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Do Labor Market Regulations Affect Labor Earnings in Ecuador?

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Although Ecuador may have the most cumbersome labor market regulations in Latin America, these are not a major source of segmentation of the labor market. The reason: the benefits mandated are fully fungible with wages.

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Summary findings

Ecuadorian labor costs are said to be high because of a large array of mandated benefits. But there are several reasons to doubt that labor market regulations, cumbersome as they are, are responsible for segmentation of the labor market, let alone slow growth and increased inequality. And available evidence on the regulations' impact on the labor market is not compelling, as MacIsaac and Rama show.

Using the 1994 Living Standards Measurement Survey, they show that the impact of mandated benefits is mitigated by a reduction of the base earnings on which they are calculated. Therefore, Ecuador's labor regulations do raise take-home pay, but less than the vast number of benefits would suggest. The increase in labor costs induced by compliance with labor regulations is even smaller than the corresponding increase in take-home pay, because mandated benefits are not subject to social security contributions or payroll taxes.

Despite mandated benefits, wage differentials between industries are comparable to those in Bolivia, a country otherwise similar to Ecuador, yet known to have "flexible" labor markets.

Cumbersome as they are, Ecuador's labor market regulations cannot be held responsible for most labor market segmentation. Compliance with these regulations is associated with significantly higher take-home pay only in the public sector and where trade unions are active — and it is unclear that merely changing the labor code would bring wages down in those two areas.

And the most dramatic earnings gap, the one between jobs in agriculture and the rest of the economy, appears to be largely independent of either unions or labor laws. Drastically streamlining the labor laws would be welcome, but only moderate change should be expected from such a reform.

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1. Introduction

Ecuador has arguably the most cumbersome labor legislation in Latin America. There are several mechanisms through which the government interferes with wage setting in the private sector, including the national minimum wage, mandatory wage adjustments to compensate for increases in the cost of living, and a vast number of mandated benefits. Each of these benefits is determined according to a specific rule and paid at a different point in time. Some of them are proportional to the base wage of the worker, while others are set as a lump sum; some are paid monthly, while others are due at specific points in time.

Some observers believe that excess labor market regulation in general, and mandated benefits in particular, are to blame for the dismal economic performance of Ecuador in the last decade or so. In spite of significant progress in macroeconomic stabilization and trade liberalization, income per capita is currently 25 percent below its 1980 level. This poor record is linked to policies that undermine international competitiveness and, thus, maintain the country's extreme dependence on oil revenues. More specifically, it is argued that weak export development is due to costs arising from domestic regulations, particularly with regard to the labor market. Consequently, labor market liberalization is seen as a top priority (see World Bank, 1994).

Ecuadorian labor market regulation not only represents a potential obstacle to economic efficiency, but may also be a source of inequality. Mandated benefits favor only a few. Moreover, by depressing labor demand in the modern sector, they may exert a downward pressure on labor earnings in the rest of the economy. In fact, the growth of the informal sector in recent years is viewed by many as a consequence of labor market regulation. Based on differences in earnings between workers in the formal and the informal sectors, as well as on differences in average labor productivity between protected and

non-protected industries, the earnings gap created by labor market regulations has been estimated at around 30 percent (see Hachette and Franklin, 1991).

However, there are several reasons to doubt that labor market regulations, as cumbersome as they may be, are responsible for a great extent of labor market segmentation, let alone slow growth and increased inequality. A first reason to doubt it is the weakness of enforcement capabilities, as described in the paper in more detail. Second, even if regulations were enforced, private contracts could still undo part of the potential distortions. For instance, if mandated benefits are fungible with base earnings, the latter can be adjusted downwards so that take-home pay (including the benefits) remains equal to the relevant alternative wage. Last but not least, the available evidence on the distortive impact of labor market regulations in Ecuador is not compelling, as discussed below.

Other studies of developing countries which deal with the impact of labor market regulations on labor costs provide little direction. While economists have strong views on the merits and demerits of labor market interventions, there is not much evidence that these interventions are major impediments to resource allocation, structural adjustment or macroeconomic stabilization in developing countries (see Freeman, 1993, and Horton, Kanbur and Mazumdar, 1994). An exception is Latin America, where economic growth rates are lower in countries with more "rigid" labor markets (see Rama, 1995). But Latin American labor market "rigidity" is mainly determined by the size of public sector employment and the extent of union membership. Other labor market interventions, such as minimum wages and mandated benefits, do not appear to be particularly harmful. It is therefore hazardous to extrapolate the conclusions of this literature to any specific country.

The goal of this paper is to take a fresh look at the consequences of labor market regulations in Ecuador. This fresh look is made possible by the availability of a new data set, the 1994 *Living Standards Measurement Survey* (LSMS), which covers both urban and rural areas. The LSMS is much more

detailed than previous Ecuadorian household surveys, both regarding earnings (including all of the mandated benefits) and individual characteristics such as unionization, or social security enrollment. These data allow for comparisons of hourly earnings associated with different jobs, depending on whether these jobs are subject or not to labor legislation. The richness of the questionnaire allows us to control for a large set of individual and sectoral characteristics.

The paper shows that labor market regulations do raise labor costs, but less than is claimed by previous studies. While it is true that individuals who earn the benefits mandated by law enjoy a higher take-home pay than their otherwise identical fellows, the gap (about 18 percent in the private, modern sector of the economy) is smaller in practice than on paper. In fact, the impact of the mandated benefits is mitigated by a sharp reduction (roughly 39 percent) of the base earnings upon which mandated benefits must be paid. Moreover, the impact of mandated benefits on labor costs is smaller than suggested by the 18 percent increase in take-home pay. This is because mandated benefits, unlike base earnings, are not subject to social security contributions and payroll taxes. Thus, total labor costs, including social security contributions and payroll taxes, increase by some 8 percent for an employer complying with labor regulations.

These conclusions are shown to be robust to changes in the sample used for the regression analysis, as well as to modifications in the criteria applied to decide whether a job is covered or not by labor market regulations. Also, differentials in take-home pay across industries are compared to those observed in Bolivia, a country which is characterized by a "flexible" labor market but is otherwise very similar to Ecuador. The ranking of industries according to these differentials turns out to be similar in the two countries, which is taken as further evidence that labor regulation has only a moderate impact on labor allocation. Paradoxically sectoral take-home pay differentials appear to be larger, in absolute terms, in the "flexible" Bolivia than in the "rigid" Ecuador.

2. Labor Market Distortions

The first and most obvious way the Ecuadorian government interferes with wage setting in the private sector of the economy is through the national minimum wage, or *Salario Mínimo Vital General* (SMVG). Minimum wages set at the sectoral level, as well as for each occupation within each sector, are decided by the *Comisiones Sectoriales de Salarios*. These are tripartite commissions, composed of a member from government, one from employers and one who represents employees. There are 119 commissions, one per sector. Their decisions are made with some reference to changes in the SMVG. In addition, the government, by executive order, periodically grants nation-wide wage increases.

A second source of potential distortions is the vast array of mandated benefits that have to be paid on top of the base wage. The list includes the thirteenth, fourteenth, fifteenth and sixteenth salaries, the cost-of-living compensation, the complementary bonus and the transportation bonus (see Sánchez Carrión, 1994, for details). The amount and timing of payment vary across benefits. To illustrate their complexity, consider the “teen” payments. The thirteenth salary is equal to the sum of all the salaries (base wage plus overtime) received by the worker between December and November, divided by twelve; it is paid in December. The fourteenth salary is equivalent to twice the monthly SMVG; it is paid in September of each year. At the time of the LSMS survey, the fifteenth salary was equal to 50 thousand sucres for all workers in the public and private sectors, and to 30 thousand for domestic service workers, per year.¹ The fifteenth salary is paid in equal amounts in February, April, June, August and October. Finally, the sixteenth salary is equivalent to 1/8 of the base wage; it is paid every month.

