

Compliance with minimum wage laws in developing countries

Institutional, individual, firm, and local labor market characteristics are critical for understanding non-compliance with minimum wage laws

Keywords: legislated minimum wages, developing countries, index of violation, enforcement, compliance, active labor market policies

ELEVATOR PITCH

The level of compliance with minimum wage laws often depends on factors specific to each labor market. In most developing countries, a substantial share of workers still earns less than the legal minimum. Enforcement has not kept up with growth in regulations to protect workers from low wages and poor working conditions. Several institutional structures shape enforcement, including the role of labor inspectors and approaches to compliance, and these and other variables can be analyzed to explore their effects on the level of minimum wage violations.

KEY FINDINGS

Pros

- ⊕ Minimum wage enforcement and compliance are low in developing countries.
- ⊕ An index of minimum wage violation would enable policymakers and researchers to analyze the level and depth of non-compliance and act accordingly.
- ⊕ Four sets of variables help in understanding the factors that influence minimum wage violations.
- ⊕ Alternative approaches to increasing compliance would shift the focus from firms' financial incentives toward interventions that shape enforcement efforts.
- ⊕ A template can help derive measures and formulate strategies to establish a more conducive environment for minimum wage enforcement and compliance.



Cons

- ⊖ If data on enforcement and compliance are scarce, finding appropriate measures for both is problematic.
- ⊖ The minimum wage can result in substantial unemployment and other economic costs that compliance and enforcement may reinforce.
- ⊖ While careful planning of enforcement strategies is necessary, lack of skills and resources often determines enforcement practice.
- ⊖ Policymakers need to consider the country's policy goals before increasing the number of inspectors; raising their number will not necessarily raise compliance rates.
- ⊖ Enforcement in a severely resource-constrained environment is difficult when minimum wage regulations are complex.

AUTHOR'S MAIN MESSAGE

Despite concerns about the economic effect of minimum wage laws on employment and the economy, enforcement and compliance remain critical. Resource-constrained developing countries should enforce minimum wage laws in a way that both protects employment and incentivizes firms to comply with the law. The index of minimum wage violation can provide more disaggregated baseline data on which to base enforcement decisions and provide a powerful policy tool for guiding where and how to channel enforcement resources most effectively to achieve desired outputs.

MOTIVATION

While there has been broad expansion in regulatory regimes that attempt to protect workers from exploitation, a substantial gap remains between regulatory intent and regulatory outcomes in most developing country labor markets. As a consequence, enforcement remains central to the debate over the effect of minimum wage regulations, and labor regulation more generally. A practical issue related to enforcement and compliance is one of measurement, particularly how to measure non-compliance and enforcement.

This article reviews the research on enforcement and compliance in developing countries, confining itself to minimum wage legislation, and offers some guidance to help policymakers derive measures and formulate strategies to establish a more conducive environment for minimum wage enforcement and compliance.

DISCUSSION OF PROS AND CONS

Measuring non-compliance

Currently, non-compliance with minimum wage legislation is typically measured as the percentage of workers in a country who are paid below the appropriate minimum wage. However, this is a fairly blunt measure, as it fails to measure the extent of the underpayment. Workers earning just slightly less than the legislated minimum wage are not distinguished from workers who are paid well below the minimum, in gross violation of minimum wage legislation.

A method for measuring non-compliance that solves this problem draws on the well-known Foster-Greer-Thorbecke (FGT) poverty measurement technique to create an

The Foster-Greer-Thorbecke poverty measurement technique

The Foster-Greer-Thorbecke (FGT) formula is defined as the sum of the difference between the poverty line, z , and individual incomes, y_i , in relation to the poverty line to the power of α , which is a sensitivity parameter. This sum covers all people defined as poor (i.e., those with incomes at or below the poverty line) and is weighted by 1 over the total population, N .

The headcount index is the proportion of the population that is poor, and is obtained by setting the sensitivity parameter α equal to 1. The poverty gap measures the average distance that a poor person is from the poverty line and indicates the depth of poverty among the poor; it is obtained by setting α equal to 1.

