SÉRIE SEMINÁRIOS Nº 26/96
DIRETORIA DE PESQUISA

SEMINÁRIOS SOBRE ESTUDOS DO TRABALHO

REGULAÇÃO E PADRÕES DE REAJUSTE SALARIAL: UMA ANÁLISE LONGITUDINA

Marcelo Neri

OUTUBRO DE 1996

INSTITUTO DE PESQUISA ECONÔMICA APLICADA

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INFLATION, REGULATION AND WAGE ADJUSTMENT PATTERNS: NON-PARAMETRIC EVIDENCE FROM LONGITUDINAL DATA

Marcelo Neri

ABSTRACT:

This paper gives a first step toward a methodology to quantify the influences of regulation on short-run earnings dynamics. It also provides evidence on the patterns of wage adjustment adopted during the recent high inflationary experience in Brazil.

The large variety of official wage indexation rules adopted in Brazil during the recent years combined with the availability of monthly surveys on labor markets makes the Brazilian case a good laboratory to test how regulation affects earnings dynamics. In particular, the combination of large sample sizes with the possibility of following the same worker through short periods of time allows to estimate the cross-sectional distribution of longitudinal statistics based on observed earnings (i.e. monthly and annual rates of change). The empirical strategy adopted here is to compare the distributions of longitudinal statistics extracted from actual earnings data with simulations generated from minimum adjustment requirements imposed by the Brazilian Wage Law. The analysis provides statistics on how binding were wage regulation schemes. The visual analysis of the distribution of wage adjustments proves useful to highlight stylized facts that may guide future empirical work.

INFLATION, REGULATION AND WAGE ADJUSTMENT PATTERNS: NON-PARAMETRIC EVIDENCE FROM LONGITUDINAL DATA

One Picture is Worth more than
One Thousand Words
- A Chinese Proverb

1. Introduction

The recent Brazilian experience offers a good laboratory to test the influences of regulation on labor market outcomes. In contrast with most economies, Brazilian wage regulation schemes affect not only the bottom of the labor market with minimum wage levels but they also impose minimum adjustment requirements on all wage levels. In particular, the law specifies wage adjustment floors for all workers that are continuously employed at the same job. These minimum adjustment levels are specified by indexation clauses that link the path of wages to the path of price indexes. The tight structure imposed by the Wage Law allow us to quantify its prescriptions by simulation methods.

Moreover, the availability of monthly surveys on labor markets across the six main Brazilian metropolitan regions during the last 15 years makes it possible to test how regulation affects earnings dynamics. In particular, the combination of large sample sizes with the possibility of following the same worker through short periods of time facilitates estimation of the cross-sectional distribution of longitudinal statistics based on observed earnings (e.g., monthly or annual rates of change). A comparison between the cross-sectional distribution of longitudinal statistics generated from actual data and predicted distributions generated by simulating the Wage Law provides an indication of the impact of the law on earnings dynamics.

This paper has two main objectives: First, to provide evidence on the patterns of wage adjustment adopted during the recent high inflationary experience in Brazil. Second, to give a first step toward a methodology to quantify the influences of the Brazilian Wage Law on earnings short-run dynamics. The main characteristic of this methodology is a high level of disaggregation in the comparison between observed earnings and simulated earnings data generated from minimum requirements imposed by wage regulation schemes. The idea is to take into account existing heterogeneity between agents vis-a-vis specific wage adjustment clauses of the law.

The empirical analysis benefits from the large variety of official wage indexation rules experienced in Brazil from December 1979 to December 1992. The analysis gives an special attention to the first half of the sample when the Brazilian Wage Law prescribed infrequent and staggered wage adjustments that varied across wage levels. These characteristics induce heterogeneity problems that the methodology developed here proposes to address.

The quantification of the Brazilian Wage Law is motivated by three basic questions: a)Do market wages comply with the Wage Law (in the sense of satisfying the minimum requirements imposed by the law)? . b) Is the Wage Law binding? In other words do market wages behave exactly as the minimum requirements imposed by the Wage Law? c)How is the Wage Law evaded? What are the main patterns of wage adjustment by those not following exactly the law's prescriptions.

Most of the paper is devoted to providing an assessment of the difficulties found when one attempts to answer these questions empirically. It discusses advantages and disadvantages found using some of the data sets available in Brazil. This discussion ranges from the earnings concepts used in the surveys to the level of aggregation used in the analysis.

The paper is organized as follows: the second section provides an institutional background of Brazilian labor markets and gives an overview of the indexation clauses adopted in the Wage Law during the 1980-92 period. These issues are discussed in more detail in appendix A. The third section reviews the previous Brazilian time-series evidence on the impact of wage regulation on market wages and points out a few heterogeneity problems intrinsic to this aggregate approach. This section provides an overview of the problems related to the quantification of the impacts of the Wage Law on earnings that will be addressed in the paper. The fourth section discusses data problems related to the quantification of the impacts of the Wage Law on earnings dynamics. These problems include non-response biases, attrition, selection biases and measurement error on reported earnings. The fifth section assesses the compliance with the Wage Law. The sixth section assesses the effectiveness of the Wage Law. The seventh section evaluates the operation of official indexation clauses that prescribe regressive wage adjustments. The last section synthesizes the main conclusions of the paper and discusses extensions.

2. Institutional Background

During the last fifty years, Brazilian workers have been compulsorily organized in associations according to activity and region. Each association has a date of collective wage negotiation. These dates set the time of the year when nominal wage values and other non wage benefits are objects of discussion between firms and employees. The Wage Law circumscribes these negotiations by fixing a floor to nominal adjustments.

Each wage settlement date also determines the schedule for within-year wage adjustments. For example, in the case of half-yearly adjustments, a worker group with a May settlement date will also receive automatic wage adjustments every November. Or in the case of quarterly adjustments, a worker group with a May settlement date will also have automatic wage adjustments every August, November and February and so on.

The duration of labor contracts is not specified. The initial wage at a monthly rate is registered and it has to meet the minimum wage legal requirement. The minimum wage adjustment policy follows the indexation clauses prescribed to all other wages. The minimum wage settlement date is on May every year. Once a year, workers also receive an additional payment known as the 13th salary, normally viewed as a Christmas bonus.

2.B Wage Indexation Clauses: An Overview

In contrast with most of the literature, the indexation clauses found in the Brazilian Wage Law are not the spontaneous outcome of firms and workers strive to reduce labor income risk. These indexation clauses are the result of government' discretionary power. In particular, the Brazilian Wage Law attempts to interfere not only with the inflationary risk that falls upon earnings but also with the wage level itself.

A regime of wage indexation is defined as a series of deterministic rules that specify the relationship between price indexes and nominal wages. There are two major attributes of wage indexation regimes:

a) The Frequency of adjustment relies on whether the rule is time dependent or state dependent and on the specific trigger points set for each type of rule. Most of the indexation rules found in the recent Brazilian experience were time dependent. However, as inflation rose over the years, the successive time dependent regimes of indexation adopted shorter wage adjustment intervals. The only genuine state dependent rule used in Brazil had its trigger point given by the cumulative change of a price index (i.e., as inflation reaches a certain point wages were automatically adjusted). The main feature of state dependent rules is that the frequency of adjustment becomes endogenous to the system within the same regime of wage indexation.

b) The Wage Index aspect is multidimensional. It involves not only the choice among the price index technologies available but also the decision of how to apply it to wages. The characteristics of price indexes include: the implicit lag between price indexes movements and effective price movements[1] and, of course, the universe used to find the price index weights (i.e., regions,

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[1] In practice, there was no such thing as the perfect indexation paradigm found in most of the literature (Gray (1976), Fisher (1977)).

earnings brackets etc.).

Once the price index is chosen there are numerous ways to use it to adjust wages. One possibility is setting the delay between the moment the price index is available and the moment it adjusts wages. Another possibility is setting how much of a given price level variation is translated into wages. A distinct feature of various regimes of wage indexation found in Brazil is prescribing regressive adjustments rates by wage level.

Appendix A describes in detail the evolution of the official wage indexation rules during the 1980-92 period, described in section 4. Table 1 below pictures the stylized facts associated with the eight regimes of wage indexation discussed in the appendix.

TABLE 1

Stylized Facts of Wage Indexation Regimes - 1980-92

Starting date	Dec 79	Mar 86	Jun 87	Jan 89	May 89	Mar 90	Set 91	Dec 92
Duration in months	63	15	20	4	10	18	15	9
Stab Plan Name	-	Cruzado	Bresser	Summer	-	Collor	-	-
Transition Phase(1)	Inst.	Inst,Avg	Gradual	Inst,Avg	Inst.	Inst.	Gradual	Gradual
Rule Type (2):	Time,R	State	Time	Time	Time,R	-	Time,R	Time,R
Trigger Point:	6 m	20%	1 m	-	1 m	-	4;2 m	4;2 m
Avg Lag(3):	8 m	E(4)	4 m	-	1 m	-	4 m	4 m

Notes :

(1) The first atribute indicates wether the transition to the new wage indexation regime was done in a Instantaneous or a Gradual manner. The second attribute indicates whether there was a conversion to previous real average values.

(2) For Time dependent rules the trigger point is specified in terms of months between adjustments. For the State dependent rule the trigger point was specified in terms of accumulated price index variation between adjustments. R means Regressive adjustments in this case lower wages get higher adjustments.

(3) Refers to the average lag between price rises and their incorporation to wages.

(4) In the state dependent case the lag is endogenous.

3. The Average Institutional Wage Approach and Aggregation Biases

The Wage Law prescriptions can be summarized by an institutional wage variable. The institutional wage represents the path of wages were the indexation clauses of the law exactly fulfilled (i.e. a binding Wage Law). It is an index that combines indexation clauses and ex-post price indexes. The previous institutional wage literature [Gonzaga (1988) and Camargo (1990)] has followed an aggregated time series approach to assess the influences of the law on labor market outcomes. Since the Wage Law precriptions are specific to settlement dates and wage levels, these previous studies assumed a given joint distribution for these variables in order to generate an average institutional wage time series. The institutional wage is placed along with other explanatory variables in regressions against observed market wages. However, this literature was not able to provide a clear assessment about the effectivity of the Brazilian Wage Law.

The time series approach that dominates the institutional wage literature tends to average out the measurement error found in individual answers. However, it also averages out some of the true variance to be explained. The combination of infrequent nominal wage adjustments and staggering generates a discrepancy between individual and aggregate earnings processes. Infrequent adjustment produce individual real earnings processes with a saw-toothed pattern, while a staggered structure of adjustment tend to smooth out these patterns at an aggregate level. Graph 1 illustrates this point replicating the legal wage adjustment prescriptions from 1966 to 1979. The smooth line corresponds to an average wage real index of all wage settlement categories assuming a uniform distribution of settlements dates through out the year. The sawtooth patterned line correspond to the wage index of a representative worker from the January settlement date group. The coefficient of variation of the average wage index is nearly four times the one found for the January settlement date group.

The solution to the aggregation bias on earnings variability within the time series approach is to use data of specific wage settlement groups. A proxy for that may be found with sectoral data where one should expect a more homogeneous wage settlements distribution.

Taking for granted the information on wage settlement dates, the data should account for other sources of heterogeneity. The Wage Law during various sub-periods prescribed wage changes that differed across wage levels. This means that to test the Wage Law one should know the evolution of the cross-sectional distribution of wages.

As the two previous paragraphs pointed out, comparissons between observed wages and institutional wages require controls for wage levels and for settlement dates. This suggests difficulties to address our basic questions on a pre-fabricated time series environment. One should be able to adapt observed wages' time series to the specificities of the law. An additional complication is that firms are allowed by the law to fire a worker and hire another one with lower wages (if they are paid above the minimum wage, of course). In other words, turn-over may be used legally as a labor cost saving device. Since the law only regulates the wage dynamics of continuously-employed workers at the same job, the analysis should be restricted to this group of individuals. This means that if the analysis is to be done at a time series level, a non-mobility condition based on longitudinal information should be imposed on the sample of observed wages.

A more fundamental source of heterogeneity that makes the time series approach incapable of addressing the questions at hand is that it aggregates information of those that are evading the law from those that are complying with it. For example, in the case when there is a large proportion of workers well apart but symmetrically distributed across the mean requirements of the law, empirical tests based on the means will loose power to reject the null hypothesis that the law is not obeyed or to reject the null that the law requirements are not binding. In the presence of substantial heterogeneity, the comparisson of the mean of the law requirements and the mean of the observed data provides little or no information on the actual compliance with the law and the actual effectivity of the law. One should compare, as well, broader measures of the distributions of artificial and actual wages, or preferably compare the distributions themselves.

The problems with the average institutional wage approach discussed in this section can thus be summarized:

a)heterogeneity by wage level,

b)heterogeneity by settlement date,

c)aggregation bias on earnings variability,

d)work only with continuously employed workers,

e)heterogeneity related to the compliance with the law,

f)heterogeneity related to how binding is the law for those that complied with it,

All the problems posed above favor the use of flexible data sets where one can adapt the data to the specificities of the Wage Law. While the two first problems can be dealt within the time series environment, the remaining problems require the use of longitudinal information at an individual level. However, the use of longitudinal information has its costs. First, the longitudinal earnings information that can be extracted in Brazil comes from concatenated samples of rotating panels subject to attrition and selectivity biases. Second, measurement error is not averaged out. This is especially problematic since the earnings concept used in this paper is influenced by the payment of extra hours and the 13th wage which produce extra noise on the earnings measure available. These problems intrisic to the use of longitudinal information closes the check list of problems to evaluate the effects of the Wage Law on earnings that will be adressed in this paper:

g)Attrition and Selectivity Biases,

h)Measurement Error on Earnings.

4. Data Issues

4.A An Overview

Pesquisa Mensal do Emprego (PME) will be the main source of data. During the 1982-95 period, PME sampled monthly an average of 44 thousand dwellings in the six largest Brazilian Metropolitan areas. PME uses a rotating panel methodology similar to the one adopted in the US Current Population Survey (CPS). In particular, the PME sampling scheme attempts to gather information on the same dwellings at months t, t+1, t+2, t+3, t+12, t+13, t+14 and t+15. Longitudinal information were generated, specially for this study, by concatenating information on the same individuals at different points in time. The analysis here uses two types of longitudinal samples: a) individuals that were followed during all eight observations of PME rotating panel scheme. b) individuals that were sucessufully concatenated during at least one of the two groups of four consecutive observations. The analysis will be restricted to the universe of employees that kept the same job during each of these longitudinal samples.

The longitudinal aspect of individual earnings data extracted from PME will provide the basic empirical evidence on the actual patterns of wage adjustment. The approach followed here is to compare at different levels of aggregation the short run movements of observed earnings with the short run movements of institutional wages. The objective of these exercises is to evaluate the effects of different clauses of the Wage Law on earnings short-run dynamics. The empirical analysis will be based on two longitudinal statistics: a)the ratio between nominal earnings one month apart (i.e., one plus the one month earnings nominal rate of change): RR_1, for short. b)the ratio between real earnings one year apart (i.e., one plus the 12 month earnings real rate of change): RR_{12}, for short.

