

Title: How Do Small Firms Respond to Labor Law Reform and Increasing Labor Enforcement? Evidence from Vietnam's Inspection Policy

Le Hoang Minh
Kyoto University, Graduate School of Economics

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Abstract

What are the consequences of making the labor regulations more stringent in the developing countries? The 2012 Labor Law reform in Vietnam increases compensation and job security for workers, while firms have to bear higher costs. However, the enforcement of this law is weak and uneven due to limited state capacity and a lack of legal expertise among small business owners. This study analyzes the effects of increased employment protections using a Difference-in-Difference (DID) framework. A sudden increase in labor inspections after the Labor Code of 2012, allows us to use quasi-experimental design to examine employment responses of SMEs subjected to inspections compared to those not inspected. The findings suggest firms subjected to inspections reduced their workforce by 8 percentage points, while increasing labor spending per worker and monthly wages for production workers. To remove the selection bias, I employ the propensity to treatment by introducing firm levels covariates at firm levels (business networks, export, business association, firm age, governmental assistance, acces to port and railway). I conduct robustness checks on DID results using Inverse Propensity Weighting (IPTW) and synthetic DID estimators, which confirm the initial findings. While there is a growing literature estimating the causal impacts of labor inspections in developing country, this research employs a novel empirical strategy, which utilizes inspections events reported at the manufacturing site-level and the panel data structure. We shed new lights on how the increase in labor protection of the labor code affects employment and firm behavior in the Vietnamese small enterprises.

1. Introduction

The 2012 Labor Law reform in Vietnam significantly increased the compensation and security of workers while firms had to bear higher costs. On the other hand, the enforcement of this law is characterized as weak and highly unequal due to limited state capacity, and a lack of legal expertise among small business owners. This study analyzes the effects of increasing employment protections as a result of the labor law reform in a Difference-in-Difference framework. The sudden increase in inspection activities after the Labor Code 2012 creates a quasi-experiment setting to investigate the effects of the reform. Specifically, we compare the employment responses of SMEs inspected for compliance after 2012 to those that were not.

The central research question addressed by this paper is: How has the increase in labor inspections following the 2012 labor law reform affected employment and worker outcomes in manufacturing small and medium-sized enterprises (SMEs) in Vietnam? While prior research on labor enforcement has often focused on larger firms or more developed economies, this study seeks to fill a critical gap by examining how labor regulations affects SMEs in a developing country context in Southeast Asia, where employment protection legislation (EPL) is notably stringent.

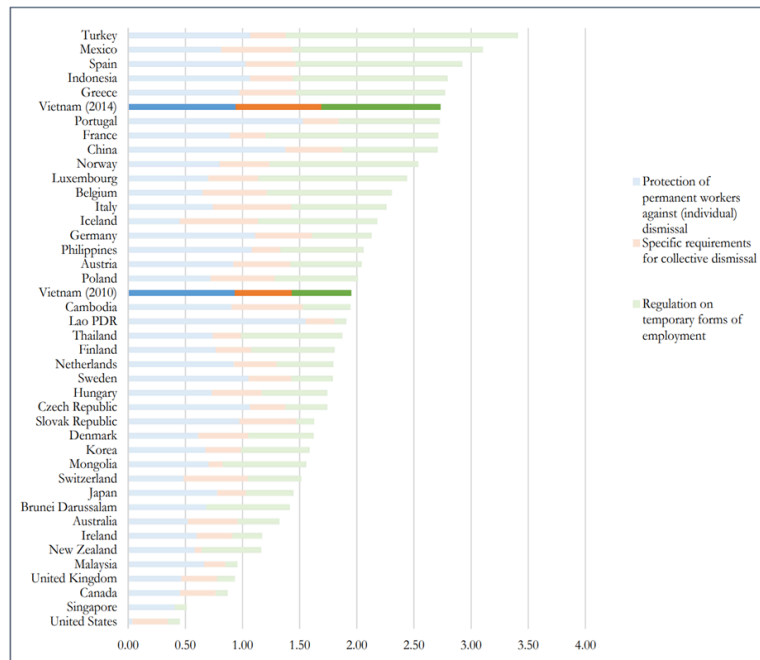


Figure: World Bank's Labor Law Strictness Index (Schmillen A.D. et al., 2016)

The findings indicate that firms subjected to inspections reduced their full-time workforce by 8 percentage points (the average firm in the sample has about 15 employees). At the same time, these firms increased per-worker labor spending and the monthly wage for production workers. For robustness checks, additional analyses were carried out using the Inverse Propensity Weighting, and synthetic Difference-in-Difference estimators.

