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Mabel Andalón  
Carmen Pagés

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**Mabel Andalón**

*Cornell University*

**Carmen Pagés**

*Inter-American Development Bank  
and IZA*

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IZA

P.O. Box 7240  
53072 Bonn  
Germany

Phone: +49-228-3894-0

Fax: +49-228-3894-180

E-mail: [iza@iza.org](mailto:iza@iza.org)

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## ABSTRACT

### Minimum Wages in Kenya<sup>\*</sup>

This paper examines the performance of minimum wage legislation in Kenya, both in terms of its coverage and enforcement as well as in terms of their implications for wages and employment. Our findings based on the 1998/99 labor force data – the last labor force survey available – indicate that minimum wages, which, in principle, apply to all salaried employees, were better enforced and had stronger effects in the non-agricultural industry than in the agricultural one. More specifically, our results suggest that (i) compliance rates were higher in occupations other than agriculture, (ii) minimum wages were positively associated with wages of low-educated workers and women in non-agricultural activities, while no such relationship is found for workers in agriculture, and (iii) higher minimum wages were associated with a lower share of workers in formal activities in a given occupation and location. Our estimates indicate that a 10 percent point increase in the minimum to median wage ratio could be associated with a decline in the share of formal employment of between 1.2-5.6 percentage points and an increase of between 2.7-5.9 points in the share of self-employment.

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Corresponding author:

Carmen Pagés  
Inter-American Development Bank  
1300 New York Avenue  
Washington, D.C. 20577  
USA  
E-mail: [Carmenpag@iadb.org](mailto:Carmenpag@iadb.org)

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## **I. Introduction**

Policies to set “living wages” are a popular but contentious instrument. As Blanchard (2002) suggests, the main reason for instituting minimum wages is to empower workers whose wages are constrained by the excessive market power of employers. Two other arguments in favor of minimum wage setting relate to efficiency-wages and the fact that minimum wages increase workers’ purchasing power, which in turn can stimulate labor demand (Levin-Waldman, 1997). The efficiency-wage argument states that higher wages can increase workers’ productivity, which in turn allows employers to pay higher wages. One reason for an increase in productivity might be that higher wages allow workers to improve their nutrition and their human development. Another version of this argument is that minimum wages force managers to provide on-the-job training, which makes workers more productive. Yet, it may be also argued that in the absence of well developed incentives to provide training, firms may just become more selective, hiring workers with higher productivity rather than incurring in the cost of training them. On its part, the purchasing power argument requires that low wage business benefit from the higher consumption of low-income workers, which may not necessarily be the case. In absence of that link the effects are likely to be small, as increased sales are not likely to compensate for higher wage costs.

Minimum wages might also help lift the working poor out of poverty by raising their wages. The empirical literature in Latin America (Morley, 1995) and other developing countries (Lustig and McLeod, 1997) provides evidence that poverty falls as the minimum wage rises. However, a theoretical model developed by Fields and Kanbur (2007) suggests that poverty can actually decrease, increase or remain unchanged depending on the degree of poverty aversion, the elasticity of labor demand, the ratio of the minimum wage to the poverty line, and the extent of income sharing.

Yet, despite its potential benefits, minimum wages might also bring undesirable side effects. The standard competitive model predicts that forcing the price of labor above the market price leads to job losses in firms where regulations are enforced, and an increase

in employment in the uncovered sector. In a model with fixed but imperfect level of enforcement, which better characterizes the labor market in Kenya (see Omolo and Omitti, 2004), positive, negative or mute responses of employment to minimum wages can prevail within well-defined ranges of minimum wages and enforcement intensities (Basu, Chau and Kanbur, 2007).

The empirical evidence on the effects of minimum wages on employment is quite mixed; see Neumark and Washer 2007 for a review of the literature on this issue. In developed countries a number of studies have failed to find significant negative impacts (see for example Card and Krueger, 1994 and Dickens, Machine and Manning, 1999). Yet others find sizeable negative effects (see for example Brown, Gilroy and Khon, 1982 and Neumark, Schweitzer and Wascher, 2000). Most of the evidence for developing countries points to negative employment effects, in particular when wages are set at relatively high levels in relation to the median wage. Bell (1997) and Maloney and Nuñez (2004) find negative employment effects of an increase in minimum wages in Colombia. Cowan et al. (2004) and Montenegro and Pagés (2004) find negative employment effects in Chile. Gindling and Terrel (2005) find that an increase of multiple minimum wages –much like in Kenya—reduces employment in Costa Rica. Rama (2001) also finds similar negative effects in Indonesia. Borat (2000) finds that mandatory wage increases in South Africa would result in significant job losses in low pay occupations, such as low-paid domestic workers and farm workers. Jones (1997) finds a decline in manufacturing employment and an increase in employment in the informal sector in Ghana. In contrast, Lemos (2004) finds little evidence of adverse employment effects in Brazil, and Bell (1997) finds no effects in Mexico where the minimum wage is set at a lower level relative to the median wage.

Kenya has held an active minimum wage setting policy since independence. There are as many as seventeen minimum wage orders, setting a large number of minimum wage floors that vary by occupation, sector of activity and location. Minimum wages are updated annually and apply to all salaried employees who are at least 18 years old and work in the formal sector. The self-employed are not covered by statutory minimum

wages. A different wage grid applies to agricultural employees and to workers in other activities.

Evidence of the effect of minimum wages in Kenya is hampered by the scarcity of data. In a descriptive paper, Omolo and Omitti (2004) find that the minimum wage policy in Kenya has failed to contribute to sustained poverty reduction. Moreover, using aggregate time series data they find a negative correlation between minimum wages and modern private sector employment. This paper contributes to the literature of the effects of minimum wages on the Kenyan labor market by: (i) examining the performance of the legislation of minimum wages in Kenya, both in terms of its coverage and enforcement, and (ii) estimating the effects on wages and employment using micro data. Our findings based on the 1998/99 labor force data indicate that minimum wages were better enforced and had stronger effects in the non-agricultural industry. More specifically, our results suggest that (i) non-compliance affected one in four salaried workers in agriculture and one in six in non-agricultural activities in urban areas, (ii) minimum wages were associated with higher wages for low-educated workers and women in urban areas who work in non-agricultural activities, while no such effects were found for workers in agriculture, and (iii) higher minimum wages were associated with a lower share of workers in formal activities, and a higher share of workers in self-employment in a given occupation and location.

The rest of the paper is organized as follows: Section two describes the institutions for minimum wage setting in Kenya. Section three presents the data used in this study. Section four examines the enforcement and wage effects of minimum wages. Section five and six report some estimates of its effects on the wage level and distribution and the structure of employment, respectively. The last section concludes.

## **II. Institutions for Minimum Wage Setting**

Minimum wages in Kenya are specified as part of a national wage policy set in place before independence and guided by the Regulation of Wages and Conditions of

Employment Act (CAP 229). The objective of such policy has been to reduce poverty as well as to protect and promote the living standards of workers (Omolo and Omitti, 2004)

Two wage boards: The Agricultural Wages Advisory Board (AWAB) and the General Wages Advisory Board (GWAB) give recommendations on the wages that might be published each year on May 1 and the employment conditions of workers. The GWAB has the authority to appoint Wage Councils to set statutory working conditions and minimum wages in different occupations. There are 17 such wage councils, but most of them have only updated statutory wages on an ad-hoc basis and so they are often outdated. The AWAB sets statutory minimum wage orders for agricultural workers while the GWAB sets wage floors for workers in other industries who are not covered by specific-wage boards. The boards have a tripartite structure (dominated by the Ministry of Labor, the central organization of trade unions and the Federation of Kenyan Employers) and are chaired by an independent member (usually a labor market or industry expert). Given the advisory status of the boards, the Ministry of Labor can modify their proposals without consultation. Since 2002, the government has not specified the statutory minimum wages for labor below 18 years of age in order to discourage the employment of children.

Within agriculture or the general order, statutory minimum wages vary by age and occupation. In addition, for the general order, minimum wages also vary by location, distinguishing three separate urban areas with different minimum wage levels. These geographical areas are: Nairobi and Mombassa, other municipalities, and other towns. The classification of occupations retains the colonial job classification in Kenya, --with a few additions and no subtractions over time-- implying that some wage categories may be irrelevant for the current job market. Tables 1 and 2 list the schedule of minimum wages specified by the agricultural and general order, respectively, for the years 1997-2004. These minimum wages only apply to workers aged 18 years or older. Within occupation and locations, minimum wages increase with the skill level and with city size. Despite the many values of the minimum wages, relative minimum wages have been kept

constant by virtue of multiplying all minimum wages by the same growth factor.<sup>2</sup> Therefore, different minimum wages across occupations have not contributed to modify relative wages across occupations or locations.

In real terms, minimum wages fell sharply from the period 1991 to 1994 and then increased afterwards at a rate of 2 percent a year. However, in 2004 real wages had not recovered the 1991 level (Figure 1). In the last years (since 1998) real minimum wages have grown in line with real GDP per capita, but much below the growth rate of real wages in the private sector (Figure 1). The evolution of the real minimum wage is almost identical if rather than a price index for the lower income group, available only for Nairobi, an overall CPI index, obtained from the World Development Indicators (WDI) is used.