In order to compensate for the number of observations lost during the concatenation process and due to the restriction in the sample of continuously employed workers, the procedure adopted here was to use all earnings information available from all concatenation groups of individuals present in any two months under analysis. For example, in order to calculate the RR_1 statistic between months t and t+1, three concatenation groups of four consecutive observations started in months t-3, t-2 and t-1 will be used. Similarly, to calculate the RR_{12} statistic between months t and t+12, four concatenation groups of eight observations that started in months t-3, t-2, t-1 and t will be used.

Most of the empirical analysis is based on the cumulative distribution function of these two statistics in different time periods and for different sub-groups of employees (e.g. divided by initial wage level, by sectors of activity, by legal status, by metropolitan region and so on). The smoothness of the CDF makes the estimation process much easier than in the case of density estimation. Nevertheless, given the requirements of the CDF estimation in terms of number of observations, the number of interactions between different sub-groups will be kept at a minimum. In sum, the visual approach adopted here may be viewed as a first approximation to the evaluation of the impacts of the Wage Law on earnings dynamics. It is inconclusive by nature but it may be helpful to reveal some guide lines to future empirical work.

4.B. Attrition and Selectivity Bias

One should account for attrition and selection biases introduced in the final longitudinal samples. These problems may be serious even if the analysis is to be restricted to the cross-sectional aspect of PME, since not all dwellings in the sample originally selected end up being interviewed. Graph 2.1 illustrates, the number of dwellings originally selected and those actually interviewed month by month from January 1982 to October 1995. Graphs 2.2 to 2.4 assess the size and the sources of non-response biases. Graphs 2.2 and 2.3 exhibit the evolution of the proportion of successful interviews, the proportion of refusals, the proportion of nonexistent dwellings, and the proportion of dwellings occupied by others. Graph 2.8 presents the distribution across metropolitan regions of planned and observed dwellings.

Note that, despite the non-response rate being on average 79% (see, graph 2.2), at each point in time the proportion of dwellings which are not interviewed at least once during the eight (four consecutive) observations of PME rotating panel scheme can be much higher. Graphs 2.6 and 2.7 shows that on average 43%(73%) of the dwellings of the set of successful interviews (i.e., the 'original' sample) remain in the constructed longitudinal samples of eight (four consecutive) observations, respectively.

Table 2.1 provides a comparison of basic demographic and economic statistics corresponding to the 1982-95 period for the group of working age individuals belonging to the following samples: a)PME original sample; b)first observation of the longitudinal samples with four observations; c)first observation of the longitudinal samples with eight observations. The analysis does not show any major differences in demographic and economic aspects of each sample. As table 3.1 shows, the profiles of the cross-sectional and longitudinal samples of working age employees also do not exhibit significant differences. Graph 2.1 illustrates the number of dwellings originally selected and those actually interviewed month by month from January 1982 to October 1995.

PME in 1980-82

During 1982, there was a major revision in PME questionnaire, the census sectors used to select the rotating samples were updated using the 1980 census. The comparison between attrition rates from the PME samples covering the periods from 1980-82 and 1982-95 shows a major improvements in statistics related to non-response biases and attrition: 1)proportion of dwellings successfully interviewed rises (graphs 2.2 and 3.1). 2)proportion of dwellings and individuals with four consecutive observations rises (graphs 2.6 and 3.4). 3)proportion of dwellings and individuals with eight observations also rises (graphs 2.7 and 3.5).

There were also introduced in the PME questionnaire during 1982, items related to schooling, payment frequencies, occupation and the possession of a working permit from the labor ministry (carteira de trabalho). Despite these major improvements, PME questionnaire lost two items that are specially useful to the work at hand:

a)the question if the employee kept the same job during the previous month.

b)the normal earnings concept which excludes the 13th wage and the payment for extra hours.

Items a) and b) will, respectively, help us to restrict the analysis to individuals that were continuously employed at the same job and to evaluate the extend of measurement error on contractual earnings. These issues are important to study the impacts of the Brazilian Wage Law on earnings short-run dynamics (i.e., our first application). We believe that these are good reasons to explore PME 1980-82 sample[2].

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[2] Tables 2.2 and 3.2 exhibit summary statistics of different samples extracted from PME 1980-82.

4.C. Continuously Employed Workers

The purpose of this section is to study how to restrict the analysis to the group of continuously employed workers. This restriction is important for at least two reasons: first, except for the minimum wage clause, the wage policy does not regulate the earnings dynamics of individuals moving between jobs. For workers above the minimum wage threshold, firms can lower the wage bill through turn-over. Another reason to focus on continuously employed workers is to avoid comparing earnings data of individuals that started the job after the month started. That is, we would like to use earnings data refering to a full working month.

Until the major reformulation occurred in 1982, PME questionnaire had a straight question whether employees kept the same job during the previous month. This question allows to test with precision different classifications that attempt to restrict the analysis to the sample of continuously employed workers. From 1982 onwards, we considered as continuously employed those employees who had positive effective earnings[3] and kept the same sector of activity during all observations of the longitudinal samples. Graphs 4.1 to 4.5 allows to compare the size of the samples for alternative classification criteria chosen.

Graph 4.4 shows that during the 1980-82 period and within the group of active age individuals observed four times, 38.04% were

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[3] Rates of change, that will be extensively throughout the paper, are only well defined for strictly positive variables. However, the condition that effective earnings are always positive is also useful to restrict the analysis to the universe of continuosly employed individuals.

workers that did not go through an observable job change. Alternatively, graph 4.4 shows that imposing the filter of positive effective earnings, of constancy of sector of activity and of working class during all observations this statistic amounts to 38.23%. This value is reasonably close to the ones found with the straight question on job change. However, if we impose all requirements simultaneously (i.e. employees with positive effective earnings, same sector of activity and non-reported job changes) during four consecutive observations, the proportion of active age individuals drop four percentile points to 32.09%. Assuming that the straight question on job change is correct, this number may be viewed as a first approximation to classification errors related to the approximation of continuously employed individuals adopted here for the sample from 1982 onwards.

Graph 4.6, provide information on the proportion of the concatenated sample on working age individuals that were classified as continuously employed from 1982 onwards (i.e. employees with positive effective earnings and same sector of activity during four consecutive observations). The key figure is that according to our definition, 19.3% of the active age population was considered on average continuously employed workers during four consecutive observations.

In terms of the sample of eight observations, given the eight-month interruption between the fourth and the fifth observation of PME rotating panel scheme, it is not possible to assure that individuals were continuously employed during the whole sixteen months period. The way to minimize this problem was to impose the most stringent non-mobility conditions during the eight observations that each individual in the sample is actually observed. According to the definition used before (i.e. employees with positive effective earnings and same sector of activity during four consecutive observations), on average 13% of active age individuals observed eight times were treated as continuously employed workers during the 1982-95 period.

Table 4.1 provides a comparison of basic demographic and economic characteristics of the first observation of the following samples of active age individuals taken out of PME rotating panel scheme:

a) longitudinal sample of individuals that were employees during at least one month out of eight observations.

b) longitudinal sample of individuals that were employees during at least one month out of four consecutive observations.

c) longitudinal sample of individuals that were continuously employed during all months of each group of four consecutive observations.

d) longitudinal sample of workers that were continuously employed during all months of each group of eight observations.

The analysis of table 4.1 reveals that as we move in the direction of the sample with more stable jobs: the sample becomes older and more educated, the proportion of males and the proportion of heads both rise, the share employed in manufacturing rises and the share of employees with legal contracts also rises. The average number of hours worked per week is the only item that does not present major differences across different samples.

Table 4.2 refering to PME 1980-82 sample does not exhibit major differences with respect to the data refering to the period from 1982 onwards, exhibited in table 4.1. The only exception is that during 1980-82, the share employed in the manufacturing sector declines as jobs become more stable.

4.D. Measurement Error on Earnings[4]

The effective earnings concept used in PME from 1980 onwards exhibits some problems to evaluate the influences of the Wage Law on market wages because it includes other itens besides contractual earnings such as the payment for extra-hours and the so-called 13th wage. However, as it was mentioned before, during its first two years of operation, the PME questionnaire asked both "effective" earnings and "normal" earnings - an earnings measure that is closer to contractual earnings. The comparisson between the two earnings concepts allows to understand some limitations of the effective earnings concept that was used alone from 1982 onwards.

Graphs 5.1 illustrate these differences by plotting the cumulative distribution function of earnings levels for working age employees for São Paulo during December 1980 and January 1981 (Note: the axis are inverted in relation to the usual plot of distribution functions).

4.D.1. Number of Zeros

A first difference between effective and normal earnings is the number of zero answers shown in graph 5.1. In the universe of

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4 DiNardo, Fortin and Lemieux (1995) provides an example of the importance of using the right earnings concepts.

employees during the around 7% of those employees that reports positive normal earnings reported zero effective earnings. However if we restrict the analysis to employees that are heads of the household this statistic rises to 10%. Moreover, the probability of reporting zero normal earnings conditioned on reporting positive effective earnings is zero in both samples.

The difference in the number of reported zero earnings between the effective and the normal concepts is explained by the way the effective earnings question is asked: what was your earnings level last month in the job that you exerted last week (in the current month)?. This question induces employees that moved between jobs during the previous month to report (or be assigned) zero earnings Graph 5.2 confirm this fact for January 1981, around 83% of the individuals with positive normal earnings that declared to be moving between jobs during the previous month of the interview reported zero effective earnings. As Graph 5.3 shows, this statistic drops to zero in the sample of continuously employed workers with positive normal earnings where the two distributions are very alike. In other words, the restriction that effective earnings are always positive in a given longitudinal sample may be helpful to restrict the analysis to the universe of continuously employed workers.

The comparison between normal and effective earnings CDF during December 1980 shown in Graph 5.4 reveals sharp differences These differences occur only in December and on a smaller scale during November (not shown here). These differences can be better analyzed in terms of the cross-sectional distribution of longitudinal statistics that will be used throughout the paper.

4.D.2. the RR_1 Statistic

There is also a timing difference between the two earnings concepts used in PME during 1980-81: while the normal earnings concept reflects nominal values during the current month of the interview, the effective earnings concept reference period is the month previous to the interview. This conclusion arises from comparissons month by month of the CDF of the RR_1 statistic according to the effective and to the normal earnings concepts during the period ranging from March 1980 to February 1982. These statistics refer only to continuously employed workers extracted from the longitudinal sample with four consecutive interviews. These statistics are also adjusted for the mentioned timing difference between both earnings concepts. The main results are:

a) The cumulative distribution of the RR_1 statistic of each concept does not change much when the same months of different years are compared (e.g., March 1980 and March 1981).

b) The cumulative distribution of the RR_1 statistic using the effective and the normal earnings concepts are very similar during the following months: February, March, June, July, August and September. The only difference noteworthy during these months is that the normal RR_1 statistic exhibits smaller absolute changes at the extremes of the distributions. During April 1980, October 1980, April 1981 and May 1981 the cumulative distributions of the RR_1 statistic present some differences in the upper part of the distribution.

c) The sharp differences of the distributions observed during November, December and January are influenced by the 13th salary. This last issue is analyzed in detail next section.

4.D.3. November, December, January and the 13th Salary

The 13th salary was initially thought and is usually perceived as a Christmas bonus but it can be paid in one or more payments until December every year. According to the law, the 13th salary equals to the nominal contractual wage refering to November. The CDF of the effective earnings RR_1 distribution first-order stochastically dominates the equivalent distribution based on the normal concept during November and December while the reverse is true during January. The differences between the effective and the normal concepts distributions provide a proxy for payments that are not included in contractual wages like those associated with the 13th salary. The observed differences between these two concepts suggest that some caution should be taken with the effective earnings monthly rate of change during November, December and January.

6.D. the RR_{12} Statistic

PME rotating panel scheme does not yield a matching rate of 50% across any 12 months period as in CPS. All concatenation groups of four consecutive observations that started in odd years are designed to match 100% of the sample 12 months ahead. On the other hand, concatenation groups of four consecutive observations that started in odd years are expected to present a null matching rate with respect to the sample observed 12 months ahead. As a result, the RR_{12} statistic can only be calculated between two months belonging to a group of 4 consecutive observations that starts in an odd year.

The comparissons of the CDF's of the RR_{12} using the effective and normal earnings concepts revealed greater similarities of these distributions across months than in the case of the RR_1 CDF's. This is true for inter-concepts comparisons and for temporal comparissons. This similarity between the RR_{12} CDF's give us confidence to use their CDF's based on effective earnings from 1982 onwards.

5. Compliance with the Wage Law

The Wage Law has two main characteristics: first, it fixes a minimum wage level. Second, it fixes minimum changes in earnings for <u>all employees</u> according to earnings levels and settlement dates. The present section evaluates the extend and the patterns of compliance with the second aspect of the Wage Law. The basic statistic to be analyzed here is the ratio between real earnings observed one year apart: RR_{12}.

A first advantage of the RR_{12} statistic is to allow comparisons across wage indexation regimes with different frequencies. There is one official settlement date per year and by no coincidence, the frequency of official wage adjustments were always fractions of this yearly cycle (e.g., 12/12, 6/12, 4/12, 3/12, 2/12 and 1/12). As a result, within a fixed frequency of wage adjustment, independently of the settlement date, any 12 month period covers the same number of automatic legal wage adjustment. Furthermore, the numerator and the denominator of the RR_{12} statistic will be in the same phase of the wage adjustment cycle, despite the existing settlement dates heterogeneity among individuals. In other words, this statistic allows us to abstract from individual workers information on settlement dates which is hard to come by[5].

More generally, the RR_{12} statistic is not affected by any event that keeps a regular yearly cycle like the payment of the 13th wage, official wage adjustments at the settlement date or even a stable pattern of anticipations of wage adjustments outside the settlement date. The similarities between the RR_{12} distributions found using effective and normal earnings concepts, illustrate this point. As the analysis of the RR_1 statistic proved that these earnings concepts exhibit different seasonal patterns.

On the negative side, the RR_{12} statistic does not provide the whole picture of how earnings are affected by inflation because it abstracts from short-run earnings adjustments. For given initial wages and RR_{12}, the more frequent are wage adjustments the higher is the present value of earnings during the 12-month interval. Another problem of the 12-month interval is that it encompasses during the period under analysis more than one official wage adjustment cycle. So for example, a firm may evade the law by not giving required automatic wage adjustment at some stage of the 12 months period. If the firm reverts into compliance by over-indexing wages at some stage of the 12 months period, the RR_{12} statistic will not capture the illegal wage adjustment practices employed within the period. In sum, the RR_{12} statistic only assures a necessary condition of compliance with the Wage Law.