This study considers two competing explanations for the negative effects of labor enforcement on firm employment. Firstly, the recent micro literature finds that a high level of enforcement imposes a cost on firms in terms of limiting the de-facto flexibility to hire informal, off-the-book workers, (Almeida and

Carneiro 2009; Almeida and Carneiro 2012; Ponczek and Ulyseia 2022) or through bribes extraction by state authority (Alm et al. 2016; Basri et al. 2019). However, additional analysis suggests that only the inspections cohort after 2012 induces a negative employment adjustment, while previous inspected cohorts do not. The study suggests another suitable explanation, which is the dramatic increase in employment protection in the 2012 Labor Code itself led to a reduction in firm employment. In the micro literature of labor enforcement, the impact of the content of the labor law has received less attention. Therefore, this study provides new insights for current research on the enforcement of labor regulations.

While previous studies have documented the negative employment effects of inspections (Ulyseia, 2020), this research is the first to use inspection events reported at the firms and employ the panel structure to estimate the treatment effects of labor code enforcement on total firm employment. Thus, the contributions of this research are twofold. First, it provides empirical evidence on the labor market effects of inspections on the small business in a developing country context. This research shows how labor enforcement mechanisms affect firms in an economy characterized by high levels of informality and limited state capacity. Second, this study highlights the trade-offs that firms make in response to increased regulatory scrutiny, particularly the balance between formalizing their workforce and reducing their overall employment to manage costs.

Finally, this study contributes to the broader literature on labor enforcement by considering the impact of the content of the labor law itself, not just the enforcement mechanisms. While much of the existing microeconomic literature on labor law enforcement has focused on the administrative and cost implications of inspections (such as bribes or compliance costs), this research draws attention to the substantial changes brought about by the 2012 Labor Code. The study shows that the stricter employment protections in the 2012 reform, combined with the uneven enforcement, led to significant reductions in firm employment. The finding suggests that strict worker protections have negative consequences on the marginal workers as firms will end contracts with workers on the lower end of the skill and productivity distribution.

2. Literature Review

2.1. Impact of Labor Law Reforms on Employment

The impact of labor law reforms, particularly employment protection legislation (EPL), has been widely studied in both developed and developing countries. Strengthening EPL often comes with the goal of improving job security and working conditions for employees, but empirical studies have shown mixed results regarding its effects on employment levels. For instance, in several studies using quasi-experimental designs, it was found that job security measures can lead to lower employment rates, particularly among vulnerable groups such as young, female, and low-skilled workers (Montenegro et al., 2004). In Chile, Montenegro et al. documented that job security measures negatively impacted employment for these groups, while the opposite was true for older, skilled workers.

A similar trend was observed in India, where states that adopted worker protection laws experienced lower employment growth compared to pro-employer states (Besley and Burgess, 2004). The reasoning behind these findings is that increased labor costs and procedural hurdles associated with EPL discourage firms from hiring, especially in high-turnover, low-skilled jobs (MacLeod et al., 2007). In contrast, high-skilled workers are more likely to benefit from EPL due to increased job security and protection from arbitrary dismissals.

2.2. Employment Protection Legislation and Firm Behavior

Employment protection legislation can significantly alter firm behavior, especially in terms of labor hiring and firing decisions. The theoretical foundation behind EPL posits that firms facing higher dismissal costs will reduce hiring, particularly of workers in high-turnover sectors, and become more risk-averse in their employment decisions. This leads to fewer job openings, longer employment durations, and potentially lower overall productivity (World Bank, 2012).