The stabilization of inflation in 1995 brought real gains in minimum and average wages. However, the relaxation of wage guidelines in mid 1994 was followed by an upward adjustment of real wages in both the public and the private sector (Kulundu Manda, 2002), which was not accompanied by similar adjustments in the minimum wage. In fact, compared to the average wage, minimum wages for general laborers declined from 0.35 of the average wage in the private sector in 1994, to 0.17 in 2004 (Figure 2). Given this evolution it is quite unlikely that minimum wages are behind the sharp increase in average wages experienced since 1994.

### **III. Data**

In this study, we rely on aggregate data from the Central Bureau of Statistics (*Economic Survey*, various years) and micro-data from the 1998/99 Integrated Labour Force Survey (ILFS), a nationally representative survey conducted during the months of December 1998 and January 1999 to 11,040 households. At the individual level there are records for 52,016 individuals. The main purpose of this survey was to gather information on the labor force, the informal sector and child labor in Kenya.

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<sup>2</sup> That is, with very few exceptions, the ratio of any minimum wage to the average minimum wage has been constant over the last years.



In the analysis that follows the term “salaried” or “paid employees” refers to all workers working for someone else, in exchange of a wage or a salary. Salary is defined as income from paid employment before adding other benefits and allowances, and before deducting taxes and other compulsory deduction. The self-employed is comprised by people that run their own business (i.e. working employers who hire employees, and own account workers who hire no employees). Unskilled workers are those who work in elementary occupations according to ISCO-88. Low-educated workers are people who have completed secondary schooling or less.

The formal sector includes public and private establishments operating organised businesses as well as farm related economic activities that are mainly located in rural areas. The informal sector, also referred to as "*Jua Kali*", covers all small-scale activities that are normally semi-organised and unregulated, and use low and simple technology.

Panels I and II of Table 3 report summary statistics for the entire population and for those who work. For the latter, we restrict the sample to those between 18 and 65 years old.<sup>3</sup> Data indicates a high share of children (42 percent) and of low educated people (8 percent), and a majority of the people living in rural areas (74 percent). Out of those who live in urban areas 35.7 percent are concentrated in the largest cities: Nairobi and Mombassa.

Regarding those in work, one in four workers are self-employed, 33.6 percent are paid employees and a large majority of employed workers are in unpaid work (43 percent). Out of those in salaried jobs, one quarter are in the informal sector, 55 percent lived in urban areas, 14 percent were engaged in agricultural activities and 30 percent are public sector employees.

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<sup>3</sup> We excluded workers below 18 years because the official publications on minimum wages of the CBS solely report minimum wages for unskilled, stockman, herdsman and watchman in agricultural activities in this age group. Moreover, to discourage child employment there is no statutory minimum wage for this age group since 2002.

Panel III of Table 3 presents wage indicators for salaried workers aged 18-64 who earned positive wages in the month of reference and worked full time. Restricting the sample this way yields 3,331 observations. Median earnings are lower in the informal compared to those in the formal sector, however, wage inequality is higher in the informal sector.

#### **IV. Incidence and Compliance of Minimum Wages**

Minimum wages in Kenya are said to suffer from inadequate enforcement. Omolo and Omitti (2004) indicate that “[even] the government itself does not adhere to the minimum wage regulations” (p.16). Using microdata from the 1998/99 Integrated Labor Force Survey (ILFS)—the last cross section of household data available— it is possible to estimate the degree of coverage and enforcement of the minimum wage in that year. These calculations are performed separately for general order (urban areas) and agricultural minimum wages.

We determine the specific minimum wage that applies to each worker based on the reported sector of activity, geographical location and occupation according to the ISCO-88 classification for occupations. It is quite difficult to match the list of occupations specified in the minimum wage schedule with those in the ISCO-88 classification. For example, the minimum wage schedule lists at least four different minimum wages for clerical jobs. Thus, it distinguishes between junior clerks, typists, cashiers and general clerks. Given these difficulties, we follow the following methodology to match workers to minimum wage categories: For all workers for whom there is no clear match to the MW categories we assign them to the general laborer minimum wage. This is the wage that according to the minimum wage regulation applies to all workers except when other orders specify a higher minimum wage. For workers for which a match between the ISCO occupation and the MW schedule is done and the MW schedule specifies a higher minimum wage than that for general laborers, we replace the general minimum wage with the higher minimum wage specified under the law. Finally, when the MW distinguishes different levels of MW for workers within the same occupation group, we assign the lower minimum wage within category. For example in the case of clerks, this

implies that all non-clearly assigned workers in clerical jobs are given the “junior clerk” minimum wage level.<sup>4</sup>

There are several additional sample restrictions. According to the Regulation of Wages and Conditions of Employment Act, the GWAB is responsible for setting minimum wages for workers in non-agricultural activities living in rural areas. However, the information on the minimum wages that apply to these workers is not available and so we had to eliminate these people from the analysis.<sup>5</sup> 1,661 of the 3,331 workers who earned positive wages in the month of reference and worked full time were engaged in non-agricultural activities in rural zones. The self-employed are also not included in these calculations as earnings data for these workers is not available in the survey.<sup>6</sup> Unpaid family workers are excluded for the same reason. Additional restrictions due to missing data on status of employment yield a sample of 1772 observations. Non-compliance rates (reported below) would be much higher if this large group was included in the calculations.

We find substantial non-compliance rates. About 24 percent of the salaried workers in agriculture and 17 percent of salaried workers in non-agricultural activities in urban areas earned monthly wages below the statutory minimum (see Table 4, column identified as *Fraction below*). Non-compliance was particularly high among workers in the higher skill occupations in urban zones such as dyers, crawlers, tractor drivers, salesmen, saw doctor or caretakers where it reached 67 percent. Among the different types of workers, non-compliance was similar for men and women in agriculture, but much higher for women (25%), relative to men (7%), in the general order (Table 5). Non-compliance was also higher for less educated workers, particularly in agriculture and for young workers (18-25 years old) both in agricultural and in general order (Tables 6 and 7). Within the

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<sup>4</sup> This implies that our results somewhat underestimate the minimum wage and non-compliance level in a few occupations.

<sup>5</sup> All the results are presented separately for workers in the agriculture industry (in rural and urban areas) and employees in non-agricultural activities (in urban areas only). The former group is affected by the minimum wages set by the AWAB (agricultural order) and the later by the minimum was set by the GWAB (general order).

<sup>6</sup> The self-employed are, however, included in the analysis to measure the employment effects of minimum wages on the informal sector.

general order regime, non-compliance was higher in municipalities other than Nairobi and Mombassa (Table 8).

The ILFS data allows identifying the percentage of workers whose earnings are at the minimum wage level. This percentage is usually identified with the term “Fraction”. Only a small fraction of salaried workers received monthly wages equal to the statutory minimum. If fraction is measured as all workers whose earnings are within a range of plus/minus two percent of the statutory minimum wage, it is found that only 0.3 percent of the workers in agricultural activities, and 2.1 percent of workers in urban areas had earnings within that range (see Table 4, column identified as *fraction at +/-2 %*) Even when this interval is increased to plus/minus 5 percent of the minimum wage, the share of workers whose earnings fall in that range is not very large: 6.8 percent for agricultural and 2.9 for urban workers. The fraction at the minimum wage is higher for men, less educated and young workers.

The number of workers whose wage and employment status are potentially influenced by the minimum wage increases somewhat if we adopt as a measure of the importance of the minimum wage the *fraction affected*, that is the proportion of workers whose wages are just above the 1998 minimum wage, but below the wage set the following year in May 1<sup>st</sup>, 1999.<sup>7</sup> These workers could have potentially lost their jobs after the following update if the wage in 1998/99 reflected their productivity. According to this measure, 8.1 percent of the workers in agriculture and 5.1 in general order were at risk of being affected by the minimum wage increase. This percentage is higher for women, less educated and younger workers.

The ratio of the minimum to the average wage is a widely used measure to assess the toughness of the minimum wage. This measure is often called the *Kaitz ratio*. Another often reported measure is the ratio of the minimum wage relative to the median wage in the economy. Measures referred to the median wage are more appropriated in countries with high earnings inequality or in instances where the minimum wage could be affecting

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<sup>7</sup> When reporting fraction affected, wages are expressed in constant prices of October 1997.

the average wage. Based on this latter indicator, minimum wages in Kenya are 0.39 and 0.76 of the median wage for agricultural and general order, respectively (see last column in Tables 4-8) By way of comparison Maloney and Nuñez (2004) find this indicator to be 0.68 in Colombia, a country in which minimum wages are considered to be high and binding. This ratio is lower for the unskilled occupations in both the agricultural and general order. However, a number of minimum wages for semiskilled or skilled occupations are set at levels that are very high relative to the median wages (above 2/3 of the median).

Based on the 1998/9 levels—there were 18 minimum wages that were higher than 70 percent of the median wage for all employees (Table 9). By way of comparison, Levin-Waldman, 1997 suggests setting minimum wages at the median of the unskilled labor wages. In Kenya, most minimum wages in urban areas are way above that range. And while minimum wages in rural areas appear low, many are above this threshold when compared to the wages of unskilled labor for agricultural areas (Table 9).