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5 This is true even in the case of the state dependent indexation rule adopted during 1986-87 (i.e., the 20% trigger), since the residual inflation (the part that did not reach the 20% figure) would be compensated for at each workers group settlement date.

Graph 6.1 incorporates two parameters representing the prescriptions of the Wage Law to the graph RR_{12} CDF based on effective earnings and normal earnings, discussed in the previous section. The example of graph 6.1 refers to May 1980 that is according to the timing convention adopted, it represents changes occurred in earnings during the period from May 1980 to May 1981.

The upper horizontal line of graph 6.1 corresponds to the maximum value of the RR_{12} requirement imposed by the Wage Law over a universe of 60 simulations. These simulations of institutional wages combine a set of five initial wage levels (1, 2, 5, 12 and 25 minimum wages) with 12 possible settlement dates. Similarly, the lower horizontal line in graph 6.1 corresponds to the minimum value of the RR_{12} Wage Law requirement over the same set of institutional wages and time intervals. The part of the distribution under the lower horizontal line would be evading the Wage Law adjustment prescriptions, if the assumption that workers are continuously employed during the 12-month period started in May 1981 is valid. According to graph 6.1, the hypothesis of compliance with the Wage Law cannot be rejected for 18% and 23% of employees according to normal and effective earnings concepts, respectively.

Graph 6.2 exhibit the evolution of the maximum and of the minimum RR_{12} prescriptions of the Wage Law during the 1979-82 period (i.e., the evolution of the lower and the upper horizontal lines of graph 6.1 across different months)[6].

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6 For a detailed description of the procedures adopted in these simulations see Jovita (1996).

Graph 6.3 synthesizes the information exhibited in Graphs 5.25 to 5.36 in appendix B and Graph 6.2, through an index of the noncompliance with the Wage Law 12 months adjustment prescriptions calculated for both earnings concepts. That is, the proportion of actual earnings changes observed which are below the lowest of all 60 adjustment requirements simulated at each month. According to the information contained in graph 6.3 for normal earnings, an average of 19% of the continuously employed workers appears to be breaking a necessary condition to comply with the Wage Law 12 month adjustment requirements. This statistic raises to 23% when the effective earnings concept is considered. Moreover, graph 6.3 shows a downward trend in the index of the noncompliance with the Wage Law during 1980.

Graph 6.4 replicates the information contained in graph 6.3 for the sample of employees in general and for the sample of employees working in the manufacturing sector, using the effective concept for all possible months between 1980 and 1984 where the RR_{12} statistic can be calculated. The analysis reveals that the average noncompliance index is slightly smaller for employees in manufacturing (17% against 18% for overall employees). The proportion of workers not complying with the Wage Law exhibits a downward trend during the period under analysis. However, considering the fall of the institutional wage real vale overtime, it is not clear what is causing the fall in the noncompliance rates observed, whether wages are becoming more adjusted to the Wage Law or vice-versa.

6.A. The Effectivity of the Wage Law

This section evaluates the extend observed wages follow exactly the prescriptions of the Wage Law. In other words, it investigates how binding is the Wage Law. This exercise consist in a more decisive step to evaluate the impact of the law on earnings short-run dynamics.

The analysis will focus on the ratio between nominal earnings one month apart: RR_1. This statistic allows us to capture anticipations of wage adjustments between official adjustment dates. However, the analysis of RR_1 is somewhat more complex than the analysis of the RR_{12}, developed last section because it is subject to problems related to the heterogeneity of individuals across wage adjustment dates.

The six-month adjustment frequency during the 1980-86 period implies a bimodal probability distribution function (pdf) of the ratio of institutional wages nominal monthly adjustment factors (RR_1). The first part of the RR pdf would be an atom at one, corresponding to the no nominal adjustment case for individuals that are not in their respective adjustment dates. In terms of the CDF of the RR_1 statistic, there will be a plateau at RR_1 equals to one. The remaining part of the institutional wage RR_1 pdf would correspond to the wage adjustment prescriptions of the law. Since during the 1980-86 period, official wage adjustment prescriptions varied across earnings brackets, there will be some dispersion of the institutional wage RR_1 pdf in the upper tail of the distribution. This dispersion will depend on the degree of differentiation of wage adjustments prescribed by the law for workers located in their respective wage adjustment dates. As a consequence, the CDF of the institutional wage RR_1 statistic, will not necessarily present a plateau at the upper tail of the distribution.

In order to capture the existing dichotomy between adjusting and not adjusting institutional wages and the dispersion of wage adjustment prescriptions for the latter group, the analysis of the RR_1 statistic will use three horizontal lines representing the Wage Law adjustment prescriptions in a given month:

a) a lower horizontal line indicating the minimum wage adjustments assumed by the institutional wage nominal monthly factors across 60 simulations (i.e., five wage brackets times 12 settlement dates (see previous section, for details)). During the 1980-86 period, this line will be typically situated at equals to one, corresponding to the majority group with fixed nominal institutional wages across two consecutive months under analysis.

b1) an intermediary horizontal line corresponding to the smallest legal wage adjustment prescription for those situated in an official wage adjustment date. This line corresponds to the smaller RR_1 statistic of the group located in an official wage adjustment date. Given the regressive wage adjustment prescriptions of the law during the 1980-86 period, the values assumed by this line will coincide with the RR_1 statistic of the group located in a wage adjustment date with higher initial wage levels (in our simulations 25 minimum wages).

b2) an upper horizontal line corresponding to the highest wage adjustment prescription of the Law. During the 1980-86 period, this line corresponds to the group earning one minimum wage that are located in an automatic wage adjustment date. Graph 7.1 exhibits the evolution of the values representing these three lines across the 1980-92 period.

Graphs 7.2 exhibits the distribution of normal and effective earnings RR_1 statistic for May 1980 coupled with the three lines mentioned above, representing the Wage Law prescriptions. The comparison between artificial and actual earnings behavior reveals the following patterns of wage adjustment during May 1980:

a) 20% (18%) of observations present a reduction in nominal earnings, according to the effective (normal) concept.

b) 28% (28%) of observations present constant nominal earnings. These focal points correspond to the prescription of the Wage Law for the majority of the labor force.

c) 24% (25%) of observations present earnings changes in excess of the minimum adjustment prescriptions of the law for those located in a wage adjustment date.

d) 20% (19%) of observations present earnings changes in excess of the maximum adjustment prescriptions of the law for those located in a wage adjustment date.

e) around 28% (29%) of observations present changes in between the Wage Law no adjustment prescription and its minimum earnings adjustment prescription. These numbers could be interpreted as a proxy of anticipations of wage adjustments outside official wage dates.

f) finally, around 4% (6%) of the observations present earnings changes in between the minimum and the maximum values prescribed by the law for those located in a wage adjustment date (i.e., a direct consequence of items c) and d)). These figures plus the universe of individuals with zero wage adjustment (i.e., 28% (28%) of item b)) correspond to 32%(34%) part of the sample which the hypothesis that not necessarily present a plateau at the upper tail of the distribution.

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b1) an intermediary horizontal line corresponding to the smallest legal wage adjustment prescription for those situated in an official wage adjustment date. This line corresponds to the smaller RR_1 statistic of the group located in an official wage adjustment date. Given the regressive wage adjustment prescriptions of the law during the 1980-86 period, the values assumed by this line will coincide with the RR_1 statistic of the group located in a wage adjustment date with higher initial wage levels (in our simulations 25 minimum wages).

b2) an upper horizontal line corresponding to the highest wage adjustment prescription of the Law. During the 1980-86 period, this line corresponds to the group earning one minimum wage that are located in an automatic wage adjustment date. Graph 7.1 exhibits the evolution of the values representing these three lines across the 1980-92 period.

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e)around 28% (29%) of observations present changes in between the Wage Law no adjustment prescription and its minimum earnings adjustment prescription. These numbers could be interpreted as a proxy of anticipations of wage adjustments outside official wage dates.

f) finally, around 4% (6%) of the observations present earnings changes in between the minimum and the maximum values prescribed by the law for those located in a wage adjustment date (i.e., a direct consequence of items c) and d)). These figures plus the universe of individuals with zero wage adjustment (i.e., 28% (28%) of item b)) correspond to 32%(34%) part of the sample which the hypothesis that the Wage Law is exactly followed cannot be rejected.

Graphs 7.3 to 7.8 exhibit the evolution of items a) to f) above for effective and normal earnings during the period ranging from March 1980 to February 1982. The relative importance of the different ranges chosen from the distribution of monthly wage adjustments exhibit different seasonal patterns across the two earnings concepts used.

The normal earnings RR_1 exhibits a smoother path throughout the year, with the exception of a more pronounced concentration of positive wage adjustments during May and November, specially for those ranges above the minimum adjustment prescription of the law (see, graphs 7.4, 7.5 and 7.6, respectively).

Effective earnings present a richer variety of wage adjustment patterns which includes those observed for normal earnings plus other patterns observed during November, December and January. For example, the share of workers with constant nominal earnings fall sharply during these months (graph 7.3). The increase of the share with negative nominal adjustments (graph 7.5) during January and the increase of the share with higher than the maximum wage adjustment prescriptions of the law during December and November (graph 7.6) are consistent with the operation of transitory shocks on earnings due to the payment of the 13th wage during November and December.

6.B. Effectivity Conditioned on Compliance

The question "How binding is the Wage Law? is more precisely answered if the analysis is conditioned on the compliance with the Law. Or at least conditioned in the fact that some of the law minimum adjustment requirements were fulfilled. This is a way to reduce the problem of heterogeneity of individuals across official wage adjustment dates.

The first step of the analysis was to divide the RR_1 distribution statistic in two groups depending on the non-compliance with the Wage Law 12 months prescriptions, as analyzed in the section 5. That is, the RR_1 distributions of individuals followed all eight times of PME sampling scheme will be split in two parts according to the RR_{12} statistic: a) the group whose RR_{12} are below the minimum requirements (i.e., those which the hypothesis of non-compliance with the law can not be rejected). b) the group which RR_{12} is equal or above the Wage Law minimum requirements[7]. The analysis of the RR_1 statistic for normal earnings during 1980, presented in graph 8.1 and a series of graphs for the whole period under analysis reveals that:

a) as expected, the RR_1 distribution of the non-compliers is first-order stochastically dominated (non-strictly) by the RR_1 distribution of those which the hypothesis of non-compliance was not rejected during all months under analysis.

b) perhaps more interesting, the latter distribution exhibits a more pronounced concentration of mass at the range within the Wage Law parameters. There are "plateaus" during May and November at the maximum monthly adjustments of the law.

In order to get an even finer picture of the effectivity of the

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7 Graphs 6.2 and 6.4 exhibit the evolution of the proportion located in each part of the sample.

Wage Law, the analysis of monthly adjustment factors is further restricted to the group of employees with 12 months adjustments above the Wage Law minimum requirements (those which the hypothesis of compliance with the Wage Law can not be rejected), the analysis of this group is divided in two parts: a) those above the law 12 months adjustment prescription. b) those within the Wage Law 12 months adjustment range (i.e., those which the hypothesis that the Wage Law 12 months prescription is exactly followed cannot be rejected). The analysis of a series of graphs like graph 8.2 revealed that:

a) the distribution of those above the law 12 months adjustment prescriptions first-order stochastically dominates the distribution of the other groups.

b) the distribution of monthly adjustment factors of those within the law 12 months adjustment prescriptions range exhibits clear "plateaus" at the maximum monthly adjustment prescribed during May and November.

7 . Wage Adjustments by Wage Levels

The indexation clauses of the Brazilian Wage Law during 1980-86, 1989 and 1991-92 prescribed higher wage adjustments for lower wage brackets. More specifically, during the first sub-period, the Wage Law adopted the so-called "cascade effect", according to which the lower part of individual wages received higher adjustment rates. Taking the "cascade-effect" prescriptions at face value, the earnings inequality would be reduced while the ordering of the earnings distribution would be preserved. The magnitudes of the marginal adjustment factors by earnings brackets of the "cascade effect" are presented in table 5. These factors should multiply the six-month consumer price index factor (i.e., one plus the inflation rate accumulated over a six month period). A curious characteristic of the "cascade-effect" is that its equalizing potential increases with the inflation rate. In the case of stable prices prescriptions of the Wage Law would be homogeneous across different wage brackets.

Graph 9.1 exemplifies the ex-post equalizing potential of the "cascade-effect" over institutional wages during the 1980-86 period. The graph shows the behavior of the institutional wage of representative workers all with a May settlement date that earned during January 1980 respectively 1, 2, 4, 8, 16 and 32 minimum wages. The earnings ratio between the higher and the lower earnings agents fall to one third of its initial value during this interval. The speed of convergence increases as inflation rises in the middle of the sample. Therefore, in the absence of labor turn over or a noncompliance with the Wage Law, the distributive potential of the "cascate-effect" should not be underestimated.

The "cascade effect", as any of the idiosyncratic components of the Wage Law, creates some problems to the use of aggregated time series of observed wages. The average institutional wage would mix earnings information of individuals subject to different wage adjustment prescriptions.

The analysis of actual wage adjustments by wage level compares the CDF of two groups using the initial earnings value of two minimum wages as the border line dividing the basic samples of employees under analysis. The short-run dynamics of these two initial earnings groups of employees during the 1980-86 period are explored in a series of graphs like graphs 8.2 shows that the wage adjustment distributions for the lower earnings brackets always first-order stochastically dominates (non-strictly) the wage adjustment distribution for the higher wage adjustment brackets. That is, according to the two earnings concepts considered and to all periods under analysis earnings (i.e., from March 1980 to February 1986) continuously employed workers with lower initial earnings get higher wage increases than higher initial earnings groups[8]. This conclusion is robust for monthly and for annual adjustment periods considered.

Graph 9.2 provide a measure of the distances between the distributions as a cardinal complementary to the concept of stochastic dominance. This measure corresponds to the average ratio between all corresponding percentiles of the RR_1 and RR distributions. As expected the distance between high and low wages RR_1 distributions is greater during May and November at the minimum wage adjustment dates. However, the relative distances between both distributions is almost never below 5% reaching more than 25% during May and November of 1983, 1984, 1985 and March 1986 (i.e., during the transition of the Cruzado Plan).

The distances between high and low wages RR_1 and RR distributions during 1980-86 appear way to big to be explained solely by the operation of regressive wage adjustment clauses of the Wage Law. One possibility is that they are influenced by some

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8 Barros, Neri and Jovita (1995) report that the probability of employees with earnings below 2 minimum wages to be fired was 3 times higher than the corresponding probability for workers with higher earnings levels during 1980.

kind of bias. As opposed to statistics like the mean or the median, mobility measures are influenced by measurement error with zero mean. That is under and over-estimations of earnings do not average out in the case of mobility measures. This problem could be magnified if earnings mobility measures (e.g. the RR_1 and RR_2 statistics) are compared between groups which the selection criteria also depends on earnings (e.g. if earnings are above or below two minimum wages). Low wage earners group as defined above, tend to incorporate a disproportionate high share of individuals that under-estimated their incomes. Similarly, high wage earners group as defined above, tend to incorporate a disproportionate high share of individuals that over-estimated their incomes. If measurement error on earnings is not correlated across time, individuals that underestimated their incomes in the first period tend to present a high rate of change on earnings between the first and the second period. Similarly, individuals that over-estimated their incomes in the first period tend to exhibit low rates of change on earnings between the first and the second period.