The empirical literature supports this argument, showing that stringent EPL leads to reduced labor market flexibility, which may hinder firms' ability to adjust their workforce in response to economic conditions (Aghion et al., 2008). In India, Besley and Burgess (2004) found that states with stricter EPL had lower employment growth compared to states with more flexible labor laws. Moreover, the negative effects of EPL were found to be concentrated in low-skilled and high-turnover jobs, suggesting that stringent labor laws disproportionately impact more vulnerable segments of the labor force (MacLeod et al., 2007).

In Vietnam, the introduction of stricter EPL as part of the 2012 labor reform aimed at increasing formal employment led to significant adjustments in firms' labor practices. SMEs, which traditionally relied on informal labor arrangements, were forced to comply with stricter employment rules, leading to a reduction in informal hiring. However, this also caused firms to reduce their total workforce to offset the increased costs associated with formalizing their employment relationships (Lee et al., 2017).

2.3. Policy Interventions in Labor Law Enforcement and Formalization

Efforts to enforce labor laws and encourage firm formalization have been central to labor market reforms in developing countries. A common intervention is the use of inspections to ensure firms comply with employment protection legislation. In Brazil, for instance, Almeida and Carneiro (2012) found that increased labor inspections led to higher rates of formal employment and compliance with labor regulations, though this effect was more pronounced among larger firms.

In Vietnam, the 2012 labor reform triggered a substantial increase in state inspections. However, the effectiveness of inspections in driving firm formalization has been mixed. While some firms responded by formalizing their employment relationships, many SMEs continued to rely on informal labor due to the higher costs associated with compliance (World Bank, 2012). The World Bank and other researchers have pointed out that these costs, combined with weak enforcement capacity, make it difficult for smaller firms to comply with labor regulations (Berkel et al., 2020).

Furthermore, empirical evidence from Vietnam suggests that the role of inspections in enforcing compliance varies significantly across regions and firm sizes. In some provinces, the lack of consistent inspection efforts allowed informal labor practices to persist, while in others, more frequent inspections led to higher compliance rates (Ulyssea, 2018). The uneven enforcement of labor regulations reflects broader challenges in Vietnam's state capacity to monitor and regulate labor practices effectively.

2.4. Micro literature on Inspections and employment in Developing Countries

The role of inspections in ensuring compliance with labor regulations has been widely studied in developing countries. Studies on Brazil and India have shown that labor inspections can be an effective tool for increasing compliance with employment protection laws, but the effects are often limited by the scale and scope of enforcement (Almeida and Carneiro, 2012; Ulyssea, 2021). In Brazil, for instance, Ulyssea (2021) found that areas with higher exposure to labor inspections saw slower growth in informal employment, suggesting that inspections can be a deterrent to informality.

However, inspections are not without their limitations. Enterprises reduced total employment, due to the lack of flexibility imposed by state scrutiny (Almeida et al., 2012). Moreover, inspections may have

unintended consequences, such as increased bureaucratic costs and corruption risks, which further discourage firms from complying with labor laws.

This body of research highlights the complexities involved in enforcing labor regulations in developing countries. While inspections can play a critical role in ensuring compliance, their effectiveness depends on the broader regulatory environment, state capacity, and firms' economic incentives.

3. Data and Research Design

3.1. Data

SMEs are central to Vietnam's economy, contributing to over 47% of the manufacturing workforce and accounting for 36% of national value added in 2016. Despite their importance, labor law compliance in this sector has been low, with many firms relying on informal labor to reduce costs. The 2012 Labor Code aimed to improve labor protections and formalize more employment relationships, especially among SMEs.

This study uses the Vietnam SME Data, a collaborative effort between the Development Economics Research Group (DERG), UNU-WIDER, and the Central Institute of Economic Management (CIEM) in Vietnam. The survey is longitudinal, spanning from 2005 to 2014, and focuses on small and medium-sized enterprises (SMEs) in the manufacturing sector. The sample are representative of the SME population in Viet Nam, whose workforce is less than 300 employees and total capital less than 1 million US dollar. It also covers 10 provinces, including the two centers of Hanoi and Ho Chi Minh City. The 8 remaining provinces were selected randomly. On average, 2,500 firms are surveyed each round, though a yearly 25% attrition is observed due to firm closures. Nonetheless, the sample

For the analysis I use four pre-reform periods (2009 to 2012) and one post-reform period (2014) for the difference-in-difference estimator. The targeted estimate is the ATT of labor inspections. I also trim the outliers to reduce the heterogeneity within the sample, which are firms whose total employment or total labor spending is larger than the 99th percentile of their respective distribution. This leaves us the sample with the following summary statistics.