## **V. Incidence of the Minimum Wage on Wage level and Distribution**

The analysis in the previous section yields a mixed picture. While wages are set at quite high levels relative to the median wage, non-compliance is high and the fraction of workers that receive wages at the minimum is relatively small. The latter suggest that minimum wages may not be affecting the level or the distribution of wages in a noticeable way.

The Labor Force data (1998/1999) indicates that across occupations there is a strong positive relation between the level and the percentage of non-compliance of the minimum wage, as shown in Figure 3. The former suggests that attempts to raise the minimum wage to significant levels in relation to the median wage lead to increasing non-compliance, thus reducing the scope for effects of the minimum wage on wages.

A common way to judge whether minimum wages have an influence in the overall wage distribution is to assess the shape of the distribution and see whether a large number of workers are bunched around the minimum wage level. If minimum wages do not exert any influence, the distribution of the logarithm of wages would display a typical Normal curve. If instead, the minimum wage is exerting a significant influence, many workers would receive wages at the minimum level and the wage distribution would show a spike at the minimum wage. In addition, there would be few workers with earnings immediately below the statutory minimum, as their wages would have been pushed up by the effect of establishing a wage floor. To accommodate the fact that Kenya has a large number of minimum wages, we present two curves in the same graph. The first presents the distribution of minimum wages; the second is a histogram of the wage distribution. Spikes in the distribution of minimum wages indicate minimum wage levels that, at least in principle, are applicable to many workers. These are the levels of the minimum wage that are likely to exert a higher influence in the distribution of wages, and the ones on which we focus our attention.

Figures 4 and 5 present the distribution of wages and minimum wages in the agricultural sector for formal and informal salaried workers, respectively. We focus first on the distribution of minimum wages. The solid line in the figure indicates how many workers are subjected to each level of minimum wages. The spikes in this curve indicate that in agriculture, two minimum wage levels apply, at least in principle, to a large number of workers. These are the statutory wages for unskilled workers and for stockman, herdsman and watchman. In comparison, minimum wages for other occupations are applicable only to a small number of salaried agricultural workers. We then assess whether the distribution of wages displays spikes at any of the two minimum wage levels mentioned above, either in the formal or informal wage distribution. This would indicate that statutory minimum wages alter the wage distribution. An examination of Figures 4 and 5 shows that there are no noticeable spikes in the wage distribution at the two mentioned minimum wage levels in the formal or in the informal sector, even though compliance levels are higher in the formal sector. Thus, there is no indication of substantive effects of minimum wages on agricultural wages.

In contrast, there appears to be a spike at the minimum wage for general laborers in municipalities other than Nairobi and Mombassa in the distribution of urban formal wages (Figure 6) which is not evident in the figure for informal employment (Figure 7). Figure 6 also reveals higher compliance with the minimum wage in the formal relative to the informal sector. The distribution of wages for formal workers lies mostly at the right of the minimum wage for general laborers. Instead, non-compliance is high and minimum wages appear not to affect the distribution of wages in the informal sector (Figure 7).

The former findings suggest that minimum wages might be pushing up the level of urban wages for formal workers in urban areas -particularly in municipalities other than Nairobi and Mombassa. However, they should be taken only as indicative as a visual inspection of the wage distribution does not provide conclusive evidence about the relationship of minimum wages and earnings controlling for individual characteristics and other factors that influence the wage level. We do so, by estimating the following specification separately for agricultural and general order:

$$\ln W_{ioj} = \alpha + \beta \ln MW_{oj} + X_i \Gamma + \tau_o + \tau_j + \tau_s + \varepsilon_{ioj} \quad (1)$$

where  $W_{ioj}$  is monthly real wage of worker  $i$  in occupation  $o$  and location  $j$ ;  $MW_{oj}$  is the monthly real minimum wage for occupation  $o$  and location  $j$ ;  $X_i$  is a vector of personal characteristics (level of education, gender and age);  $\tau_o$ ,  $\tau_j$  and  $\tau_s$  are sets of indicator variables for occupation, location and sector of employment (formal or informal), respectively and  $\varepsilon_{ioj}$  is the error term. In some specifications we also include interactions of the minimum wages with personal characteristics and the sector of employment. Notice that by controlling by occupation and location we can compare differences in minimum wages within occupations across locations in which minimum wages are set at higher levels relative to locations where they are set at a lower rate.

The first and the fourth columns in Table 10 report the simple correlation between the level of wages and minimum wages, for agricultural and general order minimum wages. Such correlation is found to be positive and statistically significant for agricultural activities, however, it may well be driven by reverse causality: higher wages determine higher minimum wages. Columns (2) and (4) in Table 10 examine the correlation between wages and minimum wages controlling for a number of individual and job characteristics that explain the level of wages across occupations. Once these effects are taken into account, the minimum wage is no longer significant in explaining the level of wages for the average worker.

Yet, minimum wages may be relevant for explaining the wage level of workers of certain types, particularly those whose wages are more likely to be close to the minimum wage. To account for such possibility, we add interactions between the minimum wage level and individual characteristics of workers (age, gender, education level, and whether formal or informal). We report the results in columns (3) and (6) of Table 10. Given that minimum wages vary only by occupation, in agriculture, the level effect of the minimum wage is absorbed by the inclusion of occupation effects. The coefficients on the interactions between the minimum wage and the personal characteristics indicate whether minimum wages affect some workers more than others. The only coefficient that is statistically significant is the interaction with age. The negative sign suggests that in agriculture, minimum wages exert a stronger upward push on wages for the adult population than for younger workers.

The level effect of the minimum wage can be recovered for workers in urban areas because minimum wages vary by location within occupation. Its coefficient suggests that minimum wages exert an upward push on the wages of less educated workers. The results also suggest that minimum wages exert a higher push on the wages of women, thereby contributing to reduce the gender earnings gap.



## VI. Minimum Wages and Employment

Evidence on the effect of minimum wages on employment in Kenya is scarce. To our knowledge, only one study studied this issue and concluded that minimum wages reduce employment (Omolo and Omitti, 2004). Their conclusions are based on an estimated negative correlation between changes in the minimum wage and changes in employment using aggregate data. However, a negative correlation does not establish causality. It could well be, for example, that the causality goes in the opposite direction, that is, periods of low employment growth, and in general poor output growth, lead to lower increases in the minimum wage.

Given the problems associated with using aggregate time series data, the economic literature relies on repeated cross sectional or longitudinal data at the individual level to estimate the effect of minimum wages on employment. Unfortunately, there is not much labor market micro data available in Kenya. To our knowledge, in the last 10 years there was only one labor force survey that covered urban areas. Nonetheless, the presence of a large number of minimum wages levels across occupations and locations provides important cross sectional variation that we can exploit with the 98/99 ILFS data to relate employment to the multiple minimum wages.

Figure 8 relates the ratio of the minimum, for each occupation-location pair, to the median wage for all salaried workers with the share of formal salaried employment, the share of informal salaried and the share of self-employment in total employment for each location-occupation pair. We restrict the analysis to urban areas since the wage analysis suggests that these are the areas where minimum wages are more likely to be binding and also because in urban areas we can exploit the occupation-location variation. Total employment includes salaried, self-employment, unpaid work and apprentices. The number of data points in these figures is constrained by: (i) the number of occupation-location pairs for which a minimum wage is defined and (ii) the number of occupation location pairs for which a sufficiently large number of observations are available in the

survey.<sup>8</sup> This data suggest a negative relationship between the level of the minimum wage—in relation to the median—and the share of formal salaried employment in total employment within occupation-location cells. It also suggests a strong positive association between the share of self-employment and the minimum to median wage ratio. Notice, for example, that the correlation coefficient between the share of formal salaried employment and the minimum to median wage ratio is -0.46 while the correlation between the share of self-employment and the minimum wage in the cross section of occupations-locations is equal to 0.58. In contrast, the correlation with informal salaried employment is very small and negative (-0.09) indicating that minimum wages could actually reduce employment for salaried informal workers. We formalize these results by estimating the following regression:

$$S_{oj} = \alpha + \beta_1 K_{oj} + \varepsilon_{oj} \quad (2)$$

Results are presented in tables 11 and 12. The dependent variable  $S_{oj}$  is the share of formal salaried (columns 1 and 4), informal salaried (columns 2 and 5), and self-employed workers (columns 3 and 6) in total employment.  $K_{oj}$  is the minimum to median wage ratio and  $\varepsilon_{oj}$  is the error term. The results on Table 11 are based on occupation-location-specific minimum to median wages while the results on Table 12 are based on the ratio of the occupation-location specific minimum wage to the median wage for all salaried workers. The results on Table 11 indicate that, assuming a minimum cell size of 10 observations, a 10-percentage point increase in the minimum to median wage reduces the share of formal salaried employment by 4.1 points, while increasing the share of self employment by 4.7 points. These results are statistically significant at the five percent level for self-employment and at the 10 percent level for salaried employment. In contrast, minimum wages are found to have a marginal effect on informal salaried employment. The level of significance increases and the size of the coefficients becomes

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<sup>8</sup> In figure 8, we do not consider occupation-location cells for which the number of observations available in the survey is below 35.

larger –but of similar magnitude-- if the threshold for the cell size is increased to 35 observations (columns 4-6).

