Producing Higher Quality Jobs: Enforcement of Mandated Benefits across Brazilian Cities between 1996-2007

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Abstract

There is an open debate on how governments can help the creation of higher quality jobs. This paper explores unique administrative data on the enforcement of labor market regulations across Brazilian cities between 1996 and 2006 to analyze this topic. We proxy job quality with several attributes going beyond wages and formality of the work contract. In the context of a strictly regulated labor market, we find robust evidence of (i) a strong trade-off between the provision of mandated non-wage benefits and wage levels, on the one hand, and the provision of optional job benefits on the other, and (ii) more formality leads to higher mean wages in the economy. We argue that enforcement policies can increase welfare depending on how workers value the benefits they get through formal channels vis-à-vis wages and optional benefits.

Keywords: Enforcement of labor regulations, Informality, Job quality
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1 Introduction

Over the last decade economic growth in Brazil has translated into rising real wages and strong job creation, particularly among those workers with a carteira de trabalho.[1] However, it remains an open question whether job quality in the country has risen significantly. One of the instruments that policymakers can use to directly foster job quality is the enforcement of mandated benefits in the labor code. This paper analyzes whether the

ment of labor law increases directly job quality through a direct effect in the compliance with the mandatory labor market regulations. However, when faced with increased enforcement of mandated job benefits, and thus with higher costs of labor, firms may choose to either decrease the demand for labor, decrease hourly wages, reduce hours of work or adjust provision voluntary benefits. In the presence of strict enforcement, the set of voluntary job benefits could be easier to adjust than the mandated job benefits simply because

we will condition on a number of time varying city characteristics like total population, average age of the population at the city level, average education of the population at the city level, share of urban population in the city, the sector composition of the economic activity in the city and the city's per capita income in each year. Because labor market, education and anti-criminal state level policies are also likely to affect enforcement and labor market outcomes, we also control for state specific year trends. Reassuringly, our main findings do not significantly change with the set of city or state level controls, which suggest that the endogeneity of the variation of enforcement in changes is probably not a serious concern.

Our paper relates with different literatures. First we relate to the literature analyzing the link between employment protection regulations and labor market outcomes (e.g., Kugler (1999, 2001, 2004), Kugler and Kugler (2003), Eslava et al (2005), Ahsan and Pages (2007), Petrin and Sivadasan (2006) and several other studies cited in Heckman and Pages (2004)]. Particularly related to our paper is Besley and Burguess (2004) and Autor, Kerr and Kugler (2007) who explore changes in the de facto regulations to identify the effects of employment protection laws on labor market outcomes. Our identification strategy relates closely with Almeida and Carneiro (2009a, 2009b) who also explore within country variation in the enforcement of labor market regulation. However, unlike our paper Almeida and Carneiro (2009a) do not explore time series data on the enforcement of regulation at the city level, nor do they consider the effects of regulation on a detailed breakdown of mandated and voluntary job attributes. Our paper makes two important contributions to this literature. First, we analyze the effects of labor market regulations on other job attributes besides the formality of the work contract. While in most studies, job quality is captured simply by formality of the work contract (e.g., ILO, 2003, Madrigal and Pages, 2008; Boeri et al, 2008), this is just one dimension of job quality.[4] We show that, in Brazil, there is a strong correlation between being formal (measured by having carteira de trabalho) and receiving other mandated or optional benefits. However, this correlation is far from perfect and there is significant within country and time series variation in the provision of these job attributes. Second, we explore time series variation in the enforcement of labor market regulations to mitigate the potential problem of unobserved city level characteristics potentially correlated with labor market outcomes and with enforcement of the law.[5]

Second, we relate to the literature linking the employer provided benefits and individual job satisfaction. For developed countries, this literature shows that the provision of fringe benefits correlates positively with individual job satisfaction (e.g., many arti-

(2006), Bender and Heywood (2006), Donohue and Heywood (2004), Uppal (2004), Benz (2005) and Artz (2008)).[6] The evidence for developing countries is scarcer. Madrigal and Pages (2008) link job protection and firm size with job satisfaction for three Latin American countries. They find that job satisfaction correlates with firm size for wage earners. The effect is heterogeneous across workers with the low skilled valuing relatively more self employment and less salaried jobs with benefits than the high skilled workers. Boo, Madrigal and Pages (2009) investigate the relationship between part-time work and job satisfaction for Honduras. They find that both women and men tend to prefer a full-time job, unlike evidence found for developed countries where the effect of hours worked on job satisfaction is negative. In Honduras, working part-time is a luxury good whose most disadvantaged families or families with children cannot afford.

Third, we relate to the literature investigating the extent to which higher mandated benefits translate to lower wages (or the commonly know rate of pass through). Among the papers cited in Boeri, Helppie and Macis (2008), the most closely related to our work are Kugler and Kugler (2002) and Gruber (1997). Kugler and Kugler (2002) study the effects of payroll taxes using a panel dataset of manufacturing plants in Colombia. The authors find 2.4% drop in wages as a result of a 10% increase in payroll taxes. Gruber (1997) explores the social security reform of Chile in 1981, which represented a large decrease in payroll taxes, and find no employment effects after a complete adjustment of the wages up. Wages also seem to respond inversely to the adoption or increase in other mandated benefits. For example, Gruber (1994) uses US state-level data to show that wages went down considerably when maternity benefits increased with a reform in the 1970s.

