



PUBLIC POLICY AND USE OF EVIDENCE IN BRAZIL

concepts, methods, contexts and practices

Editors

Natália Massaco Koga
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Janine Mello
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IMPROVING EVIDENCE USE IN PUBLIC POLICY

Justin Parkhurst¹

1 INTRODUCTION: THE IMPORTANCE OF EVIDENCE

The word ‘evidence’ can mean many things depending on context. On a personal level it can relate to individual experiences shaping our perceptions or beliefs. In legal settings it can refer to information gathered by investigators or presented to courts. While research scientists may use it to refer to empirical data collected to support or reject a particular hypothesis. At its most basic, evidence refers to information that justifies our decisions and conclusions in one way or another. As such, the importance of evidence to inform policy decisions is widely recognised, with a long history of scholarly discussion. It has been noted, for instance, that Aristotle was concerned with different forms of knowledge (including scientific knowledge) as important to inform rule-making (Sutcliffe and Court, 2005). Similarly Plato argued that it is the philosophers who possess greater knowledge – both of how to rule, as well as on the true nature of the world – who are best suited to rule and should use their knowledge to enlighten the public (Brooks, 2006; Plato, 1980).

Over time there have no doubt been countless examples of leaders using information – of one kind or another – to decide which course of action might best achieve their goals. Whether based on administrative data, military assessment, or religious prophecy – decision makers have always wanted to know if their choices of action will have desired effects. Yet the current embrace of evidence – and in particular of scientific evidence – to inform policy has more recent roots and evolution.

It was in the last century that the fields of public administration and public policy have made bureaucratic and political decision making the subject of rigorous analysis – including thinking around of the role of science in these realms. In the 1950s in the United States, Harold Lasswell developed the idea of a ‘policy orientation’ which held research and scientific methods to be critical in their deliberate use to address public problems (Lasswell, 1951; 1970). At this time in the United States there was also a growing optimism over the roles that certain kinds of evidence – in particular programme evaluations – could play in guiding policy decision makers’

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choices of public interventions. An explosion of social policy experiments and evaluations grew around the idea that rigorous testing would allow society to find ‘what works’ for key issues in education, healthcare, or criminal justice reform (Nutley, Walter and Davies, 2007; Pawson and Tilley, 1997). This initial optimism, however, soon hit a number of challenges, as it became clear that for many social interventions there was no single intervention that ‘works’ for everyone in all settings – and even if a piece of evidence could be found that something worked in one setting for one issue, it does not necessarily follow that it will work for everyone, everywhere (Cartwright and Hardie, 2012; Pawson and Tilley, 1997). Policy scholars of the time further identified that evidence or research could be ‘used’ in many different ways – not just to inform choices between competing interventions, but to delay decisions, to support pre-established choices (regardless of impact), or in broader diffuse ways shaping societal thinking (Weiss, 1977; 1979).

By the 1990s, however, a renewed focus on rigorous use of evidence could be seen. This was in part inspired by the medical profession’s formal embrace of ‘evidence-based medicine’. Said to reflect the “conscientious, explicit, and judicious” (Sackett et al., 1996, p. 71) use of scientific evidence, evidence-based medicine typically meant using experimental trials and systematic reviews or meta-analyses of trials to guide clinical practice. The launch of the Cochrane Collaboration in 1993 formalised a global network for evidence synthesis around clinical practice (Starr et al., 2009), and was seen by many as providing a ‘gold standard’ of evidence use. The medical field’s efforts thus inspired other sectors as well, which aimed to emulate the scientific rigour of the clinical sciences, and avoid the trappings of political bias through the application of methods such as experimental trials and systematic reviews (Smith, 1996; Haynes et al., 2012). This push for following evidence again filtered into the policy sector. In the UK, for instance, the government of the time declared “what counts is what works”,² which for some commentators represented the birth of the modern ‘evidence-based’, or ‘evidence-informed’, policy movement that continues to inform academic research and government planning and practice today (Boaz et al., 2019; Smith, 2013).

Within these recent developments, the use of the language of searching for ‘what works’ has proliferated, despite the fact that authors increasingly pointed out that evidence *for policy* is decidedly different to its use *in clinical medicine* (Black, 2001). One difference is that medical decision making often takes for granted the ultimate goal being pursued – assuming a shared understanding of stakeholders that the goal will be to improve patient outcomes or the cost-effective use of resources in the health system. Clinical interventions typically also assume that medical treatments work in similar ways (through the same mechanisms of causal effect) in

2. Available at: <http://labour-party.org.uk/manifestos/1997/1997-labour-manifesto.shtml>.

different people given shared human biology and anatomy. Yet in the policy realm, these assumptions rarely hold.

The availability of pieces of evidence says nothing about the desirability or consensus over the agreed goals of policy action; and the diverse mechanisms through which policy interventions cause effects means that an intervention which can produce a social result in one setting might not necessarily work in the same way elsewhere (Cartwright and Hardie, 2012; Parkhurst, 2017). As such, the evidence and policy literature has come to note that methods of evaluation or review cannot themselves eliminate political considerations from policy decisions. Indeed, the decision on which outcomes to evaluate are fundamentally linked to decisions about what social outcomes to pursue – and these in turn are decidedly political. Indeed, even within medicine there have been debates about the evidence-based approach and its focus purely on outcomes-based research data; as opposed to an incorporation of consideration of patient perspectives and values on what is in their best interest (Pinheiro and Nogueira, 2021). Policy scholars of evidence use thus note that focusing solely on a method of evidence generation (such as experimental trials or systematic reviews) risks depoliticizing critical political choices, rendering obscure the trade-offs made by decision makers – trade-offs and value judgments which typically must be transparent and contestable in democratic societies (Wes-selink, Colebatch and Pearce, 2014; Pielke Junior, 2007; Parkhurst, 2017).

There might be some concern, then, that the renewed embrace of searching for ‘what works’ risks repeating the over-optimism (and over-simplification) of some mid-20th century thinking. And while it has been important for scholars to call this out from time to time (Russell et al., 2008), the past two decades has also seen a proliferation of work that has greatly expanded our understanding of the nature of evidence use itself within policy settings. The renewed focus on evidence to inform policy has not therefore just been a political slogan. It has in turn generated a range of conceptual and practice-oriented work as well. Such work has engaged with the complex nature of social interventions, the institutional realities of policy decision making settings, and the politically contested nature of policy decision making itself.

2 RECENT WORK ON THE USE OF EVIDENCE

The understanding how – in relation to evidence use – public policymaking is decidedly different to technocratic evaluation derives from our understandings of: the political nature of decision making, the incentives and motivations of policy-makers, and the structural and procedural features of the policymaking processes itself. From this starting point, recent authors have applied a range of theories from political science, cognitive psychology, science and technology studies, and other areas to better understand the dynamics of evidence use in public policy spaces. These works have considered issues such as: how cognitive limitations and biases

of decision makers shape which evidence is seen or used (Lin and Gibson, 2003; Cairney, 2016; Parkhurst, 2012; 2016); how the arrangements and functioning of institutional systems linking research to policy can influence which evidence is seen for what problems (Hoppe, 2009; 2010; Liverani, Hawkins and Parkhurst, 2013; Lavis et al., 2008); the ways that the dynamic nature of policy change processes over time provides windows of opportunity for certain evidence to be taken up (Cairney, 2016; Lewis, 2003); how dominant policy ideas and discursive framings shape how pieces of evidence are seen as policy-relevant (Smith, 2013; Lewis, 2006); and how the institutional logics and strategic goals of bureaucratic bodies can shape which forms, sources, and uses of evidence are seen to be appropriate to their goals (Parkhurst et al., 2020). As a whole, such work provides a wealth of understanding of the policy stakeholders, systems, structures, and functions that can influence which evidence is used, by whom, when and for what goals within policy-formulating spaces.

A second major thrust of work in recent years has been to try to understand how to increase or the 'impact' evidence will have on policymaking. 'Bridging the gap' work of this nature can also build on insights provided in the above research to guide individuals to more 'successful' strategies of research 'uptake'. Some efforts look specifically for interventions that increase the use of evidence in decision making in a measurable way (Langer, Tripney and Gough, 2016). Others seek to identify so-called barriers or facilitators to evidence use (Oliver et al., 2014; van der Arend, 2014). And a number of strategies or guidelines have been developed to inform individuals aiming to achieve greater impact or uptake of their own research evidence (Green and Bennett, 2007; Bazalgette, 2020; Straus, Tetroe and Graham, 2013; Shucksmith, 2016; Lavis et al., 2003; Reed, Bryce and Machen, 2018; Cairney, Oliver and Wellstead, 2016). Typically works of this nature highlight the importance of efforts that focus on: training researchers to more effectively provide or communicate evidence ('push' strategies); training decision makers to better understand or know how to access evidence ('pull' strategies); or building links to bridge the two groups.

These works have provided a wealth of suggestions on ways one might work to increase the chances that a piece of evidence is seen, selected, or taken-up by a targeted decision maker. However, there are some key conceptual issues with efforts focused on evidence uptake or bridging the research-policy gap in this way. For one thing, there has been little reflection on the question of *which* evidence should be taken up for *what* ends. Public policy scholars have noted for decades that policymaking involves choices between competing interests, goals, and values. Yet advice on evidence utilization typically avoids consideration of what is the *right* goal to pursue, or whether the taken-up evidence leads in the right direction. Indeed, after reviewing the evidence-to-policy literature, Oliver and colleagues

were highly critical of the existing work pushing for research uptake that is based on a problematic underlying assumption that ‘more’ use of evidence is assumed to be ‘better’ – regardless of consideration of political goals and processes (Oliver, Lorenc and Innvaer, 2014). Smith similarly has explained that the guidelines to increase impact often assumes that any use of research is by definition a good thing (Smith, 2013) – while noting that efforts to *increase* the use of research is not the same as efforts to *improve* the use of research (op. cit., p. 23). It is this fundamental distinction between *using* research evidence, and *improving the use* of research evidence, that presents an important gap in the literature, and allows a critical next step to be taken in the evidence informed policy movement.

3 IMPROVING EVIDENCE FOR POLICY

While it may initially appear straightforward, what it means to *improve* evidence use within a policymaking space actually requires a good deal of conceptualization and clarification of multiple concerns; and the idea in itself can capture three linked questions, as follows.

What *should* be considered *good* evidence for policymaking?

What does it mean to use evidence in a *better* way?

How can countries build systems to ensure *the right* evidence is used in *better* ways?

As emphasized in the italics, these questions involve normative (value based), rather than technical, considerations. As such, addressing them requires an explicit normative turn in conceptualization of evidence use. That is, it is necessary to move away from academic questions of ‘what affects/shapes evidence use’, and away from practice-based questions of ‘what increases the use of (my) evidence’, to ask what represents the good use of evidence within a political system, and what can be done to try to achieve better evidence use within a country.

3.1 What *should* be considered *good* evidence for policymaking?

Some may feel that the first of the three questions above is already addressed by the methodological debates that have raged in recent years about randomized trials and the so-called ‘hierarchy’ of evidence (Ravallion, 2020; Dimova, 2019). In brief, the focus of these debates have been around methodological appropriateness. While there are a large number of individuals and groups that embrace randomized trials as the ‘best’ evidence based on their ability to illustrate causal effect of an intervention, others note that public policy decisions are not simply concerned with choices between interventions based solely on their effects – and as such the right evidence for policy must alternatively be judged on its *appropriateness to the issues being addressed* (Parkhurst and Abeyasinghe, 2016; Petticrew and Roberts, 2003). In a recent paper,

colleagues and I have further explored what this concept of appropriateness would mean for bureaucratic agencies – defining a *programmatically approach* as one that uses the goals and tasks of a bureaucratic agency as a starting point to reflect on which forms, sources, and uses of evidence best serve those goals (Parkhurst et al., 2020).

This shift to appropriateness provides an opportunity for key scientific best practices principles to be applied within the policy sphere to help identify what good evidence for policy would look like. Given that applying an incorrect or inappropriate method to solve a problem would be a violation of basic scientific principles, we can hold that it would also be problematic to apply inappropriate methods in relation to a particular goal (or knowledge need). So, for instance, if the social desirability or willingness to pay for an intervention was the evidence needed to inform a decision, an experimental trial might not be appropriate. An example such as this illustrates that requiring experimental trials would, in fact, not be providing ‘good’ evidence for that particular policy need.

Good evidence, however is not just evidence that is appropriate to the policy question. It must also be evidence of high *quality*. This is another fundamental scientific principle of course, but the quality criteria of different forms of evidence, will depend on the methods by which they are generated. Assessing social desirability (to continue the example above) might require a survey, rather than a clinical trial, to generate appropriate evidence. But survey evidence can be of higher or lower quality based on factors such as sample size and representativeness. A good piece of evidence for policy, then, can potentially be defined as evidence *appropriate* to the policy decision that is also judged to be of high *quality* according to its method of generation.

There is one more scientific principle, however, to apply when considering the question of what constitutes good evidence for policy. Science is not a search for one perfect truth, as much as the accumulation of knowledge (Bird, 2007). As such, rather than applying single pieces of evidence to justify policy action, evidence must be synthesized from bodies of knowledge to ensure the best-informed decisions can be made. It is critical then for evidence synthesis to ensure it reviews evidence in comprehensive ways, to avoid selective uses of evidence that lead to incorrect or misleading outcomes. This final scientific principle then allows us to come to a working definition to answer the first of the three critical questions above: good evidence for policymaking can be seen as rigorously synthesized evidence of high quality that is appropriate to the policy consideration at hand.

3.2 What does it mean to use evidence in a *better way*?

The second question listed above, however requires going beyond principles of scientific good practice alone. It fundamentally asks what better use of evidence means within a policy space. This rejects the idea that simply ‘more’ evidence utilization is better based on the recognition that political goals can be numerous and contested, and simply being effective does not equate to doing the right thing per se. Instead, answering the second question requires turning to consider the original purpose of the application of evidence to policymaking.

While rarely stated in academic work on the subject, for most advocates and champions of evidence use there is an implicit belief that evidence can, and should, be mobilized to reach social goals and to achieve societal improvement (Boaz, Locock and Ward, 2015). This position is based on the classic view that the ultimate goal of public policy making is in service of the public good, or the public interest (Bozeman, 2007). Again, we can look back to antiquity for this concept – as when Plato presents the argument that “no ruler, in so far as he is acting as ruler, will study or enjoin what is for his own interest. All that he says and does will be said and done with a view to what is good and proper for the subject for whom he practices his art” (i.e. for the benefit of those ruled) (Plato, 1980, p. 24). While there have been arguments over how much Plato’s calls for societal rule by (albeit benevolent) philosopher kings contrast to modern democratic principles (Brooks, 2008) – the underlying premise of policies in the public service endures. In the modern era, Dewey (1954) claimed in his classic text *The public and its problems* “a criterion for determining how good a particular state is [includes] the degree in which its officers are so constituted as to perform their function of caring for public interests” (op. cit., p. 33). And from this starting point, the idea of judging government action based on its service to the public interest can naturally be expanded to consider its use of evidence as well, however. Therefore, a key criterion for judging what constitutes a better use of evidence for policy would be to judge if it is being used in service of the public interest and societal improvement.

But what constitutes the public interest, and what goals to pursue in the name of societal improvement, are decidedly political questions. It is here then that we must move outside scientific principles to instead guide out thinking with normative principles developed for political decision making. Dating back to John Stewart Mill, democratic theory would hold that politics serves as the mechanism by which the interests and rights of the public are achieved (Christiano, 2021). As such, it is normative democratic principles, rather than scientific ones, which need to be applied which can help to judge whether evidence is being used for policy in better ways.

A first principle required to ensure evidence is being used in the public interest is that of *goal clarification* for the policy action being undertaken (and for which evidence is being marshalled). Critics of overly-technical perspectives of evidence use have often noted that policymaking involves making choices between multiple competing social priorities or values, and thus the right body of evidence to review will depend on which goals are being pursued. Indeed, in Lasswell's 'problem orientation' of the policy sciences, goal clarification is the first intellectual task to undertake – requiring policy actors to make an explicit consideration about which social values to pursue in policy action (Lasswell, 1970). In reality, it may be that politicians do not always wish to be so explicit about the goals they pursue – preferring to play different objectives off against different constituencies, or to retrospectively highlight goals achieved after any series of policy actions is complete. But from the perspective of evidence use, knowing which goals are being pursued at the start is fundamental and critical to know both what body of evidence (in relation to different outcomes) should be synthesized to inform choices, and which forms of evidence are most appropriate to the decisions made.

Goal clarification is, in fact, particularly essential to build into evidence use systems, yet it is rarely discussed or considered within works looking to improve evidence use. Cairney, Oliver and Wellstead (2016) touch on this when they note that much work in evidence use aims at reducing data uncertainty (by searching for more information on a given question), but fails to address policy ambiguity (around how problems are conceived). Some may be hesitant to ask evidence advisors to clarify social goals – out of a concern that science or evidence advice should not be making the political choices on which social values to embrace, or what social outcomes to pursue. But goal clarification is not the same as goal selection. It is fundamentally different to having science advisors select social goals and having them request – indeed even require – clarification of social goals from political leaders. Indeed, without such clarification it can never be clear if the evidence being provided is appropriate, and thus impossible to judge if it is being used well.

Other democratic principles, however, are equally crucial to apply if one wishes to ensure evidence is being used in service of the public interest. Within systems of evidence utilization, politicians and bureaucratic actors will be both shaping when evidence is used, as well as for what goals it is applied. To serve the public interest, there must be some mechanisms through which the public's values are represented, and the political agents acting on behalf of the public can be held to account. Thus, better uses of evidence for policy can be seen as those which ensure both *accountability* and public *representation* throughout the process.

A final principle, however, which can be particularly important to judge if evidence is being used well is that of *transparency*. Transparency itself is sometimes

seen as a tool that ensures or builds accountability, allowing the public to see the political decisions being made on their behalf (Meijer, 2014). Transparency is also critical, however, in relation to the use of evidence in two ways. First, Elliot and Resnik (2014, p. 648) explain that “transparency can promote public trust by helping lay people understand how both empirical evidence and value assumptions enter into scientific decision making and policy formation”. In addition, however, transparency is also necessary when experts review or synthesise evidence to inform policy so that scientific peers are able to provide scrutiny and oversight (Bornmann, 2013) – to help ensure rigor and quality in line with scientific principles discussed above.

If we accept the premise that the good use of evidence in policy is that which serves the public interest – these principles allow further consideration of what might be needed to achieve this. In particular through: clarification and specification of goals pursued; accountability to and representation of the public and their values; and transparency in the evidence utilization process to enable scientific and democratic scrutiny.

3.3 How can countries build systems to ensure *the right evidence is used in better ways*?

We can now turn to the final question of how to bring about improved uses of evidence for policy in national systems. While the above two sections highlight normative principles that can be used to conceptualise what an improved use of evidence would be for policymaking, the final step is to consider how this can be brought about systematically. This requires shifting thinking away from individual pieces of evidence, training of particular leaders, or influencing specific policy choices, to instead consider the systems of evidence and science advice operating within countries – systems that function across policy decisions, and across any particular research study or finding. In essence, it requires a shift to consideration of the institutionalisation of evidence use, and how to improve institutional arrangements in line with these principles.

Some authors have already begun to consider the steps needed to institutionalise evidence use within national policy decision making structures. Stewart, Langer and Erasmus (2019), for instance, have described this as ‘spiral’ process involving the steps of: raising awareness, developing capability, and using evidence – all taking place across a set of levels building up from the individual, to the team, organization, and ultimately institutional level. The authors argue that institutionalization of evidence use is a long-term process that cannot be judged by the use of evidence in anyone decision point. Rather they explain: “[t]he decision itself is not an endpoint... there are many incremental shifts, as you move around the spiral, all of which are important. We recognise that big changes are the result of multiple small steps, and that the larger changes can take many years to accumulate” (op. cit., p. 7-8). Koon et al. (2013) have

further highlighted the importance of the ‘embeddedness’ of research organizations within health policymaking systems – with embeddedness capturing the centrality and strength of connections that research organizations can have. This is ultimately seen to affect the influence that research organizations may have on other organizations within the system (and thus increase the uptake of research in policymaking).

Such frameworks help to identify what institutionalised systems of research and evidence use might look like, as well as steps one can take at different points to develop the systems of evidence use. However, these approaches typically work from the logic that what matters is use or take-up of research; without necessarily engaging with the normative principles discussed previously of what constitutes good evidence for policymaking, or the good use evidence within policy processes. And yet, institutionalisation is a decidedly normative process. Selznick (1957) famously described institutionalisation as a process by which organisations are ‘infused’ with values. That is to say institutionalisation sets the structures, rules, and processes that prioritise particular values and pursue certain goals. Building on Selznick in relation to public sector organisations, Boin, Fahy and ‘t Hart (2021, p. 2) further explain: “[i]nstitutions embody and safeguard certain values that are important to a society” – describing public institutions as ‘guardians of public value’ (op. cit., p. 7).

Previous work of my own has described the institutionalised arrangements of evidence advice as *governing* the use of evidence in policy making – with the normative principles discussed here allowing further consideration of what the *good governance of evidence* would look like (Parkhurst, 2017). In that work I argue that the good governance of evidence is achieved through “the institutionalisation of structures, rules, processes and practices that work to ensure that rigorous, valid and relevant bodies of evidence are utilised through transparent and deliberative processes to inform decisions that ultimately remain representative of, and accountable to, local populations” (op. cit., p. 170).

Ultimately, there is no single template to follow when considering how to build evidence advisory systems that ensure good evidence for policy is being used in ways that serve the public interest. Halligan (1995) has noted, there can be pros and cons for any given policy advisory system arrangements – looking at the location of advisors (internal or external to government) and the level of control held by government officials. Combinations of these are seen to affect the performance of the advisory system in relation to its flexibility, policy suitability or effectiveness of advice given – with Halligan concluding “the verdict is still out on what structure works best for policy advice” (op. cit., p. 162).

Thus, just as public administrative governance arrangements vary across countries, so too will evidence advisory and evidence provision arrangements. Indeed, in

most countries there will likely be sets of agencies and groups providing science and evidence to a variety of decision makers. In one mapping of the UK science advice system, for instance, Hopkins et al. (2021) illustrate how science advice to Ministers comes from: formal science advisory mechanisms in government; independent academic councils and committees; government units specialising in research and evidence; and external groups as well.

But while it is not possible to say which bureaucratic arrangements, or which system of representation, is the ‘best’ one, we can instead consider if bureaucratic and representation systems reflect good governance principles. We can also consider how to improve them if they are found lacking, or if we identify new or additional principles we wish to infuse into our organisations through further institutional change. As noted by Stewart, Langer and Erasmus (2019) above, the ongoing institutionalisation of evidence use will, in most cases, be a process of small changes at multiple points within existing bureaucratic structures. But by making these changes in relation to good governance of evidence principles, we can follow what has been termed a process of *guided evolution* of the evidence system (Parkhurst, 2017). It is *evolutionary*, as institutional change tends to be incremental shifts in existing systems, with some changes taking hold as more fit for purpose, and others falling away when proving unfit for purpose. It is *guided*, however, by explicit consideration of the normative principles upon which such changes can be based.

So, for example, it may be that existing evidence advisory bodies within a country have well established rules or procedures for evidence synthesis in relation to intervention effectiveness assessment (such as through the use of systematic reviews or meta-analysis) – with such approaches in line with scientific principles of rigour and comprehensiveness. Yet existing bodies may be lacking explicit procedures in relation to goal clarification, or may be limited in their transparency of operation. Requiring and implementing a standard procedure for evidence review which begins with an explicit statement of the goals of the policy being informed could be an incremental change within an existing system, but would help to hold both science advisors, and political leaders, accountable. Increasing transparency or public deliberation in the review process can further help to allow peer scrutiny over whether the appropriate evidence was reviewed in relation to those goals, but also allow public scrutiny over whether their political leaders are indeed pursuing outcomes representing their interests.

What is critical is for each element of an evidence advisory system to consider if their levels of transparency, deliberation, or accountability are sufficient – or if there may be a gap which prevents the public and scientific community to undertake sufficient democratic or scientific scrutiny. Ultimately, this chapter argues that

improving evidence use at a national level is a structural and institutional process that must critically look at the systems in place to provide evidence, and explicitly consider the normative principles by which those systems operate – using such principles to guide improvements and system changes.

4 DISCUSSION OF THIS VOLUME

This volume represents an important step in the efforts to improve evidence use at a national level in Brazil. Chapters touch on a range of academic and practice-based questions – yet they arise from a broad desire to improve the structure and functioning of the systems that provide evidence to inform important public policy decisions.

The book is divided into sections covering: theoretical-conceptual aspects of evidence use in Brazil (section 1); methods and approaches to communicate evidence (section 2); analysis of evidence use at different levels of the Brazilian government (section 3); analysis of the state as an evidence producer (section 4); and a final section critically analysing the use of evidence in a range of public policies in Brazil, from education to the environment to covid-19. As such the book should provide a wealth of both conceptual and empirical examples to reflect on the theory, systems, and practices of evidence use in Brazil.

Many of these chapters consider the ways that bureaucratic agencies function in relation to evidence, providing insights into the political and structural factors shaping evidence utilisation by public servants. For instance: Machado, Sandim, Alves, Motoki and Vivas look for correlates of the use of scientific evidence by public servants in the Federal District – considering features of these individuals and incentives of their organisations in relation to evidence use. Koga, Palotti, Lins, Couto, Loureiro and Lima similarly focus on the ways that evidence use by Federal bureaucrats is shaped by their differing political-institutional contexts – identifying a range of forms of evidence and uses of evidence specific to their bureaucratic realities. Oliviera and Menke discuss the sources of information preferred by another form of official – auditors of the Comptroller General. While Filgueiras, Palotti and Nascimento provide insights into how a structural shift – in the form of the construction of a digital platform – was linked to a more instrumental use of evidence in relation to policy decisions. A range of other chapters consider how particular forms of evidence was utilized in specific Brazilian policy decisions (e.g.: Furtado and Lassance on the use of computer simulations; Bachtold and Robert on the use of ethnography; Vieira, Servo and Piola on the use of Health Technology Assessment; or Fiani on the use of Econometric models).

There are also chapters that look at other arms of the state in relation to evidence use – such as the judiciary and the legislature. Work considering evidence

use in these bodies, however, has often taken on different concerns to the largely technocratic approach assumed to underlie planning of many public sector bureaucratic bodies. Work in the United States, for instance, has explored the evolving criteria used by courts – and the specific role of trial judges – for admitting scientific evidence: finding tensions around how much judges can or should be able to assess the reliability or validity of scientific evidence (Walsh, 1999; Improving..., 1997). There have also been studies in Colombia and Germany that have analysed how courts can consider health-related evidence differently to public health bodies. These studies find that courts often utilise evidence in relation to legislative and constitutional principles (such as the right to health). This was found to lead to different conclusions (and policy implications) when health-provision decisions fall to courts, as opposed to ministries of health or affiliated public health bodies (Ettelt, 2018a; Hawkins and Alvarez Rosete, 2019). In this volume, the chapter by Nascimento and Dias also considers evidence use within the judicial arm of government, yet provides a novel approach to the question. Rather than focusing on how evidence is used to decide in specific court cases, it looks at the role of evidence in advocacy (*‘ativismo com as estatísticas’* [activism with statistics]) for reform of the working conditions within judicial system itself.

In contrast to judiciaries, legislatures often hold a different position in relation to scrutinising, approving, or setting public policy. The roles played by legislatures in different countries has been found to vary considerably – from oversight and approvals (of budgets, for instance), to the direct formation of policy through the creation of laws and regulations (Ettelt, 2018b); and it has been argued that legislatures have not yet been widely studied in relation to their uses of evidence to inform policy (Rose et al., 2020). In one analysis, however, Ettelt (2018b) explored the ways that parliaments in a set of countries used evidence for health policymaking – finding the role of evidence to be limited, and noting that party politics could dominate evidence use processes.

The role of partisan politics within legislatures – and its subsequent impacts of evidence use – can, therefore, be an important area for further work. In Weiss’ (1979) classic typology of research use for policy, she describes a ‘political model’ of research use as reflecting situations where “the constellation of interests around a policy issue predetermines the positions that decision makers take” and research “becomes ammunition for the side that finds its conclusions congenial and supportive” (op. cit., p. 429). It has been further argued that the greater the levels of political contestation or polarisation faced, the greater the chance for bias in the creation, selection, or interpretation of evidence (Parkhurst, 2016).

Indeed, political competition and polarisation are often no more visible than in national legislatures, and in this volume, the chapter by Almeida explores this

very question of how the political make up of legislative committees influences the type of evidence used. The chapter undertakes an empirical analysis of bills considered by committees within the Chamber of Deputies to consider when information of different quality was used. It finds overall that information of high evidentiary quality was not often used. It further analyses correlations between quality of information and the make-up of the committees themselves, finding initial indications that greater heterogeneity of preferences within committees can lead to improved quality of information shared.

This preface, however, raised a set of key questions to guide thinking around how we can work to improve the use of evidence for policymaking. And indeed, several chapters speak more directly to the three sub-questions discussed above. For example, Pinheiro explores what is termed a ‘*modelo moderado*’ [moderate Model] – in which evidence is defined in relation to policymaker action – fundamentally analogous to the programmatic approach that the needs and goals of bureaucratic decision makers can serve to establish what forms, features, and applications of evidence are appropriate or policy relevant (Parkhurst et al., 2020).

Other chapters are decidedly institutional in their approach. Araújo, for instance, considers how the policy process and nature of planning institutionalized particular information that would be used for prevention of forest fires. While Segatto, Santos, Alves e Peria study whether evidence use was institutionalized for education policymaking at state level (finding only one state actually having institutional structures for this). Works such as these can enable critical reflection on the institutional evidence advisory systems in place, and whether they provide the most appropriate evidence for this policy need in the best possible ways.

Finally, one of the most explicit discussions in this volume of whether evidence was used *well* comes in the chapter by Moraes, who compares Brazilian state governments responses to the current covid-19 pandemic. The chapter presents a key set of criteria by which to judge good uses of evidence in relation to pandemic response – whether it was: timely, comprehensive and precise, involving expert participation, interdisciplinarity, transparent, and proximate to the political process. These principles may differ somewhat from those discussed above, but the ultimate approach is similar – an explicit consideration of normative concerns by which to judge the use of evidence.

5 FINAL THOUGHTS

While the use of knowledge to inform decisions dates back to antiquity, it has been in the past century that the structures and functioning of public administrations has become a well-developed field of study. Consideration of the ways that science and evidence are used to improve public services has grown alongside this. In the past

few decades, we have seen an expansion in academic and applied work that directly analyses evidence use within policymaking spaces drawing on a range of disciplinary and conceptual approaches. However, despite this growth, gaps still remain. Recent work has begun to understand how features of the state shape the use of evidence – yet this knowledge base still requires expansion to different country contexts and different policy issues. As such, this volume provides a wealth of insights into evidence use in Brazil specifically, cutting across a range of key public concerns. This preface, however has also raised the challenge of what it means to use evidence well, and how to build systems within countries to ensure this is done. This remains an emerging area to consider for many in the field, but again there are chapters in this volume which can help to develop these ideas in Brazil – and ultimately inform future decisions and debates about the structures of evidence advice best suited to serve the public interest.

At the time of writing, the covid-19 pandemic is providing an urgent challenge to many countries in the use of science and evidence to inform policymaking. And while this might appear to be raising new considerations for the use of evidence, in many respects, such issues have existed throughout time. The appropriate evidence in response to a novel pandemic may indeed look different to using evidence for routine health concerns, or other long term public policy considerations requiring science advice (be it transportation, forest management, or climate policy). Yet ultimately, using evidence *well* – for any policy challenge – requires establishing systems that can marshal appropriate scientific research, data, and information, to serve public needs. Doing so requires explicit reflection on the goals of policy action – as well as the criteria by which good evidence, and the good use of evidence, can be judged at a national level.

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PRESENTATION

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1 INTRODUCTION

The use of evidence as a support for government action is not a new theme in the debate about the production and legitimization of State action. In recent decades, however, the evidence-based policy movement (EBPPs) has intensified the defense that more and better evidence should be produced as instruments capable of guiding the production of policies. In contrast, different authors have called attention to the analytical and conceptual limits of restricted notions of evidence, supported by assumptions of instrumental rationality present at the core of the role attributed to scientific knowledge in modern times (Parkhurst, 2017; Cairney, 2019; Nutley, Walter and Davies, 2007; Jasanoff, 2012).

This book is part of that debate and aims to fill two gaps. First, it seeks to reduce the scarcity of studies on using evidence in different areas and levels of government in Brazil. Second, and mainly, it analyzes the dynamics of evidence use based on an expanded conception of what does or does not constitute evidence in policy. Faria and Sanches, in chapter 3, show that this agenda of studies is relatively recent in the country, with few publications. In addition, it is late in relation to the approach of EBPPs, which became internationally widespread in the 1990s. In the analyzed studies, there is a predominant defense of the principles, objectives, and methods of the EBPPs. Although this defense is, here and there, “spiced up by more topical criticisms”,⁵ Brazil still lacks a more mature dialogue with the already appreciable critical, analytical, and propositional literature produced abroad. As a result of the research *What does inform policy in Brazil: usage and non-usage of evidence by federal bureaucrats*, coordinated by the Diest/Ipea, in a joint effort with researchers from the Brazilian Federal District Planning Company (Codeplan), the Institute of Development Studies (IDS), and the University of Amsterdam, with support from the Economic Commission for Latin America and

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the Caribbean (ECLAC), considering the ECLAC-Ipea Cooperation Agreement and Ipea's International Cooperation Program (Procin), this publication counted on the participation of 51 authors from 22 national and international institutions. Throughout its 28 chapters, this work illustrates how evidence plays a role in policymaking in various thematic areas, the three branches of government, and different segments of the public bureaucracy. The theoretical and methodological diversity is a valuable characteristic of the studies published here, as is the multiplicity of backgrounds, areas of knowledge, and institutions to which the authors belong.

Given Ipea's mission to *improve policies essential to Brazilian development, by producing and disseminating knowledge and advising the State in its strategic decisions*, we strongly believe in the potential contribution of this book to the agenda of studies on how evidence, in its moderate conception (as we will discuss below), has been incorporated into the policy and decision-making on issues that affect the wellbeing conditions of the Brazilian population. Furthermore, we emphasize that, in producing this book, the pandemic of covid-19 has made the debate even more urgent, rich, and challenging.

This presentation is organized into five key points that dialogue with the analytical efforts of the set of chapters while simultaneously proposing an interaction with central aspects of recent literature on evidence in policymaking in Brazil and abroad. Although there is a relationship between the key points and the book sections, the discussions suggested are not restricted to the chapters of each section. In fact, they aim to encompass the publication as a whole. The purpose was to let readers locate the different thematic sections suggested throughout the book. We emphasize that this is our initial glance, and other topics may be identified since the contributions of each chapter are not restricted to the discussions presented here.

We would like to thank the authors who have been with us during this fruitful journey and the dozens of reviewers and collaborators who have allowed this publication to be published. It is also worth clarifying that the references to the chapters in this *Presentation* obviously do not fully reflect their individual contributions. The organizers suggested additional highlights and reflections, but unfortunately, they had to be synthesized around the five key themes chosen for this already extensive presentation. We hope to remain in dialogue with this network of scholars and practitioners to develop this research agenda further. We also thank Professor Justin Parkhurst, one of the main international references in the field, who kindly accepted our invitation to write the preface of this publication in a rich and open dialogue with the organizers. We wish you all a pleasant reading!

2 THE CONCEPT OF EVIDENCE IS POLYSEMIC AND RELATES TO MULTIPLE

INFORMATIONAL SOURCES: THE PROBLEM OF THE CONTEXTUAL FRAME

Instrumental rationality can be conceived as the rational use of means to achieve previously defined ends. In this specific use of human reason, the fundamental assumption is that there is a reasonable degree of certainty in the knowledge concerning the realities about which problem solutions are sought. Throughout history, various streams of philosophical, political, and social thought have defended using instrumental rationality to achieve well-being and social progress. Nevertheless, contemporary societies are increasingly complex, which seems to undermine the belief that there can be some certainty in social knowledge. Reinforcing this skepticism is that, despite the exponential increase in the availability of data, computational capacity, and technical and scientific knowledge, the quality of public decisions – measured in terms of general welfare – does not seem to have grown at the same pace. Paradoxically, this leads to the need to mobilize more and more data, science, and technology to understand and act upon social realities through policies.

The traditional approach to EBPPs focuses on the use of instrumental rationality. The instruments, in this case, would be the evidence, that is, the objective facts that would serve as a basis for decision-making in policy. This approach, especially in its more rationalist versions, treats the results of scientific research as the only valid form of evidence about what works or does not work in policy. In other words, EBPPs associate evidence with scientific knowledge (chapter 2). Nonetheless, as the reality of contemporary social systems seems to indicate, it is implausible that using instrumental rationality purely on scientific evidence is sufficient to ensure social progress and welfare in the long run.

Therefore, we need a comprehensive view of what evidence means to be used as a policy instrument. To this end, we first need a conceptual analysis of evidence in policy theory. That is the fundamental objective of section 1 of this book.

What is evidence in public policy? Pinheiro, in chapter 1, proposes a *moderate model*, which eschews a priori stipulated definition of evidence and defines the field of application of this concept based on contexts of concrete use of evidence. The model admits that the realities underlying policies are highly complex, multi-causal, and subject to uncertainty. However, it is also assumed that they can be, to some degree, known and deliberately modified to achieve collective welfare ends. In this aspect, the analysis proposed by Pinheiro seems to distance itself from radically *constructionist* interpretations of policies and policymakers' work, without, however, aligning itself with mechanistic, positivist, or ultra-rationalist views of policies, which seem to focus only on instrumental rationality. Moreover – opposing a *reification* of the concept that tends to reduce it to a type of *quantitative evidence* – the moderate model admits several kinds of evidence and methods,

besides demanding special attention to the diversity of the epistemological status of the areas of knowledge concerning policies. In turn, the model's moderate character is verified not only in its openness to plurality but also in its attention to both the limits of knowledge and contexts of action.

The contexts in which decisions in policy are made are crucial to the definition of evidence in the moderate model. According to Pinheiro's expression (chapter 1), *the contextual frame* delimits a background made up of epistemological, political, and institutional factors within which the policymaker's decisions regarding the use of evidence take place. In other words, to use or not to use this or that evidence, as well as the weight that will be given, for example, to scientific evidence, will depend on the contextual decision framework of the agent, in which political, symbolic, and ideological factors will always act, latently or explicitly.

To what extent would the construction of contextualized knowledge for the analysis of policies be possible? First of all, any policy should be adjusted to its implementation context, considering the behaviors and reactions of the target audiences. In turn, this adjustment requires the analyst to have a specific cognitive attitude and an openness to the phenomenological apprehension of contextual elements (Lejano, 2006, p. 228 and 252). Finally, one must be able to intuit ways to describe the context in its formal and informal aspects.

Such contextualized knowledge will require using different methods and ways of representing reality. It implies that the analyst must *look into* concrete situations experienced by people. In theory, this type of knowledge seems to be more appropriately achieved with qualitative methods, precisely those highlighted by Bachtold and Robert (chapter 7), Fonseca, Koga, Pompeu, and Avelino (chapter 6), among other chapters in this volume. Qualitative studies can gather a volume of data and information that, once organized and analyzed, can improve knowledge, including causal knowledge, about certain social phenomena. Here, establishing analogies and "Wittgensteinian family resemblances" between different cases can be crucial.

It should be clear that contextual knowledge, briefly characterized in the previous lines, is different from that obtained through statistical analysis, impact analysis, controlled randomized experiments, and mathematical modeling. However, one should try to use these types of analyses – considered more scientific, objective, and rigorous – in a cooperative and intercomplementary way with other methods. Different objects of study will require different methods of producing evidence to guide policy decisions.

3 THE PRODUCTION OF EVIDENCE IS CHARACTERIZED BY METHODOLOGICAL DIVERSITY AND ANALYTICAL APPROACHES

The production of systematic knowledge about reality aims to reach some kind of inference, either of a descriptive or causal nature. We use known facts to build hypotheses and formulate knowledge about something we do not yet know, whose conclusions can later be reviewed and refined (King, Keohane and Verba, 1994). Thus, a modern conception of science points to the existence of various means or methods to access, measure, and know reality. The production of evidence for policies is part of this broader context within the science organization. In analyzing policies and their decision-making processes, an enormous variety of methods and analytical approaches are available to obtain inferences.

This book aims to illustrate this multiplicity of resources for producing inferences with contributions that mobilize qualitative, quantitative, mixed, and experimental studies. Throughout the book, each chapter adopts different methods, as expected from the varied objects of analysis. This multiplicity of approaches, often complementary, signals how research in the field of policy may ideally operate. Moreover, the chapters exemplify the diversity of possible methodological approaches for the same investigative purpose – understanding the meanings, uses, scope, and limits of evidence in policy.

Complementing this diversity, we chose to gather, in section 2, five chapters that refer directly to methodological issues regarding examples of applications in studies about policies. This choice was made because these contributions synthesize methodological aspects that point to contemporary and pressing questions about using evidence in policy.

A first type of empirical evidence is impact evaluation. It constitutes a causal hypothesis test, in which one tries to measure statistically the effects (impacts) of a specific policy intervention based on previously established criteria to corroborate or reject the hypothesis. Moreira and Santini, in chapter 4, emphasize the importance of such evaluations for accountability and to achieve more efficient standards in the use of public resources by municipal administrations in Brazil. The authors show that, in general, there is a huge untapped potential for increasing the efficiency of Brazilian municipal policies, as mayors rarely base their policy decisions on information extracted from academic sources or research institutes. Moreover, field experiments conducted by the authors provide strong evidence that if mayors are well informed, by impact evaluations, that a particular policy is effective (as well as cheap and easy to implement), then they are likely to implement it.

However, policy analysts hardly perform impact evaluations and randomized controlled trials (RCTs) to test long-term interventions and understand policy problems that are highly complex (wicked problems). As Leão and Eyal argue

in chapter 8, in their critical debate about the origins and limits of experimental research, current studies comprehend a second wave of works produced by randomizers, formed by research groups, mainly associated with the area of economics, that overcame political resistance to the randomization of social policies. Using the sociological concept of *hinge*, the authors explain that randomizers and international philanthropic organizations (philanthrocapitalists) have partnered to produce research that tests interventions whose natures are occasional, mostly lasting a month or less. Thus, RCTs have spread in the international scenario not because of the method's intrinsic nature as a *gold standard* but because of historical and institutional circumstances of the recent political and scientific scenario.

In the absence of methods that generate more *objective* evidence, one alternative is using computer simulations, which can be used in several ways to support decision-making. Furtado and Lassance propose this type of evidence production in chapter 5. With the results of such simulations, one can evaluate a priori, with some degree of detail, certain effects of the choices made by policymakers. Thus, some *side effects* of the policy, not foreseen in the design and elaboration phases, may be mitigated by actions that would not even have been considered if the effects of the policy in question had not been computationally simulated. Moreover, different policy options can be evaluated comparatively before any substantive decisions are made and without significant public spending. Among the computer simulation techniques the authors present, there are agent-based modeling (ABM), a bottom-up method that seeks to model the behavior of agents in order to infer the overall properties of the system; big data; machine learning; network analysis; and dynamic stochastic general equilibrium models (DSGEs). Each of these methods has its wide range of applications and can be used, alone or in combination with other methods, for policy analysis.

In turn, in addition to quantitative empirical evidence and computer simulation techniques, ethnographic data and methods can be used as evidence for policy, as Bachtold and Robert show us in chapter 7. Simply put, ethnography is a qualitative method of researching “a particular culture, its values, and its beliefs, through the exercise of continuous observation and detailed description of the native way of life”.⁶ However, ethnography is not restricted to the technique of participant observation. Closely linked to anthropology, ethnography seeks to understand otherness – the *other's* way of thinking, being, and doing. By relativizing the ways of life of human groups, ethnography takes on a contextual and critical character. As the authors clarify, this is the method that best “allows for the assimilation of subjective, social, and symbolic factors that are often not understood by other research methods”.⁷

6. According to chapter 7 of this book, by Bachtold and Robert.

7. See chapter 7 of this book, by Bachtold and Robert.

Besides focusing on methods and techniques, numerous other ways of conceiving and classifying the evidence used to support and inform policy decisions exist. One of these alternatives concerns the so-called *hybrid evidence*, studied by Fonseca, Koga, Pompeu, and Avelino in chapter 6. Hybrid evidence is derived from the operation of participatory institutions, which, in turn, consist of various forms and arrangements for hearing the voices of citizens and policy stakeholders to take into account their preferences in policies (e.g., forums, conferences, public hearings etc.). The debate of these authors with the traditional literature on EBPPs allows the expansion of the concept of evidence based on new knowledge, rationalities, and *grammars* that emerge from the meetings, debates, and conflicts between the different actors interested in policies. The perspective of Fonseca, Koga, Pompeu, and Avelino in chapter 6 seems to be closer to the *post-positivist* views that, unlike the more traditional strands of EBPPs, reject the separation between the technical and the political and do not exclude a priori values and beliefs, ideology, and personal (more or less subjective) judgments in the analysis of policies.

As one would expect, the chapters gathered in section 2, dedicated to discussing methods and approaches in producing evidence, and even the book as a whole, do not bring together the totality of means to make policy-relevant knowledge. Moreover, hardly a single work will be able to illustrate and bring together the multiplicity of existing methods, as there are countless manuals and reference books for the various methodological techniques and traditions in different branches of knowledge that are constantly being updated and developed. The goal, therefore, was to bring together some recent debates about the challenges and possible gaps involving methodological issues on the use of evidence in policy.

Finally, a debate in permanent dispute attributes hierarchy to evidence and the relevance of this classification for the field of policies. The proper use of science is key to avoiding fallacies in providing input to decision-making. In *The politics of evidence*, Justin Parkhurst (2017) also pointed out this problem, which he called technical bias, defined as using evidence that does not follow scientific principles or best practices.

However, as Parkhurst himself argues in his works and the preface of this book, evidence should be helpful in the decision-making process. That is, we must consider, among other constraints, the time limits and the purpose of its mobilization in policies. Furthermore, the best evidence is not necessarily the one supposedly at the top of a predetermined hierarchy of evidence. In some cases, systematic evaluations and reviews may be necessary; in others, comparing international practices, mapping historical series, or comparing indicators are sufficiently useful. Vieira, Piola, and Servo, in chapter 19, explore the factors that influence the evaluation of technologies for therapeutic purposes by

the National Committee for Health Technology Incorporation (Conitec) in the Brazilian Unified Health System. In addition to the level of quality of evidence on the issues of efficacy/effectiveness, the authors analyze three other factors: the influence of those requesting the evaluation, the stakeholders, and the costs of the technologies. Evaluating a sample of 29 reports of the 141 published by Conitec in 2019 and 2020, based on the grading of recommendations assessment, development, and evaluation (Grade) methodology, the authors conclude that Conitec's recommendations were not always guided, in this period, by the highest levels of evidence, but in conjunction with other factors, including the three mentioned here. For example, the presentation of experience reports on the use of drugs and the high cost of new drugs compared to existing ones were relevant to the evaluations. Despite the recognized advances in health technology assessment (HTA), the study points to the challenges of strengthening and legitimizing Conitec. The case of the Ministry of Health's (MH) orientation, due to political pressure, to use chloroquine and hydroxychloroquine against covid-19 without prior evaluation by Conitec illustrates part of this reality.

In this sense, the key concern for improving the use of evidence for government management shifts from the idea of complying with a hierarchy of evidence to the creation of governance of evidence (Parkhurst and Abeysinghe, 2016; Parkhurst, 2017). With this expression, we aim to problematize an advisory system that enables the mobilization of reliable and technically valid evidence based on decision-making processes that are “inclusive of, representative of, and accountable to the multiple social interests of the population served” (Parkhurst, 2017, p. 8). The challenge posed to Brazil, and other developing nations is to expand quality public services in a polarized context marked by sharp distributional conflicts. This book aims to support this debate, at least concerning the potential of evidence to improve government action.

4 THERE ARE DIVERSE CONTEXTS FOR THE USE OF EVIDENCE IN POLICYMAKING, AND EXPLORING THIS DIVERSITY ALLOWS US TO REVEAL FACTORS THAT DRIVE OR INHIBIT CHOICES AND DYNAMICS OF USE

The moderated model proposed by Pinheiro in chapter 1 invited the authors to recognize and problematize the contextual framework in which evidence is employed. We argue that this exercise expanded the understanding of the possible conditioning or explanatory factors of the choices of informational sources, as well as their dynamics of use.

This book could observe the plurality of contextual frames from different perspectives. We will present three of them that, in our opinion, stand out the most. The first one, illustrated in section 3, but not only, deals with the diversity of spheres and levels of government. Although most chapters in the book were

dedicated to analyzing the use of evidence in the federal Executive branch (chapters 7, 9, 10, 14, 15, 16, 17, 18, 19, 20, 21, 23, and 25), some chapters contributed to the analysis of the context of local government (chapters 4, 11, 26, 27, and 28), of the Legislative (chapter 12) and Judiciary (chapter 13) branches, as well as with approaches that considered the international context of the policy analyzed (chapters 8, 22, and 24).

The second dimension of contextual plurality, portrayed to some extent in the set of chapters in section 5 but also present throughout the book, relates to policy areas. As mapped by Pinheiro (chapter 1) and Faria and Sanches (chapter 3), the historical precedence of the evidence-based medicine (EBM) movement means that the debate on the use of evidence has more accumulation and presence in the health area. However, the emergence of the covid-19 pandemic brought new challenges to governments in all countries and demands for interactions with other policy areas, as the authors well demonstrate in the chapters that dealt with cases in health care (chapters 19, 20, 21, and 28). The specificities of the use of evidence in other policy areas were also analyzed in social policies (chapters 7, 8, 15, and 17), education (chapters 26 and 27), control (chapter 10), management (chapter 16), macroeconomics (chapter 22), infrastructure (chapter 18), environmental (chapter 23), rural productive inclusion (chapter 24), and science, technology, and innovation (chapter 25).

The third dimension of contextual diversity among the chapters deals with the unity of analysis adopted by the studies. While some chapters of the book sought to deepen the perspective of the individual user of evidence (chapters 4, 9, 10, 11, and 13), some chapters offered an organizational-institutional perspective (chapters 12, 15, 18, 19, 20, 23, 26, 27, and 28) and others an integrated view between the two levels of analysis (chapters 16 and 25) or systemic view of the specific field of knowledge (chapters 14, 17, 21, 22, and 24).

In the analysis carried out with federal bureaucrats (chapter 9), *individual factors* proved relevant for the choice of the source of information to be employed by the general sample of bureaucrats at the ministries, namely the level of education, the type of work performed, occupation of higher positions and assignment in the Federal District. In addition, Jannuzzi (chapter 15) emphasizes the importance of bureaucrats' knowledge in the use of statistics and the formulation and evaluation of programs to develop better evidence-informed federal policies against hunger and poverty. Also, among individual factors, Bachtold and Robert (chapter 7) add the ability to translate knowledge as an inducer or facilitator for the greater permeability of specific sources such as ethnographic research. Likewise, several chapters recall the teachings of constructivist studies about the influence of ideas, values, and judgments carried by individuals in their choices and actions (chapters 1, 2, 13, 14, 16, 17, 20, 21, and 24). Moreover, as Saguin (chapter 2) and Vahdat, Favareto, and Favaraão

(chapter 24) discuss, actors' cognitive biases frame public problems and, therefore, limit the choice of evidence sources.

Four studies in the book were based on survey data from bureaucrats (chapters 9, 10, 11, and 25). Although chapter 9, elaborated by Koga, Palotti, Lins, Couto, Loureiro, and Lima, and chapter 11, produced by Machado, Sandim, Alves, Motoki, and Vivas, pointed to very close preferences in the general context of federal bureaucrats of the direct administration and the Federal District Government (GDF), respectively – in which the use of scientific sources would be less frequent than the use of state and experiential sources –, when we take a closer look at more specific contexts, as performed in the other two chapters (chapters 10 and 25), relevant variations could be identified.

On the one hand, Oliveira and Menke (chapter 10) indicate an even higher use, if compared to the general sample of federal bureaucrats, of state sources among the auditors of the Office of the Comptroller General (CGU), who produce control recommendations, a relevant source of information among the federal bureaucracy in general. In another direction, Schmidt, Bin, Pinheiro, and De Negri (chapter 25) portray the context of bureaucrats in the Ministry of Science, Technology, and Innovation (MCTI), which points to an intense use of information from scientific production and experience to the detriment of most state sources, except for laws and regulations and administrative records.

In fact, exploring the differences between the contexts allows us to hypothesize about the factors that induce and inhibit the use of different sources of evidence. From the four cases mentioned, we can reaffirm that individual factors are relevant, such as the greater or lesser use of scientific evidence depending on the type of work performed and the educational level of the bureaucrat. However, the prominence of the use of regulations and administrative registries in the same four cases suggests explanations from other levels of analysis. In this sense, in addition to the cases mentioned above, we identified contexts such as the formulation and implementation process of the Gov.br platform, in which, as demonstrated by Filgueiras, Palotti, and Nascimento (chapter 16), sources of various kinds, such as recommendations from international organizations, research with users of public services, and academic studies, are used jointly.

Regarding *organizational and institutional explanatory factors of evidence use*, several considerations were raised by the authors, such as the implications of changes in administrative resource flows of personnel and budget for the maintenance of evidence use capacity (chapters 23 and 25); the effectiveness and legitimacy of the instruments of mobilization and use of evidence, as discussed by Vieira, Piola, and Servo (chapter 19) and Fernandez (chapter 20), regarding decisions in health policies; as well as in the case of the regulatory process of the Brazilian National Electric Energy Agency (Aneel), presented by Martins, Sanches, and Pinheiro (chapter 18).

Besides these factors, there are also the challenges of institutionalization of consulting instances and of translation of scientific knowledge, problematized both by Segatto, Santos, Alves, and Peria (chapter 26), in the case of the Office of Evidence of the São Paulo State Secretary of Education, and by Moraes (chapter 28), regarding the state instances recently created to face covid-19. In this same scope, the effects of the design of institutional arrangements for policy implementation were debated, such as the centralization of decision-making, brought in the discussion by Ceneviva, Andrade, Koslinski, and Núñez (chapter 27) on *Escola em Foco*, from the city of Rio de Janeiro, and the effects of the institutional culture formed in the field of productive inclusion policy debated by Vahdat, Favareto, and Favaraó (chapter 24).

Finally, several studies brought up *relational and systemic factors* that were suggested as drivers or inhibitors to using different sources of evidence. These factors concern not only the isolated performance or structuring of State entities, be they bureaucrats or organizations, but also the effects of the formal or informal interactions they establish with entities from policy communities and epistemic communities from the knowledge fields concerned. The comprehensive analysis prepared by Schmidt, Bin, Pinheiro, and De Negri (chapter 25) in the field of science, technology, and innovation (ST&I), a structuring area for the configuration of the production capacity of scientific knowledge of a country, reveals different facets of the relationship between demand and supply of evidence. Besides the existence of policy incentive instruments (grants-in-aid, credit, and tax incentives) and policy evaluations, as well as the high capacity of bureaucrats working in the field, the study points out the importance of creating an institutional environment that facilitates access to information and allows the best use of evaluations for monitoring and improving policies. Despite the favorable trend with initiatives such as the Council for Monitoring and Evaluation of Policies (CMAP), the authors conclude that measures in this respect are still scarce and that the results of recent actions are yet to be studied.

Other essential reports were produced about the fruitful relationship between state bodies and institutions, such as the Brazilian Institute for the Environment and Renewable Natural Resources (Ibama) and the National Institute for Space Research (Inpe), in chapter 23; the Brazilian Institute of Geography and Statistics (IBGE), Ipea, and the Ministry of Citizenship, in chapters 15 and 17; the Ministry of the Economy (ME) and the University of Brasilia (UnB), in chapter 16, in which different interactional dynamics are established over time for the joint production of knowledge and mutual strengthening of capacities. On the other hand, interactional challenges are also problematized, such as the influence of international organizations in the narrative of the hierarchy of evidence (chapter 8) and the difficulty in recognizing and absorbing society and beneficiaries' voices and perceptions about problems and public measures (chapters 6 and 7).

Extrapolation of interactional elements to a systemic-structural level is suggested in all the papers when they address issues such as the justification structure of the Brazilian State tied to a rational-legal authority regime (chapters 9 and 14), the role of conflict in the use of evidence in the Chamber of Deputies (chapter 12), the democratic issue and societal pressure in the reception of diverse knowledge (chapter 6), the resistance of the epistemic community to recognize new empirical evidence that challenges the dominant theory, as demonstrated by Fiani in macroeconomics (chapter 22), and the various forms of refusal or omission of the use of scientific knowledge exposed even in the health field in which institutional arrangements and capacities have been constituted for longer (chapters 19, 20, 21, and 28). As well argued by Soares (chapter 21), both the process of accepting evidence and declaring ignorance, acknowledging the existence or absence of knowledge, depends on the historical and social context in which the two facets imbricate. Likewise, they can encourage or inhibit scientific development. In the case of the Brazilian Health Regulatory Agency (Anvisa) evaluation of the use of cannabis for medicinal purposes, the author portrays the social pressure and activism of families that confronted the historical context of the cannabis prohibition regime and influenced the regulatory agency's decision-making process.

In designing the contextual frame to understand the use of evidence for policy, the thematic (policy area), interactional, and systemic dimensions merge in chapter 22, authored by Ronaldo Fiani. The author presents an overview of the use of evidence in macroeconomics, focusing on the complex relationships between empirics, theory, and policy in this field. Furthermore, he does not forget certain generically *cultural* or *sociological* factors. To this end, Fiani briefly describes the history of ideas in the so-called mainstream of economic science, from the 1930s to the present day, with emphasis on the debate between different schools (Keynesian and New Classical) and the consequences of this debate on the way economists relate empirical evidence, theory and macroeconomic policy (monetary and fiscal). Supported by authors such as Summers (1991) and Romer (2016), Fiani argues that mainstream participants in economic science deal with a macroeconomic theory whose relationships to empirical evidence are somewhat problematic. The reasons for this are the increasing complexity of the statistical techniques needed to corroborate hypotheses and the “lack of generally accepted protocols on how scientifically appropriate to use these statistical techniques to corroborate a theoretical proposition”.⁸ Consequently, the definition of which macroeconomic policies would be the most appropriate for certain objectives becomes less dependent on the evidence itself and more on other factors, such as the mathematical sophistication of theoretical models and/or the academic authority of those who propose and test these models. Chapter 22, therefore, sheds new light on the complexity

8. According to Fiani in chapter 22 of this book.

of the interactional and systemic factors that condition the contextual frame of evidence use in an epistemologically *mature* policy area. In this sense, Fiani's work may inspire studies on the same topic in other policy areas.

In dialogue with Saguin's analytical model (chapter 2), we argue that a good part of the factors raised in the chapters of this publication is in the realm of the so-called policy capacity, that is, skills, competencies, and resources needed to perform the various functions of policy, accumulated and flowing at the individual, organizational, and systemic levels. We also highlight that, although the international literature on public policy has this dimension of capacities at its core, little is discussed in the national literature on the *analytical capacity* developed or to be developed in the Brazilian State – that is, the skills and resources needed for the identification, appropriation, use and production of knowledge – aimed at defining and implementing public actions.

In this sense, we emphasize that pioneering contributions are brought by this collection of chapters that, besides registering the current stage of the analytical capacity of various entities and areas of public policies, present a general diagnosis of the development and accumulation of state analytical capacities in recent decades, either by recruiting and operating highly qualified bureaucracies, or by initiatives of institutionalization of units and organizational arrangements specialized in the absorption, translation, and production of knowledge (chapters 9, 10, 11, 14, 15, 16, 18, 23, 24, 25, 26, 27, and 28). It is imperative, however, to highlight the threat of dismantling these capabilities identified in several of the chapters, as by Araújo in environmental management (chapter 23), Jannuzzi in the governmental statistics system (chapter 15), and Fernandez in health (chapter 20). Therefore, we advocate that this research agenda should be continued and deepened to understand the effects of the mobilization or demobilization of the state's analytical capacities on the production of Brazilian policies.

5 THE STATE IS NOT ONLY A USER OF EVIDENCE AND ACTS DIRECTLY IN THE PRODUCTION OF DATA AND INFORMATION ADOPTED TO SUPPORT THE POLICYMAKING IN BRAZIL

Allied to the polysemic perspective adopted as a reference to conceptualize evidence presented in the previous sections, we also propose an inflection focused on shifting the view of the State apparatus as a user of evidence to the role played by its constituent instances in the production of evidence. More than incorporating evidence produced by actors outside the State sphere, public organizations, their administrative units, and technical staff produce, systematize, and consolidate information used in different phases of the policymaking process in the form of technical notes, administrative records, follow-up and monitoring systems, policy evaluations, reports from control bodies, legal opinions and norms, information

collected from beneficiaries, among others, as indicated by different analyses contained in this book (chapters 7, 10, 14, 15, 16, 17, 18, and 23).

As already mentioned, based on surveys applied to public civil servants, Koga, Palotti, Lins, Couto, Loureiro, and Lima (chapter 9) and Machado, Sandim, Alves, Motoki, and Vivas (chapter 11) point out the prevalence of state sources, produced within the state scope, and experiential sources, linked to individual trajectories and experiences as the informational references most used by the bureaucracy to support its activities and functions. The chapters gathered in section 4 of the book illustrate how state structures have acted as producers of evidence and how this informational pool, in the words of Jannuzzi (chapter 15), has been crucial at different moments of policy production. These chapters address important aspects for thinking about the possibilities of incorporating evidence as valuable sources of support for bureaucratic and managerial action and point out relevant challenges for the qualification of this informational framework and expansion of its uses.

Based on the cases of state production of evidence analyzed, it is possible to highlight some points of convergence. Particularly, the diversity of formats assumed by state sources and the multiple purposes of their use in preparing diagnoses, designing policies, outlining public interventions and their implementation strategies, besides their use in follow-up, monitoring, and evaluation routines, as well as in inspection and control activities (chapters 7, 10, 14, 15, 16, 17, 18, 23, 24, 27, and 28).

It is also evident how the existence of administrative and managerial units focused on data governance contributes, in line with efforts to provide qualifications and changes in organizational culture, to incorporating internal and external evidence in the routines and activities that support government action. These instances operate both as knowledge brokers, in the absorption and translation of evidence produced outside the State, and as producers and disseminators of internal sources of evidence, within the government apparatus itself (chapters 9, 10, 11, 14, 15, 16, 18, 23, 24, 25, 26, 27, and 28).

Despite permeating the routine organization of governmental action daily and providing elements for decision-making at different moments of the policymaking, internal sources are still little addressed in analyses on the use of evidence by the public sphere. The underutilization or non-recognition of these data as evidence is mainly due to the administrative-operational nature attributed to this type of information, almost always produced within the governmental bodies and primarily used by public managers and leaders responsible for conducting the policies developed by governments, as indicated by Mello in chapter 14, when dealing with the use of administrative records as evidence in public policies.

However, the discussions carried out by Jannuzzi (chapter 15) and Koga, Viana, Couto, Goellner, and Marques (chapter 17) explain, for example, how policies for social development and poverty alleviation have been grounded on a robust set of data coming both from public statistics under the responsibility of the IBGE (Census, National Household Sample Survey – PNAD, and Municipal Basic Information Survey – Munic) and administrative records, especially the Single Registry for Social Programs of the Brazilian government (Cadastro Único), to establish policy targets, operationalize the granting of benefits, and monitor the performance of interventions and improvements in socioeconomic indicators.