Results become weaker if rather than measuring the level of the minimum wage with occupation-location-specific minimum to median wage ratios, they are instead measured with the ratio of each minimum wage to the median wage of all salaried workers.<sup>9</sup> Using this methodologically better measure leads to much smaller estimates of the association between minimum wages and formal and self-employment. These estimates also suggest a decline in informal salaried employment as a result of higher minimum wages. Yet, given the number of observations, none of these coefficients are statistically significant at conventional levels.

However, increasing the threshold for cell size to at least 35 observations increases the size and significance of effects for formal employment and self-employment. The direction and size of the estimates is now in line with the ones presented on table 11. A ten percent increase in the minimum to median ratio would lead to approximately 5.6 percentage points decline in the share of formal employment and a 5.9 percentage points increase in the share of self-employment. In sum, the evidence suggests that minimum wages in Kenya increase the share of self-employment and reduce the fraction of workers in formal salaried jobs.

## **VII. Conclusions**

This paper has briefly reviewed the main arguments in favor and against minimum wages. While efficiency-wage arguments may be an important part of the story, the main reason for instituting minimum wages is not to fight poverty or inequality: there are other instruments to achieve that goal. Instead, the main justification is to empower workers whose wages are constrained by the excessive market power of employers. To the extent that there is enforcement, the most important argument for not fixing minimum floors is

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<sup>9</sup> The latter measure is better from a methodological point of view because it minimizes reverse causality. This arises from the fact a higher share of informal or self employment in total employment may reduce the median wage, and therefore increase the minimum to median wage in a given occupation-location.

that this instrument can price many workers out of formal employment. However, when there is imperfect enforcement the effects of minimum wages on employment can go in any direction. Most of the evidence for developing countries points to negative employment effects.

The analysis developed in this paper, based on cross sectional data for 1998/99, indicates that minimum to median wage ratios were quite high, particularly for workers in more skilled occupations. At the same time, non-compliance affected one in four salaried workers in agriculture and one in six in urban areas. Non-compliance was higher for women, youth and workers with a low level of education attained.

A number of reasons may be behind the relatively low enforcement level of minimum wages in Kenya. On the one hand, the existence of many different categories of minimum wages makes it very difficult for workers and firms to know them. On the other, minimum wages are set at levels that are high in relation to the median wage –especially for semiskilled and more skilled occupations. Finally, the classification of occupations used for the minimum wage is outdated implying that many occupations may no longer be adequate for the requirements of today’s labor market.

The evidence indicates that minimum wages pushed up wages set by the general order, but not by the agricultural order. The indication would then be that relatively low minimum wages, combined with non-compliance, limited the effect of the minimum wage in the agricultural sector. In contrast, minimum wages in the general order appear to have raised wages for low educated workers and women, leading to seemingly strong adverse effects on formal sector employment. Our estimates indicate that a 10 percent points increase in the minimum to median wage ratio would be associated with a decline in the share of formal employment of between 1.1-5.5 percentage points –and an increase of between 2.7-5.9 points in the share of self-employment.

This paper has provided some initial steps towards an evidence-based diagnostic of the effectiveness of minimum wage policies in Kenya. Up-to-date techniques to investigate

the effect of minimum wages on poverty, inequality and employment require longitudinal micro data, or in its defect, a series of consecutive household level surveys. Such data is not available in Kenya. Improving the frequency of data collection to at least one labor force survey every two years would go a long way towards developing better labor market policies.

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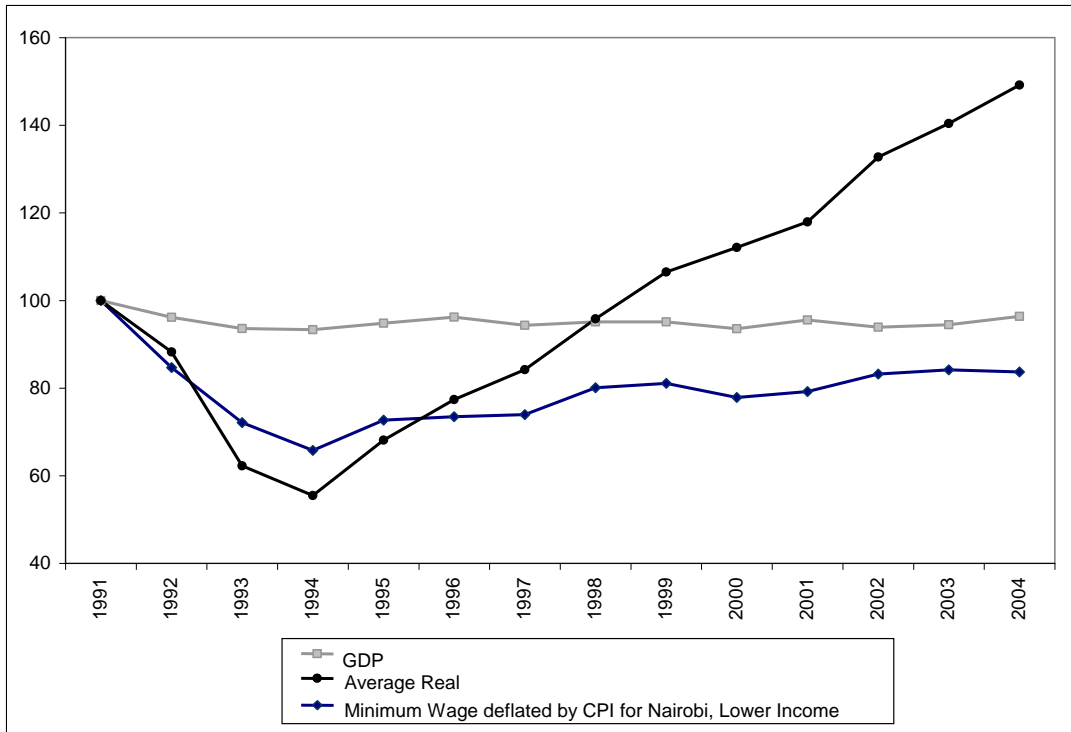
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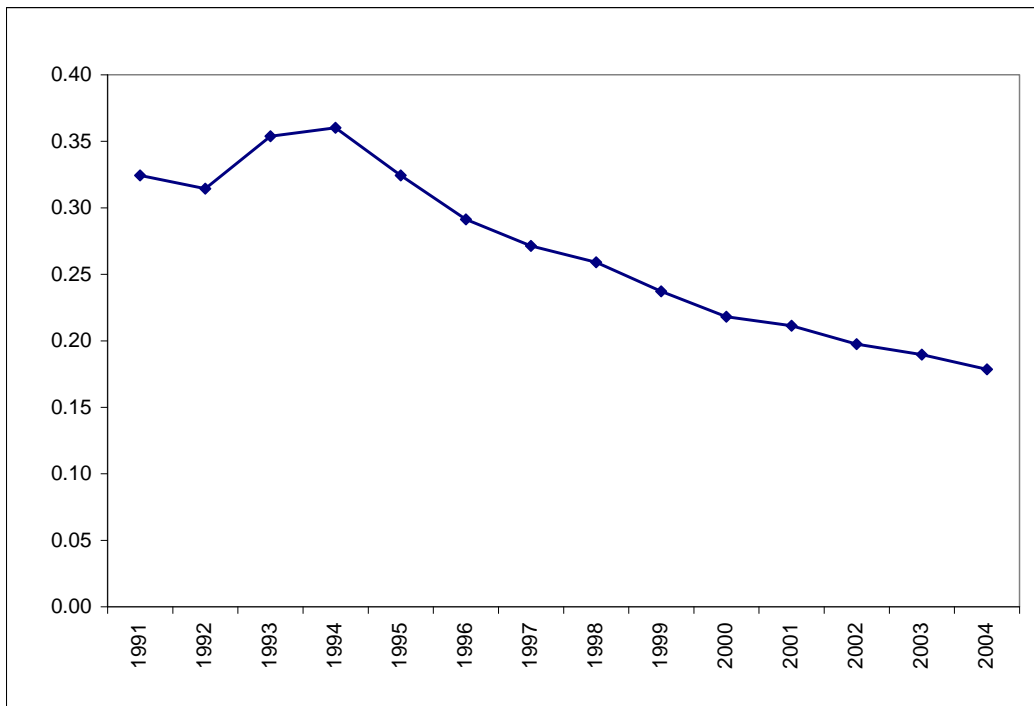


**Figure 1: Evolution of Minimum Wage, GDP per capita, and Average Wage in Real Terms**



**Source:** Own calculations based on Economic Survey (Central Bureau of Statistics), various years.  
**Notes:** Minimum wages correspond to the values for general laborers in Nairobi and Mombassa deflated with a price index for the lower income group in Nairobi. Average wages are for the private sector deflated with CPI from World Development Indicators, World Bank.