We explore two main sources of data. First, we explore information on the enforcement of labor regulations by exploring an administrative panel data set on the labor inspections in each Brazilian city, between 1996 and 2006. This data, collected by the Brazilian Ministry of Labor, provides information on the number of labor inspections in each city. Inspectors check the compliance of firms with different mandated attributes related to the compliance with minimum wages, severance pay, formal worker registration, transportation benefits, legal working time.

Second, we explore information in the Pesquisa Nacional por Amostra de Domicilios (PNAD) surveys to compute alternative measures of job quality at the city level between

the Ministry of Labor (through ownership of carteira de trabalho) and share of workers

new Brazilian Federal Constitution (FC), reflected the re-democratization process, and increased back the benefits to workers. These latter changes represented a large increase in the labor costs to firms. First, it reduced the maximum weekly working period (from 48 to 44 hours). Second, it increased the overtime wage premium from 20% to 50% of regular wage. Third, the maximum number of hours for a continuous work shift dropped from 8 to 6 hours. Fourth, maternity leave increased from 3 to 4 months. Fifth, it increased the one month vacation time pay from 1 to 4/3 of a monthly pay. Following 1988 the changes is the labor code included additional increases in the cost of labor to the employers. First, the employer's payroll contribution increased from 18.2% to 20% (and to 22.5% for workers in the the financial sector). Second, from 1988, the penalty on the firm for dismissing the worker without cause increased from 10% to 40% of the total contributions to the severance fund, FGTS. Third, from 2001, the monthly contribution towards FGTS increased from 8% to 8.5% and the penalty on the firm increased further from 40% to 50%, where 40% goes to the employee and the extra 10% goes to the government.[9]

As result, in Brazil employers face very high costs of hiring and firing formally workers. For example, in 2007, for a net wage of 100 Reais, the firm needs to disburse approximately 165.70 Reais (Cardoso and Lage, 2007).[10] In addition, if the worker is dismissed for unjustified reasons, with the exception of workers on probationary period, the firm is fined and has to pay the worker additional 40% of the FGTS balance and, since 2001, the firm also has to pay the government 10% of the worker's FGTS balance.[11] Unlike in most of the countries, in Brazil severance payments received by the worker are not subject to income taxation. This means that the workers value one Real of FGTS more than one Real in gross wages.[12] Moreover, firms pay taxes on profits, which represent about 23% (15% IRPJ and 8% CSLL). As a result, the cost of FGTS to the firm is much smaller than the value of FGTS to the worker. Moreover, not differently than in other Latin American countries, employers in Brazil must also give an advance notice to workers. During this

[9]The FGTS (Fundo de Garantia por Tempo de Servico) is 8% (8.5% since 2001) of the employee's monthly wage which goes into an individual account managed by a federal bank, where deposits get adjusted by inflation plus a 3-6% annual interest rate, depending on tenure in the current job. Workers have access to their accounts only if they get fired for no reasons, upon retirement or other reasons which mostly include the worker to buy its first own house.

[10]That mainly include: the firm's costs with social security contributions and severance pay (28% of gross wage or 28.5% since 2001). In addition, firms must pay 2% of the worker's gross wage as insurance to cover for accidents in work. Also, all private-owned firms pay 2.5% for Salario-Educacao which is a contribution toverr4u(firm)-239(funl)-239(of)-239(the)-239Ministary of aopost financing prmnary is

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interim period, workers are granted up to two hours per day (25% of a regular working day) to search for a new job or the firms voluntarily choose to grant them the full monthly wage without requiring them to work. Barros and Corseuil (2001) find that there are large productivity losses during this period.

In the empirical work, we will analyze five different mandated benefits, which we observe at the individual level in PNAD: social security coverage, worker's registration with Ministry of Labor (carteira de trabalho), wage complying with the minimum wage, transportation benefits and a maximum weekly working hours. We describe briefly next the benefits provided by each of these categories. The entitlement to a carteira de trabalho implies that the worker is protected by the Employment Laws, laid out by the CLT and revised subsequently in the 1988 FC. In particular, since 1988 owning a carteira de trabalho entitles workers to paid annual leave (CLT art. 129), maternity leave (CF art.7, XVII), severance pay conditional on being fired (Law 8036 of 1990), maximum weekly working period of 44 hours (CF, art. 7, XIII), unemployment insurance (Law 7998 of 1990) and other associated benefits such as social security and transportation benefits (Law 7418 of 1985 and Decree 95247). The social security benefits entitles workers to retirement pensions, disability benefits, death insurance and to Salario Familia.[13] The social security law, Law Elói Chaves and Decree 4682, dates from 1923 and was implemented gradually. In 1960, the Lei Organica de Previdencia Social extended social security coverage to most urban workers and three years later coverage was extended also to rural workers.