In addition to the mandated benefits, both the employee and the employer have to make contributions to social security. These contributions represent a tax on labor, rather than a delayed

payment, as the expected benefits are weakly, if at all, linked to contributions. The poor financial situation of the social security system (due to the negative yield of its investments), the government's failure to pay its share, and mounting administrative expenditures force a recognition of future default. The perceived link between benefits and contributions is further weakened by the substantial degree of discretion the government has exercised over the determination of social security benefits along the years. Total labor taxes amount to 21.5 percent of the base wage in most cases. Mandated benefits, such as the teen salaries, are not subject to social security contributions.

The capability to enforce minimum wages is weak.² The Quito branch of the labor inspection office, which has authority over roughly half of the country's labor force, has 26 inspectors in all. Most of their time and effort is spent in the arbitration of labor disputes. Consequently, they only carry out inspections upon request of the workers or, more often, of their trade unions. In this case, the worker or union pays the cab for the inspector to visit the firm, because the labor inspection office has no vehicle of its own. Should firms be penalized, the punishment for non-compliance with labor legislation is relatively low. It cannot exceed five times the monthly SMVG, regardless of the severity of the fault or the number of workers affected. As a result, the total amount of fines collected by the Ministry of Labor in the fiscal year 1993-94 was only 9 million sucres.

Although enforcement is somewhat more effective regarding payroll taxation, firms with less than ten employees are not targeted for inspection. This is because of a strong focus on revenue maximization, and also due to fears that employment would suffer from strict enforcement. Complaints from employees still play the main role in identifying the firms to inspect. The official estimate is that roughly 22 percent of the contributions are evaded by the private sector (arrears by the public sector are much higher). However, this figure refers to amounts due, not to numbers of workers or firms. In fact, only 28 percent

of the labor force is affiliated with the social security system. Affiliation is higher in the Sierra than in the Costa; it is almost nil in the agricultural sector.

This description of enforcement mechanisms suggests that trade unions may play a significant role in compliance with labor law. In fact, nearly one fifth of labor-management disputes within unionized firms arise from their failure to comply with the payment of legal minimum wages. However, there are two important and related caveats. First, collective bargaining between firms and unions is usually associated with earnings well above the SMVG. Second, unions are authorized only in large firms, which are likely to pay above the minimum anyway. In practice, only 350 thousand workers, or about 10 percent of the labor force, are unionized. Moreover, trade unions are particularly strong in the public sector and less prevalent in the private sector.

Some would argue that in spite of its limited coverage, private sector unionism has a significant capacity to affect labor market practices. In the case of Ecuador, union shops are allowed, i.e. union membership may be required to be an eligible employee. Also, labor is legally entitled to regular pay during strike periods and allowed to occupy the plant during those periods. Yet, there has been an undeniable decline of union strength over time. In November 1991, a labor market reform raised the threshold to form a union from 15 to 30 employees. At that time, the right to strike during wage negotiations was limited, and an automatic arbitration mechanism was established for stalemates which reach one month.

3. The Available Evidence

To assess whether excessive regulation raises labor costs and distorts the allocation of resources, a first possibility is to check the managers' view on the issue. In this respect, we refer to a survey of firms

carried out by the World Bank (1994) to identify the most burdensome government regulations. The survey was administered to 68 firms from Quito, Guayaquil and Cuenca, randomly selected from a register of the thousand largest companies in the country. Its primary finding was that political stability and inflation dominated the concerns of firm managers. Constraints due to the regulatory framework appeared to be relatively less important. And contrary to expectations, the labor regime was not identified as the most difficult government regulation. A more casual survey of firms carried out by Hachette and Franklin (1991) led to a similar conclusion. It is also worth noting that nearly three fourths of the firms surveyed by the World Bank were paying benefits in excess of those mandated by law, at an average cost of 7 percent of their payroll. The size of these voluntary benefits suggests that protective labor market regulations may not bite in the case of large firms.

There is however one reason why private sector managers would not complain about labor market legislation even if the latter was highly distortive, namely tax avoidance. None of the teen salaries or mandated benefits is subject to mandatory contributions and payroll taxes. If the SMVG is raised to compensate for inflation, roughly one fifth of the increase goes to social security; but if compensation is achieved by creating a new teen salary, or by augmenting existing benefits, then the marginal social security contribution is zero. Despite foregone revenue, the government also has a good reason to favor mandated benefits over wage increases. A one percent increase in the SMVG raises the government's wage bill by about 2.4 percent (World Bank, 1994, p. 14). This explains why, in spite of the consensus about the absurdity of the current system, no one really wants to change it.

While firm surveys are inconclusive regarding the effects of labor market regulations, analysis of data on individual earnings provides another alternative. If the labor market was efficient, individuals with the same characteristics (such as schooling, experience and the like) would get similar earnings across different sectors and activities. If, on the other hand, excessive labor market regulation created

labor market segmentation, then the earnings would differ depending on whether or not the employer abides by the law. Put differently, those who benefit from minimum wages, mandated benefits and job security can be expected to earn more than those who do not.

Two econometric studies explicitly or implicitly assess the extent of labor market segmentation in Ecuador. They both rely on urban household surveys from the *Instituto Nacional de Empleo* (INEM). The most detailed of these studies, by Griffin and Roberts (1994), estimates earnings functions for the years 1988 through 1992, excluding persons employed as domestic workers or in agriculture. The coefficient of the formal sector (dummy) variable in the earnings function turns out to be low: 18.4 percent in 1989, only 7.5 percent in 1992. Similar results are obtained by Samaniego (1995), using the same 1989 data. Samaniego finds that the coefficient associated with the formal sector variable is not only low (3.9 percent): it is not even significant at the 10 percent level.

As for firm surveys, these econometric exercises could be seen as evidence that in spite of their complexity, labor market regulations do not represent a major source of dualism. Still, this second type of evidence is not conclusive either, for two reasons. First, the income variables reported in the INEM surveys are ill defined, particularly regarding the mandated benefits which is precisely the element in question. In each survey, the respondent is asked to report total earnings in the previous month; in some years (1989 and 1990) the respondent is also asked to report his or her base earnings. But the nature of the benefits, bonuses and allowances included in the answers to these two questions remains unclear. Although INEM creates a variable that is meant to measure total earnings, there are serious reservations about whether it successfully does so. In some years, no adjustment is made to the reported earnings; in others, there is an adjustment ranging from 25 to 35 percent. Sometimes, the adjustment is made across the board; at other points, domestic workers are excluded from it.

The second problem with these estimates concerns the definition of the formal sector variable. INEM surveys do not ask whether the respondent receives the teen salaries, is enrolled in social security, or has a written contract. Therefore, the formal sector dummy variable is constructed based on information on the occupation of the respondent and, more importantly, on the size of the firm he or she works for. Griffin and Roberts (1994) define the formal sector as comprising professionals and workers in establishments with a personnel of six or more. Samaniego (1995) uses the same size boundary, but does not include professionals in the formal sector. The problem with these definitions is that large firms are more likely to comply with labor market legislation, but also more likely to pay higher wages for a variety of other reasons (including the unionization of their workers). It is thus impossible to identify the independent role of labor market regulations in accounting for labor market segmentation.

The existing evidence is therefore mixed. While none of studies reviewed shows massive labor rigidities, this could be due to a potentially biased methodology (in the case of firm surveys) or to the incompleteness of the data (in the case of earnings functions). Therefore, what is needed is a rigorous approach applied to better data. Fortunately, the Ecuadorian LSMS is a high quality household survey (see Grosh and Glewwe, 1995). Particularly, its questionnaire is rich enough to provide a good measure of labor earnings, including the benefits mandated by law. Since it also allows controlling for a vast number of individual and job characteristics, identifying the impact of labor market regulations on labor earnings becomes a feasible task.