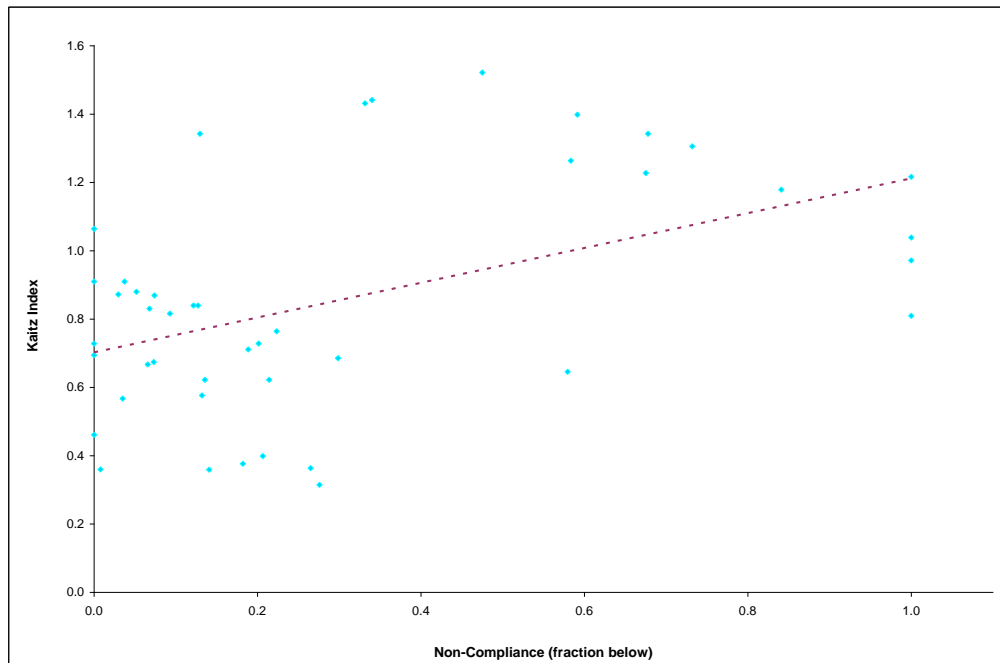
**Figure 2: Ratio of Minimum to Average Minimum Wage**



**Source:** Own calculations based on Economic Survey (Central Bureau of Statistics), various years.

**Notes:** Minimum wages correspond to the values for general laborers in Nairobi and Mombassa deflated with a price index for the lower income group in Nairobi. Average wages are for private sector workers deflated with CPI from World Development Indicators, World Bank

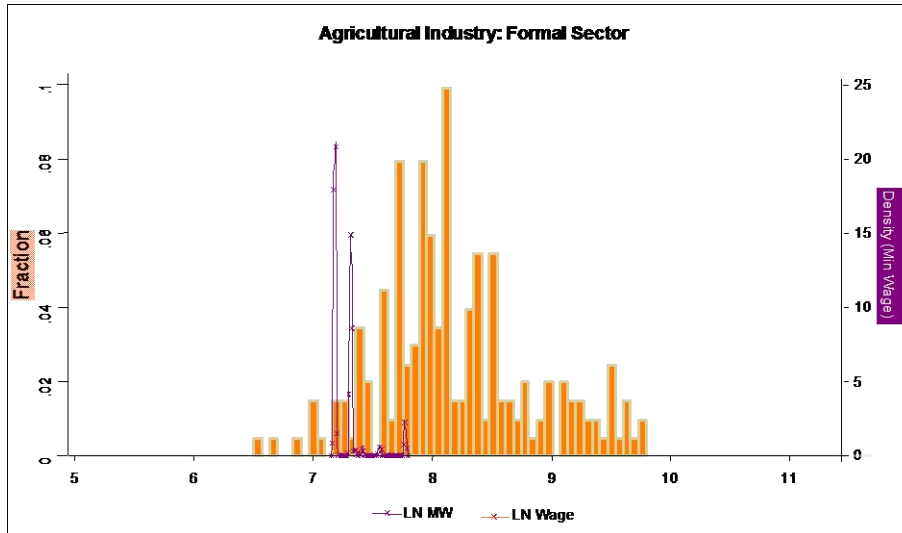
**Figure 3: Minimum Wage level (relative to Median Wage for salaried population) and Percentage of Non-Compliance by occupation-location pairs**



**Source:** Authors elaboration from Labor Force data for period 1998/99.

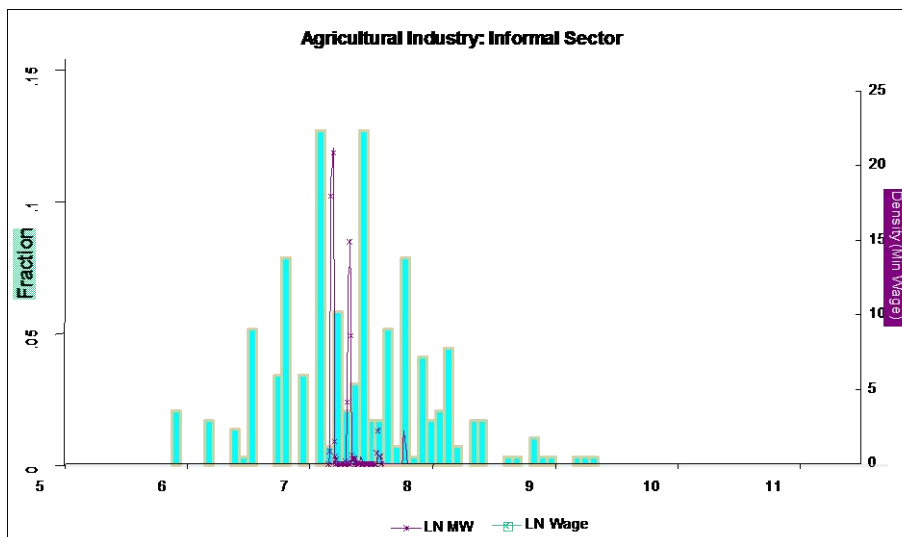
**Notes:** Each data point corresponds to the ratio of the minimum to the median wage and the non-compliance rates for one occupation–location pair (for example, unskilled workers in agricultural sector). For each occupation–location pair, the minimum to median wage ratio is computed dividing by the median wage of overall salaried employment.

**Figure 4: Minimum Wages in Agricultural Industry. Formal Sector 1998/99:  
Distribution of Wages and Minimum Wages**



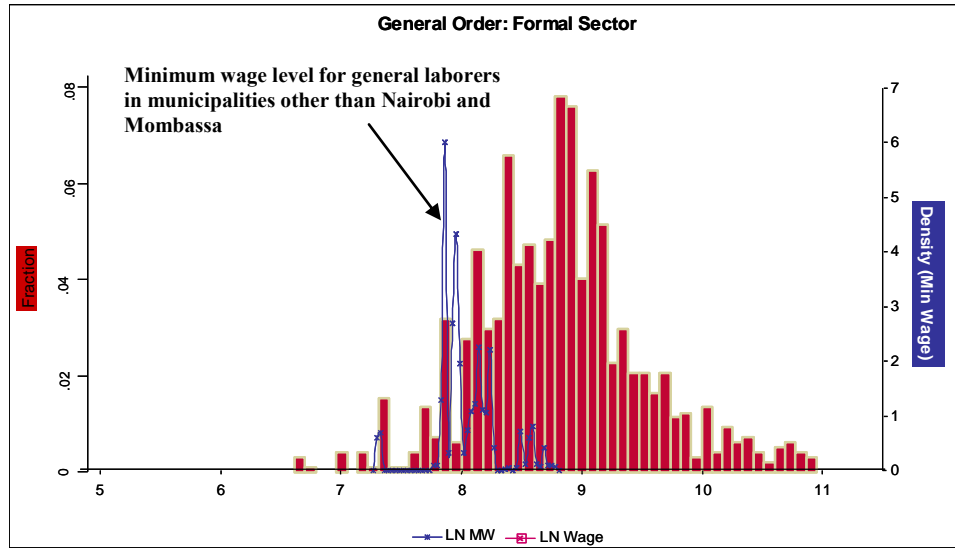
Source: Authors' calculations based on 98/99 ILFS data.

**Figure 5: Minimum Wages in Agricultural Industry. Informal Sector 1998/99:  
Distribution of Wages and Minimum Wages**



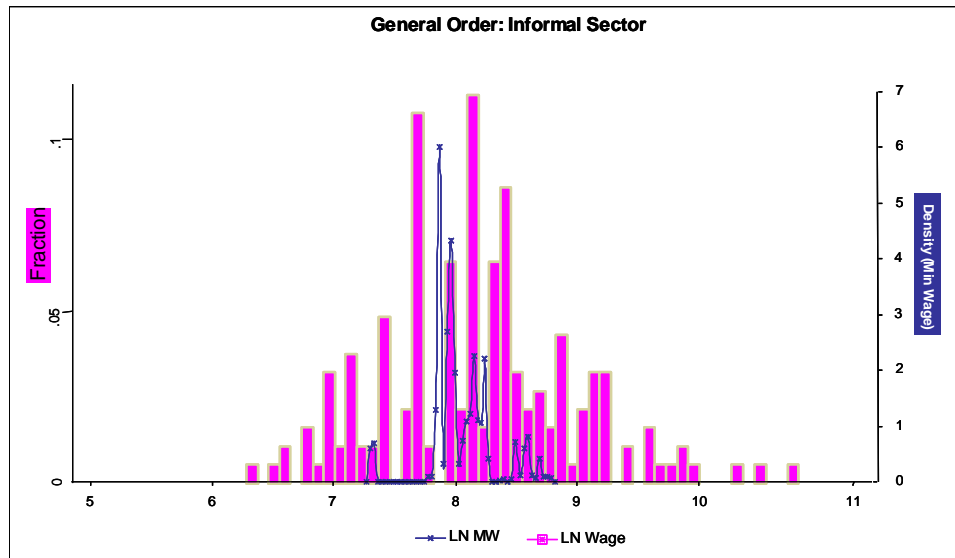
Source: Authors' calculations based on 98/99 ILFS data.