In order to eliminate the bias mentioned above, employees were classified according to years of schooling. Employees were considered low wage earners if they had less than eight years of schooling and were considered high wage earners otherwise. The relative distance between high and low wages RR_1 distributions fall to more reasonable levels indicating that the bias mentioned above seems to be playing a key role in explaining the RR_1 distributions when earnings levels were used as a selection criteria. According to both criteria May and November exhibit larger distances between RR_1 distributions indicating the possible role played by the minimum wage settlement date.

8. Conclusions

The paper attempted to give a first step toward a methodology to quantify the influences of regulation on earnings short-run dynamics. The analysis developed provided as a by product evidence on the patterns of wage adjustment adopted during the recent high inflationary experience in Brazil.

The main contribution of the paper was providing an assessment of the main difficulties found to evaluate the effect of regulation on earnings. The discussion ranged from the earnings concepts used in the surveys to the level of aggregation used in the analysis. The paper pointed out problems with the earnings concepts used by PME from 1982 onwards. The paper also pointed out advantages of working with flexible data sets where one can adapt actual earnings data to specific aspects of the Wage Law.

The large variety of official wage indexation rules adopted combined with the availability of monthly surveys on labor markets during the last 15 years generate exceptional conditions to test how regulation affects earnings dynamics. In particular, the combination of large sample sizes with the possibility of following the same worker through short periods of time allows to estimate the cross-sectional distribution of longitudinal statistics based on observed earnings (i.e., monthly and annual rates of change). The main research strategy adopted here was to compare the distribution of actual and artificial earnings short run movements.

The empirical analysis gave an special attention to the 1980-86 period. The analysis revealed a large heterogeneity of wage adjustment patterns which confirmed the adequacy of a more disaggregated approach. Some stylized facts extracted from the empirical analysis are exhibited below:

a) an average rate of non-compliance with the Wage Law 12-month adjustment prescriptions of approximately 19%. The non-compliance rate declined over the 1980-85 period.

b) an average proportion of fixed nominal contractual wages between consecutive two months of approximately 30%.

c) a concentration of adjustment in contractual wages during May and November, specially for those complying with the Wage Law 12-month prescriptions and for low wage earners. These groups exhibited proportions ranging from 5% to 20% at the exact rate of change given to the minimum wage.

d) the distribution of monthly and annual rates of change of low wage earners first-order stochastically dominates the corresponding distributions of high wage earners during all months under analysis.

e) The occurrence of transitory shocks associated with the payment of the 13th wage during November and December.

In sum, the visual approach adopted here provides some guidelines for future empirical work.

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TABLE 2.1
Profile of Samples 1982-95

	Original PME Sample	Longitudinal Sample 4 Obs	Longitudinal Sample 8 Obs
Share of Males	47,47%	47,37%	47,44%
Average Age	33,78	34,16	34,54
Share of Heads	34,71%	34,99%	34,73%
Share with less than Eight Years High School Education	61,01%	60,02%	60,94%
Share in Manufacturing [2]	12,91%	12,20%	11,90%
Participation Rates	58,04%	60,01%	59,31%
Share Searching a Job	3,18%	3,44%	3,44%
Average Unemployment Spell	40,85	41,85	44,18
Average Hours Worked Per week	43,61	41,96	41,92
Share of Employees [2]	36,33%	37,41%	36,78%
Share of Legal Employees	75,13%	78,59%	76,58%
Number of Observations	14911309	10236752	6077712

TABLE 2.2
Profile of Samples 1980-82

	Original PME Sample	Longitudinal Sample 4 Obs	Longitudinal Sample 8 Obs
Share of Males	47,66%	46,20%	46,28%
Average Age	33,14	34,27	35,10
Share of Heads	33,25%	35,00%	35,23%
Share in Manufacturing [2]	23,58%	24,16%	24,01%
Share of Individuals Working	59,71%	59,36%	57,80%
Share of Employees [2]	78,95%	78,19%	77,07%
Number of Observations	2328274	1221800	605896

TABLE 3.1

Profile of Employees Samples 1982-95

	Original PME Sample	Longitudinal Sample 4 Obs	Longitudinal Sample 8 Obs
Share of Males	62,24%	63,16%	64,43%
Average Age	32,11	32,55	32,99
Share of Heads	45,40%	45,87%	46,56%
Share with less than Finished High School Education	51,20%	52,27%	52,90%
Share in Manufacturing [2]	53,14%	25,09%	24,97%
Average Hours Worked Per week	42,74	42,38	42,33
Share of Legal Employees	72,13%	76,04%	76,58%
Number of Observations	3853502	4547980	2645256

TABELA 3.2

Profile of Employees Samples 1980-82

	Original PME Sample	Longitudinal Sample 4 Obs	Longitudinal Sample 8 Obs
Share of Males	61,39%	62,61%	64,30%
Average Age	31,54	32,56	33,45
Share of Heads	44,11%	46,33%	47,80%
Share in Manufacturing [2]	28,24%	29,04%	29,16%
Share that Would Work More Hours	61,68%	60,88%	58,90%
Number of Observations	1079123	567108	269904

TABLE 4.1

Profile of Employees Samples 1982-95

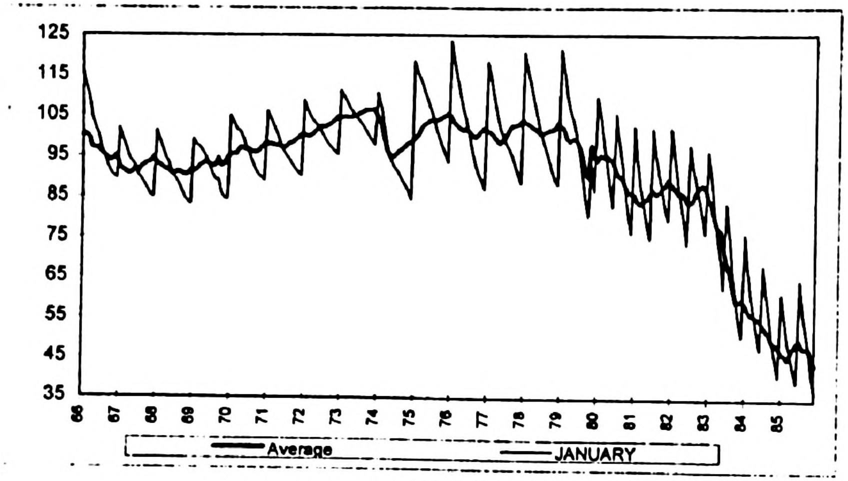
	Conc. 8 Obs. Once Employee	Conc. 4 Obs. Once Employee	Conc. 4 Obs. Cont. Employed	Conc. 8 Obs. Cont. Employed
Share of Males	61,46%	62,30%	62,31%	65,19%
Average Age	32,14	32,2	33,08	34,00
Share of Heads	41,52%	43,63%	49,15%	53,40%
Share with less than Finished High School Education	55,75%	54,39%	50,02%	48,49%
Share in Manufacturing [2]	18,99%	21,52%	26,88%	29,30%
Average Hours Worked Per week	41,99	42,16	42,72	42,68
Share of Legal Employees	76,58%	76,01%	88,20%	94,60%
Share of Employees	82,45%	84,19%	1	1
Number of Observations	3589264	5402292	1960276	731496

TABLE 4.2

Profile of Employees Samples 1980-82

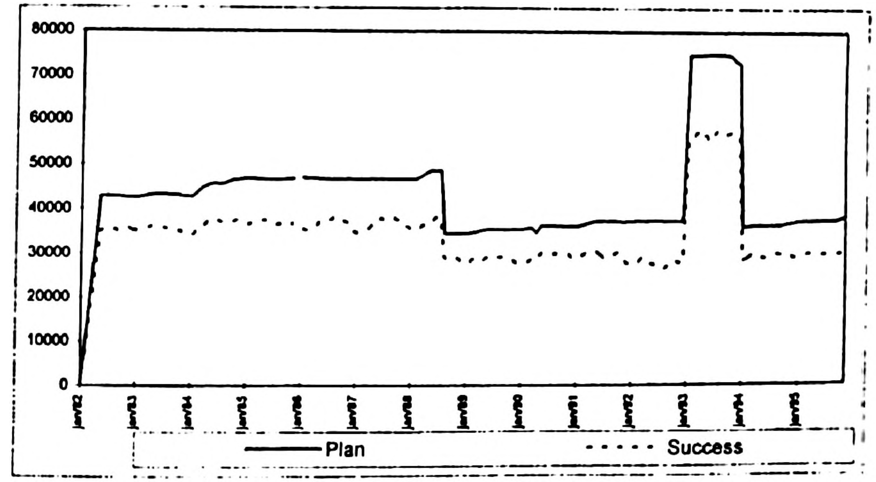
	Conc. 8 Obs. Once Employee	Conc. 4 Obs. Once Employee	Conc. 4 Obs. Cont. Employed	Conc. 8 Obs. Cont. Employed
Share of Males	61,39%	61,76%	62,00%	63,63%
Average Age	32,67	32,21	33,09	34,56
Share of Heads	42,96%	44,20%	48,20%	51,64%
Share in Manufacturing [2]	33,82%	31,02%	30,74%	30,72%
Share of Individuals Working	80,37%	91,08%	100,00%	100,00%
Share that Would Work More Hours	59,35%	55,81%	59,66%	56,88%
Number of Observations	354144	653564	408144	137144

Graph 1 - Institutional Wages - Aggregate X Individual -1966-85

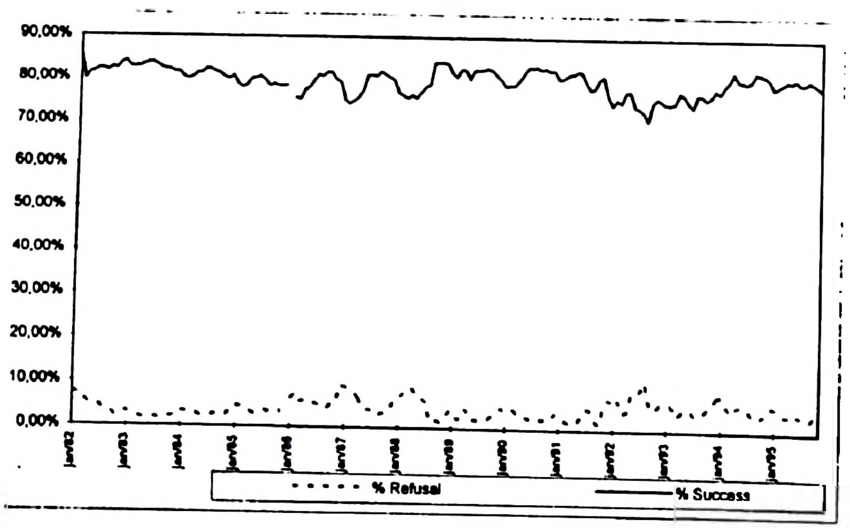


Source: Gonzaga (1988)

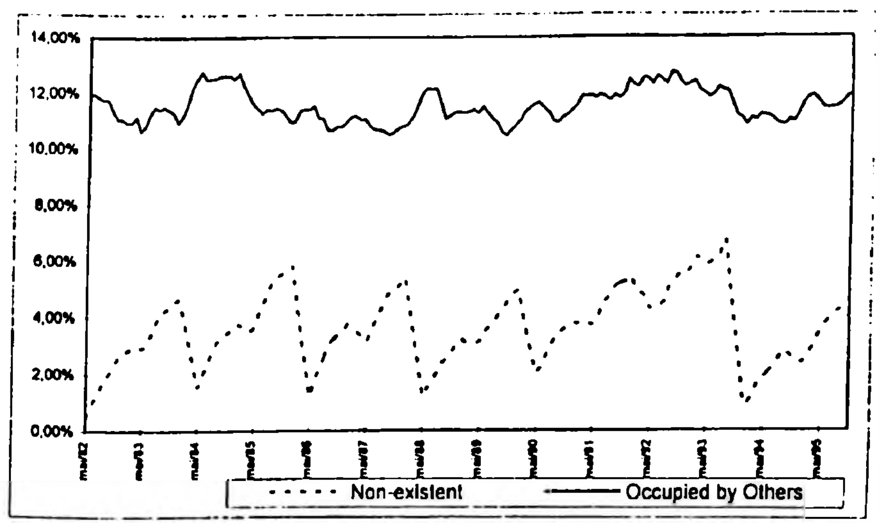
Graph 2.1 - Number of Dwellings: Plan X Sucessfull Interviews - 82-95



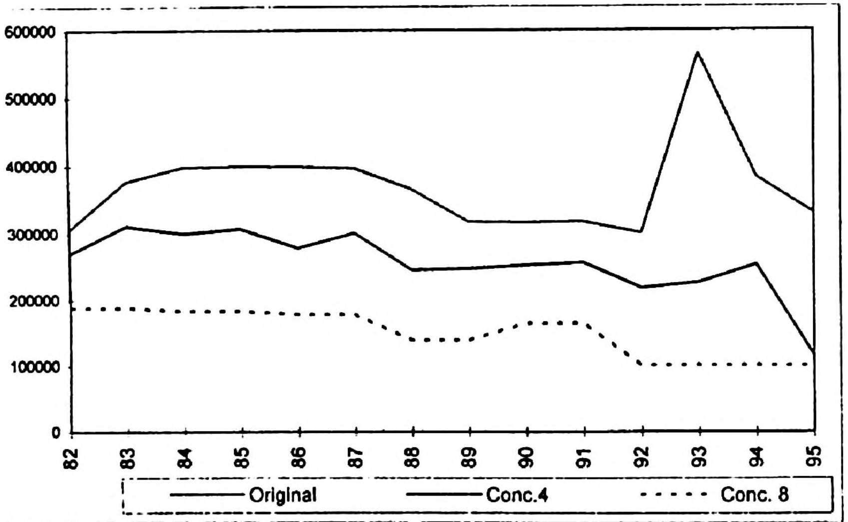
Graph 2.2 - Non-Response Bias: % Sucessfull X % Refusal - 82-95