We observe the direct entitlement with minimum wages, with transportation benefits and to maximum weekly hours. The minimum wage was implemented in Brazil since mid 1930's, in Law 1985 of 1936 and Decree 399 of 1938. The minimum wage is set monthly at the federal level.[14] In 1996, the minimum wage was set to 112 Reais and, in 2007, it was 380 Reais. At 2008 prices, the minimum wage in 1996 was Reais 248 or US$ 250 and in 2007 it was Reais 406 or US$ 200. The transportation benefits may be provided in kind or through a monetary transfer. The amount or the cost of this benefit for the firm varies from city to city in Brazil. It also depends on the journey and on the type of transport needed/available in the city (mainly by bus, metro or car).

Safety in workplace is also another important benefit which is mandated by law. The labor code is quite ample in this attribute as specified by the CF (art.6 and 7, XXII, XXIII, XXVIII e XXXIII), CLT (V, 1977) and by law 5.889 of 1973 for the rural workers. Cardoso e Lage (2007) argues that enforcement is highly linked to inspecting safety regu-

[13] Salario Familia entitles low wage workers with dependant children (until 14 years of age) to a monetary benefit per dependent. Salario Familia currently ranges between Reais 19 and Reais 27 per month and child, depending on the individual wage. Households where both parents work and are eligible for this benefit, receive this contribution twice.

[14] After 2002, Brazil had more than one minimum wage. In particular, since then the state of Rio de Janeiro adopted a minimum varying also by occupation. Since 2007, three other states in the country – Sao Paulo, Parana and Rio Grande do Sul – also adopted a state specific minimum. In the empirical work we explore time series variation between 1996 and 2007 and thus should account for these differences.

lations. We unfortunately do not observe safety in workplace benefits in data to test it. However, it is also true that fines applied because of lack of compliance with safety are highly correlated with fines by lack of worker's registration, which is one of the aspects we investigate.

Finally, there are benefits which are voluntarily paid by the firm and we observe in

will be a key feature of our empirical work. In particular, we will explore variation in the yearly number of labor inspections at the city level between 1996 and 2007.

Labor inspections became stricter and more relevant after mid 90s. The large public deficit at that time led the Brazilian government to search for alternative ways to collect revenue. The size of informal economy (57% of the workforce in the country did not pay payroll taxes in 1996, PNAD) and in particular the significant evasion of severance pay by firms seemed to be a profitable target for labor officers whose main role was to act as tax collectors.

Most of the inspections (and fines) are to ensure compliance of firms with the worker's formal registration in the Ministry of Labor, contributions to the severance pay fund (FGTS), compliance with minimum wage and with the maximum working period/shifts. Evasion of one of these dimensions accounts for approximately 62% of all fines issued in 2007. The monetary amount of the fines is economically significant and maybe issued per worker or it may be indexed to firm size. For example, in 2009 values, a firm is fined by Reais 403 for each worker without a carteira de trabalho and by Reais 170 per violation of the terms of payment. Depending on its size and profitability fines related with FGTS range from Reais 11 and Reais 106 per worker. Fines related to evasions of the working schedule (daily, weekly or extra hours) vary from Reais 40 to Reais 4,025 per worker. When firms are caught evading more than once, all fines are doubled. At 2009 prices, the federal minimum wage was Reais 415 so not complying with worker registration may imply a penalty of approximately one monthly wage.

An inspection can be triggered either by a random firm audit, or by a report (often anonymous) of non-compliance with the law. Workers, unions, the public prosecutor's office, or even the police can make reports. In practice, almost all of the targeted firms are formal firms because it is difficult to visit a firm that is not registered, since there are no records of its activity. Also, inspectors face a performance based pay scheme which often leads them to look for big cases where the penalty is likely to be large.[16]

3 Data

We explore two main sources of data. First, we use administrative city level data on the enforcement of labor regulations collected by the Brazilian Ministry of Labor. Data for the number of labor inspections and fines in each city is available for the following years: 1996, 1998, 2000, 2002, 2004 and 2006. Second, we explore the household level survey PNAD, collected by the Instituto Brasileiro de Geografia e Estatistica (IBGE). Data is available annually for the years 1996 through 2007 (except for 2000, when PNAD is not available). For the year 2000, we interpolate with values obtained from the simple average

[16] In particular, up to 45% of their wage is tied to the efficiency of the overall enforcement system (1/3 is tied to the inspectors own performance while 2/3 is tied to the system's global performance). Their base salary is also competitive. In 2004, their monthly wage was between USD 2,490 (starting position) and USD 3,289 (top management) [Almeida and Carneiro, 2009]

characteristics, including labor market outcomes. The city level characteristics include total city population, average years of schooling of population aged 23-65, average age of the population in the city, the share of urban population in city, average per capita household income and the share of workers in agriculture, mining, trade, services, manufacturing, transport and telecommunications and in construction.

We also explore PNAD to compute several labor market variables, which include total city employment, employment composition, moments of the wage distribution and alternative measures of job quality. All the variables proxying job quality discussed below are computed as the number of wage earners in each city with a specific job attribute as a percentage of the total city population aged 23-65 years old. Because labor inspections target mostly the wage earners in firms, we always exclude from the numerator domestic employees, unpaid workers or self-employed workers.

We consider three alternative types of job benefits. First, we compute variables to proxy for city level coverage with mandated benefits, which include social security coverage, formal worker registration with the Ministry of Labor (carteira de trabalho), compliance with minimum wage and transportation benefits. These are measured with the number of wage earners with social security coverage as share of city population between 23 and 65 years old. We compute similar statistics for the workers with carteira de trabalho, with monthly labor earnings above the federal minimum wage, with transportation benefits and working up to 44 hours/week.