**Figure 6: Minimum Wages in General Order. Formal Sector 1998/99:  
Distribution of Wages and Minimum Wages**



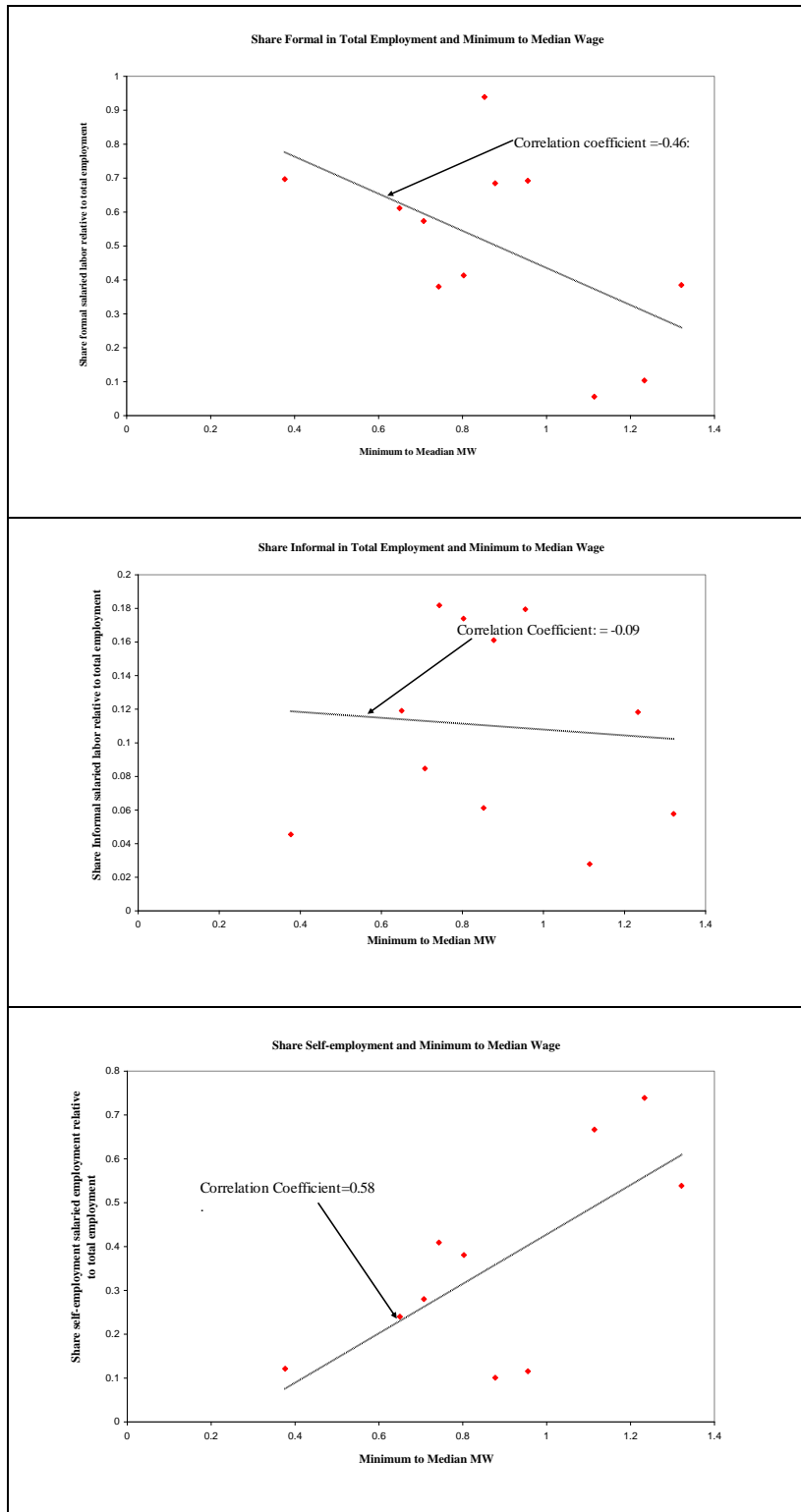
Source: Authors' calculations based on ILFS 98/99

**Figure 7: Minimum Wages in General Order. Informal Sector 1998/99:  
Distribution of Wages and Minimum Wages**



Source: Authors' calculations based on ILFS 98/99

**Figure 8: Minimum Wage and Structure of Employment**



**Source:** Authors' computations based on ILFS 98/99 data.

**Notes:** Occupation-location cells with more than 35 observations.. The analysis is for non-agricultural sectors only.

**Table 1: Gazetted Monthly Basic Minimum Wages for Agricultural Industry, 1997–2004, KSh**

Type of Employee	1997	1998	1999	2000	2001	2002	2003	2004
UNSKILLED EMPLOYEES 18 years & above	1,095	1,259	1,347	1,428	1,535	1,642	1,888	2,096
STOCKMAN, HERDSMAN AND WATCHMAN 18 year & above	1,263	1,453	1,555	1,648	1,772	1,896	2,180	2,420
SKILLED AND SEMI-SKILLED EMPLOYEES								
House servant or cook	1,249	1,436	1,537	1,629	1,751	1,874	2,155	2,392
Farm foreman	1,973	2,269	2,428	2,574	2,767	2,961	3,405	3,780
Farm clerk	1,973	2,269	2,428	2,574	2,767	2,961	3,405	3,780
Section foreman	1,278	1,470	1,573	1,667	1,792	1,917	2,205	2,448
Farm artisan	1,309	1,505	1,610	1,707	1,835	1,963	2,257	2,505
Tractor driver	1,387	1,595	1,707	1,809	1,945	2,081	2,393	2,656
Combined harvester driver	1,528	1,757	1,880	1,993	2,142	2,292	2,636	2,926
Lorry driver or car driver	1,604	1,845	1,974	2,092	2,249	2,406	2,767	3,701
AVERAGE	1,362	1,567	1,676	1,777	1,910	2,199	2,529	2,870

**Source:** Economic Survey, Central Bureau of Statistics, from Ministry of Labour and Human Resource Development

.. Data not available

**Table 2: Gazetted Monthly Basic Minimum Wages in Urban Areas (Excluding Housing Allowance), 1998-2000 and 2002 - 2004, KSh**

Occupation	Nairobi Area, Mombasa & Kisumu			Other Municipalities plus Mavoko & Ruiru Town Councils			All other towns		
	1998	1999	2000*	1998	1999	2000*	1998	1999	2000*
General labourer	2,697	2,886	3,059	2,488	2,662	2,822	1,439	1,540	1,632
Miner, stone cutter, turnboy, waiter, cook	2,912	3,116	3,303	2,593	2,764	2,930	1,663	1,779	1,886
Night watchman	3,008	3,279	3,412	2,790	2,985	3,164	1,717	1,837	1,947
Machine attendant	3,056	3,270	3,446	2,844	3,043	3,226	2,306	2,467	2,615
Machinist	3,488	3,732	3,956	3,264	3,492	3,702	2,669	2,856	3,027
Plywood machine operator	3,639	3,894	4,128	3,359	3,594	3,810	2,778	2,972	3,150
Pattern designer	4,154	4,445	4,712	3,797	4,063	4,307	3,238	3,465	3,673
Tailor, Driver (medium vehicle)	4,578	4,898	5,192	4,208	4,503	4,773	3,751	4,014	4,255
Dyer, Crawler, Tractor driver, Salesman	5,054	5,408	5,732	4,715	5,045	5,348	4,256	4,554	4,827
Saw doctor, Caretaker (building)	5,593	5,985	6,344	5,222	5,588	5,923	4,865	5,206	5,518
Cashier, Driver (heavy commercial)	6,086	6,512	6,903	5,726	6,127	6,495	5,369	5,745	6,090
Artisan (Ungraded)	3,639	3,894	4,128	3,359	3,594	3,810	2,778	2,972	3,150
Artisan Grade III	4,578	4,898	5,192	4,208	4,503	4,773	3,758	4,021	4,262
Artisan Grade II	5,054	5,408	5,732	4,715	5,045	5,348	4,256	4,554	4,827
Artisan Grade I	6,086	6,512	6,903	5,726	6,127	6,495	5,369	5,745	6,090
AVERAGE	4,241	4,538	4,809	3,934	4,209	4,462	3,347	3,582	3,797