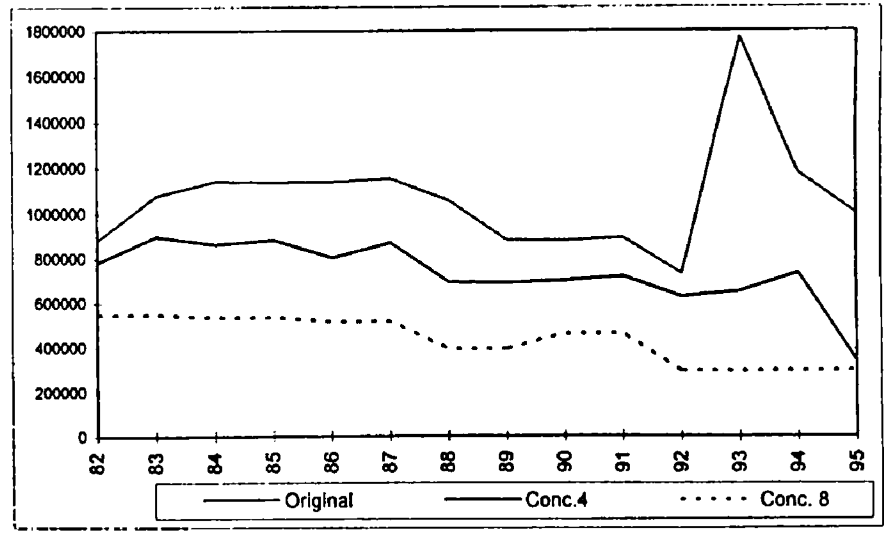
Graph 2.3 - Non-Response Bias:% Non-existent X % Occupied by others



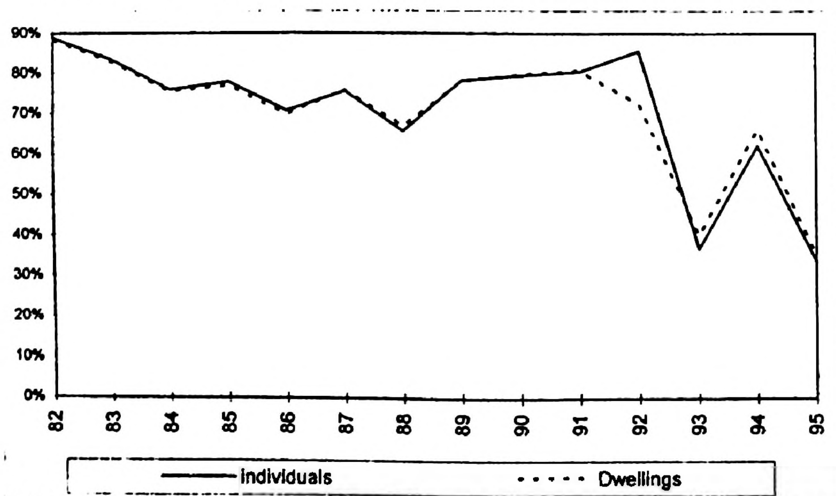
Graph 2.4 Number of Observations (Dwellings per Year) - 1982-95



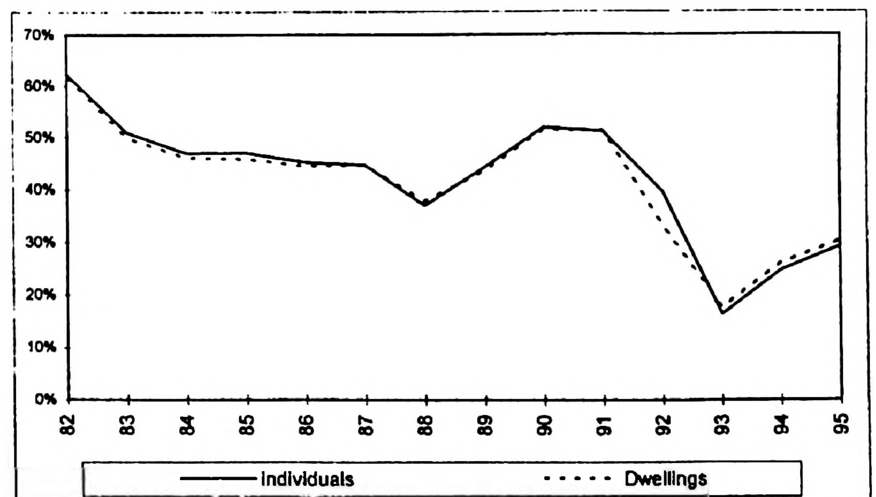
Graph 2.5 Number of Observations (Working Age Individuals) - 1982-95



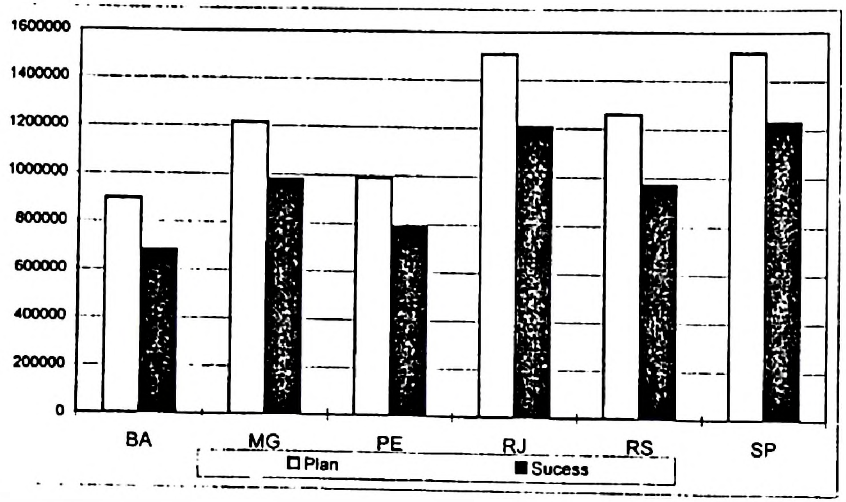
Graph 2.6 The Complement of the Atrition Rate- 4 Observations - 82-95



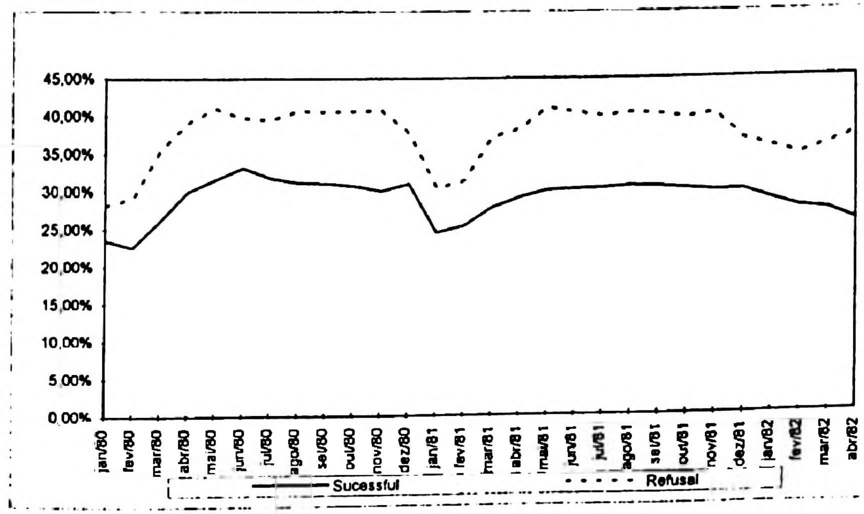
Graph 2.7 The Complement of the Atrition Rate - 8 Observations - 82-95



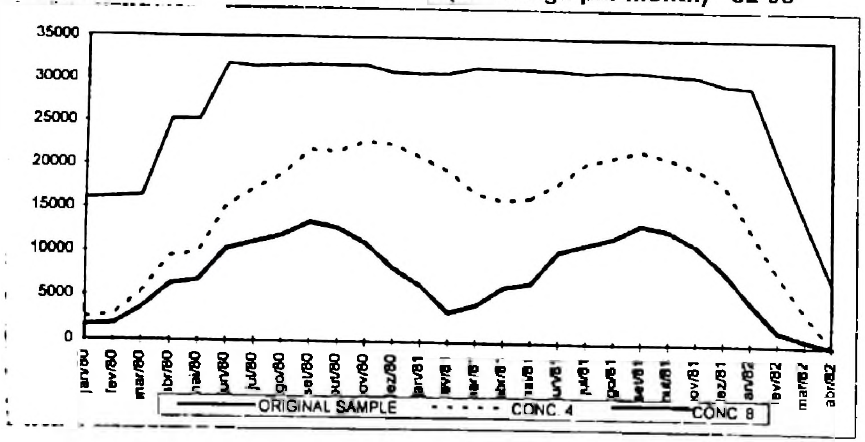
Graph 2.8 - Number of Dwellings:By Metropolitan Region - 82-95



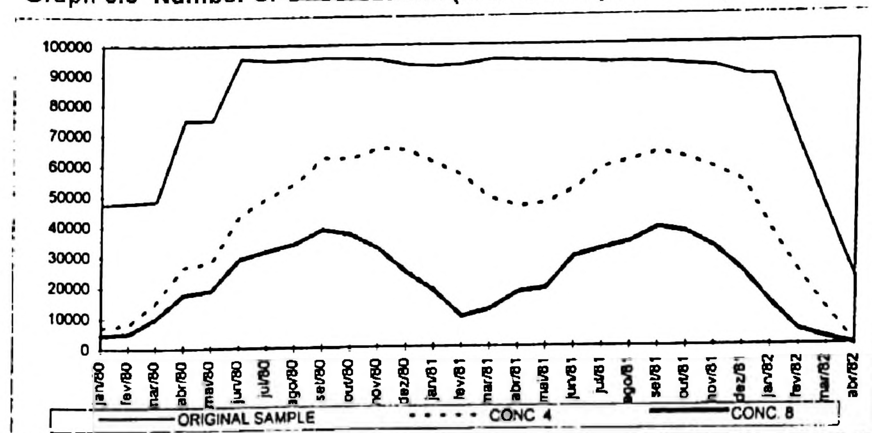
Graph 3.1 - Proportion of Dwellings: Plan X Sucessfull Interviews - 80-82



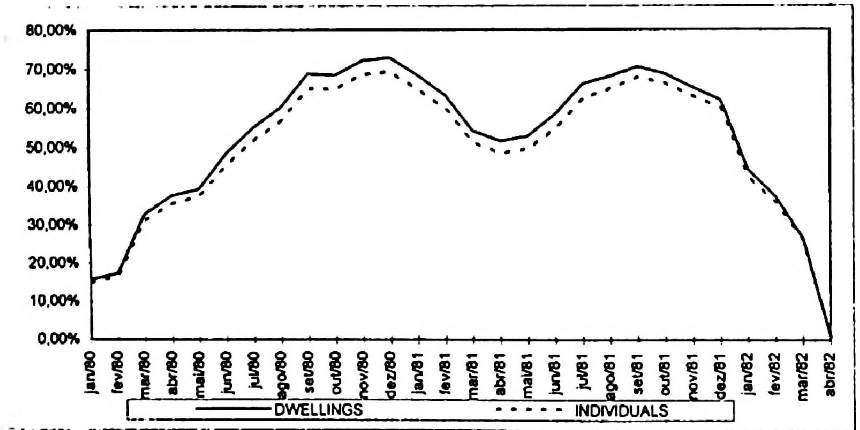
Graph 3.2 Number of Observations (Dwellings per Month) - 82-95



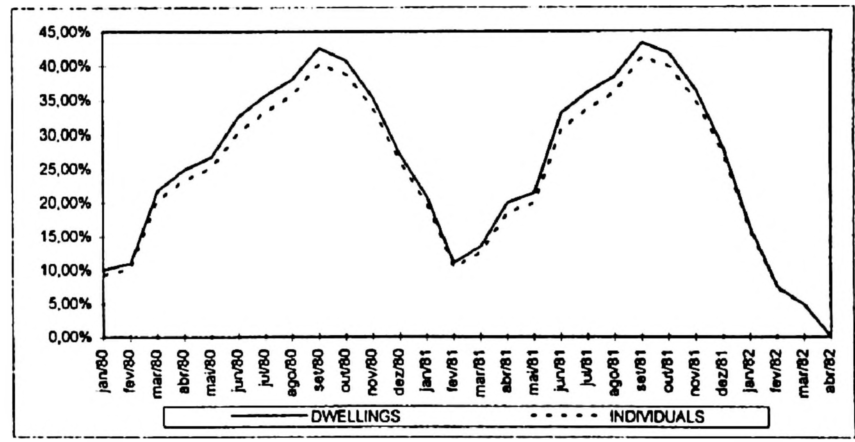
Graph 3.3 Number of Observations (Individuals per Month) - 1982-95



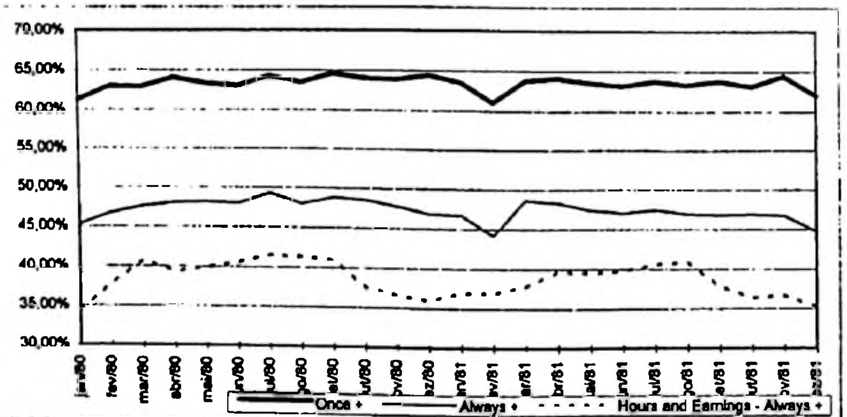
Graph 3.4 - The Complement of the Attrition Rate on Dwellings - 4 Observations - 1980-82



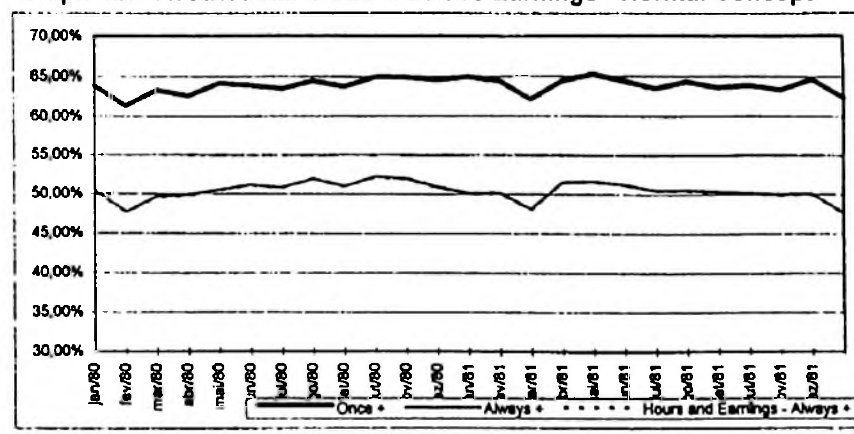
Graph 3.5 - The Complement of the Attrition Rate on Dwellings - 8 Observations - 1980-82