4. A Typology of Jobs

To measure the impact of regulations on earnings, jobs can be classified according to three dimensions: compliance with labor regulations, sector of activity and unionization. The jobs considered

are the main occupations of the LSMS respondents in the week preceding the survey, provided that these occupations were remunerated, and that the data on individual characteristics associated with them are detailed and consistent enough. However, all agricultural jobs held by farmers working on their own land are set aside, for reasons that will be explained in the next section of the paper. These criteria leave us with a sample of 7,281 observations.

The first dimension of the jobs, compliance with labor regulations, can be assessed based on three different criteria. The LSMS questionnaire asks whether the respondent is entitled to teen salaries because of his or her main occupation, whether he or she is affiliated with social security, and whether the main occupation is backed by a written contract. An affirmative answer to any of these questions can be seen as evidence that the employer plays by the rules. But in practice, the first question turns out to be inclusive of the other two. More than 80 percent of those who receive teen salaries are affiliated with social security and have a written contract, while only a few of those who are affiliated with social security or have a written contract are not paid their teen salaries. The first question is therefore chosen to classify the main occupations in terms of compliance. The consequences of using the other two instead are explored in section 7, when dealing with the robustness of the results.

The sector of activity, which is the second dimension in the job classification, is captured by assigning all observations into one of four groups: the modern (private) sector, the public sector, the informal (urban) sector and the agricultural sector. Classifying the jobs according to this second dimension is quite straightforward, except for the distinction between the modern and the informal sectors. Following the standard practice, the modern sector is defined in this study so as to include all workers in establishments with a personnel of six or more, as well as all professionals. This sector is labeled as modern, not formal, to avoid misunderstandings. The six personnel cutoff point is of course arbitrary. It is chosen here to facilitate comparisons with the other studies based on Ecuadorian micro-data, which

were briefly reviewed in the previous section. The consequences of modifying this cutoff point are analyzed in section 7.

The third dimension, unionization, can be dealt with in two ways. The LSMS questionnaire asks whether the respondent is unionized, but also whether he or she works in a unionized establishment. In practice, the latter question encompasses the former, i.e. all union members work in unionized establishments, but these establishments also employ non-unionized workers. Therefore, jobs are classified according to the second question. As in the case of the other two dimensions of jobs, the consequences of changing the criterion are explored in section 7. It is worth noting that with the chosen criterion, the relationship between unionization and compliance is as expected: almost all unionized employees receive the teen salaries, are affiliated with social security and have a written contract. However, the reciprocal relationship does not hold true: most of the respondents who enjoy mandated benefits do not work in unionized firms.

Job and individual characteristics in the full sample and in each sector of activity are reported in Table 1. As expected, both compliance and unionization are highly uncommon in the informal sector, and totally absent from the agricultural sector. At the other end, compliance is widespread in the public sector, where more than half of the employees are unionized. The modern sector occupies an intermediate position, with roughly half of the jobs paying the mandated benefits, but less than 10 percent of them being held by unionized workers. Overall, one out of 12 jobs in the sample is unionized, and one out of four pays the benefits mandated by law.

5. Hourly Earnings

Estimating the hourly earnings associated with each job in the sample is a trying task, because of the wide variety of wages, bonuses and benefits that need to be taken into account. This section provides a brief presentation of the results. To clarify matters, the hourly labor cost is disaggregated into a series of components indicated in Table 2. Also, to facilitate the discussion of the regression results in the next section, the first column in this table reports corresponding legal minima. One of the striking features of this first column is the relative importance of mandated benefits (row B), which should account for more than three quarters of take-home pay (row C) for someone earning the SMVG. As a result of this bias, social security contributions and payroll taxes, which are both proportional to the base wage (row 1), are quite minor components of total labor cost.

Average hourly earnings in the sample are reported in the second column of Table 2. It is important to note that the base wage is the only component of the labor cost for most jobs in the sample. It is also pertinent to know that the reported hourly earnings correspond to the main occupation of the respondent only. Earnings from other sources (including secondary occupations) are set aside because the aim of this paper is not to assess whether some individuals earn more than others but rather whether some jobs pay more than others. The criteria used to construct earnings data based on the LSMS questionnaire, and to express these data in September 1994 sucres, are described in detail in the appendix.

Earnings figures were not constructed for farmers, for two reasons: one practical, the other conceptual. The practical reason is that the estimates would be of dubious quality. There is an important seasonality in the selling of harvests, as well as in the weekly hours of work. Moreover, the cost of inputs, like seeds, which has to be subtracted from gross earnings, is difficult to assess. The conceptual reason is that even if this calculation was feasible, it would not necessarily fit the requirements of this

study. The focus here is on the efficiency of the labor market to equalize the labor incomes of similar workers. But the earnings of farmers include land rent and returns to capital, in addition to labor income, so they are not comparable to the take-home pay of salaried workers.

It could be argued that returns to capital also complicate the earnings of informal sector workers. Although this is a valid remark, many informal workers are actually engaged in short-run (e.g. day to day) salaried relationships. Those informal sector workers who actually are independent have very limited capital stock. A survey of informal sector entrepreneurs in the cities of Guayaquil, Machala and Manta found that more than two thirds of them started their activities with a capital of less than 50 dollars, and roughly half of them had a capital stock of less than 100 dollars (see Ponce, 1992). Assuming a real rate of return of ten percent per year, a capital of 100 dollars would yield a return of less than 0.5 cents of a dollar per hour of work (about 11 sucres, as of September 1994), which should not affect the estimated hourly earnings.

Hourly earnings in the sample are much higher than required by law. Average take-home pay (row C in Table 2) is more than 50 percent above the corresponding legal minimum, and the base wage (row 1) is about five times as high. But in spite of this gap, social security contributions by workers are low. For a base wage of 1,908 sucres, the worker's contribution to social security (row D) should be 178 sucres. The comparison with the actual average contribution indicates a compliance rate of roughly 20 percent, much smaller than the official estimate for the private sector. The comparison between columns in Table 2 also highlights the different composition of earnings across sectors.

The legal minimum is not binding for the vast majority of workers. This hypothesis, already suggested by the comparison between actual earnings and the legal minima, can be assessed in a more rigorous manner by considering the whole distribution of hourly earnings, instead of the mere averages. The distribution is depicted in Figures 1, 2 and 3, which split the sample by payment of mandated

benefits, sector of activity and unionization, respectively. The most salient feature of these earnings distributions is the absence of any spike at or around an hourly earning of 1,593 sucres. This result may seem surprising in the case of jobs which actually pay the mandated benefits (see Figure 1). The smoothness of the distributions makes sense if the payment of benefits affects the composition of take-home pay rather than its level.

6. Earnings Functions

The level of hourly earnings can be explained as a function of individual and job characteristics. Individual characteristics are intended to capture labor productivity, while job characteristics account for differences in wage setting mechanisms. As usual, individual characteristics include years of schooling and years of work, which provide information on the accumulated human capital. For each of these two variables a quadratic specification is chosen, so as to allow for non-linearities in the returns to education and experience. Individual characteristics also include gender, marital status and indigenous background. The ethnic variable is constructed based on the declared fluency in either Quichua or Shuar. The specification is completed by adding dummy variables for the location of the household (urban or rural; in the Costa, the Sierra or the Oriente) and for the characteristics of the job, as defined in section 4.