The FGT formula is adapted to derive a measure of minimum wage violation, where the poverty line, z , is replaced with the relevant minimum wage; the individual income, y_i , represents individual wage levels for workers below the minimum wage; and α is a violation aversion parameter.

The proportion of individuals below the minimum wage is derived by setting α equal to 0. The violation gap measure is derived by setting α equal to 1 and denotes the average normalized gap between the wage levels and the minimum. The “squared violation gap” is derived by setting α equal to 2.

The focus of policy responses depends on which measure of non-compliance is used.

Source: Foster, J., J. Greer, and E. Thorbecke. “A class of decomposable poverty measures.” *Econometrica* 52:3 (1984): 761–765.

Figure 1. An index of violation approach to measuring absolute and relative compliance with minimum wage legislation in Chile, 1990–2009

Year	Violation headcount (V_0)	Violation gap (V_1)	Violation gap squared (V_2)	Average shortfall (V_1/V_0)
1990	0.148	0.039	0.018	0.263
1992	0.163	0.043	0.018	0.261
1994	0.141	0.036	0.015	0.253
1996	0.161	0.039	0.015	0.024
1998	0.163	0.037	0.013	0.227
2000	0.201	0.048	0.018	0.241
2003	0.214	0.049	0.018	0.230
2006	0.293	0.071	0.028	0.241
2009	0.153	0.038	0.016	0.246
Total	0.182	0.044	0.018	0.245

Note: Analogous to the FGT poverty measures, V_0 is a standard headcount of those who earn less than the minimum wage, V_1 measures the depth of the gap between the legal minimum wage and the actual, non-compliant wage, V_2 places more emphasis on larger gaps, V_1/V_0 measures the average percentage shortfall below the minimum wage for all sub-minimum wage workers. Real minimum wage is calculated using the consumer price index from the Central Bank. Average wage is the average hourly wage for prime-age workers (25–55) subject to the minimum wage.

Source: Kanbur, R., L. Ronconi, and L. Wedenoja *Labor Law Violations in Chile*. Cornell University Working Paper, WP 2013-10, February 2013 [1].

I Z A
World of Labor

index of minimum wage violation [2]. Figure 1 shows how the index can be applied to measure non-compliance in Chile.

In 2009, for example, 15.3% of workers earned less than the minimum wage. The index measures not only the percentage of workers earning below the minimum (V_0 , analogous to the headcount ratio in the FGT poverty measure), but also the depth of the violation (V_1 , or the gap between each worker's wage and the minimum wage, analogous to the poverty gap), and the severity of the violation (V_2 , or the depth of the violation squared, which weights people at the bottom of the distribution more heavily). Additionally, V_1/V_0 denotes the percentage shortfall of the average wage of underpaid workers from the minimum wage. Put differently, underpaid workers earn on average V_1/V_0 below the minimum wage.

The index allows researchers to analyze both the level and the depth of non-compliance. Enforcement policy is too often guided by aggregate national-level labor market data or even by outlier incidents of egregious violations of the minimum wage by employers. Policymakers need accurate and detailed labor market information. Because so many countries lack such information, this method of measurement can aid policymakers in improving compliance. The index of minimum wage violation can provide more disaggregated baseline data on which to base enforcement decisions. Such a measure can be a powerful policy tool for guiding where and how to channel enforcement resources most effectively.

The impact of minimum wages on employment varies

Studies on the impact of minimum wages in the US were the first to suggest that the theoretical wage–employment trade-off does not always hold in practice: An increase in the minimum wage is not always synonymous with a decline in employment. Studies on developing countries have shown that introducing or increasing a minimum wage can have mixed effects.

Studies found evidence of significant employment declines in some cases, but not in others. For instance, a study found that minimum wages in Brazil had no significant effect on either formal or informal employment [3]. In Vietnam, however, the minimum wage was shown to have an insignificant impact on overall employment, but a significant negative employment effect in the formal sector, as laid-off workers sought employment in the informal sector [4]. The study concluded that low-wage workers in the formal sector needed protection from the negative effects of the minimum wage. Minimum wage increases in Colombia and in the agriculture sector in South Africa also had negative employment effects [5], [6]. In South Africa, no employment declines were found for other sectors with a minimum wage, including the retail, domestic work, forestry, and security sectors, and the taxi service [7].