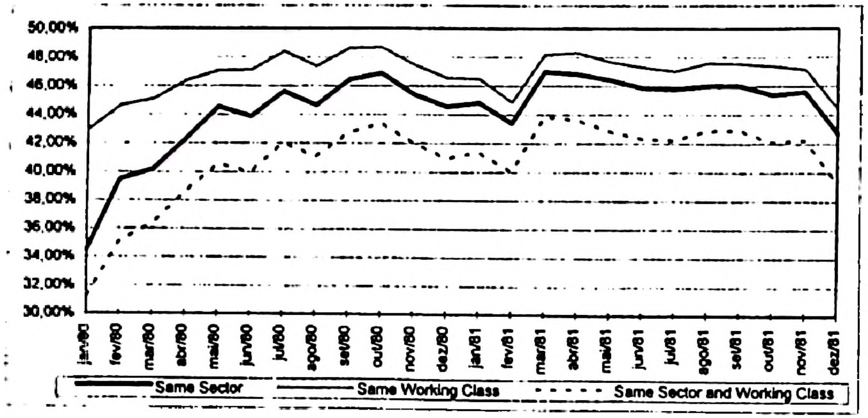
Graph 4.1 - Restrictions 4 Obs- Positive Earnings - Effective Concept



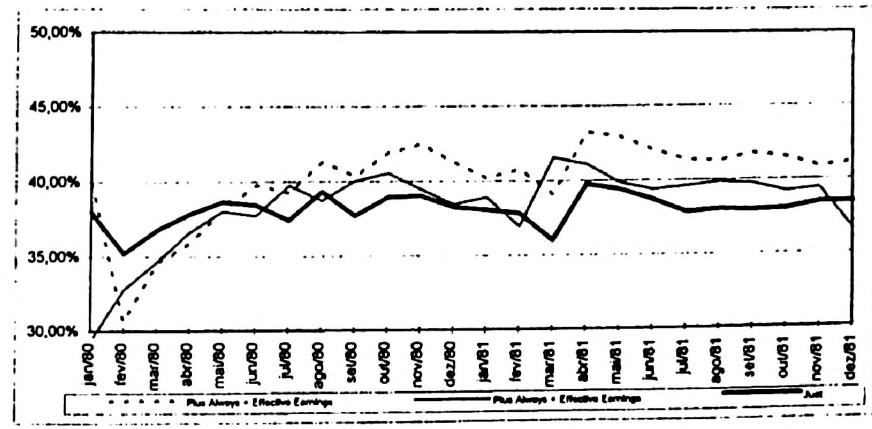
Graph 4.2 - Restrictions 4 Obs- Positive Earnings - Normal Concept



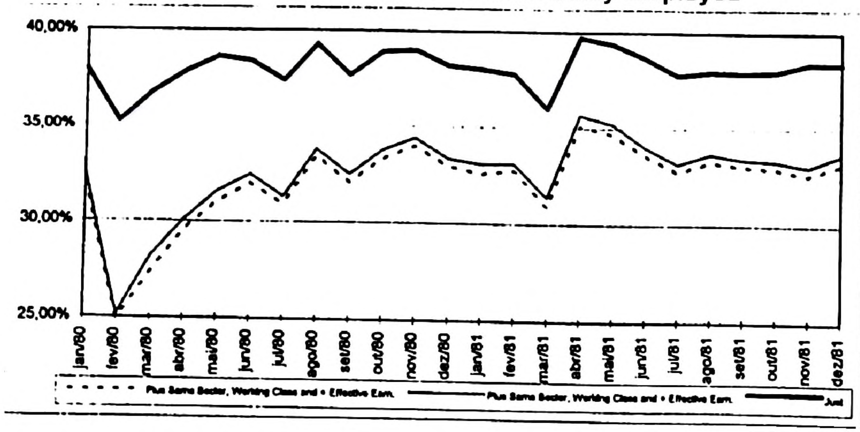
Graph 4.3 - Restrictions 4 Obs
Same Sector of Activity and Working Class



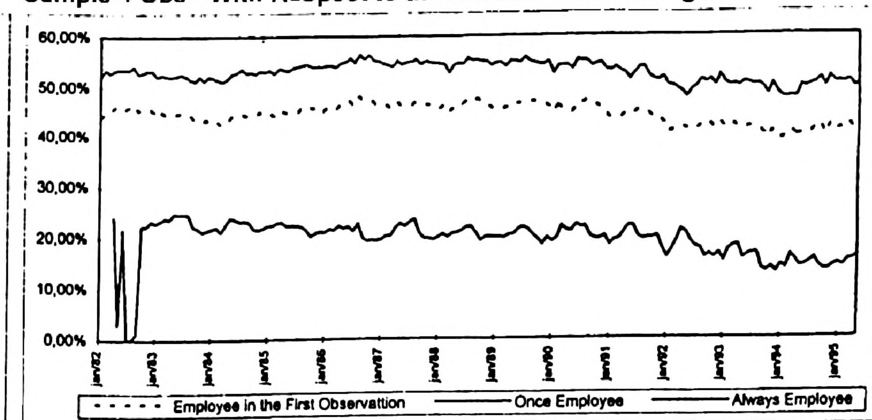
Graph 4.4 - Restrictions 4 Obs -
Same Sector, Working Class X Continuously Employed



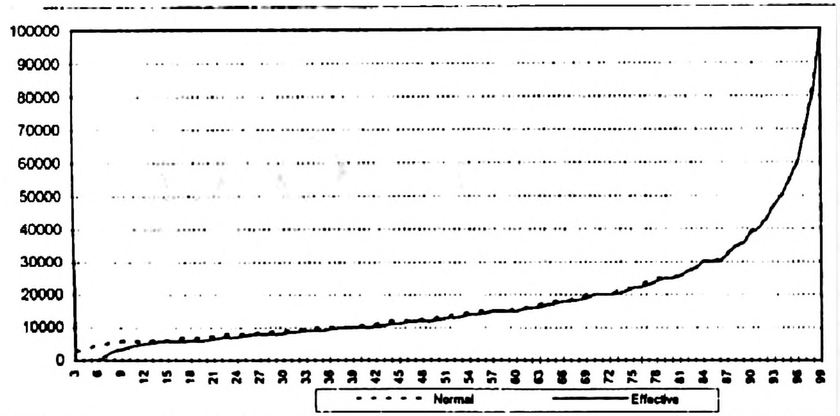
Graph 4.5 - Restrictions 4 Obs. - Continuously Employed



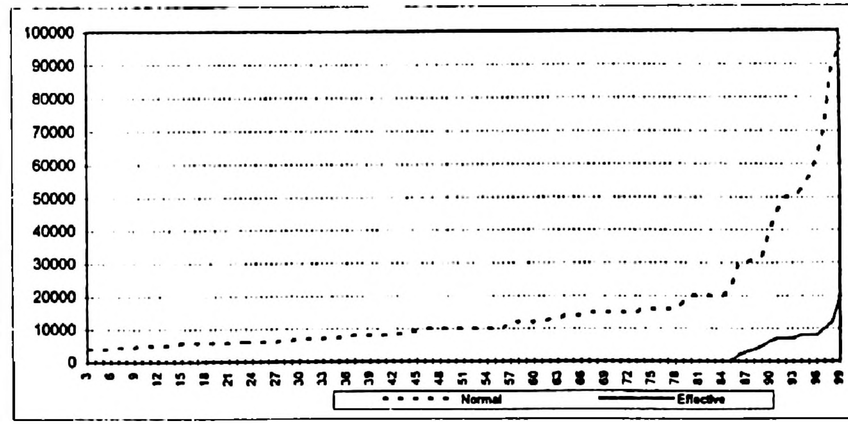
Graph 4.6- Once Employees, Employees, Continuously Employed
Sample 4 Obs - With Respect to the Number of Active Age Individuals



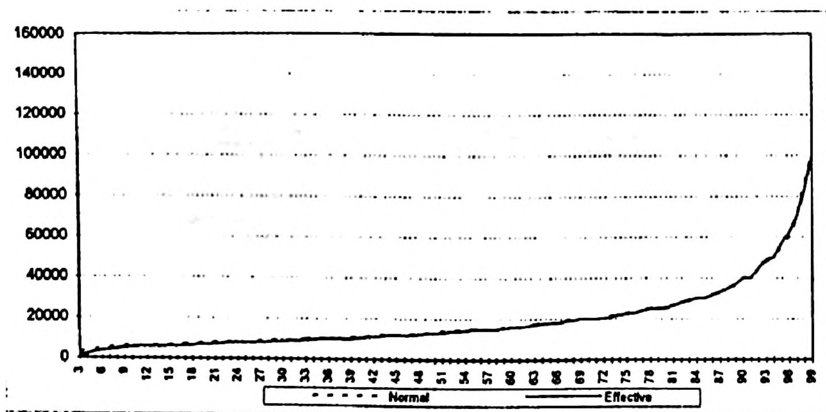
Graph 5.1 - CDF Earnings Level - Universe of Active Age Employees
Normal Earnings and Effective Earnings - January 1981 -São Paulo



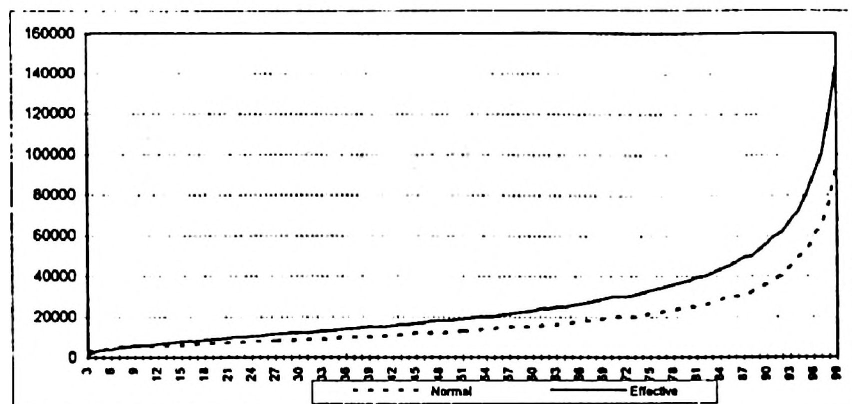
Graph 5.2 - CDF Earnings Level - Employees Moving Between Jobs
Normal Earnings X Effective Earnings - January 1981 - São Paulo



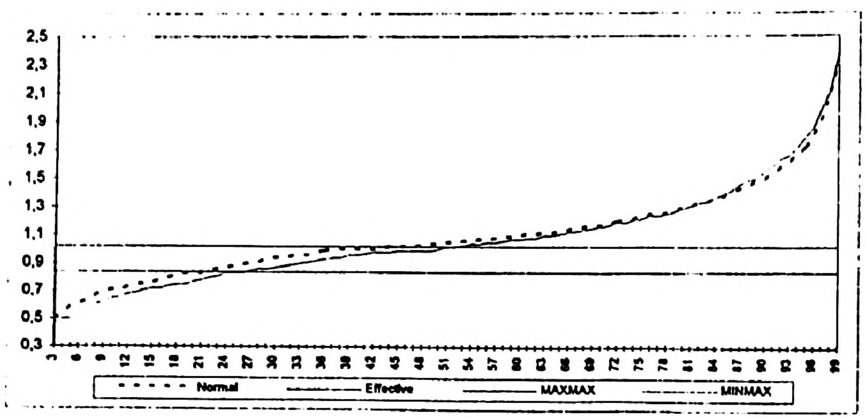
Graph 5.3 - CDF Earnings Level - Continuously Employed Workers
Normal Earnings X Effective Earnings - January 1981 - São Paulo



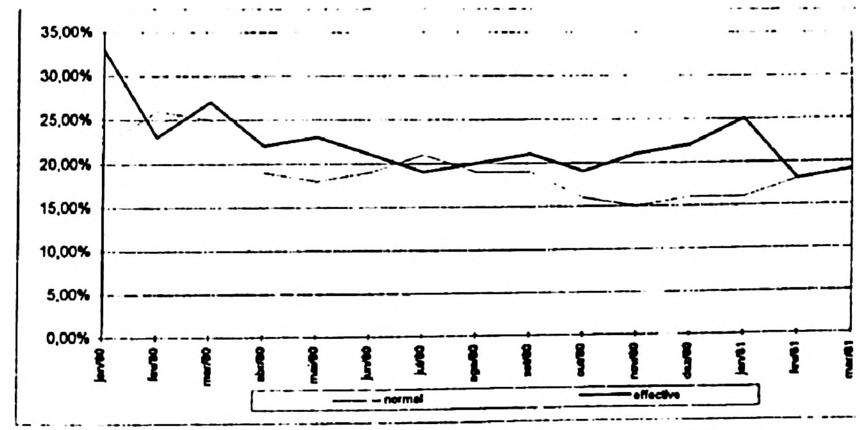
Graph 5.4 - CDF Earnings Level - Continuously Employed Workers
Normal Earnings X Effective Earnings - December 1980 - São Paulo



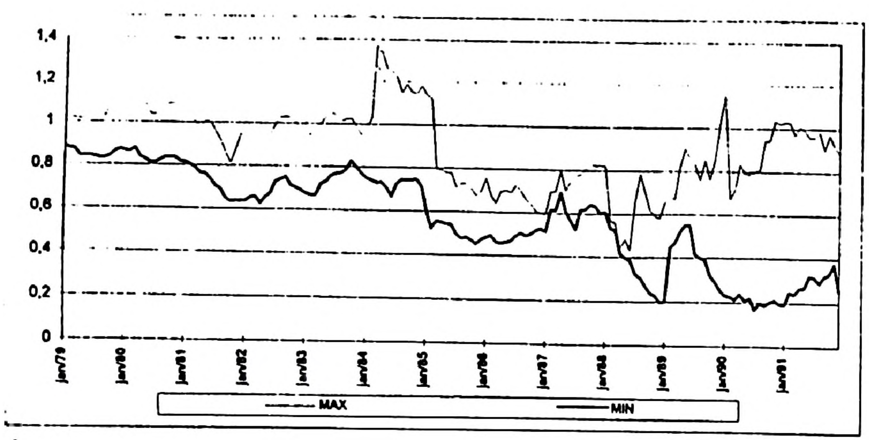
Graph 6.1 - CDF Real Earnings Adjustment Factors - May 1980
12 Months Adjustments - By Earnings Concepts