Table 1: Summary Statistics

	mean	sd	max	min	Definition
EFull_workers	14.62	21.67	150.00	1.00	Number of full-time workers
EAlabor_bill	575091.22	1122943.66	20345000.00	1200.00	Labor bill (000s)
EValue_added	1593619.47	6352251.32	305820960.00	11980.00	Value added (000s)
labor_contract	33.79	44.73	100.00	0.00	Labor contracts share
business_network	8.07	23.01	725.00	0.00	Business network
govt_assist	0.13	0.34	1.00	0.00	Government assistance
access	0.61	0.49	1.00	0.00	Access to port
access2	0.47	0.50	1.00	0.00	Access to rail
treat	0.26	0.44	1.00	0.00	Inspected (Treated)

3.2. Empirical Approach: Difference-in-Difference (DID) Framework

The difference-in-difference (DID) method is used to measure the causal effect of increased labor inspections following the 2012 labor law reform. The DID approach is particularly useful because it exploits the natural experiment created by the sudden rise in inspections after 2012. We compare employment outcomes for firms inspected post-reform with those that were not inspected, while controlling for pre-existing trends. This allows us to estimate the Average Treatment Effects (ATT) for firms that were exposed to the post-reform inspections.

Model specification

$$Y_{jt} = \alpha_j + d \sum Year_t + \sum \beta_t Inspect_j * Year_t + \epsilon_{jt}$$

Where:

- Y_{jt} represents the employment outcomes for firm j at time t ,
- $Year_t$ is an indicator for the year fixed effects, 2012 is the last year before the law became effective.
- $Inspect_j$ indicates whether firm j was inspected post-reform,

Firm-level outcome variables include: (1) Employment: The main dependent variable is the number of full-time employees at year end, which indicates the size evolution of firms. (2) Worker welfare outcomes: the ratio of total labor spending to full-time labor force; and reported monthly production worker wages

Assumptions of the DID Method

For the DID approach to provide valid causal estimates, certain assumptions must be satisfied:

1. Parallel Trends: The treatment (inspected firms) and control groups (non-inspected firms) must exhibit similar trends in employment outcomes before the reform. This assumption is tested using pre-treatment data to verify that no significant differences exist between the groups before the inspections began.

2. Exogeneity of Treatment: Inspections must be assigned independently of firm characteristics that affect employment outcomes. The sudden increase in inspections following the 2012 reform provides a natural setting to assume that the treatment was exogenous and not driven by firm-specific factors.

3.4. Validity Checks and Robustness

3.4.1. Parallel Trend Assumption

The parallel trend assumption is a critical requirement for the DID approach. A pre-trend test is conducted by examining employment outcomes for both treated and control firms before the 2012 reform. The test checks whether both groups followed similar trends prior to the intervention.

3.4.2. Alternative Estimators (Synthetic DID, IPW)

To account for any potential biases or violations of the parallel trends assumption, alternative estimators such as the Synthetic Difference-in-Difference (Synthetic DID) and Inverse Probability of Treatment Weighting (IPW) methods are employed. The Synthetic DID models construct a synthetic control group that closely matches the pre-treatment trends of the inspected firms. The Inverse Probability of Treatment Weighting methods allow for reweighting the control group using time-invariant characteristics while assuming that conditional on these confounders the two trends are parallel.

4. Results

4.1. Exploring SMEs' trends in employment and inspections

The figure 1's panel (B) indicates that a significant proportion of firms in the sample experienced labor inspections following the 2012 labor law reform. Trends in firm-level employment, as shown in Figure 1, demonstrate a divergence between firms that were inspected and those that were not. On average, the firms in the sample employ about 15 workers, while those subjected to inspections show sharper reductions in their workforce. These findings are consistent with the broader hypothesis that labor inspections lead to changes in employment dynamics among SMEs.