These and other analyses show how evidence and policies are inscribed in a process of feedback dynamics, to the extent that government action constantly demands new information that, in turn, become elements that induce changes in the work agendas of evidence-producing institutions. Changes in the form of collection, measurement, scope, coverage, and format of questionnaires, the inclusion of new themes, and public hearings are examples of how the State production of evidence has become increasingly able to meet the growing demands of government bodies for more accurate and appropriate information to fill information gaps and guide government action in all its complexity (chapters 15 and 17).

Shorter response times and greater flexibility in the construction of data collection, consolidation, and processing instruments give domestic sources an essential advantage in their applicability to public policies.

State sources also hold a great advantage when compared to other data as they have more significant potential for articulation and dialogue with the immediate needs of public policies in their various management and execution processes, in addition to containing a semantic similarity with terms and concepts adopted by bureaucracies, thus enhancing the applied character of this information. Moreover, State sources tend to speak the same language as the managers involved in the operationalization of public policies, reducing costs of incorporation, and institutionalization of mechanisms aimed at the use of evidence in different stages of government action (chapters 10, 16, 18, 23, 26, and 27).

In addition, some types of internal sources are capable of providing data on population and regions of service provision, deliveries of goods and services, eventual gaps in coverage, or even overlapping of efforts, when we think of administrative records and follow-up and monitoring systems (chapters 14, 17, 23, 26, and 27). They can also be used as parameters for granting benefits, besides presenting data on specific situations, such as census and labor data, among other demographic and socioeconomic information contained in public statistics, for example (chapters 15 and 17).

Despite the potential of State sources as evidence capable of improving government action, two warnings must be made about the limits to which this information is subject.

First, the degree of institutionalization of instances and mechanisms aimed at fostering the use and production of evidence varies greatly among bodies and institutions. It is strongly linked to managers' greater or lesser participation in efforts to enhance evidence and strategies to qualify the data to be used in government action (chapters 7, 10, 18, 19, 20, 23, 26, 27, and 28).

Secondly, the State production of evidence, as in other areas of knowledge production, does not occur in institutional vacuums and is configured by interests, values, power correlations, and material and symbolic disputes. As discussed in different chapters of this book, the use and production of scientific, State, and experiential evidence is marked by the contextual framework in which they are inserted, according to Pinheiro (chapter 1). Thus, the analyses of the dynamics of use and production of evidence cannot disregard the political dimension that permeates knowledge construction and legitimation processes of the State's actions.

In line with the arguments already developed in previous sections, evidence, as part of the constitutive elements of policy production, can affect how rules, standards, requirements, and/or criteria with the potential to guide, define, restrict, or encourage behaviors are incorporated into policy design. They can contribute by strengthening certain constructed frames of reference about specific issues, problems, or audiences. Evidence can also play an important role as an instrument through which governments and other actors in the public sphere can classify and regulate spaces, subjects, and objects that can be governed. State sources contribute to giving materiality to issues and themes. They operate by constructing senses and meanings that emerge from the multiple structures that constitute the state apparatus and take their place in the dispute with interpretations produced outside the State sphere about not only the policies and programs implemented but also the reasons and motives mobilized to justify State action in certain directions to the detriment of other possibilities.

6 THE PARADOX OF KNOWLEDGE USE: DIVERSITY OF USES AND INTERMEDIATION OF EVIDENCE BETWEEN EPISTEMIC COMMUNITIES (THE ACADEMY AND PUBLIC MANAGEMENT)

One explanation for the so-called paradox of knowledge utilization, discussed in section 2 of this presentation and chapters 1 and 2 of this book, would be the *two-communities theory* (Caplan, 1979). Despite the increasing production of data and scientific knowledge, empirical work in several countries (Cherney et al., 2015; Veselý, Ochrana and Nekola, 2018) – to which chapters 9, 10, and 11 of this book

also refer – reveals a low instrumental use of scientific knowledge by governments. According to part of the EBPPs literature, such a fact would stem from about the development of the scientific and the public management fields as two separate communities, with distinct and sometimes even incompatible incentives, times, procedures, and logics (Caplan, 1979).

However, as raised by Saguin in chapter 2, more recent studies have been challenging such theory by suggesting redirecting the focus of analysis from the reasons for low instrumental utilization to understanding other types of uses of scientific knowledge and the interaction between the two communities when they occur (Amara, Ouimet and Landry, 2004; Newman, Cherney and Head, 2016).

The literature on public policy brings in its origin the debate about the relevance of applying scientific knowledge to the steer government actions. In this debate, authors such as Weiss (1979) have warned for decades about the importance of recognizing that research and scientific evidence can be used for various purposes. Besides the linear and unidirectional instrumental use between the demand for the solution of a pre-defined public problem and the provision of empirical evidence to solve it, as advocated by EBPP, other types of utilization are clearly observed in the daily life of the policy maker.

The set of studies in this book indeed brings contributions to the identification and problematization of the instrumental use of evidence, raising potentialities and challenges of its appropriation and application in several stages of policy production, such as in the definition of the target audience (chapters 14, 17, and 24), in the composition of guiding diagnoses (chapters 6, 14, 15, 16, and 17), in agreeing on commitments to government action (chapter 15), in defining state interventions (chapters 4, 5, 11, 19, 20, 21, and 28), in following up and monitoring (chapters 14, 15, and 24), in supervising and controlling (chapters 10 and 14), and in evaluating the management and the impact of interventions (chapters 4, 6, 7, 8, 13, 14, 15, 22, and 24).

However, even in these chapters, it is possible to notice not only the instrumental use but also what Weiss (1979) highlights as conceptual or *enlightening* use, which the author argues would be of greater value to policymaking if compared to the instrumental. In conceptual use, it would not be a study or a set of systematized studies that would directly affect a policy but rather the diffuse access of a group of informational resources, including scientific ones, that would sensitize decision-makers to new perspectives and approaches to frame problems and policy solutions. That is to say, for example, in the cases mentioned above, the diagnosis survey, together with the continuous follow-up, monitoring, and inspection can generate a pool of knowledge for the policymaker that, at specific moments, leads to a particular decision.

Besides the instrumental and conceptual use, other types of applications could be found in the chapters, such as the study developed by Almeida (chapter 12), which highlights the inevitability of the political-strategic use of scientific evidence in the parliamentary debate, given the plurality of interests to be represented and the informational asymmetries in the Brazilian democratic context. In turn, the study by Nascimento and Dias (chapter 13) analyzes the tactical use of statistics in the intra-bureaucratic clashes of the lower courts, in which this type of evidence is mobilized to criticize, represent, denounce, and affirm structural inequalities. The same tactical use can be recognized *on the other side of the coin*, as presented by Soares (chapter 21) in the original analysis on the use of ignorance in the debate over Anvisa's regulation of cannabis for medicinal use. Moreover, chapter 16, about the Gov.br platform, and chapter 17, about the Single Registry for Social Programs, describe the reflexive relationship between managers and scholars that would fit more to an interactive model of use under the terminology of Weiss (1979).

When we look at the interactions between the two so-called communities (public administration and academia), we notice that the boundaries between producers and users of knowledge are not so uncontested or even remarkable. As well developed in Mello's argument (chapter 14) and explained in section 5 of this presentation, the Brazilian State is an essential producer of knowledge used to support its own actions and the scientific community and society in general. In fact, it should be considered that part of the bureaucracy, when seeking academic training and performance, can simultaneously integrate the academic-scientific community and that of public administration (chapters 9 and 11). Moreover, as already mentioned in section 4 of this presentation, several chapters presented interactions between management and the academy, both at individual and institutional levels, that did not result in the mere direct transfer of knowledge. Instead, they promoted the joint construction of knowledge (chapters 15, 16, 17, and 23).

As explored in the knowledge brokerage literature, one has to consider that bureaucracy and public organizations do not use the various sources of knowledge only directly and hermetically. And here, we are not referring only to scientific knowledge but also knowledge from other sources, such as the one produced by policy stakeholders, participatory instances, media, and beneficiaries' opinions. Often, bureaucrats and public organizations select, transform, translate, redistribute, reshape, transmit, and produce knowledge in a formal or informal interaction with producers of these sources. In this sense, besides the analytical capacity already mentioned in section 3 of this presentation, one must also consider the interactional capacity that guarantees the State the permeability of the knowledge produced by the various sources of evidence.

However, given the considerable prominence of multiple State sources in bureaucrats' routines identified in some of the chapters of this book (chapters 9, 10, 11, and 12), we emphasize the importance of further studies on the dynamics of production of these sources, to deepen our understanding of the informational flows and chains of the Brazilian State. For example, are State sources (such as regulations, technical notes, statistics, information registries, operational audits, legal opinions etc.) intermediaries of knowledge capable of absorbing the production of other sources and translating them into bureaucratic language and practices, or are they stabilizers of endogenous knowledge with low external permeability?

As the moderate evidence perspective and studies in the field already defend – including several in this book – the production of policy can benefit significantly from technical-scientific inputs, but without disregarding the political dimension inherent in the process of policymaking in a republican and democratic regime. Therefore, in seeking to protect the analytical capacity of the State against attacks such as those of the anti-science movement, we believe that it is fundamental, and not contradictory, that such analytical capacity be allied to an interactive capacity aimed at the political, epistemic, and cognitive openness of the State. We believe that this is the only way to guarantee the production of effective but also plural and legitimate public policies.

7 FINAL REMARKS

In this presentation, we seek to reflect on the analytical plurality and the methodological and empirical richness of studies produced by the authors of this book. Several themes and issues deserve to be raised for future research agendas, either due to the reflection of the chapters as a whole or because they could not be covered in this already extensive work. However, we highlight two themes that emerge from the dialogue with the preface written by Parkhurst regarding the location of the publication in the international debate on evidence for public policies. While the first is an exploratory proposition, the second seeks to contribute an agenda of applied recommendations.

To answer the questions “what should be considered good evidence for policymaking?” and “what does it mean to use evidence in a better way?” in the case of Brazil, we understand that it is necessary to jointly advance in understanding whether there is a specifically Brazilian way of using evidence in public policies. This publication brings, in our view, the first steps in this direction. However, although we have sought a broad coverage of the plurality of contextual frames of evidence use, we recognize that this is an ongoing and cumulative exercise. Therefore, analyzing policy areas that have not yet been explored, such as justice and public security, deepening the dialogue with the field of Brazilian state formation studies,

as well as producing comparative studies between different national contexts and between other countries, will undoubtedly bring a more comprehensive and more precise diagnosis of the dynamics of evidence use in the country.

Equally highly relevant is the question of which institutions should be created to guarantee the use of the best evidence in the best ways, that is, good governance of evidence. It is indeed a subject of scarce production in Brazil. We consider that it relates to the exploratory agenda previously mentioned. Nevertheless, it still demands greater interlocution and densification with other fields of knowledge that have already produced consistent theoretical frameworks on topics such as the functioning of public bureaucracies and organizations (Lopez and Praça, 2015; Palotti and Cavalcante, 2019; Pires, Lotta and Oliveira, 2018), state structures and decision-making processes (Vaz, 2018), the relationship between science, technology, and society (Haraway, 1988; Latour, 1994; 1997; Latour and Woolgar, 1997), power and democracy (Figueiredo, 2007; Figueiredo and Limongi, 1999; Limongi and Figueiredo, 2009; Pateman, 1970; Mansbridge et al., 2010; Mouffe, 2008), among others.

In addition, more empirical studies seeking to monitor and evaluate the results of initiatives created to promote the use of evidence in Brazil, such as the CMAP, coordinated by the ME; capacitation, evaluation, and organization of evidence, of the National School of Public Administration (Enap); the initiatives of production and communication of evidence, of Ipea, will be of great value to this discussion; as well as the cases mentioned in this book of the Office of Evidence of the São Paulo State Education Department; the Secretariat for Evaluation and Information Management (Sagi), of the former Ministry of Citizenship; and the regulatory impact evaluations and scientific committees of covid-19, to be just a few examples at the State level, without disregarding the countless initiatives from the society that have emerged in the last decade.

This is a research agenda that is unfolding in the national territory and that challenges us. We hope that this publication will contribute to arouse the same feeling among public managers, researchers, and those interested in the theme of the use (and non-use) of evidence in public policies.

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EVIDENCE-BASED POLICYMAKING: A MODERATE MODEL OF CONCEPTUAL ANALYSIS AND CRITICAL ASSESSMENT

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1 INTRODUCTION

This chapter aims to elucidate the concept of evidence in the scope of the evidence-based policymaking (EBP) approach and, based on a *moderate model* – which I will expound below – to criticize a traditional interpretation of this approach.

In a traditional perspective, evidence may be seen as an instrument of rationalizing decision-making processes in public policy. *Evidence* and *scientific evidence* are traditionally mistaken, denoting the knowledge generated from reproducible and systematized methods, emulating the natural sciences model.

Current literature on EBP seldom clarifies the conditions under which the concept of evidence in public policy is applied. Studies in this area are limited in stipulating definitions applied only to rather specific contexts or, the other way round, providing too generalized and non-contextualized accounts of the concept. Hence, this issue deserves a deeper understanding.

The analysis of the concept of evidence displayed here follows a method that culminates in what we call a *moderate model* because of its balanced, sensible, and pragmatic assumptions. This model will lead us to a broader, more realistic, and deeper perspective on EBP, according to which evidence will be definable only in a determined context of action. This perspective will ground both the clarification of the concept of evidence and some criticism of a traditional view of EBP.

In order to accomplish its aims, this chapter articulates seven sections, including this *Introduction* and the *Final remarks*. Section 2 lays down the foundations and methods to elucidate the concept of evidence. Section 3 describes the traditional perspective on EBP. Section 4 presents the moderate model, plotting it on the literature and shedding some light on their epistemological and ontological presuppositions. Section 5 sets the background of policymakers' actions in a contextual frame. Section 6 shows how the model works through some Brazilian

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examples of public policy decisions. Finally, *Final remarks* sums up the main steps of this chapter's discussion.

2 FOUNDATIONS AND METHODS

The concept of evidence is intrinsically vague and multidimensional,² in part because it is strongly normative. Either in common sense or in the theory of knowledge, the term *evidence* denotes different things, thus belonging to quite varied ontological categories (Pinheiro, 2020a, p. 31). Therefore, "evidence" does not fit into a precise definition, as if it were akin to a logical or mathematical concept.

However, it does not mean that the concept in question is "immune" to rational analysis or that it cannot be empirically operationalized with reasonably high levels of precision. In fact, one can define contexts under which the concept of evidence can be precisely applied, and this can be a desirable procedure depending on the purposes of the research in question. However, in this chapter, instead of making ad hoc conceptual stipulations, we propose a philosophical method of analysis.

In order to clarify a concept, we need, first of all, a set of background epistemological assumptions. An intuitive way to grasp this idea is to note that we never apply a concept in isolation, but rather in a way semantically connected on webs. For instance, the concept of *a typical summer day* is linked to others, such as those of *sun, heat, leisure, beach, vacation, cold beer, ice cream*, and so on. On this web, there is no place for a geometrical concept such as an *isosceles triangle*. At least in most contexts our understanding and/or correct application of the concept of *a typical summer day* does not depend at all on our understanding and/or correct application of the concept of an *isosceles triangle*. Hence, the conceptual web of *a typical summer day* has boundaries regarding other conceptual webs. These boundaries are what we call here the *background epistemological assumptions*.

The background epistemological assumptions of the concept of evidence in public policy concern the socioeconomic (cultural, political etc.) processes affected by public policies. Those assumptions also have to do with the foundations of policymakers' decisions. Let us call them, considering their double application – impersonal processes and personal decisions on public policy –, *public policy assumptions*.

Moreover, public policy assumptions and the way policymakers define and rank the evidence used in their policy decisions are inter-related. If public policy processes are construed as mostly rational, with their components and mechanisms seen as clear and foreseeable, then the evidence used in order to support public

2. A concept is vague when its field of application has no clear borders. In other words, the extension of the set of objects denoted by the linguistic expressions of this concept is neither given beforehand nor can be determined in an absolute way. In turn, a concept is said to be multidimensional when its several aspects neither belong to a unique ontological sphere nor can be "measured" in a single "system of coordinates".

policy decisions will tend to be empirical data, of the kind employed as inputs of quantitative models in natural sciences. In this case, let us call it a *rationalist decision model*, for its assumptions concerning the policymaker's decision are purely rational.

However, if the social reality affected by public policies is construed as an iterative process among agents whose decisions are not at all foreseeable – as they are made in an environment of irreducible uncertainty –, then the set of evidence used in public policy will be rather enlarged. In this case, evidence would include even some subjective items such as beliefs, judgments, and personal values. Therefore, we may call this model a *constructionist* one because the context of a policymaker's decision is built on actions, more or less unforeseeable and interested, of the public policies' stakeholders.

When characterizing the rationalist and constructionist models, we draw on vast literature on EBP. Sanderson (2002), Marston and Watts (2003), Amara, Ouimet and Landry (2004), Nilsson et al. (2008), Freiberg and Carson (2010), among others, in their analysis of the use of evidence in public policy, consider the idea of there being an opposition between the generic rationalist and constructivist approaches. Lejano (2006) deserves a mention here because of his clear and historically construed way of characterizing the *rationalist* and *constructionist* models, although Lejano does not use this terminology very often.

Firstly Lejano (2006) remarks on how the concepts of modern philosophers of Illuminism (rationalists and empiricists as well) were later incorporated into the analysis applied to public policies. The model of choice inspired by the work of von Neumann and Morgenstern (1944) is a noteworthy development of those concepts. Von Neumann and Morgenstern have modeled the social judgment according to the best choice among a rank of known possible alternatives. It is essentially a deductive model assuming that all variables required to assess a course of action are comparable and commensurable in terms of utility or value.

In opposition to that classical model of choice – coinciding in outline with what we call here a rationalist model –, there is a range of ideas Lejano (2006) labels as “post-positivist”. In the 19th century, Marx, Weber, and Nietzsche were pioneers of a reaction to the rationalist model. This reaction would spread fast from the 20th century on. In particular, the works of Wittgenstein, Thomas Kuhn, Foucault, the critical theory of the School of Frankfurt, the pedagogy of Dewey and Piaget, and the phenomenology of Husserl and Heidegger are important milestones in the course of a critical movement against the rationalist model.³ Concepts like alienation, will of power, domination, instrumental rationality, technocracy, negative dialectics, intersubjective communication, genre, colonialism,

3. In social science, authors such as Karl Mannheim, Edgar Morin, Yehezkel Dror, and Carlos Matus made important contributions to the constructionist perspective. I am grateful to a reviewer for reminding me of those names.

learning in practice, phenomenology, psychoanalysis etc., coming from different fields of knowledge, all belong to a wide conceptual web called by Lejano (2006, p. 12) “post-positivism”. This way of thinking rejects logocentrism, along with the reification of the meanings of linguistic expressions and of the concept of truth. Moreover, constructionism supports the idea of both social realities and the various forms of knowledge to be socially built, linguistically interpreted, and politically disputed. Science itself, as one form of knowledge among others, falls under those descriptions. Stakeholders’ fights for power (in a broad sense) play a remarkable role. This post-positivist conceptual web, as labeled by Lejano (2006), fits pretty well with what we call in this chapter the *constructionist model*.

In reality, what one finds more often is an intermediate model between the pure types of the rationalism-constructionism *continuum*.⁴ Therefore, I suppose an intermediate model to be more realistic than an extreme one. One of the challenges this chapter seeks to overcome is to characterize this intermediate model, highlighting its background epistemological assumptions.

3 THE TRADITIONAL POINT OF VIEW ON EBP

There is a perspective on public policy that, despite being found in official papers,⁵ academic works, and common sense, is seldom conveyed in a thorough way, let alone analyzed in terms of their presuppositions and consequences to public policy. We call that perspective the “traditional point of view on EBP”. In this section, we expound its basic premises and pave the way to some criticism we fully develop in section 6.

There are some general traits of the traditional point of view on EBP. First, one tends to conceive *evidence* exclusively as stemming from strict scientific methods. In other words, evidence is conflated with the results of rigorous, systematic, and reproducible processes of knowledge, especially those generated by experimental methods.

Secondly, evidence plays an instrumental role in policy decision-making, distinguishing what “works” and “does not work” in public policy. That is to say, the principle of instrumental rationality dominates the use of evidence. This means that evidence is a mere tool to achieve some “optimization” ends, whether it is the choice of more efficient policy intervention or better cost-effectiveness ratio. An instrumental use means a technical, impersonal, objective, and mechanical use. A public agent’s decision is similar to an algorithm: through a finite number of

4. I owe this idea of a *continuum* to the excellent paper of Marston and Watts (2003). Nilsson et al. (2008) also use this idea.
5. For example, see some official papers of the British government (United Kingdom, 1999a; 1999b; Bullock, Mountford and Stanley, 2001) that in practice built the underpinnings of what would be known later as EBP: *Modernising government* (1999); *Professional policy making for the twenty-first century* (1999); and *Better policy-making* (2001).

steps and using scientific evidence it would be possible to tell which interventions lead or not to solutions to economic, political, and social problems in public policy.

In the third place, the traditional view assumes the ideal public policy decision-making to be neutral from a political and ideological point of view. This assumption appears clearly in a speech of the former leader of the Australian Labor Party, Mark Latham, in 2001:

The myths of the welfare state are based on old ideological ways of thinking, a struggle between government-first and market-first policies. It is now clear that both approaches are flawed. The world has moved on. Welfare policymakers need to look beyond the old Left and the new Right to those evidence-based policies that can end the human tragedy of poverty (Latham, 2001⁶ apud Marston and Watts, 2003, p. 149-150).

In Latham's speech, we can see a particular political stance – a third way had as superior to the traditional Left and Right – being supposedly legitimated by the “evidence” symbolical warrant. Reading between the lines, one can see the authority of science being invoked as the reason for the EBP's superiority. Thus, Latham's speech assumptions, when thoroughly conveyed, say that “objective” scientific evidence can put an end both to old political-ideological disputes (“government-first” versus “market-first” policies) and to one of the most painful scourges of humanity – poverty. Here the scientific evidence objectivity is put in opposition to the subjective, normative, and ideologically loaded character of the typical statements of traditional politics. The alleged objectivity of scientific evidence would allow the political authorities to make correct decisions – and, for this very reason, legitimate decisions – in public policy on behalf of the collective welfare. According to the advocates of the traditional point of view on EBP, such evidence would once and for all overcome the “myths” and the “old ideological ways of thinking” in public policy.

4 THE EPISTEMOLOGICAL PREMISES AND DELIMITATIONS OF THE MODERATE MODEL

There are reasons to avoid the most extreme versions of the rationalist and constructionist models, such as characterized in section 2. In Pinheiro (2020b, p. 21), these reasons are thus presented:

The more rationalist the model under consideration, the more it will tend to disregard the complexity inherent to the public decisions' dynamics. Among the determinants of the abovementioned complexity, one can name the following: the decisions' non-linearity, their multicausality, conditions of uncertainty, as well as the influence of beliefs, habits, traditions, emotions, values, ideology, and interests on public actions

6. Latham, M. Myths of the welfare state. *Policy*, v. 17, n. 3, p. 40-43, 2001.

and choices.⁷ In turn, the more a policy agent supports his/her decisions on strict constructivist premises, the less he/she will be able to make general claims about the behavior of social, political, or economic agents. Ultimately, extreme constructivism turns the analysis and assessment of public policy unfeasible, which also applies to the role of evidence in public policy because the ultimate triggering process of policies – i.e., the agents' intentions – is construed as obscure, maybe unknowable.

Mostly based on some criticism of the rationalist model, literature suggests some moderate models.⁸ However, there is little deepening of these models' epistemological presuppositions. In this section, we intend to fill this gap, at least in part.

4.1 The complexity of the social process

We need a moderate model whose epistemological assumptions allow the apprehension of the social, the political, and the economic as complex but rationally analyzable systems. According to Cloete (2009, p. 309), complex systems are open – that is, they interact with the environment – and they include many interrelated variables in nonlinear and dynamic ways. Other proprieties of complex systems are self-organization, multidimensionality, ability to operate out of equilibrium, and sensibility to historical contexts.⁹

A “paradox in late modern societies”, according to Sanderson (2002, p. 19), is that “while the increasing complexity of social systems progressively undermines notions of certainty in social knowledge [regardless of what some illuminist tradition believed], it simultaneously raises the stakes in regarding the rational guidance of those systems”. The search for a better understanding of those systems, not at all implying to leave evidence aside, stresses the need for deepening its use. Therefore, one ought to seek an increasingly intensive and extensive use of the available evidence, for what it is necessary some investment in assessment tools and computation methods, as well as in personnel capabilities, and so forth.¹⁰ Since it is possible that we get at least probable knowledge of the social systems, it will be easier to make public policies more susceptible to enhancement through assessment based on scientific research evidence and evidence of other types.

7. Public policy decisions are usually involved in an atmosphere of uncertainty. This is due in part to the fact that it is impossible to know all variables affecting those decision-making processes. Moreover, as a kind of interactive game, some agents' decisions can only be known after the decisions of other agents are taken. I thank a reviewer for calling my attention to this aspect of the issue of uncertainty.

8. Sanderson (2002), Parkhurst (2017) and Saltelli and Giampietro (2017) are examples of this literature. A synthesis of these works can be found in Pinheiro (2020a, p. 20-21).

9. An excellent conceptual discussion and a presentation of the potential use of complex systems in public policy can be found in Furtado, Sakowski and Tóvolli (2015). See also, in the present book, the chapter *Simulações computacionais aplicadas à tomada de decisão pública* (*Computational simulations applied to public decision making*), authored by Bernardo Furtado and Antonio Lassance.

10. Nowadays, one may obtain the evidence used in the conception, implementation, and assessment of public policy through highly sensitive systems. They are designed to capture and process managerial information on specific policies and programs. I owe this idea to a reviewer to whom I am grateful.

We need to consider the possibility and viability of increasing the degree of understanding of some policy processes in an EBP moderate model. In those processes, policymakers' choices have to be stressed, in terms of the purposes and methods of the government actions. Now, one has to assume the rationality of those actions and choices – that is to say, their intelligibility and possibility of submission to critical scrutiny. However, a moderate model cannot undertake an a priori commitment to the kind of rationality one particular process has. This commitment will require a thorough examination of the case in question.¹¹

4.2 The varieties of knowledge, discourses, rationalities, and... evidence!

The moderate model should welcome and reconcile different kinds of evidence, in several areas of policy, at the same time keeping the overall coherence of the model. Thus, it must be sensitive to many types of knowledge uses, comprising a variety of fields of knowledge and public policies. Therefore, the model has to envisage a broad view of those different branches of knowledge and policies. In particular, it has to have a wide comprehension of what we can understand by *evidence*, based on the premise that both the social reality and the conditions of an agent's decision are irreducibly rich and multifaceted.

By considering the plurality of evidence possibly informative to public policies, Mulgan (2005, p. 219) enumerates the following forms of knowledge available to governments:¹²

- i) statistical knowledge (for example, of population size and migration);
- ii) policy knowledge (for example, on what works in reducing reoffending);
- iii) scientific knowledge (for example, on climate change);
- iv) professional knowledge, often informed by rigorous testing (for example, on the impact of vaccination);
- v) public opinion (for example, quantitative poll data and qualitative data);
- vi) practitioner views and insights (for example, police experience in handling organized crime);
- vii) political knowledge (for example, the balance of opinion in the ruling party);
- viii) economic knowledge (for example, on which sectors are likely to grow or contract);
- ix) classic intelligence (for example, on the capabilities and intentions of hostile states or terrorist networks).

A moderate model for the use of evidence in public policy should acknowledge that decisions made by policymakers in different areas of policy are made under much differentiated evidential grounds concerning their epistemic credentials.

11. When talking about the rationality of decision processes in public policies, we mean only the knowability and intelligibility of those processes. These proprieties render them liable to representation and analysis through concepts, judgments, and reasoning. Rationality does not imply any connection to the truth of the propositions used in those processes, neither as premises nor as conclusions. For instance, a policy process could be rational – knowable, intelligible, and analyzable –, but based on false premises, that is, disconnected from the factual reality.

12. What we do in the following list, quoted from Mulgan (2005), is merely to give some examples, without any intention to present paradigmatic cases or to be exhaustive.

4.3 The epistemological status of subjects associated with public policy areas

Policy areas usually are associated with disciplines (subject areas) with different degrees of consensus, among the scientific community, on the rigor and robustness of the methodological and theoretical cores of those subjects. In addition, the degrees of scientific validation of the results of research in different subject areas are equally diversified.

In general, policy areas associated with the subjects recognized as the most rigorous and scientifically validated are those grounded on the most developed and formalized institutional arrangements. They also contain the most specialized, qualified, structured, and well-paid professional careers. In their case, scientific evidence is more available, and it is easier to reach a consensus about which interventions *work or do not work* in public policy. Conversely, in areas where the related subjects are not the object of a consensus in the scientific community about the rigor and robustness of the methodological and theoretical bases, it is unclear what does or does not work in terms of public policy. In these more recent subjects, which usually arise from the confluence of different fields of knowledge, reliable evidence is rarer and seldom leads to research results with high scientific validation.

This feature of public policy fields explained in the previous paragraph, I propose to call it here *epistemological status*. Thus, I propose that more traditional areas, such as *healthcare*, have a more consolidated epistemological status than more recent areas, such as *cybersecurity*.

Where does the idea of a scale of epistemological statuses applied to public policy fields come from? At the outset, I see the primary inspiration for this idea in American philosopher Willard van Orman Quine (1908-2000). Pondering over the criteria for choosing ontologies – that is, deciding what objects exist in the world –, Quine (1985) proposes a core of scientific knowledge. This is based on formal sciences (logic and mathematics) and natural ones (physics, chemistry etc.), capable of providing a simple conceptual scheme to encompass, organize, and explain the world's phenomena, which at first sight appear to us as a shapeless and fragmented mass. According to the author, a reasonable criterion for choosing ontologies also works for choosing scientific theories: “we adopt (...) the simplest conceptual scheme that can encompass and organize the disordered fragments of raw experience” (Quine, 1985, p. 227). Therefore, the simplicity and efficiency of a conceptual scheme to encompass and organize the array of phenomena in the world, as well as the objectivity of the validation of the results of theories – properties that galvanize consensus among scientists – are reasonable criteria, according to Quine (1985), for choosing ontologies. Formal and natural sciences were the most successful in this criterion, so they are at the core of scientific knowledge. This, however, is surrounded by a fringe of scientific subjects with lower degrees

of adequacy to Quine's criterion – among them, the applied social sciences, and the humanities.

Another inspiration for the idea of a scale of the epistemological status of the subjects and fields associated with public policy is Mulgan (2005). The author talks about *stable*, *in flux*, and *recent* policy fields in order to mark the varying degrees of consensus on the criteria for obtaining and using knowledge in the various public policy fields (Mulgan, 2005, p. 221-222). Mulgan's (2005) classification is, in its turn, directly inspired by Thomas Kuhn (2003), for whom the period of "normal science" – when the scientific community's consensus about theoretical, methodological, experimental, validation, explanation etc. standards prevail – may be followed by periods in which anomalies (unexplained phenomena) accumulate, entering a period of "extraordinary science", and finally by scientific revolutions. For Kuhn (2003, p. 35), the maturing of a specific science occurs when an entire scientific community can share a scientific paradigm. Mulgan's stable fields would be analogous to Kuhn's normal science; the fields in flux and the recent fields would correspond to the period of extraordinary science before the emergence and affirmation of new paradigms.

To know what is meant by evidence applicable to public policies requires the consideration of the degree of consolidation of the epistemological status of the subject or policy field at issue. In fields where policy action takes place on realities addressed by well-established sciences, such as the realities of natural sciences, there should be more consensus about what is meant by good quality evidence. This meaning will converge with the theoretical and empirical standards of these sciences. However, in fields of less consolidated sciences, as is the case of most public policies (education, social welfare, public security, labor etc.), the epistemological standards of the underlying sciences (humanities and applied social sciences) are less consensual. These fields accommodate a much more comprehensive range of possible evidence to inform public policies, albeit at lower degrees of epistemic power and scientific validity, regarding the quality ranking of such evidence.

4.4 The boundaries to the use of knowledge and evidence

The moderate model should be mindful of the boundaries of knowledge in each field and the boundaries of analogies between the natural world, studied by natural sciences, and the socio-political world, studied by the applied social sciences.

The knowledge used in policy assessment and decision-making should not be expected to be, as a whole, apodictic, demonstrative, exact, or infallible. The moderate model recognizes that public policy is based primarily on *conjecture*, for which moderation in causal explanations and inferences is recommended.

In many situations, such conjectures will allow decisions with only an average degree of certainty that policy interventions will work as expected.

The validity conditions of social knowledge must be assessed at least as carefully as for knowledge in natural sciences. Even in the latter, any evidence is context-sensitive since any observation depends on its context. Therefore, judgments drawn from the evidence will have a scope of validity, which must be circumscribed as clearly as possible. The criteria for the applicability of these judgments should be systematized and made explicit as much as possible (Oxman et al., 2009, p. 3).

As for the boundaries inherent to the nature of social knowledge (in comparison to knowledge in natural sciences), Mulgan (2005, p. 224) highlights: i) historical contingency: greater mutability, less capacity for generalization or universalization; ii) reflexivity: the actors themselves are both subjects and objects of social cognition, that is, their actions can transform this knowledge;¹³ and iii) boundaries arising from the subject organization of the social sciences: there are knowledge gaps between the confines of these subjects. We could also point out that social knowledge has specific boundaries regarding its method, such as controlled experimental methods.

4.5 The relevance of conceptual analyses, methodologies, and theoretical frameworks

Preliminary conceptual analysis and theory-building work are essential regardless of the public policy field. Conceptual analyses and theories are like *lenses* through which the analyst sees and interprets reality, making it intelligible to themselves. In other words, concepts and theories provide the basic frames of thought in a given area of knowledge and consequently provide the conditions under which evidence is to be used.

Especially in areas ranked lower in the epistemological status scale, where scientific evidence of greater rigor and systematicity is scarce, good prior work of conceptualization and theorization may pave the way not only for possible future use of scientific evidence in public policy decisions but also for the use of other types of information, such as experts' personal opinions.

Usually, for beliefs, opinions, and values to lend themselves to supporting public policy decisions, it is necessary that some groundwork (conceptual, methodological, and theoretical) has been previously developed, showing the logical

13. Canadian philosopher Ian Hacking provides an interesting example here. The human individual, perceiving himself as an object of a given classification, can react by changing his behavior and thus changing the extent of the classification itself (Hacking, 1995; 1999). This aspect, according to Hacking, constitutes a remarkable difference between the typologies of the social sciences and the natural sciences – in the latter, the extension of classificatory categories tends to be more stable, although recent developments in physics have set this understanding in perspective.

entailments between those *beliefs*, *opinions*, and *values*, on the one hand, and the theoretical conclusions, on the other. Of course, opinions will not typically have the epistemic weight of scientific evidence, mainly because their generating mechanisms will not have the rigor and systematicity of the methods employed in sciences of higher epistemological status. However, since these more “subjective” elements are essential to the democratic public debate – and, realistically speaking, it is improbable that they will ever be left out of public policy –, they can and should be submitted to rational-critical scrutiny, being placed in a coherent background, and centered by a conceptual, methodological, and theoretical framework.

In short, rather than simply dismissing *non-scientific* elements or sources of information for public policy, the moderate model view advocates for a *systematized and rigorous critical* use of these elements and sources, based on the continuous development of conceptual, methodological, and theoretical frameworks. In this regard, policy analysts and policymakers should not be spared the intellectual duty of seeking to advance knowledge in their respective fields, developing their own analytical resources if necessary.

4.6 Listening to stakeholders

A moderate model should be open to the several types of information provided by the policy stakeholder(s). They should be considered as potential sources of evidence. In fact, one of the problems of the more rationalist models is the *technocratization* of the use of evidence; that is, it is assumed that only experts (scientists, academics, technicians) can produce evidence for public policies. This is often done at the expense of the use of information collected from various social stakeholders – mainly citizens and the target audience of the policies – considered of inferior quality, which leads to adverse consequences for the legitimacy of public policies in a democratic regime.

4.7 The clarifying aspect of evidence

Finally, in a moderate model, the role of evidence is less of being a *neutral* instrument of information for decision-making and more of shedding light on the complex problems involved in such decision-making. The influence of evidence here is indirect (Sanderson, 2002), fostering new ideas and arguments, providing ideas and elements to enlighten the context of policy decisions, and providing a framework through which problems can be thought. The purpose is thus to clarify the issues and set the ground for a broader public debate.¹⁴

14. Such an idea is already found in the pioneering work of Weiss (1979) and in the work of several other authors who have sought to explain the role or use of academic research evidence in public policy. See, for example, Sanderson (2002) and Young et al. (2002). Freiberg and Carson (2010), in turn, offer a criticism of this model.

5 THE PRAGMATIC DIMENSION AND ITS CONSEQUENCES FOR THE UNDERSTANDING OF THE CONCEPT OF EVIDENCE IN PUBLIC POLICY

5.1 The issue of use

The history of EBPs – as described by official discourse in the late 1990s in the United Kingdom – signals the role of evidence as a *means* to achieve public welfare purposes (satisfaction of users, taxpayers, and citizens) through the provision of public services (Solesbury, 2001). This general idea is echoed in much of the specialized literature to this day and seems to be based on the premise that the more scientific evidence is used in public policy decision-making the greater the benefits for the populations.

However, it is not necessarily true that decision-making processes based on scientific evidence, whether in the public or private sphere, lead to better outcomes than those based on less rigorous elements, such as intuition or personal opinions. For example, scientific evidence can be used to garner more power for its holders, regardless of the impact that such use has on the *common welfare* or the *public interest*, whatever the characterization those expressions are given.

Like any instrument that can cause benefit or harm, depending on the ways and purposes of its use, evidence in politics can also be objects of good or bad use, regardless of the scientific rigor with which such evidence may have been produced. Thus, a *deontological* reading of the use of evidence in public policy is possible, according to which evidence *should* be used with prudence and expertise, never casually, recklessly, or maliciously. In this line of thought, the quality of public policy decisions – that is, their positive impact on the common welfare – is also a function of how sensibly it is used.

According to Bamberger (2008, p. 128), the main problem with using information in public policy is that the increasing availability of such information nowadays does not seem to have resulted in better public policy decisions. According to a particular view, Bamberger's problem is rooted in the fact that EBP are still in an emerging (or transitional) stage, in which the tools required for the effective application of evidence in public policy are not yet mature. This view tends to point to mere technological advances and computing power as the primary sources of use of scientific evidence in public policy.

However, the problem of the use (including nonuse or inappropriate use) of evidence in public policy is more complex than the aforementioned deontological and technological or analytical inadequacy perspectives suggest. Such perspectives are incomplete, overlooking, for example, the fact that evidence is used in many different ways and for many different purposes, often according to criteria that have little to do with the efficiency, efficacy, and effectiveness of policies, let alone

with the degree of technological advancement of analytical and computational tools. Evidence often serves as symbolic instruments of political power, defense of ideological positions, and maintenance of the status of specific careers in the public bureaucracy. Factors as such should not be overlooked in our conceptual analysis, as they are crucial to the definition and relevance of the evidence employed in public policies.

Seeking to provide a broader view of the subject, the pragmatic approach adopted in this text points to the need to understand the use of evidence within a model or framework of actions (decisions) in public policy. Evidence here acts as a *means* for decision-making in public policy, even though the expression *means* is not unequivocal and may designate different realities, from specific techniques to theories, concepts, models, subjects etc. Methods, instruments, and tools are terms used in the literature to designate the means used by the stakeholder(s) in their decision-making in the public policy arena.

The *structure of the action* encompasses four structural elements: i) the agent; ii) their collection of beliefs, knowledge, preferences, skills, and abilities; iii) the purposes of the action; and iv) the means by which the agent undertakes the action to achieve their ends. As already suggested, this structure does not occur in an *ontological vacuum*; instead, it makes sense only in a background defined by a contextual frame, in which the relations of the elements above and those with other contextual elements of the action are shown.

The contextual frame and the background defined by it unite the structure of the agent's action. Thus, the structural elements of action (the agent, their informational instruments, their purposes, their collection of beliefs and knowledge etc.) should not be seen as independent and separate in the contextual frame. In effect, these elements interact. In particular, the use of evidence may alter the agent's body of knowledge about the reality in which he/she wishes to act and thus also modify the very purposes of the action. In a way, the instruments used in public action – including the evidence on which the decisions are based – are chosen or formed together with other elements of the agent's decision-making structure. Thus, it is only by paying attention to the contextual frame that one can understand why, despite their stated commitment and legal obligation to make their decisions on an impartial and evidence-informed basis, policymakers often set the scientific evidence aside and decide according to other criteria.

There are, however, countless ways to describe the context of public action. Literature generally does not delve into this type of analysis; more often than not, contexts are delimited based on a particular subject or policy field. For example, authors such as Upshur, VanDenKerkhof and Goel (2001) limit their analysis of the use of evidence to the field of health policies and propose a model capable

of encompassing several dimensions of evidence (quantitative, qualitative, personal, social, symbolic, evaluative etc.), making a distinction between the personal context (individual patient therapies, for example) and the community context (collective health). Other authors, such as Young et al. (2002) and Freiberg and Carson (2010), use Weiss' (1979) typology of the relationship between public policies and knowledge – knowledge-driven model; problem-solving model; interactive model; tactical-political model; illuministic model – to try to outline such a context of use.

5.2 The contextual frame

Our challenge is to connect key elements of the scenario, the context, and the general framework in which a public agent's action structure makes sense. This framework can comprise several things, phenomena, and processes, forming a background to condition the agent's decisions. In this text, we highlight three categories of factors that constitute this background: i) *political*: the temporality of politics (inertia, urgency), ideologies, power disputes, and democracy; ii) *epistemological* (policy assessment, uncertainty, reflexivity of social knowledge etc.); and iii) *normative, institutional, and organizational*. These types of factors coexist in the contextual framework of a public agent's decisions and can be considered complementary and interactive rather than mutually exclusive or detached.

Let us see, as an example, how the aforementioned epistemological and political factors may interact. In a study about the United Kingdom, based on a survey conducted in 2009, with public employees engaged in different areas of public policy, Stevens (2011) sought to shed light on this issue. The author aimed to explain the gap between the (moral and normative) commitment of policy-makers to the use of evidence, on the one hand, and, on the other, the non-use (or not very appropriate and rational use) of it in practice. The method employed by Stevens (2011, p. 241) consists in "paying attention to how people use evidence in shaping human relationships as well as in the process of telling policy stories". These narratives are important because policymakers must convince others that their policy proposals are worth implementing. Thus, evidence is used as a tool of persuasion to *sell the policy* to the authorities and various segments of the bureaucracy, the non-governmental stakeholder(s), and the public. In this persuasive effort, *uncertainty management* and specific *unspoken rules for success in bureaucratic offices*¹⁵ seem to condition how policymakers use evidence to make decisions. Policy proposals should be crafted in a way that meets these constraints. Finally, the results of Stevens' (2011) study do not suggest that British bureaucrats deliberately avoid, distort, or abuse evidence in their public policy decisions, but only that they are conditioned by a particular *way of thinking about the world* as to how they use that

15. Examples of such rules, according to Stevens (2011, p. 244): "don't specialize too much; be useful and find superiors who support you".

evidence. Stevens' research illustrates how epistemological (uncertainty management), political (authority support), and institutional-organizational (success in bureaucratic offices) factors are integral to the contextual framework in which policymakers' actions and decisions come to life.

5.3 Institutional, normative, and organizational constraints

Many studies seek to identify the conditions that hinder or aid a policy process better supported by evidence. How to put the right tool (evidence) in the hands of policymakers, and how to ensure that they know how to use it? This question seems to motivate these works. To answer it, we emphasize the development of effective normative and institutional means to bring together researchers, policymakers, and other audiences involved in the policy cycle and thus provide broad access to knowledge.

Some authors, based on international experiences, propose some measures, such as government funding of research in the policy fields most in need of this type of activity and the promotion of “the use of systematic review methods to assist the process of knowledge accumulation and synthesis” (Nutley, 2003, p. 5). In the extensive empirical study by Oliver et al. (2014), the main barrier to using evidence in public policy was the low access to relevant and good-quality research papers and the lack of timeliness of research findings. The same study detected that the main enabling factors were the collaboration between researchers and policymakers and the emergence of new knowledge transfer models. Training and continued technical-professional development of policymakers have also been pointed out as factors influencing the use of evidence (Nutley, 2003; Davies, 2004; Mulgan, 2005; Moseley and Tierney, 2005; Howlett, 2015; Cherney et al., 2015; among others). Furthermore, fostering the use of evidence from scientific research may encompass arrangements that promote the integration of staff with analytical capacity at all stages of the policy process.

It is necessary to allow knowledge to flow through policy networks or communities to encourage the use of evidence (of various kinds) and to foster healthy debate in public policy. To do so, it is necessary to be mindful of the fluidity of communication between the producers (researchers, academics) of scientific research and its users (policymakers and other stakeholders), i.e., that researchers can communicate their results in a way that is accessible to users, without distorting the interpretation of research results (Nutley, 2003; Davies, 2004). A vital element of this communicative fluidity is a common understanding of the policy problem at hand and the robustness of the evidence needed to address the solution to that problem. Experience shows that it is possible to build bridges between these two seemingly opposing worlds, even with modest actions – for example, by promoting

the local approximation of researchers and policymakers and by encouraging joint training programs between these two audiences.

The organizational aspect is often listed among the conditions that either aid or hinder the use of evidence to support public policies. Among the aiding conditions is, for example, the development of organizational cultures in which decision-makers value the results of scientific research. Studies such as those by Marston and Watts (2003) show that these organizational cultures are very heterogeneously distributed among policy communities and actors involved in public policy. In turn, the work of Moseley and Tierney (2005, p. 114-115), in addition to relating the use of evidence to specific characteristics of the professional careers of policymakers, lists the following cultural challenges to the use of evidence at the level of public organizations: i) overvaluing of practice over analysis; ii) resistance to experimentalism and innovation; and iii) excessive fear of losing the autonomy of professional judgment and expertise.

Finally, the study by Nilsson et al. (2008) reveals that the choice of policy assessment tools in public organizations in Germany, Sweden, the United Kingdom, the United States, and the European Commission is strongly conditioned by standard routines and practices and by the expectation that the results of the assessment will support the core beliefs of the dominant coalition – that is, it is a “politically based evidence production” (Nilsson et al., 2008, p. 352), quoting one of the interviewees in the United Kingdom. The latter, more *political* pattern of use entails a preference for instruments that are not too complex, that predict outcomes in a more or less vague way, and therefore less risky for the political positions of dominant actors. Also, according to Nilsson et al. (2008), one of the challenges for the future of EBP is to institutionalize the use of advanced assessment tools, such as those that have made *climate change* a sensitive public policy issue worldwide. Only such tools can deal with the most intricate, dynamic, and multivariate problems.

6 THE MODERATE MODEL AND THE CRITICISM TO THE TRADITIONAL VIEW OF EBP

The purpose of this section is twofold. First, it seeks to expose, through examples, how the moderate model works, whose assumptions were presented in section 4. The aim is to show that such a model applies to the reality of public policy, especially in Brazil. Second, this part of the chapter proposes a criticism of the traditional perspective of EBPs (section 3).

The moderate model provides a specific *grammar* for distinguishing the pieces of evidence that support policymakers’ decisions in a plurality of possible public policy decision-making contexts. Through this model, it is possible to shed light on various aspects of the use of evidence in the factual situations in which public

agents make their decisions. The contextual frames – delimiters of backgrounds *woven* by factors of different natures (epistemological, political, institutional etc.) – acquire more precise outlines in each particular case.

One first interesting case is that of the National Committee for Incorporation of Technologies in the Unified Health System (Conitec), analyzed by Vieira, Servo and Piola (2020). Even though Conitec has clear rules on how to make its decisions when assessing health technologies to be used in the Unified Health System (SUS), based on scientific evidence of the highest possible degree of reliability, the study shows that there are contexts in which the decisions of the committee are made even if they are not in conformity with those rules. That is, the actions are not always based on the best evidence, and there is a marked difference in the quality of evidence depending on the type of medication or therapeutic intervention under assessment. It was found that, beyond *stricto sensu* scientific evidence (based on randomized clinical trials – RCTs), Conitec's decisions are also sensitive to other types of information, such as those from public hearings and court decisions.

The complexity of public agents' decision-making framework is exemplified in a surprising fashion in Soares' (2020) work. The author shows that the *lack of knowledge* about a specific policy problem that demands an urgent decision can be strategically instrumentalized to motivate this decision. Examining the case of the National Health Inspection Agency (Anvisa) decisions regarding issues related to the planting, regulation, commercialization, and use of cannabis for medicinal purposes in Brazil, Soares (2020) reports how Anvisa directors inform their decisions. In a context of lack of reliable information, decisions are mainly based on how agents conceive the problems according to their worldviews, values, and principles. In other words, a policymaker's collection of beliefs and previous knowledge can act as vicarious information in decision-making contexts of ignorance – that is, of lack of grounded and relevant knowledge for the agents' decision on a given issue.

A different side of the concept of evidence as a tool to public policy brings us to the work of Koga, Viana and Marques (2020). The authors investigate the different uses and meanings of the Federal Government's Unified Registry for Social Programs (Cadastro Único) as an instrument or source of information for federal social program managers. They conclude that the Unified Registry, in its technical operations (stratification, creation of inclusion criteria, data crossing routines etc.), interacts with the application of concepts such as *family*, *income*, *poverty*, and *domicile*, among others. In other words, the technical manipulations of the Unified Registry affect and are affected by the semantics of social policies. Consequently, this instrument has a non-neutral use from the point of view of the narratives not only of social program managers but also of several other federal social policy stakeholders.

Santos, Silveira and Rocha (2020) exemplify the possibility of divergences in the use and interpretation of scientific evidence by various actors involved in a specific policy. In this case, disagreements were verified among the auditors of the Office of the Comptroller General (CGU), the managers of the Cartão Reforma program – whose purpose is to mitigate the qualitative housing deficit in Brazil – and other social stakeholders (contractors, governors, members of civil society etc.). Disagreements over which housing deficit indexes to use and how these indexes should support the allocation of public resources to the Cartão Reforma program were at the center of the disputes between CGU auditors and the managers of this program. The case illustrates that the cause of disagreement in the use of evidence may not lie in the *quality* of the evidence but in the conflicting views and interests of the stakeholders regarding the program. This is so because, in this case, the indexes used by auditors and managers were of equivalent quality, produced by an institution with a high technical and scientific reputation, the João Pinheiro Foundation (FJP). Discussions about this or that index, this or that methodology, can be a sort of *cover-up* for internal oppositions motivated by economic and political interests.

In their turn, Oliveira and Menke (2020), in a survey study with internal auditors of the CGU, found that scientific articles are not the most used type of information in the decisions made by the auditors. Such articles are considered of lesser relevance and, when applicable, are mainly used as methodological inspiration or external confirmation of data. A result corroborated more than once in research with the Brazilian federal bureaucracy (Enap, 2018) is the broader use of normative information (laws and formal rules) than scientific research results. The work of Oliveira and Menke (2020) found – although without elaborating on the argument – that, in the opinion of the target audience of the survey, academic studies may contain biases that could compromise the objectivity of audits.

Let us take one last example, hypothetical but plausible. Whether it is a policy manager working at the Central Bank of Brazil (BCB) or the National Treasury Secretariat (STN), responsible for designing policies to manage Brazil's public debt on a sustainable trajectory. It has a system of models of an accounting and econometric nature, which allows them to calculate the estimated trajectory of the public debt ratio as a proportion of the gross domestic product (GDP), given some parameters (for example, interest rates, exchange rates, estimated GDP growth rate, inflation etc.). Let us also suppose that in a given period, the manager runs their own calculations and concludes that the trajectory of the debt/GDP ratio is sustainable for the next twelve months. They consult the opinions of academics and fiscal policy experts and find that the results of their models converge with those opinions. Consequently, supported by these results and supported by external opinions, the manager decides not to change the current public debt management

policy since they deem having good reason to believe that said policy is on the right track.

In the example above, in a strict sense, the direct evidence, which serves as an instrument for the policymaker's decision-making, is constituted by the results of the policymaker's modeling system. However, it is easy to see that these results are not produced without the help of other information, such as macroeconomic parameters, model relationships, and coefficients, the construction of future scenarios for the relevant variables, the opinions of other agents etc. Of course, using this information involves a set of choices and auxiliary hypotheses that are not observable but are subject to a good deal of arbitrariness on the part of the analyst. The models themselves are built based on several pragmatic assumptions about the behavior of the public debt, in its various modalities, types of securities, indexers etc.

Therefore, in a strict sense, the choices and information that, one may say, surround and connect to the public debt equation system outputs are not evidence but instead could be more appropriately called *requirements*, *parameters*, or *subsidies* for the public debt management policy. This is the case of the opinions of some external agents (academics and fiscal policy experts), which act as checkpoints to fine-tune the model in several respects. Nevertheless, the example illustrates well two points to which attention is drawn in this chapter. The first one is that the evidence belongs to a set of choices and information – such as requirements, parameters, and functional expressions, amongst others – with varying degrees of formality and methodological rigor. This set constitutes such a unit that, *in a broad, derivative sense*, each element of this set can be called *evidence*. Secondly, the members of this set are held together by a backdrop of beliefs and practices shared by the community of analysts and managers – in this case, regarding how a policy of national public debt management is made – at the center of which is a conceptual, methodological and theoretical armor.

The examples above, taken from different policymaking contexts in Brazil, from different public policy fields and topics, and from different segments of the bureaucracy, highlight the variety of the use of evidence in its multiple types. The examples reveal different possibilities for using technical-scientific evidence according to the contextual framework that involves the decision-making agents.

Of course, isolated cases cannot provide statistical representativeness. Notwithstanding they at least indicate, among other things, that the rational-instrumental use of scientific evidence – as advocated by the traditional view of EBPs – is only one of the possible uses. There is a myriad of factors not directly related to methods of cognition of reality that naturally condition public policy decisions and that make the use of scientific evidence a much more complex task than simply

running a model or raising a set of numbers or quantitative data that indicate to the policymaker *what works*.

Finally, in none of the cases mentioned in this section is the use of evidence (scientific or otherwise) neutral or purely rational-instrumental, but is always conditioned by the purposes, worldviews, and interests of the various policy stakeholders.

Therefore, the examples in this section clarify certain features of the moderate model (variety of evidence, role of the stakeholder(s) as possible sources of evidence, complexity of a policymaker's decision-making structure, interpenetration of epistemological, political, and institutional/organizational conditioning factors). Thus, the cases also strongly suggest the partial and incomplete character of the traditional view of EBPs, marked by de-contextualized prioritization of scientific evidence, the merely instrumental character of evidence use, and assumed objectivity and political/ideological neutrality of scientific evidence.

7 FINAL REMARKS

In literature, several authors, for example, Oliver et al. (2014), complain about the fact that few studies provide clear definitions of *evidence*. Thus, it would be difficult to describe the role played by evidence and other factors that affect policymaking decisions. Now, these authors seem to demand a clear definition of evidence as a precondition for describing the role played by evidence in public policy decision-making. However, the perspective adopted in this chapter is different and, in a way, the opposite: evidence is defined from its concrete contexts of use, and *family resemblances* are established among the different types, sources, and uses of evidence. In other words, this text does not have as a starting point a prompt answer to the question: what is evidence? One obtains this answer after a process of conceptual clarification, in which the formulation of a so-called *moderate* epistemological model takes place. In this model, an analysis of the contextualized use of evidence in the clarifications and decisions of agents regarding public policies plays a key role.

The above-mentioned moderate epistemological model is open to a reasonable degree of rationality regarding cognition and political action on social processes through public policies. Moreover, the same model allows for various types of evidence and methods and requires special attention to the diversity of epistemological statuses of the areas of knowledge of public policies under consideration. However, the moderate character of the model is verified not only in its openness to plurality but also in its attention to the limits of knowledge of the contexts of action. This attention to the epistemological boundaries of the evidence used in public policy also lies at the heart of the *critical* character of the moderate model.

How evidence is defined and used depends on how the nature of social and public policy decision-making processes is perceived. This view introduces a kind of relativism to the concept of evidence, in contrast to the traditional view of EBP, which tends to *absolutize* or *reify* the concept of evidence. This double relativism, in turn, cannot be adequately understood without a contextual frame that encompasses the agent's decisions. The contextual frame refers to a pragmatic – that is, usage or action-related – element that is key to the moderate model. This frame defines a background made up of epistemological, political, and institutional factors within which a policymaker's decisions on the use of evidence occur. In other words, to use or not to use this or that evidence, as well as the weight that will be attributed, for example, to scientific evidence, will depend on the contextual decision framework of the agent, in which political, symbolic, and ideological factors will always be latent or explicitly present.

Finally, the criticism of the traditional view of EBPs, developed in this chapter and based on the moderate model, raises a red flag. The so-called traditional view increases the risk that EBPs become an ideological means for political and/or technocratic elites to impose their perspective on society as a whole about the relevant social problems and their solutions. Here we talk about the risk of losing the legitimacy of public policies in a democratic context. It is likely that the traditional view of EBP increases this risk since it tends to reify the concept of evidence and to overvalue the use of scientific evidence in a generally uncritical and decontextualized way.

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INTUITION, REASONING AND CAPACITY IN POLICYMAKING: BUILDING A COGNITIVE MODEL OF KNOWLEDGE AND EVIDENCE UTILISATION

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1 INTRODUCTION

The evidence-based policy (EBP) movement reinvigorated the demand for greater instrumental rationality in the affairs of the government. It emerged within the larger context of declining trust on governments and increasing availability of research evidence (Davies and Nutley, 2000). The growing body of research evidence on what works can be used to improve the effectiveness of policy initiatives and measures that could ameliorate loss of public trust (Sanderson, 2002). EBP sought to increase take up of these forms of evidence in order to “find the most reliable, most objective, most relevant evidence available and make the most out of it within practical constraints” (Bédard and Ouimet, 2016, p. 2). Evidence utilisation has been reinforced to promote instrumental rationality as a hallmark of a modern government. It represents the shedding of the vestiges of traditional, affective irrationality in favour of instrumental rationality. But just as EBP derives its legitimacy from its emphasis for objective analysis of scientific evidence, it is also the reason for its failures as a movement to foster better policymaking.

Much of the criticism EBP received came from its almost singular concern with scientific research evidence, making it largely ignorant of other factors that policymakers consider during decision-making. Evidence of what works about public policy grew as a result of the experimental turn in social sciences inspired by medical science (Banerjee and Duflo, 2009). For instance, it gave rise to the use of systematic reviews to appraise and synthesise evidence that exist in order to simplify the search for evidence (Young et al., 2002). Randomised control trials (RCTs) in development economics also became widespread and supported a bias towards counterfactual analysis as the ‘golden standard’ in policy research. However, RCTs are replete with practical problems that diminish their epistemic claims of effectiveness (Deaton, 2009). Because of this tendency to equate evidence

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with scientific research, the EBP movement neglected the fact that other forms of evidence generated outside scientific research are also evaluated particularly in policymaking (Cairney, 2016).

Despite some acknowledgement that factors other than evidence is considered in policymaking, EBP's modified version as being 'evidence-informed' still only treats scientific research as the only valid form of 'evidence' of what works. It assumes that policy problems can be truly understood and the most effective solution can be identified through scientific research. More often, the causal model that links the problem with the solution is contested and difficult to be known unless policies have been implemented (Colebatch, 2006; Hisschemöller and Hoppe, 1995). Notwithstanding the pious hopes of EBP advocates, what emerged now is "a concomitant crises of science, trust and of sustainability" that upended the ability of EBP's to drive rational problem solving (Saltelli and Giampietro, 2017, p. 63). What is truly missing, at least according to Cairney (2016), is a nuanced understanding of evidence as it relates to policy theory.

This chapter addresses this gap by following the admonition of behavioural public administration about the missing micro-foundations of decision-making (Grimmelikhuijsen et al., 2017; Sanders, Snijders and Hallsworth, 2018). The chapter seeks to reignite the interest on the 'psychology of policymaking' by examining the cognitive dimensions of evidence use (Cairney, 2016). In doing so, it harps back at the fundamental discourse started by the likes of Herbert Simon and Harold Lasswell at the birth of policy sciences about the role of scientific evidence in an otherwise messy policy process by offering a model of evidence use grounded on a simplified understanding of two important cognitive processes: intuition and reasoning. It argues that the probability of using research evidence depends on cognitive process activated. Reasoning is best suited to analyse scientific evidence while intuition relies on one's own tacit knowledge. This simplified conception of the cognitive use of evidence is then related with policy capacity in order to forward an understanding of how to improve integration of evidence and knowledge in policymaking. The chapter concludes with some implication on how to conduct further research on evidence and knowledge utilisation grounded a better understanding of its cognitive dimensions.

2 RATIONALITY AND HUMAN COGNITION IN POLICYMAKING

The study of public policy has long been concerned with maximising the use of human cognition to solve pressing societal problems. In envisioning the professional field of policy sciences, Harold Lasswell highlighted the importance of possessing both the knowledge *of* and knowledge *in* the policy process to elicit and give "effect to all the rationality of which individuals and groups are capable

at any given time” (Lasswell, 1970, p. 13). Modern governments are expected to introduce policies through a process where “the end, the means, and the secondary results are all rationally taken into account and weighed” (Weber, 1968, p. 26). A cadre of professional analysts motivated to find the best solutions for the most pressing policy problems, particularly for developing countries, should be trained and bestowed the knowledge of policy sciences (Lasswell, 1965). The policy sciences was envisioned to be fundamentally concerned with fostering instrumental rationality in how the government conducts its affairs (Dunn, 2019).

Such conception of a knowledge-driven problem-solving process set off a debate about the extent to which the generation and deployment of knowledge can truly lead to rational decisions. On one end, the Lasswellian notion of public policymaking approaches problem-solving through a systematic way of putting together governmental instrument to achieve certain goals (Dunn, 2018; Howlett, 2010; Linder and Peters, 1987). Following the traditions of policy analysis and policy design, the fundamental concern is to drive instrumental rationality through a careful generation and assessment of policy alternative and selection of the best solution to address a well-defined policy problem (Howlett, Ramesh and Perl, 1995; Weimer and Vining, 2011). This techno-rational assessment of public policy approaches it from a normative angle, that is, the identification of the best and most effective instrument should be based on a systematic assessment of evidence about each of the option’s ability to achieve the goal.

At the other end of the debate are scholars who argue for the almost impossibility of achieving instrumental rationality. Rittel and Webber (1973) earlier lamented about how rational ‘cognitive styles’ have proven to be insufficient in truly understanding wicked social issues confronting government planners. Recognising the complexity of structuring problems, Herbert Simon developed the notion of bounded rationality to better elaborate the cognitive processes involved in problem solving and the constraints to fully processing information to make rational decisions about ill-structured problems (Fernandes and Simon, 1999; Simon, 1967; 1997). Because of limitations to time and resources, Lindblom (1959) argued that most policy-makers are just muddling through in the assessment of policy alternatives, resulting in policy choices that are only marginal to the status quo. Such arguments identify the limits of human cognition to squarely face the complicated and often conflict-laden environment as the main source of sub-optimal policy outcomes.