Earnings functions, based on the individual and job characteristics listed above, were estimated for both the log of take-home pay and the log of base earnings. Regression results are reported in Tables 3 to 6. In addition to the full sample estimates, the Tables present regression results for each of the four sectors of activity considered (modern, public, informal and agriculture) as well as for unionized and non-unionized workers and firms. Splitting the sample according to the sectoral classification is warranted because of potential obstacles to labor mobility between sectors, which may lead to different earnings

patterns in each of them. Similarly, the way labor legislation is applied may vary significantly depending on whether workers are unionized or not. The econometric results confirm that both the sector of activity and the union status affect the shape of the earnings functions, particularly regarding returns to education, gender gaps, and differentials between individuals with and without an indigenous background.

Marginal returns to education increase with the number of years of schooling in both the modern and the informal sector, but they are constant in the public sector, and nil in agriculture. Similarly, there are increasing returns to schooling for workers who either are non-unionized or work in non-unionized firms, but constant returns to schooling for the rest of the workers. Increasing returns are reflected in the parabolic shape of the earnings function: the coefficient multiplying the schooling years is not statistically significant, whereas the coefficient multiplying the square of the schooling years is. Constant returns are associated with a linear earnings function, where the statistical significance of the coefficients on schooling and schooling squared is reversed. Finally, the coefficients multiplying both schooling variables are not statistically significant in the case of agriculture. This result can be seen as evidence that salaried workers in this sector tend to perform heavy physical tasks, with relatively low requirements in terms of intellectual activity. The lack of significance of the coefficients multiplying the experience variables in agriculture provides support to this interpretation.

The econometric results also show significant earnings differentials by gender, ethnic background, and geographical region. Their size varies according to sector of activity and union status. Not surprisingly, the gender gap is much narrower in the public sector than in the rest of the economy. It is also narrower where workers are unionized than where they are not. Equal pay usually characterizes collective bargaining outcomes, and is a salient feature of meritocratic organizations such as the civil service. At the other end of the spectrum, gender and ethnic background are highly relevant in agriculture and in non-unionized activities. Part of the gender gap in earnings could be explained by the

requirements, in terms of physical strength, of some better paying agricultural tasks. However, the earnings differentials against women and people of indigenous background are also likely to reflect discrimination.

From the perspective of this paper, the most interesting results are those related to the dummy variables summarizing the job characteristics. Tables 3 to 6 show that, on average, hourly earnings in the public sector are not significantly different from those in the informal sector. Wages may be higher for unskilled workers, and lower for managers and technical staff, as reflected in the shape of the returns to schooling, but in the aggregate these differences cancel out. Hourly earnings in agriculture, by contrast, are 30 percent lower than in the informal sector.³ This gap cannot be attributed to regional differences in consumer prices, hence in the purchasing power of hourly earnings, because the regressions already control for the location of the household. The gap cannot be attributed to the regulatory setting either, because there are no institutional barriers to entry into the informal sector. The most plausible explanation for the earnings gap, apart from measurement error, is that migrating out of agriculture entails a cost for workers and their families.

Workers in the modern sector, those protected by labor market regulations and those in unionized firms do all get a higher take-home pay than otherwise identical workers. The increase in take-home pay is estimated at 9 percent for jobs in the modern sector, at 21 percent for jobs complying with labor law, and at 8 percent for jobs held by unionized workers. Note that the coefficient multiplying the union dummy variable is barely significant, which could be consistent with the weakening of the labor movement in recent years. The coefficient multiplying the modern sector dummy variable, in turn, is within the range found for formal sector dummies in previous studies. This similarity is not surprising, because the definition of the formal sector variable in such studies was close to the one in this paper (see section 3). Finally, the impact of compliance on take-home pay varies across sectors. It is high in the

public sector, but nil in the informal sector; it is about 18 percent in the modern sector of the economy. Similarly, the impact of compliance is much higher where unions are active than when they are not.

It may seem surprising that compliance with labor regulations raises take-home pay by only 18 percent in the modern sector, when on the other hand mandated benefits are supposed to represent such a big addition to base earnings. The answer to this puzzle is relatively straightforward: those workers who are paid the benefits mandated by law also get much lower base earnings. Indeed, the most striking feature, when comparing Tables 3 and 5, or 4 and 6, is the change in the sign of the coefficient multiplying the compliance dummy. On average, the base earnings of the workers who are entitled to mandated benefits are 39 percent lower than those of otherwise identical workers. This shift is mostly driven by changes in the composition of take-home pay. The compensating decrease of base earnings is roughly the same in the modern sector as in the sample as a whole. It is much higher in the informal sector, much lower in the public sector, and not statistically significant in the case of unionized workers.

The change in the composition of take-home pay induced by compliance with labor regulations would not be possible if base earnings were prevented to adjust downwards by a binding minimum wage. But this does not appear to be the case, for two reasons. First, base earnings in the sample are much higher than the minimum wage. The average base earnings of workers who get the mandated benefits is 1,908 sucres per hour, as compared to a legal minimum of 373 sucres (see Table 2). And second, the minimum wage is only weakly enforced anyway. The density functions drawn for take-home pay in section 5 made it clear that there was no spike at or around the legal minimum, which in turn was consistent with the description of enforcement capabilities, in section 2. Only in unionized activities, and to a lesser extent in the public sector, is the downward adjustment of base earnings more difficult.

7. Robustness

The econometric results in the previous section could well be driven by the particular definition of the dummy variables used to classify the jobs in the sample, or by particular sub-sets of observations. To assess the robustness of the results obtained, the regression analysis is replicated here for different sets of explanatory variables, as well as for different partitions of the sample. Regarding the explanatory variables, alternative criteria are used to judge whether jobs comply with labor market regulations, to allocate them into sectors of activity, and to decide whether they are affected by union activities. The LSMS questionnaire permits definitions of compliance as affiliation with social security or the existence of a written contract (instead of entitlement to teen salaries), definitions of the modern sector which exclude establishments with less than 11 or 31 employees (instead of 6), and definitions of the unionized sector which include only those individuals who work in unionized firms (instead of those who actually are union members). Regarding the sample, the regression analysis is replicated for each of the main regions in the country (Costa, Sierra and Oriente). Regressions are also produced excluding from the sample those workers whose take-home pay is in the upper or lower 5 percent-tails of the earnings distribution. Observations falling in any of these two tails are indeed more likely to be subject to measurement errors either in the size of earnings or in the number of hours worked.

The main results of the analysis are unaffected by changing the sample or the definition of the dummy variables. Depending on the criteria used to decide whether a job is covered by labor market regulations, the impact of compliance on take-home pay ranges from 15 to 22 percent, while base earnings decline by 21 to 39 percent (see Table 7). The estimates remain roughly the same when the 5 percent tails of the earnings distribution are set aside, which suggests that results are not driven by outliers (see Table 8). From a regional perspective, however, the Oriente seems to differ from the rest of the

country. This is the only region where mandated benefits lead to an increase of take-home pay without any significant compensating decline of base earnings.

8. An International Comparison

The ideal way to evaluate the distortions created by Ecuadorian labor market regulations would be to compare the sectoral wage structure under the current regulations with that which would exist in a liberalized environment. If these two structures were markedly different, there would be little doubt that regulations affect the sectoral allocation of labor and hence economic efficiency. If, on the other hand, the wage structures were similar, labor market regulations could not be held responsible for the poor economic performance of Ecuador. This ideal experiment, which involves estimating earnings functions over two different regulatory environments within the same country, is unfortunately not feasible. But it can be simulated through the use of data from a country which is similar to Ecuador in most respects, but is characterized by a more “flexible” labor market. That country is Bolivia.