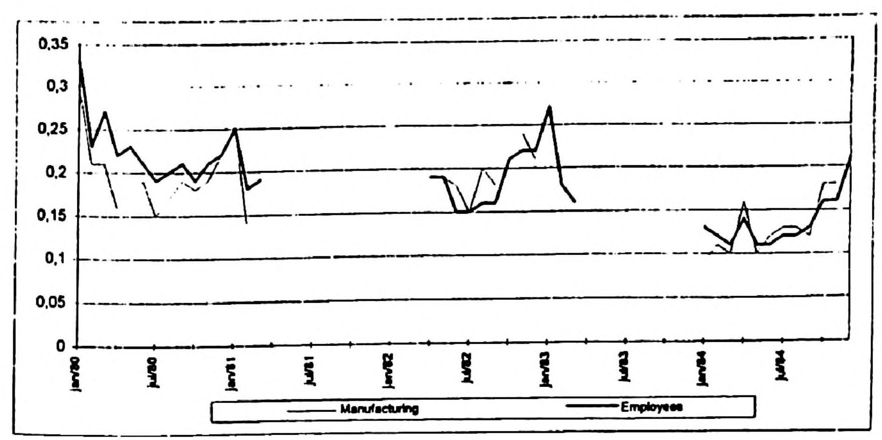
Graph 6.2 - Non-Compliance with the Wage Law
12 Months Prescriptions - 1980-82 - By Earnings Concepts



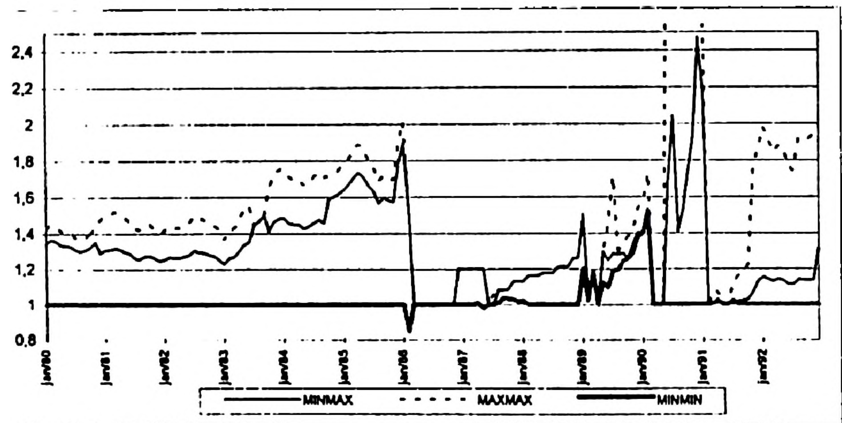
Graph 6.3 - 12-Month adjustment Factors of the Wage Law -1979-91



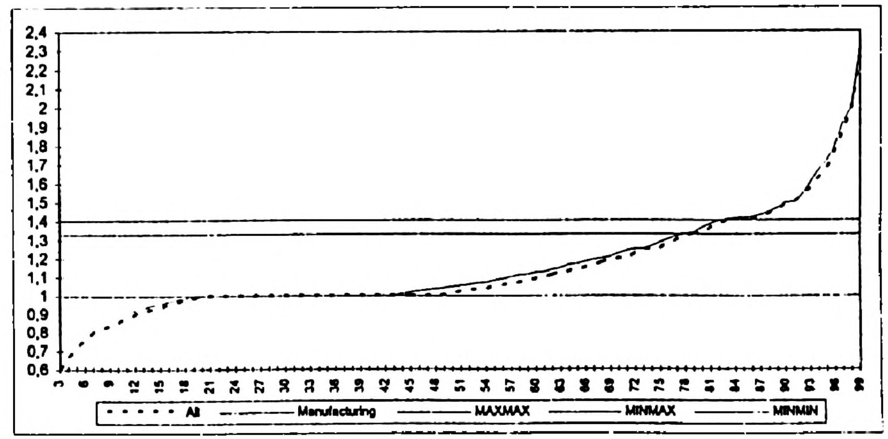
Graph 6.4 - Non-Compliance with the Wage Law
12 Months Prescriptions - 1980-84 -



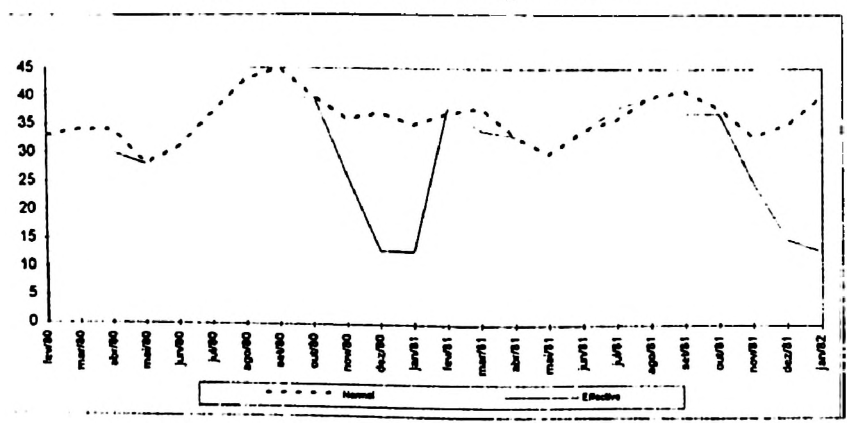
Graph 7.1 - Monthly Adjustments Factors of the Wage Law - 1980-92



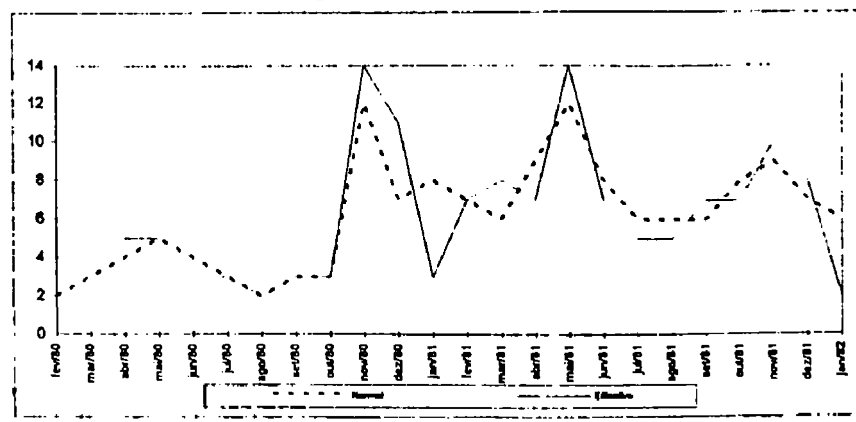
Graph 7.2 - CDF Nominal Earnings Monthly Adjustment Factors
May 1980 - By Earnings Concepts



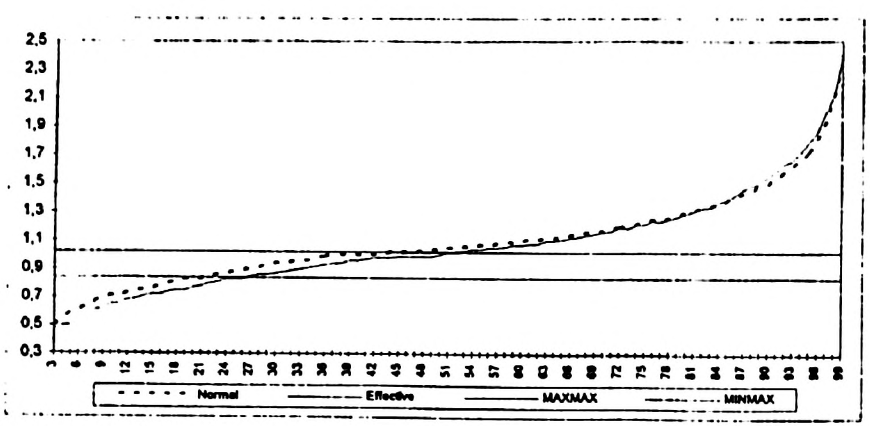
Graph 7.3 - Employees - Feb1980-Jan 1992 - By Earnings Concepts
Share with Nominal Earnings Constant



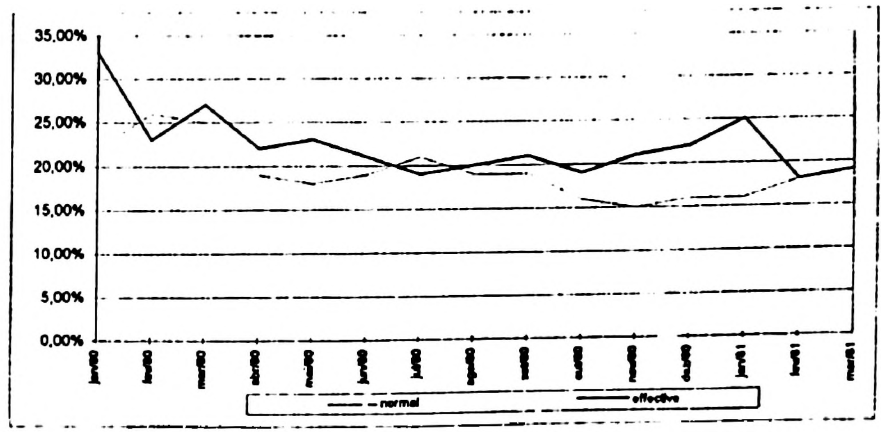
Graph 7.4 - Employees - Feb1980-Jan 1992 - By Earnings Concepts
Share Within Wage Law SD Adjustments Range



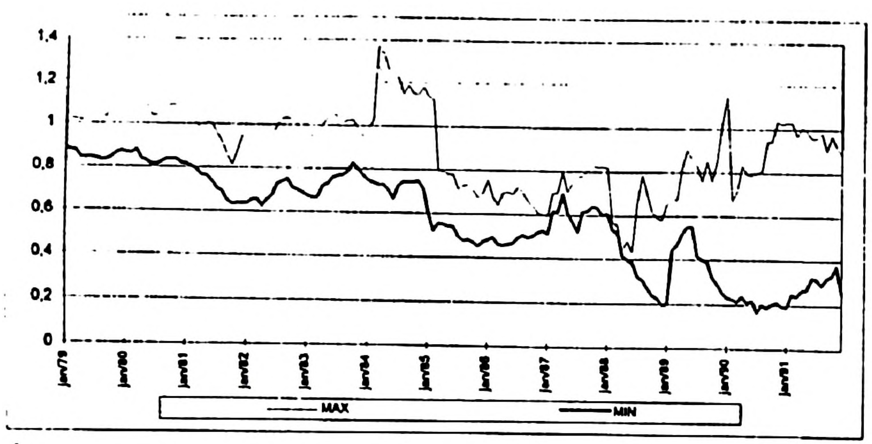
Graph 6.1 - CDF Real Earnings Adjustment Factors - May 1980
12 Months Adjustments - By Earnings Concepts



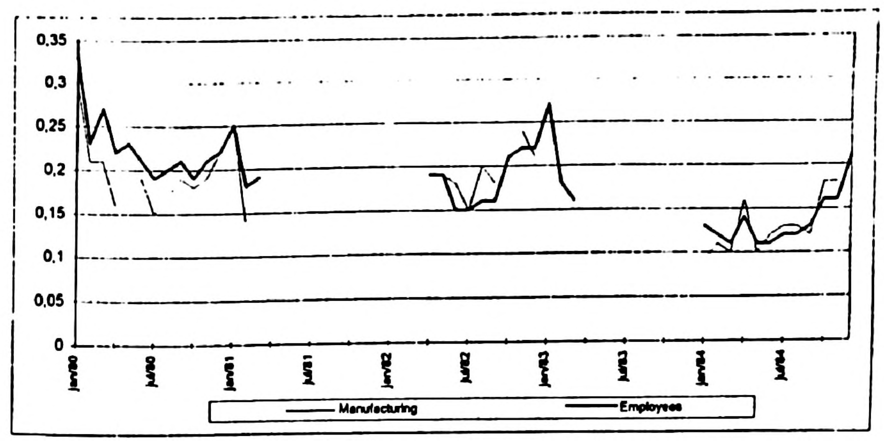
Graph 6.2 - Non-Compliance with the Wage Law
12 Months Prescriptions - 1980-82 - By Earnings Concepts



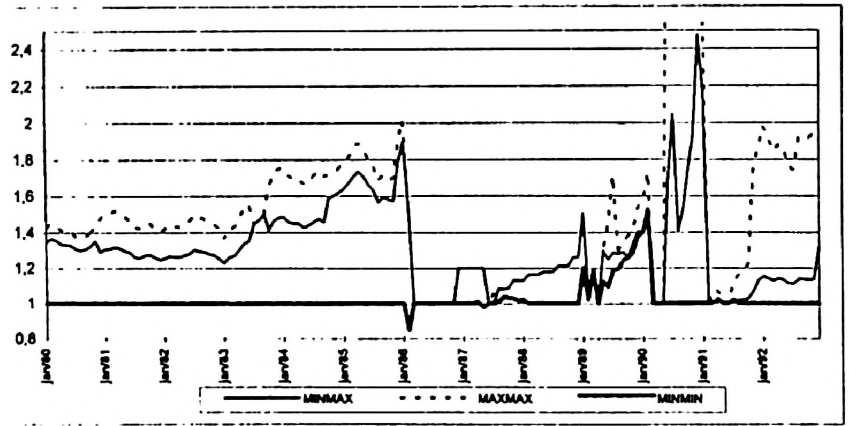
Graph 6.3 - 12-Month adjustment Factors of the Wage Law -1979-91



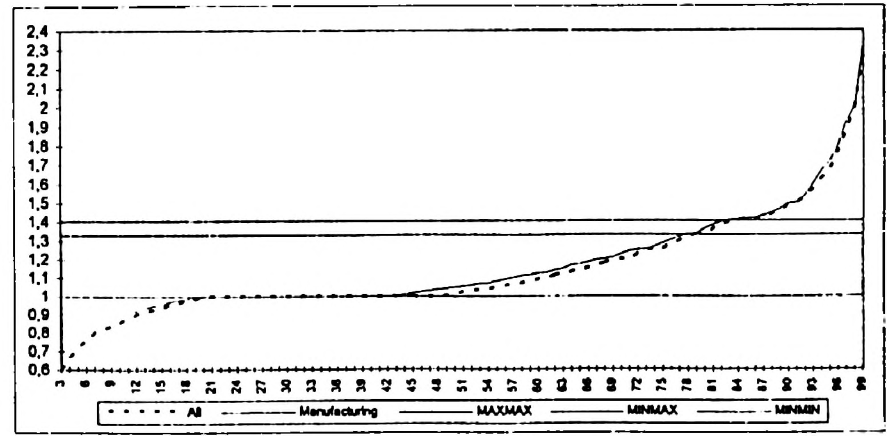
Graph 6.4 - Non-Compliance with the Wage Law
12 Months Prescriptions - 1980-84 -