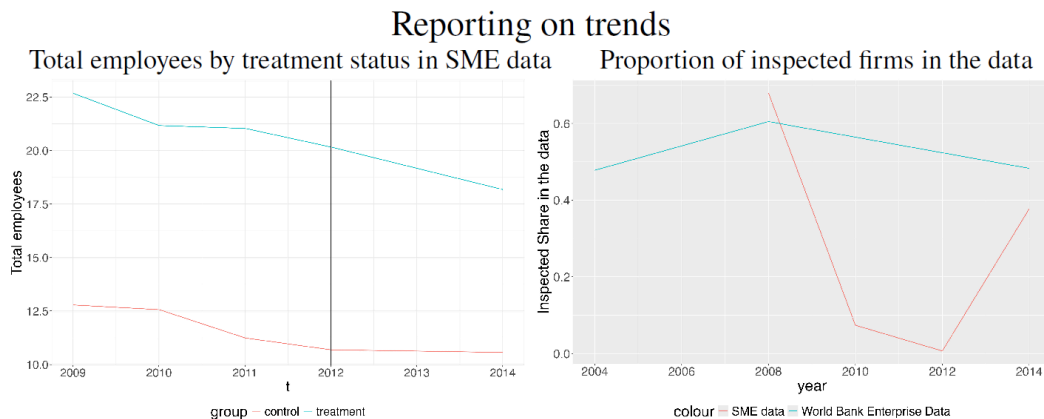


Figure 1: (A) Trends in the firm-level employment and (B) The share of firms inspected by state authority on law compliance in SME and World Bank data

4.2. The effects of labor inspection on various firm outcome using DID

Table 2: Effects of labor inspections on employment

	TWFE	Poisson QML	Poisson QML-IPW
Inspect*2009	0.845 (0.840)	-0.025 (0.043)	-0.057 (0.045)
Inspect*2010	0.665 (0.762)	-0.027 (0.040)	-0.046 (0.043)
Inspect*2011	0.400 (0.280)	0.001 (0.015)	-0.010 (0.017)
Inspect*2014	-1.489* (0.708)	-0.085+ (0.043)	-0.117* (0.052)
Num. Obs.	9668	9668	7976
FE: id	X	X	X
FE: year	X	X	X

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Std. errors are clustered at the firm level. The first treatment year is 2014, and the reference year is 2012. Column (1) is the Two-Way Fixed Effects Difference-in-Difference estimator. Column (2) shows the results of the Poisson Quasi-Maximum Likelihood estimator on non-negative employee counts. Column (3) uses Inverse Propensity Score Weighting estimators to improve covariate balance.

The results from the TWFE model indicate a significant reduction in employment, with an estimated decrease of 1.489 employees in firms inspected after 2014 ($p < 0.05$). The Poisson QML and Poisson QML-IPW models provide consistent estimates, though the magnitudes of the reductions are smaller. These findings suggest that inspections had a substantial impact on firm-level employment, particularly for SMEs, where the additional costs of complying with labor regulations may lead firms to reduce their workforce.

Table 3: Effects of labor inspections on labor bills and firm performance

	Log Labor Bill Per Worker	Log Wage	Log Profit	Labor Contract
Dyear = 2011	0.004 (0.015)		-0.153 (0.161)	-0.012 (0.014)
Dyear = 2014	0.105** (0.038)	0.044+ (0.024)	0.029 (0.437)	-0.737 (2.315)
Num. Obs.	4118	2602	4125	4125
FE: id	X	X	X	X
FE: year	X	X	X	X

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Std. errors are clustered at the firm level. All models use the TWFE estimator on different firm outcomes using IPTW estimators.

Table 3 presents the effects of inspections on labor costs and firm performance. While firms reduced their workforce following inspections, they increased labor spending per worker, leading to higher wages for production workers. This result suggests that firms responded to inspections by formalizing their workforce and raising wages, potentially as a way to comply with the new labor regulations.

We use two different approaches to relax the strong parallel trend assumption, which are Synthetic Difference-in-Difference and Inverse Probability of Treatment Weighting (IPW). The robustness of the results across different estimation techniques provides confidence in the causal interpretation of the findings, which consistently show that inspections lead to reductions in workforce size.