This broader debate about the limits of human cognition for effective policymaking is central to what the EBP movement is trying to change. Given bounded rationality, evidence may exist but may be difficult to understand or too complex to be used for decision-making. Tools such as meta-analysis and systematic reviews form a key part of facilitating evidence use by a temporally

and cognitively constrained decision-maker (Young et al., 2002). While EBP emphasised the importance of simplifying the highly evolving and increasingly complex evidentiary landscape of policymaking, its view of human cognition is restricted to instrumental reasoning as the idealised cognitive process. According to Dewey (1938, p. 17), “rationality is an affair of the relation of means and consequences... Rationality as an abstract conception is precisely the generalised idea of the means-consequence relation as such”. All forms of reasoning, at least according to this pragmatist view of policymaking, are about finding the best means to a given end (Garrison, 1999). The abductive search for evidence and reason may enable the realisation of such ends (Dunn, 2019). However, marshalling evidence and reason has been narrowly defined as evidence derived from objective scientific research (Cairney, 2016). This is a form of what Parkhurst (2016) calls issue bias, where the focus on technical concerns subordinated other relevant issues that may be more political or operational in nature. EBP particularly finds individual practical wisdom as problematic because individuals are constrained about what they know and are subjected to emotions that may bias their decisions.

3 A COGNITIVE MODEL OF KNOWLEDGE USE

Further works on bounded rationality, particularly from cognitive psychology, have made progress in better elaborating on why human cognition remained so constrained in making decisions. The theory of human cognition that lies at the heart of these scholarly works distinguishes the two systems of human cognition: reasoning and intuition (Kahneman, 2003; Stanovich, 1999; Stanovich and West, 2000). Intuition or System 1 cognition is fast, automatic and associative. Intuition, at least as it relates to decision-making, can be defined as “affectively charged judgments that arise through rapid, nonconscious, and holistic association” (Dane and Pratt, 2007, p. 40). It is associative as it links disparate elements and make sense of patterns based on existing knowledge (Epstein, 2010; Kahneman, 2003). Intuitive judgements, which are the observable outcomes of intuition, are important to make quick and almost automatic decision that governs our behaviour in much of our daily life (Bargh and Chartrand, 1999). System 1 processes generate unconscious impressions of objects of perceptions and are often linked to biological impulses derived from human evolution.

On the other hand, reasoning or System 2 operations are slow to generate judgments that are deliberative and conscious. Rational decision-making models are based on System 2 processes that are often conceived as the primary means of developing ideas and analysing trade-offs (Kahneman, 2003). The dual systems theory of human cognition suggests that the limitations to rationality earlier noted can be linked to the tendency to make quick judgement through intuition. Kahneman and Frederick (2002) argued that System 2 governs the judgments made through

intuition but it is often done rather poorly, inevitably making erroneous judgments. Conditions within the policy environment such as limited information, time and complex stimulants require quick decisions, making the activation of the slower and deliberative reasoning very challenging.

Much of the models of government decision-making privileges reasoning as the ideal cognitive process as it demands drawing from scientific knowledge. While intuition is often triggered unconsciously, it also depends on some form of knowledge. In his two-minds recasting of the dual systems theory, Evans (2010, p. 316) posited that System 1 processes draw on experiential knowledge while System 2 processes require manipulation of “explicit representations through working memory”. Both systems promote instrumental rationality – employing rationality to achieve some goals – but they differ in the temporality of goals. Intuition can generate effective judgments when personal experience and logic are used to satisfy immediate concerns and achieve short-term goals with means found from experience. Reasoning seeks to anticipate the future and involves the generation and analysis of alternatives based on deliberate processing of information. Reasoning provides a wider latitude for the use of scientific knowledge because of its inherent deliberative nature.

However, what EBP failed to recognise is the interdependence between system 1 and 2 processes in generating the observable outcome of cognition: judgments. One could conceive intuition as a precursor to reasoning (Myers, 2004; Shapiro and Spence, 1997). In fact, as Simon (1987) had earlier suggested, it is rare for decision-makers to rely on one system alone and most of the time, good decisions are based on a mix of intuition and rational processes. Accessibility, or the “ease with which particular mental contents come to mind” (Kahneman, 2003, p. 452), is central to understanding the relationships between intuition and reasoning. As a default, intuition is easily accessible because the mind computes automatically a representation set of the object observed. Kahneman (2003, p. 453) noted that the “the acquisition of skill selectively increases the accessibility of useful responses and of productive ways to organise information”. As such, the capacity to draw in reasoning can be trained and different forms intuitive judgments that combine intuition and reasoning can be made depending on the extent to which intuition and reasoning are triggered. Even without system 2 endorsement, intuitive judgments are made only with system 1. Intuitive judgments can also be temporarily made but this could be adjusted by system 2 as information becomes available. Deliberative judgements are made when system 1 processes are not accessible or when system 2 corrects a wrong judgment by system 1. In this interactive cognitive model of decision-making, both scientific and experiential knowledge are used to make the best judgments given environmental constraints.

4 EVIDENCE AS POLICY KNOWLEDGE

The dual-process theory of human cognition discussed above is largely consistent with the notion of ‘evidence-informed policy’. Research on EBP is traditionally approached from two camps: two communities theory and the non-instrumental use of research (Oliver, Lorenc and Innvær, 2014). In the two communities theory, the separate professional development of academics and policymakers set them apart and encourage divergent views about what evidence should be and can be used for policymaking (Caplan, 1979). Carol Weiss’s (1979) typology of research utilisation suggests research’s different role in decision-making beyond its canonical instrumental use. These two theories are important in the discussions about the paradox of knowledge utilisation where the widespread availability of knowledge does seem to not guarantee their utilisation. Many contemporary work on EBP holds the assumption that a policy driven largely by scientific knowledge is superior which contradicts Weiss’ (1979) argument that evidence that are used more indirectly, as in the case of the enlightenment model, could offer more effective solutions. The interaction between bureaucratic expertise and scientific knowledge once again become central in the explanation of (the lack of) knowledge utilisation.

The thinking that intuition, particularly expert intuition, can be used alongside scientific knowledge to make the most effective decisions underlies this largely indirect view of knowledge use. Within evidence-based medicine, clinical expertise or ‘knowledge in practice’, scientific evidence and patient’s expectations and preferences constitute the core elements that must be integrated into everyday practice (Gabbay and Le May, 2004; Rycroft-Malone et al., 2004). In the same way doctors use their own professional knowledge to make judgments, policymakers can rely on the wealth of managerial and policy experience to overcome the challenges posed by the hectic and messy context of managerial work that demands them to make decisions on the fly (Mintzberg, 1971). Their busy schedules make public managers, as in the case of many Brazilian middle managers, unable to truly collect and process scientific evidence, which pressures them to rely on their own managerial know-how to make decisions (Saguin and Palotti, 2020). Thus, as Schön (1984) had earlier argued, tacit knowledge is a critical element of being a professional and should form part of the development of a ‘public service profession’ (Perry, 2018). The inherent uncertainty and ambiguity in public policymaking requires policy professionals to possess “some form of expertise that the community defers to” (Rourke, 1979, p. 541).

Although EBP recognises this interaction between intuition and reasoning through the interaction of expertise and scientific research, much of the EBP literature conflate knowledge and evidence. EBP considers evidence only as empirical evidence or “evidence claims [that] report facts about the world” (Cartwright and Hardie, 2012, p. 7). But factual representation of the world goes beyond mere

results of scientific studies. As Cartwright and Hardie (2012) added further, evidence includes causal stories and supporting factors to build a convincing argument about how a policy can work as intended. This is partially the reason for the conceptual confusion evidence in the EBP context as a causal argument is a form a specific of policy knowledge. Policy knowledge is broadly defined as “the body of human knowledge available to assist policy makers in their understanding of the causes and consequences of the outputs of government and the subsequent society impact” (Webber, 1991, p. 11). Policy knowledge and empirical evidence becomes inextricably linked with reasoning because such a cognitive processes allows for associative elements that policymaking demands. One needs to make the connections between specific governmental action with societal outcomes that may not exactly be intuitive. Knowledge from scientific research and professional experience are crucial sources of information about past performance of similar actions and how it may materialise in the future for other similar endeavours.

EBP’s conflation of evidence and knowledge dismisses the critiques received by the techno-rational approach to policy analysis, particularly from democratic theorists. These scholars have long lamented the tendency of reliance on scientific knowledge to undermine democratic values (Dryzek, 1989; Jenkins-Smith, 1988). Solutions identified by evidence as the best may not necessarily be legitimate and effective given the prevailing policy context. Second-best solutions may be more appropriate in solving vexing societal problems when citizens were engaged in the analysis. This process folds in the concerns for instrumental rationality along with democratic rationality that addresses underlying issues of political legitimacy of many modern governments. The role of policy analysts or those traditionally perceived to be responsible for marshalling policy evidence should take the form of ‘interpretive mediator’ of knowledge and practical considerations on the ground (Fischer, 1993). This goes against the exhortation of Lasswell (1965) for policy scientists to possess professional knowledge of and knowledge for policy process because, as many of these scholars argued, ineffective policies emerge because of the widening gap in the preferences between the bureaucratic experts and the citizens who are the supposed beneficiaries of the policy. DeLeon (1992, p. 127) suggests for the policy analysts to “devise and actively practice ways”, such as policy polling and public hearing, “to recruit and include citizen’s personal views into the policy formulation process”.

The participatory turn in public policy challenged expert knowledge’s claim to epistemic superiority. Governments, particularly from developing countries, actively collect information from other political actors thought to be crucial in the design and implementation of policies (Saguin, Ramesh and Howlett, 2018). Participatory processes can be used to improve not only the technical components (or the causal theory) of the policy but also the value judgments by the participants (Stewart,

Dennis and Ely, 1984). Citizen-derived valuation of policies can also enhance substantive elements of policy as well as improve its qualitative features (Walters, Aydelotte and Miller, 2000). Participation and deliberation can generate democratic rationality by generating a broad-based understanding of knowledge not just among individuals who are involved in the process but also in terms of collective judgments. Embedding citizens into government decision-making acknowledges the potential of citizens to “contribute policy-relevant information, learn to judge the results of technical analysis, and engage in debate about what to do” (Stivers, 2010, p. 256). Democratic knowledge, as Sadiki (2015, p. 706) emphasised, blurs the distinction between “intuitive/spiritual, intellectual and practical know-how” and favours “a holistic approach”. Participatory processes have thus given rise to a different form of knowledge that must be incorporated in decision-making. Public knowledge or policy knowledge derived from public deliberative processes between actors can be seen as an alternative form of evidence that can be used in policymaking.

Such distinction between scientific, expert/experiential and democratic knowledge is consistent with the Aristotelian categories of knowledge. In Flyvbjerg’s (2001) elaboration of these knowledge types, distinction is made between episteme (science), techne (art) and phronesis (practical wisdom). Epistemic knowledge follows the ontology of natural sciences and “concerns universals and the production of knowledge which is invariable in time and space, and which is achieved with the aid of analytical rationality” (Flyvbjerg, 2001, p. 54-55). Policy knowledge that is epistemic holds claim about causal linkages between an action and a consequence. For instance, it is widely accepted that requiring seat belts would significantly reduce deaths from road accidents. Technical knowledge refers to the knowledge gained from the practice of the art and craft of policy work. As it is gained from actual professional expertise, it can also be referred to as tacit knowledge, which Thompson (2003, p. 121) describes as the knowledge “which cannot be explicitly codified but which rests very much in implicit personal or institutional practices often associated with craft like skills, awareness of reputations, hands on techniques, etc”. Lastly, phronetic knowledge is a “sense of the ethically practical rather than a kind of science” (Flyvbjerg, 2001, p. 57). Phronetic knowledge is akin to Lindblom and Cohen’s ordinary knowledge that is based on “common sense, casual empiricism, or thoughtful speculation and analysis” (Lindblom and Cohen, 1979, p. 12). As Tenbensen (2006) would argue, “phronetic knowledge claims... [involves] problem definition” and is about strategic decision (where are we going?) and normative action (what should be done?). It is fundamentally about “what stakeholders are supposed to bring to...governance” by drawing on their own experiences and practical knowledge (Linke and Jentoft, 2014, p. 155). Ultimately, Flyvbjerg suggested that phronetic knowledge is the most important in policymaking as it is most sensitive to context and local power relations, although integration of the knowledge triad

remains key in finding the second-best policy designs. This integration of scientific evidence with framing and persuasion can address uncertainty (lack of information) and ambiguity (unclear preference), potentially ensuring the effectiveness of the chosen policy solution (Cairney, Oliver and Wellstead, 2016).

As table 1 would show, each of these types of knowledge can be linked with a specific causal claim and type of evidence. Evidence is fundamentally a form of policy knowledge that is useful in breaking down the policy problem and appraising the costs and benefits of the solutions; but it is equally vital in reigning in theoretical and conceptual perspectives of social science into policymaking (Larsen, 1980). From a knowledge perspective, evidence that can be marshalled into policymaking will depend largely on the type of policy knowledge involved (Tenbenschel, 2006). If the decision-making is based largely on epistemic knowledge, scientific evidence will most likely be used through backward reasoning. A hypothesis is made about a certain causal claim and this is tested through observations. Expert intuition forms only a minimal part but is used to approximate the validity of the evidence. Decision-making that depends largely on tacit knowledge would require evidence derived from professional experience and expertise. It has been found that the largely unarticulated form of knowledge is crucial in navigating through the complex web of bureaucratic layers in pushing for genuine administrative reforms in China (Chan and Chow, 2007). Although experience is a necessary condition for gaining expertise, it is not a sufficient condition to say whether one has expert evidence that can be used. Tacit knowledge can be rational when it adopts forward, inductive reasoning that generalises from a case to a known established hypothesis. Lastly, phronetic knowledge can be derived from lay evidence through public engagement. It pertains to the ‘grass-roots’, vernacular knowledge that is often seen as the antithetical to expert knowledge. But phronetic knowledge can also be rational through conditional reasoning (*if p then q*). Given the affective nature of phronesis, knowledge derived from public engagement requires evidence that allows generalisation of a policymakers conditional probability strategies (Oaksford and Chater, 2003).

TABLE 1
Types of policy knowledge

Type of policy knowledge	Characteristic of knowledge claim	Type of evidence	Reasoning strategies	Role of expert intuition
Epistemic (episteme)	Universalistic, causal	Scientific or research evidence	Backward reasoning	Approximation of knowledge
Tacit (techne)	Technical, occupation-specific	Professional expertise	Forward reasoning	Holistic, associative
Phronetic (phronesis)	Context-dependent, practical wisdom, problem definition	Lay evidence	Conditional reasoning	Affective

Source: Tenbenschel (2006).
Author's elaboration.

5 KNOWLEDGE UTILISATION MODELS AND POLICY CAPACITY

The different forms of knowledge considered by the policymaker point to a multitude of purposes beyond the instrumental use of knowledge that the rationalist tradition of public policy suggests. Caplan (1979) earlier cited the instrumental use of knowledge tend to be applied to micro-level problems that pertain to run-of-the-mill, routine policy problems while conceptual uses of policy knowledge apply to macro-level problems that require empirically-grounded substantive solutions. The diversity of knowledge uses is a core aspect of policy learning and advocacy coalitions as it sets the stage not only for technical analysis but also for political debates about the problem and the solution (Sabatier, 1987; 1988). The vibrancy of the political debates can also foster the symbolic use of knowledge, which can be classified either as legitimation or substantiation (Boswell, 2008). Legitimation function pertains to boosting the credibility of the claims made about the assessment of the scope and scale of the problem, criteria used in appraisal and solutions proposed (Boswell, 2009). The use of knowledge this way is perceived to be more transparent because it makes known the basis of every decisions made (Hertin et al., 2009). Knowledge can also be used to substantiate positions and preferences not only of the client but also of experts themselves. However, it remains unclear when policymakers actually require these types of knowledge. This has motivated scholars to posit the paradox of non-utilisation of knowledge, that is, despite the availability of various sources of knowledge, policymakers do not use them.

Carol Weiss (1979) suggested that the differential use of research evidence points to a variety of interaction between basic research and public policy. The knowledge-driven model, generally found in the physical sciences, occurs when basic research is directly applied in public policies. It assumes that epistemic knowledge will solely determine the action to be taken. The problem-solving model suggests an evidence-seeking behaviour meant to determine the best solutions to a given issue that warrants government attention. This is what the pragmatic approach to policy sciences advocates in terms of instrumental rationality. The interactive model is characterised by a “disorderly set of interconnections and back-and-forthness that defies neat diagrams” (Weiss, 1979, p. 428). A host of different actors are consulted and used as sources of knowledge beside researches because of the absence of convergent evidence. The political model is about the use of research evidence to support a pre-conceived belief and interest in order to “neutralise opponents, convince waverers and bolster supporters” (op. cit., p. 429). It is the most pejorative use of scientific evidence that is often widely available and subjected to different interpretations. The tactical model is not concerned with the substantive elements of the research findings. Knowledge here is not used to influence policymaking but, in some ways, to legitimise action or inaction through the conduct of research. The enlightenment model brings social science research

orientation at the heart of government affairs. Under this model, Weiss (1979, p. 430) argued that the research “sensitises decision-makers to new issues and helps turn what were non-problems into problems”. Arguably, Weiss favoured the enlightenment model because “without any special effort, truth will triumph” (idem, *ibidem*) because research diffuses without obstruction in the government.

From a cognitive angle, these models can be conceived as schema or cognitive structure. A schema is “a cognitive structure that represents knowledge about a concept or type of stimulus, including its attributes and the relations among those attributes” (Fiske and Taylor, 1991). Individuals hold their own pre-existing schemas that allow them to relate to organisations and other individuals differently (Larson, 1994). Herbert Simon (1958) treated decision-making as schema to better understand how government conducts its business. The models that Weiss identified are essentially influenced by one’s own schema because it is a theory or a preconception of the world (Fiske, 1994). Schemas “help the individual to construct meaning out of the environment” (Larson, 1994, p. 22) as well as guide one’s reaction to events, and thus pay particular focus on the relationship between intuition and reasoning and as this relationship interfaces with evidence. As Fiske (1994, p. 166) had argued, “the normal, default option is to go with the schema, the category, the preconception, the theory”. Utilisation of data or scientific knowledge through reasoning would thus require awareness of the ‘diagnosticity of the data’ and one’s motivation for data-driven, piecemeal processes, Fiske (1994, p. 166) added.

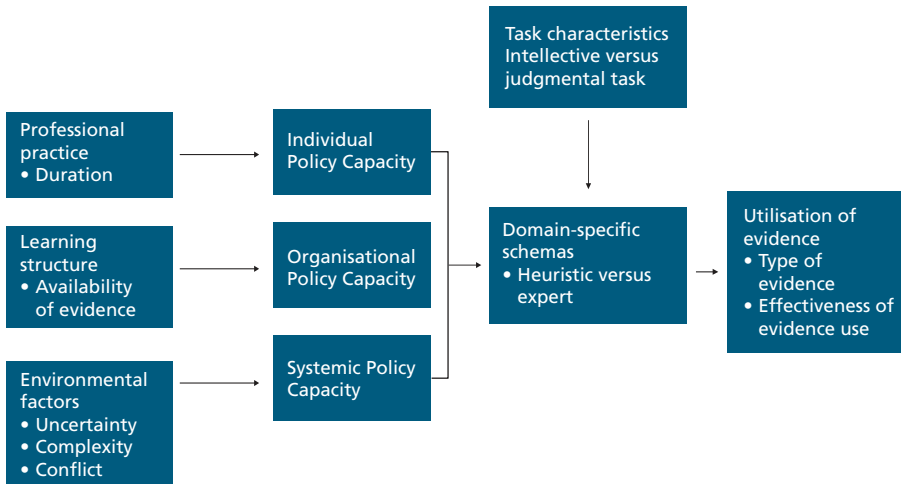
The schemas will differ across domains depending on the policy functions needed to be performed. These functions, as Wu, Ramesh and Howlett (2015) suggested in their discussion about policy capacity, refer to managerial, political/relational and analytical functions that are expected of a modern government (Saguin and Ramesh, 2020). At the level of organisation, these functions are consistent with organisational processes that correspond to specific behavioural aspects of administration which are information processing, affective bonding and action generation (Beyer and Trice, 1982). Depending on the configuration of functions of the sector and the salience of each organisation processes, the schema would represent the ability of the policymaker to access intuition and reasoning as the circumstance would allow.

Two types of schemas are identified by Dane and Pratt (2007) that relate specifically to decision-making: heuristic schema and expert schema. A cognitive structure that often privileges heuristics or mental shortcuts tend to rely more on intuition or theory-driven thinking. Heuristics simplify complex concepts into its constituent elements based on critical, rather than comprehensive, information (Tversky and Kahneman, 1974). Expert schema, on the other hand, brings in expertise as the ability to match patterns based previously encoded data, triggered

by an external stimuli (Chase and Simon, 1973; Simon, 1996). The likelihood of these schemas to be accessed depend on one's domain, training and capacity as well as external stimulus. In other words, the dominant schema for evidence use will be different across policy sectors and across organisational types (Head, 2016).

As Dane and Pratt (2007) further elaborated, macro-variables can determine what kind of decision-making schema an individual can take, which in turn will affect the type of evidence that will be used and its effectiveness (figure 1). A policymaker's schema will intermediate the relationship between these variables with evidence and knowledge use. Schema as a pre-existing cognitive construct is shaped by a set of individual, organisational and environmental factors that can be collectively understood as policy capacity. Policy capacity refers to the necessary skills and resources to perform policy function that exists at the individual, organisational and systemic levels (Wu, Ramesh and Howlett, 2015). Policy capacity can be viewed both as stock that exists at each level and a flow that influences the stock of other levels (Saguin, Tan and Goyal, 2018). One's schema would determine the nature of evidence and knowledge use as a reaction to a stimuli and is contingent upon one's policy capacities.

FIGURE 1
Relationship between policy capacity and utilisation of evidence



Author's elaboration.

Some stimuli that are external to policy capacity such as new mandates, policy changes, demographic shifts can characterise task characteristics. A stimulus, that can be envisioned as largely exogenous to the decision to be made, can pose different degrees of structuring of a problem. As earlier discussed, policymaking often involves determining which evidence can be used to solve wicked or ill-structured

problems but there are government agencies that are concerned with tame or structured problems. For such kind of problems, the task of evidence use is supposed to be intellectual that requires “definite objective criterion of success within the definitions, rules, operations, and relationships of a particular conceptual system” (Laughlin, 1980, p. 128). On the other hand, wicked problems would involve judgmental tasks that are inherently “political, ethical, aesthetic, or behavioural” in nature “for which there is no objective criterion or demonstrable solution” (idem, *ibidem*). The cognitive nature of evidence use may differ according to the nature of tasks that permeates a certain sector or organisation. Judgmental tasks related to complex problems would require more intuition and thus will be characterised by greater use of professional expertise and lay evidence than scientific research. Intellectual tasks related to tame problem would entail greater use of reasoning and thus will usually require epistemic knowledge.

The earlier discussion about expertise points to the importance of professional practice and its duration (or individual policy capacity) in determining what form of evidence will be used. Expert intuition can be effective once a significant amount (usually ten years) of problem-solving experience is accumulated by a policy workers (Chase and Simon, 1973; Khatri and Ng, 2000). Holding other things constant, experienced public managers that hold generalist expertise will most likely rely on tacit knowledge and use past professional experience as evidence (Howlett and Wellstead, 2011). Individuals with domain knowledge and appreciation of what evidence should be evaluated like doctors or lawyers have higher levels of policy analytical capacity and will most likely use scientific evidence. Policy workers whose function require higher levels of political capacity will most likely rely on lay evidence, particularly as most of their tasks would be characterised as judgmental.

A learning structure or an environment that fosters feedback and reflexivity is largely a function of organisational capacity. Organisational policy capacity refers to “all assets, capabilities, organisational firm attributes, information, knowledge” (Barney, 1991, p. 101; Daft, 1983) that can be used to foster better use of evidence. If scientific evidence is available and organisational commitment exists to ensure that only scientific evidence is used, most likely scientific evidence will be used more than tacit or lay evidence. This is the case for high levels of organisational analytical capacity. When an organisation requires managerial expertise of their policy workers, tacit knowledge from managers will be predominantly used. Lastly, politically oriented organisations would most likely use ordinary knowledge as it tends to build on public engagement and political management for its legitimacy.

Abstract environmental factors such as complexity, conflict and uncertainty feed into the likelihood of the problem being unstructured. However, the existence

of systemic level interventions can reduce uncertainty and complexity. For Christopher Hood, systemic policy capacity is fundamentally about authority or the “possession of legal or official power” (Hood, 1983, p. 201). But such power can be used to control, exhort and even suggest evidence use. Systemic policy capacity roughly pertains to the existence of an enabling environment that allows for the differentiated use of evidence according to context and case. For example, as it relates to health policy, centralised political systems have less space for pluralised discussion through evidence discourse and rely more on professional expertise (Klein, 1990). The absence of independent source of research evidence like think tanks or universities can also encourage governments to use evidence more symbolically or rely on ordinary knowledge in order to make decisions (Liverani, Hawkins and Parkhurst, 2013). The existence of a competitive and diversified marketplace of ideas can truly bolster the supply (and in turn, demand) of available scientific evidence (Anderson, 1996; Boston, 1994; Tiernan, 2011). These systemic level interventions suggest greater policy capacity to perform system-level functions that shapes how and what kind of evidence will be used.

The relationships highlighted in figure 1 only provides an indicative directionality in the complex interdependencies between the different levels of policy capacity, schema and evidence use. Evidence use and its effectiveness in policymaking is triggered by certain exogenous task requirements that may be intellectual or judgmental. Task characteristics determine the intensity of the cognitive tasks required but do not purely determine the nature of evidence use. One’s decision-making schema would determine the cognitive processes that will be triggered and the ability to perform a certain tasks will be based on the set of policy capacity that exists. Evidence use is thus not just a function of individual-level characteristics but macro-variables shape the likelihood of evidence that can be used in terms of the cognitive process that will be triggered. Such relationships would be difficult to predict as concrete hypothesis but it could be expected that they will drive the difference across policy domains, organisations and even individuals in the use of evidence.

6 CONCLUDING REMARKS

This chapter sought to provide a cognitive approach to understanding the paradox of knowledge utilisation and the crises that beset the EBP movement. It argues that research on the subject should be motivated in understanding why certain knowledge are used, by whom and in what context. It draws on the recent literature on policy sciences and behavioural public policy to suggest factors that shape knowledge utilisation from the perspective of policy capacity (Wu, Ramesh and Howlett, 2015). More specifically, in order to understand the cognitive nature of evidence research must examine individual factors that may affect the likelihood of a policymaker to use what type of evidence (micro-level), organisational

dimensions that shape how the demand and supply of policy knowledge interact (meso-level) and the characteristics of the policy advisory system that determines the 'supply' of policy knowledge (macro-level). These levels of policy capacity militate the accessibility of intuition and reasoning, which determines the nature of evidence that will be used in particular policy sector or organisation.

In bringing together the literature on policy capacity and cognitive science, the chapter hopes to guide future research on evidence use in three ways. First, future research must examine the interaction of the different evidence and how the conflicting ontological origins of each evidence are grappled with and resolved by policy workers. The idea of knowledge integration is seen to be the most ideal type of research-policy interface as suggested various scholars like Weiss, Boston and Flyvberg. Second, the relationship between cognitive processes of intuition and reasoning with the use of evidence must be understood more systematically. Survey research can inform the different factors that influence the use of evidence by policy-makers but experimental methods can potentially unlock micro-perspective of individual behaviour, attitudes and cognitive process that link evidence use with policy environment (James, Jilke and van Ryzin, 2017). Lastly, the propositions identified briefly in this chapter must be tested to identify whether capacity can shape the likelihood of using research evidence vis-à-vis other forms of evidence. Attention must be given to the degree to which individual, organisational and systemic capacities exist to perform managerial, analytical and political functions (Mukherjee and Bali, 2019; Ramesh, Howlett and Saguin, 2016; Ramesh et al., 2016). Whether or not the capacity for utilisation of different forms of evidence or the ability to access reasoning can truly be developed should also be a matter of future research. The cognitive approaches to public policy and administration possess a promising space in locating the role of evidence (in whatever form) within the messy world of policymaking. It is incumbent upon for future research to examine systematically whether there is truly a merit to reinvigorating the desire to better understand human cognition in policy research.

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SURVEY AND DEPICTION OF THE EVIDENCE-BASED PUBLIC POLICY MOVEMENT IN BRAZIL¹

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1 INTRODUCTION

As the covid-19 pandemic spread around the world, the performance of denialist governments in fighting the novel coronavirus proved to be increasingly deficient. In this context, in which it was expected that the evidence-based solutions recommended by the scientific community would become virtually consensual, it seems that the world has not seen a complete overturn of denialist postures, based on diverse beliefs and the political pledge for an increasing polarization. The World Health Organization (WHO) and the Pan American Health Organization (PAHO), in turn, warned us about the perverse effects of the so-called *infodemic*, that is, “an overabundance of information – some accurate and some not – that makes it hard for people to find trustworthy sources and reliable guidance when they need it” (Opas, 2020, p. 2). Also, according to Opas (2020, p. 2):

Infodemic refers to a large increase in the volume of information associated with a specific topic whose growth can occur exponentially in a short period of time due to a specific incident, such as the current pandemic. In this situation, misinformation and rumors appear on the scene, along with manipulation of information with doubtful intent. In the information age, this phenomenon is amplified through social networks, spreading farther and faster like a virus.

But this excess is not only problematic due to rumors and fake news, since in its first months alone, more specifically until mid-June 2020, “covid-19 gave rise to more than 23,000 scientific articles, and urgency brings problems: traditional journals shorten publication deadlines and texts not reviewed by other scientists monopolize digital repositories” (Santos, 2020).

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However, if some distrust toward experts and their expertise persists, the numerous difficulties faced by science to guide decision-making processes in the public sector and to inform the production of public policies have been acknowledged for decades. Back in the late 1950s, for example, sociologist Robert Merton asserted that “the honeymoon of intellectuals and policymakers is often nasty, brutish and short” (Merton, 1957, p. 222⁴ apud Monaghan, 2011, p. 38). The issue concerning the difficulties of ensuring that the assessment of public policies is effectively used to improve government action or in the feedback of the so-called *public policy cycle* has also been discussed and problematized for decades (Faria, 2005).

Nevertheless, since the mid-1990s, for several reasons, particularly in the Anglo-Saxon world, the demand for the adoption of evidence-based public policies (EBPPs) has intensified, a demand that has spread globally since then (Faria, 2022). According to Parkhurst (2017, p. 4), “such calls for policies to be evidence-based have proliferated so widely in the past few decades as to become a movement unto itself”.

The so-called EBPPs are a type of policy “based on research that applies rigorous and systematic procedures for data collection and is committed to transforming these data into formal knowledge that is actually useful in decision-making”⁵ (Bracho, 2010, p. 307). It is important to note that, acknowledging the countless difficulties of various natures for this goal to be achieved, some more realistic authors prefer to use the term *evidence-informed public policy*.

In Brazil, the so-called evidence-based public policy movement (EBPPM) is still quite incipient (Sandim and Machado, 2020). This chapter aims to present a survey and a depiction of the EBPPM in the country. Its purpose is to trace the movement’s penetration both in the Brazilian public administration, at the three levels of government (federal, state and municipal), in knowledge-producing institutions, especially universities, and in civil society and market organizations. This is a comprehensive, but certainly not an exhaustive survey.

The chapter is divided into introduction; brief methodology and research limitations; theses and dissertations (T&Ds), which lists, classifies, and analyzes the completed research developed within graduate programs in the country, provided by the Catalogue of Theses and Dissertations (CTD) of the Coordination for the Improvement of Higher-Education Personnel (Capes); scientific papers, which lists, classifies and analyzes the works published in Brazil until the beginning of 2021; institutions, events and promotions related to the subject of EBPPs in Brazil,

4. Merton, R. K. *Social theory and social structure*. Glencoe, United States: Free Press, 1957.

5. As per the original: “*basada en investigación, que aplica procedimientos rigurosos y sistemáticos para la recolección de datos y se preocupa por la transformación de éstos en conocimiento formal de carácter utilizable para la toma de decisiones*”.

in the public and private spheres; and final considerations, which synthesize the findings and present an overview of EBPPMs in the country.

Before starting, however, we must make an important remark, which is that the different methods employed in the survey inevitably produced some distortions, which will be discussed briefly in the second section, throughout the text, and in more detail at the end of the chapter (appendix D). Perhaps the main one is the lack of sensitivity of these methods to important and sometimes traditional forms of knowledge production and interaction between public sector decision-makers and experts. These forms, which are also capable of informing the production of public policies, are under the responsibility of different governmental and non-governmental actors, such as policy assessment, technical advice, and the production of data and statistics. This is because, to a large extent, the methods we employed favored actors and instances that are recognized and publicized as producers or consumers of evidence for public policies. This discrepancy reflects the fact that the emergence of the EBPP movement, which occurred internationally in the 1990s, neither inaugurates nor exhausts the much older and more comprehensive concern of public policies not operating solely on ideology, tradition, or the example of others.

2 BRIEF METHODOLOGY AND RESEARCH LIMITATIONS

The surveys of T&Ds, scientific papers, institutions, events, and promotions presented in this chapter were conducted in March 2021. Several specific search engines were used, as well as the broader Google and Google Scholar search. The problems and limitations of the methods employed are discussed in more detail in appendix D. We also performed a content analysis of the data found, the results of which are presented, in a summarized way, in specific tables.

A survey was carried out using the Capes' CTD search engine within its specificities to produce the T&Ds section. This is a database launched in 2002, which indexes the material produced by Coleta Capes since 1987, with a direct search on the Sucupira Platform as of 2014.

For the survey of scientific papers, we used the search engine and algorithms of the database of Brazilian productions of the Scientific Electronic Library Online (SciELO), launched in 1997 and which aggregates journals from the most diverse areas of knowledge. We also did specific searches in Google Scholar, in search of non-indexed journals, in addition to tracking other works in the bibliographies of the previously found papers. Finally, for the search of institutions, events and promotions, Google was used within its most diverse range of possibilities of combining search terms and strategies, as well as the direct search in the main sites of the public administration of the 26 Brazilian states and the Federal District.

Despite the scope of the search, it is essential to explain some of the reasons for the use of the databases and search engines chosen by us, to the detriment of others. Regarding the T&Ds, it is important to stress that the base is fed by data generated by Coleta Capes, which, in turn, is under the responsibility of each graduate program (PPG), which can generate gaps, delays and periodic revisions of the data disclosed there, altering the search results as these revisions occur. Its alternative, the Brazilian Digital Library of Theses and Dissertations (BDBTD), of the Brazilian Institute of Information in Science and Technology (Ibict), does not yet include all research institutions, since participation in it is voluntary.

In the case of the scientific papers, the choice of the SciELO database of national production is justified by its relevance, impact, and coverage, even though the database does not include other important indexes that are quite specific regarding their areas of knowledge, such as the Virtual Health Library (VHL) and its aggregated databases. Most likely, this option resulted in the underappreciation, in this chapter, of the specific production in the health field.

Finally, in the search for institutions, events, and promotions, it is crucial to make it clear that the way Google and other less popular search engines index public pages to return their searches interferes directly with the amount, comprehensiveness, and accuracy of the results, which are conditioned by previous searches and even by the browsing history of those who perform the search. Even if strategies are adopted to minimize these externalities, the very performance of a search for certain terms impacts the next search to be made, by other individuals, for the same terms. Thus, information on more internal pages or subpages of a given website tends to return in smaller numbers than on the main pages or is often obscured by many layers of navigation. In addition, web pages, especially those of municipalities and other institutions, are updated, deactivated, or re-used frequently, so that a search on a particular date represents a snapshot of the data at that moment in time, but without complete information about the history of creation, modification, and deletion up to that point.

3 EBPP-THEMED THESES AND DISSERTATIONS

The number of EBPP-themed of T&Ds presented in Brazil is still very low, and their production is quite recent, as we will see in this section. A survey conducted in the Capes CTD in March 2021, using the methodology described in appendix D, indicated the existence of only 23 papers (appendix A). It should be noted, however, that the catalogue, which is an important source of research, does not reflect the entire universe of production of the PPGs in the country, even if it is its main reference.⁶ The vast majority of these 23 catalogued T&Ds were presented in the second half of the 2010s, as shown in table 1.

6. Another important source, not used in this research, is the BDBTD of IBICT, linked to the Ministry of Science, Technology, and Innovations.

TABLE 1
Presentation year of EBPP-themed T&Ds (2010-2019)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
1	0	2	0	1	3	3	4	2	7	23

Source: Capes' CTD. Available at: <https://catalogodeteses.capes.gov.br/catalogo-teses/#/>. Accessed on: Mar. 15, 2021. Authors' elaboration.

Of these 23 final papers, eight are dissertations presented in professional master's programs, ten in research master's programs, and five are doctoral theses. These data suggest that, among researchers in training in Brazil, it is the younger ones who seem to be more concerned with the issue of EBPPs. One should also note the importance of professional master's programs in the country, which, as it is known, are much smaller in number than the research ones.

Concerning the geographical distribution of these 23 T&Ds presented, the prevalence of the Southeast region is not surprising, given the large concentration of the country's graduate programs in this region. Table 2 presents this distribution in more detail.

Of these 23 T&Ds, thirteen were presented in federal institutions, six in state institutions, and four in community or private institutions.

It is also hardly surprising that the great majority of the research that gave rise to the T&Ds we are analyzing here was developed in the large area of health sciences. This is hardly surprising because it is well known that the very EBPP movement had as one of its main sources the so-called evidence-based medicine (EBM), which worldwide continues to have great capillarity in the health field (Baron, 2018). Table 3 presents the distribution of these 23 final papers according to the areas and subareas of knowledge to which the graduate programs in which they were presented belong.

TABLE 2
EBPPM-themed T&Ds in Brazil: geographical distribution

North	2	Pará = 1 Tocantins = 1
Northeast	0	-
Midwest	1	Federal District = 1
Southeast	16	São Paulo = 10 Rio de Janeiro = 5 Minas Gerais = 1
South	4	Rio Grande do Sul = 3 Paraná = 1
Total	23	-

Source: Capes' CTD. Available at: <https://catalogodeteses.capes.gov.br/catalogo-teses/#/>. Accessed on: Mar. 15, 2021. Authors' elaboration.

TABLE 3
Areas of knowledge in which the EBPPM-themed T&Ds were presented

Area of knowledge	Number of T&Ds	Subarea of knowledge
Health sciences	14	Collective health = 4 10 other subareas, 1 paper each
Applied social sciences	5	Economics = 2 Management = 2 Law = 1
Human sciences	2	Social sciences = 2
Interdisciplinary	2	Scientific and technologic policy = 1 Science, technology and society = 1
Total	23	-

Source: Capes' CTD. Available at: <https://catalogodeteses.capes.gov.br/catalogo-teses/#/>. Accessed on: Mar. 15, 2021. Authors' elaboration.

Even though the subjects, inquiries, approaches, concerns, and methodologies of this body of work on EBPPs are very diverse, it is worth trying to analyze their content, even if this great variety forces us to take a more panoramic look. Table 4 summarizes some important issues, which are discussed below (a more detailed version of this table is presented in appendix E).

TABLE 4
Analysis of the content of the EBPP-themed T&Ds within the Capes catalogue

Analytic categories	Number of yes	Frequency (%)
1 Does it advocate that public policies should be informed by evidence? (Yes or not very clear)	21 out of 23	91
2 Does it promote direct dialogue with the EBPP movement? (Yes or no)	10 out of 23	43
3 Health papers that dialogue only with EBM	7 out of 18	39
4 Does it theorize about evidence management or EBPP production? (Yes or no)	8 out of 23	35
5 Does it emphasize evidence production? (Yes or no)	19 out of 23	83
6 Does it emphasize the use of evidence or the interaction between public managers and knowledge producers? (Yes or no)	10 out of 23	43
7 Does it explore or develop instruments for the production of EBPP? (Yes or no)	15 out of 23	65

Authors' elaboration.

Let us take a further look at the analytical categories presented in table 4. The first question aimed to gauge the normative bias of these T&Ds. The reader should not have been surprised by the finding that the vast majority of papers (91%) advocate that public policy be informed by evidence. The only two exceptions are dissertations presented in a graduate program in the social sciences, which adopt a more neutral or balanced position, centrally embracing some skepticism about the rationalizing expectations of the EBPP movement. This is not to say, of course, that the other papers are uncritical or merely laudatory defenses of EBPPs.

In any case, it is clear that a defense of the principles, goals, and methods of the EBPPM is largely prevalent in these papers, even if this defense is usually tempered by more topical criticism.

The values in the second row of table 4, in their turn, may be seen as unexpected. Our content analysis, also based on the bibliography of these T&Ds, found that only 43% of them are in direct dialogue with the EBPP movement, that is, they address problems, raise questions and/or make references to works and traditions beyond the more specific focus of the thesis itself. It seems possible to understand this data in the following way: if the EBPP movement has gained great capillarity in several countries, its appropriation in the academic universe, at least in Brazil, has often been partial and fragmented (we could also suggest that, perhaps, these works are somehow trapped by their own pragmatism).

As previously mentioned, EBM should be understood as one of the first and most important drivers of the EBPP movement. Worldwide, EBM continues to have a high status and to expand its penetration among health professionals, institutions, and policies, since health is a field of knowledge that, while fostering multidisciplinary approaches, also produces a strong gravitational effect. Thus, our finding that 39% of the T&Ds on health EBPPs are in dialogue *only* with EBM, and not with the broader EBPP movement should not come as a surprise (third row of table 4).

Surprisingly for us, the fourth row of table 4 reveals that only 35% of the T&Ds we analyzed theorize about evidence management or the production of EBPPs. Since these are graduate-level final papers, perhaps our expectation is that they are almost required to mobilize the available theoretical frameworks. However, the vast majority of the papers in our sample seem to have more pragmatic concerns, having refrained from further theorizing about the EBPP movement, which reflects the so-called *utilitarian turn* in science and knowledge production (Solesbury, 2001). This perspective seems to find support in the data of the seventh row of table 4, which show us that 65% of these T&Ds explore or develop specific tools to produce EBPPs. These instruments will be presented below. Before, however, we should explore more carefully the data presented in the fifth and sixth rows.

In general, the EBPP movement acknowledges that the search for improving the quality of government action involves both the need to make the process of policy production more permeable to scientific evidence and, likewise, the acknowledgement of the importance of making the knowledge producers understand the needs and specificities of decision-makers and their context. Therefore, the fifth and sixth questions seek to gauge whether the T&Ds in the sample emphasize the *production* of evidence (83% of them do) and/or emphasize the *use* of evidence or the interaction between public managers and knowledge producers (only 43%

of them do). It is clear, therefore, that most T&Ds focus on the issue of evidence production, neglecting, to a greater or lesser extent, the factors that hinder its effective use in the process of producing public policies. It is worth noting, however, a fact that is not included in table 4: of these 23 T&Ds, six emphasize both the production and the use of evidence, thus covering a much wider range of issues and problems specific to the field.

Finally, a few quick comments are in order about the 65% of T&Ds that explore or develop tools to produce EBPPs (seventh question). More specifically, the fifteen T&Ds that had a major concern on the subject have explored eight types of tools, namely: systematic reviews; randomized controlled experiments; scope reviews; technician training and change in organizational culture; cost analysis; impact evaluation; municipal public policy score; and knowledge translation. It is also worth noting that systematic reviews were the only instrument explored by more than a single thesis or dissertation, having been favored by nine of these fifteen pieces (60%).⁷

4 EBPP-THEMED SCIENTIFIC PAPERS

Given our goal of conducting as exhaustive a survey as possible, the survey of the EBPP-themed papers that we present in this section was done by searching SciELO Brazil, Google Scholar, and the bibliographies of the papers found. In appendix D, the methodology used is presented in all its details. These searches resulted in a list of 41 papers that we consider to be part of the “Brazilian branch” of the EBPP movement (appendix B). Please note, however, that, as in the case of the T&Ds, these 41 papers are linked in different ways to what, in this chapter, we call the EBPP movement in Brazil. If these distinct forms of linkage to the EBPPM are often evident just by reading their titles, this diversity will become more precise when we present a content analysis of these papers, along the lines of the analysis of the T&Ds. Before that, however, we must analyze their dates of publication and the journals in which they were published.

Table 5 shows the year of publication of the 41 papers we found. Although their spread in time is greater than that of the T&Ds, it is clear that, as we saw in the case of T&Ds, most of these papers were published very recently, i.e., in the second half of the 2010s. Thus, the data presented in tables 1 and 5 allow us to state that, from the analytical or academic point of view, the rooting of the EBPP movement in Brazil is recent, fragile and late. Recent, because most of the T&Ds and papers came to light in the second half of the last decade. Fragile, because their number can be considered quite small (additional data, which will be presented and discussed later, seem to corroborate this fragility).

7. For an overview, although not exhaustive, of the EBPPM tools or its methods and techniques, see Faria (2022).

And late, because the movement has been gaining momentum since the 1990s (Faria, 2022).

Following the example of what we found in our depiction of the Brazilian T&Ds that can be thought of as somehow linked to the EBPPM, in the case of papers, most of them were published in journals of the broad field of health sciences. However, differently from what was exposed in table 3, the papers of the “Brazilian branch” of EBPPM are distributed a bit more evenly among the areas of knowledge as table 6 points out.

Please note that, in the case of the papers, the applied social sciences were almost as important as the health sciences.

TABLE 5
Year of publication of the EBPP-themed papers (2001-2021)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
0	0	0	4	0	0	2	0	0	0	2
2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
2	1	0	5	3	3	4	7	7	1	41

Authors' elaboration.

TABLE 6
Area of knowledge of Brazilian journals in which EBPP-themed papers were published

Area of knowledge	Number of papers	Subareas
Biological sciences	2	Biodiversity, genetics
Health sciences	17	Public health, collective health, genetics, nursing
Applied social sciences	16	Public management, business management, agriculture and society, economics, tourism, education, information science
Human sciences	5	Sociology, philosophy, public policy
Interdisciplinary	1	Communications, health, education
Total	41	-

Authors' elaboration.

These 41 papers were written by 108 authors and published in 25 different journals, from the five areas of knowledge presented in table 6. These data show that, also in Brazil, the EBPPM is becoming an increasingly multidisciplinary movement.

It is worth noting that almost 15% of the authors of the papers under analysis here, or sixteen of them, are foreigners. In most cases, the publications of these foreign authors were made in partnership with Brazilians, a fact that reveals some of the ways in which the EBPPM, strongly trans-nationalized (Faria, 2022), is gaining capillarity in the country (only three of the papers are authored exclusively by foreigners).

Observing the frequency with which certain journals and authors appeared in our survey allows us to advance a little further in our characterization of the EBPPM in Brazil. If the data that we present below do not reveal any concentration that seems abnormal or capable of suggesting that, in the country, the EBPPM is concentrated in a few journals or authors, these data certainly show us that some of them have greater centrality.

Regarding the journals, seventeen out of the 25 that published papers on EBPPs did so only once. Of the others, five published two papers each; one published three (*Revista de Administração Pública*); another published four (*Boletim de Análise Político-Institucional*, three of them in a special issue, whose other papers were not detected by our methodology); and the last one, which published no less than seven papers, spread over six different issues (*Ciência e Saúde Coletiva*).

As far as the authors are concerned, the concentration is lower, but we believe it to be no less important. This is because, of the 108 authors, only five have published more than one article. If three of them are partners in two papers and another wrote two papers alone, another author, Maria José Carneiro, from the Federal Rural University of Rio de Janeiro (UFRRJ), signs alone or in a partnership no less than four of the papers here under evaluation. It is also worth mentioning that this researcher was the supervisor of two of the master's dissertations analyzed in the previous section. It is clear, then, that when the universe of analysis is as restricted as ours, a single researcher can make a significant difference.

However, our analysis of the Brazilian papers linked to the EBPPM would not be complete without an appreciation, albeit generic, of their content. To this end, we employ the same analytical categories that we used in our discussion of T&Ds. Table 7 presents a summary of our content analysis of the 41 papers (in appendix E, these data are presented in a disaggregated manner).

TABLE 7
Synthesis of the content analysis of the EBPP-themed papers published in Brazil

Analytical categories	Number of yes	Frequency (%)
1 Does it advocate that public policies should be informed by evidence? (Yes or not very clear)	26 out of 41	63
2 Does it promote direct dialogue with the EBPP movement? (Yes or no)	23 out of 41	56
3 Health papers that dialogue only with EBM	7 out of 21	33
4 Does it theorize about evidence management or EBPP production? (Yes or no)	33 out of 41	80
5 Does it emphasize evidence production? (Yes or no)	27 out of 41	66
6 Does it emphasize the use of evidence or the interaction between public managers and knowledge producers? (Yes or no)	28 out of 41	68
7 Does it explore or develop tools for the production of EBPP? (Yes or no)	21 out of 41	51

Authors' elaboration.

Table 7 shows us, in its first row, that, as we have seen in T&Ds, most papers (63%) clearly advocate that public policy be informed by evidence. This finding reveals that, on its academic side, the EBPPM's "Brazilian branch" has a strong normative bias, which is more accentuated in the case of T&Ds (91%, according to table 4). Since the movement is assumed to be propositional, such a finding should not be surprising.

The second row of table 7 shows us that, contrary to what we saw in the case of T&Ds, a small majority (56%) of papers are in direct dialogue with EBPPM (43% of T&Ds do so). Concerning health papers that dialogue only with EBM (third line), only 33% of them do so. Thus, most of the health papers dialogue more broadly with EBPPM.

In the previous section, we saw that only 35% of the T&Ds theorize about evidence management or the production of EBPPs. This figure rises sharply in the case of papers, reaching 80% (fourth row). This difference may be explained by the fact that, usually, authors of published papers are more mature and experienced than graduate students.

The fifth and sixth rows, on their turn, show us that a higher percentage of papers emphasize the production of evidence (66%) and the use of evidence or the interaction between public managers and knowledge producers (68%). Thus, if most T&Ds, as we have seen, focus on the issue of the production of evidence, neglecting, to a greater or lesser extent, the factors that hinder its effective use in the process of public policy production, the same does not seem to happen with the papers.

Finally, it should be noted that, as we had seen, but with greater intensity in the case of T&Ds (65%), most papers (51%) explore or develop tools to produce EBPPs. If, as we saw, the T&Ds emphasized eight different types of tools, the papers, which represent a much larger amount, emphasize eleven types of tools, namely: evaluation of public policies; systematic review; technological horizon monitoring; machine learning; knowledge translation; deliberative dialogues; drafting of strategic products lists; behavioral evidence; on-line decentralization project; cause and effect map; and health impact assessment. It is also worth noting that, as we have found in the case of the T&Ds, systematic reviews were widely privileged in the papers, since, out of the 21 that more carefully explored tools to produce EBPPs, almost half of them (ten) emphasized systematic reviews.

Having discussed so far two of the academic strands of EBPPM in Brazil, the chapter will now deal with the institutionalization of the movement in the country and what has been done in other spheres to promote it in these latitudes. Before doing so, however, we must point out an important gap in our survey: given the inexistence (or our lack of knowledge) of a search engine capable of making the finding and

recording work more possible, nothing will be said here about the ways in which the movement has been disseminated in the country through the availability of specific courses in Brazilian universities.

5 INSTITUTIONS, EVENTS AND PROMOTION OF THE EBPPM'S "BRAZILIAN BRANCH"

At the international level, the EBPP movement has mobilized multiple actors, individual and institutional, governmental and non-governmental, from the academia and the private sector, local, national and international (Faria, 2022). In this section, we will deal exclusively with the institutional actors that have acted to promote the movement in Brazil, but one should also remember the central role certain individuals, usually referred to as *public policy entrepreneurs*, play in the innovation, negotiation, and more general process of producing public policies and also, for sure, in EBPPM (Cairney, 2018).

We understand that any survey of the EBPP movement, even in a single country, as the one intended here, will hardly be exhaustive, due to the great capillarity of its processes and the multiplicity of its actors and agents. What is intended here, then, is simply to present a sample of the complex institutional mosaic that supports and promotes the EBPPM in Brazil, a sample that is affected by the limitations inherent to any internet search. The methodology used in this survey is also presented below (appendix D), where we also discuss, in more detail, its inevitable limitations.

In our research, we detected 32 institutions, events, or promotions that we associate with the "Brazilian branch" of EBPPM, which are also listed below (appendix C). Again, it is clear that these initiatives are quite recent, as shown in table 8.

TABLE 8

Year of the foundation of institutions or happening of events and promotions related to EBPP in Brazil

2007	2008	-	2013	2016	-	2018	2019	2020	2021	Total
1	1	-	1	2	-	6	7	13	1	32

Authors' elaboration.

We found the number to be 32 surprising since we expected to find a much more flourishing universe, even considering the search method's limitations. Nevertheless, these 32 institutions, events and promotions found, if fewer in number than expected, reveal, nonetheless, that also in Brazil the movement is gaining capillarity from the work, often articulated, of a remarkable diversity of actors. Of these 32, half (sixteen) are institutions, and the other half are events or promotions. Of the 32, twelve are governmental; eleven are non-governmental; and nine are institutions, events, or promotions of universities in the country. Although our

decision to consider universities as a separate category may be controversial, we believe that this distinction is important for a variety of reasons, such as the very nature of the movement and the need to assess, also by this means, the penetration of the EBPPM in Brazilian universities.

When we consider how the EBPPM institutions, events and promotions are distributed among the different sectors in the country, which is also presented in detail in the list in appendix C, we come up with the following result: five institutions and seven events and promotions were found in the governmental sphere; eight institutions and three events and promotions were found in the non-governmental sphere; and three institutions and six events and promotions were found in the universities.

Let us take a closer look at the governmental actions we associate with the development of the EBPPM in Brazil. Before doing so, however, we must reiterate that much of what the State does that could be linked to the movement or the promotion of its cause, such as all the activity of public policy assessment and its institutionalization in governments, ended up not being detected, since the collection method we used favors initiatives that, to some extent, are understood and disseminated as evidence production or consumption. In other words, the methodology employed restricts, in proportions that we are unable to measure, the survey herein presented and discussed.

This caveat aside, we believe that the findings are important nonetheless. First, we should note that out of the twelve governmental initiatives found, ten refer to the federal government (only two events from subnational governments were found: one course offered by the School of Government of the Federal District and another by the School of Government of the Public Prosecutor's Office of Rio de Janeiro). Please note that our search on the official websites of all 26 Brazilian states and the Federal District did not find any initiatives. This is not to say, of course, that there are no other initiatives by Brazilian subnational governments to promote EBPPs. The Secretariat of Education of the State of São Paulo, for example, created the Office of Evidence in 2020. Still, it seems clear that the EBPPM has not yet gained greater capillarity or visibility in Brazilian subnational governments, which can perhaps be thought of as a result of both the smaller capacities of subnational governments, as well as the flagrant incipency of the movement in the country. As already mentioned, of the twelve governmental initiatives, five are institutions linked to the federal government (a council, an advisory body, two electronic platforms and a professional master's graduate program created by the National School of Public Administration – Enap) and seven are events or promotions (courses, seminars, workshops and a call for tenders to contract research, the latter also from Enap). Finally, it is worth noting that of these twelve government initiatives, four

are linked to Enap, which makes it the main promoter of the EBPPM in Brazil, at least according to our methodology. Enap is also a partner of the Getulio Vargas Foundation (FGV) and the Mobility and Social Development Institute (IMDS) in the creation of the Evidência Award.

As far as non-governmental initiatives are concerned, there is an interesting inversion in the frequencies identified, since the number of institutions found was much higher than the number of events and promotions (8 x 3). If the greater pliability and autonomy of the non-governmental sector perhaps explains the greater number of institutions, the small number of events and promotions found (three) seems to us much harder to explain. We found a great diversity of non-governmental institutions in our research, including three think tanks, a non-governmental organization (NGO), a non-partisan association, a platform, a startup, and a network, the latter linked to an international organization, the WHO. It is worth pointing out, exemplifying once again the limitations of the methodology employed, that any quick search on YouTube will also show that several other Brazilian non-governmental institutions are involved with EBPPM, perhaps the best known of them being Instituto Unibanco and Instituto Ayrton Senna. This research will also show, to a lesser extent, the involvement of other governmental institutions and universities.

Finally, as far as universities are concerned, if the six events and promotions detected are of the expected kind (seminars and debates, a course, and an extension project), the three institutions are the following: the Evidência Award, established by FGV and IMDS; the Social Intelligence Center, created by PUC-Minas in partnership with ChildFund Brasil; and the Covid-19 BR Observatory, which advertises itself as an “independent initiative of 85 researchers associated with 28 institutions”,⁸ most of them universities. It is also worth noting that in this third category, the university arena, FGV stood out, responsible for one-third of the items in the category (three out of nine).

Having thus completed our journey, we will summarize our findings and present below a general panorama of the EBPPM in Brazil.

6 FINAL CONSIDERATIONS

The most general conclusion of our survey is that the rooting of the EBPP movement in Brazil is recent, fragile and late. It is recent because most of the T&Ds, papers, institutions, and associated events and promotions date from the second half of the 2010s and the year 2020. Fragile, because its number is limited, even though, also in the country, the EBPPM mobilizes actors and institutions of

8. Available at: <https://covid19br.github.io/>. Accessed on: March 10, 2021.

great prestige. It can be considered late when we remember that the movement was launched in the 1990s. The data we have presented and discussed allow us to state that, also in Brazil, the EBPPM is notably multidisciplinary, even if the contributions of the health sciences and applied social sciences prevail, as seems natural to us. Nevertheless, our questioning about the connections established in the T&Ds and papers showed that, if the EBPPM has gained capillarity in the Brazilian academic universe, it usually dialogues in a restricted manner with the entire analytical and propositional wealth of the movement.

It is certainly not surprising to find that a significant part of the academic studies that we understand as composing the “Brazilian branch” of the EBPPM has more pragmatic concerns, having dispensed with further theorizing on the production of EBPPs (65% of T&Ds and 20% of the papers). In our view, if the bias was expected, it also reflects a more general phenomenon: the so-called *utilitarian turn* in science and knowledge production. Concerning the most frequently explored tools for the promotion of EBPPs, systematic reviews gained prominence at the academic level, as we have seen. We also observed that, if most of the T&Ds favor the *production* of evidence, neglecting to some extent the factors that hinder its effective *use* in the process of producing public policies, this does not seem to happen with the papers.

Our analysis of the institutions, events, and promotions associated with the EBPPM in the country, albeit restricted to a universe that we consider modest, revealed that the movement has also gained some capillarity in this area, although only in recent years. We also saw that, in its governmental aspect, the initiatives, of various kinds, are concentrated at the federal level, with few initiatives from subnational governments. At the federal level, the work done by Enap, which we can perhaps consider the main promoter of the EBPPM in the country, at least at the governmental level, has gained prominence. Our survey also showed a great diversity of non-governmental institutions working in this field, often in an articulated manner. In the university arena, FGV seems to stand out, a finding that is not surprising when we take into account all the efforts made by the institution to act and be recognized as a think tank.

Whether the EBPPM movement is considered an important addition to the welcome efforts for the modernization of the Brazilian State, whether it is understood as an indispensable tool for maximizing the effectiveness and efficiency of Brazilian public policies, whether it is interpreted as an expression of the search for depoliticizing government action, as an instrument for promoting neoliberalism or as just another brand name, the fact is that the survey undertaken here seems to indicate that the EBPPM has been rapidly implanting itself in the country.

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APPENDIX A

LIST OF THE BRAZILIAN EVIDENCE-BASED PUBLIC POLICY-THEMED THESES AND DISSERTATIONS

AGLIO, F. J. de C. **Ciência ou senso comum?** O uso do conhecimento científico no discurso político da revisão do Código Florestal Brasileiro. 2012. Thesis (Master's Degree) – Universidade Federal Rural do Rio de Janeiro, Rio de Janeiro, 2012.

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ALVARENGA, A. C. **O Pronaf na produção bibliográfica:** uma revisão sistemática de artigos publicados de 2007 a 2014. 2015. Thesis (Master's Degree) – Universidade Federal Rural do Rio de Janeiro, Rio de Janeiro, 2015.

CACAPIETRA, R. dos S. **Pequenos incentivos, grandes mudanças:** economia comportamental aplicada a políticas públicas. 2019. Thesis (Master's Degree) – Centro Universitário do Estado do Pará, Belém, 2019.

CAYETANO, M. H. **Panorama do recrutamento, contratação e remuneração dos recursos humanos em odontologia no serviço público.** 2019. Dissertation (Doctoral Degree) – Universidade de São Paulo, São Paulo, 2019.

FARIAS, A. L. S. **Percepções de gestores do Sistema Único de Saúde sobre o uso de evidências no processo decisório de gestão de políticas de saúde.** 2017. Thesis (Master's Degree) – Instituto Sírio-Libanês de Ensino e Pesquisa, São Paulo, 2017.

GAIOTTO, E. M. G. **Elaboração de uma síntese de evidências para políticas de saúde:** reduzindo a mortalidade perinatal no município de Porto Feliz-SP. 2016. Thesis (Master's Degree) – Coordenadoria de Recursos Humanos da Secretaria de Estado da Saúde de São Paulo, São Paulo, 2016.

GALLASSI, A. D. **Análise do custo social do uso do álcool no Brasil no ano de 2007.** 2010. Dissertation (Doctoral Degree) – Universidade de São Paulo, São Paulo, 2010.

HOFFMANN, J. F. **Modelagem estatística para avaliação de impacto de políticas públicas de saúde no contexto de quase-experimentos longitudinais.** 2019. Dissertation (Doctoral Degree) – Universidade Federal do Rio Grande do Sul, Porto Alegre, 2019.

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MASTROROCCO FILHO, D. A. M. **Políticas farmacêuticas informadas por evidências.** 2015. Thesis (Master's Degree) – Universidade de Sorocaba, Sorocaba, 2015.

MENEGOTTO, G. **Ambiente obesogênico escolar e obesidade em adolescentes brasileiros: teoria e evidências.** 2019. Thesis (Master's Degree) – Universidade Federal do Rio Grande do Sul, Porto Alegre, 2019.

MOREIRA, L. G. **Da política sobre drogas até a gestão pública baseada em evidências: uma análise qualitativa na capital do Brasil.** 2015. Thesis (Master's Degree) – Hospital de Clínicas de Porto Alegre, Porto Alegre, 2015.

ONOUÉ, E. Y. **Determinantes econômicos e sociodemográficos da demanda por importações de produtos farmacêuticos: análise para países em desenvolvimento.** 2019. Thesis (Master's Degree) – Universidade Estadual de Maringá, Maringá, 2019.

RAMOS, M. C. **O processo de regionalização via Coap informado por evidências: estamos no caminho certo?** 2017. Thesis (Master's Degree) – Universidade de Brasília, Brasília, 2017.