Ecuador and Bolivia are similar in their geography, ethnicity and economy. About half of their territory is in the high mountains of the Andean region of South America, with both capital cities located at an altitude of some 10 to 12 thousand feet. A large fraction of the population in both countries actually lives in the highlands. The other half of the territory is made of tropical plains and jungles. Prior to the arrival of the Spaniards, vast areas of the two countries were dominated by the Inca empire. Even nowadays, Ecuador and Bolivia are the two most indigenous nations of South America. They are also among the poorest. Their output per capita is around 1,000 dollars per year at current prices, and they both have about 40 percent of their population still living in rural areas.

Where the two countries differ markedly is in their approach to labor market regulation. Until 1985, when the *Nueva Política Económica* (NPE) was adopted, Bolivia was characterized by the same kind of government interventions as Ecuador. There were so many mandated bonuses that the actual pay and the base wage bore little relation to each other. In the early 1980s, the number of bonuses paid in annual income (in addition to the base wage) ranged from 4 in agriculture to 44 in manufacturing. But as a result of the NPE, only overtime and the Bolivian equivalent of the thirteenth salary remained in force. Moreover, in 1985 private sector employers were allowed to freely rescind the contracts of their employees and the government stepped out of all private sector wage negotiations (see Horton, 1994, and Wood and Patrinos, 1994).

Comparing the sectoral structure of take-home pay in Ecuador and Bolivia is therefore the closest one can get to the ideal experiment described above. Fortunately, there is also a series of LSMS surveys for Bolivia, so that it is possible to estimate the sectoral take-home pay differentials in the two countries, after controlling for individual characteristics, and then to compare them. Such is the goal of the rest of this section. From a methodological perspective, the approach we follow was first applied to Spain and the United States, to assess the labor market consequences of different health insurance arrangements (see de la Rica and Lemieux, 1994). The results obtained in that opportunity provide us with a benchmark against which to judge our findings.

The empirical analysis relies on the 1992 round of the Bolivian LSMS. Unlike the Ecuadorian LSMS, the Bolivian ones cover urban areas only. They are also less detailed regarding earnings and individual characteristics. To a great degree, detailed earnings are not required because none of the mandated benefits in force in Ecuador, except the thirteenth salary, exists in Bolivia. Yet, this lower level of detail also reflects a less careful treatment of overtime, tips and payments in kind. Regarding the individual characteristics of the workers, it is unfortunate that the 1992 questionnaire does not refer to the

ethnic background nor to the union status of the interviewees. Note that due to these features of the Bolivian LSMS, the estimated correlation between sectoral take-home pay differentials in the two countries should be less than perfect even if the regulatory environments were identical. The comparison is thus biased in the direction of exaggerating the impact of labor regulations.

To estimate take-home pay differentials across sectors it is necessary to introduce industry dummies in the specification of the earnings functions. Since the Bolivian LSMS covers urban areas only, all interviewees working in agriculture were excluded from the sample in the two countries.⁴ The remaining industries were defined as those containing at least a hundred and fifty observations in each of the two countries. The list of industries can be found in Table 9. This Table also reports results for earnings functions estimated under two specifications. The first one, in columns (1) and (3), controls for individual characteristics only. The second one, in columns (2) and (4), also includes job characteristics, such as being enrolled in social security or working in the modern sector of the economy. Given that these job characteristics, in themselves, are affected by labor regulations, the sectoral earnings differentials reported in columns (1) and (3) provide the best ground for the comparison.

Differentials in take-home pay across industries turn out to be similar in the two countries, as shown in Figure 4. This Figure plots the coefficients multiplying the industry dummies in Bolivia against the corresponding coefficients in Ecuador. The black squares correspond to activities such as health and education, which are heavily dominated by government. Since government pay policies may be quite different in the two countries, there are no reasons to expect the premia for these particular industries to be comparable. When they are set aside, the correlation coefficient between take-home pay differentials in the two countries is 0.49. This is exactly the same as the correlation coefficient obtained in the case of Spain and the United States by de la Rica and Lemieux (1994).⁵ Since our earnings data are certainly noisier than theirs, the “true” correlation coefficient is likely to be higher in the case of Ecuador and

Bolivia. Therefore, we can conclude, as they do, that “that the two systems produce markedly similar outcomes in the two countries”.

The similarity between take-home pay differentials in the two countries concerns their sectoral ranking, but not their absolute size. One of the striking features of the two international comparisons is that the countries with the more “flexible” labor market (Bolivia and the US, respectively) are characterized by a wider distribution of labor earnings. The slope of the estimated regression line in Figure 4 is about 2.2. This means a sectoral differential of 1 percent in Ecuador corresponds to a 2.2 percent differential in Bolivia. A similar regression line, relating sectoral wage differentials in the US to those in Spain, would yield a slope of about 1.9. The more compressed earnings distribution found in Ecuador hints that labor market regulations have an impact on labor allocation.

More generally, the international comparison casts doubts on the idea of measuring labor market rigidity on basis of the magnitude of wage differentials across sectors of activity. Just as the earnings differentials are bigger in the “flexible” Bolivia than in the “rigid” Ecuador, the wage gap between the modern and the public sector versus the informal sector is also bigger (see table 9). One possible explanation is that labor market flexibility allows the factors of production to align to their most productive and best rewarded use. Another possibility is that wage differentials stemming from ethnicity and unionization (unevenly distributed across sectors, but unaccounted for in the comparison) are larger in Bolivia than in Ecuador. Whatever the reason, the international comparison suggests that labor market rigidity should be evaluated based on the earnings gap between covered and uncovered jobs, not between modern and informal sector jobs.

9. Conclusion

This paper shows that Ecuadorian labor market regulations do raise labor costs, but to a lesser extent than suggested by the vast array of benefits mandated by law. On average, and after taking into consideration the different criteria that can be used to classify jobs, take-home pay is about 18 percent higher for private sector jobs complying with labor regulations than for otherwise identical jobs. The impact of mandated benefits on take-home pay is drastically attenuated by a decrease of the base earnings on top which mandated benefits are paid. This decrease, of about 39 percent, is in turn facilitated by the low level and weak enforcement of minimum wages. Furthermore, the increase of labor costs induced by compliance with labor regulations is smaller than the corresponding increase in take-home pay. This is because mandated benefits are not subject to social security contributions or payroll taxes.

To illustrate the point, consider the following example, which refers to an employer willing to pay his or her employee a total of 1,000 sucres per hour, net. Total labor cost, from the employer's perspective, would be 1,215 sucres per hour, because of social security contributions at a rate of 21.5 percent. What would be the consequences of complying with mandated benefits? According to the econometric results above, take-home pay would increase to about 1,180 sucres per hour, while base earnings would drop to roughly 610 sucres. Since only base earnings are subject to social security contributions and payroll taxes, total labor cost would be now 1,311 sucres per hour (add 21.5 percent of 610 to take-home pay). This represents an increase of 8 percent over the total labor cost in case of non compliance, which could explain why managers do not complain much about these regulations.

More generally, the results in this paper suggest that Ecuadorian labor market regulations, as cumbersome as they are, cannot be held responsible for a great deal of labor market segmentation. Compliance with these regulations is associated with significantly higher take-home pay only in the public

sector and where trade unions are active. It is unclear whether the mere change of the labor code would be enough to bring wages down in any of these two cases. On the other hand, the most dramatic wage gap, the one between jobs in agriculture and in the rest of the economy, appears to be largely independent from either unions or labor laws. A drastic simplification and streamlining of the intricate and confuse set of labor market regulations currently in force would of course be welcome, but moderate expectations should be put on the consequences of such a reform.