Occupation	Nairobi Area, Mombasa & Kisumu			Other Municipalities plus Mavoko & Ruiru Town Councils			All other towns		
	2002	2003	2004	2002	2003	2004	2002	2003	2004
General labourer	3,518	3,905	4,335	3,246	3,603	3,999	1,877	2,083	2,312
Miner, stone cutter, turnboy, waiter, cook	3,800	4,218	4,682	3,371	3,742	4,154	2,169	2,408	2,673
Night watchman	3,925	4,357	4,836	3,639	4,039	4,483	2,240	2,486	2,759
Machine attendant	3,987	4,426	4,913	3,711	4,119	4,572	3,008	3,339	3,706
Machinist	4,551	5,052	5,608	4,259	4,727	5,247	3,482	3,865	4,290
Plywood machine operator	4,749	5,271	5,851	4,383	4,865	5,400	3,623	4,022	4,464
Pattern designer	5,420	6,016	6,678	4,954	5,499	6,104	4,224	4,689	5,205
Tailor, Driver (medium vehicle)	5,972	6,629	7,358	5,490	6,094	6,764	4,894	5,432	6,030
Dyer, Crawler, Tractor driver, Salesman	6,593	7,318	8,123	6,151	6,828	7,579	5,552	6,163	6,841
Saw doctor, Caretaker (building)	7,297	8,100	8,991	6,813	7,562	8,394	6,347	7,045	7,820
Cashier, Driver (heavy commercial)	7,940	8,813	9,782	7,471	8,293	9,205	7,005	7,776	8,631
Artisan (Ungraded)	4,749	5,271	5,851	4,383	4,865	5,400	3,623	4,022	4,464
Artisan Grade III	5,972	6,629	7,358	5,490	6,094	6,764	4,903	5,442	6,041
Artisan Grade II	6,593	7,318	8,123	6,151	6,828	7,579	5,552	6,163	6,841
Artisan Grade I	7,940	8,813	9,782	7,471	8,293	9,205	7,005	7,776	8,631
AVERAGE	5,534	6,142	6,818	5,132	5,697	6,323	4,367	4,848	5,381

**Source:** Economic Survey, 2001 and 2005. Central Bureau of Statistics from Ministry of Labour and Human Resource Development

\*Provisional



**Table 3. Descriptive Statistics**

Variables	Kenya		
<b>I. Percentage of population</b>			
aged 0 to 14 years old	42.26		
aged 15 to 24 years old	20.00		
aged 25 to 64 years old	33.82		
aged over 65 years old	3.92		
women	50.08		
enrolled in schooling	27.58		
no education	26.56		
primary education	51.33		
secondary education	17.09		
undergraduate and postgraduate	0.92		
retired	0.43		
in urban areas	25.91		
Nairobi and Mombasa	35.77		
Other Municipalities	51.84		
All other towns	6.15		
sample	52 016		
<b>II. Percentage of Workers (18 to 64 years)</b>			
self employed	24.63		
paid employees:	33.60		
informal sector	26.81		
full time	79.99		
in urban areas	55.73		
Nairobi and Mombasa	40.82		
Other Municipalities	49.47		
All other towns	5.82		
Agriculture <sup>#</sup>	14.23		
Manufacturing	14.06		
Construction	4.59		
Hotels and Restaurants	5.05		
Transports and Communications	8.2		
Financial Services	6.14		
Public Sector	29.92		
sample	17 145		
	<b>Total</b>	<b>Formal</b>	<b>Informal</b>
<b>III. Labor Market Indicators*</b>			
ln 10th percentile real earnings distribution	7.36	7.87	6.73
ln 25th percentile real earnings distribution	8.01	8.23	7.22
ln 50th percentile real earnings distribution	8.52	8.69	7.79
ln 75th percentile real earnings distribution	8.97	9.03	8.29
ln 90th percentile real earnings distribution	9.35	9.44	8.78
ln average real earnings distribution	8.79	8.93	8.18
sample <sup>§</sup>	3 331	2 409	804

<sup>#</sup>The fractions of the activities do not add up to 1 because there are some activities not reported here.

\* The sample used is full time paid employees aged 18-64 years with positive earnings

§ The difference between formal and informal and total is due to missing values in status of employment.

**Source:** Own calculations based on ILFS 98/99

**Table 4: Minimum Wage Indicators: Fraction below, Fraction at MW, Fraction affected and Kaitz Index**

Occupation	Obs.	Occupation share	Fraction below	Fraction at +/- 2%	Fraction at +/- 5%	Fraction affected	Minimum to Median Ratio (Median Group)	Minimum to Median Ratio (Median Salaried)
<b>I. Agricultural Industry</b>	510	100	0.245	0.003	0.068	0.081	0.768	0.392
unskilled	281	54.61	0.276	0.003	0.049	0.049	0.630	0.315
stockman, herdsman and watchman	159	29.57	0.265	-	0.114	0.147	0.727	0.363
house servant or cook	32	7.73	0.141	-	0.059	0.086	0.410	0.359
farm foreman, farm clerk	18	4.73	0.035	-	-	0.064	0.336	0.567
farm artisan	5	0.76	0.182	0.182	0.182	-	0.753	0.376
tractor driver	8	1.22	0.207	-	-	-	0.659	0.399
lorry or car driver	7	1.37	-	-	0.091	0.091	0.283	0.461
<b>II. General Order</b>	1212	100	0.176	0.021	0.029	0.051	0.529	0.767
general laborer	593	48.73	0.136	0.015	0.020	0.041	0.415	0.622
miner, stone cutter, turnboy, waiter,cook	9	0.66	0.298	-	-	-	0.549	0.686
machine attendant,shoe cutter	167	13.12	0.201	0.066	0.080	0.083	0.560	0.728
machinist, junior clerk	138	10.63	0.068	0.006	0.013	0.025	0.567	0.831
plywood machine operator, copy-typist, shop assistant	172	16.02	0.074	-	0.012	0.086	0.570	0.869
pattern designer	2	0.2	1.000	-	-	-	1.296	0.972
dyer, crawler, tractor driver, salesman	62	6.79	0.675	0.037	0.046	0.019	1.612	1.227
saw doctor, caretaker (building)	20	1.16	0.678	0.072	0.072	0.072	1.342	1.342
cashier/driver(heavy commercial)	40	2.01	0.340	0.048	0.077	0.049	0.721	1.441
artisan (upgraded)	9	0.68	0.052	-	-	-	0.640	0.880

**Source:** Authors' calculations based on ILFS data

**Notes:** Fraction below is the percentage of workers paid below their corresponding statutory minimum. Fraction at +/- x% is the fraction of salaried workers that received monthly wages within a range of plus/minus two and five percent of the statutory minimum wage. Fraction affected is the proportion of people earning a real wage between the 1998 and the 1999 minimum wage. The minimum to median ratio (Median salaried) is also known as Kaitz Index.

**Table 5: Minimum Wages Variables by Gender**

Occupation	Gender	Obs.	Occupation Share	Fraction below	Fraction at +/- 2%	Fraction at +/- 5%	Fraction affected	Minimum to Median Ratio (Median Group)	Minimum to Median Ratio (Median Salaried)
<b>A. Agricultural Industry*</b>		510	100	0.245	0.003	0.068	0.081	0.768	0.392
unskilled	male	209	39.03	0.270	0.002	0.042	0.037	0.630	0.315
	female	72	15.58	0.292	0.007	0.068	0.077	0.552	0.315
all other occupations	male	184	35.06	0.207	0.004	0.096	0.101	0.620	0.388
	female	45	10.33	0.213	0.000	0.071	0.186	0.779	0.389
<b>B. General Order<sup>&amp;</sup></b>		1212	100	0.176	0.021	0.029	0.051	0.529	0.767
general laborer	male	377	30.66	0.069	0.015	0.022	0.037	0.357	0.615
	female	216	18.07	0.249	0.014	0.017	0.048	0.551	0.634
all other occupations	male	477	39.67	0.215	0.027	0.040	0.059	0.628	0.907
	female	142	11.60	0.215	0.024	0.031	0.062	0.688	0.893

\* all other occupations in Agricultural industry refers to workers other than unskilled workers in Table 1.

<sup>&</sup> all other occupations in general order refers to workers other than general labourers in Table 2.

**Source:** Authors' calculations based on ILFS data.

**Notes:** See Table 4 for definitions of the variables reported in this Table.

**Table 6: Minimum Wage Variables by Education Level**

Occupation	Education	Obs.	Occupation Share	Fraction below	Fraction at +/- 2%	Fraction at +/- 5%	Fraction affected	Minimum to Median Ratio (Median Group)	Minimum to Median Ratio (Median Salaried)
<b>A. Agricultural Industry*</b>		510	100	0.245	0.003	0.068	0.081	0.768	0.392
unskilled	Low	258	49.95	0.292	0.004	0.054	0.053	0.630	0.315
	High	23	4.67	0.100	0.000	0.000	0.000	0.420	0.315
all other occupations	Low	166	30.28	0.297	0.000	0.131	0.170	0.819	0.369
	High	63	15.11	0.033	0.009	0.009	0.020	0.253	0.427
<b>B. General Order<sup>&amp;</sup></b>		1212	100	0.176	0.021	0.029	0.051	0.529	0.767
general laborer	Low	207	16.49	0.307	0.019	0.027	0.075	0.737	0.641
	High	386	32.24	0.048	0.013	0.017	0.024	0.320	0.613
all other occupations	Low	180	13.23	0.316	0.045	0.053	0.053	0.684	0.855
	High	439	38.04	0.180	0.020	0.032	0.062	0.614	0.921

\* all other occupations in Agricultural industry refers to workers other than unskilled workers in Table 1.

<sup>&</sup> all other occupations in general order refers to workers other than general labourers in Table 2.