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APPENDIX B

LIST OF THE EVIDENCE-BASED PUBLIC POLICY-THEMED PAPERS PUBLISHED IN BRAZIL

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APPENDIX C

LIST OF INSTITUTIONS, EVENTS AND PROMOTIONS RELATED TO THE BRAZILIAN EVIDENCE-BASED PUBLIC POLICY MOVEMENT (EBPP)

C.1 TWELVE GOVERNMENT INITIATIVES

C.1.1 Government institutions

- 1) Council for Monitoring and Assessment of Public Policies (CMAP), established in December 2016 with the purpose of, alongside the Office of the Comptroller General (CGU), the Office of the Chief of Staff and ministries, assessing public policies implemented in Brazil. Available at: <https://bit.ly/3o2qdAD>. Accessed on: Sept. 21, 2021.
- 2) +Brasil platform, launched by the federal government in 2019 and managed by the Federal Data Processing Service (Serpro) under the scope of enabling public policies based on technological evidence. Available at: <https://www.serpro.gov.br/menu/noticias/noticias-2019/plataforma-brasil-viabiliza-politicas-publicas-baseadas-em-evidencias-tecnologicas> and <https://bit.ly/2W1ekiK>. Accessed on: Sept. 21, 2021.
- 3) Strategic Advisory Board for Evidence of the Ministry of Education (MEC), created in July 2018 with the mission of promoting the appropriate use of evidence and fostering innovation culture to improve the quality of Brazilian educational policies. Available at: <http://portal.mec.gov.br/publicacoes-para-professores/30000-uncategorised/70101-assessoria-estrategica-de-evidencias>. Accessed on: Sept. 21, 2021.
- 4) National School of Public Administration (Enap) Professional Master's Program in Public Policy Assessment and Monitoring. Available at: <https://www.enap.gov.br/pt/cursos/pos-graduacao/mestrado/mestrado-profissional-em-avaliacao-e-monitoramento-de-politicas-publicas>. Accessed on: Sept. 21, 2021.
- 5) GovData platform: intelligence platform for evidence-based public policy enforcement. Available at: <https://loja.serpro.gov.br/jaclientegovdata>. Accessed on: Sept. 21, 2021.

C.1.2 Government events and promotions

- 1) Webinar held by the Office of the Chief of Staff of the federal government on December 4, 2020, as part of the Cycle of Webinars on the Center for Government and Peer Review of the Organization for Economic Cooperation and Development (OECD), which discussed the importance of evidence-based public policy. Available at: <https://www.gov.br/casacivil/pt-br/assuntos/noticias/2020/dezembro/casa-civil-discute-em-webinario-a-importancia-de-politicas-publicas-baseadas-em-evidencias>. Accessed on: Sept. 21, 2021.
- 2) Short course promoted by Enap on the subject, which took place in March 2019. Available at: <https://suap.enap.gov.br/vitrine/curso/189/>. Accessed on: Sept. 21, 2021.
- 3) The School of Government of the Federal District has in its program for the triennium 2020-2022 an evidence-based social policies-themed course. Available at: <https://bit.ly/3kxEAeg>. Accessed on: Sept. 21, 2021.
- 4) Evidence-based public policy workshop promoted by the Chamber of Social Rights and General Administrative Act Enforcement of the Federal Public Prosecutor's Office, addressing the subject *Logic model for public policies: an instrument for evidence-based public policy assessment*, held on November 18, 2019. Available at: <https://www.mpf.mp.br/pgr/noticias-pgr/pgr-participa-de-abertura-da-oficina-de-politicas-baseadas-em-evidencias>. Accessed on: Sept. 21, 2021.
- 5) Training Course at the Roberto Bernardes Barroso Institute of Education (IERRB) – School of Government of the Prosecution Office of Rio de Janeiro on evidence-based public policies, held on August 26 and 28 and September 2 and 4, 2020. Available at: <https://bit.ly/3u4GBll>. Accessed on: Sept. 21, 2021.
- 6) Enap public notice to award research grants under the Brazil Chairs Program contemplating, among the subjects, the communication of evidence in public policies, published in the Official Gazette of the Union (DOU) on June 11, 2019. Available at: <https://www.enap.gov.br/pt/acontece/noticias/processo-seletivo-programa-catedras-brasil>. Accessed on: Sept. 21, 2021.
- 7) Public governance and evidence-based policies course, promoted by Enap on October 19, 2018, with the participation of authorities associated with the federal government. Available at: <https://bit.ly/3ELmJZ4>. Accessed on: Sept. 21, 2021.

C.2 ELEVEN NON-GOVERNMENTAL INITIATIVES

C.2.1 Non-governmental institutions

- 1) Impulso Gov – a think tank created in 2019 with the intention of, based on open data on public health in Brazil, supporting the development of solutions and decision-making of state and municipal governments regarding the management of the Unified Health System (SUS). Available at: <https://www.impulsogov.org/>. Accessed on: Sept. 21, 2021.
- 2) Questão de Ciência Institute – a think tank created in 2018 to promote EBPPs through scientific research, science journalism, and advocacy for the use of scientific data. On its website, there are opinion papers and a scientific journal. Available at: <https://iqc.org.br/>. Accessed on: Sept. 21, 2021.
- 3) Open Knowledge Brasil – a civil society organization, the Brazilian chapter of Open Knowledge International. Established in Brazil in 2013, it develops civic tools, projects, analyses of public policies, and data journalism with the purpose of fostering transparency between government and society. Available at: <https://ok.org.br/>. Accessed on: Sept. 21, 2021.
- 4) RIO+ Initiative – a non-partisan association that aims to contribute to the socio-economic recovery of Rio de Janeiro by analyzing data, encouraging local research, fostering the emergence of talent, and bringing evidence to the political environment. It organized, in June 2020, the 1st SeminárioRIO – Evidence-Based Public Policy. Available at: <https://riomais.org/>. Accessed on: Sept. 21, 2021.
- 5) Center for Public Leadership (CLP) – a think tank and course promoter in the area of public policy and management with courses on the subject of EBPPs. Available at: <https://www.clp.org.br/quem-somos/>; <https://www.clp.org.br/curso/mlg/>; and <https://conteudo.clp.org.br/guia-100-dias-de-governo>. Accessed on: Sept. 21, 2021.
- 6) Nexo Políticas Públicas – a scientific-journalistic platform linked to the media outlet Nexo Jornal to dialogue with various audiences, from the academic to the political, and the population in general, since evidence plays a key role in the development, implementation and assessment of public policies and is a direct result of academic research. Available at: <https://pp.nexojornal.com.br/>. Accessed on: Sept. 21, 2021.
- 7) Gove Digital – a startup, self-described as a govtech, that works to transform the way city managers make their daily decisions and also to increase the efficiency of public finance. Available at: <https://www.gove.digital/>. Accessed on: Sept. 21, 2021.

- 8) Evidence Informed Policy Network Brasil (EVIPNet Brasil) is the Brazilian branch of a network promoted by the World Health Organization (WHO) to promote the systematic use of scientific research evidence in the development of public health policies. Available at: <https://www.sbmfc.org.br/noticias/conheca-o-evipnet-brasil/>. Accessed on: Sept. 21, 2021.

C.2.2 Non-governmental events and promotions

- 1) Transparency covid-19 – an Open Knowledge Brasil initiative that aims at assessing the quality of the data and information related to the novel coronavirus pandemic published by the federal government and the Brazilian states on their official websites. Available at: <https://transparenciacovid19.ok.org.br/>. Accessed on: Sept. 21, 2021.
- 2) Third International Congress on Control and Public Policy, hosted by the Rui Barbosa Institute, was held in Belo Horizonte in 2018, covering the topic of EBPPs. Available at: <https://bit.ly/39xbqWk>. Accessed on: Sept. 21, 2021.
- 3) Evidence-based public policy course, organized by A Ponte, a network of women with academic and practical expertise in government that seeks to provide information to improve the design of public policies in Brazil. Available at: <https://bit.ly/3hY6ezc>. Accessed on: Sept. 21, 2021.

C.3 NINE INITIATIVES FROM UNIVERSITIES

C.3.1 Institutions created by universities

- 1) Covid-19 BR Observatory – an independent initiative of 85 researchers associated with 28 institutions with the goal of tabulating and disseminating information on covid-19 based on scientific methodology to inform the authorities responsible for public policies and the population in general. Available at: <https://covid19br.github.io/>. Accessed on: Sept. 21, 2021.
- 2) Evidência Award – created in 2020 by Fundação Getulio Vargas (FGV), Enap and Instituto Mobilidade e Desenvolvimento Social (IMDS) to acknowledge and promote the interaction between science and public policy. Available at: <https://eventos.fgv.br/premioevidencia>. Accessed on: Sept. 21, 2021.
- 3) Center for Social Intelligence (NIS) – an initiative of the Pontifical Catholic University of Minas Gerais (PUC-Minas) and ChildFund Brasil to create a research center to produce scientific indicators for decision-making by public managers. Available at: <http://nis.org.br/>. Accessed on: Sept. 21, 2021.

C.3.2 Events and promotions by universities

- 1) Graduate program seminar at the Federal University of Espírito Santo (Ufes) on EBPPs held online in June 2020. Available at: <https://prppg.ufes.br/conteudo/evento-online-politicas-publicas-baseadas-em-evidencias-relevancia-da-integracao> and https://prppg.ufes.br/sites/prppg.ufes.br/files/field/anexo/seminario_-_programacao_completa.pdf#overlay-context=user. Accessed on: Sept. 21, 2021.
- 2) Extension project, with the selection of fellows, implemented by the School of Law and State Sciences at the Federal University of Minas Gerais (UFMG), called Evidence-Based Public Policy, held in May 2018. Available at: <https://bit.ly/3zzWIbu>. Accessed on: Sept. 21, 2021.
- 3) Center for Public Sector Policy and Economics (CE-PESP/FGV) online event on public policies to fight covid-19, held on June 4, 2020. Available at: <https://www.cepesp.io/pesquisadores-discutem-como-transformar-combate-ao-covid-em-legado-para-as-politicas-publicas/>. Accessed on: Sept. 21, 2021.
- 4) Public policy courses: Assessment and Evidence I and II, offered on July 15, 2020, at the graduate program in economics of the School of Economics, Business and Accounting of the University of São Paulo (FEA/USP), on a remote basis, for the external audience to attend in the condition of special students. Available at: <http://fea.usp.br/oferta-de-cursos-online-da-pos-graduacao-em-economia-fea-usp-para-publico-externo>. Accessed on: Sept. 21, 2021.
- 5) First seminar on evidence-based public policies in the Brazilian Criminal Justice System, held in November 2020 by the Federal University of Ceará (UFC) and the Konrad Adenauer Foundation. Available at: <https://bit.ly/3kzHBul>. Accessed on: Sept. 21, 2021.
- 6) FGV Webinar – experiences and challenges in the use of evidence in public policies, on April 22, 2021. Available at: https://evento.fgv.br/evidencias_politicaspublicas/. Accessed on: Sept. 21, 2021.

APPENDIX D

METHODOLOGY FOR THE PRODUCTION OF THE SURVEY

D.1 METHODOLOGY FOR THE REVIEW OF EBPP-THEMED BRAZILIAN THESES AND DISSERTATIONS

The search engine of the Catalogue of Theses and Dissertations (CTD) of the Coordination for the Improvement of Higher-Education Personnel (Capes)¹ presents a simple search field to be filled with the desired words, which can, if necessary, be concatenated to longer expressions. To do so, the use of double quotation marks is required. At this first moment, it is not possible to guide the search by specific fields, such as title, author, or keyword, and afterwards, it is possible to refine the search, which can then be performed by the following criteria: type, year, author, advisor, committee, major knowledge area, knowledge area, evaluation area, concentration area, program name, institution, and library.

Searching for many words without proper delimitation by quotation marks usually produces exorbitant results. For example, a search for *políticas públicas baseadas em evidências* (evidence-based public policy) – without quotation marks – yielded 1,137,292 theses or dissertations out of a total of 1,213,947 papers in the Capes database (the searches in the Capes catalogue for this chapter were conducted between March 5 and March 15, 2021).

On the other hand, by delimiting with quotation marks the various sets of words for the search and listing the various ways in which the searched theme may appear in the manuscripts, such as “evidence-based public policies” or “evidence-based policy” and its other variations, the system begins to return a more feasible number for refinement and analysis.

That is why we decided to search for the complete terms in the base by enclosing them in quotation marks so that they could be searched in the content available to be searched. In an attempt to get as many results as possible, we searched for the twenty terms listed below.

- 1) “*Políticas públicas baseadas em evidências*”.
- 2) “*Políticas públicas baseadas em evidência*”.
- 3) “*Política pública baseada em evidências*”.
- 4) “*Política pública baseada em evidência*”.

1. Available at: <https://catalogodeteses.capes.gov.br/catalogo-teses/#/>.

- 5) “*Políticas públicas informadas por evidências*”.
- 6) “*Políticas públicas informadas por evidência*”.
- 7) “*Política pública informada por evidências*”.
- 8) “*Política pública informada por evidência*”.
- 9) “*Gestão pública baseada em evidências*”.
- 10) “Evidence based policy”.
- 11) “*Políticas baseadas em evidências*”.
- 12) “*Políticas baseadas em evidência*”.
- 13) “*Política baseada em evidências*”.
- 14) “*Política baseada em evidência*”.
- 15) “*Políticas informadas por evidências*”.
- 16) “*Política informada por evidências*”.
- 17) “*Políticas informadas por evidência*”.
- 18) “*Política informada por evidência*”.
- 19) “*Gestão pública baseada em evidência*”.
- 20) “Evidence based policies”.
- 21) With our apologies for stating the obvious, it is worth noting that the Capes CTD accounts for the papers available, and not necessarily all those presented in graduate programs (PPGs) in the country. The CTD encompasses the 1987-2019 period, covering all areas of knowledge. The theses and dissertations presented in 2020 and 2021 were not yet registered at the time of our survey, in March 2021. In addition, it is worth adding that there is only expanded information for works presented and cataloged from 2013, which coincides with the year of the first insertion of complete data in the Sucupira Platform, launched in March 2014.

The review thus carried out was able to detect 23 theses and dissertations (appendix A).

D.2 METHODOLOGY FOR THE REVIEW OF EBPP-THEMED PAPERS PUBLISHED IN BRAZIL

To search for papers that address the subject of evidence-based public policies (EB-PPs), we chose to search both the database of an indexer of scientific publications of recognized impact, the Scientific Electronic Library Online (SciELO) Brazil,

as well as Google Scholar, in order to obtain results from different sources. The search was also carried out in the bibliographies of the papers found.

It is important to stress that, even though the SciELO Brazil catalogue of papers is quite extensive and Google Scholar indexes all the material publicly available on the internet, a search in their databases will not yield the answer to all the material produced on the theme, but all the material indexed by their respective search engines.

As far as the search itself is concerned, the SciELO Brazil database² allows the search for both single papers and complete journals catalogued in its databases. In the case of papers, there are three ways of searching: by author, by subject, and by words contained in the various indexed fields of such papers.

In the case of the last two categories, the search by subject is somewhat more restricted than the search by words, since there is a finite limit of subjects already catalogued in the database. A brief search for these subjects reveals that there are several ways in which the topic of EBPPs is already inserted, even indicating a set of words that can also be used in the broader search available in the environment.

Thus, the subjects already indexed in the base are the following:

- *política basada en la evidencia;*
- *política baseada em evidências;*
- *política baseada na ciência;*
- *política informada por evidências;*
- *política informada por la evidencia;*
- *política pública baseada em evidência;*
- *políticas baseadas em evidências;*
- *políticas informadas por evidências;*
- *interface ciência/políticas públicas;*
- evidence-based policies;
- evidence-based policy;
- evidence-based public policy;
- evidence-informed policy;
- evidence-informed policy making; and
- science-based policy.

2. Available at: <https://www.scielo.br/>.

A closer look at these already catalogued topics shows that several papers are indexed in more than one category, since the subject field is composed of the keywords defined in the papers, and these are often present in several languages, highlighting the reason for the existence of similar terms in different languages, such as *politica basada en la evidencia* and *evidence-based policy*, whose search leads to the same papers.

In addition to the topics already indexed, some papers address the subject, but are registered under other topics. To find them, we used the broader search tool, which searches for specific words or sets of words in the following relevant fields: title, author, subject and abstract. With a broader return of results, we filtered them according to the information found in the abstract.

For this search, the following sets of words were selected: i) *politica(s) pública(s) + evidencia(s)*; ii) policymaking + evidence(s); and iii) public policy (ies) + evidence(s).

As for Google Scholar, its search engine works in a similar way to the Google search engine, working diffusely to find in all the indexed material all the words typed, giving more relevance to those that contain all the words, especially in the chosen order, and allowing for forcing specific associations of words with the use of double quotes and search operators, such as + and –, to indicate the compulsory presence or absence of certain words.

In this case, as the scope of the indexed material is global and it is impossible to specify that only results from a particular country are desired, being able to choose whether we want pages in any language or only in a specific language, we chose to select productions only in Portuguese and containing the words *politics*, *public* and *evidence*, both in the singular and plural, and specifying that the important sets are “public policy” + “evidence”, ordered by relevance.

Such an arrangement was defined as the set “evidence-based public policies”, being quite restrictive, tends to result in a very small number of results, while the defined set returns thousands of them, and the ordering by relevance helps to filter, in the initial pages of the search, eventual false positives, such as slide shows and text files with no defined origin, which also end up being indexed by the base.

It is important to point out that, as with any Google search, the results tend to vary over time and according to the number of accesses to certain pages to the detriment of others, thus changing the order in which the papers appear in the searches since the search itself and access to the selected papers already changes the degree of relevance they have for subsequent searches. The survey thus carried out was able to detect 41 papers (appendix B).

D.3 METHODOLOGY FOR RESEARCHING EBPP-RELATED INSTITUTIONS, EVENTS AND PROMOTIONS IN BRAZIL

To search for events (courses, seminars, congresses, colloquia etc.) and institutions, governmental or not, both Google, with its diffuse search process, and the main sites of the public administration of all 26 states of the federation and the Federal District were used.

In the first case, the search consisted of the set of words “evidence-based public policies” delimited by quotation marks, followed by other terms, namely: *organization*, *congress*, *seminar*, *colloquium*, *lecture* and *event*, in such a way that the search engine would give relevance to all the words searched, with greater emphasis on those that are exactly the way and in the order they were written, and then bringing approximations that are considered relevant by the algorithms.

In the second case, the search engines of the sites of the 26 states and the Federal District were consulted for the words *assessment* and *evidence*, together or separately, in the expectation that relevant results would be gathered about that state, its organizational chart, programs etc.

It should be noted that Google always shows approximate results and, many times, already conditioned to the searcher, with its algorithms using information such as previous searches, other sites accessed, and geographic location, among others, to determine which results may be more or less relevant to those performing the search. Even when you open a private or incognito browser window and perform this search there, in an attempt to minimize or limit the effects of previous searches and accesses, these effects continue to be noticed.

Furthermore, it is also necessary to understand that the search engine indexing process does not, at first, distinguish between a news item on an online portal, a call for papers in an academic journal, or even information contained in slide or text files uploaded to cloud services and shared publicly on the web, identifying them all as possible results of the search performed. It is also transparent to the searcher whether these results are still available or have already been discontinued from their original locations, thereby generating phantom links to websites that were once online but no longer exist.

Finally, it is also important to understand that search engine result prioritization processes give greater relevance to material published or modified closer to the date of the search, going backwards in time as more results are requested until they lose relevance or return more broken links than positive results.

Conversely, the search engines of the various sites of the states have a finite and comparatively smaller set of results to return but face a lack of standardization among the units, as well as a lack of indication of which types of information are

catalogued for searching, such as laws, events, organizational charts, news etc. Thus, they may bring inconsistent or different results among the various entities of the federation.

Therefore, after the search conducted between March 15 and March 20, 2021, and the due filtering of the results to highlight those about which it was possible to obtain more details, we reached a total of 32 items (appendix C).

APPENDIX E

THESES, DISSERTATIONS AND PAPERS' CONTENT ANALYSIS DETAILING

TABLE E.1
Detailed content analysis of the evidence-based public policies (EBPP)-themed theses and dissertations at the Coordination for the Improvement of Higher-Education Personnel (Capes) catalogue

Analytical categories	Thesis or dissertation No.																		Total					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		19	20	21	22	23
1 Does it advocate that public policies should be informed by evidence? (Yes or not clear)	NC	NC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	21 Yes
2 Does it dialogue directly with the EBPPM? (Yes or no)	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes	10 Yes
3 Does it dialogue only with evidence-based medicine? (Does not apply, yes or no)	NA	NA	NA	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No	No	Yes	NA	Yes	Yes	NA	No	No	No	7 out of 18
4 Does it theorize about evidence management or EBPP production? (Yes or no)	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	No	No	No	No	No	Yes	No	No	No	Yes	No	No	No	8 Yes
5 Does it emphasize the production of evidence? (Yes or no)	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	19 Yes
6 Does it emphasize the use of evidence or the interaction between public managers and knowledge producers? (Yes or no)	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	Yes	No	Yes	No	Yes	No	No	Yes	No	Yes	Yes	Yes	10 Yes
7 Does it explore or develops tools for the production of EBPPs? (Yes or no)	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes	No	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	15 Yes
8 Type of tool emphasized or defended	NA	a	b	c	d	a	a	e	f	NA	a	NA	NA	g	NA	a	a	NA	a	a	a	h	NA	-

Authors' elaboration.

Obs.: 1. NC = not clear; NA = does not apply.

2. Row 1 index: 8; a = systematic review; b = controlled random experiment; c = scope review; d = technician training and change in the organizational culture; e = cost analysis; f = impact assessment; g = municipal public policy score; and h = knowledge translation.

Note: ¹ Evidence-based public policy movement.

TABLE E.2
Enlarged content analysis of EBPP-themed papers published in Brazil

Analytical categories	Paper No.																							Subtotal
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 Does it advocate that public policies should be informed by evidence? (Yes or not clear)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NC	Yes	Yes	NC	Yes	NC	NC	NC	NC	NC	Yes	NC	NC	NC	NC	NC	-
2 Does it dialogue directly with the EBPPM? (Yes or no)	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	Yes	Yes	Yes	No	-
3 Does it dialogue only with evidence-based medicine? (Does not apply, yes or no)	Yes	No	Yes	NA	NA	NA	NA	No	NA	Yes	NA	No	No	NA	NA	No	Yes	No	Yes	No	NA	NA	NA	-
4 Does it theorize about evidence management or EBPP production? (Yes or no)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	-
5 Does it emphasize the production of evidence? (Yes or no)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	-
6 Does it emphasize the use of evidence or the interaction between public managers and knowledge producers? (Yes or no)	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes	No	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	No	-
7 Does it explore or develops tools for the production of EBPPs? (Yes or no)	Yes	No	No	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No	No	No	No	No	-
8 Type of tool emphasized or defended	a	NA	NA	b	b	NA	NA	b	NA	b	b	b	b	b	NA	NA	NA	c	NA	NA	NA	NA	NA	-

(Continues)

(Continued)

Analytical categories	Paper No.														Total				
	24	25	26	27	28	29	30	31	32	33	34	35	36	37		38	39	40	41
1 Does it advocate that public policies should be informed by evidence? (Yes or not clear)	Yes	Yes	Yes	Yes	NC	NC	Yes	NC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	26
2 Does it dialogue directly with the EBPPM? (Yes or no)	No	No	No	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No	No	Yes	No	Yes	Yes	23
3 Does it dialogue only with evidence-based medicine? (Does not apply, yes or no)	NA	No	Yes	No	NA	NA	No	NA	NA	Yes	NA	No	NA	NA	No	No	NA	No	7 Yes; 14 No
4 Does it theorize about evidence management or EBPP production? (Yes or no)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	33
5 Does it emphasize the production of evidence? (Yes or no)	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	27
6 Does it emphasize the use of evidence or the interaction between public managers and knowledge producers? (Yes or no)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	28
7 Does it explore or develops tools for the production of EBPPs? (Yes or no)	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	21
8 Type of tool emphasized or defended	d	e	NA	NA	NA	NA	b+f	a	a	g	h	i	NA	a+j	NA	k	b	b	-

Authors' elaboration.

Obs.: 1. NC = not clear; NA = does not apply.

2. Row 1 index: a = systematic review; b = controlled random experiment; c = scope review; d = technician training and change in the organizational culture; e = cost analysis; f = impact assessment; g = municipal public policy score; and h = knowledge translation.

PARTICIPATORY INSTITUTIONS AND HYBRID EVIDENCE: DISCUSSION, FERTILE RELATIONS, AND ECOLOGY OF KNOWLEDGE¹

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1 INTRODUCTION

The literature on evidence-based public policies (EBPPs) traditionally emphasizes the connection (and influence) of scientific evidence on their management cycle. More recently, however, the communication between EBPP and the different epistemological approaches that have emerged in recent decades in the field of public policy analysis has made space for the inclusion of a contextual perspective, so that other logic and knowledge can also be considered evidence (Fischer, 2000; Yanow and Schwartz-Shea, 2006; Lejano, 2006; French, 2019; Peres, Boullosa and Bessa, 2021; Pinheiro, 2020a; 2020b). In this area, participatory institutions (PIs) are seen as a locus of knowledge production.

This chapter argues that, on the one hand, PIs promote the inclusion of support based on different forms of knowledge for the management of public policies. On the other hand, we will discuss how such tools are debated, transformed, and re-signified so that *hybrid evidence*, which is the evidence arising from meetings, discussions, deliberations, operational agreements, and conflicts manifested in these spaces, can be generated. It is knowledge that arises from the fruitful relationships established between different actors, who would probably not interact outside the PIs (Abers and Keck, 2008).

The general objective of this chapter lies within this framework, and is to discuss two key questions, namely: i) whether or not PIs produce evidence for

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public policies; and ii) what is the nature (and originality) of the evidence produced within these spaces. The methodology used will be qualitative and will have a predominantly theoretical focus, analyzing – in a complementary way – the literature on EBPP; deliberative democracy; agonistic democracy; and the concept of ecology of knowledge.

This chapter has four more sections in addition to this introduction. Section 2 outlines an overview of the dialog established between the literature on EBPPs and deliberation. Section 3 addresses the potential contribution of PIs and participatory mechanisms to the generation of hybrid evidence using three perspectives: deliberation, agonism, and ecology of knowledge.

It is important to point out that this work does not intend to present each perspective exhaustively, based on sets of authors and dialogs constructed in fields of study with decades of tradition. The approaches have a trajectory formed by dialogs and intersections, and the very definition of the limits and frontiers between them is imprecise and variable. The dialogs established between the authors also contribute to the redefinition or elimination of boundaries and theoretical oppositions.

Thus, this chapter goes beyond emphasizing and discussing the boundaries between the schools of thought, aiming to show how the forms of rationality and interaction between different actors – technical and non-technical – contribute to generating evidence that goes beyond those traditionally advocated by the original literature of EBPPs. To this end, the chapter mainly addresses founding authors in the discussion of each perspective, seeking to identify the root of each and their original contribution to the generation of hybrid evidence.

Section 4 summarizes the argument developed in the previous sections, with special attention to participation and the division of deliberative work. In the systemic approach, there is room for coexistence and articulation between the three schools discussed above, reinforcing the hybrid nature of the potential evidence produced.

Section 5 brings the final considerations and indicates that the hybrid evidence from PIs can be marked by *complementarity*, *transformation*, and *reformulation* of the relationship between different forms of knowledge and epistemologies. Finally, the chapter concludes with a brief discussion of the potential effects that arise from reducing the role of PIs in Brazil, which may interrupt experimentalism around hybrid evidence.

2 PARTICIPATION AND EVIDENCE FOR PUBLIC POLICIES: THE GAP BETWEEN THEORY AND THE EMPIRICAL

Despite the extensive debate surrounding rationality in the specialized literature, for our analysis, we present the interpretation, by Ramos (1989), of the distinction proposed by Weber between the so-called formal/instrumental rationality (*zweckrationalitat*) and subjective or value rationality (*wertrationalitat*), as it helps us clarify the bases of criticism that affect EBPP, as well as the locus of contributions from social participation. We will use the term *subjective rationality* in a synthetic and simplified way to rescue, as suggested by Ramos (1989, p. 3) the ancient meaning of the term reason as the “active force in the human psyche that enables individuals to distinguish between good and evil, between false and true knowledge and, thus, to order his personal and social life”.

In turn, the term *instrumental rationality* will be used to express human conduct guided towards the calculation of utility and consequences, meaning, *determined by an expectation of calculated results or ends* (Ramos, 1989, p. 5). We thus perceive that, while the first understanding carries a normativity about how the social order should be, the second empties itself of ethical elements and focuses on the functional and instrumental aspects surrounding how individuals conduct themselves.

At the core of the EBPPs movement is the search for the best evidence on *what works* to support decision-making in public policy (Davies, Nutley and Smith, 2000). The EBPP discourse, originally formulated in the 1990s in Anglo-Saxon countries, is based on the defense of instrumental rationality, complete and free of subjective interference, and empirical falsifiability as a means of building scientific consensus.

However, not-so-recent critical streams point to the relevance of recognizing the limits and risks of exacerbating a belief in instrumental rationality, as well as the positivist epistemological bases and their methodological procedures. These schools of thought question the emphasis on the search for generalizations and linear causality to the detriment of other attributes considered relevant for the production of public policy, such as contextuality and the diachronic aspect of knowledge construction, as well as the argument legitimacy (Fischer, 2000; Landemore, 2012; Pallett, 2020). Several issues emerge from this dispute, including a challenge to what we should understand by evidence capable of subsidizing public policies. It is in this area that we intend to carry out our discussion, focusing on the literature that seeks to analyze the essence and synthesis of social participation as possible sources of evidence for public policies.

Two initial points deserve to be highlighted before delving into this literature. The first deals with the non-originality of the clash previously mentioned. We can

say that the EBPP movement presents a new way of perceiving the classic debate on the separation between technique and politics in discussions about public policies in a democratic context.⁶

While EBPP revisits the idea that this separation is desirable, post-positivist approaches, such as the one that began with the Argumentative Turn, reject the possibility of this separation and propose to discuss ways to consider values, beliefs, and policies in the analysis of *policymaking* (Fischer, 2000; Yanow and Schwartz-Shea, 2006; Lejano, 2006; Spink, 2019; Pinheiro, 2020a; 2020b; Peres, Boullosa and Bessa, 2021). In this way, despite some of these works having been produced even before the term EBPP was coined, the arguments raised by them are worth remembering as they bring relevant subsidies to discuss the role of social participation in the production of evidence, understood in a broader sense, as a form of knowledge that can be used in the production of public policies.

The second point concerns the diversity of concepts for *social participation* given in different analysis contexts of this literature. In some cases, as in that of theorists who emphasize the concept of participatory democracy, participation is brought up as a broader phenomenon, as one of the generating processes of social transformation and democratic construction (Pateman, 1970; 2012; Macpherson, 1978; Barber, 2003). In this line of thought, social participation has an end in itself, regardless of its results in decisions or public policies.

Other theorists, linked to the aforementioned argumentative line of thought, approach social participation from the perspective of deliberative democracy, in which the deliberative character of participation emphasizes the construction of forums where their debates would occur guided by communicative rationality among the set of actors interested in policies, in attempts to reproduce and enhance public spheres (Habermas, 1992; 1997; 2002; Calhoun, 1996; Cohen, 1999). Participation now has an end connected to the collective production of decisions and their social legitimation. The empirical emphasis shifts to the institutional design of forums (ranging from specific instances such as referendums, public hearings, meetings with interest groups, and neighborhood association meetings, to more stable and structured instances such as public policy councils, participatory budgeting, and national conferences).

Considering our objective of identifying the potentialities and limits of participation as a source of evidence for public policies, we are interested in examining the concept in different meanings. Due to the common focus on rationality and the belief that it is necessary to reformulate the dialog between technique and politics, the debate between EBPP and participation has been made, in the specialized

6. For a more in-depth analysis of this debate, see, for example, Schumpeter (1961), Bobbio (1997), Dahl (2001; 2012), Brennan (2016), and Sandel (2020).

literature, based on a point of view that defines participation from a deliberative perspective. Such a definition interprets social participation as “deliberation on pressing issues that concern the people affected by the decisions in question” (Fischer, 2000, p. 32).

In this context, we can say that it is possible to organize the literature that seeks to analyze and problematize the relationship between deliberation and evidence in four main discussions: i) the type of use that is intended for or effectively given to informational excerpts and knowledge of social participation; ii) the differences between the sources of scientific and deliberative evidence, as well as the advantages and disadvantages of each; iii) the factors that determine these differences; and iv) proposals on how to expand the use of knowledge generated by social participation in the process of producing public policies.

Just as in the debate on the relevance of scientific knowledge in the production of public policies, the discussion involving the contribution of knowledge produced by deliberation must be permeated by the question *for what purpose should it be used?* Weiss (1979) draws attention to the importance of recognizing that scientific research is not used in the real world of public policy for the sole purpose of directly supporting decisions. Other purposes are even more frequent, such as the use to clarify new contexts or definitions of public problems, or as *ammunition* to legitimize a previously made decision.

Likewise, works that problematize the use of social participation as a source of evidence point out that it is first necessary to understand the expected objective of social participation to then be able to analyze what types of evidence it can produce to support public policy. This implies that each event or participatory instance can have different intentions, ranging from the exchange of experiences and local knowledge and the translation of technical knowledge into public debate, to measuring public opinion, persuasion, and the construction of legitimacy around previously defined choices (Walters, Aydelotte and Miller, 2000).

It is worth clarifying that Walters, Aydelotte and Miller (2000) begin their reflection with an idea of participation as a mechanism and instrument of deliberation and not necessarily as a political project of democratic construction. Notwithstanding criticism regarding the desirability of each of these uses, it should be noted that, in practice, these different uses are adopted and condition the results in terms of levels and types of subsidies generated for public policy. Therefore, it is important to be aware that no source of knowledge is used simply to directly support decision-making. Other uses can be given, and it is worthwhile to not only recognize them but investigate them, not discarding them beforehand as means capable of supporting public policy, such as, for example, the use of participation to elucidate contexts unknown to bureaucrats or specialists.

Another analytical perspective of the relationship between participation and the production of evidence highlights the differences between scientific evidence and the knowledge and subsidies produced through social participation. The results of deliberative experiences, which, in general, are researched and analyzed based on qualitative investigative methodologies of specific case studies, are often dismissed or seldom considered because they are evaluated as devoid of rigor or empirical robustness that guarantees replicability or theoretical confirmations. The predominance of positivist and quantitative logic for defining the so-called hierarchy of evidence – meaning the parameters for valuing the types of scientific evidence⁷ – relegates deliberation to a secondary level as a source of evidence (Pallett, 2020).

The analysis of the epistemological differences between neo-positivism and post-positivism allows us to identify different contributions that the evidence produced from each of these epistemologies can generate (Fischer, 2000). While the neo-positivist approach seeks generalizations based on a consensus built through the reproduction of empirical tests and statistical confirmation, the post-positivist approach starts with contextualized knowledge and seeks to produce policy analyses through the examination of discursive processes established between different views in the field (Danziger, 1995⁸ apud Fischer, 2000; Dryzek, 1993; Yanow and Schwartz-Shea, 2006).

Despite the permanent search for scientific objectivity in the positivist and neo-positivist perspective defended by EBPP, its critics demonstrate the limited rationality of agents (Simon, 1956) and argue that knowledge construction processes also carry judgments and choices that are not exclusively technical, but permeated by social values and factors (Fischer, 2000). In this sense, the deliberations, as well as local knowledge, would have the power to bring up different values and views on public issues and problems (Fischer, 2000; Pallett, 2020). By contextualizing the issues and encouraging deliberation, participation would also reveal the political dimension – with its interests, resources, and power games – in which public problems are inexorably inserted (Fischer, 2000).

In this way, several advantages and by-products can be pointed out by promoting meetings and deliberation between citizens, bureaucrats, and specialists. Citizens can be called upon to assess the implications of specialist analyses, allowing the verification of scientific evidence in terms of time constraints and the location in question (Fischer, 2000) or, yet, to reduce biases in the definition of public issues, as it allows a multitude of social concerns to be considered (Parkhurst, 2017).

7. Although there is no consensus on all levels of this hierarchy, it is possible to say that randomized controlled trials, meta-analyses, and systematic reviews are at the top of the hierarchy of evidence.

8. Danziger, M. Policy analysis post modernized: some political and pedagogical ramifications. *Policy Studies Journal*, v. 23, n. 3, p. 435-450, 1995.

New knowledge can be identified and existing knowledge can be remodeled and legitimized (Fischer, 2000).

Despite the possibilities suggested, the literature on the subject demonstrates that participation can result in a frustrating undertaking that is difficult to generalize. Recent works seek to identify factors that can lead to low participatory effectiveness and ways for better use.

Therefore, questioning the purpose of using participation becomes relevant. Empirical research shows that part of the frustration with the results of participatory processes stems from a misunderstanding of the participants, or a lack of explaining the intended use to them (Walters, Aydelotte and Miller, 2000; Mendonça and Cunha, 2012). Walters, Aydelotte and Miller (2000) emphasize the importance of such a definition and of communicating it to those involved before the participatory interaction. They also argue that it is important to consider that different instruments and mechanisms better serve different purposes.

Based on a case study of an open public debate process on environmental conservation and the demarcation of protected lands in Utah, in the United States, in the 1990s, the authors point out, for example, that public consultations and opinion polls conducted served more as a thermometer of public support for the environmental issue than as indicators or parameters for the demarcation of lands to be conserved. In the same sense, Mendonça and Cunha (2012), when analyzing the participatory practices of the Legislative Assembly of Minas Gerais State, highlight the importance of connecting the different participatory formats to the objectives of the different phases of public policy, in addition to exploring the articulative potential between different participatory arenas envisioning the construction of deliberative systems.

Walters, Aydelotte and Miller (2020) analyze aspects related to the definition of the use of participation because of the stage in which policy production is found and also adds the issue of the level of conflict between those interested and involved in *policymaking*. The authors argue that the intentions for using participation can be different depending on the stage of public policy. In the initial stages of policy production, such as defining the public problem and identifying criteria, social participation would be useful to highlight different and even competing perspectives that exist in the context of intervention. As for the stages of prospecting, evaluating alternatives, and recommending actions, the possibilities of use to clarify and legitimize positions in the policy definition process would gain more strength. The authors also suggest that public policy problems involving more conflicts demand participation in the initial stages of policy production, whereas, in problems with less conflict, social participation could be introduced in more advanced stages of policy, such as those that identify and recommend alternatives.

Thus, considering the different uses that evidence brought about by social participation can have, as well as the constraints in different contexts of use, the literature that focuses on the subsidies of participation maintains that it is not a substitutive debate, but rather one of integration between the different sources of knowledge. This implies that the challenge would not be to replace scientific evidence with subsidies for social participation but to integrate them, based on recognizing the relevance not only of instrumental rationality but also of the communicative rationality arising from the argumentative process. In this sense, its role is to reveal more about the existing contextual dependence, which, in general, is neglected by the formal argumentative logic of the academy (Fischer, 2000; 2007).

Based on the observation of cases of discursive confrontation between citizens and specialists around environmental issues, Fischer (2000, p. 45, our translation) suggests that “(i)instead of questioning a citizen’s capacity for participation, we should ask how we can interconnect and coordinate the different and simultaneously inherently interdependent discourses of citizens and experts”. Therefore, the question would not revolve around which is the better discourse, but how these different discourses, revealed in the deliberations, can be and are interconnected.

In a converging direction, we can observe the attention of the editors of one of the main journals that address the issue of evidence in public policies – *Policy and Evidence* – when they problematize the hierarchization of different forms of evidence and raise the challenge of facing the difficulties in integrating them (Pearson and Smith, 2018). This is the frontier of the debate about the contribution of other sources of evidence, in addition to scientific evidence, in studies on EBPPs.

Recognizing the diversity of evidence sources is supported by work in different fields. However, little progress has been made toward an integrative proposal. Some nods in this direction would involve considering making room for the development of multi-method analysis capacities and skills, both quantitative and qualitative; and reassessing the parameters and evaluation criteria of the different sources of knowledge (Pallett, 2020). Sustaining, for example, that the subsidies of participatory knowledge be judged and evaluated based on the same parameters of controlled randomized experiments conducted in laboratories, is impossible. Indeed, it can be argued that their attributes and potential contributions to public policy are not distinct but complementary.

The challenge, therefore, is to bring together and build connections between specialized knowledge and public opinion, considering that both technical constraints and public preferences condition the production of public policy. Interacting with citizens has the power to provide specialists with experiences, preferences, and values found in the context of public policy. Ignoring these values implies the loss of important evidence for decision-makers and policymakers and hinders

the social legitimacy of decisions, which is fundamental in a democratic system. The warning raised by Fischer (2000, p. 9) regarding the dangers of exacerbating a technocratic way of decision-making could not be more accurate: “some authors even suggest that the division between the haves and the have-nots will be one of the basic sources of social and political conflict in the new century”.⁹

3 THREE PERSPECTIVES FOR UNDERSTANDING THE RELATIONSHIP BETWEEN SOCIAL PARTICIPATION AND EVIDENCE

As pointed out in section 2, the literature on EBPPs has encountered difficulties to incorporate the subsidies of participation and deliberation as evidence. This section aims to contribute to this topic by listing four different potential interrelations between the results of participatory mechanisms and initiatives that seek to incorporate the use of evidence in public policies. Each of them deals differently with the relationship between specialized knowledge and participation, here called hybrid forms of evidence that, as mentioned in section 1, would be those arising from meetings, discussions, deliberations, consensuses, and conflicts manifested in the participatory spaces.

Next, we will discuss the relationship between participation and EBPP in detail, from the following perspectives, each addressed in a subsection: *3.1 Rational deliberation and complementarity based on the legitimacy of the best argument*; *3.2 Fruitful relationships and evidence arising from conflict*; and *3.3 The ecology of knowledge*.

As highlighted in the introduction, the split between the schools of thought made here is fundamentally typological, intended to highlight elements that are original to each perspective. Over the decades of theoretical and empirical development in the field, the dialog between authors allows us to constantly redefine boundaries between approaches (Karagiannis and Wagner, 2008; Knops, 2007; Mendonça and Selen, 2015).

3.1 Rational deliberation and complementarity based on the legitimacy of the best argument

The relationship between technique, politics, and evidence from the perspective of deliberative democracy is the most developed and explored by specialized literature. The literature mobilized in section 2 is an example of the recurrent and already

9. This dilemma invades, for example, the field of political philosophy. Brennan (2016) defends a regime that he calls epistocracy, the domain of people who hold knowledge. He argues that the average American citizen is uneducated and unprepared. Voters' decisions are based on emotion and their choices have little rationality. The author believes that political decisions must be made by specialists. In an opposite proposal, in his discussion of meritocracy, the philosopher Michael Sandel claims that one of the great problems of American politics is that the participation of the working population in the decision-making elite has progressively decreased. This results in an elite that is insensitive to the problems that affect the majority of the population. Income inequality has steadily increased in the United States since the 1970s, and there are few concrete proposals to address this problem (Sandel, 2020).

established dialog between the literature on EBPPs and deliberation. This occurs, among other reasons, due to the foundations of deliberative theory. Main authors of this school, such as Habermas (1992; 1997; 2002), Cohen (1989; 1999), and Calhoun (1996), perceive that the spaces of participation and deliberation consider the development of decisions on a rational foundation based on exchange and collective choice of the best arguments.

The principle of rationality inherent to the deliberative perspective implies not only that interaction between specialists and citizens as a whole is possible, but also desirable. Furthermore, it is advocated that scientists and public policy specialists are possibly sensitive to the knowledge of ordinary citizens and would treat such knowledge as valid within the rational debate. Integrated more recently in the literature of EBPPs, it is here that the defense of *complementarity* between the results of deliberation and scientific evidence is based.

It should be noted, however, that the notion of rationality for deliberativists does not coincide with the idea of instrumental rationality that underlies the EBPP discourse. The deliberativist perspective brings an emancipatory project of the human being in its roots and aims precisely to counteract the imprisonment of private subjectivity generated by the homogenization processes of large-scale industrial society and modernity.¹⁰ To this end, Habermas (1968) defends the notion of a communicative reason capable of safeguarding the ethical autonomy of individuals and stimulating the human capacity for self-reflection.

When examining the concrete experiences of deliberation, however, it is verified that many times they do not follow the conditions foreseen and advocated by the deliberativists. Fischer (2009, p. 11) points out that, while contributions from deliberative democrats “generally recognize the need for expertise, they have also failed to move beyond standard expert understandings, which has hindered citizen participation”. It proposes to develop methodologies that allow a productive meeting between specialists and laypeople, emphasizing the importance of the figure of the *broker*, a mediator who would be responsible for fostering constructive dialog between specialists and non-specialists, acting in the mutual translation between languages and the forms of knowledge, in the search for effective deliberation.

In active deliberative experiences in the United States and some European countries, called Mini publics (Grönlund, Bächtiger and Setälä, 2014; Felicetti, Niemeyer and Curato, 2016), the mediator has a fundamental importance in

10. As Ramos (1989) highlights in his analysis of Habermas' view of rationality: “in 'the large-scale industrial society, research, science and technology, and industrial utilization merged into one system' (Habermas, 1968, p. 104), thus leading to a repressive form of institutional structure, in that the norms of mutual understanding of individuals are absorbed in a 'behavioral system of rational action with a determined purpose' (op. cit., p. 106). In other words, in such an environment, the difference between substantive and pragmatic rationality becomes irrelevant, even disappearing. Technical-industrial society legitimizes itself through the objective concealment of this difference” (Ramos, 1989, p. 13).

attempts to replicate the perfect public sphere (Ryan and Smith, 2014). Fischer (2000) goes further and points out that the purposes of mediators and promoters of deliberative experiences can be that of the State agents, bureaucrats, and specialists in public policies themselves. This would allow dialog and integration not only between scientific and non-scientific knowledge but also between technical, administrative, and political knowledge held by bureaucrats. In this context, the public servant can be seen as a facilitator of public engagement; as the creator of communities of participation (Fischer, 2009; Fischer and Gottweis, 2013).

Thus, the first form of the relationship between participation and evidence discussed here would be marked by *complementarity* arising from the leveling of scientific, bureaucratic, and common citizen knowledge. From the encounter between these actors and dialogical processes of translation and search for operational agreements, it would be possible to create evidence that incorporates these three forms of knowledge and give way to the technical rigor, the social legitimacy of decisions, and the capacity of their incorporation into public policies, simultaneously.

Although theoretically well-developed, empirical studies on the relationship between experts, bureaucrats, and citizens point to important challenges to complementarity that serve as relevant contributions to the literature on EBPPs. There are recurrent cases of State impermeability to decisions arising from participation and deliberation. The focus of these studies on the institutional design of forums and on the deliberative process itself relegated the issue of incorporating the results of Mini publics into the cycle of public policies, due to the lack of connections with the centers of power (Goodin and Dryzek, 2006; Pateman, 2012; Vieira and Silva, 2013), to a backstage position. The challenge of mediating and translating knowledge has also proved to be quite complex, and forms of scientific knowledge and forms of knowledge related to public management have been used to control debates within participatory experiences. Brazilian empirical literature points to multiple examples in which technicians and bureaucrats control debates and condition the results of deliberative experiences (Wendhausen and Caponi, 2002; Fuks and Perissinotto, 2006; Wendhausen and Cardoso, 2007).

Seeking more elements to advance in the exploration of dynamics for the construction of hybrid evidence, that is, informational resources generated by the integration of knowledge in meetings between bureaucracy, citizens, and the scientific community, we will discuss contributions of the debate on social participation from the perspective of agonistic democracy below.

3.2 Fruitful relationships and evidence arising from conflict

Authors such as Mouffe (1999; 2000; 2013) and Purcell (2008) criticize the deliberative concept based on the empirical limitations of deliberative democracy experiences (such as mini publics). They question the notion that political arenas can be based on consensus from the debate between rational arguments not only in the instrumental dimension – as deliberativists do, but also in the subjective dimension. The authors defend an agonist conception of pluralism, emphasizing that the deliberative perspective is depoliticized, and incapable of dealing with the contradictions and conflicts inherent to the public sphere.

Despite the recent developments by both the deliberative and agonistic literature in the sense of reviewing its precepts and bringing the two currents together (Mendonça and Selen, 2015), for this discussion we believe it is relevant to highlight the mistrust of the agonistic perspective regarding the possibility of a harmonic, rational and consensual construction of public policies, based on the dialog between expert bureaucrats and ordinary citizens. The agonist perspective maintains that deliberative forums cannot be isolated and shielded from political contradictions and social inequalities inherent to a broader society and, therefore, there is no way to prevent the deliberative arena from being permeated by power relations, reproducing inequalities.

However, despite these criticisms, social participation is not irrelevant to agonists. Participatory and deliberative forums are important precisely because they allow the expression of inequalities and power relations. By allowing interaction between different ideologies and social groups, participatory spaces can circumscribe conflict and social contradictions within a demarcated space, keeping it from breaking away from the democratic order (although elements of that order may be questioned). Mouffe (2005, p. 31, our translation) understands that

there must be a consensus on the constitutive institutions of democracy and on the “ethical and political” values that support political association – freedom, and equality for all – but there will always be disagreement over what they mean and how they should be implemented. In a pluralist democracy, such disagreements are not only legitimate but necessary.

Thus, this author defends an agonistic confrontation in which the opponents – and not the enemies, as in an antagonistic confrontation – dispute in conditions where power relations can be contested and different alternatives can emerge and be confronted. It is in this sense that participatory spaces can be seen as a locus for agonistic confrontation.

Without intending to generate consensus or eliminate conflicts, participatory spaces can prevent such conflicts from reaching dimensions that go beyond the scope of democracy. In this context, while the spaces built under a deliberative

perspective seek to identify common interests, the participatory spaces seen under an agonist perspective are intended to allow the expression and dispute of different, often conflicting, ideas and views.

These are the terms under which Abers and Keck (2008) perceive the main merits of PIs as promoters of fruitful relationships between different actors. There is an emphasis on *the creative forms that arise in the interaction between profoundly different actors* who probably would not interact if it were not for the existence of spaces for participation and not for the exchange of arguments, seeking to bring the different perspectives to a common and rational instrumental language. The purpose of these spaces would be to allow such interaction. The result of this interaction can allow innovative solutions that would never exist otherwise to emerge (Abers and Keck, 2008).

Such solutions, based on differences and not on the attempt to standardize languages towards consensus, can be considered hybrid evidence, capable of being incorporated into public policies. This is not static evidence, but a type of knowledge that requires technicians to be open and permeable concerning *the common citizen's knowledge*. Many of the shortcomings of deliberative democratic experiences occur because technicians and those who hold power do not value and are not open to different experiences.

From the debate raised so far, we support a concept of hybrid evidence that does not focus on the direct result of the participatory mechanism, but that envisions the *transformation of the multiple actors* that participate therein in a perspective of democratic strengthening. These actors are who can modify how we create and implement public policies. Participation mechanisms can therefore contribute to the creation of new identities that dissolve the boundaries between citizens, the State, and academia (Koga, 2016).

The agonistic perspective understands that alternatives are generated from the existence of different contingent political identities, which carry competing demands and projects that can also conflict. Collective identities, in turn, are constituted by a process of continuous discrimination between *us* and *them*. This means that opposition is a constitutive element in the formation of collective identities and, therefore, in the real emergence of alternatives and choices (Mouffe, 2010). In this sense, agonistic participatory spaces would be common symbolic spaces in which conflict can be expressed and identities, public problems, and alternatives, can emerge.

The daily political action of these *transformed* actors, both outside and within the participatory arena itself, is what will allow the incorporation of hybrid evidence in public policies. The action of bureaucrats, fundamental actors in this perspective, can, in the long term, strengthen the analytical capacity of the State, which becomes more permeable to new sources of knowledge and evidence (Hsu, 2015).

In subsection 3.3, we will also incorporate the contributions of the debate involving the ecology of knowledge into the formulation of the concept of hybrid evidence.

3.3 The ecology of knowledge

The postcolonial perspective, undertaken by Boaventura Santos (2007) when defending an ecology of knowledge, adds to the debate in this chapter by explicitly questioning the very nature of knowledge and speaking of the perverse effects generated by the predominance of Western scientific knowledge as an archetypal form of impartial and universal knowledge.

According to the author, the last centuries have been marked by the legitimization of Western science as a unique and superior form of knowledge. Science now holds a monopoly on the universal distinction between true and false, to the detriment of alternative forms of knowledge, such as philosophy and theology. As Quijano (2007) adds, the instrumentalization of reason by the power of the colonizers not only expropriated the colonized peoples of their knowledge but also repressed the modes through which they produced knowledge, resulting in distorted knowledge paradigms. Stating that science is the only valid form of knowledge holds a connection to the historical and contextual process surrounding the affirmation of this form of knowledge.

Western modernity was built from the division of the world that Santos (2007) calls the affirmation of abyssal thinking: it is a division between a dominant model of civilization, which is now considered legitimate, and other models, historically considered primitive or inferior. Such a division would have justified colonial domination, based on a positivist and evolutionist premise. Western civilization and its knowledge base, modern science, would be the dominant form. The other forms of civilization – as their respective cosmologies and alternative forms of knowledge – were considered subaltern and, sometimes, decimated in what the author called an *epistemic genocide*.

Non-scientific knowledge came to be considered invalid and mischaracterized as forms of knowledge. Indigenous, peasant, popular, and lay knowledge were now seen as false. These forms of knowledge came to be denied the very definition of *knowledge*. They would, therefore, be considered simply as beliefs, opinions, and intuitive understandings in general. The legitimization of colonial thought made it possible to draw a line that

separates philosophy and theology on the one hand, and, on the other, knowledge made incommensurable and incomprehensible for not obeying either the scientific criteria of truth or the criteria of knowledge recognized as an alternative, to philosophy and theology (Santos, 2007, p. 73).

However, it is increasingly visible that science has strong limitations as a primary source of evidence for public policy. Contemporary literature points to difficulties in directly incorporating scientific evidence into public policies since its preparation process follows different rules, often incompatible with the rites considered scientific. In opposition, the very ontological nature of science as universal knowledge is called into question due to its limitations in influencing some areas of public policy. Even in areas with a high scientific weight, such as environmental policies, some solutions suggested by science seem to have a less practical effect than other forms of knowledge – such as indigenous knowledge – in reducing environmental impacts.

It is necessary to emphasize that the scientific field itself is an arena of struggles between several different concepts. In this field, dominant and dominated positions confront each other (Bourdieu, 1983). In the human and social sciences, including public policies, different paradigms coexist and the introduction of a new paradigm does not necessarily supervene that of the previous paradigm, as would be expected in the exact sciences (Kuhn, 2005). In economics, for example, different theories advocate using different public policies to solve concrete problems. The adopted economic policy is a result of the concrete struggles for the scientific legitimacy of that time. Consequently, methods must be constantly renewed. These procedures must be further refined when social scientists use public policies to propose interventions in reality.

The resolution of such a dilemma, according to Santos (2007, p. 83), requires an “alternative thought of alternatives”, meaning an “ecology of knowledge”. Such ecology stands for an understanding of the real world that exceeds the Western understanding. The monoculture of modern science is confronted by the plurality of heterogeneous knowledge. Scientists must exercise constant epistemological vigilance and put previously constructed notions to the test, that is, the conceptions of what they consider correct (Bourdieu, Chamboredon and Passeron, 1975).

The recognition of new forms of knowledge does not discard science but puts it on the same level as other forms, based on sustainable, dynamic, and autonomous interactions between them. The ecology of knowledge emphasizes not only the product that will be the basis of evidence but above all, the process of building knowledge that must be, by nature, interknowledge. Therefore, this implies presuming that other types of knowledge are irrational and recognizing other types of rationality as possible means of achieving knowledge.

Although the materialization of the ecology of knowledge requires a broad societal transformation, some of its principles can be developed in participatory spaces, generating hybrid forms of knowledge. The presence, in some participatory mechanisms, of actors from traditional communities, and popular movements,

among others, allows the incorporation of new epistemologies into the political process. Within participatory spaces, such forms of knowledge can interact with elements from other epistemologies, such as modern science, generating innovative evidence for the construction of public policies.

We recognize the proposals made by the ecology of knowledge are difficult to implement in most of the current interaction contexts between the State and society and that its promotion is still residual. However, for the formulation of the concept of hybrid evidence sustained in this chapter, we understand that this perspective contributed significantly by arguing that, for the PIs to be able to promote the ecology of knowledge, it is necessary to resume basic aspirations of participatory democracy, such as an emphasis on participation as an educational process and the search for a broad social transformation, which reaches the very source of knowledge on which society is based (Barber, 2003; Macpherson, 1978; Pateman, 1970). We also note that, depending on the profile and objective of the participatory space, an opening toward the ecology of knowledge may be the only way to incorporate the knowledge of the broad set of actors involved in the public policy management cycle.

4 SUMMARY: HYBRID EVIDENCE AND DIVISION OF DELIBERATIVE WORK

The relationship between participation and evidence implies considering forms of hybrid evidence that go beyond technical, scientific, or bureaucratic knowledge. To this end, non-technical and non-scientific forms of knowledge need to be considered as being on the same level as the classic forms valued by the literature on EBPPs. It is important to emphasize that it is not a question of discarding forms of knowledge based on formal western rationality, but of recognizing the existence and respecting other forms of knowledge, integrating them with a view to inter-knowledge.

Evidence from participatory spaces is not mutually exclusive. Although this chapter has used – for didactic purposes – a division between three different perspectives around the hybrid evidence, in empirical reality such schools of thought present several overlapping points. The development of the deliberative, agonistic, and ecology of knowledge fields is decades-long, and such boundaries are fluid. The debate between authors – and the empirical imperatives – has led to increasingly complex theoretical formulations, which combine characteristics from each of the three perspectives.

One of these formulations advocates establishing deliberative systems (Mansbridge, 1999; Mansbridge et al., 2010). Although the very definition of systems refers to the deliberative aspect, “systemic” theorists are open to the expression of feelings and values, they recognize the inevitability (and usefulness) of conflicts, the potential of fruitful relationships, and even of other forms of rationality other than

the western one. Such authors review the very concept of reason, incorporating and discussing agonist elements.

As Fonseca (2019) points out, *systemic* authors update the deliberative perspective – incorporating elements from other schools of thought – based on the perception of the impossibility of forming a public sphere based on exclusively rational arguments and in which all social actors have the material and cognitive conditions to participate freely and equally.

Agonistic elements – such as the possibilities of bargaining, voting, and negotiating, in addition to the inevitability of the manifestation of power relations and values such as self-interest –, previously considered pernicious for deliberative practices, are revitalized and considered legitimate acts within participation forums (Mansbridge, 1999; Mansbridge et al., 2010). That considered, *systemic* authors reformulate the deliberative perspective based on the inclusion of conflicting and pluralistic elements, without such reformulation annihilating the search for a public sphere capable of producing equality and generating public deliberations (Bächtiger et al., 2010).

Within the scope of deliberative systems, the concepts of participatory space ecology and deliberative moment sequencing are relevant to translating hybrid evidence from theory to practice.

Thinking about evidence from the perspective of the ecology of participatory spaces implies recognizing that PIs are not uniform. In Brazil, for example, the old National Social Participation System (or Sistema Nacional de Participação Social, in Portuguese)¹¹ considered a series of mechanisms, such as public policy councils; public policy commissions; national conferences; public ombudsmen; dialog tables; inter-council forums; public hearings; public consultations; and virtual environments for social participation as instances of participation.

Such mechanisms are very different from each other, each having its objectives, compositions, institutional designs, and particular ways of acting. As a result, depending on the specificities of each participation mechanism, it may mobilize one or more forms among the hybrid evidence discussed throughout this chapter.

In some instances of participation, expressing conflicts may be the prevalent goal; in others, the political inclusion of marginalized groups is the main result of the mechanism (Alencar et al., 2013). There are cases in which the role of technical and scientific knowledge is so intrinsic to the participatory institution itself that such instances are better defined as technical-political (Fonseca, Bursztyrn and Moura, 2012).

11. Decree No. 8.243, of May 23, 2014, revoked by Decree No. 9.759, of April 11, 2019.

Also relevant to understanding the multiplicity of ways to incorporate hybrid evidence into public policy are the concepts of division of deliberative labor (Mansbridge et al., 2012) and deliberation sequencing (Goodin, 2005).

The division of deliberative labor points out that, if the existence of instances of interaction between specialists and non-specialists is recommended, processes in which expertise and technical complexity should guide decision-making are also necessary, without necessarily relying on the active participation of ordinary citizens.

The sequencing of deliberative moments provides palpability to the proposal of deliberative work division, by seeking to define connections – temporal and transvalued – between moments of debate and decision-making. Therefore, “sequenced and multilevel processes can contemplate the participation and influence of both specialists and ordinary citizens and activists interested in the subject, in a multiplicity of channels and respecting the different forms of knowledge” (Fonseca, 2019, p. 99).

Both concepts are fundamental to dealing with the *technicians’ dilemma*, based on the recognition that PI results are functionally differentiated and temporally distributed, respecting the spaces of action, the roles, and the logic of each group of actors (Moore, 2016).

In summary, it is necessary both to recognize and act in different and differentiated PIs and to predict multiple moments and scales of action within them. Only then will it be possible to incorporate hybrid evidence into the literature and empirical practices of constructing EBPPs.

5 FINAL CONSIDERATIONS

In this chapter, we debate the possible contributions of social participation as a source of evidence for the production of public policies. By analyzing the literature that discusses the precepts of the EBPP movement and any criticism surrounding it, we show that the theme is still little explored in these works and, when it is, social participation is considered within a point of view limited to some aspects of the deliberative perspective.

Bearing in mind the polysemic character of the term *social participation*, we sought to analyze the main theoretical approaches that conceptualize it, considering aspects that are of interest to the debate of evidence for public policies. Three approaches were highlighted in this chapter: deliberative democracy, agonistic democracy, and the ecology of knowledge. They present different ways of understanding or conceiving: i) the nature of knowledge; ii) the purpose of the participatory process; iii) the forms of interaction between the actors involved; and iv) the characteristics of the evidence produced by participation.

Despite their differences, we argue that the three approaches offer contributions to the reasoning of social participation as a potential generator of what we call *hybrid evidence*, meaning evidence originating from the encounter between different actors and groups, whether through debates, deliberations, operable agreements or even conflicts manifested within participatory spaces.

In the deliberative perspective, social participation would be understood as a means of organizing the arrival of different substrates of rationality in the decision-making process. The search for operational agreements of this approach would place the participatory phenomenon as a means of achieving *complementarity* between scientific, bureaucratic, and common citizen knowledge through dialogic processes.

The agonistic approach, in turn, assumes that conflict is non-eliminable and inherent in social relations and, therefore, in the political sphere. The agonistic perspective maintains that the non-recognition of the conflict threatens democracy since it excludes minority and dissenting positions and identities that, when not recognized in the political sphere, end up finding an outlet in other spheres of life, such as the religious or private sphere. Within this understanding, the agonistic approach sees participatory spaces as a potential locus of democratic manifestation in the pluralist sense, that is, guaranteeing expression, recognition, and confrontation between different or even opposing positions and interpretations that exist in society.

In this sense, the main contribution of participation would be less in the method of reaching common decisions, but in the excerpts generated by the participatory process. The production of fruitful relationships between actors who would never meet outside these spaces, as well as the possibility of collective identities, public problems, and creative solutions emerging and being recognized from these interactions would be examples, from the agonistic perspective, of contributions of participation to the hybrid evidence production process for public policies. We begin to partially see contributions at a level of *transformation*, not just complementarity.

Continuing this transformative perspective, the approach of the ecology of knowledge adds to the debate by explicitly questioning the hegemony of Western scientific knowledge as the only source for understanding the world and, therefore, public problems. As a result of the dominant civilization model, knowledge originating from Indigenous, peasant, and popular knowledge, for example, is ignored or interpreted in advance as false, since it does not follow the criteria of western scientific production.