Second, we compute variables to proxy for city level coverage with a set of voluntary benefits, which include housing benefits, private health insurance, education or child care benefits and food benefits. Again these are measured with the number of wage earners with housing benefits as share of total city population aged 23 and 65 years old. We compute similar statistics for the workers with (private) health insurance, with education or child care benefits and with food benefits.

Third, we consider in addition a set of job characteristics that are more indirectly related with job quality at the city level. In particular, we compute the share of wage earners in firms with more than 11 employees as share of total population, the share of wage earners in construction and the share of wage earners that work more than 30 hours per week (i.e., are considered full time).[21] The rational is that job quality correlates with firm size and with satisfaction on the job. Madrigal and Pages (2008) report that job

also assume that job quality is correlated with working fewer hours (or having a part-time job).[22]

Finally, we also compute additional labor market indicators at the city level. First, we compute the median, percentile 10th and 90th of the labor earnings for all wage earners in each city. Similarly, we also construct these moments for workers with and without the specific mandated or voluntary attributes discussed above. Second, we compute city level measures of the composition of employment in each city: as the share of wage earners (registered or unregistered with Ministry of Labor), the share of the self-employed, the share of the unpaid workers, the share of domestic employees and the share of the non-employed, always as a proportion of the total city population between 23 and 65 years old.

4 Theoretical Model

We motivate our estimations with a simplified version of a theoretical model of compensating differentials studied in Rosen (1974, 1986) and summarized in Fernandes (2002). These models relax the assumption that wages are the only choice variable when firms and workers decide on the optimal allocation of labor. In addition to wages, workers value also job attributes. Some jobs offer worse working conditions than others, and thus firms must pay a compensating differential to account for the worker's lower utility.

As discussed in the previous section, we observe whether Brazilian workers receive a set of mandated and voluntary benefits. If individuals value these benefits, they should be willing to receive lower wages in exchange for having these job attributes. The greater the worker's valuation of each benefit, the larger the wage reduction she would be willing to accept. All else constant, providing these benefits is costly to firms and thus, they are willing to offer jobs that trade off these benefits in exchange of lower wages.

Assume that the workers utility function is $U = U(w$

heterogeneous, with varying costs to provide job benefits across cities and over time. In particular, cities differ in the tax structure, factor prices and technology available. Therefore, firms located in different cities will have different cost of providing the same job attribute. In sum, in the real world significant differences across individuals and firms in their preferences and costs of providing certain job benefits could prevent us from finding the empirical contradiction of the model that wages and benefits correlate negatively. Nevertheless, we are confident that exploring within country and time series variation at the city level and conditioning for several city characteristics as well as year trends, we account for the large heterogeneity.

In the next section we relate the degree of enforcement of labor market regulations at the city level, which is a proxy for the cost of providing mandated job benefits, with the provision/supply of certain job benefits. Our empirical strategy will compare job benefits across cities and over time. We assume that the cost of evading the law and not providing mandated benefits is higher in cities with stricter enforcement of labor market regulations (which we will proxy with labor inspections). Thus, stricter enforcement should directly affect the provision of mandated benefits. The most important mandated benefits are observed in our data and include social security coverage, the worker formal registration with MoL, compliance with federal minimum wage, provision of transportation benefits and compliance with maximum working period.

As discussed in section 2, when labor inspectors visit the firms they check the compliance with a wide set of mandated benefits established in the labor code and which include all the dimensions reported above (e.g., Cardoso and Lage, 2007). Even though the Brazilian labor law is set at the federal level, – and thus the cost of compliance with mandated benefits should not vary at the city level- it might change over time, i.e taxes rates, allowances, minimum wage etc[24]

All else constant, firms located in cities with stricter enforcement will face higher labor costs. They will have a lower demand for labor and thus may reduce employment,

in the economy for those who remain employed. Nevertheless, we still find it more plau-

where Y_{it}^{k} is a proxy of the job attribute k in city i at time t, $E_{it-1}$is the measure of enforcement of labor market regulation in the city i and time t-1, X_{it}

The main parameter of interest is

are identified with lagged enforcement. In the absence of labor market rigidities, the

share of workers with social security of 0.28pp. The effect is statistically significant but seems small in economic terms, depending on how much of enforcement can be increased by the labor authorities. More inspections also led to positive and significant effects on the share of registered workers and on the share of workers earning above the minimum wage, which grew respectively by 0.35 and 0.38pp, if enforcement increases by 10%. On the contrary, the share of unregistered workers decreased significantly by 0.16pp. These results are expected since law should directly affect having mandated benefits positively and not having them negatively. By contrast, the share of workers without transport benefits and the share working by the legal working hours did not change significantly with enforcement. One possible reason could be because enforcement is not primarily used to monitor firm's compliance with transport benefits or with legal working period, as table 9 shows.