Appendix

The Estimation of Hourly Earnings

The simplest case is that of independent workers, because no additions or subtractions to the declared earnings are required. The declared earnings represent in this case both the base wage (row 1 in terms of Table 2) and the take-home pay (row C). Although one individual declared to be entitled to old-age pension because of his or her main occupation, the LSMS reports *net* earnings, so that no adjustment is warranted. The declared earnings are adjusted for inflation though, to get their equivalent as of September 1994. The assumption here is that earnings of independent workers increase in line with consumption prices, at a rate of roughly two percent per month. This rate is cumulated over the time period going from the last declared earnings to September 1994.

The number of hours of work associated with the declared earnings is estimated based on a series of questions in the LSMS survey. These questions concern the frequency of the earnings, the number of hours worked per day and the number of days worked per week. In all three cases, the answers refer specifically to the main occupation of the respondent, not to all of his or her activities. However, the calculation of the number of hours worked is less straightforward when the declared earnings correspond to a quarter, a semester or even a year. If this is so and, in addition, the main occupation is said to be either occasional or temporary, the declared earnings are prorated by the number of months a year the respondent declares to work in the main activity.

Additions and subtractions to the declared earnings make the case of salaried workers more complicated than that of independent workers. Because of the way the LSMS questionnaire is structured, the declared earnings correspond to the sum of the base wage (row 1), the social security contribution

(row D), if any, and the mandated benefits (rows 5 to 8), if any, with the exception of the 13th to 15th salaries. For those who declare to receive teen salaries, full compliance with the law is assumed. Therefore, all the mandated benefits, as set by labor regulations in force, are deducted from the declared earnings in order to estimate the base wage (row 1). Social security contributions are subtracted from this basic wage when the respondent declares to be entitled to old-age pension or to unemployment benefits because of his or her main occupation.

The declared earnings of salaried workers need also be adjusted for a whole array of bonuses and extra payments (rows 2 to 4). Concerning bonuses (row 3), all payments for the anniversary of the firm or institution, for Christmas and for vacation purposes are added up. The resulting total is divided by 12 to obtain its monthly equivalent. Other additions are the average monthly earnings associated with tips and overtime (row 2), and the monthly value of food, clothing, transportation and housing provided by the employer (row 4). In the case of workers receiving the teen salaries, the mandated transportation allowance is not added up to the total, because it is already included in the declared earnings. All the earnings components are divided by the number of hours worked per month in the main occupation, following the same criteria as in the case of independent workers.

Only a few of the items included in the take-home pay of salaried workers are adjusted for inflation. Indeed, during the period covered by the LSMS there were no adjustments of the SMVG, and no mandatory wage raises across the board either. Monthly earnings in September 1994 should therefore be the same as in the previous months. It can be argued that those jobs which are not actually subject to labor regulation, or those whose earnings are determined by collective bargaining might have experienced wage raises during the few months when the LSMS was carried out. But there is no way to assess this possibility and to correct the declared earnings accordingly. Regarding other earnings, such as the Christmas bonus, the LSMS questionnaire is too ambiguous to warrant any adjustment. The respondent is

indeed asked to report either the actual amount of the last bonus or the expected amount of the next one. Therefore, it is unclear whether this amount has to be inflated or deflated. When needed, the purchasing power of the teen salaries is corrected for inflation, though. This is feasible because labor legislation clearly specifies the point in time where these teen salaries have to be paid. For instance, the thirteenth salary is due by the end of December. Consequently, to estimate its present value as of September 1994 we multiply it by a factor of 0.942, resulting from cumulating an inflation rate of two percent per month over three months.

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Footnotes

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- ¹ As that time, the exchange rate was roughly 2,300 sucres per dollar.

- ² The description of enforcement capabilities and practices is based on personal interviews with managers at the Quito offices of the Ministry of Labor and the Social Security Institute.

- ³ Keep in mind that a coefficient c multiplying a dummy variable can be interpreted as a percent change in the endogenous variable only as long as c is close to zero. For larger values, in absolute terms, the percent change in the endogenous variable is given by $100 [\exp(c) - 1]$.

- ⁴ In the case of Bolivia, these were highly qualified urban professionals providing technical assistance to farmers.

- ⁵ The correlation coefficient is apparently higher in the case of Spain and the United States, but this is due to one single sector (household service). If this outlier is removed from the comparison, then the correlation coefficient drops to 0.49.

Table 1 Job Distribution					
	Sector				
	Modern	Public	Informal	Agric.	Total
Job characteristics					
Receives teen salaries (%)	46.3	94.5	3.1	0.0	25.8
Is enrolled with S.S. (%)	37.0	89.7	2.3	0.0	22.1
Has a written contract (%)	42.7	92.9	2.4	0.0	24.3
Is unionized (%)	6.5	52.4	0.2	0.0	8.0
Is in a unionized firm (%)	13.2	67.9	0.5	0.0	11.9
Individual characteristics					
Schooling (years)	11.0	13.5	7.8	4.9	8.9
Experience (years)	15.5	20.3	20.8	24.6	19.8
Male (%)	70.8	58.4	56.5	86.5	65.3
Married (%)	46.5	63.2	41.9	40.1	45.4
Indigenous (%)	3.0	4.2	4.0	14.2	5.2
Urban (%)	81.0	85.4	77.2	16.3	70.3
Mean hourly wage (sucres)	3089	3363	2119	1203	2411
Sample size	2129	836	3250	1066	7281

<p>Table 2 Earnings Composition (Suces per hour, as of September 1994)</p>						
Component	Legal Minima	Actual Earnings				
		Total	Modern	Public	Informal	Agric.
1) Base wage	373	1908	2265	1768	1934	1065
2) Tips and overtime	0	20	50	24	6	3
3) Voluntary bonuses (vacation, Christmas, firm anniversary ...)	0	32	55	117	7	0
4) Voluntary allowances and payments in kind (food, housing, clothing ...)	0	177	262	189	149	135
A) Basic earnings (= 1+2+3+4)	373	2137	2632	2098	2097	1203
5) Teen payments	196	102	179	410	9	0
6) Compensation bonus	294	68	112	291	6	0
7) Cost-of-living bonus	659	152	251	653	14	0
8) Transportation allowance	71	6	10	26	1	0
B) Mandated benefits (=5+6+7+8)	1220	328	552	1380	30	0
C) Take-home pay (=A+B)	1593	2464	3184	3478	2127	1202
D) Social security contribution by worker	39	35	58	147	4	0
E) Payroll taxes	50	n.a.	n.a.	n.a.	n.a.	n.a.
F) Total labor cost (=C+D+E)	1682	n.a.	n.a.	n.a.	n.a.	n.a.

Note: In the calculation of the legal minima, a month was supposed to include 170 hours of work and no overtime.
All legal figures correspond to the most general regime.

Table 3 Determinants of Take-Home Pay (in Log)					
Variable	Sector				Full Sample
	Modern	Public	Informal	Agric.	
Schooling	-0.0126 (-0.876)	0.0878 (3.664)	-0.0009 (-0.073)	0.0085 (0.373)	0.0011 (0.151)
Schooling ²	0.0042 (6.883)	-0.0005 (-0.509)	0.0038 (5.353)	-0.0001 (-0.059)	0.0034 (9.602)
Experience	0.0250 (6.127)	-0.0302 (5.718)	0.0285 (8.264)	0.0029 (0.471)	0.0249 (11.123)
Experience ²	-0.0003 (-4.251)	-0.0004 (-3.823)	-0.0005 (-7.481)	-0.0002 (-1.772)	-0.0004 (-10.286)
Male	0.2145 (5.709)	0.1143 (2.768)	0.2871 (8.712)	0.6167 (6.678)	0.2886 (13.079)
Married	0.1672 (4.129)	0.0626 (1.464)	0.1138 (3.120)	-0.0940 (-1.330)	0.0900 (3.915)
Indigenous	-0.0201 (-0.185)	0.0308 (0.295)	-0.0279 (-0.315)	-0.2997 (-2.615)	-0.1676 (-3.266)
Urban	0.0587 (1.267)	-0.0080 (-0.129)	0.0861 (2.113)	0.2092 (2.445)	0.0768 (2.856)
Costa	0.1157 (1.382)	0.0218 (0.371)	0.1872 (3.082)	0.2120 (1.895)	0.1761 (4.623)
Sierra	0.1188 (1.428)	0.1059 (1.958)	0.0031 (0.052)	-0.0130 (-0.120)	0.0513 (1.384)
Compliant	0.1680 (4.727)	0.5116 (5.739)	0.0836 (0.890)		0.1884 (5.507)
Modern					0.0887 (3.059)
Public					0.0466 (0.924)
Agriculture					-0.3696 (-10.518)
Unionized	0.0881 (1.256)	0.0311 (0.774)	-0.3244 (-0.858)		0.0809 (1.710)
Intercept	6.3658 (50.763)	5.6970 (31.757)	6.1254 (64.223)	6.0916 (36.306)	6.2442 (103.041)
Adj. R ²	0.2822	0.2814	0.1262	0.1173	0.2673
n	2129	836	3250	1066	7281