**Source:** Authors' calculations based on ILFS data.

**Notes:** See Table 4 for definitions of the variables reported in this Table.

**Table7: Minimum Wage Variables by Age**

Occupation	Age	Obs.	Occupation Share	Fraction below	Fraction at +/- 2%	Fraction at +/- 5%	Fraction affected	Minimum to Median Ratio (Median Group)	Minimum to Median Ratio (Median Salaried)
<b>A. Agricultural Industry*</b>		510	100	0.245	0.003	0.068	0.081	0.768	0.392
unskilled	18-25	85	15.43	0.408	0.000	0.064	0.013	0.839	0.315
	26-45	145	28.73	0.203	0.003	0.053	0.065	0.594	0.315
	46-64	51	10.45	0.281	0.010	0.017	0.058	0.617	0.315
all other occupations	18-25	58	8.91	0.463	0.000	0.106	0.140	1.008	0.378
	26-45	135	28.84	0.155	0.005	0.094	0.130	0.614	0.384
	46-64	36	7.64	0.109	0.000	0.056	0.056	0.369	0.415
<b>B. General Order<sup>&amp;</sup></b>		1212	100	0.176	0.021	0.029	0.051	0.529	0.767
general laborer	18-25	117	0.10	0.317	0.020	0.029	0.066	0.661	0.628
	26-45	401	0.07	0.088	0.016	0.018	0.037	0.382	0.621
	46-64	75	0.32	0.088	0.003	0.017	0.024	0.375	0.618
all other occupations	18-25	104	0.09	0.558	0.065	0.077	0.102	1.280	0.960
	26-45	436	0.36	0.125	0.018	0.031	0.057	0.594	0.892
	46-64	79	0.06	0.217	0.015	0.018	0.004	0.591	0.887

\*all other occupations in Agricultural industry refers to workers other than unskilled workers in Table 1.

<sup>&</sup> all other occupations in general order refers to workers other than general labourers in Table 2.

**Source:** Authors' calculations based on ILFS data

**Notes:** See Table 4 for definitions of the variables reported in this Table.

**Table 8: Minimum Wage Variables by Location: General Order**

Occupation	Obs.	Fraction below	Fraction at +/- 2%	Fraction at +/- 5%	Fraction affected	Minimum to Median Ratio (Median Group)	Minimum to Median Ratio (Median Salaried)
<b>Area 1: Mombasa and Nairobi</b>							
general labourer	177	0.073	-	0.005	0.053	0.450	0.674
<b>Area 2: Other Municipalities</b>							
general labourer	368	0.214	0.031	0.038	0.038	0.440	0.622
<b>Area 3: All other towns</b>							
general labourer	48	0.008	-	-	-	0.189	0.360

**Source:** Authors' calculations based on ILFS data

**Notes:** See Table 4 for definitions of the variables reported in this Table.

**Table 9: Minimum Wages relative to the Median for all Salaried Workers 1998/9**

<b>Mombassa, Nairobi and Kisumu</b>	<b>Mombassa, Nairobi and Kisumu</b>	<b>Other municipalities</b>	<b>All Other Towns</b>
<b>Occupation</b>			
General Laborer	0.674	0.622	0.360
general miner, stone cutter	0.728	0.646	
machine attendant/shoe cutter	0.764	0.711	0.577
junior clerk/tractor driver	0.872	0.816	0.667
machine operator/copy-typist/Shop :	0.910	0.840	0.695
artisan (upgraded)	0.910	0.840	
Salesman/tractor driver	1.264	1.179	1.064
Caretaker	1.398	1.306	1.216
Cashier/driver(heavy)	1.522	1.432	1.342
<b>Agricultural Industry</b>			
		<b>Median Unkilled</b>	
<b>Occupation</b>	<b>Median All salaried</b>	<b>in Agriculture</b>	
Unskilled	0.315	0.630	
House servant	0.359	0.718	
Stockman, Herdsman and Watchman	0.363	0.727	
farm artisan	0.376	0.753	
Tractor driver	0.399	0.798	
Lorry or car driver	0.461	0.923	
farm foreman or farm clerk	0.567	1.135	

**Source:** Authors' computations based on ILFS 98/99

**Table 10: Effect of Minimum Wages on Wages**

Dependent Variable: In of Real Wages						
Variables	Agricultural			General Order		
	1	2	3	4	5	6
In MW	1.960** [0.256]	0.396 [0.213]		0.054 [0.084]	0.165 [0.156]	1.016** [0.388]
education		0.609*** [0.118]	5.369 [6.129]		0.600*** [0.110]	5.962*** [2.098]
gender (1=female)		-0.120*** [0.028]	-0.135*** [0.025]		-0.183*** [0.048]	-0.421*** [0.115]
18-25		-0.293*** [0.037]	5.132** [1.431]		-0.359*** [0.051]	-2.219 [1.603]
46-64		0.001 [0.079]	-2.281 [2.332]		0.240*** [0.066]	2.9 [1.701]
stockman, herdsman and watchman			0.068 [0.040]			
house servant			0.472*** [0.055]			
farm foreman, farm clerk			0.529 [0.559]			
farm artisan			-0.063 [0.099]			
tractor driver			0.152 [0.092]			
lorry or car driver			0.543* [0.253]			
miner, stone cutter, turnboy, waiter, cook					-0.295 [0.186]	-0.328** [0.156]
machine attendant, shoe cutter					-0.07 [0.055]	-0.104 [0.063]
machinist, junior clerk					-0.222*** [0.067]	-0.285*** [0.065]
plywood machine operator, copy-typist, shop assistant					-0.024 [0.062]	-0.142* [0.070]
pattern designer					0.018 [0.135]	-0.126 [0.204]
dyer, crawler, tractor driver, salesman					-0.452*** [0.124]	-0.651*** [0.194]
sawdoctor, caretaker (building)					-0.590*** [0.160]	-0.869*** [0.157]
cashier, driver (heavy commercial)					-0.02 [0.157]	-0.117 [0.155]
artisan (upgraded)					-0.032 [0.053]	-0.177* [0.104]
other Municipalities					-0.276*** [0.030]	-0.264*** [0.033]
all other towns					-0.202** [0.080]	-0.115 [0.092]
formal		0.597*** [0.029]	1.364 [4.551]		0.347*** [0.073]	1.367 [2.198]
InMW*education			-0.657 [0.834]			-0.681** [0.260]
InMW*gender			0.002 [0.021]			0.043*** [0.014]
InMW*18-25			-0.747*** [0.199]			0.234 [0.203]
InMW*46-64			0.314 [0.325]			-0.333 [0.213]
InMW*formal			-0.107 [0.631]			-0.127 [0.275]
Constant	-6.644*** [1.862]	4.504** [1.527]	7.326*** [0.030]	8.185*** [0.679]	6.970*** [1.290]	0.247 [3.121]
Observations	507	493	493	1208	1162	1162
R-squared	0.1	0.44	0.46	0.00	0.35	0.37

Standard errors in brackets

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Omitted categories: incomplete secondary education or less, male, 26-45 years, and Nairobi and Mombasa (General Order).

Omitted occupations: Unskilled in Agricultural Industry and General Laborer in General Order

**Source:** Authors' estimates based on ILFS data.



**Table 11: Structure of Employment and Minimum to Median Wage Ratio for each occupation-location pair**

	Share Salaried Formal in Total Employment	Share Informal in Total Employment	Share Self- Employed in Total Emp.	Share Salaried Formal in Total Employment	Share Informal in Total Employment	Share Self- Employed in Total Emp.
	Cell Size >10	Cell Size >10	Cell Size >10	Cell Size >35	Cell Size >35	Cell Size >35
Kaitz (minimum/median)	-0.412* (0.08)	0.014 (0.84)	0.468** (0.03)	-0.471 (0.05)	0.007 (0.92)	0.516** (0.02)
Constant	0.741*** (0.00)	0.121** (0.02)	0.036 (0.78)	0.738*** (0.00)	0.111** (0.04)	0.054 (0.67)
Observations	15	15	15	10	10	10
R-squared	0.218	0.003	0.316	0.391	0.001	0.493

Absolute value of t-statistics in parentheses

\*significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Source:** Elaborated by the authors from ILFS data.

**Table 12: Structure of Employment and Ratio of Minimum to Median Wage**

**(Median wage for all salaried employes)**

	Share Salaried Formal in Total Employment	Share Informal in Total Employment	Share Self- Employed in Total Emp.	Share Salaried Formal in Total Employment	Share Informal in Total Employment	Share Self- Employed in Total Emp.
	Cell Size >10	Cell Size >10	Cell Size >10	Cell Size >35	Cell Size >35	Cell Size >35
Kaitz (minimum/median)	-0.116 (0.62)	-0.102 (0.12)	0.272 (0.20)	-0.559** (0.04)	-0.02 (0.79)	0.593** (0.02)
Constant	0.592** (0.01)	0.215*** (0.00)	0.088 (0.63)	0.929*** (0.00)	0.132 (0.08)	-0.139 (0.47)
Observations	15	15	15	10	10	10
R-squared	0.02	0.18	0.122	0.423	0.009	0.5

Absolute value of t-statistics in parentheses

\*\* significant at 5%; \*\*\* significant at 1%

**Source:** Elaborated by the authors from ILFS data.