Based on this critical view of the nature of knowledge, the ecology of knowledge makes it possible to broaden the understanding of participatory spaces as potential generators of hybrid evidence not only within the spectrum of Western formal knowledge but also among knowledge that departs from different

epistemologies, at a level of *reformulation*. This is not about ignoring science, but making use of participatory mechanisms to enable interactions between different forms of knowledge in a perennial, dynamic and sustainable way. In the approach, emphasis is placed on the international potential of participation as a knowledge construction process instead of a tool for choosing the best available evidence, directly confronting the precepts of the EBPP approach.

In short, we highlight three main contributions of the literature presented above to the debate involving EBPP. First, the initial literary contribution attempts to bring politics and democratic aspirations to the center of public policy. Whether aiming at the emancipation of human beings or democratic radicalization, participatory currents highlight the importance of having plural worldviews and the pedagogical effects of interaction in the process of social organization. Second, in this same sense, this literature recognizes and gives rise to conflict, as an inherent and even desirable element in encounters with others that, in addition to allowing one to recognize what is different, has the power to generate new knowledge and collective identities.

Finally, and third, we sustain that participation literature has contributed to critiquing EBPP, as it makes clear the centrality of the instrumental dimension in the vision of rationality that the latter defends to the detriment of the subjective dimension that participation seeks to rescue. In other words, in addition to calculating the best means for the desired immediate results, the participation literature collaborates in rescuing normative aspects of human rationality, making different positions on issues such as which society we want to live in and the means we consider correct for reaching it, explicit, debatable, and contestable.

Despite the relevant theoretical-analytical constructions of the three schools presented, it must be recognized that considerable empirical research must be performed regarding the effective use of the potentialities of social participation for the construction of hybrid evidence. The fact that challenges for implementing a vision of the ecology of knowledge are certain, with considerable magnitude, and demand expanded processes of social transformations that are still incipient. To be more specific, these processes would be the dispute involving the recognition of the relevance of other sources of knowledge other than those produced by Western science.

In any case, we maintain that the lessons learned from the literature on social participation reveal a vast and fruitful way to advance in the debate, not only about what can be considered as evidence to inform and support public policies but also to envision and problematize means of integration from different sources of knowledge, as the literature on EBPPs has already recognized. The proposal to deepen and empirically explore the construction processes and uses of hybrid evidence,

as well as to dialog with the literature that deals with the limits, specificities, and improvement of participatory instances, strongly points in this direction.

There is room here for a critical comment about the current possibilities for Brazilian PIs to continue experimentation around hybrid evidence. As of 2014, an explicit and deliberate movement towards the devaluation of PIs took shape in the national political scenario.

The first act was the reaction to Decree No. 8.243, of May 23, 2014 (Brasil, 2014), which established the National Social Participation Policy (PNPS, or *Política Nacional de Participação Social* in Portuguese) and the National Social Participation System (SNPS, or *Sistema Nacional de Participação Social* in Portuguese). Legislative Decree Project (PDL, or *Projeto de Decreto Legislativo* in Portuguese) No. 1.491/2014 discussed the suspension of the effects of the presidential decree, claiming that there was a “transfer of the institutional debate to segments eventually co-opted by the government itself”, with the risk of “restricting this participation to that social segment chosen per the desire of the palace”.¹²

These arguments, which do not withstand a more careful analysis (Avelino, Ribeiro and Machado, 2018), were accepted by the House of Representatives when approving the PDL, whose proceedings in the Federal Senate were halted.

The second act began during the Michel Temer government, when he issued Provisional Presidential Decree No. 744, on September 1st, 2016, eliminating the Board of Trustees of Empresa Brasil de Comunicação (EBC). The explanatory memorandum sent to the National Congress justifies that the collegiate’s extinction “results from the need to speed up decisions within the scope of the EBC, in compliance with the principle of efficiency” (Oliveira and Padilha, 2016). The risks behind this trend have also been analyzed (Avelino, Alencar and Costa, 2017).

Finally, in the government of Jair Messias Bolsonaro, the argument of efficiency joins that of economy to justify various restrictive measures that focused on how participative spaces work, such as Decree No. 9.759 of April 11, 2019, which “extinguishes and establishes guidelines, rules, and limitations for federal public administration collegiate bodies” (Brasil, 2019). When the constitutionality of this act was questioned before the Federal Supreme Court, the Attorney General’s Office used these arguments to defend the presidential act, “to the extent that (sic) it implements a better rationalization of the use of public resources, structure and manpower by reducing the exorbitant number of collegiate bodies that, in practice, burdened the public machine and hindered the scope of its optimal operation” (AGU, 2019, p. 4). The effect of these measures on spaces of participation and the

12. Available at: <https://www.camara.leg.br/proposicoesWeb/fichadetramitacao?idProposicao=617737>.

phenomenon of concentrating power on the government agenda have also been discussed (Avelino, Fonseca and Pompeu, 2020).

Analyzing this path, it is possible to perceive that the movement against social participation is initiated with openly partisan political arguments to, over time, incorporate a more technical and sophisticated discourse, which uses arguments of efficiency and economy to justify the decisions of public administration. With the attacks on social participation, it is important to try to identify, in addition to the announced democratic setback, what is also lost in terms of providing evidence for public policies.

The perception is that political restriction also hides an epistemic restriction, in an opposite position to the hybrid evidence discussed throughout this chapter. The first act would, therefore, exclude all manifestations and knowledge coming from social groups that did not necessarily support the current government. Furthermore, as was evident from the second act onwards, silencing opposing groups was insufficient: it was necessary to end *inefficient* dialogs, thus considered as any form of questioning directed towards the public administration that would hinder the “scope of its optimal operation” (AGU, 2019, p. 4). This speech, based on instrumental rationality, showed that there was a project to be completed by the public administration and any divergent evidence, whether political opposition, simple disagreement, or alternative forms of knowledge, would no longer be tolerated. In a public management model that does not admit proof to the contrary, hybrid and plural spaces are not just undesirable, they are considered extremely dangerous.

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HOW DO FEDERAL BUREAUCRATS GET INFORMED? AN X-RAY OF THE SOURCES OF EVIDENCE USED IN POLICY WORK

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1 INTRODUCTION

The use of scientific knowledge to support policy has been a debated issue since the emergence of the field of policy analysis (Lerner and Lasswell, 1951; Weiss, 1979). More recently, the evidence-based policy approach (EBP) resumes and extends this debate by advocating for public decision-makers to use scientific evidence about “what works” to improve policy.

On the one hand, EBP renews belief in the precepts of instrumental rationality and scientific neutrality as the foundation of policy decisions (Davies, Nutley and Smith, 2000). However, on the other hand, it catalyzes criticism from different analytical schools, such as the argumentative and post-structuralist ones, which provide the basis for different arguments about what would inform and provide the basis for policy.

This chapter seeks to explore some of these arguments. The first relates to the recognition of non-linearity and the rejection of the stagist model of the process of policy production. As empirical work in the area of policy implementation has revealed, policy production is not a linear and unidirectional process that begins with policy formulation and ends with policy delivery. Instead, multiple actors, instruments, and contextual factors interact and affect each other in policy production,

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generating distinct effects, even different from those expected in the original policy conception (Pressman and Wildavsky, 1973; Pires, 2018). Following this understanding, we maintain that knowledge of not only what informs policymakers at the moment of formulation but also what informs the distinct “policy workers” (Colebatch, Hoppe and Noordegraaf, 2010, p. 7) in their diverse contexts of action becomes highly relevant to understand this set of informational interactions that shape the process of policy production.

The second argument that we also seek to explore in the analysis deals with broadening the understanding of evidence beyond scientific evidence. The critical policy literature points out the significant limitations to the instrumental use of scientific evidence (Simon, 1956; Lindblom, 1959; Weiss and Bucuvalas, 1980; Cairney, 2019) and the importance of other factors for the production of policy, such as the historical contingency proper to social phenomena; the interests, values, and motivations of actors; and the interactive reflexivity among actors and between actors and objects (Fischer and Gottweis, 2012; Lejano, 2006; Spink, 2019; DeLeon, 2008; Yanow, 2000). In this sense, scientific evidence should be conceived as just another of the possible meaning-validation frameworks for policy production (Williams, 2010).

Indeed, national and international empirical work has shown that scientific evidence is not among the tools most used by bureaucrats (Veselý, Ochrana and Nekola, 2018; Cherney et al., 2015; Newman, Cherney and Head, 2017; Enap, 2018; Macedo, Viana and Nascimento, 2019; Koga et al., 2020). Also, bureaucrats’ actions, including in analytical work, do not take place in isolation but in interaction with policy stakeholders, and therefore they are influenced and informed by other forms of knowledge brought in by them (Colebatch, Hoppe and Noordegraaf, 2010).

We claim that these findings of empirical studies dialogue with the proposal of Pinheiro (2020b) of a moderate model for understanding evidence, which recognizes that the choice and use of the type of informational tool are conditioned to the specific contextual framework of use. Using such a proposal, in this chapter, we seek to provide an x-ray of the use of evidence sources by bureaucrats and to empirically analyze how factors that configure the context of bureaucrats’ performance relate to evidence sources for the production of policy. In particular, the different types of policy work and capacities.

To this end, we analyze the results of a survey conducted by Ipea, between October and December 2019, with a sample of 2,180 individuals from the universe of nearly 100,000 civil servants of the direct public administration who work in various areas and ranks in policy production (Koga et al., 2020).

The initial studies of the survey pointed out, among other results, the existence of four types of jobs in federal policies: i) analytical/control; ii) relational; iii) contract/supervision; and iv) administrative. In addition, it brought data on four main types of evidence used by the respondents as a whole (Koga et al., 2020):

- internal – standards, technical notes, recommendations from control bodies, government databases etc.;
- external non-academic – journalistic reports, recommendations from participatory instances, information from interest groups etc.;
- external academic – articles and scientific research; and
- experiential – personal experience and consultation with colleagues.

This chapter is structured in five sections, in addition to this introduction. In section 2, we discuss the literature on the moderate model of evidence and factors that would configure the context in which federal bureaucrats act, especially the type of work they perform and their analytical capacities. In section 3, we present our analytical model for exploring the use of the kinds of information in the production of policies as a function of the factors that express the context in which federal bureaucrats operate. In section 4, we expose the methodology and the variables that represent the elements of the proposed analytical model (*policy work, individual analytical capacity, organizational analytical capacity, policy area, and individual characteristics*). In section 5, we present and discuss the results of the analysis. Finally, in section 6, we bring the conclusions and the implications of these results.

2 THE USE OF EVIDENCE IN THE CONTEXT OF BUREAUCRATS’ PERFORMANCE: TYPES OF WORK AND CAPACITIES IN POLICY

The EBP approach resumes and extends the traditional debate in the policy analysis literature on the role of scientific knowledge and instrumental rationality in policy (Lerner and Lasswell, 1951; Simon, 1956; Lindblom, 1959; Weiss and Bucuvalas, 1980; Fischer and Gottweis, 2012; DeLeon, 2008). EBP emerged as one of the central elements of the Tony Blair administration in the United Kingdom, elected in 1997, which advocated the agenda of “what matters is what works” as opposed to the “conviction politics” that characterized the administration of his predecessor Margaret Thatcher (Davies, Nutley and Smith, 2000). Despite EBP advocates’ recognition of the limits of instrumental rationality and the non-linearity between the process of scientific knowledge production and practice in policy, the normative precepts of the rationalist approach, such as the separation between technique and policy, the hierarchy of evidence, and the belief in scientific neutrality, remain underlying in this pragmatic pursuit of the best possible inputs for conducting policy (Cairney, 2019; Oliver et al., 2014; Parkhurst, 2017).

Pinheiro (2020a; 2020b) highlights that the very definition of evidence is disputable in this debate. On one extreme, grounded in the rationalist paradigm, is the idea of evidence as the result of rigorous and systematic scientific production. However, other factors derived from constructivist approaches are recognized as relevant for decision-making and policy production along this spectrum. Given the non-existence in the specialized literature of systematic characterization of evidence in policies and considering the accumulation in the field, Pinheiro (2020b) proposes a moderate model between the two extremes. That is, between a radical perspective of the rationalist model that would disregard the complexity inherent in the decision-making process, characterized by non-linearity, uncertainty and multicausality, and a radical view of the constructivist model that would make it impossible to propose general propositions and the pragmatic use of evidence to produce analysis and evaluation of policies.

Starting from a dialogue with North American pragmatism and the “second” Wittgenstein’s philosophy of language, Pinheiro’s (2020a; 2020b)⁷ moderate model seeks to extract learnings from the rationalist and constructivist models critically and proposes that use within a contextual frame is the characterizing element of an informational tool in evidence. That is, the contextual frame would condition the use of informative instruments and their conformation and recognition by users as evidence. According to Pinheiro (2020b, p. 23), such a framework would be composed of three main types of factors that intertwine:

- i) politicians – the temporality of politics, its ideological commitments, and its disputes over power and democracy; ii) epistemologies – the evaluation of policy, uncertainty, the reflexivity of social knowledge etc. (Mulgan, 2005, p. 224⁸ apud Pinheiro, 2020b, p. 23); and iii) normative, institutional, and organizational.

This section aims, therefore, to review and discuss the literature that addresses the context in which bureaucrats operate, especially the work done regarding policies in modern public administrations. Furthermore, the objective is to associate the type of activity of bureaucrats with other contextual factors that may be presented as conditioning agents for using specific informational instruments by bureaucrats, such as the analytical capabilities necessary to develop this work, the areas of policies, and individual characteristics. Finally, it is worth noting that, although we recognize that the literature brings several factors that may characterize different contextual frames of the bureaucrat’s work, this research will seek to focus on the debate about the policy work and analytical capacity, as these are factors analyzed more intensely by recent international literature and still little explored in Brazil.

7. For details on this study, see Pinheiro (2020a; 2020b).

8. Mulgan, G. Government, knowledge and the business of policy making: the potential and limits of evidence-based policy. *Evidence & Policy*, v. 1, n. 2, p. 215-226, 2005.

Defining policy work is not a trivial task. Besides the difficulty of drawing common concepts for different political-institutional contexts, to allow a comparison, there are substantive differences depending on the definition of the policy process used (Colebatch, 2006). Another primary element is the type of attachment to the public apparatus, as policy appointments would focus on “familiarization with standard technical tools such as supply-demand, cost-effectiveness, and cost-benefit analysis, along with the study of cases, workshops, simulations, or real-world projects” (Howlett and Wellstead, 2011, p. 615). Other forms of insertion in the field of policy, including the performance of generalists, would be related to a more appropriate “political” performance. However, would the actual operation of contemporary public administrations allow for this interpretation?

Recent research has pointed to a less dichotomous view of professionals working in government. For example, Howlett and Wellstead (2011), based on a comprehensive survey of the Canadian subnational bureaucracy, argue that the analysts interviewed perform nine different functions, including formulation, implementation, communication, database management, and legal analysis, which can be grouped into four main types of functions in policy: i) presentation of options and courses of action; ii) implementation; iii) advising and consulting; and iv) policy evaluation. Consequently, there is a relevant variation in the techniques used, the interaction format with internal and external actors, and the different policy issues involved in these professionals. Similar scenarios, pointing to diversity in the types and designs of insertion in the public apparatus, are observed in contexts as diverse as the Canadian federal government (Wellstead and Stedman, 2010), the Czech Republic (Veselý, 2014), the Philippines (Saguin, Ramesh and Howlett, 2018), the Netherlands (Hoppe and Jeliaskova, 2006), and Brazil (Filgueiras, Koga and Viana, 2020).

In this same vein, other empirical studies have shown that analytical policy work, in general, occurs associated with other work, like those of a “relational” type, such as intergovernmental negotiation, public consultations, translation, and even democratization functions (Meltsner, 1976; Colebatch, Hoppe and Noordegraaf, 2010; Kohoutek, Nekola and Novotný, 2013; Olejniczak, Raimondo and Kupiec, 2016). The possible permeability of diverse sources of knowledge brought in by the different actors participating in policy (Colebatch, Hoppe and Noordegraaf, 2010) with whom the bureaucracy interacts in its work must be acknowledged (Cairney, 2019). This relational approach has already been recognized and explored in research on the Brazilian federal bureaucracy, especially at the federal level (Cavalcante and Lotta, 2015; Pires, Lotta and Oliveira, 2018).

Another concept used in studies on bureaucrats and public organizations concerns policy capacities, which can be defined as the set of skills and resources needed to perform functions and produce policies (Wu, Ramesh and Howlett,

2015). As evidenced by Filgueiras, Koga and Viana (2020), the concepts of capacity and policy work are mutually related. Capacities, insofar as they are accumulations of resources and skills, condition the performance of work. In other words, the performance of certain functions in policies requires structural conditions to do so. In turn, the existence of skills and resources is useless if they are not activated. Work allows capabilities to be deployed, developed, and transformed.

As Wu, Ramesh and Howlett (2015) point out, the performance of policy functions by bureaucrats and public organizations demands different kinds of capabilities, such as administrative, relational, and analytical. For the discussion in this chapter, we are interested in capabilities in their analytical dimension, which refers more specifically to “knowledge acquisition and its use in the processes developed in policy” (Howlett, 2009, p. 162). The specialized literature takes the analytical capacity of both bureaucrats and public organizations as a fundamental condition for enabling the flow of intelligence about and for policies to policy decision-makers (Olejniczak, Raimondo and Kupiec, 2016).

Three dimensions seem to be relevant to thinking about analytical capacities. The first refers to the processing of evidence: data collection; reading and analysis of scientific research; formulation of models and use of statistics; applied research; evaluation of mechanisms associated with achieving goals; and program design. The second consists of communicating messages related to the policy itself: the ability to articulate medium- and long-term priorities; consulting, and relationship management. The third concerns, more specifically, the resources associated with obtaining and processing analytical elements: technical quantity and quality of professionals working in government organizations; budget; access to external networks of experts, and knowledge production (Howlett, 2009). In other words, as Howlett (2009) suggests, analytical capacity is related not only to the appropriation, use, and dissemination of scientific knowledge but also to the other sources of knowledge that circulate in the process of producing a policy.

Among the empirical studies that mobilize analytical capacities is the work of Wellstead, Stedman and Howlett (2011), who analyze Canadian federal bureaucrats allotted in the capital and the provinces, and sub-national government employees. The authors argue that the nature of the tasks performed by bureaucrats is related to their attitude toward the workings of government – street-level bureaucrats involved in short-term emergency activities perceive analytical skills as low quality – as well as their involvement with the work performed in policy. These factors are more relevant than the level of government at which bureaucrats perform their functions.

It is important to consider individuals, organizations, and the policy sub-system as units of analysis in studies of analytical capacities. For example, Elgin and Weible (2013) combine aspects of the analytical capacities discussion with the Advocacy Coalitions Framework to understand Colorado’s energy and climate

policy subsystem. By contrasting the actions of two coalitions – for and against the climate change thesis – the authors argue that the profile of the participants and their strategies in the policy subsystem were similar, even though the coalitions were completely opposite in their objectives. Both had individuals with good education, experience, and formal educational background in technical skills, and organizations were relatively capable of regulating strategies to advocate their views. The coalition favoring the climate change thesis was victorious in influencing policy in Colorado because of its broader reach, although the other coalition “remains capable of engaging in political debates” (Elgin and Weible, 2013, p. 130).

In the Brazilian context, Macedo, Viana and Nascimento (2019), starting with data from the survey applied by the National School of Public Administration in 2017 (Enap, 2018), with the same profile of bureaucrats of the direct federal administration being explored by this research, make a substantial effort to investigate how analytical capacities are organized in the Brazilian federal administration. The authors observe that, depending on the commissioned position held, the area of policy and the government agency, as well as individual characteristics, such as the bureaucrat’s level of education and how long he/she has worked in policy, the sources of evidence mobilized may vary.

As already mentioned, Filgueiras, Koga and Viana (2020), in turn, propose the study of policy capacities in association with the work performed by bureaucrats. Capacities are a latent concept that, although it expresses the accumulation of resources and structural conditions of state entities, does not allow us to observe state action per se or the result of its mobilization. On the other hand, the policy work portrays precisely that the diversity of state action and its performance would be conditioned to the accumulation of capacities. Therefore, they would be analytical keys that affect each other mutually and that when analyzed together, they would deepen the understanding of a greater plurality of contexts of mobilization of capacities and actions of bureaucrats in policies. The authors identify four different jobs performed by government managers – relational, analytical, managerial, and administrative – which vary depending on the field of policy.

Koga et al. (2020) identify four main types of sources of evidence used by the group of respondents by exploring data from the same survey analyzed in this research: i) internal – standards, technical notes, recommendations from control agencies, government databases etc.; ii) external non-academic – journalistic reports, recommendations from participatory forums, information from interest groups etc.; and iii) external academic – articles and scientific research; and experiential – personal experience and consultation with colleagues.

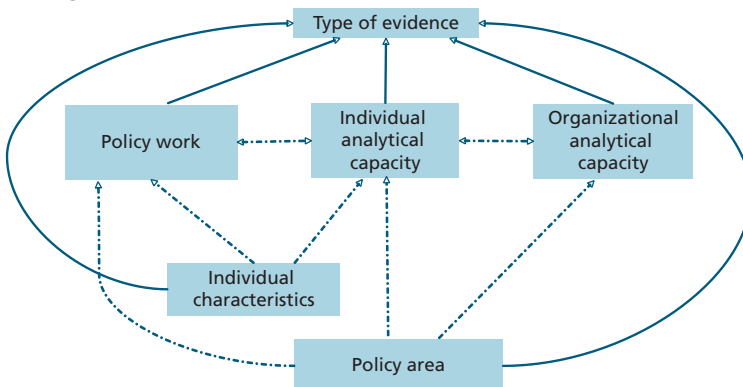
Based on new empirical evidence, this chapter intends to move forward in the debate about the conditioning factors of the pattern of use of sources of evidence by bureaucrats depending on the work performed and the analytical capabilities

present in the functioning of public administrations based on the Brazilian case. In this context, we aim to explore some hypotheses raised by the literature and other previous empirical works (Ouimet et al., 2009; Wellstead, Stedman and Howlett, 2011; Newman, Cherney and Head, 2017; Cherney et al., 2015; Macedo, Viana and Nascimento, 2019; Veselý, Ochrana and Nekola, 2018). To this end, in this study, we analyze the relationship between different types of information and contextual elements of the performance of federal bureaucrats in direct administration.

3 ANALYTICAL MODEL

Given the literature presented above, this section proposes the analytical model summarized in figure 1 to investigate the relationships of factors that constitute the context of federal bureaucrats' performance and the use of different sources of evidence. Four types of conditioning factors are identified in the model. The first one concerns *individual characteristics*, in general, analyzed by research with Brazilian federal bureaucrats (Cavalcante and Lotta, 2015; Saguin and Palotti, 2021; Macedo, Viana and Nascimento, 2019), which would incorporate sociodemographic aspects – such as age and gender – and professional aspects related to occupying management and advisory positions (DAS) and the place of work (in Brasilia or outside Brasilia). The second one deals with the areas of policy that, both in national and international literature, are explored as essential characterizers of differences in State performance (Davies, Nutley and Smith, 2000; Parkhurst, 2017; Macedo, Viana and Nascimento, 2019; Cavalcante and Lotta, 2022). Finally, the other two types of conditionals regard the factors of most interest in this paper, as justified earlier: analytical capabilities (individual and organizational) and types of policy work.

FIGURE 1
Path diagram



Authors' elaboration.

Considering the theoretical debate in section 2, figure 1 expresses the path diagram in which the arrows represent the direction of the hypothesized effect among the variables. In the proposed model, policy areas would affect analytical capacities and policy work and the use of the types of evidence sources. Organizational and individual analytical capacities would have a reflexive effect on each other and the uses of evidence types. At the personal level, individual characteristics would affect policy work and individual analytical capacity. The aspect *policy work*, in turn, would affect individual analytical capacity and the type of evidence used by the bureaucrat.

It is worth explaining that we will not analyze in this chapter the effects of all the relations suggested in the model, but only the association between these variables and the variable of interest – *type of evidence*. In other words, we will analyze the solid arrows' relationships, not the dashed ones. Finally, we state that the analysis proposed in this chapter is relevant insofar as it allows advances in constructing a complete explanatory model about bureaucrats' choice of information sources.

4 METHODOLOGY

The data analyzed here were collected in a survey as part of the research project *What does inform policy in Brazil: usage and non-usage of evidence by federal bureaucrats* by Diest/Ipea. The online questionnaire (self-administered) was sent by email to a sample selected from a universe of 96,543 civil servants in direct administration offices. The first sample contained 6,055 civil servants. Two more selection rounds were then carried out using exactly the same method, arriving at the final number of 18,165 public civil servants (Koga et al., 2020). Thus, 2,180 valid, complete records were obtained, representing a response rate of 12% of the sample.⁹

The questionnaire contains the variables referring to the dimensions presented in figure 1, that is, *type of evidence*, *policy work*, *area of policy*, *organizational analytical capacity*, *individual analytical capacity*, and *individual characteristics*, in addition to the variables: *how to occupy a DAS position*, *Unit of Federation (UF) where he/she is assigned*, *age*, and *gender* (all variables analyzed are listed in appendix A).

The hypotheses tested correspond to the effects of the variables concerning the use of certain types of information by federal civil servants, especially the variables *policy work*, *individual analytical capacity*, and *organizational analytical capacity*. To this end, we opted for structural equation modeling (SEM), a statistical technique of multivariate data analysis used to examine relationships between observable variables and latent variables (or constructs). This technique allows

9. The full questionnaire can be found in Koga et al. (2020).

us to test theoretical propositions about how latent variables are formed^{10,11} the relationships between them, as well as the direction of such relationships, in a cause-and-effect assumption.

In this sense, the analysis specifies and validates an SEM derived from theoretical approaches in the literature intending to investigate how types of policy work and other determinants related to the context in which bureaucrats perform (such as organizational and individual capacities) are associated with the uses of different types of information. In sum, SEM was used as a confirmatory technique for the proposed analytical model, mainly in understanding how and if the selected indicators are related to each type of information.

The R package *lavaan*, with diagonally weighted least squares estimation, was used in the analysis. The overall model fit measures indicate a good fit to the data. The Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR) were used to evaluate the model fit.

CFI indicated that the sample data are well fit to the model (0.92). Such an index measures the relative fit of the observed model when comparing it to the baseline model (i.e., the model with the worst fit), in which values above 0.90 indicate adequate fit (Hu and Bentler, 1999).

The RMSEA was 0.068, within limits indicated as a good model fit. RMSEA evaluates how far a hypothetical model is from a perfect model. According to Hooper, Coughlan and Mullen (2008), a value around 0.06 indicates a good fit, while the threshold value is 0.07 (Steiger, 2007).

In turn, the SRMR, which is the square root of the difference between the sample residuals of the covariance matrix and the hypothesized covariance model, was 0.059. The values of this index range from 0 to 1, with less than 0.08 indicating a good fit (Hu and Bentler, 1999). Thus, the three indexes (CFI, RMSEA, and SRMR) showed a good fitting of the model.

10. Thus, the variables *type of evidence* and *policy work* are taken as latent variables (or constructs) that are indirectly observable through a set of indicators (as described in appendix A).

11. As described in Koga et al. (2020), the *type of evidence* variable was previously submitted to the factor analysis technique in order to detect common profiles in the answers obtained for the fifteen types of information presented to the respondents. At the occasion, it was possible to delineate four specific profiles: internal, external, academic, and experiential (see the distribution of the fifteen types among these four profiles in appendix A). On the same opportunity, the variable *policy work* was also subjected to the factor analysis technique (Koga et al., 2020). From the responses obtained for the fourteen types of work presented, it was also possible to delineate four specific profiles: analytical/control, relational, management/supervision, and administrative (see the distribution of the fourteen types among the profiles in appendix A).

5 RESULTS OF THE ANALYSIS

Table 1 presents a summary of the findings of the structural equation model.¹² With regard to the estimates, it is worth noting that the coefficients are standardized for the latent variables.¹³ This means that they follow an approximately standard normal distribution (with mean 0 and variance equal to 1). As for the other (observable) variables, the results can be interpreted in their original scales (described in appendix A).

TABLE 1
Structural equation model results (2019)

		Type of evidence							
		Internal ¹		External ¹		Academic ¹		Experiential ¹	
		Estimate	Value z	Estimate	Value z	Estimate	Value z	Estimate	Value z
Policy work	Analytic/control ¹	0,818***	8,554	-0,056	-0,723	0,229**	3,135	0,345***	3,796
	Relational ¹	-0,820***	-9,260	0,727***	10,503	0,352***	5,891	-0,144	-1,842
	Contract/supervision ¹	0,478***	4,943	-0,160*	-2,224	-0,231**	-3,183	0,132	1,581
	Administrative	0,180***	12,614	0,097***	6,479	0,005	0,404	0,152***	8,900
Organizational analytical capacity	Resources	0,029	1,656	0,140***	7,761	0,184***	11,292	0,147***	7,063
	Specialized unit	-0,145**	-2,900	0,09	1,766	0,123**	2,655	-0,062	-1,070
Individual analytical capacity	Education	0,026	1,258	0,129***	5,976	0,348***	18,210	0,111***	4,686
	Skills	0,015	1,850	0,038***	4,583	0,050***	6,785	-0,007	-0,684
	Experience in policy	0,019	0,95	-0,025	-1,246	-0,009	-0,454	0,065**	2,834
Public policy area	Social	0,276***	3,734	0,038	0,513	-0,132	-1,960	-0,182*	-2,217
	Economic	0,308***	4,694	0,03	0,447	-0,075	-1,255	0,019	0,249
	Infrastructure	-0,061	-0,821	-0,076	-1,013	0,025	0,373	-0,11	-1,288
	Environment	0,142	1,258	0,408***	3,617	0,085	0,751	-0,032	-0,252
	Control	0,849***	8,245	0,283**	2,693	0,123	1,320	0,095	0,805
Individual characteristics	DAS 1-3	0,285***	3,903	0,005	0,065	-0,046	-0,697	0,185*	2,192
	DAS 4-6	0,393***	4,417	0,352***	3,816	0,091	0,973	0,269**	2,632
	Working in the Federal District (DF)	0,148**	3,015	0,213***	4,164	0,118**	2,620	-0,017	-0,292
	Age	-0,007**	-3,279	0,006**	2,738	-0,006**	-2,920	-0,007***	-2,935
	Gender	-0,046	-1,017	-0,102*	-2,213	0,03	0,717	-0,014	-0,278

Authors' elaboration.
 Note: ¹ Latent variable.
 Obs.: * *p*-value < 0,05; ** *p*-value < 0,01; *** *p*-value < 0,001.

12. The correlations found between the latent variables (e.g., *policy work*) and their factor loadings are shown in appendix A. Although they are an essential part of the statistical model, from a theoretical and descriptive point of view, they do not add anything concerning the relationships analyzed here.

13. Regarding statistical significance, the asterisks beside the estimates describe the respective *p*-value (* *p*-value < 0.05; ** *p*-value < 0.01; *** *p*-value < 0.001). Thus, the presence of asterisks indicates statistical significance; likewise, the absence indicates no statistical significance. In turn, the magnitude of the relationship/influence between the variables should be observed by examining the value of the coefficient *estimate*.

As can be seen more clearly in table 2, the existing relationships between *policy work* and *type of evidence* are almost all statistically significant and have quite elucidative path coefficients (effect/influence).

One notices that the *analytical/control* work presents a positive and significant path coefficient in all types of evidence, except for the *external* type (-0.82). The others are: *internal* (+0.81), *experiential* (+0.34), and *academic* (+0.22). In other words, this type of work is related to a greater use of these three types of information.

Two main points are worth highlighting regarding these results. The first one concerns academic sources. Although the literature already recognizes that analytical work deals with gathering and mobilizing knowledge coming not only from scientific sources, we would expect that the most significant association with this type of source would be found in this type of work. Nevertheless, as shall be seen below, the most important association with the use of the scientific source was found in relational work.

The second point deals with the magnitude of the *internal* type of evidence (+0.81), at least twice as large as the *academic* and *experiential* types. This value indicates that the *analytical/control* function is strongly associated with a greater use of internal evidence, such as normative, technical notes, legal opinions etc. In fact, the very association of analytical work with control work, which was already pointed out in previous studies on bureaucrats, such as in the publications by Macedo, Viana and Nascimento (2019), Koga et al. (2020) and Saguin and Palotti (2021), raises questions about the form and purposes for which analytical work has been carried out in the Brazilian federal administration. That is, whether it is being done to support policy decisions, as advocated by the literature on policy analysis and EBP itself, or to respond to demands of control.

In any case, the significantly higher use of internal sources in the *analytical/control* work in relation to other sources is remarkable. Some hypotheses can be raised from these results. One of them would be the characterization of an eventual function of intermediation, validation, or translation of other sources of evidence, including the academic-scientific ones, performed by internal sources.

Another hypothesis would be the configuration of an endogenous process in which the federal administration itself would produce and consume its own sources of information. If we consider that recommendations from control and judicial decisions entities are among these internal sources, exploring this hypothesis becomes even more relevant, especially when possible, implications fit within the recent debate about the growing influence of management control (Filgueiras, 2018; Nogueira and Gaetani, 2018; Grin, 2020). Perhaps this is yet another front on which this influence can be analyzed.

TABLE 2
SEM results: policy work versus type of evidence (2019)

		Type of evidence							
		Internal ¹		External ¹		Academic ¹		Experiential ¹	
		Estimate	Value z	Estimate	Value z	Estimate	Value z	Estimate	Value z
Policy work	Analytic/control ¹	0,818***	8,554	-0,056	-0,723	0,229**	3,135	0,345***	3,796
	Relational ¹	-0,820***	-9,260	0,727***	10,503	0,352***	5,891	-0,144	-1,842
	Contract/supervision ¹	0,478***	4,943	-0,160*	-2,224	-0,231**	-3,183	0,132	1,581
	Administrative	0,180***	12,614	0,097***	6,479	0,005	0,404	0,152***	8,900

Authors' elaboration.

Note: ¹ Latent variable.

Obs.: * p -value < 0,05; ** p -value < 0,01; *** p -value < 0,001.

On the other hand, the *relational* work presents a positive and significant path coefficient for the *external* (+0.72) and *academic* (+0.35) types of evidence. In this case, the magnitude for the *external* type indicates that the *relational* function is intensely associated with the use of knowledge produced by different groups in society (beneficiaries, interest groups, and media, among others), including the academic ones.

It is also worth noting that the *relational* function obtained the highest magnitude for the *academic* type of evidence (+0.35), so it stands out as the work most strongly associated with academic-scientific evidence, even though it is not the most prominent in that function. Meanwhile, the same function is negatively related to internal evidence use, which is significantly reduced with a magnitude of -0.82.

Although these results do not confirm the expectations of the greater use of scientific sources in *analytical/control* work, they corroborate the literature on policy work that highlights the effects of relational performance for the greater permeability of external interlocutors' influence (Meltsner, 1976; Colebatch, Hoppe and Noordegraaf, 2010). Moreover, as Ouimet et al. (2009) pointed out, the greater interaction with scholars would also lead to greater use of scientific evidence by bureaucrats, which may occur with more intensity in this type of relational work.

Regarding the *contract/supervision* work, the path coefficients were significant, with positive trends only for the *internal* type of evidence (+0.48) and negative for the *academic* (-0.23) and *external* (-0.16) ones. Again, this association seems consistent with what would be expected for a type of activity that, by definition, is aimed at ensuring compliance with internal norms and guidelines produced by the public administration itself.

Finally, *administrative* work – characterized by activities such as scheduling meetings, processing cases, preparing letters and memos etc. – presents significant

and positive path coefficients for the *internal* (+0.18), *experiential* (+0.15), and *external* (+0.09) types of evidence. In other words, this function is associated with using all three types of evidence. Contrarily, *administrative* work did not present significance for academic-scientific evidence, so there is no association between this role and the use of this type of evidence, as indeed was not expected given the more operational nature of this type of role.

Concerning analytical capabilities, by observing recommendations from the literature (Olejniczak, Raimondo and Kupiec, 2016; Wu, Ramesh and Howlett, 2015; Elgin and Weible, 2013; Pattyn and Brans, 2015), we sought to analyze both the effects of capacities accumulated at the individual level of bureaucrats and the impacts of capacities accumulated at the level of direct administration organizations, as presented in table 3. As for the individual level, analytical capacities were represented by the educational background, learned skills, and previous bureaucrats' experience, seeking to capture the analytical resources from formal knowledge and the analytical resources from tacit knowledge.

As argued in the specialized literature, prior knowledge and skills would determine the ability of individuals to recognize the value, acquire, evaluate, and use different sources of knowledge (Ouimet et al., 2009). As for organizational-level analytical capacities, these were represented by the level of informational resources made available by the bodies and the existence of a specialized structure that would configure a higher institutional maturity focused on the use of scientific evidence, as indicated by experiences in other countries (Newman, Cherney and Head, 2017).

TABLE 3

SEM results: organizational and individual analytical capacities versus type of evidence (2019)

		Type of evidence							
		Internal ¹		External ¹		Academic ¹		Experiential ¹	
		Estimate	Value z	Estimate	Value z	Estimate	Value z	Estimate	Value z
Organizational analytical capacity	Resources	0,029	1,656	0,140***	7,761	0,184***	11,292	0,147***	7,063
	Specialized unit	-0,145**	-2,900	0,090	1,766	0,123**	2,655	-0,062	-1,070
	Education	0,026	1,258	0,129***	5,976	0,348***	18,210	0,111***	4,686
Individual analytical capacity	Skills	0,015	1,850	0,038***	4,583	0,050***	6,785	-0,007	-0,684
	Experience in policy	0,019	0,95	-0,025	-1,246	-0,009	-0,454	0,065**	2,834

Authors' elaboration.

Note: ¹ Latent variable.

Obs.: * p -value < 0,05; ** p -value < 0,01; *** p -value < 0,001.

According to table 3, the results regarding *individual analytical capacity* indicate a positive association between education level and the use of *external* (+0.13), *academic* (+0.35), and *experiential* (+0.11) types of evidence. The relevance of the

positive effect between education and use of academic-scientific evidence, as predicted by the literature (Ouimet et al., 2009; Wellstead, Stedman and Howlett, 2011; Newman, Cherney and Head, 2017), should be highlighted. As for the greater diversity of sources used by individuals with higher education, the results confirm the findings presented by Macedo, Viana and Nascimento (2019) for the same profile of bureaucrats surveyed in 2017.

On the other hand, the *skills* variable, which corresponded to the use of data processing tools and technologies, is only weakly associated with the greater use of *external* (+0.04) and *academic* (+0.05) evidence. In any case, since these are skills that would directly facilitate the use of this type of evidence, a positive association was expected.

Regarding the length of experience in policy, a significant relationship was found only for using experiential evidence, which was positive and weak (+0.06). Unlike what was raised by Macedo, Viana and Nascimento (2019) regarding the negative association between the time of experience and the use of various informational sources, the results of the 2019 survey do not allow us to identify an association between time of experience and other types of evidence analyzed in this research. Nonetheless, we believe exploring the implications of a possible disinterest in informational sources such as scientific and external as the bureaucrat specializes in policy remains valid. Would relying only on experiential sources reduce their analytical capacity and strengthen the tendency towards endogeneity and self-absorption pointed out above?

From the point of view of *organizational analytical capacity* (table 4), it is essential to underline that the availability of organizational resources to obtain information from studies and research is positively associated with the use of *external* (+0.14), *academic* (+0.18), and *experiential* (+0.15) evidence. Furthermore, the existence of an organizational unit specialized in the use of research and scientific studies was positively associated with the use of *academic* evidence (+0.12) and negatively related to the use of *internal* evidence (-0.145).

These results corroborate both the EBP literature that discusses mechanisms and strategies for promoting bureaucrats' use of scientific evidence and the literature about capacities that problematize the relationship between individual and organizational analytical capacities. As for the former, the EBPs literature argues that the provision of resources, organizational incentives, and the creation of policy units can tell a lot about the level of rapprochement between bureaucracy and academia and the use of scientific evidence (Pattyn and Brans, 2015; Howlett, 2015; Cherney et al., 2015). In this same regard, such units aimed at mobilizing scientific knowledge could imply more significant use of scientific evidence and a lower demand for internal sources, as suggested by the data in table 3.

An important advance for understanding the effects of analytical capacities, particularly on the use of scientific evidence, would be to deepen the relationship between individual and organizational capacities, seeking to analyze how they affect each other. As the literature recognizes (Pattyn and Brans, 2015), in order for bureaucrats' analytical capacities to be mobilized, it is not enough to provide them with academic training. Organizations must also demand and provide institutional conditions for the use of scientific evidence and other informational sources. Understanding that dynamics and combinations of capacities favor a greater use proves to be a fruitful path for deepening this debate.

As for the results in table 4, it is worth mentioning that, from the perspective of SEM, not many relations with statistical significance were found between the *area of policy*¹⁴ and the *type of evidence* used by bureaucrats. The *social* (+0.28), *economic* (+0.31), and *control* (+0.85) areas are associated with a greater use of internal evidence. The strong association in the case of the *control* area stands out. Such an area is also positively associated with the use of external evidence.

TABLE 4
SEM results: policy area versus type of evidence (2019)

		Type of evidence							
		Internal ¹		External ¹		Academic ¹		Experiential ¹	
		Estimate	Value z	Estimate	Value z	Estimate	Value z	Estimate	Value z
Public policy area	Social	0,276***	3,734	0,038	0,513	-0,132	-1,960	-0,182*	-2,217
	Economic	0,308***	4,694	0,03	0,447	-0,075	-1,255	0,019	0,249
	Infrastructure	-0,061	-0,821	-0,076	-1,013	0,025	0,373	-0,11	-1,288
	Environment	0,142	1,258	0,408***	3,617	0,085	0,751	-0,032	-0,252
	Control	0,849***	8,245	0,283**	2,693	0,123	1,320	0,095	0,805

Authors' elaboration.

Note: ¹ Latent variable.

Obs.: * p -value < 0,05; ** p -value < 0,01; *** p -value < 0,001.

The hypotheses raised about the *analytical/control* work also deserve to be studied because of the results presented on the more specific performance of bureaucrats in the *control* area that rely heavily on *internal* evidence and, to some extent, *external* evidence. For example, as Oliveira and Menke (2020) point out in a study on the preferences of auditors at the Office of the Comptroller General (CGU), there is an apparent prevalence of the use of internal sources, such as standards and evaluations produced by the Comptroller itself. Notwithstanding

14. In the analysis, the variable *policy area* was recoded as a dichotomous variable. Thus, for this variable, respondents linked to the central area were chosen as the reference group for the other areas. That is, the values indicate greater or lesser use by respondents from each area, always in comparison with respondents from the central area (for a list of the bodies that make up each area, see appendix A).

the existence of institutional guidelines to encourage the use of scientific evidence in audit processes, Oliveira and Menke (2020) report that CGU auditors are suspicious of this type of source, which is a finding that deserves to be analyzed.

Concerning the results concerning policy areas, it is also worth mentioning the important positive association of the *environment* area with the use of *external* evidence (+0.26). Such association has already been identified in the literature due to the specificities of the area in terms of subjection to international regulations, external financing evaluation standards, and interactions with non-governmental organizations and international organizations (Abers, 2016; Koga et al., 2020; Macedo, Viana and Nascimento, 2019).

Another important finding for this variable is that, from the model’s point of view, there is no statistically significant association in the model tested between policy areas and the use of academic-scientific evidence. As suggested in the model in figure 1, it is possible that the effect of the use of evidence in policy areas is mediated by the type of work performed and the bureaucrats’ accumulated capacities in the different policy sectors. Another previously mentioned hypothesis deals with the possibility that academic sources are indirectly consumed through other sources, such as standards, technical notes, and control recommendations, which absorb scholarly sources in their elaboration. In any case, this is an analysis to be deepened.

As for the bureaucrats’ sociodemographic characteristics, the results presented in table 5 indicate a weak negative association between the male gender and the use of the *external* type of evidence (0.102, $p < 0.05$). A significant association was observed for all types of evidence for the variable age. However, with magnitude to be weighted depending on the age. It was negative for the *internal* (-0.007), *academic* (-0.006), and *experiential* (-0.007) types and positive only for the *external* type (+0.006).

TABLE 5
SEM results: individual characteristics versus type of evidence (2019)

	Type of evidence								
	Internal ¹		External ¹		Academic ¹		Experiential ¹		
	Estimate	Value z	Estimate	Value z	Estimate	Value z	Estimate	Value z	
DAS 1-3	0,285***	3,903	0,005	0,065	-0,046	-0,697	0,185*	2,192	
DAS 4-6	0,393***	4,417	0,352***	3,816	0,091	0,973	0,269**	2,632	
Individual characteristics	Working in DF	0,148**	3,015	0,213***	4,164	0,118**	2,620	-0,017	-0,292
	Age	-0,007***	-3,279	0,006**	2,738	-0,006**	-2,920	-0,007***	-2,935
	Gender (male)	-0,046	-1,017	-0,102*	-2,213	0,03	0,717	-0,014	-0,278

Authors’ elaboration.
 Note: ¹ Latent variable.
 Obs.: * p -value < 0,05; ** p -value < 0,01; *** p -value < 0,001.

Relevant associations were identified about the functional characteristics related to occupation of positions and work in the DF. For the *internal* evidence type, positive associations were found both for the occupation of *DAS 1-3* (+0.28) and *DAS 4-6* (+0.39) and for *working in DF* (+0.15). This last variable also showed a positive association for the *external* (+0.21) and *academic* (+0.11) types of evidence, indicating a greater diversity in the use of evidence sources by federal bureaucrats working in the DF compared to those working in other Brazilian UFs.

This difference may be related to the different nature of the work performed and the degree of influence of bureaucrats working in organizational units of direct administration outside Brasilia, in general, more related to the operationalization of guidelines and decisions defined by the headquarters of agencies in Brasilia (Saguin and Palotti, 2021) and, therefore, with less demand and access to a diversity of informational sources. However, further studies deserve to be conducted to make statements about these dynamics. It should also be remembered that these data refer to the context of bureaucrats in the direct federal administration. This dynamic should be distinct if we consider the entities of the indirect administration, many of which are characterized by a high degree of specialization and located outside Brasilia, such as universities, regulatory agencies, foundations, and research institutes.

Finally, as for the DAS occupation, in addition to the positive association of higher magnitudes with the internal sources already mentioned, the results indicate an association with experiential sources for both *DAS 1-3* (+0.18) and *DAS 4-6* (+0.27). Furthermore, for these higher DAS, there is also a positive association with the use of *external* evidence (+0.35). These results, in dialogue with the literature on mid-level bureaucracy (BME), bring interesting questions to the debate.

As Pires (2018) reveals, bureaucrats who occupy a DAS act at an intermediate level between the so-called street-level bureaucracy and the decision-makers, both of which are pressured and external-environment oriented. In this role, the function of mid-level bureaucrats would be to act as “agents of integration, articulation, coordination, and production of coherence” within the State, influencing the production of policies by interfering in the flow of critical resources, including information resources (Pires, 2018, p. 201). Such a differentiated position and function of these bureaucrats raises the question of whether they exercise an intermediary function of the various sources of information, as already pointed out in the control bureaucracy case.

Furthermore, despite a greater diversification of sources, especially in the case of the higher DAS positions, the absence of association between the occupation of these positions and the use of scientific evidence again calls attention. For example, if mid-level bureaucrats are a relevant gateway to informational sources within the public administration, scientific evidence would not be accessed through them.

6 FINAL REMARKS

This chapter sought to present an x-ray of the types of evidence used by bureaucrats and which contextual factors of their performance in policy are associated with the consumption and use of these informational sources. Regarding Pinheiro's (2020b) proposal of the moderate model of evidence, this study is based on the understanding that an informational tool becomes evidence depending on the contextual framework in which it is used. Therefore, this would justify expanding the observation of the use of informative tools to a greater diversity of contexts in which users act.

In order to portray this greater diversity, an analytical model was proposed that considers four types of contextual conditioning factors of federal bureaucrats' performance, as well as the possible relationships between them, namely: policy work; the analytical capacities accumulated by bureaucrats and agencies; the policy areas in which they act; and the functional and sociodemographic characteristics of individuals.

In 2019, when data were collected via the survey, four types of informational resources were used by bureaucrats in the direct federal administration: i) internal – sources produced by the federal public administration itself; ii) external academic – academic-scientific research and sources; iii) external non-academic – research produced by other actors outside the federal public administration and non-academic; and iv) experiential – sources coming from the bureaucrat's own experience or co-workers.

Relevant associations were identified between these sources and the contextual factors analyzed. The strong association between the type of *internal* evidence and most of the contextual variables of the model should be emphasized, pointing to an accentuated use of this source, especially in the *analytical/control* and *contract/supervision* works, in DAS posts, and in the social, economic and control sectors.

Although some of these results are expected due to work, as in the case of the *contract/supervision* work, we argue that these results require further study on two main issues. The first concerns a possible role assumed by internal sources as intermediaries and validators of other sources of evidence, and the second is related to the relationship between analytical work and control. Are there gatekeepers or knowledge brokers who would control what other sources of information and how these would reach the federal administration? If so, how does this dynamic occur? Who would they be? The results presented in this research present control bureaucrats and DAS officials as actors who may be performing this function.

As for the external sources, the associations of greater magnitude were found in the more specific contexts of *relational* work, among the higher DAS officials (4 to 6), and the *environment* area. The first two factors may be related, as

suggested in the analytical model, and connect to a more interactive and business-like context in which the exchange of information sources is enhanced. The same would occur in the *environment* area due to the influence of the international setting and the more substantial presence of the policy's external stakeholders. However, the fact that other areas or types of policy work have not shown a positive association with this source of information may suggest a tendency towards self-enclosure or endogeneity, which is already characterized by the significant presence of internal sources in the different contexts of bureaucratic performance.

The results concerning the sources of scientific evidence go in the same direction. At first, no positive association was found with any policy area. As for policy work, *relational* is again the one that would have some significant association due to its greater relationship with external actors and, therefore, access to a greater diversity of informational sources. In the second one is the *analytical/control*. The latter reinforces the argument for the need to deepen the context of this type of work and the relationship between control and policy producers also for access to scientific sources.

It is also essential to highlight the association between analytical skills, both individual and organizational, and the use of scientific evidence, as suggested by the specialized literature that argues that the use of this type of source demands not only qualification of bureaucrats but also research infrastructure and institutionalization of evidence governance tools.

Finally, as for experiential sources, positive associations were found in greater magnitude in *analytical/control* work and between DAS 4 and 6 officials. Research that examines the importance of tacit knowledge for specific work contexts in policy may help to understand these relationships.

We recognize that several developments and deepening can be envisioned from the results presented. One approach is to continue exploring and refining the proposed analytical model to advance explanatory analyses of the use of evidence. To this end, incorporating factors that allow investigating the relationships between the explanatory variables and the political-institutional dynamics of the actions of bureaucrats and organizations, as does the literature on policy subsystems in the advocacy coalition model, seems fruitful. The other approach is to conduct and compare studies with different profiles of bureaucrats, such as those of the internal administration, control bodies, and subnational entities.

In fact, other studies have already been or are being conducted in Brazil with this objective and deserve to be analyzed as a whole in order to add to a comprehensive picture of the Brazilian State's analytical capacity. Furthermore, the improvement of the methodology applied, through the use of experimental or qualitative methods that allow the triangulation of data, can also bring advances, especially in

the context currently experienced with the emergence of covid-19, which makes one question the importance, the uses and, limits of scientific evidence and what has actually been informing policies. This study aimed to be part of this path.

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APPENDIX A

VARIABLES, QUESTIONS, AND SCALES

TABLE A.1
Type of evidence and indicators (questions)

Latent variable	Question	Question in the questionnaire
Internal	D1	Laws and regulations.
	D2	Technical notes produced by federal public administration bodies.
	D3	Legal opinions and court decisions.
	D4	Recommendations from control bodies.
	D6	Government information systems and databases (for example, Siafi, Cadastro Único – Single Registry –, IBGE data etc.).
External	D5	Best practices and initiatives produced by states and municipalities.
	D9	Recommendations from participatory instances (e.g., policy councils, conferences etc.).
	D10	Experience and opinions of policy beneficiaries or ombudsman comments and suggestions.
	D11	Information generated by interest groups (e.g., unions, companies, social movements, NGOs etc.).
	D12	Opinions and recommendations of international organizations or best practices produced by governments of other countries.
Academic	D13	News articles.
	D7	Articles, chapters, or books produced by researchers.
Experiential	D8	Scientific research reports (e.g., research consulting products, Ipea discussion papers etc.).
	D14	Personal experience.
	D15	Consultation with co-workers from the same or other bodies of the federal administration.

Authors' elaboration.

Obs.: 1. Question in the questionnaire: "In the past 12 months, how often have you used the types of information listed below for your work?". Scale: never (1), rarely (2), occasionally (3), frequently (4), always (5).

2. Siafi – Integrated System of Financial Administration of the Federal Government; IBGE – Brazilian Institute of Geography and Statistics; NGOs – non-governmental organizations.

TABLE A.2
Type of work and indicators (questions)

Latent variable	Question	Question in the questionnaire
Analytical/control	C1	Prepare reports, opinions, technical notes, and other information to support decision-making.
	C2	Collect and analyze data and information related to policy.
	C4	Elaborate normative texts (for example, bills, decrees, ordinances etc.).
	C10	Meet the demands of control bodies.
	C12	Advise directors.
Relational	C3	Hire and validate evaluation studies of the policy processes, results, and impacts.
	C6	Capture and negotiate financial resources to make policy actions, projects, and programs feasible.
	C8	Coordinate the team.
	C9	Represent your body, negotiate, and make agreements about actions and policies with other government entities (for example, other ministries, states, and municipalities etc.).
	C11	Consult with and assist interested groups in society on issues involving policy.
Contract/supervision	C14	Organize events.
	C5	Supervise compliance with policy rules and regulations.
	C7	Elaborate, negotiate, manage and supervise contracts, agreements, terms of development, terms of collaboration and other instruments.

Authors' elaboration.

Obs.: The question in the questionnaire is: "In the last 12 months, how often did you perform the following activities related to the policy in which you work?". Scale: never (1), rarely (2), occasionally (3), frequently (4), always (5).

TABLE A.3
Observable variables (questions)

Observable variables	Question	Question in the questionnaire
Administrative (type of work)	C13	Do you perform administrative activities, such as scheduling meetings, processing cases, purchasing tickets, and drafting letters and memos?
Area	A14	In which ministry or higher office do you currently work?
Resources	D49	Does my organization have enough means and resources to obtain information produced by scientific research and studies?
Institutionalization/ governance	D50	Within the structure of your ministry/body, is there an organizational unit (advisory, coordination, department, or secretariat) specialized in the use of scientific research and studies?
Formation	F4	What is the highest-level course you have completed?
Skills	E4	Do you use new tools and technologies for data processing and statistical analysis (programming in R, Stata, Python, Java etc.)?
Experience with policy	B2	How long have you been working with this policy?
Do you hold a management and advisory position (DAS)?	A5	What level of DAS or equivalent position do you currently hold?
Working in the Federal District	A16	In what state do you currently work?
Age	F2	How old are you?
Gender	F1	What is your gender?
Race/color/ethnicity	F3	What is your race/color/ethnicity?

Authors' elaboration.

TABLE A.4
Division into six major policy areas

Policy area	Body
Central	Special Advisory to the President of the Republic
Central	National Data Protection Authority
Central	Presidential Staff
Central	Personal Office of the President of the Republic
Central	Institutional Security Office of the Presidency of the Republic
Central	Ministry of Defense
Central	Ministry of Justice and Public Security
Central	Ministry of Foreign Affairs
Central	Government Secretariat of the Presidency of the Republic
Central	General Secretariat of the Presidency of the Republic
Central	Vice-Presidency of the Republic
Control	Federal Attorney General's Office
Control	Office of the Comptroller General
Economic	Ministry of Agriculture, Livestock, and Supply
Economic	Ministry of Economy
Economic	Ministry of Tourism
Infrastructure	Ministry of Science, Technology, Innovations, and Communications
Infrastructure	Ministry of Infrastructure
Infrastructure	Ministry of Mines and Energy
Infrastructure	Ministry of Regional Development
Environment	Ministry of Environment
Social	Ministry of Citizenship
Social	Ministry of Education
Social	Ministry of Women, Family and Human Rights
Social	Ministry of Health

Authors' elaboration.

STATE PRODUCTION OF EVIDENCE AND USE OF ADMINISTRATIVE DATA IN PUBLIC POLICIES¹

Janine Mello²

1 INTRODUCTION

The debate over the use (or non-use) of evidence to support government action, although not new as a practice aimed at organizing and legitimizing State action, has been increasingly incorporated into the literature of the policy field. In recent decades, the defense of the need for more and better evidence to be produced as instruments to guide the production³ of policies has intensified. But on the other hand, different authors have called attention to the analytical and conceptual limits of restricted notions of evidence understood fundamentally as representations of truth, based on assumptions of technical-instrumental rationality present at the heart of the role attributed to scientific knowledge in modernity (Parkhurst, 2017; Cairney, 2019; Nutley, Walter and Davies, 2007; Jasanoff, 2012).

Simultaneously, public information and official statistics production have assumed contours of greater amplitude, scope, and complexity. Here also lies the dual character of the interpretations of the phenomenon. There are arguments focused on the potential use of these data to improve State interventions and, consequently, on the welfare conditions of the populations. Also, there are reflections on the ethical limits linked to the use of this information by governments (such as issues of consent and privacy), in addition to the role effectively played by these records in the configuration of elements that delimit specific themes or social problems, in the definition of which portions of the population will or will not be served by particular policies, or even in evaluations on the performance of government strategies from implementation data of programs and policies (Penner and Dodge, 2019; Poel, Meyer and Schroeder, 2018; Silveira, 2017).

1. The author is grateful for the thoughtful and generous comments made by Paulo Jannuzzi and Isabele Bachtold on this chapter. Any errors and omissions are the sole responsibility of the author.

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3. The use of the term *production* encompasses the phases of policy formulation, implementation, monitoring, and evaluation.

The most apparent dialogue between the two debates is centered on how the State uses these data in planning its interventions and broader policy production processes. Despite recognizing the relevance of this dimension of analysis, this text proposes to approach the discussion of evidence based on the role assumed by the State as a *producer of evidence capable of guiding governmental action on certain themes/agendas/policies*, and not only as a user of data and information that may support its activity.

Recognizing the heterogeneity⁴ that characterizes the different existing administrative records, their different origins, specificities, and especially their function for policies, the objectives of this chapter are: i) to map the main sources of data, in the form of administrative records, existing in the federal government; ii) to categorize the different administrative records, according to possible functions to be performed; and iii) to evaluate their articulation as a potential source of evidence to support policies. Methodologically, the analysis will be exploratory and qualitative in nature and will be supported by categorizing the cases selected due to their specificities and multiple uses in the stages of policy.

Administrative records under the responsibility of the federal government⁵ that meet the following criteria will be mapped:

- national coverage;
- availability of data for consultation;
- the role of the Federal Executive in managing the registries;
- degree of consolidation of the database (time of existence, official character of the database, database management mechanisms, periodic updates, among others); and
- thematic diversity among governmental areas.

Once the main characteristics of the selected cases have been mapped and identified, the databases will be classified according to their uses and functions in the following categories: i) support for formulating policies; ii) instrument to guide implementation; iii) mechanism for following up and monitoring actions; iv) support for inspection actions and control of physical and financial execution; and v) mechanisms for accountability, transparency, and social control.

4. Despite the multiplicity of information generated by the State apparatus, we chose to limit the analysis to the set of data from administrative records managed at the federal level, such as, for example: Unified Registry for Social Programs of the Federal Government (Cadastro Unico); Department of Informatics of the Unified Health System (Datusus); School Census; Annual Social Information Report (Rais), and General Registry of Employed and Unemployed People (Caged); Information System of Agrarian Reform Projects (Sipra); Declaration of Aptitude to the National Program for Strengthening Family Agriculture (DAP); among others.

5. This does not mean that the other subnational entities do not participate or have specific functions in the processes of registration, updating, and qualification of information, among others.

Finally, we will analyze the administrative records and their different forms of articulation with the production of policies, allowing for a deeper understanding of how the federal government uses this information as evidence.

As a result of the analysis, we hope to increase our understanding of the roles played by administrative records in the different stages of policy production and their potential and limitations. In addition, we seek to raise hypotheses and possible explanations for the use and non-use of information of this nature as helpful evidence to improve the design, execution, and delivery of services essential to improving the welfare conditions of the Brazilian population.

With these objectives in mind, the text is divided into four sections in addition to this introduction. Section 2 is dedicated to discussing the concept of evidence beginning with the problematization of notions supported by rational-positivist assumptions about the role played by evidence in policies. Section 3 outlines the theoretical frameworks adopted to understand the notions of State and policies mobilized in the text and their relations with the production of evidence. Section 4 discusses administrative records and their different uses in policies and the results obtained from the proposed categorization. Section 5 brings the final remarks, reviewing the results and their connections with the topics mentioned in the theoretical discussion.

2 BRIEF NOTES ON THE CONCEPT OF EVIDENCE

In the last decades, the defense of the need for more and better evidence to be produced as instruments capable of guiding the production of policies has intensified. In the scope of the debates on evidence-based policies, there have been recurrent studies on how governmental instances make (or should make) use of evidence – generically defined as something that can be scientifically proven – to support or improve their actions regarding population groups.

However, different authors have problematized key elements of this debate, such as the very notion of what constitutes *evidence* and the need to understand how the political dimension permeates the adoption or not of sets of evidence to guide government action. The discussion also incorporates questions about how values, assumptions, worldviews, and interests affect the definition of what does or does not constitute valid input for public action and strategies for using this information.

The understanding of what constitutes evidence is polysemic and multifaceted, and this paper will assume as a premise an *expanded* knowledge of *evidence in policy* based on the discussions held in works such as Pinheiro (2019), Nutley, Walter and Davies (2007), and Oliver, Lorenc and Innvær (2014), among others. In general, these studies approach evidence as one among several informational sources mobilized to support decision-making processes pointing to the need for

a conceptual broadening of what could be understood as valid evidence within the policy production debate. Moreover, the contingent and unfinished nature of evidence assume a central explanatory position as a key to understanding the relationship between power configurations, interests, worldviews, and shared values in a given socio-historical time and the processes of production and meaning of what is classified as evidence.

According to this perspective, evidence can be understood as data generated in the scope of scientific research conducted by universities and research institutes. It also can result from internal evaluations made by governments themselves about their own policies. They can also be found in audits by control agencies, in reports and technical notes produced by the State bureaucracy, or even as a result of external evaluations by specialized consultants hired by the public power.

Evidence is produced both inside and outside the State scope. Within the State, they can be compiled as reports on the follow-up of execution, performance evaluations, registers, population census, and administrative records, among others. Outside the State, they are produced by research centers, universities, and think tanks; they may be dispersed in media materials or be the empirical result of the professional experience of people involved with a certain theme.⁶ Evidence may take on a more scientific or technical bias, depending on how, by whom, and for what purpose it is produced.

What differentiates scientific and technical evidence from values, beliefs, and convictions that people have about a given issue? To what extent the notions we have of *science* and technique are not themselves ways of interpreting the world and the reality that surrounds us as well as ethical and moral values or religious beliefs? What is the difference between using these different sources of information (if we consider them all legitimate from an epistemological point of view) insofar as they express attempts to construct explanations for the events that fill human life? In the limit, why would scientific and technical evidence be more adequate than personal beliefs and convictions to guide the production of policies?