4.3. Estimates using Synthetic DID

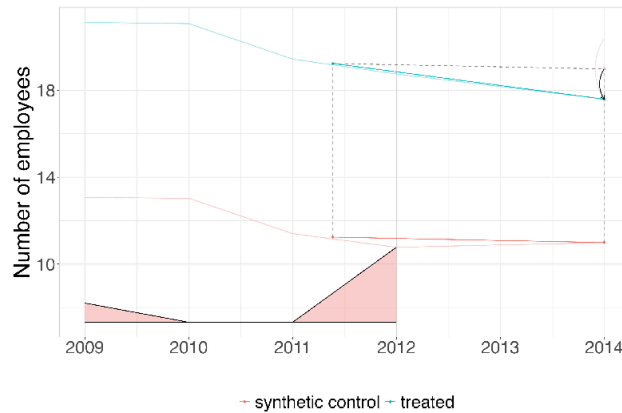


Figure 2: The control group constructed by Synthetic DID

Table 1: Average Treatment Effects (ATT) of Inspections Using Synthetic Difference-in-Difference Estimator

Outcome	Estimator	Inference	Estimate	Std. Error	t-statistic
Employee count	Synthetic DID	Bootstrap	-1.389	0.6647	-2.090

5. Discussion

5.1. Interpretation of the results

The results of this study provide critical insights into the effects of labor inspections on employment outcomes in Vietnam. The findings align with existing literature on labor market regulation, which suggests that increased enforcement typically leads to reductions in total employment. In the context of Vietnam’s 2012 labor law reform, the reduction in employment is likely a consequence of firms attempting to manage the increased costs associated with compliance. This is particularly evident in SMEs, where the burden of formalizing labor contracts and adhering to stricter employment regulations can lead to workforce downsizing.

The DID analysis demonstrated that inspected firms experienced a statistically significant reduction in their workforce, with a notable decrease in employee count by 8 percentage points. At the same time, these firms increased spending per worker, likely as a response to the formalization of labor contracts and the need to comply with wage regulations. This dual effect—decreasing employment while increasing per-worker costs—highlights the trade-offs faced by firms under increased regulatory scrutiny.

The results suggest that while inspections may increase compliance with labor laws, they also impose significant costs on firms, particularly SMEs. Policymakers must balance the need for labor protection with the economic realities faced by small businesses. Overly stringent enforcement could lead to unintended consequences, such as reduced employment opportunities, especially for low-skilled workers who are most vulnerable to layoffs.

One potential policy response is to provide targeted support for SMEs, helping them to comply with labor regulations without reducing their workforce. This could take the form of financial incentives, subsidies for formalization, or technical assistance in navigating the complexities of labor law compliance. Moreover, ensuring that inspections are evenly distributed across firms, regardless of size or location, is crucial to avoid the perception of unfair enforcement and reduce opportunities for corruption.

5.2. Limitations and Future Research Directions

Despite the robustness of the results, this study has several limitations. First, the analysis did not capture the heterogeneity of labor inspection effects among firms with different characteristics. It would be important for research to look at the differential effects on different types of enterprises, provided the right designs for causal inference.

Second, while the DID framework accounts for many potential confounders, there remains the possibility of unobserved factors influencing both the likelihood of inspection and employment outcomes. Nevertheless, the Synthetic Difference-in-Difference estimator help alleviate the concerns by incorporating individual and time interactive fixed effects. Future research can explore alternative identification strategies, such as instrumental variables, to strengthen the causal inference. Additionally, examining the long-term effects of inspections on firm performance, and misallocation, would provide a more comprehensive understanding of the costs and benefits of labor law enforcement.

6. Conclusion

This study provides empirical evidence on the impact of labor inspections following Vietnam's 2012 labor law reform. The findings suggest that while inspections improve compliance with labor regulations, they also lead to reductions in total employment, particularly among SMEs. These results underscore the importance of designing labor policies that strike a balance between protecting workers' rights and creating the environment for business to grow. Moving forward, policymakers in Vietnam should consider providing the balanced incentives for small firms to comply with the new labor standards, such as improving the flexibility of the contract terms and the use of seasonal workers.

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