Table 3 reports the estimates of the effects on the voluntary benefits. Point estimates show that stricter labor inspections at the city level are associated with a larger share of the wage earners without voluntary benefits (including housing benefits, food benefits, education/child care benefits or without health insurance). A stricter enforcement at the city level is more negatively correlated with the provision of food and health benefits. Here cities with 10% higher labor inspections have a 0.5pp higher proportion of wage earners without food subsidies and without health benefits. These findings suggest that stricter enforcement of labor regulations pressure firms to reduce labor costs (or to cut employment). In the short-run, rigidities of wage contracts justify why firms may adjust voluntary benefits instead of wages. Firing costs may also play a role to explain why firms do not cut employment. This is especially true if the worker is not newly hired by the firm.[32]

Table 4 reports the effects of enforcement on additional proxies for job quality including share of workers working full time, share of workers in construction and the share of workers in firms with more than 11 employees (non-micro). Table 4 shows that positive and significant effects on the share of full-time workers in specification with basic controls (panel A) but not in the specification with all controls (panel B). That is not surprising because compliant firms offer long term contracts and also lower working time flexibility as hiring a worker is costly. In other Latin American countries however working full-time as opposed to part-time raises job satisfaction. That is consistent with working

ment we observe across states. For instance, suppose that policies towards decreasing the bureaucracy cost to set up a formal firm in the state share a common trend with the enforcement policies. Lower costs to open up a compliant business and more enforcement could complement each other in terms of coordinated anti-evasion policies between the federal government which has the enforcement role and the state governments which collect a large fraction of the firms' tax bill. Low bureaucracy costs also incentivizes entry of formal firms in the market which should directly impact job quality. Because low bureaucracy cost is likely to be related to stricter labor regulatory environment and also to more job quality, it must potentially be an important omitted factor.

To reassure that our coefficients are not reflecting the common trend between enforcement in a state and omitted factors, we include in the regressions the year trends by state. We then add to the right hand side of equation 1 state dummies (minus one) interacted with a year trend.

The inclusion of state-specific trends makes our identification stronger as we rule out possible biases from common trend policies within a state, on the other hand, it is important to note that including the trends by state in the equation may have weakened the enforcement effects since it is possible that enforcement effects could be mainly explained by trends in each state.

of reach of labor inspections. Lower size might be an obstacle for firms to invest and improve in-work benefits, in that sense, there is here a trade off between more mandated benefits and benefits associated with a larger firm size. There is also less evidence that workers work more in less riskier occupations after more regulation as the coefficient on the share of workers in other occupations (which are not construction) is positive however this is insignificant.

By the results on wages in Tables 7.1 to 7.4, in general we confirm existence of a wage (de-)compensation for employees (with)out benefits. Differently from the results of the earlier specification, here we see an increase in the 10th percentile wages of workers with the benefits of social security and registration. We interpret these results as consequence of change in the composition of workers. Incoming workers into the formal sector have lower skill levels than the existing workers in that sector. That tends to move left the distribution of wages of registered employees, raising wages at bottom and contributing to reduce top wages in that group.

In Table 8, we also regress the wages (or earnings) of all workers in the city against enforcement using the specification in 1 with all controls and the specification with the year trends by state. The coefficients of the latter (Panel B) show that mean and median wages in the city increases significantly with more enforcement, while other percentiles remain unaltered.

Overall, our results suggest that stricter enforcement increases compliance with mandated benefits ('carteira') but there is a trade off between mandated and voluntary benefits and also between mandated benefits and wages. Despite higher fraction of unpaid workers, mean wages in the city increase, so net positive impact of enforcement on wages. Because there is tradeoff between wages and the registration benefit, and the proportion of workers with registration increased with enforcement, the result on mean wage is likely to be driven by an increase in the formal demand.

7 Conclusion and Policy Implications

Growth in Brazil over the last years has translated into job creation, in particular across the formal sector. This has been followed by rising real wages (both in the formal and informal sectors), which could be interpreted as an improvement in job quality in the country. The debate whether good and bad jobs are rising has often been confused with identifying the trend of formal and informal jobs. However, even a formal sector job might not have the full set of job attributes that are mandated by the law (e.g., full mandated benefits, full severance pay or a minimum wage). The degree to which employers provide mandated job attributes to workers hinges on the whether there is enforcement of labor market regulations. This paper analyzes how changes in the enforcement of labor market regulation affect the provision of mandated and voluntary benefits.

We explore a unique administrative panel data on the enforcement of labor market regulations and detailed job quality proxies, at city level between 1996-2007. Our results show that stricter enforcement at the city level increases compliance with mandated ben-

efits but there is a trade off between mandated and voluntary benefits and also between