The contemporary *comprehension* of the functions and meanings of technical and scientific knowledge is based on Enlightenment assumptions typical of the Western modernity period about the conditions of possibility of knowledge, the potential, and limits of human rationality, and the role of different knowledge (mythical, cultural, local) mobilized by other societies over time. As Susanne Langer (2004, p. 270) summarizes well:

6. For more details on how personal experiences acquire the status of knowledge and/or evidence in policy production processes, see Mazanderani et al. (2020) and Smith-Merry (2020).

we have inherited the realistic outlook and its intellectual ideal, science. We have inherited a naive faith in the substantiality and ultimacy of facts, and are convinced that human life, to have any value, must be not only casually and opportunely adapted to their exigencies (...), but must be intellectually filled with an appreciation of “things as they are.” Facts are our very measure of value. They are the framework of our lives; thinking that leads to the discovery of observable fact takes us “down to reality”; Wittgenstein has really caught and recorded the modern man’s intellectual attitude, in his metaphysical aphorisms. (...) Our world “divides into facts” because we so divide it. Facts are our guarantees of truth.

In this sense, what is placed outside rationality is discarded as fact, as a given of reality, as evidence. However, it is worth noting that the notion of instrumental rationality, central to *the project of modernity*, has long been questioned and replaced by contextual and situational notions of rationality (Kay, 2011; Nugroho, Carden and Antlov, 2018; Jasanoff, 2012; Jasanoff and Kim, 2015). The reason, consequently, comes to be understood from its multiplicity and contingency as a critical factor in understanding human action and its ways of meaning the world; not just one reason, but different rationalities, no longer a universal and unique knowledge, but other types of epistemologically valid knowledge as attempts to understand the phenomena of human life and its events.

Evidence, in this sense, is no longer understood as a pure, neutral, or ahistorical element capable of revealing the world and – embracing the unfinished character of knowledge postulated in the 1920s by Bachelard (2004) – begins to be perceived, as well as other social phenomena, as the result of constructed processes of the meaning of reality permeated by power relations, interests, values, and worldviews that affect how informational data are produced, received, and interpreted by individuals and social groups. Evidence does not emerge in institutional vacuums and carries within it situational elements that should not be overlooked in efforts to understand its potential and limits in producing policies.

In this chapter, the use of evidence is addressed as a tool for designing and implementing policies, understood in its most basic sense as structured responses to solve problems faced by a society that aims to achieve a change in reality. The focus is restricted to the use of evidence (of different types) capable of providing information that contributes to the understanding of collective problems that exist in society, such as the collective ones as increasing social inequality, high crime rates, lack of teachers or hospital beds, among many others.

In these cases, evidence should ideally contribute to support decisions capable of increasing well-being and improving the living conditions of different segments of the population. That does not imply a naïve assumption that decision-making processes will necessarily be informed by evidence or that, when incorporated into decision-making, evidence will produce better policies. Evidence

is one other element that can contribute to problem-solving. They do not contain answers in themselves, nor do they provide ready-made solutions for government action. As “data relative to culture, (...) necessarily embedded in a construction” (Bachelard, 2004, p. 18), they depend on interpretation, opening a wide range of possibilities for the use of evidence as a support for State action.

Considering the above premises, *evidence in policies* would be all those data and information capable of broadening the understanding of phenomena of different orders (economic, social, cultural, political) and their repercussion (positive or not) on various publics, regions, contexts, or life situations. Paradoxically, the same movement that enables a broader understanding of what can be considered a source of knowledge in policies allows distinguishing evidence from other sets of arguments used to justify public action in a particular direction and to the detriment of different possibilities. Unlike personal beliefs and convictions, evidence, whether technical, scientific, professional, or local (Nugroho, Carden and Antlov, 2018), should be responsive to isonomic and republican criteria.

That does not mean that justifications based on personal beliefs and convictions are not endowed with rationality or are not valid as constructed knowledge about the world. However, if we admit that the coexistence of different forms of knowledge is correct, it would make more sense to consider their specificities, differences, and similarities to understand how multiple pieces of knowledge related to different dimensions of human life. If, on the one hand, this does not presuppose that there is a hierarchy among the different types of knowledge, on the other hand, it is not reasonable to assume that they are indistinguishable and interchangeable bits of knowledge. In this sense, understanding how the different types of knowledge are constructed, their various epistemological statutes, and their internal logics of constitution and legitimation tend to be a crucial effort to make explicit the role attributed to each of these discursive regimes in the Foucaultian sense, their possibilities and limitations as instruments of justification for the interventions continuously operated on social reality.

Far from adopting a posture of reification of technical-scientific knowledge or of attributing a sacralized place to evidence, the production of technical-scientific knowledge should itself be understood as part of constructed processes of understanding the world that surrounds us and, for this very reason, subject to error, incompleteness, and permeated by values, interests, and force correlations.⁷ And it is precisely because they are not flawless and do not constitute “unquestionable truths” that evidence is an object of dispute and can be submitted to scrutiny and

7. This issue is widely discussed in studies of philosophy of science and sociology of knowledge, among other areas. For more details, see, for example, Latour (1994), Bachelard (2004), and Langer (2004).

questioning by different sectors of society, be they groups of researchers or “experts” on a given theme, opinion formers, and other actors in civil society.

Evidence should meet minimum publicity elements capable of ensuring, to some extent, transparency to the methods and theories that led to the achievement of certain results via wide and periodic dissemination. The regular dissemination of statistics, reports, and studies allows data sets and effects on countless themes to be followed up and questioned, as indicated by various examples in recent history.⁸ While the evidence is produced from hypothetical-deductive systems constituted by concepts, paradigms, and methodological and conceptual choices legitimated by epistemic communities, values and beliefs derive from other matrices of meaning.

Despite the array of arguments in favor of the use of evidence in policy, its adoption as an informational element for formulating and implementing government policies is eminently a political decision. As discussed in section 3, policies are not only made of data, information, and statistics. They are also permeated by commitments, interests, values, and a greater or lesser degree of adhesion to worldviews shared by different sectors of society.

In this sense, the mere existence of evidence and its abundant production, or the defense that scientific data are better than beliefs and convictions, or even that evidence should override the agreements between different political and economic interests, does not imply the automatic adoption of evidence by governments.⁹ The literature on evidence has focused on the reasons that would lead governors and public managers to make or not use evidence. Factors pointed out range from the lack of adequate evidence to support the policies under discussion to the difference in logic, languages, and timing of evidence production, and the urgency to respond to problems taking place right now. Other studies see the lack of knowledge by public managers of evidence produced by research institutions as one of the main barriers to its use or highlight the difficulty of translating evidence into information capable of guiding policy design or implementation and the need to build bridges between producers and users of evidence¹⁰ (Hall and Battaglio, 2019; Weiss, 1977).

8. Disputes over deforestation data released by the National Institute for Space Research (Inpe), the ways of counting deaths resulting from covid-19 and the unemployment metrics adopted by the Brazilian Institute of Geography and Statistics (IBGE). In line with this, the increase in requests for access to government data via the Access to Information Law (LAI) or the questions about the attribution of secrecy to documents that provide support for reforms, as in the cases of social security and administrative reforms more recently, among other examples.

9. Different studies argue that the best alternative to increase the use of evidence would be the adoption of specific strategies for knowledge dissemination (Dias et al., 2015). However, works such as that of Hall and Battaglio (2019) problematize explanations centered only on the barriers and difficulties of access to evidence by public managers.

10. More recent studies have proposed the adoption of co-creation or co-production as more adequate terms to encompass the strategies of approach between research and practice. For more information, see Metz, Boaz and Robert (2019).

It is worth noting that the non-use of evidence can take on a strategic character and constitute a decision in itself. That is, not using evidence is not always due to some barrier to access or understanding of that data. Instead, evidence can be deliberately discarded for several reasons. For example, more tangible cases occur when evidence points to results contrary to the interests or narratives adopted by governments on particular issues or when, in the face of a multiplicity of the available evidence, the set of evidence mobilized is selected as a way to corroborate decisions previously made to the detriment of other evidence related to the same theme.

The political dimension is not outside the game of production and use of evidence. Nevertheless, it does not mean that data and information used as evidence should be invalidated or discarded as part of the decision-making process. Assuming the constructed nature of different types of knowledge does not allow us to claim that there is no difference between them. Different kinds of knowledge have different purposes, carry different assumptions and origins, and have multiple uses and meanings depending on the context in which they are found.

For this study, which is concerned with discussing the relationship between evidence and policies, evidence must be understood as one element among other possible elements that, ideally, should be distinguished from other types of knowledge when it comes to public issues, protection of the rights of different segments of the population, and issues that are subject to government intervention. This is so because evidence must respond to responsiveness criteria, which is greater than personal beliefs and convictions.

3 STATE, POLICIES, AND THE PRODUCTION OF EVIDENCE

As part of the broader institutional context, it would not be possible to understand the processes of production of policies and instruments mobilized to organize governmental action, including the construction of evidence, without considering the central role played by discourses, ideas, groups, values or hegemonic structures in the creation of benchmarks for action and behavior of organizations and individuals, as well as in the recognition or questioning of rules and limits for the inclusion and exclusion of specific positions.

These assumptions establish a dialogue with studies that, more markedly from the 1980s and 1990s on, have questioned the notion of policy as a technical-rational result of linear actions, organized separately in sequential processes. Analyses centered on rational choice theory (Shepsle, 2006; Shepsle and Bonchek, 1997) and policy cycle approaches (Ball, 1993; Cairney, 2012; Howlett et al., 2013), and studies focused on the political dimension of policies and on aspects such as language, argumentation, representations, ideas, and meanings – hitherto little explored as variables to understand the processes of policy production of their ef-

fects – come into play as a result of the growth/strengthening of analytical perspectives associated with post-positivist, argumentative or critical studies¹¹ strands in the Anglo-Saxon literature on policy (Yanow, 2015; Cairney, 2012; Fischer et al., 2015; Bacchi, 1999) or in the French stream of sociology of public action studies (Halpern, Lascoumes and Le Galès, 2021).

Similarly, studies focusing on the role played by evidence in state action have taken on a critical bias toward the almost axiomatic ideas that “the more evidence, the better the policy” or of “what works?” as a way to recommend paths to be pursued by public management in search of more effective and efficient solutions by looking only at a part of the elements that make up the complex and intricate arena of policy production.

Elements such as power, conflict, context, social construction, ideas, and representation become central to understanding the use of evidence in policy. They are defined not only as government tools but also as windows that allow us to observe the intricacies of political processes in which actors, concepts, and instruments interact in different ways, creating or consolidating “new rationalities of governance and regimes of knowledge and power” (Shore, Wright and Però, 2011, p. 2).

The conceptual definition of policies adopted in this study is based on the blending of theoretical elements present in different interpretative matrices to establish a broader framework capable of embodying different dimensions and the complexity inherent in public action. To this end, three premises were established that, in my opinion, address fundamental issues for understanding policies from the theoretical framework adopted.

The first is that *policies, as materializations of state action, are constituted by rules, standards, requirements, and/or criteria with the potential to guide, define, restrict, or encourage the behavior*. In general, the development of a policy is defined as a process of technical-political nature, configured by a set of decisions taken by actors/organizations based on the possibilities and limitations produced by the context in which they are inserted (Steinmo, 2016; Immergut, 2007). Considering that “the effects of policies are shaped at the core of the structures in which these actors operate, and according to ideas they hold” (Howlett et al., 2013, p. 20), it is reasonable to assume that both the policy design and its forms of implementation are influenced by widespread and socially accepted perceptions and expectations about what is defined as the object of public intervention, as well as about what is indicated as public demand to be met by government action.

11. Also known as interpretive, ideational, cognitive, constructivist, among other related terms. See more in Fischer et al. (2015).

Under this perspective, it is central to understand how rules, representations, and expectations that implicitly or explicitly configure the content of a policy influence the dynamics of reinforcement or deconstruction of practices with the potential to perpetuate conditions of inequality among social subjects.

In other words, this brings to the core of the discussion about policies the notion that preferences, interests, and social representations do not emerge from institutional vacuums. They are, on the other hand, the result of social constructions based on a given institutional context in which sets of perceptions and beliefs influence the ways used by social actors to build images and perceptions about social reality, as well as to guide their actions and behaviors according to these references (Castoriadis, 2007; Stone, 1988; Muller and Surel, 2002; Ingram and Schneider, 2015).

It makes no sense, under this perspective, to characterize the production of policies as the result of logical-rational processes guided by an alleged technical impartiality free of values and ideological components. The understanding of the reasons why a policy assumes a certain content, scope, reach, or objective to the detriment of other possible ones requires that the emphasis of the analysis is not limited only to the formal and material processes that stand out to the eye, but also that it is shifted to the explicitness of symbolic or informational elements that permeate the logics, the meanings, the contents, the texts, and the discourses associated with the action by the heterogeneous list of actors that circulate the processes of policy production and that cannot be disconnected from the social, economic, and political conditions that constitute the historical moment to which they belong.

The second premise is that *policies could also be conceived as producers of specific referential on a given theme, problem, or group*. Understanding policies, in this way, requires that they be considered part and product of the institutional context from which they emerge, at the same time that they play a similar role by constituting cognitive matrixes¹² from which multiple actors give meaning to social reality and guide their actions and interactions with other social subjects. From this perspective, policies would be

processes through which the representations that a society makes of itself to understand and act upon reality are elaborated. The elaboration of a policy involves first of all the construction of a representation of the reality on which one intervenes and it is through this image that the actors interpret the problem, confront possible solutions, and define their action (Grisa, 2010, p. 106).

12. Also defined as frames, referential, or frameworks, among other possibilities. For more on this, see Goffman (2007). Analyses based on the cognitive approach defend the understanding of policies as "cognitive and normative matrixes, constituting systems of interpretation of reality, within which the different public and private actors may inscribe their action" (Muller and Surel, 2002, p. 44).

Recurrently adopted by studies associated with the cognitive approach to policy (Jobert, 1989; Braun, 2015; Hajer and Laws, 2006), this notion allows for the incorporation of elements linked to the need to emphasize how relations occur between the production of policies; the actors inserted in these processes; the set of ideas mobilized during the stages of formulation and implementation; and the multiple representations that permeate these interactions and may or may not be established as benchmarks for understanding the meanings, objectives, justifications, and intentions of given government action.

Considering the focus of the analysis, assuming that policies play a relevant role in establishing the forms mobilized by individuals to conceptualize and symbolize social relations, from which they organize their lives and structure social reality, would be directly linked to the role assumed by ideas in the constitution of multiple representations or visions present in policies. Interpreted not as unequivocal or inexorable results of processes guided by power asymmetry but as a web of meanings from which sets of ideas, or representations, are mobilized, strategically, consciously, intentionally, or not, to delimit the possibilities of action at a given moment.¹³

However, it is worth emphasizing the relevance of treating the representations that prevail as guiding government action and the multiple understandings constructed by the actors affected, to a greater or lesser extent, by these policies as strategic elements for understanding the symbolic and material disputes that occur in the formulation stage, in addition to the impacts produced by these representations throughout the implementation of the action.

In this sense, ideas that shape a policy tend to constitute guiding principles for what would be understood as an adequate policy design considering the contours given to the problem at hand and its causes, as well as the criteria used to define the parameters adopted in the implementation stages and, consequently, the performance benchmarks based on which the policy will be evaluated.

As a third premise, policies are assumed as *instruments through which governments and other actors in the public sphere can classify and regulate spaces, subjects, and objects liable to be “governed”* in dialogue with conceptions adopted by authors associated with the anthropological strand of studies on policies (Shore, Wright and Però, 2011; Wedel and Feldman, 2005; Miranda, 2005; Porto, 2014).¹⁴

It is worth pondering, supported by an expanded meaning of power in the terms defended by Foucault (2008), that admitting the influence of policies on social reality does not presuppose affirming that restrictive content invariably guides

13. What does not mean that there are no changes in the conditions of production of these referentials and in their forms of use. For more information, see Tomazini (2021).

14. In these studies, as well as in part of the analyses that constitute the sociology of public action, the Foucauldian notion of governmentality assumes a central role as an explanatory key to the conditions of possibility for state action.

their action around classifications, delimitations, and distinctions established by the policies. On the contrary, policies would be endowed with an ambivalent nature, in which they serve as instruments of consolidation, validation, and legitimation of a particular social order, or they can contribute as devices to change reality (Lovbrand and Strippel, 2015; Luke, 2015). Understood according to these frameworks, policies

are not simply external, generalized or constraining force, nor are they confined to texts. Rather, they are productive, performative, and continually contested. A policy finds expression through sequences of events; it creates new social and semantic spaces, new sets of relations, new political subjects and new webs of meaning (Shore, Wright and Però, 2011, p. 1).

The general assumption is that understandings that are more compatible with the complexity inherent to the State structure and the processes of production of policies would incorporate in their interpretative horizon reflections on contextual interactions, power correlations, and factors linked to ideas, interests, and beliefs as constitutive dimensions of theoretical perspectives based on the social construction of reality as a prerogative of analysis.

The same reflection applies to understanding the dynamics of production of the different types of evidence mobilized by governmental actors in a given historical moment. In line with the arguments presented in this text, evidence, as part of the constituent elements of policy production, may affect how rules, standards, requirements, and/or criteria with potential to guide, define, restrict or encourage behaviors are incorporated into policy design. They can also contribute by strengthening certain constructed frameworks about specific issues, problems, or audiences. Finally, evidence can also play an essential role as an instrument through which governments and other actors in the public sphere can classify and regulate spaces, subjects, and objects that can be governed.

Having made these considerations, it is crucial to understand the dynamics that delimit the use of evidence by State actors, especially those that allow a wide range of evidence to be produced within government agencies, and how this information, especially for this paper, administrative records are created and adopted as valid supports in the production of policies.

4 ADMINISTRATIVE RECORDS AS EVIDENCE

Despite permeating the routine organization of governmental action daily and providing elements for decision-making at different moments in the production of policies, administrative records are still little addressed in analyses of the structuring and management of governmental actions, and they are still scarce in studies that address the production and use of evidence by the State sphere (Holt, 2008; Groves and Schoeffel, 2018). Despite efforts in different countries to foster the use

of administrative records for statistical purposes and as a source of policy evidence (United States, 2014; 2016; Wallgreen and Wallgreen, 2014),¹⁵ the underutilization of these data can be explained by numerous reasons. Among these, and perhaps the main one is that it stems from the administrative-operational nature attributed to this type of information, almost always produced within government bodies and used chiefly by public managers and leaders responsible for conducting the policies being developed by governments.

Described very broadly as “data that derive from the operation of administrative systems, typically done by public sector agencies” (Elias, 2014, p. 103), administrative records generally have purposes related to the management of the policies themselves and are adopted for the purposes of recording and monitoring the information needed to enable the fulfillment of the legal-normative competencies and responsibilities assigned to the different sectoral bodies.

It is possible to argue, in light of the Brazilian experience, that, in addition to more operational purposes such as those listed by Woollard (2014) – recording specific information provided by individuals or organizations stored as reference (births, deaths, registration data etc.); collection of information that supports the fulfillment of governmental responsibilities (granting of benefits, tax collection etc.); and the permanent storage of information necessary for the completion of the legal and regulatory competencies and responsibilities assigned to the different sectoral agencies etc.); and also the permanent storage of information about specific events of interest to the public administration – administrative records also play other roles, more related to the production processes of policies, and repeatedly can assume the role of evidence adopted to support decisions and measures aimed at ensuring the implementation or smooth progress of these interventions.

Administrative records can easily become useful evidence to guide State action. For example, they consolidate information that can be mobilized in the preparation of diagnoses on a given situation or public problem, provide data on population groups that may or may not become beneficiaries of a given government program, or function as valid references to accompany the execution and implementation of policies and to support the monitoring and evaluation of these initiatives.

The Brazilian public administration has countless administrative records that vary enormously in scope, degree of consolidation (guided by aspects such as length of existence, the official character of the database, database management mechanisms, and periodic updates, among others), degree of transparency, availability of data for consultation, in management arrangements, as well as in purposes and thematic areas.

15. More information at: <https://www.statcan.gc.ca/en/our-data>.

If, on the one hand, there are areas with robust systems capable of consolidating different layers and levels of information and guiding the execution of sectorial policies (health and education, for example), on the other hand, there are some sectors that have been gradually advancing in structuring mechanisms for systematizing data and expanding the strategic use of these records for planning their interventions (environmental and social assistance areas are examples). However, there are also those areas in the early stages of managing these databases, often having only spreadsheets or isolated records mobilized by the actors involved in operationalizing their policies (for example, data on traditional peoples and communities).¹⁶

Recognizing the heterogeneity that characterizes these records, their origins, specificities, and mainly the functions they assume for policies, we have opted to limit the analysis to the set of data from part of the primary administrative records managed at the federal level, characterized by national coverage, with data available for consultation and a relative degree of consolidation. Accordingly, these data were collected in an exploratory and qualitative way by consulting the websites of the federal public administration agencies and the bases indicated in the Open Data platform.¹⁷ These include, for example, the Unified Registry (Cadastró Único), the systems linked to Datasus, the School Census (Censo Escolar), the Rais and Caged data, Sipra, and DAP, as detailed in appendix A.¹⁸

The level of disaggregation and detail of data on specific publics (reaching, in some cases, individualized identification of information) and the low cost of access to these records, given that they are already internalized within the government structure, are among the main advantages listed for promoting the use of administrative records.

Furthermore, administrative records are characterized, in general, by a large population scale, broad territorial coverage, and long time series. Moreover, they are submitted to more regular and periodic updating routines than other information assets, such as research or surveys developed by non-governmental institutions and agencies that lack pre-established periodicities or remain focused on a restricted number of cases.

For analytical purposes, administrative records have a significant advantage over other data as they have a greater potential for articulation and dialogue with

16. Different chapters of this publication highlight the multiple uses and stages of development of these registers in the federal public administration. See, for example, chapters 7, 17, 20, 23, 26, and 27.

17. For more information, access the link: <https://dados.gov.br/>.

18. It is worth mentioning that there is no consolidated mapping of all administrative records under the federal government's responsibility and that, despite initiating a preliminary systematization in this sense, this study has no intention of covering all systems and databases produced within the technical-managerial structure of the federal level. Due to the dispersed and diverse nature that characterizes this information, a further study focused on deepening these databases' details and main characteristics are necessary. Most records can be identified from the federal public administration bodies' electronic sites and the Open Data platform.

the reality of policies and their various management and execution processes by seeking to systematize information on all services and public facilities or beneficiaries, resulting from a given policy.

In different cases, the administrative records can provide information about the public and regions served by specific policies, types of deliveries made, gaps in service, and overlapping efforts. They can serve as parameters for granting benefits, besides presenting data on specific situations, as occurs with labor market data, birth and mortality rates, among other demographic and socioeconomic information.

Despite the underutilized potential of administrative records, it is worth making explicit the limits to which these bases are subject, given that, substantially, this information was not collected for statistical purposes (Groves and Schoeffel, 2018; Wallgreen and Wallgreen, 2014).

Often, records are limited to the potential population or population addressed by a given policy, and their temporal coverage may be restricted to the initiative's duration. Furthermore, significant heterogeneity among the variables that make up these registries may exist. There may be differences in the update periods between information within the same registry or the instances responsible for filling out and checking consistency. There are also possible gaps in the registration of previous values. Updated fields may overwrite others without properly saving previous information, resulting in losses of temporally distributed information.

Other aspects that affect the consistency of these data and that are conditioning factors for the use of administrative records as a reliable source of evidence to support policies are heterogeneity in the methodologies for collecting and recording information over time, discontinuity in the filling out or updating of information, gaps in metadata, lack of transparency about the criteria for collecting and processing data, or even the existence of secrecy and privacy requirements that limit access to the information by third parties.

In short, the challenges aimed at improving the management of these databases and also, along the lines proposed in this work, expanding the strategic use of these records as evidence for policies require efforts in multiple directions to resolve conceptual and methodological inaccuracies in the construction, filling out, and updating of variables, as well as problems arising from the dispersion and lack of integration between administrative records with common thematic convergences and/or identification keys. In addition, there are obstacles linked to failures arising from discontinuity processes in data governance or from inconsistencies internal to the records, and, finally, aspects related to secrecy and access restrictions to information of a sensitive nature contained in the records to ensure security in data use.

Despite these caveats, the preliminary exploration of administrative records in Brazil indicates promising paths for expanding the use of these data and their possible applications, considering the different functions they perform in the organization of state action and the operationalization of policies.

Table 1 summarizes the administrative records selected in the analysis based on the previously indicated criteria of national coverage, degree of updating and consolidation, availability of data for consultation, etc., and their classification by the following uses and functions: i) support for formulating policies; ii) instrument to guide implementation; iii) mechanism for following up and monitoring actions; iv) support for inspection actions and control of physical and financial execution; and v) mechanisms for accountability, transparency, and social control.

It is worth emphasizing, once again, that this systematization does not represent the totality of administrative records produced by federal bodies but is based on examples among the records known and frequently used by the public administration.

TABLE 1

Administrative records by body and uses and functions

Number	Name	Acronym in Portuguese	Managing body	Uses and functions
1	Annual Social Information Report	Rais	MTE	i), ii), iii), iv)
2	Unified Registry for Social Programs of the Federal Government	Cadastro Único	Ministry of Citizenship	i), ii), iii)
3	General Registry of Employed and Unemployed People	Caged	MTE	i), ii), iii)
4	Integrated Planning, Budget, and Finance System	Simec	MEC	i), ii), iii), iv), v)
5	Social Security Benefits System	Sisben	MPS	ii), iii), iv)
6	National System of Civil Registry Information	Sirc	MMFDH	i), iii)
7	Unified Health System User Registration System	Cadsus	MS	i), ii), iii), iv)
8	Death Control System	Sisobi	MS	i), ii), iii), iv)
9	Information System of Agrarian Reform Projects	Sipra	Incra	i), ii)
10	Declaration of Aptitude to the National Program for Strengthening Family Agriculture	DAP	Mapa	i), ii)
11	Information System on Families in Federal Protected Areas	SISFamílias	ICMBio	i), ii), iii)
12	Management Analysis and Monitoring System	SAMGe	ICMBio	i), ii), iii)
13	National Wildlife Management System	Sisfauna	Ibama	i), ii), iii)
14	Program to Calculate Deforestation in the Amazon	Prodes	Inpe	iii), v)
15	Real-Time Deforestation Detection	Deter	Ibama	iii), iv), v)
16	Terraclass	Non-applicable	Inpe/Embrapa	iii), iv), v)
17	Registration System of the Unified Social Assistance System	Cadsuas	Ministry of Citizenship	i), ii), iii)
18	Citizen Benefits System	Sibec	Ministry of Citizenship	ii), iii), iv)
19	Bolsa Família Program Management System	SIGPBF	Ministry of Citizenship	ii), iii), iv)

(Continues)

(Continued)

Number	Name	Acronym in Portuguese	Managing body	Uses and functions
20	Conditionalities System	Sicon	Ministry of Citizenship	ii, iii, iv)
21	Food Purchase Program Information System	SIS/PAA	Ministry of Citizenship	i, ii, iii, iv)
22	Cisterns Program Management Information System	SIGCisternas	Ministry of Citizenship	ii, iii, iv)
23	Health Information System for Primary Care	Sisab	MS	i, ii, iii, iv)
24	Mortality Information System	SIM	MS	i, iii, v)
25	Hospital Information System of the Brazilian Unified Health System	SIH/SUS	MS	ii, iii)
26	Information System on Live Births	Sinasc	MS	i, iii)
27	Notifiable Diseases Information System	Sinan	MS	i, iii, iv, v)
28	National Immunization Program Information System	SI/PNI	MS	i, ii, iii)
29	Outpatient Information System of the Brazilian Unified Health System	Siasus	MS	ii, iii, iv)
30	National Registry of Health Establishments	CNES	MS	i, ii, iii)
31	Energy Information System	SIE-Brasil	MME	i, ii, iii, v)
32	Environmental Rural Registry	CAR	MMA	i, ii, iii, iv, v)
33	Indigenous Information System	Non-applicable	Funai	i, ii, v)
34	School census	Non-applicable	Inep	i, ii, iii, iv, v)
35	Brazilian Educational System	SEB	Inep/MEC	i, ii, iii, iv)
36	Higher Education Census	Non-applicable	Inep	i, ii, iii, iv, v)
37	HÓRUS	Non-applicable	Minfra	i, ii, iii)
38	National System of Environmental Information	Sinima	MMA	i, ii, iii, iv, v)
39	Certified Quilombola Communities	Non-applicable	FCP	i, ii, v)
40	National Emissions Registry System	Sirene	MCTI	i, ii, iii)

Author's elaboration.

Obs.: MTE – Ministry of Labor and Employment; MCidania – Ministry of Citizenship; MEC - Ministry of Education; MPS – Ministry of Social Security; MMFDH – Ministry of Women, the Family, and Human Rights; MS – Ministry of Health; Incra – National Institute of Colonization and Agrarian Reform; Mapa – Ministry of Agriculture, Livestock and Supply; ICMBio – Chico Mendes Institute for Biodiversity Conservation; Ibama – Brazilian Institute of the Environment and Renewable Natural Resources; Embrapa – Brazilian Agricultural Research Corporation; MME – Ministry of Mines and Energy; MMA – Ministry of the Environment; Funai – National Indian Foundation; Inep – National Institute of Educational Studies and Research Anísio Teixeira; Minfra – Ministry of Infrastructure; FCP – Palmares Cultural Foundation; MCTI – Ministry of Science, Technology and Innovations.

4.1 Uses and functions of administrative records in Brazil

Based on the exploratory analysis of the selected list of administrative records, it was possible to identify different uses and functions attributed to these registries and bases related to the processes of public policy production.

Different situations were indicative of the potential adoption of this information as sources of evidence to support decision-making and to improve the design and implementation of actions.

It is worth noting that many of the records analyzed are multifunctional, performing simultaneous functions¹⁹ that vary according to the purposes for which they were created or due to changes and extensions of scope incorporated into these records over time. The same occurs when systems are designed to consolidate or organize dispersed and fragmented sets of the information under a common platform.

That said, the uses and functions of the records analyzed were divided into five major groups: i) support for formulating policies; ii) instrument to guide implementation; iii) mechanism for following up and monitoring actions; iv) support for inspection actions and control of physical and financial execution; and v) mechanisms for accountability, transparency, and social control. As mentioned earlier, these categories are useful to highlight the presence and potential use of records in different stages of public policy production and better understand how they fit into these categories.

It is very common to observe, in the literature on policy design, the valorization and indication of the need for diagnoses and existing data on the object of the policy under discussion to be taken into account by policymakers when planning and delimiting the scope of government action (Weiss, 1977; Capano et al., 2019; Howlett, 2019; Howlett et al., 2013). Official statistics, census data, and surveys conducted by research institutes and universities can be mobilized to support many of these initiatives, as explained in different chapters of this publication.²⁰ However, the results²¹ of a survey conducted with more than 2,000 federal civil servants indicate that the inputs most used by the bureaucracy derive from internal sources based on the technical production of the agency itself, or even on the experiences of civil servants on a given theme.

Along these lines, administrative records can also play and do, in many situations, play a central role as a *support for the formulation of policies* in the preparation of diagnoses that allow public authorities to plan measures and estimate the possible impacts of their policies. As guiding instruments for policy design, administrative records can be adopted as a starting point to delimit and identify the potential public to be served by a given policy; they can also work as a parameter to guide the actions in the territory and direct the delivery of services and the implementation of public equipment. In the same direction, several records also allow the identification of service gaps or assistance gaps and population or regional inequalities in access to essential services.

19. The case of Simec is a clear example of this.

20. For more information, see chapters 15, written by Paulo de Martino Jannuzzi, and 17, authored by Natália Massaco Koga, Rafael Viana, Bruno Gontyjo do Couto, Isabella de Araujo Goellner, and Ivan da Costa Marques, in this publication.

21. Described by Natália Massaco Koga, Pedro Lucas de Moura Palotti, Rafael da Silva Lins, Bruno Gontyjo do Couto, Miguel Loureiro, and Shana Nogueira Lima in chapter 9 of this book.

Another recurrent use of records comes in the form of instruments that are used to operationalize the policy implementation processes. These systems not only support policy management but also configure, in many cases, the channels for formalizing demands, submitting proposals, approving projects, and ensuring the compliance of stages and requirements foreseen in policy implementation.

The data generated during these multiple processes may become necessary supports to the extent that they allow the visualization of the subsequent stages of policy implementation and the possible gaps, difficulties, and restrictions that permeate these processes, thus serving as *instruments to guide the implementation*.

From this perspective, information on physical-financial execution, the degree of adherence of subnational or non-state actors to certain initiatives, and difficulties of access to the list of actions offered by the State become strategic evidence that can be applied to solve problems and possible course corrections during the policy execution processes.

The debate on the use of evidence has a long history of association with discussions on the relevance of strategies and tools for monitoring and evaluating policies to qualify government policies.²² For example, data on the achievement of expected goals, impacts resulting from state interventions, and other indicators on the performance of government initiatives have been widely adopted as a tool to improve the different stages of policy production based on *mechanisms for monitoring and tracking actions* (Howlett et al., 2013).

Monitoring systems managed at the government level produce a massive amount of information used mainly for managerial purposes or to inform managers and other leaders of the current status of ongoing policies; however, information of this nature also constitutes evidence capable of improving existing policies and future interventions based on lessons learned from past experiences.

Information contained in administrative records can also be used *to support supervision and control actions* from the standpoint of internal and external control over the delivery of expected results or the proper application of public resources. They may have been systematized for inspection purposes or improved due to periodic audits and similar actions. Countless administrative records, especially those adopted for the granting of benefits or rendering accounts, for example, undergo regular rounds of audits to verify their adequacy and conformity.

When publicized and periodically disclosed, administrative records also play an essential role as inputs for rendering accounts of the results achieved by policies and the application of public resources, thus strengthening *mechanisms of*

22. For more information, see Sanderson (2002).

accountability, transparency, and social control of the population over public services by allowing the different actors involved in the issue to see the State's action in its multiple dimensions.

5 FINAL REMARKS

This chapter intended to understand the State not only as a potential user of evidence but also as a producer of evidence, observing to what extent informational resources – in this case manifested in the form of administrative records – generated during different processes that constitute the bureaucratic activity can be used in the production of policies.

The analysis was based on assumptions that broadened the scope of understanding the dynamics of the production of policies and evidence in the context of State action. The first is centered on the notion that evidence and policies are not neutral and are permeated by power relations that configure their conditions of possibility and meanings assumed inside and outside the state apparatus. The second is that informational data used to support decisions about government interventions can be understood from their multiple origins and natures, not restricted only to a certain field of knowledge production.

The adoption of these assumptions implies problematizing both the views supported by a restrictive framework about what constitutes valid evidence and those perspectives anchored by a radical relativism, unable to make room for the glimpse of the differences between the multiple forms of manifestation of knowledge and explanations about the world and, even more seriously, the multiple repercussions produced by the adoption of different types of knowledge built about the socio-historical reality.

In this sense, how evidence is understood contributes to widening or restricting the perspectives recognized as valid or apt to be pronounced as considered positions in the public debate. Accordingly, it is crucial that, when mobilizing informational sources on a given theme, public managers and leaders recognize the multiple possibilities of knowledge production without ignoring the specificities and contexts of construction of each one of these references. The argument is that it would not be appropriate to elect only one type of knowledge and subordinate all the others. This is so due to the gains of considering not only scientific knowledge but also the one produced by technical-bureaucratic instances or by the target audiences of the policies and their local knowledge and experiences as information that contributes to understanding the implementation of policies and their effects on reality.

Within this framework, administrative records were listed as a way how state agencies produce potentially helpful evidence to support their own actions. One

of the issues arising from this analysis lies in the fact that, commonly, these records are not understood as evidence because they do not meet specific requirements attributed to scientific knowledge and, consequently, their mobilization and use as a support capable of influencing the different stages of production of policies are also not read from the standpoint of public bureaucracy as the adoption of mechanisms to better inform the policies under its responsibility.

However, as explained throughout this text, these records go through different stages of public policy production, taking on diagnostic, control, operationalization, and publicity functions of public action. Moreover, their governance practices have been the subject of constant improvement and refinement. In this sense, using such information as evidence is already something that occurs in practice in different policy areas without, however, this process being recognized as such or gaining visibility from this framework.²³

There is an enormous space for expanding these practices by recognizing the importance of administrative records as tools for internal governance of government agencies and as ways to structure the State's perception of public problems and the different possibilities for intervention on these issues. Nevertheless, to make this movement possible, administrative records need to constitute a body of tools that are known and disseminated within the public administration, reducing the risk that power transitions or management changes may result in losses related to the cost of learning about which data already exist, which ones are available, how they are created, and how governmental and non-governmental actors can use them.

If, on the one hand, there is a substantive gap in the recognition and appropriation by the political-bureaucratic body itself of the myriad of data produced by the countless processes of organization of the State action, on the other hand, there is obviously a long way to go to ensure that these records expand their possibilities of use as evidence capable of informing consistent diagnostic and decision-making processes by the managers.

As a starting point, these records lack organized actions aimed at their disclosure and dissemination within the public administration. As a result of the ignorance of the bureaucracy about the existence or characteristics of such records, there is an overlapping of efforts and rework to collect data that already exists in other databases, as well as a drastic reduction in the possibilities of articulation between sectors that could use this information to see multiple dimensions of the problems faced by the policies.

23. For further information, see chapter 9 in this publication.

Efforts in this regard would contribute to broadening the dialogue between the areas responsible for managing these records. It opens space for cooperation and collaboration among converging areas and discourages the logic of ownership of these records, hindering efforts for greater integration and exchange of information within and outside the sectors. This circumstance depends, of course, on the planned and secure availability of data, guaranteeing compliance with rules of privacy, secrecy, and consent regarding sensitive information that may, in some way, expose or harm individuals or organizations due to improper use of this data.

By contrast, broadening access to these data would encourage research by non-state actors and greater use of this information by research agencies and academia, extending the understanding of the potential of registries as statistically valid and consistent data. However, that depends, to a great extent, on the recognition by the governance instances of the need to systematize and organize the existing systems – ensuring continuity, updating, clear and registered routines, as well as efforts to generate inputs that allow the stages of construction and updating of the bases to be of common knowledge to the current and future teams involved in these areas.

It is essential, for the intensification of the use of evidence in public policies, the recognition that evidence is produced all the time at the State level and that its use can be improved, significantly reducing the costs of access to crucial data about the Brazilian population and its demands and potentialities. Thus, measures that foster rigor in the governance of administrative records by creating rules and guidelines for their construction, maintenance and updating, as well as the creation of instances in the agencies responsible for managing information and producing evidence capable of contributing to better inform policies, become essential for the debate on the best use of inputs produced by the State apparatus to serve as increasingly consistent and robust support for use by the State itself.

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APPENDIX A

TABLE A.1

Detailed list of administrative records selected in the analysis

Name	Acronym in Portuguese	Description	Date of creation	Managing body	Uses and functions
Annual Social Information Report	Rais	The governmental management of the labor sector relies on an important data collection tool called Rais. Established by Decree No. 76,900 of December 23, 1975, Rais aims at: Supplying the needs of control of the labor activity in the country, Providing data for elaborating labor statistics and making information about the labor market available to governmental entities. The data collected by Rais constitute expressive inputs to meet the needs of the labor nationalization legislation; the control of the records of the Severance Premium Reserve Fund (FGTS); the Systems of Collection and Granting and of Social Security Benefits; technical studies related to statistics and actuarial nature; the identification of the worker entitled to special salary raise from the Social Integration Program and the Civil Servants' Investment Program (PIS/Pasep).	1975	MTE	i), ii), iii), iv)
Unified Registry for Social Programs of the Federal Government	Cadastro Único	The Unified Registry is an instrument that identifies and characterizes low-income families, allowing the government to better understand the socioeconomic reality of this population. It records information such as household characteristics, identification of each person, education, employment, and income status. Since 2003, the Unified Registry has become the main instrument of the Brazilian State for the selection and inclusion of low-income families in federal programs, being compulsorily used for the granting of benefits under the Bolsa Família Program (BFP), the Social energy tariffs, and the Minha Casa Minha Vida Program, among others. In addition, it can also be used to select beneficiaries for programs offered by state and municipal governments. Therefore, it functions as a gateway for families to access various policies. Implementing the Unified Registry is a shared responsibility between the federal government, states, municipalities, and the Federal District. At the federal level, the Ministry of Citizenship (MCidadania) is the responsible manager, and the Caixa Econômica Federal is the operating agent that maintains the Unified Registry System. The Unified Registry is regulated by Decree No. 6135 of June 26, 2007, and other regulations.	2003	Ministry of Citizenship	i), ii), iii)
General Registry of Employed and Unemployed People	Caged	Caged was created as a permanent record of employee admissions and dismissals under the Consolidation of Labor Laws (CLT) regime. It is used by the Unemployment insurance benefits to check the data regarding labor relations, in addition to other social programs. This database also provides the basis for studies, research, projects, and programs related to the labor market, while supporting the decision-making process for governmental actions.	1965	MTE	i), ii), iii)
Integrated Planning, Budget, and Finance System	Simec	Simec is MEC's operational and management platform that deals with the budget and monitoring of the federal government's online proposals in the area of education. In Simec, managers verify the progress of the Joint Action Plans in their cities. MEC offers states, municipalities, and the Federal District a virtual Simec environment for elaborating the Joint Action Plan and monitoring the works agreed upon with the National Fund for Education Development (FNDE). Simec's 2011-2014 Articulated Actions Plan (PAR and PAR) modules are a tool that offers a diagnostic and planning instrument for educational policies designed to structure and manage strategically defined goals, contributing to the construction of a national education system. Simec's Construction Works 2.0 module is a tool for monitoring and controlling the projects agreed with the FNDE, including the construction, renovation, and expansion of educational spaces.	2005	MEC	i), ii), iii), iv), v)

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Name	Acronym in Portuguese	Description	Date of creation	Managing body	Uses and functions
Social Security Benefits System	Sisben	Sisben is responsible for granting millions of benefits every month and, as a result, the issue of security and auditing in the branches and advanced service units of social security that grant these benefits and in the management that supervise them and, finally, in the Social Security Technology and Information Company (Dataprev), which performs the services of storage and maintenance of this data, becomes very important.	No information	MPS	ii), iii), iv)
National System of Civil Registry Information	Sirc	Sirc collects and processes data from civil registries of birth, marriage, death, and stillbirth. With Sirc, these activities are performed with the support of a digital platform, in a flow that connects the Bureaus of Vital Statistics to the Brazilian State's e-government environments. In addition to contributing to eradicating under-registration in the country and expanding the full exercise of citizenship, Sirc seeks to promote improvements in the provision of public services, facilitating access to rights and social benefits.	2019	MMFDH	i), iii)
Unified Health System User Registration System	Cadsus	Cadsus allows the generation of the National Health Card (CNS), which facilitates the Brazilian Unified Health System (SUS) management and contributes to increased efficiency in direct care to the user. The registration allows the development of a database for diagnosis, evaluation, planning, and programming of health actions.	No information	MS	i), ii), iii), iv)
Death Control System	Sisobi	Sisobi is responsible for collecting information on deaths from Brazil's offices of the Civil Registry of Natural Persons. At the National Institute of Social Security (INSS), Sisobi data is used to cancel benefits by cross-referencing with the Unified System of Benefits (SUB).	2001	MS	i), ii), iii), iv)
Information System of Agrarian Reform Projects	Sipra	Sipra is the computer-based system that aims to treat, systematize, and recover data about the Agrarian Reform Projects and their beneficiaries.	No information	Incra	i), ii)
Declaration of Aptitude to the National Program for Strengthening Family Farming	DAP	An instrument used to identify and qualify the Family Units of Agrarian Production (UFPA) of family farming and their associative forms organized in legal entities. DAP beneficiaries are considered to be UFPA made up of family farmers, artisanal fishermen, aquaculturists, mariculturists, forestry workers, extractivists, quilombolas, indigenous people, agrarian reform settlers, and beneficiaries of the National Land Credit Program.	No information	Mapa	i), ii)
Information System on Families in Federal Protected Areas	SISFamílias	The Chico Mendes Institute for Biodiversity Conservation (ICMBio) launched an online data management tool in April 2015. In addition to gathering the information already collected, SISFamílias provides photos, satellite images, and reports on each unit, allowing for updates, corrections, and the incorporation of new families into the system.	2013	ICMBio	i), ii), iii)
Management Analysis and Monitoring System	SAMGe	SAMGe is a tool that aims to analyze and monitor the management effectiveness of our Protected Areas. SAMGe is based on the relationships between resources and values allocated to objectives, their interrelations with society through use, and how the institution responds to territorial management challenges. These elements determine management effectiveness, which is the compliance of policies within a territorially protected space. The tool has already been serving as a support for the preparation and revision of Management Plans and decision-making in different sectors of the institution. Similarly, the Ministry of Environment (MMA) has used the SAMGe as a tool to measure the management effectiveness of protected areas under the umbrella of various projects. It evaluates other ways of applying the methodology as a tool to assist in the allocation of resources and management efforts.	2016	ICMBio	i), ii), iii)
National Wildlife Management System	Sisfauna	Sisfauna is an electronic system for managing and controlling undertakings and activities related to the use and management of wild fauna in captivity in Brazil. There are two versions of this system: Sisfauna 1.0 – Fauna Management, dedicated to issuing Prior, Installation, and Management Authorizations; and Sisfauna 1.2 – Re-registration, aimed at registering again already authorized enterprises and controlling their breeding stock.	No information	Ibama	i), ii), iii)

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Name	Acronym in Portuguese	Description	Date of creation	Managing body	Uses and functions
Program to Calculate Deforestation in the Amazon	Prodes	It is used to calculate, on an annual basis, how much native forest has been lost so that the government can formulate policies based on this data.	1988	Inpe	iii, v)
Real-Time Deforestation Detection	Deter	Carried out by the Brazilian Institute for the Environment and Renewable Natural Resources (Ibama), it is a system responsible for providing preliminary warnings about areas with signs of devastation, a quick survey, almost in real-time, to support the supervision and control of deforestation.	2004	Ibama	iii, iv, v)
Terraclass		System used to measure changes in land use and gauge whether deforested woodland is being used for livestock, agriculture, mining, or cattle ranching, for example. Mappings detected the state of the land in 2004, 2008, 2010, 2012, and 2014 – enabling a decade-long analysis.	2004	Inpe/Embrapa	iii, iv, v)
Registration System of the Unified Social Assistance System	Cadsuas	Suas registry system contains all the information related to the municipalities, managing bodies, funds, municipal councils, and entities that provide social assistance services.	No information	Ministry of Citizenship	i, ii, iii)
Bolsa Família Program Management System	SIGPBF	Aiming to improve and integrate the management of its main processes, the SIGPBF was developed to allow the monitoring of all management actions related to the Programa Bolsa Família and the Unified Registry.	No information	Ministry of Citizenship	ii, iii, iv)
Conditionalities System	Sicon	Sicon is a tool to support intersectoral management that integrates conditionalities monitoring information in the areas of Health and Education, promoting interoperability through the integration and consolidation of school attendance information, vaccination schedules, and prenatal appointments from specific systems developed and managed by the Ministry of Education (MEC) and the Ministry of Health (MS). It is also responsible for the information about family care/monitoring from the National Secretariat of Social Assistance to aid in accessing social services and monitoring PBF beneficiary families for more efficient and effective management of the PBF. It is a multi-user system for federal, state, and municipal managers and members of social control, accessible via the internet.	No information	Ministry of Citizenship	ii, iii, iv)
Food Purchase Program Information System	SIS/PAA	Operational and management tool for the Food Purchase Program (PAA) used to: Register executing units, supplier beneficiaries, receiving units, and program products; record product acquisition and distribution operations; Monitor compliance with the annual limits of beneficiaries and supplier organizations; monitor the acquisition of products; and Monitor achievement of goals.	2015	Ministry of Citizenship	i, ii, iii, iv)
Cisterns Program Management Information System	SIG Cisternas	All the cisterns built are registered in the SIG Cisternas. Each registration presents data on the technology's geographic location (georeferencing), data on the beneficiary, and data on the stages of construction. It also includes a receipt signed by the family. It is a document with a photo that proves the delivery of the technology to the beneficiary. The SIG Cisternas guarantees the control and transparency of the program.	No information	Ministry of Citizenship	ii, iii, iv)
Health Information System for Primary Care	Sisab	Sisab was established in 2013, becoming the Primary Care information system in effect for the purposes of financing and adherence to the programs and strategies of the National Primary Care Policy, replacing the Primary Care Information System (Siab). Sisab is part of the strategy of the Department of Family Health (DESF/SAPS/MS) called e-SUS Primary Care (e-SUS APS), which proposes to increase information management, process automation, improve infrastructure conditions and improve work processes. With Sisab, it will be possible to obtain information on the health and health situation of the territory's population through health reports, as well as reports on health indicators by state, municipality, health region and team.	2013	MS	i, ii, iii, iv)
Mortality Information System	SIM	SIM was created by the Department of Informatics of the Brazilian Unified Health System (Datusus) to regularly obtain data on mortality in the country. With the creation of SIM, it was possible to comprehensively capture mortality data to support the various spheres of public health management. Based on this information, it is possible to carry out situation analyses, planning and evaluation of actions and programs in the area.		MS	i, iii, v)

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Name	Acronym in Portuguese	Description	Date of creation	Managing body	Uses and functions
Hospital Information System of the Brazilian Unified Health System	SIH/SUS	Created in August 1981, in Curitiba, replacing the Hospital Admission Guide (GIH) system in 1982, the popularly known AIH system went through several platforms in UNISYS mainframes and ABC-BULL, in the centralized processing phase. It was the first Datasus system to have its collection implemented in microcomputers (AIH in diskette – 1992) and decentralized to the users themselves, ending the era of typing poles. The AIH processing continued centralized until it was decentralized to the Health secretary managers in April 2006, using Windows platform, Firebird DBMS and delphi programming language – which is its current state. The purpose of the AIH (SIHSUS system) is to register all hospital admissions that were financed by SUS and, after processing, to generate reports so that managers can make payments to health establishments. In addition, the federal level receives a monthly database of all hospitalizations authorized (approved or not for payment) so that the medium and high complexity production values can be passed on to the health secretariats, as well as the values of the National Center for Regulation of High Complexity (CNRAC), Fund for Strategic Actions and Compensation (FAEC) and university hospitals – in their various forms of management contract.	1981	MS	ii, iii)
Information System on Live Births	Sinasc	Datasus developed Sinasc aiming to gather epidemiological information regarding births reported nationwide.	No information	MS	i), iii)
Notifiable Diseases Information System	Sinan	Sinan is supplied mainly by the notification and investigation of cases of diseases and illnesses that are on the national list of compulsorily notifiable diseases (Consolidation Ordinance No. 4 of September 28, 2017, Annex V, Chapter I), but states and municipalities are allowed to include other important health problems in their region. Its effective use allows for the dynamic diagnosis of the occurrence of an event in the population, and may provide support for causal explanations of the diseases subject to compulsory notification, in addition to indicating risks to which people are subjected, thus contributing to the identification of the epidemiological reality of a given geographical area. Its systematic use, in a decentralized way, contributes to the democratization of information, allowing all health professionals to have access to the information and to make it available to the community. It is, therefore, a relevant instrument to help health planning, to define intervention priorities, besides allowing the impact of interventions to be evaluated.	2005	MS	i), iii), iv), v)
National Immunization Program Information System	SI/PNI	The fundamental objective of the SI/PNI is to enable the managers involved in the program a dynamic risk assessment regarding the occurrence of outbreaks or epidemics, based on the registration of immunobiologicals administered and the quantity of vaccinated population, which are aggregated by age group, in a certain period, in a geographical area. On the other hand, it also enables the control of the stock of immunobiologicals necessary for the administrators who have the task of programming their acquisition and distribution.	No information	MS	i), ii), iii)
Outpatient Information System of the Brazilian Unified Health System	Siasus	Siasus was created in 1992 and implemented in July 1994 in the state secretariats replacing the Payment Authorization Guide (GAP) and the Social Security Outpatient Information and Control System (Sicaps) to finance outpatient care. In 1996, it was widely implemented in the municipal health secretariats – then called semi-full management – by the Basic Operational Norm (NOB) 96. In 1997, the application started to process, besides the traditional Outpatient Care Production Bulletin (BPA), a numbered and authorized document called High Complexity Procedure Authorization (Apac). Siasus receives the transcription of production in the BPA and Apac documents, consolidates and validates the payment according to budget parameters stipulated by the health manager himself, before approving the payment – it uses the Budgetary Programming Form (FPO). Monthly, managers, besides generating the amounts due to their network of facilities, send to Datasus-RJ a database containing all the procedures performed in their management. Also, monthly, Datasus-RJ generates files for tabulation having these services. Finally, complementing the information from the Siusus system, it provides the Health Care Secretary/Department of Regulation, Evaluation and Control (SAS/Drac) with the values of the financing ceiling to be transferred to the managers.	1992	MS	ii), iii), iv)

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Name	Acronym in Portuguese	Description	Date of creation	Managing body	Uses and functions
National Registry of Health Establishments	CNES	Official system for registering information on all health establishments in the country, regardless of their legal nature or whether they are part of SUS. It is the official MS registry concerning the reality of Brazil's installed capacity and health care workforce in public or private health care establishments, with or without SUS agreements. The CNES is the registry base for the operation of more than ninety national systems, such as: the Outpatient Information System (SIA), Hospital Information System (SIH), and e-SUS Primary Care (e-SUS APS), among others. It is an auxiliary tool that provides knowledge of the reality of the existing health care network and its potential to assist in health planning in the three spheres of government for effective and efficient management.	2000	MS	i), ii), iii)
Energy Information System	SIE-Brasil	A valuable tool for the process of management and transparency of the country's energy information. The system allows the Ministry of Mines and Energy (MME) to manage and disseminate information on energy supply and demand, energy facilities, resources and reserves, energy prices, consumption equipment, industrial production, efficiency, demographics, economics, particulate emissions, and prospects, as well as legal and documentary information. The Modules for Brazil, states, municipalities, countries and the world allow comparing indicators based on uniform criteria for data treatment.		MME	i), ii), iii), v)
Environmental Rural Registry	CAR	A nationwide electronic public registry, mandatory for all rural properties, to integrate environmental information from rural properties and possessions regarding areas of permanent preservation (APPs), restricted use, legal reserve, remaining forests and other forms of native vegetation, and consolidated areas, making up the database for control, monitoring, environmental and economic planning, and combating deforestation. CAR registration is the first step towards obtaining the property's environmental regularity and includes: data on the owner, rural possessor, or person directly responsible for the rural property; data on the documents proving ownership and/or possession; and georeferenced information on the property's perimeter, the areas of social interest and places of public utility, with information on the location of the remnants of native vegetation, the APPs, the sites of restricted use, the consolidated areas, and the legal reserves.	2012	MMA	i), ii), iii), iv), v)
Indigenous Information System	Non-applicable	This module allows research on the indigenous lands located in the Brazilian territory and their stages in the demarcation process: in studies; delimited; declared; approved; and regularized.	No information	Funai	i), ii), v)
School census	Non-applicable	The School Census is the main instrument for collecting information on primary education and is the most important Brazilian educational statistics survey. It is coordinated by the National Institute for Educational Studies and Research Anísio Teixeira (Inep) and carried out in collaboration with the state and municipal education departments and with the participation of all public and private schools in the country. It covers the different stages and modalities of basic and professional education: Primary education (early childhood education, elementary school, and high school); Special education – substitutive modality; Youth and adult education (EJA); and Professional education (technical courses and continuing education courses or professional qualifications). Data collection from schools is declaratory and divided into two stages. The first stage consists of filling out the initial registration, when information about the educational establishments, managers, classes, students, and school professionals in the classroom is collected. The second stage occurs with filling in details on the student's situation and considering the data on the students' movement and performance at the end of the school year. The School Census is regulated by normative instruments that establish the obligation, the deadlines, the responsible parties, their responsibilities, and the procedures for the entire data collection process. In addition, all the legislation related to the School Census is available for consultation in the Documents and Legislation menu.	2007	Inep	i), ii), iii), iv), v)

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Name	Acronym in Portuguese	Description	Date of creation	Managing body	Uses and functions
Brazilian Educational System	SEB	SEB is a continuous registry, completed and updated by institutions of primary education (early childhood education, elementary school, and high school), higher education, federal, state and municipal, public and private, and federal institutions of professional and technological education. SEB gathers data on the teaching staff and students of the educational institutions; student enrollment and attendance; and student academic records. The data can be shared with agencies and entities of the direct federal public administration, and with other interested entities, for the formulation, implementation, execution, evaluation, and monitoring of policies. Security, protection, and confidentiality norms and procedures must be observed. The services offered via SEB will benefit both institutions and students. The first initiative is the Student ID, free, digital, aimed at students in basic, technological and higher education. The ID can be issued via a cell phone application. Soon, new services will be made possible through SEB. The registration of information in SBE does not follow a specific schedule. At any time, primary and higher education institutions (IES) can define new managers for SEB and include or change student information.	2019	MEC or Inep	i), ii), iii), iv)
Higher Education Census		The Higher Education Census, conducted annually by Inep, is the most complete research instrument in Brazil concerning the IES that offer undergraduate courses and specific training sequences, as well as their students and professors. This collection aims to provide the academic community and society with detailed information about the situation and significant trends in the sector. The Higher Education Census gathers information about higher education institutions, their undergraduate courses, in-person or distance learning, sequential courses, vacancies offered, enrollments, first-year students and seniors, and information about teachers in the different forms of academic organization and administrative categories. The data are collected from the questionnaires filled out by the IES and by importing data from the e-MEC system. During the period the questionnaire is being filled out, the institutional researchers can make the necessary changes or additions to the data of their respective institutions at any time. After this period, Inep verifies the consistency of the information collected. The census system is then reopened for checking and validation of data by the IES.	1997	Inep	i), ii), iii), iv), v)
HÓRUS		The National Civil Aviation Secretariat's system that presents information, in an agile and interactive format, on Brazilian civil aviation. Infrastructure, operation, and performance data are available for the country's airdromes.	No information	Minfra	i), ii), iii)
National System of Environmental Information	Sinima	Sinima is one of the instruments of the National Environmental Policy, provided by Law No. 6938/1981. It is considered by the Information Policy of the MMA as the conceptual platform based on the integration and sharing of information between the various systems existing or to be developed under the National Environmental System (Sisnama), according to Ordinance No. 160/2009. Sinima is the instrument responsible for information management within Sisnama, according to the logic of shared environmental management between the three spheres of government, with three structuring axes for action: axis 1 – development of tools for access to information; axis 2 – integration of databases and information systems. These two axes are interconnected and deal with geoprocessing tools, in line with guidelines established by the electronic government (e-Gov), which allow the composition of interactive maps with information from different themes and information systems. They are developed with the support of the MMA's General Coordination of Information Technology (CGTI); and axis 3 – strengthening the process of production, systematization, and analysis of statistics and indicators related to the attributions of the MMA. This is Sinima's strategic axis, whose primary function is to strengthen the process of production, systematization, and analysis of environmental statistics and indicators; to recommend and define the systematization of a basic set of indicators and establish an agenda with institutions that produce environmental information; and provide integrated assessments of the environment and society.	1981	MMA	i), ii), iii), iv), v)
Certified Quilombola Communities	Non-applicable	Database with data on certified quilombola communities, composed of certificates issued to the remaining quilombola communities (CRQs).	No information	FCP	i), ii), v)

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Name	Acronym in Portuguese	Description	Date of creation	Managing body	Uses and functions
National Emissions Registry System	Sirene	Set of data on the country's greenhouse gas emissions results (Decree No. 9.172/2017). The time series of emissions refers to the latest results published in the National Inventory, as part of the Third Brazilian National Communication to the United Nations Framework Convention on Climate Change, and the third and fourth editions of the annual estimates, whose data from the graphs and tables can be exported to Excel.	2017	MCTI	i), ii), iii)

Author's elaboration.

Obs.: 1. MTE – Ministry of Labor and Employment; MPS – Ministry of Social Security; MMFDH – Ministry of Women, the Family and Human Rights; Incra – National Institute of Colonization and Agrarian Reform; Mapa – Ministry of Agriculture, Livestock and Supply; Inpe – National Institute for Space Research; Embrapa – Brazilian Agricultural Research Corporation; Funai – National Indian Foundation; Minfra – Ministry of Infrastructure; FCP – Palmares Cultural Foundation; MCTI – Ministry of Science, Technology and Innovations.

2. The uses and functions of the records analyzed were divided into five major groups: i) support for formulating policies; ii) instrument to guide implementation; iii) mechanism for following up and monitoring actions; iv) support for inspection actions and control of physical and financial execution; and v) mechanisms for accountability, transparency, and social control.

ARE EVIDENCE-BASED MACROECONOMIC POLICIES POSSIBLE? THE DIFFICULT RELATIONSHIP BETWEEN MACROECONOMICS AND EMPIRICAL EVIDENCE

Ronaldo Fiani¹

In the last three decades, the methods and conclusions of macroeconomics have deteriorated to the point that much of the work in this area no longer qualifies as scientific research.²

Paul Romer

1 INTRODUCTION

The established framework for empirically evaluating macroeconomic policies involves the examination of theoretically determined relationships from econometric models. This framework was laid in the 1940s, with the work of the Cowles Commission for Economic Research (1950) in the United States, and became consolidated after World War II, with its diffusion throughout the United States and Western Europe.

Lucas (1976) critique would generate a shift in this framework, leading to the construction of macroeconometric models with deep parameters; that is, parameters that reflect the behavior of rational maximizing agents, not only in face of the possibilities of choice but also regarding the policies adopted, in the approach that became known as rational expectations.

Such an inflection would eventually result in the current trend of model development harshly criticized by Summers (1991) and Romer (2016). These two authors do not have the same theoretical ambition and, therefore, the same scope in terms of the academic repercussion of Lucas (1976) but focus precisely on evaluating the *practice* of production and analysis of empirical evidence through econometric models in macroeconomics.

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2. Romer (2016, p. 1).

Thus, this chapter is organized into the following sections. After this introductory section, the second section discusses the evolution and role of econometric models in the first decades of the twentieth century as a tool for analyzing and comparing evidence-based macroeconomic policies. The third section discusses Lucas (1976) critique, the major theoretical challenge to this type of empirical approach. The fourth section discusses Summers' (1991) critique, which is mainly focused on the structural models that were developed after Lucas' (1976) critique. The fifth section discusses Romer's critique of more recent econometric models, whose complexity often hinders an accurate assessment of the value of their results, which is often worsened by the manipulation of parameters by the analyst. The conclusion section examines the possibilities for more evidence-based macroeconomics considering what has been discussed in the previous sections. It will be argued that it is possible to establish the outlines of *more evidence-based* macroeconomics, paraphrasing Julian Reiss (2008).

It is important to stress that we do not intend to undertake an exhaustive review of the use of evidence in macroeconomics, which would be impossible within the limits of this paper. We only intend to present a quick overview of the treatment of evidence in the field of macroeconomics, as an introduction to the debate on evidence-based macroeconomic policies in the country.

2 THE WIDESPREAD USE OF ECONOMETRIC MODELS IN THE EARLY POST-WAR PERIOD AS A TOOL FOR EVIDENCE-BASED MACROECONOMIC POLICIES

The origin of econometrics as a source of empirical evidence for macroeconomic policymaking and evaluation can be traced to the work of the Cowles Commission for Economic Research. This commission was created in 1932, when Alfred Cowles, president of Cowles and Company, an investment consulting firm in Colorado Springs, began a survey of the accuracy of stock market experts over 1928-1932. This survey sparked Alfred Cowles' interest in basic economic research, which led him to offer financial support for the creation of the commission and to always shoulder most of the funding (Christ, 1952, p. 3).