Note: t-values are in parentheses.

Table 4
Determinants of Take-Home Pay (in Log)

Variable	Union member		Unionized firm		Full Sample
	Yes	No	Yes	No	
Schooling	0.0575 (2.265)	-0.0054 (-0.695)	0.0847 (3.492)	-0.0087 (-1.092)	0.0011 (0.151)
Schooling ²	0.0007 (0.693)	0.0038 (9.878)	-0.0003 (-0.315)	0.0040 (9.965)	0.0034 (9.602)
Experience	0.0263 (4.228)	0.0247 (10.458)	0.0246 (4.415)	0.0248 (10.266)	0.0249 (11.123)
Experience ²	-0.0003 (-2.820)	-0.0004 (-9.901)	-0.0003 (-2.738)	-0.0004 (-9.809)	-0.0004 (-10.286)
Male	0.0723 (1.440)	0.3098 (13.113)	0.1241 (2.743)	0.3133 (12.861)	0.2886 (13.079)
Married	0.0203 (0.396)	0.0978 (3.974)	0.0904 (1.962)	0.0925 (3.648)	0.0900 (3.915)
Indigenous	0.1590 (1.208)	-0.1882 (-3.451)	0.1720 (1.443)	-0.1947 (-3.479)	-0.1676 (-3.226)
Urban	0.0450 (0.587)	0.0791 (2.795)	0.0908 (1.310)	0.0750 (2.594)	0.0768 (2.856)
Costa	0.0224 (0.299)	0.1852 (4.451)	0.0812 (1.192)	0.1841 (4.267)	0.1761 (4.623)
Sierra	0.0872 (1.293)	0.0506 (1.240)	0.1097 (1.750)	0.0467 (1.101)	0.0513 (1.384)
Compliant	0.5815 (4.273)	0.1713 (4.763)	0.5099 (6.375)	0.1570 (4.139)	0.1884 (5.507)
Modern	0.3363 (1.387)	0.0796 (2.653)	0.1436 (0.902)	0.0847 (2.758)	0.0887 (3.059)
Public	0.2091 (0.867)	0.0568 (0.989)	0.0433 (0.266)	0.0751 (1.136)	0.0466 (0.924)
Agriculture		-0.3742 (-10.321)		-0.3790 (-10.332)	-0.3696 (-10.518)
Unionized					0.0809 (1.710)
Intercept	5.6860 (19.377)	6.2537 (96.385)	5.6266 (25.330)	6.2713 (94.225)	6.2442 (103.041)
Adj. R ²	0.2662	0.2445	0.2951	0.2347	0.2673
n	582	6699	867	6414	7281

Note: t-values are in parentheses.

Table 5
Determinants of Base Earnings (in Log)

Variable	Sector				Full Sample
	Modern	Public	Informal	Agric.	
Schooling	-0.0166 (-0.969)	0.1283 (3.920)	-0.0016 (-0.123)	0.0085 (0.373)	-0.0033 (-0.416)
Schooling ²	0.0049 (6.781)	-0.0013 (-0.992)	0.0038 (5.371)	-0.0001 (-0.059)	0.0039 (10.361)
Experience	0.0294 (6.110)	0.0404 (5.610)	0.0302 (8.584)	0.0029 (0.471)	0.0277 (11.492)
Experience ²	-0.0004 (-4.388)	-0.0004 (-3.337)	-0.0005 (-7.816)	-0.0002 (-1.772)	-0.0004 (-10.494)
Male	0.2621 (5.858)	0.1866 (3.315)	0.2865 (8.571)	0.6167 (6.523)	0.3083 (12.950)
Married	0.1944 (4.288)	0.1123 (1.938)	0.1065 (2.876)	-0.0940 (-1.330)	0.0942 (3.816)
Indigenous	-0.0369 (-0.294)	0.0963 (0.667)	-0.0304 (-0.338)	-0.2997 (-2.615)	-0.1719 (-3.130)
Urban	0.0244 (0.442)	-0.0129 (-0.150)	0.0869 (2.100)	0.2092 (2.445)	0.0700 (2.415)
Costa	0.1577 (1.613)	-0.0172 (-0.214)	0.1826 (2.964)	0.2120 (1.895)	0.1805 (4.410)
Sierra	0.1091 (1.126)	0.1041 (1.411)	-0.0008 (-0.013)	-0.0130 (-0.120)	0.0409 (1.026)
Compliant	-0.4958 (-11.643)	-0.2568 (-2.165)	-0.8571 (-7.714)		-0.4962 (-12.980)
Modern					0.0926 (2.971)
Public					0.0074 (0.134)
Agriculture					-0.3663 (-9.757)
Unionized	0.1402 (1.657)	-0.0036 (-0.074)	-0.1633 (-0.427)		0.0805 (1.549)
Intercept	6.2470 (42.345)	5.1914 (21.287)	6.1767 (67.236)	6.0916 (36.306)	6.1962 (95.232)
Adj. R ²	0.2601	0.2060	0.1337	0.1173	0.1914
n	2023	793	3223	1066	7105

Note: t-values are in parentheses.

Table 6 Determinants of Base Earnings (in Log)					
Variable	Union member		Unionized firm		Full Sample
	Yes	No	Yes	No	
Schooling	0.0950 (2.630)	-0.0102 (-1.232)	0.1067 (3.220)	-0.0105 (-1.245)	-0.0033 (-0.416)
Schooling ²	0.0000 (0.028)	0.0043 (10.570)	-0.0001 (-0.086)	0.0043 (10.135)	0.0039 (10.361)
Experience	0.0339 (3.978)	0.0274 (10.898)	0.0304 (4.092)	0.0275 (10.727)	0.0277 (11.492)
Experience ²	-0.0004 (-2.463)	-0.0005 (-10.193)	-0.0003 (-2.260)	-0.0005 (-10.129)	-0.0004 (-10.494)
Male	0.0960 (1.401)	0.3286 (13.032)	0.1642 (2.751)	0.3284 (12.715)	0.3083 (12.950)
Married	0.1162 (1.680)	0.0951 (3.638)	0.1903 (3.167)	0.0853 (3.185)	0.0942 (3.816)
Indigenous	0.1739 (0.975)	-0.1920 (-3.325)	0.1729 (1.119)	-0.1962 (-3.330)	-0.1719 (-3.130)
Urban	0.0147 (0.138)	0.0728 (2.416)	0.0739 (0.790)	0.0691 (2.257)	0.0700 (2.415)
Costa	0.0110 (0.107)	0.1922 (4.351)	0.0789 (0.874)	0.1894 (4.166)	0.1805 (4.410)
Sierra	0.0383 (0.417)	0.0441 (1.019)	0.0721 (0.873)	0.0371 (0.831)	0.0409 (1.026)
Compliant	-0.1002 (-0.554)	-0.5204 (-13.045)	-0.1679 (-1.632)	-0.5453 (-12.967)	-0.4962 (-12.980)
Modern	0.3432 (1.069)	0.0844 (2.644)	0.1280 (0.630)	0.0937 (2.880)	0.0926 (2.971)
Public	0.0642 (0.201)	0.0463 (0.741)	-0.1303 (-0.628)	0.0786 (1.099)	0.0074 (0.134)
Agriculture		-0.3716 (-9.692)		-0.3765 (-9.755)	-0.3663 (-9.757)
Unionized					0.0805 (1.549)
Intercept	5.2958 (13.327)	6.2112 (90.179)	5.2963 (18.094)	6.2298 (88.684)	6.1962 (95.232)
Adj. R ²	0.2125	0.1919	0.2410	0.1888	0.1914
n	553	6552	818	6287	7105

Note: t-values are in parentheses.