TABLE 1

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TABLE 2

Effects of Enforcement of Labor Regulations on Mandated Job Benefits

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86&".'2&)$%)*%'"**6*:'+$'#)*"$&=":':')*"';-T:&"*"%',7';+&7U'P':+0$+3+;)$&')&'?MVW'PP':+0$+3+;)$&')&'?VN'X="'&),-"'*"#6*&:'&="'-"):&':YT)*":'":&+5)&":'63'"YT)&+6$'>?@'+$'&="'&"Z&'I="$'&="'%"#"$%"$&'[)*+),-"'+:'&="':=)*"'63'#6#T-)&+6$')0"%'AB4ED'I +&=>6T&@':6;+)-':";T*+&7';6["*)0"U'36*5)-'*"0+:&*)&+6$'I +&='&="'_+$+:&*7'63'J),6*'>_6J@U'5+$+5T5'I)0"U'&*)$:#6*&)&+6$',"$"3+&')$%'I6*\+$0',7'CC'=6T*:aI""\@N'L$')--':#";+3+;)&+6$:U'I"'T:"';+&7')$%'7")*'3+Z"%'"33";&:N'F)$"-'G'*"0*"::+6$:'+$;-T%"',):+;';6$&*6-:'I=+;=')*"'5")$'"%T;)&+6$U'-60'63'#6#T-)&+6$')$%'5")$')0"')&'&="';+&7')$%'7")*N'F)$"-'S'+$;-T%":';6$&*6-:'+$'F)$"-'G'*"0*"::+6$:'#-T:'&="':=)*"'63'T*,)$'#6#T-)&+6$U'&="':=)*"'63'I6*\"*:'#"*'+$%T:&*7'>+N"N':=)*":'+$'5)$T3);&T*+$0U')0*+;T-&T*"U'&*)%"U":"*[+;":U'&"-";655T$+;)&+6$:')$%'6&=4"*:@U')$%'3+$)--7'&="'-60'63'#"*';)#+&)'+$;655"'+$'&="';+&7')$%'7")*N'G--'+$%"#"$%"$&'[)*+),-":')*"'-)00"%N'/"'T:"'&="'+$["*:"'63'&="'$T5,"*'63'6,:"*[)&+6$:'#"*";"--'):'I"+0=&:N

TABLE 3

! "#"$%"$&' ()*+),-".	` 6T:+$0		H66%		1%T;)&+6$a]=+-%'])*"		` ")-&=	
	I +&=	I +&=6T&	I +&=	I +&=6T&	I +&=	I +&=6T&	I +&=	I +&=6T&
	>?@	>A@	>B@	>C@	>D@	>E@	>R@	>Q@
	F)$"-'G.'H1' I +&=',):+;';6$&*6-:							
J60'K'L$:#";&+6$:'	4MNMMD >MNMMD@	MNMAQ >MNM?M@ PPP	4MNMBC >MNM?C@ PP	MNMDE >MNM?E@ PPP	MNMMB >MNMMA@	MNMAM >MNM?M@ PP	4MNMAR >MNM?C@ PP	MNMDM >MNM?D@ PPP
<,:N	CQBC	CQBC	CQBC	CQBC	CQBC	CQBC	CQBC	CQBC
	F)$"-'S.'H1' I +&=')--';6$&*6-:							
J60'K'L$:#";&+6$:'	4MNMME >MNMMD@	MNMAE >MNM?M@ PPP	4MNMBB >MNM?D@ PP	MNMDB >MNM?Q@ PPP	MNMMA >MNMMA@	MNM?R >MNM?M@ P	4MNMBM >MNM?B@ PP	MNMCO >MNM?E@ PPP
<,:N	CQBC	CQBC	CQBC	CQBC	CQBC	CQBC	CQBC	CQBC

2&)$%)*%'"**6*:'+$'#)*"$&=":':')*"';-T:&"*"%',7';+&7U'P':+0$+3+;)$&')&'?MVW'PP':+0$+3+;)$&')&'DVW'PPP':+0$+3+;)$&')&'?VN

X="'&),-"'*"#6*&:'&="'-"):&':YT)*":'":&+5)&":'63'"YT)&+6$'>?@'+$'&="'&"Z&' I ="$'&="'%"#"$%"$&'[)*+),-"'+:'&="':=)*":'63'#6#T-)&+6$')0"%'AB4ED' I +&='6*' I +&=6T&'&="',"$"3+&'63.'=6T:+$0U'366%U'"%T;)&+6$a;=+-%';)*"')$%'"5#-67"*'#*6[+%"%'="')-&='+$:T*)$;"N'L$')--':#";+3+;)&+6$:U' I "'T:"';+&7')$%'7")*'3+Z"%'"33";&:N'F)$"-'G'*"0*":+6$:'+$;-T%"',):+;';6$&*6-:' I =+;=')*"' 5 ")$'"%T;)&+6$U'-60'63'#6#T-)&+6$')$%' 5 ")$')0"')&'&="';+&7')$%'7")*N'F)$"-'S'+$;-T%":';6$&*6-:'+$'F)$"-'G'*"0*"::+6$:'#-T:'&="':=)*"'63'T*,)$'#6#T-)&+6$U'&="':=)*"'63' I 6*\"*:'#"*'+$%T:&*7'>+N"N':=)*":'+$' 5)$T3);&T*+$0U')0*+;T-&T*"U'&*)%"U':"*[+;":U'&"-";6 5 5 T$+;)&+6$:')$%'6&="*:@U')$%'3+$)--7'&="'-60'63'#"*';)#+&)'+$4;6 5 "'+$'&="';+&7')$%'7")*N'G--'+$%"#"$%"$&'[)*+),-":')*"'-)00"%N' / "'T:"'&="'+$["*:"'63'&="'$T 5 ,"*'63'6,:"*[)&+6$:'#"*';"--'):' I "+0=&:N

TABLE 4

Effects of Enforcement of Labor Regulations on Other Job Benefits

TABLE 5
Effects of Enforcement of Labor Regulations on Wages

X) , -"'DNBN'X*)$:#6*&)&+6$' , "$"3+&:

	/ +&='S"$"3+&			/ +&=6T&'S"$"3+&		
! "#"$%"$&' ( )*+) , -".	F?M	_ "%+)$	FOM	F?M	_ "%+)$	FOM
	>?@	>A@	>B@	>C@	>D@	>E@
	F)$"-'G.'H1' I +&=' ,):+;';6$&*6-:					
J60'K'L$:#";&+6$:'	4MNMDM	4MNMB?	4MNABQ	MNAMQ	MNCB?	4MN?DR
	>MN??M@	>MNMQ?@	>MN?AQ@P	>MNAME@	>MN?QM@PP	>MNMQR@P
< , :N	CC?R					

TABLE 6

Effects of Enforcement of Labor Regulations using State-specific Year Trends

X),-"'EN?N'133";&'63'1$36*;"5"$&'6$'15#-675"$&']65#6:+&+6$

X) , -"'E\B\'133";&'63'1$36*;" 5 "$&'6$'<#&+6$)-'S"$"3+&:

! "#"$%"$&' ()*+) , -".	` 6T:+$0	H66%	1%T;)&+6$a] =+-%'])*"	` ")-&=
	I +&= I +&=6T& I +&=			

TABLE 7

Effects of Enforcement on Wages using State-specific Year Trends

X),-"'R?'26;+)-'2";T*+&7']6["*)0"		
	/ +&='26;+)-'2";T*+&7	/ +&=6T&'26;+)-'2";T*+&7
!"#"$%"$&'()*+),-".		

X) , -"'RNBN'X*)$:#6*&)&+6$'S"$"3+&:

TABLE 8

Effect of Enforcement of Labor Regulations on Labor Earnings of All Workers

FIGURE 1
Intensity of labor inspections in Brazil

FIGURE 2
Percentage of cities with labor inspections between 1996-2006, in Brazil

FIGURE 3
Intensity of labor inspections in Brazil, cities sampled in PNAD survey

Appendix

TABLE 9
Enforcement of Labor Regulations in Brazil: 1996-2006

!"#$"%&'	())*	())+	,---	,--,	,--.	,--*
/01%'#2342 5$6$'728$692:"%3#2;<7='>6$3<7	,?@*-	A?-B)	A?.@*	A?.,)	A?.BA	A?BBA
/01%'#2342 5$6$'728$692:"%3#2C$<'7	,?@@.	,?*.,	,?*A)	,?*,,	,?*,B	,?*,+
D36"&2 /01%'#2342:"%3#2;<7='>6$3<72	.@)?A*+	A+A?,.*	.@*?-*+	A++?,@@	A@)?(B(	.-*?-)A
D36"&2 /01%'#2342:"%3#2C$<'72	((-?.B@	(..?)+,	(,(?)@.	((*?(.A	((B?.@.	(.-?.,)
!"#$#"%&#'(#)(*&'+,-(./(%/$+0						
E3#F'#%7243#1"&2#'H$76#"6$3<2I3:	-J,(	-J(+	-J(+	-J()	-J()	-J()
53<6#$%06$3<72CKDL2	-J(+	-J(*	-J(*	-J(*	-J(@	-J(*
53<6#">60"&2E"H'72	-J(B	-J(@	-J(@	-J(@	-J(@	-J(@
I"<M"63#N2E3#F$<H2O'#$3M2	-J(-	-J(A	-J(A	-J(,	-J(,	-J(,
I"<M"63#N2P'762O'#$3M2	-J-)	-J((	-J((	-J((	-J((	-J((
D#"<7=3#6"6$3<2Q'<'4$672	-J-.	-J-@	-J-.	-J-A	-J-.	-J-A
R<'1=&3N1'<62;<70#"<>'2	-J-A	-J-.	-J-A	-J-,	-J-A	-J-,
S69'#2T$<>&J7"4'6N?29'"&692"<M2$<U83#F2%'U<'4$67V2	-J()	-J,-	-J,(	-J,(	-J,,	-J,,
53##'&"6$3<TC$<'72E3#F'#%7243#1"&2#'H$7U6#"6$3<?2S69'#2C$<'7V	-J)+	-J))	-J)+	-J)B	-J)*	-J)B
53##'&"6$3<T53<6#$%06$3<72CKDL?2S69'#2C$<'7V	-J)@	-J)B	-J)@	-J).	-J)@	-J)@

TABLE 10

Enforcement of Labor Regulations in Brazil: 1996-2006, cities sampled in PNAD

!"#$"%&'	())*	())+	,---	,--,	,--.	,--*
/01%'#2342 5$6$'72 8$692;<7='>6$3<	*()	*@@	*+A	*)*	*)A	B-,
/01%'#2342 5$6$'72 8$692C$<'7	. . ,	.B.	.+B	.).	.+-	@-.
/01%'#2342;<7='>6$3<72	.-@?)@)	A,B?-)(	A+A?B.+	A,*?.(-	,).?+BA	AA,?*B.
/01%'#2342C$<'72	+.?()+	((,?A),	)-?@,-	+.?AB-	+,?(.)	)*?(A+
!"#$#'"%&#'(#)(&'+,-(./(126,+0*						
2E3#F'#072 43# 1"&2#'H$76#"6$3<2 I 3:	-J,-	-J(B	-J(B	-J(+	-J(+	-J(+
CKDL253<6#$%O6$3<7	-J(+	-J(*	-J(*	-J(*	-J(@	-J(*
53<6#">6O"&2 E"H'72	-J(B	-J(@	-J(@	-J(@	-J(.	-J(@
2 I "<M"63#N2 E 3#F$<H2O'#$3M2	-J-)					

!