Mathematician Charles F. Roos was the first research director of the Cowles Commission, and his book published in 1934, *Dynamic economics: theoretical and statistical studies of demand, production and prices*, the first in the series of Cowles Commission monographs that would play a major role in the development of econometrics for the next decades, included topics such as the demand for consumer goods, automobile demand for gasoline, demand for agricultural products, demand for capital goods, among others. Roos' book, however, neglected the problem of identification, so it was not possible to tell whether the author had estimated a demand curve or some linear combination of demand and sup-

ply functions (Dimand, 2019, p. 3). Only the second generation of the Cowles Commission, with names like Jacob Marschak and Tjalling Koopmans would be able to tackle the identification problem.

Interestingly, the concerns of the first generation of the Cowles Commission, which included names such as Alfred Cowles himself, mathematician Harold Thayer Davis, and Charles F. Roos, were generally very different from what would later become the research standard in econometrics. In this first stage, there was a concern with predicting changes in stock prices – notably Alfred Cowles himself – and the study of business cycles.³

As far as cycle analysis is concerned, a prominent role has been played by Harold T. Davis, who, ironically – when considering later developments – dismissed Keynes' general theory in a surprisingly superficial way (in a footnote) but showed great interest in Stanley Jevons' theory about the influence of sunspots on business cycles (Dimand, 2019, p. 4).

Eugene Slutsky – who did not participate in the Cowles Commission – played a key role in taking the focus of interest of the commission away from the study of cycles, starting with the translation of his paper *The summation of random as the source of cyclic processes* – originally published in Moscow – in the journal *Econometrica*, due to his methodological criticism of the statistical methods used in the analysis of cycles (Dimand, 2019, p. 5-6).⁴ It was a rare case of solving empirical controversies in macroeconomics, in which the methodological discussion shifted the focus of theoretical interest.

This focus on cycles would be definitively abandoned when Jacob Marschak took over as research director of the Cowles Commission in 1943. His actions would promote an important change in the commission's research lines, establishing econometric studies as the main method of empirical research in macroeconomics. With the appointment of Marschak as research director, one of the central concerns of the commission would be the study of the statistical properties of estimating simultaneous equations with random errors (Dimand, 2019, p. 8), influenced by the works of Trygve Haavelmo,⁵ Leonid Hurwicz⁶ and Tjalling Koopmans.⁷

3. Charles Roos and Harold Davis, research directors of the Cowles Commission at its inception, before the move from Colorado Springs to the University of Chicago in 1939, were mathematicians interested in curve fitting and techniques for decomposing time series into i) trends; ii) multiple coincident cycles with different periodicities and amplitudes; and iii) erratic movements (Dimand, 2019, p. 7).

4. Eugene Slutsky was the first teacher of Jacob Marschak – then going by Jakob – in Kyiv before the First World War. In his critique, Slutsky pointed to the fact that the techniques employed by the commission's cycle analysts generated apparent cycles, even though there was no cycle in the original data (Dimand, 2019, p. 5-6).

5. *The statistical implications of a system of simultaneous equations*, published in the journal *Econometrica* in 1943, and *The probability approach in econometrics*, also published in *Econometrica* in 1944 (Dimand, 2019, p. 8).

6. *Stochastic models of economic fluctuations*, published in *Econometrica* in 1944 (Dimand, 2019, p. 8).

7. The dissertation *Linear regression analysis of economic time series*, of 1936, by Tjalling Koopmans, was published in the following year (Dimand, 2019, p. 8).

The turning point would be the Cowles Commission conference in Chicago through January and early February 1945, which, according to Edmond Malinvaud (1983, p. 7), would become the most influential conference on statistical inference ever held. Malinvaud (1983, p. 7) gives an idea of the importance of the researchers involved and the scope of the topics discussed: R. L. Anderson, Trygve Haavelmo, Harold Hotelling, Leonid Hurwicz, Lawrence R. Klein, Tjalling C. Koopmans, R. Leipnik, Henry B. Mann, Jacob Marschak, H. Rubin, Gerhard Tintner, and Abraham Wald discussed topics such as time series analysis and maximum likelihood estimation and identification problems in simultaneous equation models.

Thus, the January 1945 conference and Cowles Monograph No. 10, which laid out the results of this conference, were crucial to the path that econometric research in macroeconomics has followed since then. In particular, the journal brought forth groundbreaking papers that set the trajectory of research on the conditions for identifying structural coefficients of simultaneous equations, regarding problems of bias when the estimate of simultaneous equations employs least squares methods that are suitable for only one equation, as well as on full and bounded information maximum likelihood methods (Dimand, 2019, p. 8). *The cornerstones of modern empirical research in macroeconomics were laid at that event and in the publication that followed it, especially concerning simultaneous equation models.*

But the role of the Cowles Commission went beyond advances in the use of econometric techniques to produce empirical evidence in macroeconomics. The commission also played a key role in an issue that is of direct interest to this paper: the relationship between theory and empirical research. Although the commission's research had always had some connection with economic theory, the latter was not the direct object of research (Malinvaud, 1983, p. 2). This picture will begin to change with the entry of Oskar Lange and Jacob L. Mosak in 1939: "their Cowles Commission Monographs, respectively Nos. 8 and 7, both published in 1944, *Price flexibility and employment*, and *General-equilibrium theory in international trade*, were the first ones to deal with formalized economic theory" (Malinvaud, 1983, p. 2).

The second decisive moment in the redefinition of the relationship between theory and empirical macroeconomic research, with the emphasis being progressively shifted to the theoretical foundations of empirical research, would happen through 1942-1943, with the entry of Leonid Hurwicz and Trygve Haavelmo, in addition to the already mentioned participation of Jakob Marschak. Malinvaud (1983, p. 2) explains that the share of theoretical-themed papers jumps from something around one-third of the titles until 1950 to two-thirds of the titles in the following years, which led the committee to change its motto from "science is measurement" to "theory and measurement".

The tools for empirical discussion of macroeconomic policies combined with theoretical explorations in economics were thus established. With the development of econometric techniques for estimating simultaneous equation models and an emphasis on theoretical discussion, the Cowles Commission laid the foundation for what was to become the practice of empirical discussion in macroeconomics from the mid-twentieth century on.

Edmond Malinvaud (1998) describes the rise of econometric models as a tool for empirical assessment of macroeconomic policies in the United States and Europe, starting in the 1950s. Although Jan Tinbergen's main econometric contributions in Europe began in the 1930s (Tinbergen, 1937), in the post-war period, it was after the Klein-Goldberg model in the United States in 1955, and since 1957 in Europe, that econometric models began to gain wide acceptance as tools for empirical assessment of macroeconomic policies (Malinvaud, 1998, p. 330).

This expansion of the use of econometrics for the assessment of macroeconomic (fiscal and monetary) policies was strongly influenced by the wide acceptance of Keynesianism as a fundamental tool of economic management. As Malinvaud (1998, p. 330) explains, the acceptance of Keynesianism was a result of the concern to avoid the return of the interwar crisis, since this theory proposed precisely to combine fiscal and monetary measures, to ensure full employment with price level control.

Therefore, the use of econometric models to assess macroeconomic policies was born associated with Keynesianism, having as its central motivation the search for full employment with inflation control. An important step in this direction was taken by Henri Theil, who, based on his experience in Holland published *Economic forecasts and policy* (Theil, 1958), in which he discussed econometric methods for studying economic policies and predicting their effects.

The growing use of macroeconomic models was accompanied by an optimism that expressed itself in ever more extensive models, surrounded by growing expectations, which materialized in the idea that it would be possible to design an optimal macroeconomic policy based on evidence, *evidence being understood as the results of these econometric models*. This led "economists, armed with their dynamic models, to find themselves in a position even similar to that of engineers called upon to optimally direct the trajectory of a rocket" (Malinvaud, 1998, p. 330).⁸

This optimistic expectation that econometric models could provide empirical evidence for the adoption of an *optimal macroeconomic policy* would be severely shaken in the 1970s. In that period, there was the combined experience of economic

8. "Des économistes, dotés de leurs modèles dynamiques, se virent même dans une position semblable à celle d'ingénieurs appelés à diriger au mieux la trajectoire d'une fusée".

stagnation and inflation in the United States, which became known in journalistic terms as *stagflation*.

As will be seen later, the inability of Keynesian models to initially deal with this hitherto unprecedented conjuncture motivated Lucas (1976) critique, the first to theoretically challenge the use of econometric models to assess the scope of macroeconomic policies. This critique was the most far-reaching and motivated the search for structural parameters (deep parameters) that reflect the choices of rational maximizing agents when faced with the possibilities of choice and the very policies adopted, in the approach that became known as rational expectations.

3 LUCAS CRITIQUE

The discussion about the problems with the use of evidence in macroeconomics begins with Lucas critique of Keynesian econometric models (Lucas, 1976), as this critique was one of the first to significantly affect one of the main sources of evidence in the macroeconomic debate: the results of econometric models. At the same time, Lucas critique offers a unique opportunity to study the difficulties of the macroeconomic debate with empirical evidence.

Lucas critique, as presented in *Econometric policy evaluation: a critique* (Lucas, 1976, p. 41), is summarized at the end of the chapter, where it is presented as “a single syllogism”: since the structure of an econometric model is constituted by the rules of the agents’ optimizing behavior, any policy change will transform the structure of the model, as it changes the relevant data for these agents’ decision-making process.

As can be seen from the previous quote, *Lucas critique was fundamentally directed at the use of macroeconomic models in the evaluation of public policies*. It can be said, therefore, that the critique was perhaps the first theoretical effort to question the grounding of public policies in empirical evidence based on the results of econometric models.

Lucas critique claimed that changes in economic policies altered the very way in which these policies affected the economy. The reason is that by being rational – that is, using all available information – agents would anticipate the consequences of new macroeconomic policies and consequently change their behavior. This would have damaging implications for the use of econometric models in formulating and, especially, predicting the effects of economic policies. As Lindé (2001, p. 896) explains, after Lucas critique, past behavior would no longer be a valid reference to estimate the effects of alternative policies, and the parameters of econometric models in reduced form would no longer be constant.

As is well known, the reduced form of an econometric model is built from a structural model – that is, from a model of equations built from theoretically derived relationships. The reduced form is nothing more than an algebraic arrangement, in which the endogenous variables are placed as a function of the exogenous variables. Therefore, it is far less detailed than the structural form. Because they are simpler, the theoretical foundation of models in reduced form is less theoretically demanding.

The importance of Lucas' (1976) critique in the macroeconomic debate cannot be overstated: it has been assimilated by a majority in academia as a fundamental step in the modernization of economic theory, at least as far as its dominant paradigm is concerned, as exemplified by Hall's (1996) assessment of the importance of Lucas's contribution, written in light of his awarding of the 1995 Alfred Nobel Memorial Prize in Economic Sciences. According to Hall (1996, p. 38), the effect of Lucas's critique was to train subsequent generations of economists to develop macroeconomic models in a way that was rigorously consistent with microeconomic fundamentals, which would have affected not only the field of applied economics but also economic theory.

As Lucas' (1976) very critique concerns how evidence is used in the macroeconomic debate and how the use of that evidence affects the accuracy with which forecasts are made, the debate concerning this critique has involved from the beginning a *discussion about the ability to make forecasts about the behavior of the major economic aggregates*. In actuality, Lucas (1976) used the Phillips curve and its inverse relationship between unemployment and inflation, one of the basic instruments of active macroeconomic policy, as an example of his argument.

It is curious to notice that the Phillips curve *is one of the few cases of empirical observation giving rise to the production of a new theory*, something that should be common if the production of economic theory was usually based on evidence.⁹ However, according to Lucas (1976, p. 40), the Phillips curve failed to anticipate the so-called *stagflation* of the 1970s in the United States. According to the author,

9. As is known, the origin of the Phillips curve is his paper *The relation between unemployment and the rate of change of money wage rates in the United Kingdom, 1861-1957* (Phillips, 1958). Even though evidence can be found in the literature of some passages where earlier authors have identified some inverse relationship between unemployment and inflation, possibly, according to Humphrey (1985), going back to John Law (1621-1729), it is generally accepted (Gordon, 2011) that the link between unemployment and inflation was formally established by Phillips' estimated regression, represented by: $w_t = -0,90 + 9,638U^{-1,934}$ (Phillips, 1958, p. 290), in which w_t is the annual rate of change of nominal wages in a percentage and U the unemployment rate.

This empirical identification produced a wave of theoretical innovation, although sometimes rendering the relationship ineffective, as in the case of the version of the Phillips curve with rational expectations, which nullifies the trade-off between inflation and unemployment even in the short run. To discuss the revisions of this curve since its inception would be impossible within the scope of this paper. The interested reader is advised to refer to, among several possible references, Gordon (2011).

there would then have been instability in the parameters of the Phillips curve, caused by the reaction of rational agents to the macroeconomic policies of the period.

Therefore, much of the strength of Lucas' (1976) critique stems both from its presentation as a logical – and therefore in principle irrefutable – syllogism and from the apparent inability of the Keynesian models of the time – in particular, the Phillips curve – to explain and predict the combination of economic stagnation and inflationary acceleration of the 1970s. Proper consideration of Lucas's critique, therefore, requires that these two aspects of his triumph be considered.

Lucas critique, if taken *superficially*, is really a syllogism. If agents alter their behavior in response to changes in economic policy, reduced-form models that do not incorporate agents' reactions to policy changes are doomed to irrelevance at best and to produce erroneous forecasts at worst.

This superficial reading does not, however, exhaust the issues associated with Lucas' (1976) critique. In fact, this critique involves at least two other questions (one theoretical and one empirical), and the two questions do not boil down to simple syllogisms.

The theoretical question concerns the type of behavior of agents when faced with changes in economic policy so long it is accepted that they respond rationally to policy changes.

This question, as is well known, was answered by Lucas and others with the rational expectations model: agents are rational maximizers, in the sense that they have and use all the available information and thus correctly anticipate the consequences of macroeconomic policies, largely cancelling out the effect of any discretionary policies. The solution would be to establish clear rules that influence agents' expectations, as is the case with the inflation targeting regime, rather than to adopt discretionary macroeconomic policies, such as an active fiscal policy. Obviously, the assumption of rational expectations cannot be considered a syllogism, but a hypothesis to be empirically assessed.

However, when considering its consequences in terms of models of economic policy analysis, Lucas's critique is surrounded by paradoxes, especially the one related to one of its recent and important developments, which is the dynamic stochastic general equilibrium models (DSGE).¹⁰ These models are considered mainstream in macroeconomics, particularly in monetary policymaking. This type of model, of course, also enjoys great popularity in Brazil, as indicated by the works of Vereda and Cavalcanti (2010), Cavalcanti and Vereda (2011), Ferreira (2015), Areosa and

10. Sergi (2018, p. 2) identifies the DSGE models as part of the new neoclassical synthesis that seeks to respond to Lucas critique. See also Hurtado (2013; 2014).

Coelho (2015), and Nunes and Portugal (2018), just to mention some of the most representative works in the country.

Nevertheless, despite being an offshoot of Lucas critique, DSGE models, curiously, do not meet the criteria for parameter invariance. Even their main advocates, such as Fernández-Villaverde and Rubio-Ramírez (2008, p. 84), claim that it is difficult to accept that the parameters of DSGE models are structural. For example, most of these models specify a stable production function, with constant elasticity of output with respect to capital – something unacceptable, considering Lucas' (1976) criticism, since changes in relative factor prices would induce the development of new technologies. Also according to the authors, problems of this type would affect almost all dimensions of a modern DSGE model.

In fact, the adoption of the rational expectations hypothesis is no guarantee of the stability of model parameters, as demonstrated by Estrella and Fuhrer (1999). By testing models with optimizing behavior based on rational expectations versus simpler models without the same behavior, the authors observed that there is little evidence that backward-looking models are unstable, unlike models with rational expectations, which show *clear evidence of instability* (Estrella and Fuhrer, 1999).

Despite their instability, it is still possible to defend rational expectations models if i) the instability of the parameters is also significant in the Keynesian models used so far; and ii) the problems with the Phillips curve and other Keynesian models used in the 1970s are *actually* a consequence of changes in agents' behavior in response to changes in macroeconomic policies.

If other factors have also played a role in addition to, or as a substitute for, eventual changes in an agents' behavior, a subsequent question involves evaluating whether these other factors could be incorporated coherently into the Keynesian models then in force, or whether they could only be included in those models with the addition of ad hoc hypotheses – that is, hypotheses elaborated from the very fact that is intended to be explained, to avoid discrediting the theory.

According to Goutsmedt et al. (2019, p. 535), Lucas' (1976) critique was widely accepted and incorporated into the dominant paradigm by most economists as an unquestionable principle that immediately disqualified Keynesian models, ignoring not only the issues mentioned above but also a whole series of empirical evidence that was presented by Keynesian economists in the debate about Lucas critique during the 1970s and 1980s.

The debate about Keynesian models that followed Lucas' (1976) critique clearly illustrates the difficulties in assessing evidence when it comes to discussing macroeconomic policies, as well as the overvaluation of theory to the detriment of empirical evidence. To this end, it is necessary to emphasize in Keynesian answers

what concerns *only* the effect that agents' expectations may have on the structure of the model, disregarding specific questions about the rational expectations hypothesis. This is because the debate over Lucas (1976) often combines the empirical question with the theoretical discussion about the rational expectations hypothesis.

Indeed, as Goutsmedt et al. (2019) explain, the core of the Keynesian critique of Lucas (1976) lay in its *practical relevance*. Malinvaud corroborates this point, clarifying that the empirical evidence for the validity of Lucas critique remained very limited, even more than twenty years later: the “little illustrative models” (*les petits modèles illustratifs*) presented by Lucas and other authors would only demonstrate a possibility, and have not been subject to more accurate empirical testing (Malinvaud, 1997, p. 21). On the same point, Malinvaud would write a year later something that would become the central argument to explain the empirical irrelevance of Lucas' (1976) critique: that private agents do not care about monetary and budgetary decisions unless they affect them directly (Malinvaud, 1998, p. 335).

Hence, it is reasonable to inquire from where the success that Lucas' (1976) critique enjoyed in academia originated, almost immediately upon its release. It seems that this success resulted not only from its strength as a “simple syllogism” – which was seen not to be so simple – but also from empirical evidence supporting the critique. However, this evidence was not direct: it was related to the apparent inability of Keynesian models to anticipate economic fluctuations – particularly the combination of high unemployment and inflation of the 1970s. This inability was taken by critics of Keynesianism as evidence of the relevance of Lucas critique.

In fact, at the empirical level, Lucas' (1976) critique has not been directly tested systematically and repeatedly. What was empirically tested were some of its hypotheses and predictions, *based on the rational expectations model*. Thus, there was no dissociation of the critique from the theoretical school it contributed to the foundation of. Some of the classic works in this regard are those by Lucas (1973), Sargent and Wallace (1973), Sargent (1976), and Barro (1977).

This predictably led to the Keynesians' response involving empirically assessing the existence of structural breaks and parameter instability in their models following a change in economic policy, with an emphasis on empirical analysis of the Phillips curve, the central macroeconomic policy tool, according to this generation of Keynesians. This occurred despite Lucas' (1976) critique being much broader, concerning the structural stability of models in the face of the possibility of changes in expectations in response to changes in macroeconomic policies (Goutsmedt et al., 2019).

The first Keynesian response was given by Blinder in his book *Economic policy and the great stagflation* (Goutsmedt et al., 2019, p. 10). Other authors fol-

lowed, such as Otto Eckstein, with his books *The great recession, with a postscript on stagflation*, and *The DRI model of the U.S. economy*, Lawrence R. Klein (1985) and Robert J. Gordon (1975; 1984; 2011). All of these responses emphasized that the conventional Keynesian model and the Phillips curve in particular adequately described the stagflation situation of the 1970s, provided that they incorporated the supply shocks in energy and agricultural products of the period.

However, these responses have simply been ignored, which has led Keynesians like Blinder and Malinvaud to consider New Classical macroeconomics an illegitimate “palace coup” since it is devoid of an empirical basis (Goutsmedt et al., 2019, p. 22). It is important to stress here that one is not discussing the technical quality of these responses, only the fact that they have been ignored, and Lucas’ (1976) critique has been considered a milestone in the use of evidence in macroeconomics, totally disregarding its questioning from an *empirical* point of view by renowned professionals.

Even more surprisingly, Goutsmedt et al. (2016, p. 11) point out that Lucas’s critique was *nothing new* – in fact, something that was acknowledged in passing in a short footnote by Lucas (1976, p. 20) himself. The exact same idea was explicitly discussed by Jacob Marschak and Jan Tinbergen but was dropped in the following decades. The interesting question would then be to ask what would have allowed Lucas (1976) to reopen the discussion (Goutsmedt et al., 2016, p. 13).

There are thus two important omissions, from an empirical point of view, regarding Lucas’ (1976) critique: the macroeconometric papers that anticipated and discussed the problem of parameter stability; and the empirical responses that questioned the relevance of the critique for Keynesian models. It proves very difficult to frame these omissions from the perspective of an evidence-based subject. A scientist normally considers the evidence that preceded his work, as well as any empirical evidence that questions his result.

These facts indicate that there is indeed a significant problem in the relationship between macroeconomics and empirical evidence. Lawrence Summers (1991) argues along these lines, and his critique will be considered below.

4 SUMMERS AND THE “SCIENTIFIC ILLUSION” IN EMPIRICAL MACROECONOMICS

The most recent critique of the way evidence is used in macroeconomics through econometric models is that of Lawrence Summers (1991), in his paper *The scientific illusion in empirical macroeconomics*. This criticism is relevant because he is an economist with extensive experience in macroeconomic policymaking, having worked in the United States Treasury Department and the World Bank, and having served on the National Economic Council during the first administration of former United States president Barack Obama.

Thus, Summers (1991, p. 144) defines what he calls “the scientific illusion in empirical macroeconomics”, namely the beliefs that: i) empirical efforts in macroeconomics should focus on the deep structural parameters related to preferences and technologies; ii) empirical work in macroeconomics should test hypotheses rigorously derived from theory; and iii) sophisticated statistical techniques are important to distinguish causal relations in systems with many interdependent variables. As seen in the previous section, the aforementioned beliefs are direct results of Lucas critique. These beliefs, according to Summers (1991, p. 144) “form the core of what I consider the scientific illusion in empirical macroeconomics”.

Summers’ (1991) critique of the role of evidence in the macroeconomic debate can be summarized as follows: macroeconomic theory is divorced from empirical observation and overemphasized by the “failure of empirical work to deliver facts in a form where they can be apprehended by theory” (Summers, 1991, p. 144).

Thus, Summers (1991) identifies two fundamental difficulties in the relationship between macroeconomics and empirical evidence. One concerns the excessive weight of theory in the debate. The other concerns the type of evidence that is produced. The two problems are two sides of the same coin.

Therefore, Summers (1991), in criticizing the supremacy of theory over empirical evidence in the macroeconomic debate, is not an isolated case. The excessive weight of theory is also identified and criticized by Juselius (2010, p. 2), who calls for greater prominence of empirical analysis over theory, not only to provide more solid grounds for analysis but also to underpin new theories.

It would be reasonable to expect that empirical evidence would not only stimulate the production of new theories, as Juselius (2010) calls for, but also serve as a basis for predictions that can be empirically tested. However, this is not the case, as Summers (1991, p. 144) points out, because the vast majority of theoretical macroeconomics, despite emphatic statements in favor of rigor and generality, neither starts from empirical observations nor results in empirically verifiable predictions.

In fact, Summers (1991, p. 131-132) sets the crucial role of empirical evidence in the development of new scientific theories in opposition to the almost irrelevance of such evidence for the development of new economic theories. He mentions, as an example of the crucial contribution of empirical evidence to stimulate the development of new scientific theories, the role of the Hubble telescope in the creation of the Big Bang theory; or the study of fossils, fruit flies, and the DNA of various species for the most modern formulations of the theory of evolution.

To stack up the theoretical work of economists against those of scientists who develop new theories from empirical evidence, Summers (1991) lists several

works that have helped shape current macroeconomics, with few or no references to econometric models, such as *Models of business cycles*, by Robert Lucas (1987); *Dynamic macroeconomic theory*, by Thomas Sargent (2009); *Growth theory: an exposition*, by Robert Solow (1970); and *Asset accumulation and economic activity*, by James Tobin (1982).

Since the evidence provided by econometric models – especially those that incorporate more sophisticated techniques – is weak and problematic, the theory behind the models ends up being more important than the empirical evidence itself. Also, according to Summers (1991), contrary to the practice in the natural sciences, replications of econometric results to test estimated parameter values are rare. For Summers (1991, p. 133), this is a consequence of the fact that “the results are rarely an important input to theory creation or the evolution of professional opinion more generally”.

Effectively replicated econometric work, according to Summers (1991, p. 133), usually involves qualitative aspects, rather than estimating structural parameters or testing a hypothesis. The reason for this – despite the significant methodological innovations involved in Thomas Sargent’s deep parameter approach or Christopher Sims’ vector autoregression (VARs) approach – would be that researchers in both lines mistake methodological advances for advances in substance (Summers, 1991, p. 134).

Summers’ criticism of Sargent’s approach to the estimation of deep parameters – that is, the structural parameters that describe the fundamental behavior of consumers and firms¹¹ – is focused on two papers by Hansen and Singleton (1982; 1983). These two papers are recognized for their econometric value, as shown by the Frisch medal awarded to Lars Peter Hansen and Kenneth Singleton in 1984. Given the outstanding character of these econometric papers, their basic flaws represent this entire genre of work (Summers, 1991, p. 134).

The first important issue to be stressed is that even if the hypothesis under test is not rejected, Summers (1991) still points out that the structural parameters estimated in models such as those of Hansen and Singleton (1982; 1983) would hardly be taken seriously. In addition to limitations in data access and use, *it is uncommon for estimated structural parameters to be used to make predictions regarding the effects of macroeconomic policies*. As Summers notes, even though Hansen and Singleton (1982; 1983) have estimated the structural parameters of the utility function of representative consumers, as recommended by Lucas’ (1976) critique,

11. As explained by Low and Meghir (2017, p. 35), fully specified structural models adopt explicit assumptions about the goals of economic actors, their environment, and their information set, also specifying the choices that can be made; thus, allowing the individual optimization problem to be solved as a function of the information set.

it is unlikely that anyone would use these estimates to calculate the effects of a tax cut (Summers, 1991, p. 136).

Here, we have another key point of this work. Given the large volume of econometric papers in specialized journals, why are the estimated values of the structural parameters hardly ever used in policy simulations, unlike the parameters estimated in laboratory experiments, which are subsequently employed in engineering applications?¹² It is the fact, noted by Summers (1991), that these structural parameters are usually ignored when discussing the effects of public policies.

The answer to this question, both regarding Hansen and Singleton (1982; 1983) and any other model concerned with estimating structural parameters, is simple: the heroic assumptions and frequent problems in specifying the structure of models – even more so in the case of those employing the concept of the representative consumer – generate so many uncertainties that they make it impractical to apply the parameter estimated in this way to evaluate public policies, even if the model does not reject the assumptions under test.

It should not come as a surprise that Summers (1991, p. 137) considers that “Hansen and Singleton’s work creates an art form for others to admire and emulate but provides us with little new knowledge”. An equally severe judgment would apply to any similar attempt “to test a highly restricted and surely incorrect structure using elaborate methods which do not shed light on the cause of any deviations of data from theory” Summers (1991, p. 137).

According to Summers (1991), the main goal of Hansen and Singleton (1982; 1983) was to test the relationship between consumption and asset prices, based on a representative consumer model with rational expectations. Summers (1991, p. 135) then identifies some relevant general problems in Hansen and Singleton’s approach. These authors offer no indication as to the origin of their failure, whether in the logic of the theory itself or in the auxiliary hypotheses made to test that theory.

This is an important argument: the more complex the theoretical models and the more sophisticated the estimation techniques to try to empirically validate these models, the more auxiliary assumptions have to be made to obtain any result, and, as a consequence, it becomes increasingly difficult to discern whether the result (the rejection or non-rejection of a given hypothesis) is a consequence of the hypothesis itself or of the additional requirements derived from the estimation technique that is needed to empirically evaluate the hypothesis.

12. It is important to emphasize that this is not about questioning the *theoretical* bases of these models; for example, the hypothesis of the representative consumer, given the obvious heterogeneity of consumers. The discussion in this paper is restricted to the question of the use of empirical evidence in macroeconomics, accepting the models that are seen as mainstream.

In fact, several problems are involved in estimating a theoretical model with micro-foundations that cannot be directly observed and that require complex statistical techniques for its empirical evaluation. As Hendry and Muellbauer (2018, p. 304) point out, first, even if there is only one theory to be empirically evaluated – that is, even if the *theoretical consistency* condition is met – this does not mean that there is only one model for empirical estimation: there are different ways to implement a model empirically, varied ways to consider variables that cannot be observed and different ways to handle expectations.

Nor is there just one way to ensure empirical consistency. There are different ways of measuring data; data revisions happen; it is not always possible to calculate precisely the uncertainty of estimates; and the selection criteria for the different empirical models are not unique and homogeneous. All these issues generate an inevitable uncertainty regarding the values of the estimated parameters. As a consequence, it is not surprising that these parameters hardly contribute to the estimation of macroeconomic policies.

Second, if the hypothesis that drives the study is rejected due to details in the implementation of the empirical test, this rejection provides no indication of the type of change needed in the theory. Even more seriously, the rejection of a theoretical hypothesis because of the particular implementation characteristics of an empirical test provides no stimulus for further theoretical developments with respect to the hypotheses being tested (Summers, 1991, p. 135).

As for the alternative technique of examining empirical evidence in vector autoregression macroeconomics, Summers' (1991) verdict is no more favorable. He endorses what he calls Sims' (1980a) "destructive argument" against structural models (Summers, 1991, p. 137).¹³ But Summers (1991) is less condescending about the possibility of VAR-based modeling providing input for the formulation of macroeconomic theories and policies.

In fact, VAR-based models are usually subject to severe criticism. As Fabio Canova (1995, p. 57) explains, critics point out that the methodology of VAR models bears little relation to economic theory, is based on a set of unsustainable assumptions, and is essentially flawed, being subject to Lucas critique. It is thus a paradox that after the academic success of this critique, VAR-based models have achieved popularity.

Indeed, Summers' (1991) critique uses Ben Bernanke's (1986) paper, *Alternative explanations of the money-income correlation*, as a paradigmatic example of the problems of empirical evidence generated by this type of model. According to

13. Summers mentions only Sims (1980a) as a fundamental reference for VAR-based modeling, but Canova (1995) also mentions Sims (1972; 1980a; 1980b) and Sims, Goldfeld and Sachs (1982).

Summers, the only valid conclusion from VAR-based models such as Bernanke (1986) is that “the only firm conclusion reached is that structural interpretations of VARs are very sensitive to the model one assumes” (Summers, 1991, p. 138). Such a rigorous conclusion should come as a surprise since it is a feature of VAR-based models that they do not require a theoretical background, only that they select the variables to be included and define the lag structure.

Given the lack of theoretical substance in these models, estimates and forecasts based on VARs are strongly affected by the inclusion or exclusion of variables (Braun and Mittnik, 1985) and their gap structure (Hafer and Sheehan, 1989). In the context of this paper, it is particularly relevant to note that the structure of the gaps also severely affects the economic recommendations suggested by the models (Hafer and Sheehan, 1991).

Here, we reach another point of fundamental importance in this paper. On the one hand, models that seek to estimate structural parameters impose an overly demanding theoretical framework on the data, which makes the results lack robustness. As a result, much is invested in statistics to evaluate the conformity of the model with the data, an unavoidable necessity due to the overly restrictive nature of the hypotheses that are adopted – such as the hypothesis of a representative consumer (Summers, 1991, p. 136-137).

On the other hand, forgoing theoretical support in the data analysis – as VAR-based models do – not only gives room for a large number of alternative theoretical hypotheses to explain the same result but also makes this type of model very susceptible to arbitrary selections by the researcher, regarding both variables and gaps. This renders this type of modeling of little interest for the design and evaluation of macroeconomic policies.

In fact, there seems to be a problem in the relationship between macroeconomics and empirical evidence that seems to oscillate between two extremes: either theory “rules” the evidence, as in the case of structural models, or statistical relations between historical series start to “suggest” a link between them (VAR-based models), and theory becomes something secondary, at the discretion of the researcher.

Next, an even more radical criticism of structural models will be addressed, in which this type of model is considered a step *backwards* concerning the development of the scientific character of macroeconomics, despite appearances to the contrary.

5 ROMER AND THE LOSS OF MACROECONOMIC'S SCIENTIFIC CHARACTER

Romer's (2016) critique is even more radical and poignant than Summers' (1991). Given the arsenal of mathematically complex theoretical models and the wide variety and availability of statistical techniques and series, it is not surprising that

Romer's quote, which serves as the epigraph to this paper, is somewhat shocking when he states that macroeconomics has been losing its scientific character. One should also note the academic relevance of the author of such a severe diagnosis: Romer was awarded the 2018 Alfred Nobel Memorial Prize in Economic Sciences, alongside William Nordhaus.

In his work, *The trouble with macroeconomics*, Romer (2016, p. 9) blames the dominant theoretical paradigm in macroeconomics for rejecting empirical evidence that contradicts its theoretical postulates, in favor of the authority of economists such as Robert Lucas. According to this author, this refusal would be aggressive towards any criticism, *even if the criticism is based on evidence*. More seriously, Romer (2016) blames the so-called *mainstream macroeconomics* for promoting retrocession in this theoretical field, especially with its habit of *deliberately ignoring evidence*. This would be the case, for example, when mainstream authors claim that the Central Bank has no way of affecting the interest rate that functions as the basis of the economic system and that monetary policy would be irrelevant.

Mentioning deflation early in Paul Volcker's tenure at the United States central bank, the Federal Reserve (FED), achieved from sharply contractionary monetary policy, Romer (2016, p. 4) notes that if the FED can cause the interest rate to change by 500 basis points, it seems absurd to inquire whether monetary policy is relevant. Romer (2016, p. 10) suggests that a statement that so "blatantly" contradicts established facts suggests a lack of interest by economists in the very facts.

Romer's (2016) very piece offers an example of the macroeconomic field's difficulties in dealing with empirical evidence. This author presents statistical series that show how the United States central bank caused deflation at the beginning of Paul Volcker's administration – between 1979 and 1983 – by raising the real interest rate on federal funds, which also resulted in a significant reduction in economic activity and increased unemployment. To these statistics, Romer (2016, p. 2) counters the work of Jesús Fernández-Villaverde (2010), defined by him as one of the leading mainstream economists, and who states that, despite the "impressive empirical case" of those who believe that money affects economic fluctuations, he is not fully convinced of the importance of money, "outside the case of large inflations".

The empirical evidence presented by Romer (2016), his criticism, and the skepticism expressed by Fernández-Villaverde (2010) definitely cannot coexist in the same research field without a sense of embarrassment. The effective use of evidence should limit the debate, at first, only to issues of secondary importance

in the macroeconomic field, helping to pacify fundamental questions.¹⁴ Why is the debate still going on if there is a variety of statistics available to be used as evidence?

This question raises another important issue: it is not enough to have evidence, even if in the form of historical series built with statistical rigor and precision – which is often not the case. *It is necessary to define what can validly be considered as legitimate evidence to support a statement in macroeconomics, and how this evidence can be properly used in the debate.* As seen earlier, different econometric models can account for the same theory – that is, there are different ways to estimate a theoretical hypothesis empirically, there are several data alternatives to measure the same variable, there is the problem of variables that cannot be observed, and there are a variety of equally valid criteria for selecting an empirical model.

These factors aggravate the embarrassment resulting from the lack of generally accepted protocols on the scientifically adequate way to use these statistical techniques in order to support a theoretical proposition. Without such protocols, the macroeconomic debate that should define what fiscal and monetary policies are appropriate for a given purpose ends up relying on other factors, such as academic authority, the mathematical sophistication of theoretical models, or both.

Thus, given the profusion of statistical and econometric methods whose criteria are subject to strong questioning, even the most basic theoretical relations that guide macroeconomic policy proposals are immersed in bitter controversies, in which the academic prestige of the participants and the complexity of the theoretical models presented seem to have greater importance than the available evidence. In Romer's words (2016, p. 8), "progress in the field is judged by the purity of its mathematical theories, as determined by the [academic] authorities".

Indeed, even an empiricist author like Reiss (2008, p. 2) is forced to recognize that, as far as economics is concerned, even a basic concept such as a *firm* cannot be directly observed, being something of a completely different nature from a collection of machines, buildings, CEOs etc. Reiss' (2008, p. 3) recommendation, therefore, is to *acknowledge that there is a plurality of methods to construct and gather evidence*, which involves, in addition to direct observation of evidence from the senses, also statistical methods, such as number-indexes; econometric regressions; analysis of variance (Anova); mathematical modeling; computer simulation models; experimental economics; mental experiments; expert opinion etc. Therefore, the possibility of evidence-based fiscal and monetary policies depends rather on an appreciation of the various types of evidence in the debate concerning basic macroeconomic fundamentals.

14. Except in extraordinary moments, what Thomas Kuhn (1998) called *scientific revolutions*.

Any naïve empiricist perspective that minimizes the complexity in the construction of evidence in macroeconomics runs into the fact that the econometric evidence widely used in the debate is built on techniques that offer many degrees of freedom to the analyst, perhaps even excessive degrees of freedom, which may allow for lax manipulations of the results, especially when there are no generally accepted protocols as to the appropriate level of use of these degrees of freedom. These problems are first illustrated by Romer (2016) with the well-known identification problem. In this regard, criticizing economists who lack the commitment to historical evidence, he notes that modeling strategies that allow for more variables and more *imaginary shocks* provide additional degrees of freedom since more variables aggravate the identification problem (Romer, 2016, p. 10).

Romer (2016, p. 11-12) discusses the identification problem with a simple log-linear labor supply and demand model with random shocks. To predict the effect of a policy change, one needs to estimate the elasticity of labor demand. As is well known, in this case, the solution to the identification problem is to impose some constraint on the supply curve. Romer (2016, p. 10-11) imposes two alternative restrictions: one in which the supply curve is perfectly inelastic; and another in which it has a positive shift and passes through the origin. Each constraint produces very different results for the demand curve. Therefore, without additional information, no result has any meaning. Herein lies the possibility of arbitrary manipulations, according to the preferences of the researcher.

Romer (2016) also provides other examples of econometric model estimation that allow too much freedom to the analyst's arbitrariness. He mentions, for example, the model of Smets and Wouters (2007), which has seven variables and 49 parameters to estimate, with only seven equations, so 42 of the 49 parameters have to be estimated with information *other* than the time series of x (Romer, 2016, p. 12). The inclusion of rational expectations further exacerbates the identification problem by increasing the number of parameters, which have to be specified based on information other than the time series of the independent variables (Romer, 2016, p. 12).

Because of this excessive freedom given to the arbitrariness of analysts, the solutions found have become increasingly opaque: "a discussant or referee cannot say that an identification assumption is not credible if they cannot figure out what it is and are too embarrassed to ask" (Romer, 2016, p. 15). Such opacity in the use of the degrees of freedom provided by the models has increased over time. Romer (2016) goes on to say that assumptions about the distribution of error terms are a good place to "bury things", simply because "hardly anyone pays attention to them" (Romer, 2016, p. 15).

There are also problems when using Bayesian methods. Back to the example of estimating the elasticity of the demand curve for labor, in the case of using a

Bayesian method, Romer (2016, p. 15) notes that by manipulating the backgrounds for the supply curve, it is possible to change the subsequent outcomes for the elasticity of demand, until you get the one desired.¹⁵

In face of all these issues, Romer (2016, p. 19) concludes that

perhaps this time, macroeconomists should admit that the wreckage runs so deep that they should abandon the quest for the sacred simultaneous equation model. It might be wiser to adopt the messy methods that medical researchers have used to make discoveries that were implemented and actually improved health.

That is, rather than dogmatic fidelity to a particular method of empirical analysis – such as structural models – it may be more productive to consider a wider range of evidence of different natures, even if the resulting method is not formally elegant. The different pieces of evidence may reinforce each other or, alternatively, provide different results and thereby broadening the perspective of the analysis, possibly even stimulating new theoretical developments. This point will be taken up again in the conclusion.

6 BY WAY OF CONCLUSION: IS MORE EVIDENCE-BASED MACROECONOMICS POSSIBLE?

Reiss (2008, p. 162) warned that econometric models are almost always poorly specified and that, in socioeconomic analysis, structural breaks are frequent. Consequently, a sophisticated model with complex techniques involving the estimation of structural parameters may end up being of less use than a simpler model when it is necessary to make macroeconomic forecasts, especially those related to policy choice: indeed, more complex models often fail to demonstrate their superiority over simpler models (Reiss, 2008, p. 162). Certainly, the problems with macroeconometric models, in general, are so numerous and with such diverse sources that David F. Hendry (2018, p. 19) inquires what would be a possible criterion for selecting among them, concluding that, historically, the criterion has been conformity with mainstream accepted macroeconomic theory – that is, it has been *internal credibility*, rather than verisimilitude.

This greater weight of theory often ends up translating, in practice, into the greater importance of academic prestige when deciding debates about macroeconomic theory and policy, as charged by Romer (2016). Therefore, there is no shortage of statistical and econometric techniques to address empirical evidence in an attempt to develop evidence-based macroeconomic policies. Instead, the problem

15. Romer (2016, p. 15) quotes several authors to support his criticism of Bayesian methods in producing empirical evidence in macroeconomics, especially regarding the Smets and Wouters (2007) model; among them, Iskrev (2010) and Komunjer and Ng (2011), who show that without background information, the Smets and Wouters (2007) model is not identified.

seems to lie in the way in which these techniques are used, and the excessive importance attached to theoretical models at the expense of empirical analysis.

Critical awareness must be developed toward this type of researcher bias, demanding that all procedures of empirical analysis be made explicit and critically examined by peers, regardless of the researcher's theoretical attachment and fidelity to the principles of a school. The use of different econometric models and empirical evidence – using different data by researchers belonging to different theoretical schools – may to some extent generate results that are not controlled by any one researcher, or group of researchers, even more so if they are combined with other techniques, such as simulation models, or even the analysis of simple descriptive statistics. This can play a role similar to that of randomized clinical trials, even if it does not involve the same degree of randomization that characterizes such trials.

These considerations suggest that efforts toward building more evidence-based macroeconomics should primarily include the simultaneous consideration of different types of evidence and openness to debate in macroeconomics.

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EVIDENCE-BASED ENVIRONMENTAL PROTECTION? INSTITUTIONAL DEVELOPMENT, PLANNING AND BUDGET ENFORCEMENT AT IBAMA

Suely Mara Vaz Guimarães d'e Araújo¹

1 INTRODUCTION

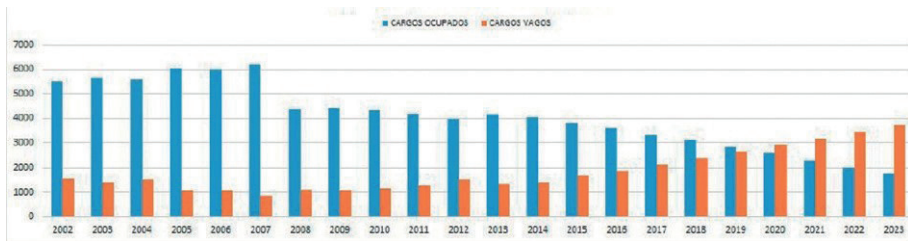
The Brazilian Institute of Environment and Renewable Natural Resources (Ibama) can be considered the main operational agency in the National Environmental System (Sisnama). Established by Act No. 7.735/1989, it gathered the attributions of four agencies: Special Secretariat of Environment (Sema) of the Ministry of Interior, Brazilian Institute of Forest Development (IBDF), Superintendence of Fisheries Development (Sudepe) and Superintendence of Rubber (Sudhevea).

Its founding act, updated in 2007, basically grants the agency the following attributions: to execute the environmental police power; to enforce federal attributions in the National Environmental Policy regarding environmental licensing, environmental quality control, permission for the use of natural resources, and environmental supervision, monitoring, and control; and to perform supplementary actions under the power of the federal government, which occurs mainly in environmental supervision, with a special focus on Brazil's Legal Amazon. Ibama has been facing serious problems to ensure the execution of its institutional tasks, both due to the progressive reduction in the number of employees and insufficient budgetary resources.

The agency had 2,618 active workers in June 2020. A technical note of that year (Ibama, 2020) presented a demand for a competitive examination to fill 2,311 positions in the agency, of which 970 were for environmental analysts, 336 for administrative analysts and 1,005 for administrative technicians. Figure 1 presents the personnel development and perspectives.

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FIGURE 1
Ibama employees (2002-2023)



Source: Ibama (2020).

Obs.: Figure whose layout and texts could not be formatted due to the technical characteristics of the original files (Publisher's note).

The Ibama (2020) document also highlights the significant reduction in the number of employees designated to act as federal environmental agents (AAF), that is, for environmental inspection activities. There are said to be 591 AAF, while in 2010 the figure was 1,311. This number speaks for itself, being clearly insufficient to ensure the effective performance of the agency in inspection operations that take place all over the country and cover different types of environmental violations, not only those related to areas controlled by the Federal Government or to activities licensed by the agency.

The largest part of Ibama's budget is for personnel expenses. The agency is responsible for the payment of retirees from the agencies involved in its constitution and, due to the growing pace of retirements, the payment load of the inactive is relevant. In the discretionary expenses, the budget actions under the responsibility of the Environmental Protection Directorate (Dipro), responsible for environmental supervision, prevention and fighting of wildfires, and environmental emergencies, stand out.

The purpose of this chapter is to present how environmental supervision and the prevention and fighting of wildfires, led by Ibama, were institutionalized as concrete public policies. This concern was unfolded into some reflections: i) the development of the agency, in the sense of using technical information and relying on information technology in its decision-making processes regarding environmental inspection and fire prevention and control; ii) the main lessons learned on these topics; and iii) how these processes are reflected in the agency's planning and budgetary execution.

The research includes the analysis of the use of scientific evidence or other kinds by the federal bureaucracy (Pinheiro, 2020; Koga et al., 2020), of institutional changes over time (Mahoney and Thelen, 2010), and the lessons derived from these processes (Sabatier, 1988; Sabatier and Jenkins-Smith, 1999; Sabatier and Weible, 2007). A view on advocacy coalitions along the lines of the advocacy

coalition framework (ACF) continues the author's research on the application of this theoretical framework to environmental policy in Brazil (Araújo, 2007; 2013; Capelari et al., 2020).

Public data and documents were used, as well as semi-structured interviews guided by the questions highlighted in the previous paragraph. The respondents were free to include additional comments. The six interviewees, all of them long-time Ibama employees, responded in writing and requested anonymity. Three of them have already worked in coordination positions at Dipro, and the other three were selected for their informal leadership role in the inspection team. In addition, participant observation was relevant due to the author's experience as president of the agency during the Temer administration (June 2016 to December 2018). Budgetary data were highlighted, with details regarding the past five years, under the assumption that the budget is an important mirror of political options and an adequate parameter, in its execution, for the analysis of the fulfilment of public policies.

2 LITERATURE REVIEW

A large set of factors influence the production of public policy, among them the availability and use of evidence. The evidence-based public policy approach (EBPPs) has generated growing interest from academics and other researchers and analysts. In this context, it is important to understand that the term *evidence* can have several meanings when applied to public policy decision-making processes: it can refer to scientific evidence, managers' personal experiences, previous organizational experiences, beneficiaries' opinions about public policies, and other players. In practice, evidence can also be used to justify decisions already made (Koga et al., 2020, p. 7-8).

Pinheiro (2020) intends to shed light on the concept of evidence, a central element from the perspective of EBPPs. Usually, the approaches on the subject state that research evidence should play a central role in the formulation and implementation of public policies, but there is room for other forms of knowledge and interests. Pinheiro (2020, p. 17) raises the following question: "since we are not only talking about scientific evidence, how would one define the information used in the actions and decisions of policymakers and other stakeholders?"

According to Pinheiro (2020, p. 18), the analysis of the concept of evidence requires a method based on moderate, reasonable, and pragmatic criteria. Following his analysis, the author also explains that the concept of evidence in public policies can be placed at different points of a continuum, in which the two poles are two general models, the rationalist one and the constructivist one. Given the limitations of leaning simplistically towards one of these two extremes, the author proposes a middle ground – the *moderate model* – which makes the following epistemological assumptions:

P1) to perceive the social, economic and political systems as complex, but rationally analyzable ones; P2) to consider the limits of knowledge in general, the fallibility of scientific knowledge and the specificities of knowledge in social sciences; P3) to consider the epistemological (scientific) status of the subject or policy area in question; and P4) to understand the use of evidence within a general framework of action of the policymaker or other stakeholders (according to the particular case), which, in turn, is specified within a contextual framework (Pinheiro, 2020, p. 21).

When making a concrete decision, public agents use a variety of information, influenced by their beliefs and knowledge, their goals, and the path taken to achieve them. This structure is influenced, in turn, by a context in which political, epistemological, normative, institutional and organizational factors must be considered (Pinheiro, 2020, p. 23).

In this study, we follow Pinheiro's (2020) perspective, which sees evidence that will support EBPPs as included in social and decision-making processes that need to be understood within a contextual framework and not as external and neutral parameters.

The moderate model presented by the author is epistemologically compatible with the public policy subsystem view presented by Sabatier and partners in the ACF (Sabatier, 1988; Sabatier and Jenkins-Smith, 1999; Sabatier and Weible, 2007). The different players, individual and collective, public and private, who act systematically over the years trying to influence decisions on a given public policy issue are driven by beliefs, which also reflect different types of interests. Moreover, the dynamics of this network of actors are influenced by external, structural, and cyclical factors. Rationality is worked in the ACF under the perspective of bounded rationality (Simon, 1985), which also seems to be featured in Pinheiro's (2020) moderate model.

The conflicts between the advocacy coalitions addressed by the ACF are embedded in a specific social, political, economic, historical, and sectoral context (embedded conflict hypothesis). The players' beliefs, in turn, are endogenous and dynamic, varying in a structured way out of these conflicts (socially induced learning hypothesis). Policy-oriented learning is an important element in the ACF. It will stem from technical information, but also from conflict and coordination relations among actors (Araújo, 2013). Vicente and Calmon (2011, p. 2) point out that, from the perspective of the ACF, the evolution of technical-scientific knowledge is important to understanding policy-oriented learning and that directed to public policies and institutional change, which contributes to the interaction with the EBPP approach.

Since the earliest versions of the ACF, technical information has been seen as a relevant resource for the advocacy coalitions that make up each policy subsystem. However, groups will incorporate this information differently, with different optics influenced by their respective belief systems.

Araújo (2007; 2013), in his application of the ACF, identified four advocacy coalitions in the green agenda subsystem, each with their own set of beliefs directed at environmental policy: i) the traditional developmentalists; ii) the modern developmentalists; iii) the socio-environmentalists; and iv) the enlightened technocrats.² Ibama was classified by Araújo (2007; 2013) as an enlightened technocrat between 1992–2002 and as a socio-environmentalist between 2003–2009. The division into four groups was adopted here due to the connection of this work with the research developed by the author on advocacy coalitions in Brazilian environmental policy.

The environmental policy subsystem, during the Bolsonaro administration, is under the dominance of traditional developmentalists, at least if one considers the formal powers (Capelari et al., 2020).

As per the view of these four groups, technical-scientific knowledge is stressed by enlightened technocrats and modern developmentalists, combined with traditional knowledge by social-environmentalists, and undervalued by traditional developmentalists (Araújo, 2007; 2013).

Finally, as Araújo (2007; 2013) found frequent evidence of gradual changes in environmental policy, characterized as layering changes according to Mahoney and Thelen's (2010) classification, we should present the typology of changes elaborated by these authors (table 1). In the Bolsonaro administration, this gradual approach has been broken (Capelari et al., 2020).

2. Among the beliefs of traditional developmentalists are: a vision of natural resources that tends towards pure utilitarianism; appreciation of cultural aspects (or, in certain extreme manifestations, disregard for knowledge as a value); and opposition to environmental policy instruments and conservation units. Among the beliefs of modern developmentalists are: focus on the sustainable use of natural resources; defense of a minimal State; priority to technical-scientific knowledge; and emphatic valorization of economic instruments of environmental policy. Among the beliefs of the socio-environmentalists are: focus on reconciling sustainable use and preservation; emphasis on democratic and participatory processes in state decisions; valuing traditional knowledge, without disregarding technical knowledge; emphatic defense of indigenous and other traditional populations; and valuing different types of environmental policy instruments. Finally, among the beliefs of enlightened technocrats are: priority for the preservation of natural resources; defense of a State characterized more by its vigorous action than by its democratic aspects; priority for technical-scientific knowledge; tendency to understand that government decisions should be centralized in the Union; emphasis on regulatory instruments; and priority for fully protected conservation units (Araújo, 2007; 2013).

TABLE 1
Typology of gradual changes

	Change by displacement	Layering	Drift changes	Change by conversion
Elimination of previous rules	Yes	No	No	No
Denial of previous rules	-	No	Yes	No
Change in the impact/application of previous rules	-	No	Yes	Yes
Introduction of new rules	Yes	Yes	No	No

Source: Mahoney and Thelen (2010, p. 16).

In layering, an institution, defined as a formal or informal rule, is complemented by rules that add to it. “*Layering of rules* tends to cause a thickening in the governance regime, altering its functioning and regulatory capacity” (Barcelos, 2012, p. 198). The elements added over time may supplant the previous systems (Gomes and Calmon, 2012, p. 5).

3 INSTITUTIONAL DEVELOPMENT

3.1 The perception of environmental agents

The content of this section seeks to expose and analyze, in an integrated manner, the responses of the interviewees to the following questions: i) “how have environmental enforcement actions and the prevention and fighting of wildfires changed over the years?”; ii) “how much has the agency evolved in the sense of using technical information and relying on information technology in its decision-making processes regarding environmental inspection and the prevention and fighting of wildfires?”; and iii) “what were the main lessons learned on these topics?”. The interviewees were also asked about the budget issue over the years, without further demand for details on the subject. The comments that make up the text are derived from the content emphasized by the respondents.

According to the interviewees’ statements, Ibama’s main asset in its initial phase was the dedication of its employees to the cause of environmental protection. They performed their tasks amidst adversities, such as poor commuting conditions, lack of technology and effective monitoring instruments, weak rules on sanctions and the environmental sanctioning process, immense logistical difficulties to enforce the environmental legislation and, above all, lack of consistent planning and a robust doctrine to overcome the challenges of environmental inspection and wildfire prevention and fighting.

From this perspective, it is worth noting that the passing of Act No. 9.605/1998 (Environmental Crimes Act – LCA), which brought together in a single piece of legislation the rules on criminal and administrative sanctions applicable to

violations against the environment, took place only in 1998. Its first regulation dates from 1999, and the one currently in use is from 2008.³ This act is the main foundation for the actions of environmental inspectors. Prior to the LCA, the rules on environmental violations were dispersed in various legal documents and were contradictory when considered together. This picture reinforces the reference made by the interviewees about the fragility of the legislation in the initial phase of Ibama's operation.

It is a consensus among the interviewees that the professionalization of the fight against environmental crimes and the prevention and fighting of wildfires was enabled mainly through: i) the competitive examination for environmental analysts in 2002 and subsequent ones; ii) the systematic partnership with the National Institute for Space Research (Inpe); iii) the strengthening of environmental policies within the Ministry of the Environment (MMA) and other ministries, especially the Action Plan for the Prevention and Control of Deforestation in Brazil's Legal Amazon (PPCDAM) and the National Plan on Climate Change; and iv) the improvement of the agency's internal planning tools regarding the subjects addressed here, expressed mainly in the Annual National Plan for Environmental Protection (PNAPA).

PPCDAM was launched in 2004 and initially involved seventeen ministries. The coordination was under the Office of the Chief of Staff, which is coherent with the interdisciplinary perspective adopted for the plan but was transferred to the MMA in 2013.⁴ From the beginning, the plan worked with three axes: land and territorial planning; environmental monitoring and control; and promotion of sustainable productive activities. In the fourth phase of the plan (2016-2020), a fourth axis was added, that of economic and regulatory instruments (Brasil, 2018).

Also as of 2004, Inpe began to operate the Real-Time Monitoring System (Deter), which enabled alerts on the occurrence of deforestation in the Brazilian Amazon, making it possible for Ibama agents to act more efficiently in the field and, consequently, rationalizing the use of human and budgetary resources.

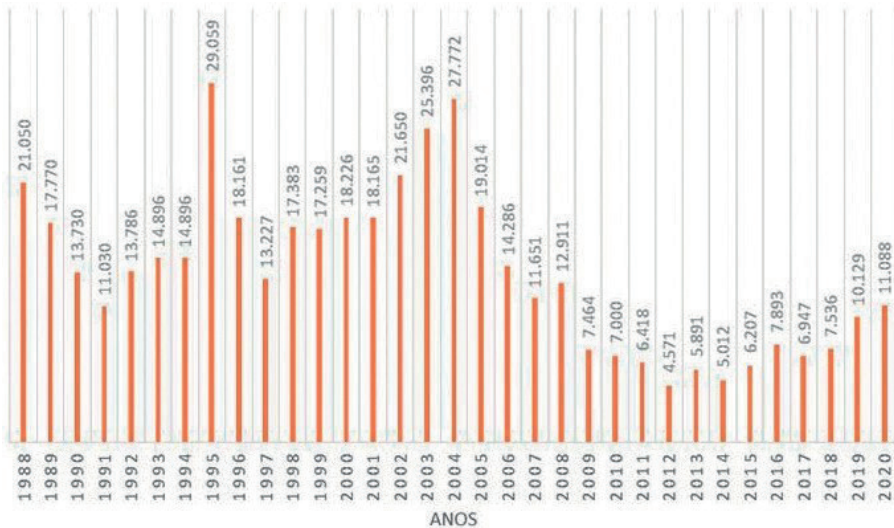
Ibama and Inpe have always been key players in the implementation of the environmental monitoring and control axis of PPCDAM – in the perception of the interviewees, the only axis that managed to remain solid throughout the duration of the plan. This is pointed out as the main factor responsible for the 83% reduction in deforestation rates in the Amazon between 2004 and 2012, as shown in figure 2.

3. Please check Decrees No. 3179/1999 (available at: https://www.planalto.gov.br/ccivil_03/decreto/D3179imprensa.htm) and 6514/2008 (available at: https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2008/decreto/d6514.htm), with an updated text.

4. Please check Decree No. 7.957/2013, available at: http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2013/Decreto/D7957.htm.

For five interviewees, the results for the 2013-2018 period are due to the lower amount of resources allocated to inspection, which places budgetary aspects in a prominent position in the perception of the inspectors. Another factor mentioned is the flexibility of the legislation brought by Act No. 12651/2012, the new Forestry Act, which allowed the regularization of irregular suppression of vegetation that occurred before July 2008. Probably, problems were also generated with the displacement of coordination from the Office of the Chief of Staff to the MMA, accompanied by the weakening of the performance of other ministries, but this was not highlighted by the respondents. The period 2019-2020 will be discussed in subsection 3.2.

FIGURE 2
Deforestation rates in the Brazilian Amazon (1988-2020)
(In km²)



Source: Inpe. Available at: http://terrabrazilis.dpi.inpe.br/app/dashboard/deforestation/biomes/legal_amazon/rates. Accessed on: Apr. 15, 2021.

Obs.: Figure whose layout and texts could not be formatted due to the technical characteristics of the original files (Publisher's note).

Three interviewees emphasized the use of Inpe data also by the team of Ibama's Center for Wildfire Prevention and Fighting (Prevfogo). Prevfogo has followed the whole trajectory of the agency,⁵ having been transformed into a specialized center in 2001.

5. Please check Decree No. 97635/1989, available at: https://www.planalto.gov.br/ccivil_03/decreto/1980-1989/D97635Impressao.htm.

With the organization of Inpe's fire data bank,⁶ Prevfogo's coordination team and its firefighters began to fight the events with more precision and speed. The interviewees reported that Prevfogo adopts ever-updated detection technologies, combining Inpe data and maps of combustible material concentration developed by the center's analysts. In addition, it has been called to perform consultancy work for other Latin American countries.

Prevfogo has improved, in partnership with universities, integrated fire management techniques, also used by the Chico Mendes Institute for Biodiversity Conservation (ICMbio) and other agencies. Integrated management is defined as:

a planning and management model that associates ecological, cultural, socio-economic, and technical aspects in the execution, integration, monitoring, evaluation, and adaptation of actions related to the use of prescribed and controlled burning and the prevention and fighting of wildfires, with the aim of reducing emissions of particulate matter and greenhouse gases, conserving biodiversity and reducing the severity of wildfires while respecting the traditional and adaptive use of fire.⁷

In the scope of integrated fire management, controlled burning is included in areas with a previously mapped accumulation of biological material, especially near conservation units or indigenous lands. As defined in an integrated fire management plan, prescription burning can be carried out for research or management purposes in determined areas and under specific conditions.

Five of the interviewees highlighted the relevance of Prevfogo's work not only in preventing and fighting wildfires but also in cooperation with other government agencies that work in this area. This work led the center to coordinate the International Wildland Fire Conference (Wildfire) in 2019.

In addition to Prevfogo, four of the interviewees highlighted the relevance of Ibama's environmental monitoring center, which was initially part of Dipro and later became a broader unit that can meet the technical demands of all the directorates, the National Center for Environmental Monitoring and Information (Cenima). The center coordinates, controls and executes activities related to the monitoring and management of environmental information, through the processing and development of technologies, research and the integration of databases and geospatial environmental information, as well as providing access to information and knowledge to the agency's internal and external public.

The organization of the coordination of environmental intelligence, integrated into the Brazilian Intelligence System (Sisbin) and the coordination of environmental emergencies, as well as the development of the electronic notification of

6. Available at: <https://terrabrasilis.dpi.inpe.br/queimadas/bdqueimadas/>. Accessed on: Apr. 15, 2021.

7. Available at: https://www.camara.leg.br/proposicoesWeb/prop_mostrarintegra;jsessionid=E5117E00962F961FFE120433C8BFB37E.proposicoesWebExterno2?codteor=1707953&filename=Avulso+-PL+11276/2018. Accessed on: Apr. 15, 2021.

infractions and remote inspection operations, were also emphasized. In the words of one of the interviewees:

the establishment of the intelligence coordination and centers and the inclusion of Ibama in Sisbin also contributed significantly to the planning and development of the institute's inspection operations, providing environmental protection actions at local and national levels with qualified and reliable information for the compilation of the evidentiary set of environmental crimes identified, in addition to providing greater safety for inspection agents in field actions (Interview).

Overall, the interviewees' narrative sought to highlight both the progressive use of technical information and scientific evidence, from the perspective of EBPPs (Pinheiro, 2020), and the gradual implementation of improvements in the agency's performance, predominantly framed as layering in the typology of Mahoney and Thelen (2010). It also evidenced the concern to highlight the lessons learned in this progressive evolution, in line with the ACF (Sabatier, 1988; Sabatier and Jenkins-Smith, 1999; Sabatier and Weible, 2007), for example, in the references to remote enforcement actions, which complement the field operations, or the work with indigenous firefighters, which shows an alignment of the agency with socio-environmentalism, consistent with the findings of Araújo from 2003 (Araújo, 2007; 2013).