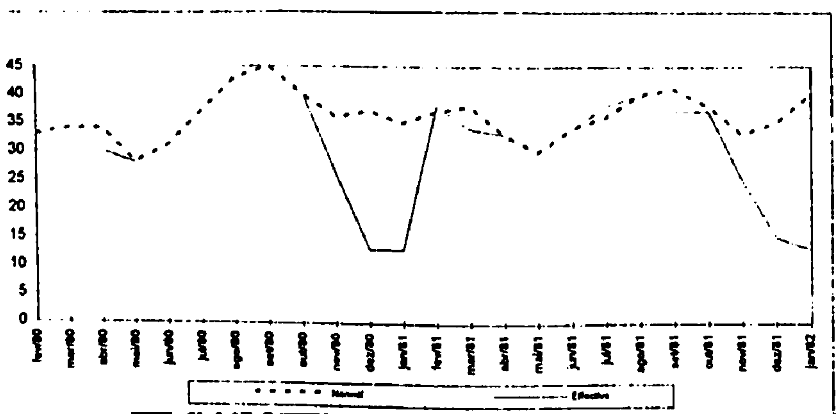
Graph 7.1 - Monthly Adjustments Factors of the Wage Law - 1980-92



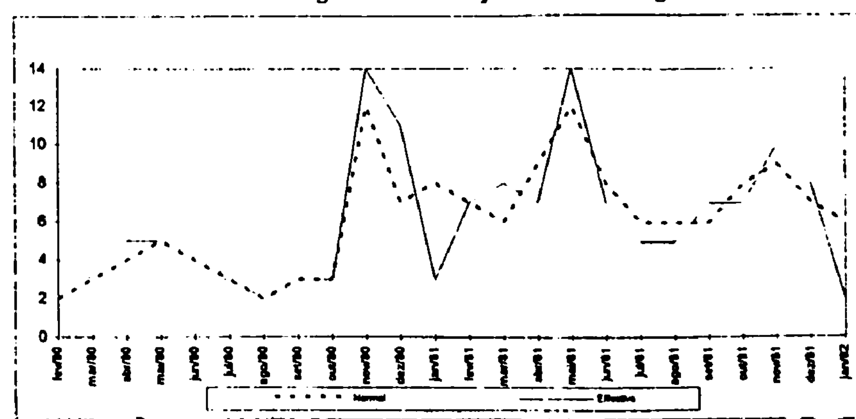
Graph 7.2 - CDF Nominal Earnings Monthly Adjustment Factors
May 1980 - By Earnings Concepts



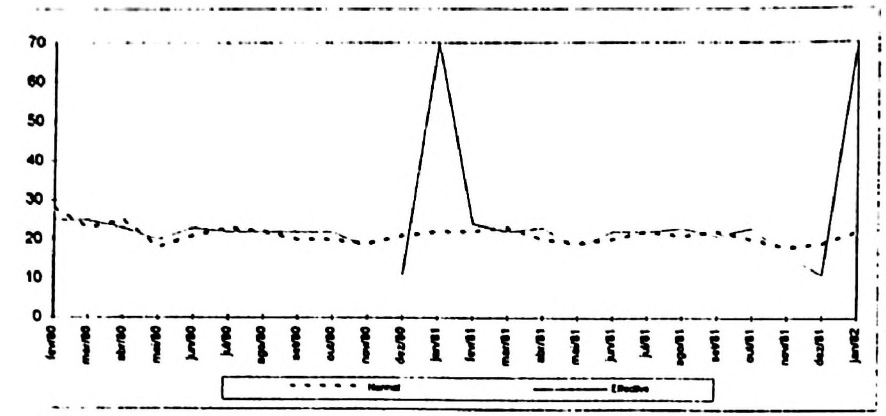
Graph 7.3 - Employees - Feb1980-Jan 1992 - By Earnings Concepts
Share with Nominal Earnings Constant



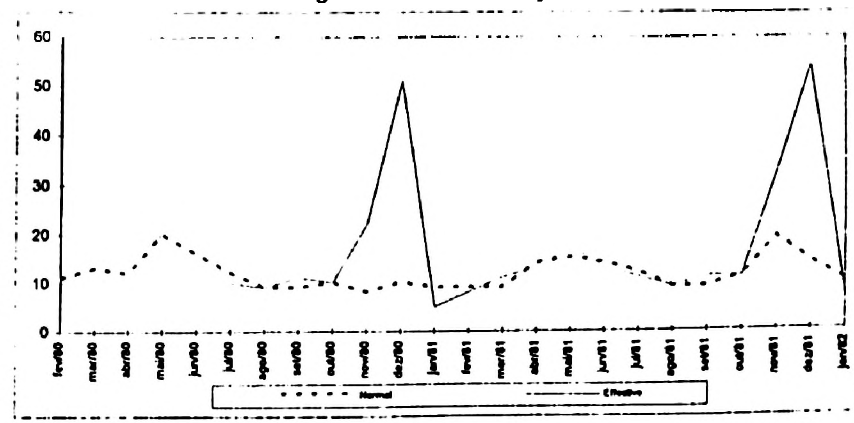
Graph 7.4 - Employees - Feb1980-Jan 1992 - By Earnings Concepts
Share Within Wage Law SD Adjustments Range



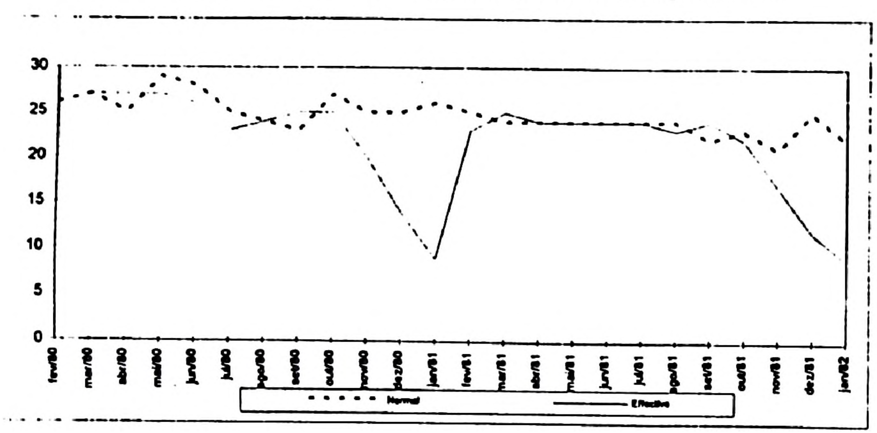
Graph 7.5 - Employees - Feb1980-Jan 1992 - By Earnings Concepts
Share with Nominal Earnings Falling



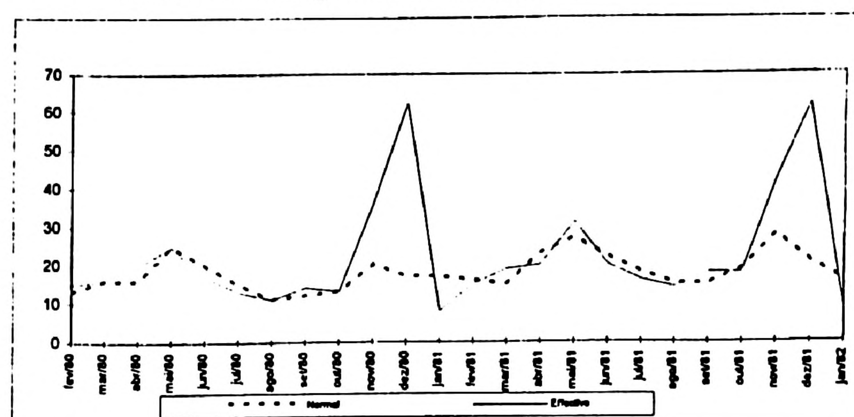
Graph 7.6 - Employees - Feb1980-Jan 1992 - By Earnings Concepts
Share Above Wage Law SD Max Adjustments



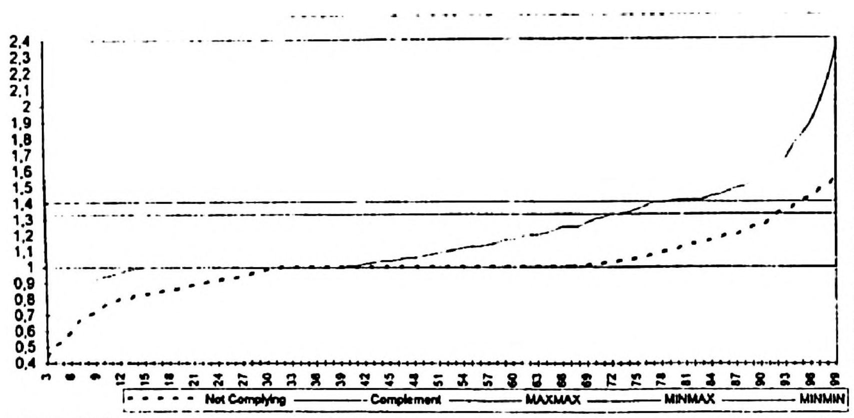
Graph 7.7 - Employees - Feb1980-Jan 1992 - By Earnings Concepts
Share Within Wage Law No Adjustment and SD Min. Adjustment.



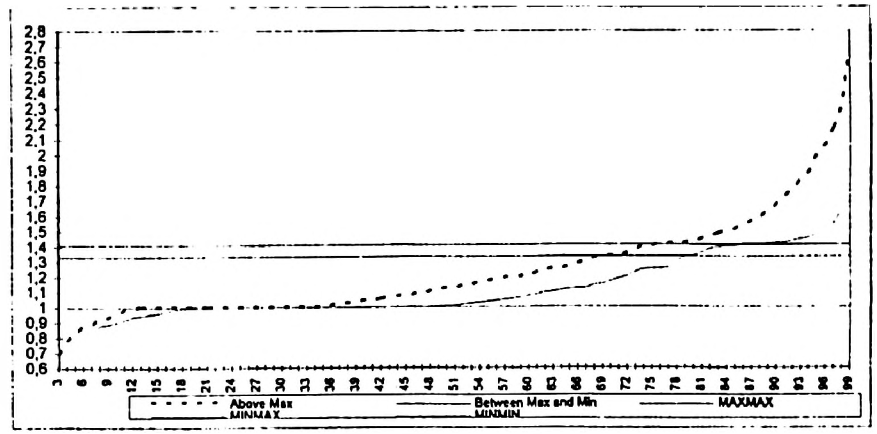
Graph 7.8 - Employees - Feb1980-Jan 1992 - By Earnings Concepts
Share Above Wage Law SD Min Adjustments



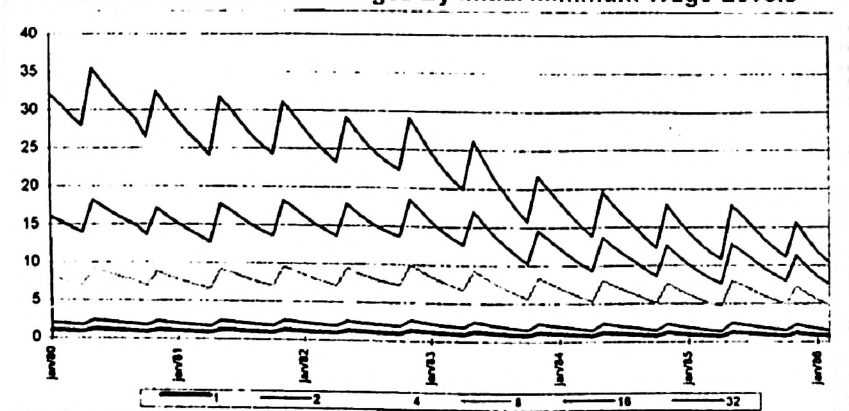
Graph 8.1 - CDF Nominal Monthly Adjustment Factors-
Normal Earnings - May 1980
Non-Compliers with the Law 12 Months Prescription X Complement



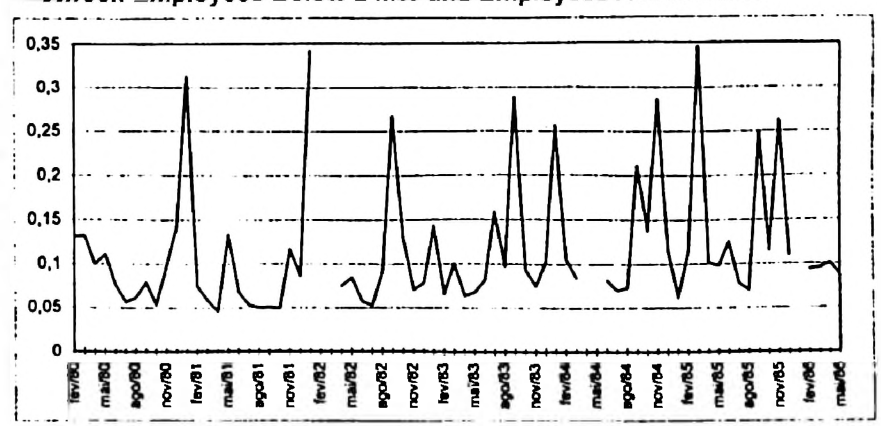
Graph 8.2 - CDF Nominal Monthly Adjustment Factors
Normal Earnings - May 1980 - Complement of Non-Compliers
Above 12 Months Max Prescription X In Between Max-Min Prescrip.



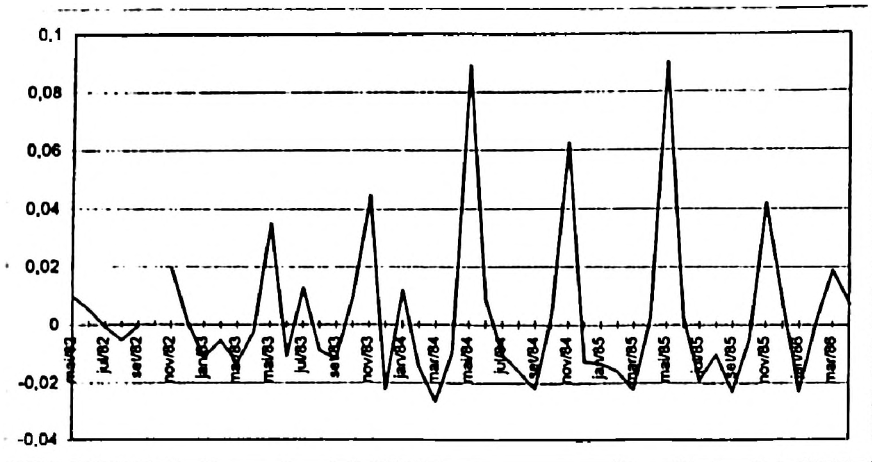
Graph 9.1 - The "Cascade-Effect" - 1980-86
The Evolution of Institutional Wages By Initial Minimum Wage Levels



Graph 9.2 - Average Relative Distance Between Montlhy Adj. Factors
Between Employees Below 2 MW and Employees Above 2 MW



Graph 9.3 - Average Relative Distance Between Montlhy Adj. Factors Between Employees with Low and High Years of Schooling



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