TABLE 11

Descriptive Statistics for the Enforcement and Other City Level Characteristics

				I '"<2%N2N'"#					
!"#$"%&'	S%7J	I '"<2 L6J ['YJ		())*	())+	,---	,--,	,--.	,--*
:3H2T:"%3#22;<7='>6$3<7\(-?---](V	.+.+	-J-AA	-J((,	-J-AB	-J-A,	-J-A*	-J-A,	-J-A-	-J-AA
:3H2342O3=0&"6$3<	.+A.	((J+(	-JB@	((JB+	((J+-	((J+-	((JB)	((J+,	((J+@
ZY'#"H'2^'"#72342L>933&$<H2	.+A.	@J+A	(J+)	.J)-	@J(-	@J@B	*J((	*J.B	*J+A
ZY'#"H'2ZH'2O3=0&"6$3<	.+A.	A)J+A	(J@)	A)J@B	A)JB*	A)JB,	A)JB+	A)J)*	.-J(+
O#3=3#6$3<2342R#%"<2O3=0&"6$3<	.+A.	-JB+	-J,.	-JBA	-JBA	-JBB	-J+(	-J+,	-J+,
ZY'#"H'2:3H2342='#2>"=$6"2C"1$&N2 ;<>31'	.+A.	@JBB	-J@B	@J**	@J*)	@JB,	@JB)	@J+-	@J)*
L9"#'2342 8 3#F'#72$<W									
22ZH#$>O&6O#'	.+A.	-J,@	-J,A	-JA(	-J,)	-J,*	-J,,	-J,,	-J,(
22 I $<$<H	.+A.	-J-(	-J-,	-J-(	-J-(	-J-(	-J-(	-J-(	-J-(
22 I "<04">6O#$<H	.+A.	-J(,	-J-)	-J((	-J((	-J((	-J(.	-J(.	-J(.
22D#"M'	.+A.	-J(A	-J-*	-J((	-J((	-J(,	-J(.	-J(.	

TABLE 12

Descriptive Statistics of the Main Job Quality Measures at the City Level

		D3 6"&2			I '"<2%N2N'"#					
a3%2Q'<'4$6		S%7J	I '"<2	L6J ['YJ	( ))B	( )))	,--(	,--A	,--@	,--B
L3>$"&2L'>0#$6N2 5 3Y'#"H'	8$69	.+A.	-J,*@	-J(-+	-J,,+	-J,A.	-J,*,	-J,B(	-J,+)	-JA-+
	8$6930 6	.+A.	-J(-@	-J-@+	-J((*	-J(((	-J(-*	-J(-,	-J(--	-J-)@
P'H$76#"6$3<2 I 3:	8$69	.+A.								

TABLE 13

Summary of the 50th Percentile of Log of Wages, by Job Benefit and for All workers

TABLE 14
Summary of Workers by Employment Status

				I '"<2%N2N'"#					
d 1 =&3N 1 '<62L6"607	S%7J	I '"<2	L6J ['YJ	( ))B	( )))	,--(	,--A	,--@	,--B
E"H'2d"#<'#7	.+A.	-JAB-	-J-)(	-JA..	-JA.@	-JA*+	-JABA	-JA+)	-J.-A
L'&42d 1 =&3N'M	.+A.	-J(+B	-J-B+	-J,-A	-J,-.	-J(+A	-J(+A	-J(B*	-J(B,
/ 3<' 1 =&3N'M	.+A.	-J,+(	-J-+A	-J,+-	-J,B)	-J,)@	-J,+@	-J,B,	-J,B@
R<="$M2 E 3#F'#7	.+A.	-J-B*	-J-+A	-J-),	-J-),	-J-*B	-J-B(	-J-*)	-J-*,
[3 1 '76$>	.+A.	-J-@,	-J-A@	-J-.B	-J-.B	-J-@A	-J-@A	-J-@B	-J-@*
S69'#	.+A.	-J-A-	-J-,B	-J-AA	-J-AA	-J-AA	-J-A@	-J-AB	-J-A,

L30#>'W2Z0693#`72>"&>0&"6$3<72TO / Z [?? I $<$76#N2342 : "%3#?2( ))B269#30H92, --BJ
/ 36'W2D"%&'2#'=3#672699'279"#'2342699'2=3=0&"6$3<2"H'M2, AU*@2 8 937'2' 1 =&3N 1 '<6276"6072$7W2 8 "H'2'"#<'#27'&4U' 1 =&3N'M? 2
<3<' 1 =&3N'M?20<="$M2 8 3#F'#?2M3 1 '76$>2' 1 =&3N' '2"<M2369'#2 8 3#F'#2T' 1 =&3N'#23#2 8 3#F$<H243#23 8 <2>3<70 1 =6$3<V2

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