Table 7
Sensitivity of Compliance Coefficient to Changes in Job Classification
(Full Sample)

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Take-home pay						
Teen salaries	0.1884 (5.507)	0.1939 (5.495)	0.2010 (5.877)			0.1931 (5.588)
S.S. affiliation				0.1608 (4.594)		
Written contract					0.1415 (4.077)	
Adj. R ²	0.2673	0.2669	0.2669	0.2678	0.2673	0.2670
Base earnings						
Teen salaries	-0.4962 (-12.980)	-0.5023 (-12.706)	-0.4976 (-12.962)			-0.4970 (-12.865)
S.S. affiliation				-0.3027 (-7.766)		
Written contract					-0.2320 (-6.003)	
Adj. R ²	0.1914	0.1913	0.1914	0.1791	0.1763	0.1913
Other job attributes						
Modern	6 and +	11 and +	30 and +	6 and +	6 and +	6 and +
Union	Job	Job	Job	Job	Job	Firm

Note: All other explanatory variables in the regressions are the same as in Tables 3 to 6. t-values are in parentheses.

Table 8 Sensitivity of Compliance Coefficient to Changes in the Sample					
Variable	Regions			Excluding 5 % tails	Full sample
	Costa	Sierra	Oriente		
Take-home pay					
Teen salaries	0.1951 (4.285)	0.1576 (2.946)	0.4172 (2.773)	0.2271 (8.917)	0.1884 (5.507)
Adj. R ²	0.2205	0.3131	0.2520	0.2531	0.2673
n	3428	3032	821	6550	7281
Base earnings					
Teen salaries	-0.4389 (-8.579)	-0.5813 (-9.716)	-0.2269 (-1.345)	-0.4977 (-16.695)	-0.4962 (-12.980)
Adj. R ²	0.1530	0.2354	0.1297	0.1496	0.1914
n	3346	2958	801	6391	7105

Note: All other explanatory variables in the regressions are the same as in Tables 3 to 6. t-values are in parentheses.

Table 9
Determinants of Take-Home Pay (in Log)
in Urban Areas, Excluding Agriculture

Variable	Ecuador		Bolivia	
	(1)	(2)	(3)	(4)
Schooling	0.0110 (1.114)	0.0046 (0.465)	0.0232 (1.595)	0.0350 (2.531)
Schooling ²	0.0037 (8.189)	0.0036 (8.230)	0.0088 (10.176)	0.0064 (7.780)
Experience	0.0291 (10.181)	0.0280 (9.815)	0.0522 (13.753)	0.0486 (13.414)
Experience ²	-0.0004 (-7.686)	-0.0004 (-7.446)	-0.0007 (-10.871)	-0.0006 (-10.557)
Male	0.1877 (6.766)	0.1774 (6.428)	0.2401 (6.172)	0.1866 (5.014)
Married	0.1107 (3.908)	0.1066 (3.787)	0.0554 (1.500)	0.0417 (1.183)
Modern		0.1241 (3.742)		0.8892 (21.316)
Public		0.2034 (3.166)		1.4533 (21.991)
S.S. affiliation		0.1827 (4.808)		0.2477 (6.090)
Mining	0.4124 (2.518)	0.2534 (1.547)	1.3879 (11.971)	0.4539 (3.960)
Food and tobacco	0.3796 (4.137)	0.2673 (2.895)	0.6485 (5.603)	0.3033 (2.742)
Textiles	0.3048 (2.245)	0.1606 (1.178)	0.0217 (0.180)	0.0064 (0.056)
Wood, paper and printing	0.1365 (1.318)	0.0451 (0.436)	0.9537 (6.277)	0.5349 (3.680)
Oil, chemicals and plastic	0.4001 (3.097)	0.2669 (2.059)	1.1619 (4.709)	0.5841 (2.481)
Cement	0.2696 (1.935)	0.2167 (1.564)	1.0966 (6.615)	0.6776 (4.284)
Metal industries	0.4326 (3.957)	0.4008 (3.684)	0.6343 (3.804)	0.2174 (1.366)

(Continued)

Table 9 (Continued)				
Determinants of Take-Home Pay (in Log) in Urban Areas, Excluding Agriculture				
Variable	Ecuador		Bolivia	
	(1)	(2)	(3)	(4)
Other manufacturing	0.1640 (1.982)	0.1332 (1.619)	0.0615 (0.495)	-0.0564 (-0.477)
Water, power and construction	0.4316 (5.792)	0.3954 (5.305)	0.0958 (1.004)	-0.2018 (-2.211)
Automotive repair and service	0.1527 (1.744)	0.1387 (1.595)	0.2224 (1.905)	0.1389 (1.252)
Wholesale trade	0.4138 (4.624)	0.3565 (3.993)	1.4114 (8.516)	1.2583 (7.984)
Retail trade	0.1154 (1.849)	0.1278 (2.059)	-0.1556 (-1.727)	-0.0580 (-0.677)
Hotels and restaurants	0.3139 (4.026)	0.2999 (3.872)	0.4387 (3.838)	0.2912 (2.679)
Transportation and communication	0.3825 (5.020)	0.3917 (5.169)	0.2909 (2.959)	0.0912 (0.973)
Insurance and finance	0.5828 (5.876)	0.3929 (3.881)	2.0156 (11.588)	1.2811 (7.669)
Real estate	0.1314 (1.349)	0.0629 (0.645)	1.1315 (8.756)	0.9011 (7.324)
Government services	0.2553 (3.545)	-0.0125 (-0.146)	1.5955 (15.482)	0.2987 (2.653)
Education	0.1651 (2.212)	-0.0541 (-0.662)	1.3335 (12.958)	0.1771 (1.634)
Health	0.1246 (1.446)	-0.0577 (-0.640)	1.3369 (11.142)	0.4119 (3.448)
Other social and personal services	0.2126 (2.910)	0.1996 (2.751)	0.7148 (7.075)	0.4969 (5.164)
Other services	0.1886 (2.567)	0.2060 (2.813)	1.3052 (12.914)	1.3783 (14.332)
Adj. R ²	0.2557	0.2659	0.4172	0.4742
n	4714	4714	8303	8303

Note: Base industry is apparel. The model for Ecuador also includes fishing. t-values are in parentheses.

Figure 1

EPANECHNIKOV KERNAL

Figure 2

EPANECHNIKOV KERNAL

Figure 3

EPANECHNIKOV KERNAL

Figure 4

Industry Wage Premia in Ecuador

Estimated premia are from columns (1) and (3) in Table 12. Base industry is apparel. The slope of the fitted regression line is 2.162, and it is significant at the 5 percent level.

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