It is worth noting, finally, that internal training was a topic pointed out by five interviewees. According to an inspector recognized as an important informal team leader:

among the internal actions that significantly contributed to the consolidation of Ibama as the main environmental protection institution in the country and one of the most important in the world, we can mention the investment in periodic refreshing and qualification courses for federal environmental agents. This qualification, in turn, resulted in the creation of an internal critical mass, which saw the problems and the solutions differently. As a consequence of this, we saw the creation of the Internal Regulation of Inspection (RIF), which provided greater standardization and modernization of the activity and procedures of environmental inspection, establishing deterrence as the central strategic objective of Ibama's inspection structure (Interview).

The tone of the interviewees' answers was marked by their support for the agency's history, which is expected given the critical position of the current federal administration regarding environmental policy, its rules, and its agents. We are going through a process of large-scale change, of deconstruction, in this field of public policies (Capelari et al., 2020). The interruption of the process of gradual construction that occurred in 2019 also accounts for the disruption of production circuits of technical information capable of informing decisions regarding Ibama management. This is expressed in the respondents' accounts.

3.2 Critical topics

As previously mentioned, the insufficiency of human and budgetary resources is a central problem for Ibama's performance in terms of environmental inspection and wildfire prevention and fighting. Naturally, the deficiencies in this regard also have an impact on the other activities of the agency.

As this is an aspect directly related to environmental inspection, its historical difficulties with the environmental sanctioning processes must be pointed out. The agency faces serious problems to handle the sanctioning processes and effectively collect the fines applied, whose funds raised are destined, in part (20%), to the National Fund for the Environment (FNMA) and the rest to the Treasury.⁸

Considering that the environmental sanctioning process ends with the administrative *res judicata*, the average time for its completion in the period 2005-2012 was 5 years and 7 months. In 2013, this time was reduced to 4 years and 3 months and, in 2014, to 2 years and 11 months. As the teams were reduced, the duration increased again in 2015 and 2016, to 4 years and 1 month. In more recent years, the teams started working with a goal of 3 years (Ibama, 2019).

It is worth clarifying that the number of cases tried annually by the Ibama team is high. In 2018, 13,071 cases were completed (Ibama, 2019), but the liability is very large. The time of just over three years to finish the cases needs to be reduced. To face this challenge, it is necessary to take it as a priority in the agency. Without the completion of sanctioning processes, the dissuasive power of fines and other environmental sanctions is greatly weakened.

From this perspective, Ibama has been investing in the mechanism of converting fines into environmental services.⁹ If compliance with the conversion were to become viable, there would tend to be a significant reduction in terms of the backlog of unadjudicated environmental sanctioning processes.

The conversion of fines was regulated by Decree No. 6514/2008 and was applied by Ibama until 2012 when it was suspended due to the realization that rules about the types of services to be performed were necessary, as well as due to the agency's difficulties in monitoring small projects throughout the country. Refining the rules of the mechanism based on previous experience and evidence that more structuring actions were needed to obtain results with the application of the mechanism, Decree No. 9179/2017 resumed the conversion of fines.

Among other points, it made explicit the actions regarded as environmental services and created the indirect conversion modality, aiming to carry out larger

8. Please check Act No. 9605/1998, art. 73 (available at: http://www.planalto.gov.br/ccivil_03/leis/19605.htm) and Decree No. 6514/2008, art. 13 (available at: http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2008/decreto/d6514.htm).

9. Please check the art. 72, § 4^o of Act No. 9605/1998.

projects, strategically chosen in light of the country's environmental reality and international commitments on environment and climate, such as the Paris Agreement (2015).

The decision at the time can be qualified as based on technical evidence and had the political support of the Presidency of the Republic, which was seeking resources for some projects. Environmental recovery in the headwaters region of the São Francisco River was prioritized as the subject of the first call for the indirect conversion of fines, to be launched in early 2018. The narrative was “planting trees to harvest water” at a time of pronounced water crisis. This interaction between technical and political factors is consistent with the moderate model presented by Pinheiro (2020).

Under the Bolsonaro administration, Decree No. 9760/2019 maintained the two conversion modalities (direct and indirect) but referred the details of indirect conversion to later regulation. There were adjustments to the regulation and the adoption of a provisional measure that centralized decisions about the allocation of conversion resources to the Minister of the Environment. This provisional measure¹⁰ was unsuccessful and expired. There was the cancellation of Ibama's first call for indirect conversion, launched in 2018, which had selected environmental recovery projects in the São Francisco and Parnaíba basins, and since then, the implementation of the conversion of fines remains at a very slow pace.

Only Ibama's second call for indirect conversion, which provides support for environmental recovery projects in the araucaria region in Santa Catarina, has not been suspended by the current management, certainly because it arises from a court settlement. The next subsection deals exactly with the period 2019-2020.

3.3 The period 2019-2020

The Bolsonaro administration brings a historical rupture characterized by successive gradual changes that have marked the evolution of the National Environmental Policy since its formalization by Act No. 6938/1981. It is a radical change in terms of the ideology that had been guiding this field of public policies so far. Environmental control, especially, has been the object of frequent criticism in the speeches of government authorities, who emphasize the importance of prioritizing the urban environmental agenda, as well as voluntary tools and support to the productive sector. Command and control have been put in check and, as a result, the so-called “excessive” rigor of the environmental rules and the enforcement agents, especially Ibama.

For the public policy subsystem in focus, adopting the conception of Sabatier and partners (Sabatier, 1988; Sabatier and Jenkins-Smith, 1993; 1999; Sabatier and

10. Please check Provisional Measure No. 900/2019, available at: <https://bit.ly/3D5kHRB>.

Weible, 2007), there is a turning point, marked by increasingly intense controversies and conflicts.

A process of de-institutionalization is underway, coordinated by the traditional developmentalist group. The dominant coalition actually denies the very existence of the subsystem and questions structural elements of environmental policy in the country – for example, how it was built, and the interaction between the government and civil society organizations, among others. In this extremely conflicting scenario, the concern with EBPPs and with learning directed at public policies loses almost all space and becomes empty (Capelari et al., 2020).

The interviewees' comments about these two years stressed, in addition to criticism by government authorities about the strictness of enforcement, the abandonment of PPCDAM without justification, the paralysis of new hires in the Amazon Fund, which has guaranteed important support in Ibama's enforcement actions in the Amazon since the end of 2016,¹¹ and the changes in the rules about the environmental sanctioning process, which have made it difficult to try and close the cases. Regarding the sanctioning process, the main questions are in the previous phase of mediation, which in practice has not yet taken off, and in the centralization of decision-making power in the state superintendents of the agency, who are chosen mainly based on political criteria.

These issues, it should be noted, are subject to legal action before the Supreme Court (STF).¹² Reflecting a subsystem that has become hyper adversarial (Capelari et al., 2020), the intensity of the judicialization of the federal government's environmental decisions has increased significantly. There are lawsuits filed by opposition parties to the government in the STF, lawsuits in the first instance filed by environmental organizations, in addition to lawsuits in the STF and in the first instance filed by the Public Prosecutor's Office. Furthermore, very recently, there has been an innovative citizen suit filed by six young climate activists, which calls for the suspension of the Nationally Determined Contribution (NDC) presented in 2020 under the Paris Agreement, on the grounds that an accounting gimmick had occurred that violated the requirement of progressivity in Brazil's climate ambition.¹³ Let us now see how this large-scale change will reflect in the budget.

11. The first version of the Profisc 1 project in the Amazon Fund was hired in November 2016. Available at: <https://www.fundoamazonia.gov.br/pt/projeto/Fortalecimento-do-Controle-e-do-Monitoramento-Ambiental-para-o-Combate-ao-Desmatamento-Ilegal-na-Amazonia/>. Accessed on: Apr. 15, 2021.

12. See respectively Action Against the Violation of a Constitutional Fundamental Right. (ADPF) No. 760 (available at: <https://portal.stf.jus.br/processos/detalhe.asp?incidente=6049993>), Direct Action for the Declaration of Unconstitutionality by Omission (ADO) No. 59 (available at: <https://portal.stf.jus.br/processos/detalhe.asp?incidente=5930766>) and ADPF No. 755 (available at: <https://portal.stf.jus.br/processos/detalhe.asp?incidente=6034288>).

13. Citizen Suit No. 5008035-37.2021.4.03.6100, pending before the 14th Civil Federal Court of São Paulo. Available at: <https://pje1g.trf3.jus.br/pje/ConsultaPublica/listView.seam?numeroProcesso=A%C3%A7%C3%A3o%20Popular%20n%C2%BA%205008035-37.2021.4.03.6100>.

4 THE BUDGET: PUBLIC POLICY BEYOND THE DISCOURSE¹⁴

Since the environmental policy is marked more by regulatory and control actions than by the transfer of resources, the budget for the MMA and its agencies has never been high. In recent years, however, the amounts have fallen sharply.

Araújo and Feldmann (2019) highlight, among other points, the tiny amount allocated to the MMA and its agencies in the 2020-2023 Pluriannual Plan:

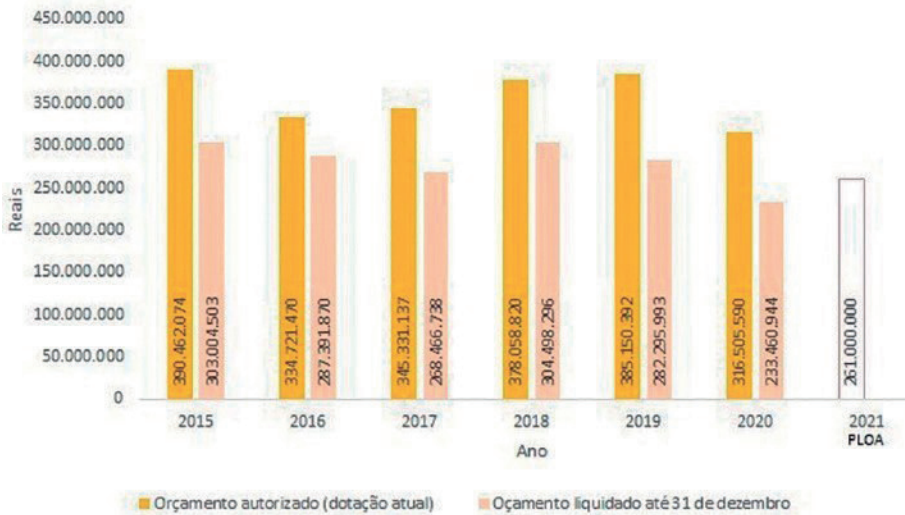
of the total resources destined for the environment axis, the Ministry of Agriculture (MAPA) will be responsible for 98.4% of the resources in the next four years, with 95.6% (more than R\$ 133 billion) going to sustainable agriculture and livestock program. The Ministry of the Environment programs – climate change, conservation and sustainable use of biodiversity and natural resources, and urban environmental quality – account for 1.6% of the total resources of the axis. If the calculation is made considering the total governmental resources foreseen in the PPA proposal (R\$ 6.8 trillion), the MMA's programs will represent 0.03%, which is unacceptable.

According to calculations by Werneck et al. (2021), the 2021 budget proposal for the MMA and its agencies, considering mandatory and discretionary expenses, brought the lowest amount in two decades. The resources are clearly insufficient if compared to the expenses necessary for the realization of the National Environmental Policy, as evidenced by the budget execution in previous years (Werneck et al., 2021). A problem of disregard for technical evidence is characterized, which contradicts the perspective of EBPPs.

As the research focuses on Ibama's activities in environmental inspection and preventing and fighting wildfires, it is necessary to analyze Ibama's discretionary budget and, subsequently, the specific budget actions related to these themes. Figure 3 shows the authorized and liquidated amounts (up to December 31) for the years 2015 to 2020 and makes a projection for the year 2021.

14. The data in this section were consolidated on April 15, 2021, prior to the enactment of the 2021 Budget Law. Also not included is the proposal for budget complementation presented by the Executive Branch to the National Congress on May 20, 2021, resulting from the promise made by the President of the Republic to increase resources for environmental policy, expressed at the meeting organized by the President of the United States on April 22 and 23, 2021.

FIGURE 3
Ibama's discretionary budget (2015-2021)
 (In R\$ 1 million)



Authorized budget (current appropriation) Budget paid up to December 31

Source: Werneck et al. (2021).

- Obs.: 1. Amounts updated according to the IPCA (Central Bank of Brazil – Citizen Calculator), considering the month of December of each year and the month of November 2020.
2. It was considered as effectively authorized the amount corresponding to the column “current appropriation” of the Integrated Planning and Budgeting System (Siop).
3. The 2019 budget action 21BS was not considered because Ibama did not internalize the corresponding resources, destined for the states.
4. In the Annual Budget Law Project (PLOA) 2021, the resources conditioned to legislative approval under the terms of item III of article 167 of the Federal Constitution of 1988 were not considered.
5. Figure whose layout and texts could not be formatted due to the technical characteristics of the original files (Publisher’s note).

As previously mentioned, among the discretionary expenses, the budget actions under the responsibility of the Environmental Protection Directorate (Dipro), which is responsible for environmental inspection and prevention and fighting of wildfires, as well as action in environmental emergencies, not covered in this text, stand out.

There are three Ibama budget actions directly related to environmental inspection and wildfire prevention and fighting, as follows:

- environmental control and inspection (214N);
- prevention and control of wildfires in priority federal areas (214M); and
- prevention, inspection, fighting and control of illegal deforestation, wildfires and other environmental violations in Brazil’s Legal Amazon and its border area (21BS).

Action 21BS was created to accommodate R\$ 280 million arising from the Lava Jato anti-corruption agreement, of which R\$ 230 million were passed on to the states in 2020 – as remainders payable from 2019 – and R\$ 50 million were internalized in Ibama, also in 2020. It should be clear that this is a temporary budget action, which will not be repeated in subsequent years.

Even in the Bolsonaro administration, which has reduced the attention to environmental enforcement by Ibama, with the empowerment of the military in operations, especially in the Amazon, actions 214M and 214N continue to be the agency's discretionary actions with the largest volume of resources, second only to the unit administration (budget action 2000), which covers the resources of the headquarters and those passed on to the state superintendencies. As an example, in 2019, R\$ 46 million were effectively authorized in action 214M and R\$ 103 million in 214N, in nominal values. The finalist action with the largest volume of resources after these two was the one related to the management of the sustainable use of biodiversity (214O), with just over R\$ 18 million authorized. These amounts were considerably reduced in 2020, a situation that becomes even more complicated when the 2021 PLOA is considered, but 214M and 214N continue to show a higher total than the other Ibama finalist actions. Table 2 shows the situation of budget action 214M between 2016 and 2020.

TABLE 2

Appropriation and execution of budget action 214M (2016-2020)
(In R\$ 1 million)

Year	Initial appropriation	Authorized	Pledged	Paid	Paid + RP ¹ paid
2016	66,521,601	66,723,084	55,251,809	46,863,414	46,683,016
2017	57,492,477	50,645,920	36,388,637	24,211,500	30,556,115
2018	60,843,645	43,212,653	41,468,806	34,203,475	41,829,959
2019	49,568,647	50,025,027	43,423,405	39,051,593	43,936,778
2020	40,371,413	40,371,413	39,645,268	30,635,631	32,183,893

Source: Siga Brasil/Senado. Available at: <https://www12.senado.leg.br/orcamento/sigabrasil>.

Author's elaboration, with the support of the Institute of Socioeconomic Studies (Inesc).

Note: ¹ RP = remainders payable.

Obs.: Data adjusted by Dec. 2020 IPCA, includes the execution of amendments.

Action 214M funds wildfire control activities in the so-called priority federal areas, by means of prevention, education, management, preparation, fighting, recovery of areas and replacement of the use of fire in the rural environment, as well as training, hiring and management of temporary fire brigades. The priority areas for Ibama's work are, in general, indigenous lands, settlements of the National Institute for Colonization and Agrarian Reform (Incra) and, in joint action with ICMBio, conservation units.

The execution amounts for this action show a significant drop in initial and authorized amounts between the years 2019 and 2020, which was also reflected in lower executed amounts, in a year marked by wildfires. It was already known that the year 2020 would be especially problematic, especially in the Pantanal region at Mato Grosso.¹⁵ Furthermore, there was a delay in hiring the brigade workers,¹⁶ which made the low execution even less effective, since, whether in the control of wildfires or environmental monitoring, it is not only important to execute but to execute at the right time throughout the year. From this perspective, it can be said that the government's actions did not respond adequately to the technical evidence presented, also in this matter clashing with the notion of EBPPs.

The scenario for 2021 gets worse: the PLOA proposed only R\$ 29.7 million and the amount approved by the Congress and sent for sanction is R\$ 35.7 million. The forecast is for a continuation of the drought,¹⁷ which would impose an increase in resources from the perspective of EBPPs and not a reduction. Table 3 shows the situation of budget action 214N between 2016 and 2020.

TABLE 3
Appropriation and execution of budget action 214N (2016-2020)
(In R\$)

Year	Initial appropriation	Authorized	Pledged	Paid	Paid + RP paid
2016	80,301,164	93,292,162	84,292,629	81,073,046	80,608,513
2017	112,817,193	101,235,805	97,121,448	85,933,570	87,198,932
2018	124,421,192	103,576,349	100,250,400	92,236,761	96,622,436
2019	112,088,291	112,088,291	104,534,589	90,375,940	93,124,878
2020	80,336,103	67,632,816	67,504,035	61,163,640	60,385,224

Source: Siga Brasil/Senado. Available at: <https://www12.senado.leg.br/orcamento/sigabrasil>.

Author's elaboration, with the support of Inesc.

Obs.: Data adjusted by Dec. 2020 IPCA, includes the execution of amendments.

Action 214N funds inspection actions aimed at verifying environmental compliance and enforcement of environmental norms, as well as the prevention and punishment of different types of environmental infractions, including deforestation and exploitation of forest resources.

The reduction in values, in 2020, in all budget phases, stands out. With R\$ 80 million in the initial appropriation and, especially, with R\$ 67 million in

15. Available at: <https://www.dw.com/pt-br/inc%C3%AAndios-e-seca-nas-nascentes-do-pantanal-alertam-paramudan%C3%A7as-clim%C3%A1ticas/a-55372348>. Accessed on: Apr. 15, 2021.

16. Available at: <https://oeco.org.br/noticias/atraso-do-governo-em-contratar-brigadistas-pode-piorar-cenario-de-queimadas-em-2020/>; and <https://oglobo.globo.com/brasil/combate-queimadas-na-amazonia-no-pantanal-foi-atrasado-em-quatro-meses-24686841>. Accessed on: Apr. 15, 2021.

17. Available at: <https://climainfo.org.br/2021/03/01/seca-persiste-e-pantanal-teme-mais-uma-temporada-de-incendios-em-2021/>. Accessed on: Apr. 15, 2021.

the actually authorized expenses, there was no room for Ibama to internalize the R\$ 47 million per year in financial resources from the contract with the Amazon Fund, which covers the expenses with the leasing of helicopters and vans used for monitoring the biome. These expenses are very important for inspection, and the resources from the Amazon Fund were essential for the inspection operations in 2017 and 2018.

If these resources from the Amazon Fund were to enter in full in 2020, there would only be R\$ 30 million for the remaining environmental supervision expenses throughout the country. Dipro's annual planning consolidated in the PNAPA always involves more than a thousand annual operations. Instead of the annual R\$ 47 million planned in the Profisc 1-B project, only R\$ 24 million were used in 2020, more than half in December.¹⁸

All Amazon Fund contracts are non-reimbursable resources, donated with the sole condition of being used for the contracted purposes, which are always related to the control of deforestation in the biome. There is no technical justification for such a low authorized amount in the 2020 budget, with direct consequences in the amounts throughout the budget cycle.

Action 214N's 2021 figures have improved a little, but did not meet the monitoring demands: the PLOA proposed R\$ 82.9 million and the amount approved by Congress and sent for sanction is R\$ 94.5 million.

It should be noted that, as of 2021, there is no forecast for additional resources in action 21BS, established to receive the resources of the Lava Jato anti-corruption agreement. The amount of R\$ 50 million allocated to Ibama was partially executed in 2020, with a total payment of R\$ 31 million. Most of the amount authorized in 2019 in this action – R\$ 230 million, in nominal values – was not released to the agency but was automatically transferred to the states of Brazil's Legal Amazon, as established in the agreement. Table 4 presents the data of action 21BS, with updated amounts.

TABLE 4
Appropriation and execution of budget action 21BS (2019-2020)
(In R\$)

Year	Initial appropriation	Authorized	Pledged	Paid	Paid + RP paid
2019	0	293,380,424	240,991,062	0	240,407,785
2020	0	52,474,184	50,721,431	32,680,869	31,610,789

Source: Siga Brasil/Senado. Available at: <https://www12.senado.leg.br/orcamento/sigabrasil>.

Author's elaboration, with the support of Inesc.

Obs.: Data adjusted by Dec. 2020 IPCA (which explains the difference in amounts compared to the original Lava Jato anti-corruption deal), includes the execution of amendments.

18. Available at: <https://www.fundoamazonia.gov.br/pt/projeto/Profisc-I-B/>. Accessed on: Apr. 15, 2021.

5 FINAL CONSIDERATIONS

The research conducted sought to describe and analyze the institutionalization process of environmental inspection actions and prevention and fighting of wildfires at Ibama, combining the theoretical perspective of the EBPPs, according to the moderate model presented by Pinheiro (2020), as well as elements of the ACF, previously applied by the author concerning environmental policy, and the classification of gradual changes presented by Mahoney and Thelen (2010).

In the more than three decades of the agency's existence, through the information in public documents and legislation, a gradual development can be seen, with changes mainly in the layering category (Mahoney and Thelen, 2010). This conclusion is also obtained from the responses of the interviewees, employees with extensive experience working in the local government.

The interviewees emphasized the progressive use of technical information and scientific evidence, from the perspective of EBPPs (Pinheiro, 2020), as well as policy-oriented learning (Sabatier, 1988; Sabatier and Jenkins-Smith, 1999; Sabatier and Weible, 2007). Examples are the emphasis on the joint work with Inpe, the relevance of Cenima and the coordination of environmental intelligence, as well as innovations such as remote surveillance operations. These manifestations are coherent with the formal records about Ibama's activities that can be found on the agency's website and in its annual management reports.¹⁹

With the beginning of the Bolsonaro administration, the environmental policy subsystem becomes dominated, at least formally, by traditional developmentalists. With this, gradualism gives way to rupture (Capelari et al., 2020). We do not yet know the extent of the effects of the radical changes underway. In addition to the deregulation effort, in the budgetary plan, there has been a decrease in the resources allocated to environmental policy, which is of great concern to those who work in this field of public policy. Finally, the weakening of the importance given to technical-scientific evidence, characterized, for example, by the abandonment of PPCDAM and other plans and programs that were being implemented, regardless of changes in government, until 2018, is cause for concern.

It is expected that this rupture process will be reversed and there will be room for greater balance within the environmental policy subsystem, with the appreciation of the expertise of public employees working in this field and the reinforcement of learning oriented to public policies and the EBPP perspective, facing all the challenges stemming from it. The institutional rupture underway in environmental policy, including the rules and practice of Ibama's actions, has

19. Available at: <https://www.ibama.gov.br/component/phocadownload/category/82-relatorios-de-gestao>. Accessed on: Apr. 15, 2021.

also led to the weakening of information production circuits that can be used as evidence, with negative effects that will probably take years to be solved. Reconstruction will not be simple.

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USE OF EVIDENCE IN POLICIES AND STRATEGIES FOR RURAL PRODUCTIVE INCLUSION IN LATIN AMERICA¹

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1 INTRODUCTION

The challenge of reducing poverty and including people in economic life through labor has received increasing attention from policymakers. Among the factors that have driven this debate are the limits faced by cash transfer policies (World Bank, 2020); the economic and employment crises experienced by emerging countries (World Bank, 2019); the recent dynamics of global capitalism, supported by labor-saving technologies and sectors (Albuquerque et al., 2019); and the intensification of previous problems due to the impact of the coronavirus pandemic (Vahdat et al., 2020). It is in view of this context that different programs have been designed with goals such as providing technical and vocational training, connecting workers with job openings, and offering credit and other resources for establishing small businesses. This set of interventions has often been called productive inclusion or economic inclusion interventions.

Even though the public debate is often dominated by the challenges experienced in urban centers, most of the actions undertaken in these interventions take place in rural areas, where most of the people living in poverty are still concentrated. On a global scale, almost two-thirds of the population in this situation live in rural areas. In Brazil, while 84% of the population live in areas considered urban, among the people in poverty, 50% of them are located in rural areas (IBGE, 2012).

1. The information and analyses assembled in this text were assembled by the authors in the framework of activities conducted in the scope of the Itinerant Chair on Rural Productive Inclusion, an initiative of the Brazilian Center for Analysis and Planning (Cebrap), in partnership with the Arymax and Tide Setubal Foundations and the Humanize Institute.

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As for the interventions promoted in the field of productive inclusion worldwide, according to the mapping of the Partnership for Economic Inclusion (PEI), promoted by the World Bank, 88% of the initiatives devote their attention to rural areas.⁵

By analyzing the state of productive inclusion programs around the world, PEI identifies that establishing a broad evidence base is a critical challenge for the greater effectiveness of what is being done. In this sense, the report reinforces that we need to keep learning about the first-hand experiences being produced by countries that have also had to respond to changing contexts of poverty and different social trends (Andrews et al., 2021). For this learning to take place and result in continued improvements in interventions, it is critical to deepen reflection on how evidence is being used and what can be improved in this particular field.

Despite the growing appreciation of the use of evidence in public policy-making, the available literature highlights, from the standpoint of theoretical formulation, the plastic character of the concept – it involves many dimensions and includes a certain diversity of interpretations. One of the available definitions describes evidence as any informative tools, assembled by policymakers and other interested social players, employed in public policy decisions, in a given contextual framework (Pineiro, 2020). Koga et al. (2020) point out that, when addressing the use of evidence, it is important to avoid both the rationalist position – which assumes that the simple use of evidence would allow for the proper instruction of public action based on the best available information, without worrying about other conditions of decision-making – and the hyper-politicizing position – which argues that the practice of planning and policy management could do without a justification supported by knowledge about the problem addressed and the learning obtained from other forms of intervention on similar realities. Pineiro (2020) suggests adopting an intermediate position, in which evidence is taken into consideration, but without losing sight of the contextual framework within which they operate.

This chapter has a double purpose – one of a theoretical nature and empirical one. From the theoretical angle, it aims to show that for the use of evidence to meet its goal of informing the decision-making process, three interdependent questions must be answered. First, one must ask: *evidence about what?* This is not just about defining the area of an intervention or policy. The point of this question is that there are different ways of defining the problem on which one wants to act. Using the same denomination – for example, rural productive inclusion – one can delimit the causes of the problem in different aspects of reality: the available technology, the level of capitalization, the access to markets, the basic living conditions,

5. PEI Data Portal – landscape dashboard. Available at: <https://www.peiglobal.org/pei-data-portal>. Accessed on: Apr. 2, 2021.

and combinations of these various dimensions. And this will play a crucial role in defining what evidence needs to be considered. Next, one has to ask: *evidence for what?* That is, there are different ways to act on the problem outlined. And each path implies different repertoires of actions that also call, each of them, for certain types of evidence in support. For example, multidimensional actions call for evidence about the interdependencies among the mobilized areas, and not only about the object of each of them, while top-down and unidimensional actions tend to require only evidence about the monitoring of their implementation. Thus, it is only after exploring these two questions, and in light of the choices they force us to make, that we could try to answer the question: *what evidence to assemble?*

From an empirical perspective, we aim to demonstrate that, by devoting our attention exclusively to the issues of *evidence about what* and *evidence for what*, the Latin American experiences in the field of productive inclusion have relied only partially on evidence and, in doing so, have achieved limited results. To demonstrate this argument, we analyzed the experiences of rural productive inclusion programs in five Latin American countries, which represent some of the main efforts made in the region in the past decade. One implication of the conclusions drawn from this analysis is that a future generation of policies on this topic will have to assemble different types of evidence and, to do so, respond to the triad mentioned above if it wants to move beyond the limits of the previous generation.

Framing the issue of evidence with these inquiries allows us to place the discussion regarding its use in an inseparably cognitive, structural, and contextual approach. That is, we believe that in this way one can operate with Pinheiro's (2020) warning, taking into account that there are political options involved in shaping interventions and selecting what kind of information counts as evidence, but also avoiding a hyper-politicizing view, since, conversely, the quality of data and information used as evidence affects and is affected by the repertoire of values and practices of managers and professionals involved with a public policy or program.

To develop these arguments, this chapter is organized into three sections in addition to this introduction. Section 2 focuses on the question of *evidence about what?* The discussion presented indicates that the evidence, in the cases of the policy initiatives and strategies for rural productive inclusion analyzed, was assembled especially to support the targeting of the efforts on the poorest. This was accompanied by a multidimensional approach to poverty and, as such, covered several domains beyond the constraints on household monetary income. But looking at the interventions specifically, the use of an approach based on the interdependencies among the various dimensions of poverty proved to be only partial, in most cases. This adaptation, as will be shown, has shaped the repertoire of actions put into practice in each of the countries. This is why section 3 introduces the question of

evidence for what? In this section, the discussion shows that, despite acknowledging the need for multi-component approaches, the interventions had great difficulty overcoming the fragmentation of the components assembled. They were implemented in a juxtaposed manner, with little or no coordination and integration. This was reflected in the way evidence involving the implementation of policies was assembled in the implementation of initiatives, with separate monitoring for each component, focusing on its isolated aspects (number of families served by initiative, amounts spent), but without paying attention to the ways of combining the mix of components made possible by policies and programs or the results that would indicate effective changes in the productive condition (increase in productivity, occupations, labor income etc.).

As it may have been clear, the answer to the question of *what evidence was or should have been assembled* is an unfolding of the answers obtained for the two previous questions. Therefore, at the end of sections 2 and 3, we discuss the implications of the considerations presented for the use of evidence by the programs. Additionally, section 4 brings the final considerations of this text, discussing the gaps identified and indicates the need to assemble other types of evidence in order to enhance interventions in the field of productive inclusion more coherently and consistently, with a multidimensional and relational approach, i.e., supported by interdependencies. It is precisely this that will make it possible to avoid a certain technicality in the discussion on the use of evidence, and also a hyper-politicizing or even voluntaristic version of the use of evidence.

2 EVIDENCE ABOUT WHAT?

To begin the discussion on evidence, it is important to define the problem that is being addressed. In this sense, in the case of productive inclusion, it is useful to consider how the discussion on poverty reduction in rural areas has evolved in the past decades until reaching contemporary approaches and the current or recent ways in which programs in the region understand the problem of economic exclusion. It is based on this analytical movement that we will be able to understand what the programs have sought to assemble as evidence and what are the consequences of this.

2.1 The emergence of the rural productive inclusion approach

The concern with rural development and poverty reduction in the countryside has evolved over time, giving rise to different approaches. In the case of Brazil, for example, until the mid-1950s, the strategy adopted for rural areas was based on a policy of expanding the agricultural border in fertile lands, through an extensive production pattern and cheap labor, without paying closer attention to other dimensions of development (Santana et al., 2014), it was also expected

that migration to the cities would be enough to absorb the surplus labor existing in the countryside. With the acceleration of the country's urbanization from the mid-1950s on, pressures on the development pattern of rural areas arose and two perspectives dominated the public debate: one that favored agrarian reform as the central strategy to expand production, and another that advocated for technological modernization, based on the Green Revolution framework (Buainain, 1999). The second perspective ended up prevailing and gained strength in the 1970s, creating a link between credit and the adoption of technological packages, which led to *compulsory modernization* among rural producers. The result was extremely unequal: while some establishments became integrated and increased their competitiveness, the vast majority were marginalized and hundreds of thousands disappeared (Souza Filho and Buainain, 2010).

To support small producers in rural areas, projects inspired by the idea of integrated rural development (IRDP) were promoted in the 1980s. This approach recognized that the Green Revolution had not managed to benefit small farmers and, therefore, proposed a set of interventions that emphasized the productive aspect of rural development and paid special attention to improving the supply conditions of rural producers (Garcia, 2003). Typically, the interventions were organized around three complementary axes: i) infrastructure development, especially the construction and improvement of roads; ii) technical assistance services to help farmers implement technologies; and iii) credit lines to make the necessary investments feasible. Unfortunately, the IRDP projects failed in their goals. They were too expensive and were not able to reverse the selectivity that the modernization of agriculture had set in motion. The fiscal crisis experienced by Latin American countries in the same period undermined this perspective, creating a vacuum for the time to come.

In a period that started in the 1990s and lasted until the early 2000s, a new approach to rural development emerged, supported by cash transfer programs and other social benefits and by offering specific production support policies to family farmers. Considering once again the Brazilian case, the 1990s saw the extension of social security rights for rural workers. The Bolsa Escola and Vale Gás programs were also created, later expanded with the Bolsa Família Program (PBF) in the 2000s, shaping a national conditional cash transfer policy (Castro and Modesto, 2010). In turn, policies were created to address different economic needs of rural areas, particularly family farming, addressing a broader set of challenges than before. Some examples of policies in this period are: in 1996 the National Program for the Strengthening of Family Farming (Pronaf) was created to improve access to credit for producers; in 2003 the Food Acquisition Program (PAA) was created to improve access to markets through public purchases, overcoming the exclusive focus of policies on supply conditions; in 2004 the Agricultural Activity Guarantee

Program (Proagro) was created, which sought to provide insurance services for family farming (Guanziroli et al., 2019). A similar pattern can be found in other Latin American countries (Sabourin and Grisa, 2018).

Through the adoption of these sets of policies and in a context of economic growth, Latin America has made significant progress in reducing poverty. According to the World Bank, between 2000 and 2014, the percentage of the population living in extreme poverty in Latin America (including rural and urban areas) dropped from 25.5% to 10.8%, while the population living in poverty dropped from 42.8% to 23.4% (World Bank, 2019).

However, at the end of the 2000s, amid the fiscal crisis of the countries, it became clear that there were also limits to the policies undertaken. On the one hand, cash transfer policies, successful in alleviating poverty, did not have the same success in what is conventionally called an *escape hatch* from dependence on these benefits, given that they were not able to guarantee better job opportunities for this population and also due to the limited results in reducing the so-called *intergenerational poverty* (World Bank, 2020; Araújo, Bosch and Schady, 2017). On the other hand, support policies for rural producers in many cases were mostly accessed by the better-structured producers, while the weaker ones remained on the margins (Aquino and Schneider, 2015).

Thus, a *hard core* of poverty was found to exist in several countries, which persisted despite the expansion of public policy efforts. Added to this panorama, the economic and employment crisis experienced particularly by emerging countries in the middle of the last decade led to setbacks in the progress achieved (World Bank, 2019) as well as a weakening of labor relations. According to the World Bank, although Latin America has reduced poverty in the period from 2002-2016, the percentage of economically vulnerable people rose from 34% to 38% in the same period (World Bank, 2018).

The productive inclusion programs emerged within this context, depending on the country, between the mid-2000s and the early 2010s, aiming precisely to respond to the challenges that presented themselves. Seeking to reach the extremely poor, productive inclusion programs assumed that it was only by increasing household income through work that poverty could be reduced in the long term (Rigolini, 2016; World Bank, 2020). At the same time, the approach is inspired by the proposal of unmet basic needs, disseminated by the Economic Commission for Latin America and the Caribbean (ECLAC) in Latin America. According to this approach, it is necessary to combine productive inclusion mechanisms with mechanisms to solve other needs that affect people's chances of inclusion. Therefore, productive inclusion programs were inserted as components of broader anti-poverty programs, conducted by ministries or secretariats dedicated to social development, which sought to offer, in a coordinated manner, different types of interventions.

Several Latin American countries have undertaken programs based on the productive inclusion approach. In this chapter, they are used as cases to support the discussion on evidence use: the rural productive inclusion route of Plano Brasil sem Miséria (Brazil Without Extreme Poverty Plan), created by the Brazilian government in 2011; the Chile Solidario and Ingreso Ético Familiar (IEF) programs, created in 2002 and 2012, respectively, by the Chilean government; Peru's Haku Wiñay program, created in 2014; the Oportunidades Rurales program, whose origins date back to the late 1960s, but which was extensively reformulated in cooperation agreements between the Fondo Internacional de Desarrollo Agrícola (Fida) and the Colombian government throughout the 2000s; and the Mexican government's Programa Territorios Productivos (PTP), which began in 2015. The current status of each of these programs at the beginning of the third decade of the century is variable. Therefore, the information used concerns the stages of design and implementation of each of them over the last decade, and not their current condition.

And it is also important to note that the initiatives analyzed in this study are of different orders. Some are specific programs, as is the case of Peru and Colombia. Others are strategies or rationales that bring together different programs, as is the case of Brazil and Chile. In some of the discussions it might even be more appropriate, for example, to compare the Haku Wiñay program with the Programa Fomento Rural, which is a component of the rural productive inclusion route strategy of Brazil Without Extreme Poverty. However, the very decision to unify the actions in a single program or keep them distributed seems relevant to the analysis presented here. Thus, despite the existing differences, discussing the experiences precisely by exploring these contrasts is a path that offers a rich panorama for the purposes of this chapter, which intends to show how the use of evidence is not, at risk of being redundant or self-evident; on the contrary, it is something variable and dependent on contexts and choices, conscious or not, explicit or implicit in decision-making processes.

2.2 The different definitions of the programs for the problem of economic exclusion in rural areas

Typically, productive inclusion interventions have aimed to support the population in extreme poverty to enter the labor world. When considering rural areas, it is important to acknowledge that most of the population living in poverty is already inserted, often in weakened productive units seeking to ensure their subsistence. Thus, more than inserting this population into the labor world, the general goal of productive inclusion interventions, in this case, is to support populations living in extreme poverty to improve their production conditions or market participation.

Even though the programs considered in this study share this general goal, there are differences in the way they define the problem of economic exclusion. By comparing the selected programs in the region, it is possible to identify at

least two differences: i) the existence (or not) of a distinction in the lines of work aimed at rural areas in comparison with urban areas; and ii) the fields of issue identified as relevant in overcoming economic exclusion. These two matters will be addressed below.

Productive inclusion programs are often based on the premise that the challenges experienced by rural areas differ from those in urban areas, which leads to the definition of differentiated strategies for each type of space. Among the experiences analyzed, only the Chilean programs did not offer a distinguished look at rural areas. In the case of these programs, it was assumed that extreme poverty is equally distributed among the population and, therefore, the same program could serve different contexts. Fernández et al. (2016) point out that, even though the type of productive activity typically carried out in each space differs, Chilean programs were markedly urban and did not consider the particularities existing in rural areas, such as the distances that need to be covered by these populations to reach markets or the difficulty in accessing services and infrastructure.

In the other programs that have taken a specific look at rural areas, it is interesting to observe that the predominant perspective establishes an equivalence between rural spaces and agricultural activity. This is especially the case in Brazil, as well as in Peru and Colombia, which assume that productive exclusion is mainly the result of insufficient agricultural production to generate income. This is particularly relevant because literature has pointed since the 1990s to the declining trend of farming in the incorporation of labor and in the constitution of rural families' income, due to the increasing adoption of technologies (Ramírez, 2019). With this, the importance of the so-called *non-agricultural rural opportunities* (Graziano da Silva, 1999) and multiactivity (Schneider, 2003). Nevertheless, even though there are a few exceptions, the efforts of the programs have been directed at equipping family establishments to improve their production and insertion in agricultural markets (Mello et al., 2014; Fida, 2007; Asensio, 2021). Thus, as much as a difference can be established with the approach adopted for urban areas – typically focused on technical training and labor intermediation programs – it is possible to say that the initiatives designed have maintained traces of a traditional, or sectoral, view of rural areas.

The only exception to that is the Mexican program, which acknowledged the role of agricultural and nonagricultural incomes for rural areas. The PTP was based on the understanding that there is a declining trend in the importance of agricultural income for the economic reproduction of rural families, which are increasingly dependent on other occupations (Berdegué et al., 2015). In its operation, Territorios Productivos sought to understand the weight of these other activities in the composition of family income, the diverse strategies of economic reproduction, and the rural-urban flows that are established (youth migration,

commuting etc.) and, based on this reading, to encourage synergies between these spaces (Berdegué et al., 2015).

As for the problem areas considered by each initiative, in addition to the economic dimension itself, there is a relative consensus that it would be necessary to address both basic needs and productive capacities to support rural families. If from the productive angle, a traditional vision restricted to agricultural activities was repeated, here there is something new. Reflecting the understanding that poverty is a multidimensional problem, and not only an economic one, the programs sought to address a variety of needs, such as access to basic sanitation, water, housing, electricity, education, health and official registration services, and the transfer of income – either through the programs themselves or through complementary actions. The argument here is that the precariousness of these basic conditions affects the capacity of families to better use their assets – knowledge, labor power, land, and natural resources – to develop the productive dimension. The Chilean programs differed from the others in this respect as well, by identifying the need for people experiencing poverty to develop capabilities and attitudes that promote the families' autonomous development (Larrañaga, Contreras and Cabezas, 2015).

Regarding productive capacities, the programs analyzed coincide in highlighting the challenges of lack of technical training and poor access to financial resources. However, there is a difference regarding the type of knowledge that is considered necessary to be assembled. While the programs in Brazil, Chile and Mexico recognize the importance of knowledge provided by technical assistance services, the cases of Peru and Colombia have pointed out the need for interventions to be culturally adapted as well. In this sense, the Haku Wiñay program relied heavily on the figure of local experts, called *yachachiqs* (*that who knows*, in Quechua), who seek to retrieve indigenous knowledge to incorporate it into the interventions and, by being inserted in the socio-cultural dynamics of the communities, have privileged knowledge of the area, its features and the needs of rural families (Asensio, 2021). In the Colombian program, it was also acknowledged the importance of mobilizing local talents – who belong to the communities themselves and have outstanding and applied knowledge to solve common problems – and promoting the exchange of experiences, in a process that values local knowledge in the search for adapted solutions (Procasur, 2017).

Also, with regard to productive capacities, the programs analyzed differ in the attention they give to the difficulty of accessing markets. Most of the programs implicitly assumed that, as farmers improved their productive conditions (with access to technical assistance and credit), they would be better able to increase their production and productivity and access markets. In this context, the attention to markets is indirect. The Peruvian and Mexican programs have additionally acknowledged the

need to promote diversification and the creation of innovative enterprises in rural areas. The Colombian program, on the other hand, contemplated the possibility of conducting market studies and therefore included components to foster the training of producers in this sense (Asensio, 2021; Berdegué et al., 2015; Fida, 2007). The only country that seems to have adopted a component that more directly addresses the issue of market access was Brazil, through public procurement policies (Mello et al., 2014). In this case, the policy was expected to provide a relatively stable market opportunity under good conditions and to act as an initial impulse to, as a next step, enable households to access other opportunities in conventional markets, even in the absence of specific instruments for this second type.

Finally, one last issue that the country programs addressed differently is the role assigned (or not) to territories. Some country programs identified the importance of territories in that they recognized that the challenges that exist in one place differ from those that exist in another and that the texture of territories matters for these differences. This brings demands for flexibility and adaptability to the interventions implemented and for institutional capacity at the local level to support decision-making. This is especially the case for the Peruvian and Colombian programs (Asensio, 2021; Fida, 2007). In these programs, there was not exactly a differentiation of strategies for different types of territories, but a prominent role was given to local instances of governance to adapt policy instruments to local conditions. Mexico's Territorios Productivos program took a deeper look at territories, pointing out that the economic exclusion of rural areas is also associated with the lack of participation and synergy among local actors and institutions, as well as with the underutilization of the linkages between urban and rural areas (Berdegué et al., 2015). The Chilean programs and the Brazilian program⁶ have given little or no attention to the territorial dimension, focusing essentially on the challenges experienced by individuals and families in poverty (Favareto, 2019; Fernández et al., 2016).

2.3 Evidence-assembling for defining the target audience

Once the problem of economic exclusion is understood, an important challenge is to define the target audience. To move in this direction, the programs sought to assemble different types of evidence, in order to target the interventions. The choices made indicate that there is a link between the definition of the problem of

6. Even though the Brazilian program did not adopt a territorial logic in its planning, there was a concern about paying attention to the needs presented by different regions. The Água para Todos program, for example, was one of those that made up the mix present in the Rural Productive Inclusion Route of Brazil Without Extreme Poverty, and it had a special focus on establishments in the Northeast region. The same can be said about the Bolsa Verde program, which was targeted at the Amazon region. The design and implementation of these programs required the assembling of different types of information to plan the interventions, from a better mapping of the existing infrastructure to the identification of the target audience. It should also be remembered that in the same period, there was a national territorial policy, but the execution of the productive inclusion policy did not involve the governance spaces of that initiative.

economic exclusion, the strategies for identifying and defining the target audience, and the evidence assembled.

As previously discussed, the focus of the programs in Brazil and Chile was on individuals and families living in poverty, and therefore, the definition of the target audience in these cases involved assembling evidence on different vulnerabilities based on the countries' national registries. In Brazil's case, eligible families were already targeted by the Plano Brasil sem Miséria, paying special attention to the population living in extreme poverty and including families with incomes of up to half a minimum wage per capita. To identify these families, information from the Unified Registry for Social Programs of the Federal Government (Cadastro Único) was used, systematized from a set of initiatives that also included the active search for families by social assistance professionals in the municipalities (Campello, Falcão and Costa, 2014), and the use of other information systems, such as the Pronaf Aptitude Declaration (DAP). It is worth remembering that the very creation of the Unified Registry had been an important innovation, unifying databases and information on beneficiaries and potential beneficiaries, which were previously scattered in individual databases by program, with inconsistencies between them.

In Chile's case, similarly, data from the Registro Social de Hogares was used, from which the analysis of the profiles of families in different dimensions of vulnerability was carried out. Based on quantitative criteria, those below a defined score were considered eligible for the program. The Chilean initiatives added a second stage to the definition of the target audience, in which families were visited by social workers who perform a qualitative situational diagnosis and confirm whether the families can be beneficiaries of the program (Larrañaga, Contreras e Cabezas, 2015).

In the cases of Peru and Colombia, additional evidence on the space in which families are inserted was included, indicating a greater concern with the territorial dimension of productive inclusion. In the Peruvian case, the definition of the target audience took place in three stages. First, at the national level, population centers were identified in the rural areas of the country with a high incidence of poverty, a predominance of families that depend on practices characterized as subsistence economies,⁷ among other vulnerability factors, such as child malnutrition. In the Colombian case, in particular, the attention to areas marked by armed conflict is especially relevant. In the second stage, the offices at the zonal level conducted a new socio-economic assessment of the population centers, during which they sought the opinion of the municipalities, and evaluated the budgetary capacity of the zonal level for program execution. Finally, in the locations that were selected to receive the intervention, any inhabitant can enroll in the program if they wish, and

7. The definition of subsistence economy is based on the indicator of land use, which must be predominantly agricultural, and households with less than 1.3 hectares that use at least 75% of domestic labor in these activities (Asensio, 2021).

there are no restrictions related to property size or participation in other programs (Asensio, 2021). In addition to identifying the regions with predominantly rural characteristics and in which of them there is a concentration of families living in poverty, the Colombian program assessed whether there are social organizations capable of implementing the project's actions (Fida, 2007).

Finally, in Mexico's case, evidence was assembled to allow the identification of *functional territories* where the program would be implemented. First, the sites where the National Cash Transfer Program (Prospera) was in operation and there was a significant presence of small agricultural production units (less than 20 hectares) were identified. Among the sites mapped in each state, those with a higher number of Prospera beneficiaries and with more than four hundred inhabitants were identified, which would be prioritized to receive the program. The functional territories encompassed a set of municipalities, including a headland and the municipalities that are within a radius of up to 10 km and that also had a relevant presence of small properties and a minimum number of Prospera beneficiaries.

With that, it was expected that functional territories would be spaces that present intensity in economic and social interactions between inhabitants, local organizations, production units, and companies. To confirm the previous analyses, based on the country's databases, surveys were conducted to validate the territories and to analyze the existence of local organizations and their development potential (Berdegué et al., 2015).

This quick look at the diversity of rural productive inclusion experiences in Latin America shows how different ways of defining the condition of exclusion imply, consciously or not, different types of evidence to be assembled. In some cases, this involves the geographic scope of the actions – whether the evidence needs to cover the region and the relations between rural areas and urban centers, the socioeconomic conditions of the municipalities, or just the dimension of the vulnerability of the families. The same could be said about the topics that the assembled or necessary evidence should cover: if only those related to infrastructural conditions or also to the behavioral dimension, among others. And, finally, specifically on the productive dimension, whether the evidence relates only to the problems and conditions *inside* the establishments, or whether it should also involve information on the potential markets for the work and production of the families; and whether this work is limited to primary activity labor or whether the evidence should also cover the domains associated with the multiactivity of these poor families. All this, in turn, will also have repercussions on the modalities of actions to be implemented and, of course, the type of evidence that policies and interventions will also require. This is the focus of section 3: evidence for what kind of practices?

3 EVIDENCE FOR WHAT?

After defining the outlines of the problem of economic exclusion and the target audience that will be addressed, each of the programs has advanced in defining the instruments of intervention and the structures responsible for them. Next, comments will be made about how the outlines of these forms of intervention were defined, implemented, and, as a result, what repercussions these options had for the production and use of evidence.

3.1 A set of policies along a pathway

By looking at the productive inclusion programs, it is possible to note that most of them addressed the overcoming of economic exclusion through a set of policies that are organized along a pathway. The only case that does not seem to have included the idea of a pathway is the Colombian program, in which local associations formulated technical assistance or financing projects to be approved by the program management committees, but there does not seem to have been an expected sequencing. For the other countries, the notion of a pathway – or productive inclusion route, as in the Brazilian case – worked as an organizing element for the set of policies offered. However, this notion was expressed in different ways, maintaining a strong relationship with the way the problem of economic exclusion is conceived in each case.

In the Chilean and Brazilian cases, both countries designed routes that should be taken by individuals and families, reflecting their approach to productive inclusion. The pathways in this sense would be associated with two possible tracks: that of establishing a small business or that of obtaining a formal job. For rural areas, the first case is the most frequent.

In Chile's case, the path to be followed should constitute an action plan to be trodden by the families with defined deadlines and requirements. After deliberating with the social worker responsible for accompanying the family on whether they would follow the track to entrepreneurship or formal employment, a standardized pathway was defined to be completed by the families within three years. The track to entrepreneurship involves evaluating different options, defining which business to start, obtaining the required technical training or receiving technical assistance services, and purchasing equipment and inputs. For each of these steps, families should meet minimum requirements to move on to the next and have access to the benefits. If these requirements were not met, the families could be expelled from the program. The Chilean model is criticized precisely because it adopts a standardized pathway that does not give space to the particularities of each case (Fernández et al., 2016; Larrañaga, Contreras e Cabezas, 2015).

In Brazil's case, while the Programa de Fomento followed a similar logic to the Chilean program, it is interesting to note that the Rural Productive Inclusion Route, defined by the country's federal government, also served as an organizing scheme to bring together different interventions that were previously dispersed, but without establishing a sequencing with the families. Or rather, in the planning, the route envisaged a sequencing, even considering that the families would not necessarily receive all the interventions, since not all of them suffered from the same constraints. The *rural route* consisted of a combination of programs that sought to meet the different needs of small farms. First, programs would be offered to meet basic needs (water, electricity, and income); then, attention would be given to productive needs (credit and technical assistance); and, finally, the insertion of farmers into institutional markets would be sought. However, since the implementation of programs for each of these needs was done separately, sometimes by different ministries, and only the monitoring of goals and problem-solving was done by a centralized structure, each of these programs or actions reached different groups of poor farmers in a random order, distorting the original conception (Mello et al., 2014; Mello, 2018).

For the Peru and Mexico cases, the program stages were related to their implementation in a site, rather than focusing on the families. These programs are described below.

The Peruvian program defined three stages, each lasting one year, during which the aim was the maturation of the families' businesses. In the first stage, considered the most intense, the program's local experts would support the families in implementing productive technologies and practices selected by the local population, as well as improvements in the infrastructure of their homes, especially regarding sanitation and health. In the second year of the program, the local experts would work on strengthening technological ownership and solving possible problems arising from its use, as well as promoting financial capacity building. In the last year, the work of the local experts with family establishments should be reduced and focused on collective enterprises, which should also receive the support of commercialization experts in order to improve their financial results (Asensio, 2021).

Finally, the Mexican experience organized its trajectory around a territorial development plan. After identifying the forms of collective action existing in the territory, a diagnosis of the site's main problems and obstacles to progress would be made. Based on the diagnosis, a three-year development plan and a one-year work plan would be prepared. The plans were to be built in a participatory manner, with community members, local organizations and government agencies. The projects undertaken would aim to identify and stimulate the main economic axes of the territory. The implementation would be done with the support of government

agencies and would also count on the participation of the community and local organizations, which would also participate in its monitoring (Berdegú et al., 2015).

3.2 The need for coordinating the actions

In order to offer the different types of interventions involved in productive inclusion programs, a high degree of coordination is required, especially with regard to two aspects: i) the programs that make up the pathways need to reach the same families in the territories; and ii) they need to be delivered in the right sequence to ensure cumulateness. Without this, the idea of a pathway is just an abstraction. And for this to happen, coordination is needed between levels of government and between areas of government, since each component of the intervention routes or pathways is typically located in a government structure, often in different agencies, with their own implementation and governance mechanisms.

Overall, programs have assumed that policy instruments are provided at the national level and coordinated at the local level; however, the implementation of this arrangement has taken different forms and has not always been conducive to coordination at the local level.

To provide policy instruments at the national level, some countries have used pre-existent programs, while others have created new ones. In Brazil's case, for example, the programs that were mobilized to make up the rural productive inclusion route already existed and were operated by different ministries. To foster their mobilization and coordination around program beneficiaries, interministerial situation rooms were created for monitoring the programs (Mello et al., 2014). In the Chilean case, it was identified that including Chile Solidario beneficiaries in programs that already existed in the country, such as agricultural technical assistance services and support services for enterprise development, would bring many difficulties to these programs. Therefore, it was decided to duplicate some of these initiatives, creating parallel programs directed to the needs of the targeted audience. This arrangement is criticized for not favoring the connection of the enterprises with the most specialized services in the country and with more dynamic markets (Fernández et al., 2016).

As mentioned earlier, most country programs recognized the need to assign a coordinating role to the local level. However, different arrangements have been adopted to this end. In Chile, although program planning was initially centralized in the national government, over time this role was transferred to the municipalities, in recognition of the importance of paying greater attention to local needs. Municipal governments have also relied on the support of assistants who accompany families in two areas: psychosocial and labor (Larrañaga, Contreras and Cabezas, 2015). In the Peruvian and Colombian cases, coordination was established through

an interaction between local civil society organizations – management councils of groups of forty to eighty families in Peru and local producer associations in Colombia – with regional or zonal government bodies. In the Haku Wiñay program, coordination has also been strengthened through the figure of *yachachiqs* – responsible for providing direct accompaniment to families (Asensio, 2021). In Mexico's case, operating units were created with representatives from government and local organizations (Berdegué et al., 2015). In the three latter, these local organizations were responsible for managing resources, identifying and requesting the supply of necessary policies, monitoring the implementation of actions, and in some cases participating in their evaluation.

The exception in this latter discussion is the Brazilian program, since, unlike the social assistance network, which has municipal capillarity throughout the national territory, the country does not count on structures at the local level to undertake the productive support policies. In the case of the PBF, for example, the Municipal Council of Social Assistance (CMAS) monitors the application and the situation of families. In the case of productive inclusion, however, there is no local council. The former Municipal Councils for Rural Development (CMDRs) were almost totally dismantled. Instead, Territorial Councils were created in many places, but they did not operate at the municipal level. As a result, important programs such as technical assistance, credit, among others, did not undergo any municipal management structure, remaining exclusively under the coordination of national structures, very distant, by their very nature, from the subtleties and specificities of the local contexts of implementation, and this, obviously, made it very difficult to coordinate these instruments at the moment of their implementation with the beneficiaries (Favareto, 2019).

3.3 Evidence assembling to monitor program development

To follow up on the actions undertaken by the programs, the countries assembled different types of evidence. By observing the different cases, it seems possible to identify two distinct situations. The first is the Brazilian and Chilean programs, which sought to monitor the execution of each of the components but paid less attention to their coordination and the results of the programs. And another situation, in which we find the Mexico and Peru initiatives, which have incorporated evaluation strategies in their program design.

The programs in Brazil and Chile chose to monitor the programs' components, thereby privileging the monitoring of the reach of the interventions and their impacts in aggregate terms, for example, on the country's poverty indicators. In Brazil's case, largely maintaining the logic of each intervention, it was measured, for example, how much of the program budget was actually being invested, how many people received technical assistance, or how many cisterns were installed.

But there was no evidence as to whether these investments were reaching the same families or whether they were being pulverized, or whether the idea of a route-based access sequencing to programs was taking place. The information was assembled for monitoring and eventual support by the management structures coordinated by the Brazil Without Extreme Poverty plan, which amalgamated all these other programs dispersed among different ministerial structures. In the Chilean cases, emphasis was also placed on the scope of the interventions, monitoring, for example, the number of visits made by social workers, how many families started vegetable gardens, or how many received the inputs to start animal farming. By only following up on the actions of each of the components, these programs faced difficulties in establishing the coordination of interventions and were not able to make the necessary adjustments to improve their complementarity and, therefore, their effectiveness (Fernández et al., 2016; Favareto, 2019).

It is important to mention that, at the beginning of the implementation of these initiatives, some of the actions undertaken had to face the challenge of the lack of data or information about the families they sought to assist. It was during the implementation process that some of this information was captured and later used to redirect the actions. In this sense, there was not necessarily a deliberate decision to monitor the execution of the programs individually. There was an institutional inertia that favored the fragmentation of the focus and the emphasis on the scope of the policies. Even so, the follow-up of each of the programs was what finally allowed the identification of the lack of convergence of actions. In the case of the Brazilian rural route, for example, it was observed that most of the beneficiary population received only one or two interventions of the defined set, so the cumulative pathway that had been imagined was not implemented (Mello, 2018).

In the cases of Peru and Mexico, the governments of both countries commissioned and carried out impact evaluations. For the Mexican program, follow-up committees were established at the national, state, and territorial levels to receive and discuss the evidence provided by local experiences, which would be reported and monitored by an evaluation system developed for the program both in the planning and implementation process and at the end of the three-year cycle (Berdugué et al., 2015). In addition, the program contemplated the implementation of pilot projects that would function as learning spaces in which strategies, methods, and instruments would be tried out and a system of systematic monitoring and learning would be maintained. The decisions to expand and follow up on the program would be based on the results obtained. The evaluation and monitoring system also included a learning component, which would allow the identification of critical elements that hinder the proposed operating process and the expected effects of the program (Rimisp, 2015).

This review of the programs shows that the use of evidence can be quite diverse, depending on at least two aspects: i) just as the way of defining the problem shapes the managers' gaze to seek certain types of evidence in their support and focus definition, the use of this evidence also has repercussions on the repertoire of actions selected to compose the programs and the rural productive inclusion strategies; and ii) the evidence on the actions and their implementation has also been diverse, as to the purposes – to monitor formal execution, to generate learning or to subsidize decisions on linkages or bifurcations of pathways, to improve management and seek complementarities and synergies, or to assess impacts.

4 FINAL CONSIDERATIONS

Resuming the ambitions announced for this chapter, the main purpose was to offer theoretical and, mainly, empirical reflections on the use of evidence, based on the analysis of selected experiences of Latin American governments in promoting rural productive inclusion.

From the theoretical standpoint, we have tried to develop the argument that the use of evidence operates in the interdependencies between technical and cognitive decisions. That is, there is a starting point that is given by the agents' cognitive bias, by framing the problem that is the focus of public interventions in a particular way, which, in itself, already conditions the type of evidence to be sought. This creates a kind of path dependency, in which the choice of evidence, in turn, conditions the repertoire of actions to be included in the programs. With regard to action implementation, both the agents' cognitive bias and the type of institutional culture are relevant, which may favor more evidence that allows for follow-up and accountability on spending and goals, or some kind of constructivism and generation of institutional learning supported by the monitoring of results or effectiveness of actions.

The consequence of all this for analyses about evidence is that one cannot understand the ways they are produced and used decontextualized from these political, cognitive, and institutional dimensions. However, this does not mean overemphasizing the political and cultural dimensions but rather drawing attention to the interdependencies between these and how the technical aspects provoked by evidence act to reinforce or challenge these biases. For all these reasons, it is necessary that the question *what evidence* is preceded by the questions *evidence about what* and *evidence for what*. Because they raise the level of reflexivity not only about the use of evidence but about the practices of managers and about the objects of their interventions, reconnecting what certain evidence-associated automatisms or technicalities associated may generate.

Also in this conceptual dimension, it is important to note that the term evidence has been used to refer to different types of information. Among the most common types of evidence are: registration data, information on existing infrastructure, social worker diagnoses, data on policy implementation, and the results of impact evaluations. The role that each of these types plays in social interventions should be acknowledged, but it is equally important to differentiate them and understand the purpose of their use and the implications they have for public management. Especially when it comes to analyzing the effectiveness of interventions, it is essential to pay attention to the validity of the evidence, which has been discussed more broadly around the concept of scientific evidence, which is characterized by greater rigor and reflexivity.

Two challenges are posed for the expansion of its use. On the managers' side, the challenge is to create conditions for the use of *scientific evidence* in the various phases of policy design and management, in addition to consulting experts. This involves the promotion or incorporation of good studies on the lessons learned from similar experiences that were previously implemented, diagnoses and situational characterization of families, and the elaboration of baselines supported by state-of-the-art knowledge about the problems and the complexity surrounding their interdependencies. On the part of researchers and the scientific community, it is necessary to improve the adaptability of the methods that ensure rigorous knowledge to the time constraints and the concrete needs of public managers. This involves modeling the language and the aim of research and prioritizing the problem-based approach, among other aspects.

From an empirical perspective, it should have become clear that the use of evidence, particularly in some countries, lacks reflection. The great effort to reach populations traditionally not served by public policies, about whom information was often lacking, seems to have limited the possibilities for a more deliberate and structured effort to use evidence throughout the stages of planning, implementation and evaluation of policies. In this sense, not using evidence in some cases was not an option, but a contingency to be faced. A lot of data on target audiences had to be produced during implementation, and thus attention to targeting and monitoring of each intervention prevailed, while the evaluation of the effectiveness of interventions received little or no attention.

Furthermore, the analysis presented also revealed a crucial gap: for the best design of the initiatives, there is a lack of evidence that would help identify the obstacles and factors that have effectively favored the escape from poverty and productive inclusion. It is curious that, in all the analyses and evaluations that have been made about the programs, there are no consolidated lessons that seek to show, for example, how families have managed to break out of productive exclusion. There is no systematic follow-up of those who leave the productive inclusion programs. There is a lack of evidence on how to achieve higher levels of coordination between

levels and areas of government or between different programs. In a word, much effort is focused on the initiatives' means and little on their ends.

All this is especially important given the moment these experiences are taking place and the growing relevance that the use of evidence is having in public management. The several studies mentioned here, and also some syntheses, such as that produced by PEI, seem to suggest that it is necessary to inaugurate a new generation of rural productive inclusion initiatives (Andrews et al., 2021). Perhaps the evidence about what worked or did not work in these programs may create a favorable environment for better use of this instrument in the new programs that will be shaped in the coming years.

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