These differences in outcomes suggest that the employment effects of a minimum wage hike are unpredictable, particularly when there is imperfect enforcement, so that both compliant and non-compliant employers are in the labor market. In most cases, determining the impact on employment requires empirical investigation, both at the country and sectoral levels. This includes an examination of compliance levels.

Evidence on enforcement and compliance with minimum wage laws

While there is no consensus on the effect of minimum wage laws on the labor market, the literature does broadly agree that enforcement of and compliance with minimum wage laws are low in most developing countries. Formal enforcement efforts are weak, and a substantial proportion of workers still receive sub-minimum wages [8], [9].

The required legislative frameworks are in place, and many countries now have an extensive web of labor regulations, including minimum wage laws [10]. Some regulatory frameworks are so detailed that countries have multiple minimum wages that differ across sectors, as in Costa Rica and Kenya. In South Africa, statutory minimum wages vary not only by sector, but also in some cases by occupation and location, resulting in more than 36 different minimum wages. Thus, it is not generally a lack of labor regulation that is of concern, but rather a lack of compliance with existing regulations because of imperfect enforcement [8].

Several recent empirical studies on compliance levels reveal that a large proportion of workers in developing countries earn wages below the legal minimum. For example, in Argentina, only half of the workforce receives the legally mandated minimum wage and other benefits, including restrictions on the maximum number of hours worked and compensation for work-related injuries [8]. In Kenya, non-compliance with minimum wage laws soars to nearly 70% in higher-skilled occupations in urban areas. The many categories of minimum wages in Kenya make compliance and enforcement more difficult. In South Africa, just under half of the workforce is estimated to receive wages

below the legal minimum, but there is considerable variation between sectors. Other studies find similarly high levels of non-compliance in developing countries such as Brazil, Chile, and several other Latin American countries, and Trinidad and Tobago [3], [5], [9].

However, not all developing countries have such high levels of non-compliance. In Vietnam, for example, just over 3% of formal and private-sector workers earned sub-minimum wages in 2006; estimates are only slightly higher for the public sector, at 4.2%, and the informal sector, at 6.8% [4].

Another approach to ensuring compliance in developing countries

Another strand of the literature, smaller in size but broader in scope, moves away from the focus on the financial incentives of individual employers and studies the institutional structures that shape enforcement, including the role of labor inspectors and different approaches to compliance. Much of this work draws on insights from sociology and institutional economics [10].

Two models of enforcement: Penalizing non-compliance or encouraging compliance

Central to this literature is the idea that effective enforcement must take country-specific factors into account. One study identifies two models of minimum wage enforcement, describes the contexts in which they apply, and assesses their applicability, with a particular focus on developing countries [10]. The study distinguishes between an Anglo-American model and a Latin model of enforcement.

The Anglo-American approach to enforcement, seen most clearly in North America, views non-compliance as a result of rational, utility-maximizing calculations by individual firms and thus adopts a punitive approach to violations to encourage compliance. This is the model used by most economists in the literature described above, who view penalties and deterrence as the key policy levers. Within this model, labor inspectors generally have very little leeway in cases of non-compliance; they are expected to simply enforce the law. An employer that violates the minimum wage law is fined accordingly.

The appeal of this approach for policymakers is that it generally requires a less-skilled inspectorate, and it limits the potential for corruption and bribery. However, the concern is that a strict, punitive approach in developing countries risks driving emerging firms into the informal sector and could have strong disemployment effects.

In the Latin model of enforcement, applied in many Latin American countries, enforcement agencies tend to treat non-compliance as less of a calculated decision by firms than as an outcome of a range of possible factors, including limited capabilities of employers (see below). The response to non-compliance assumes a more “conciliatory and tutelary” attitude, aiming to assist non-compliant firms to become compliant over time [10]. In the Latin model, inspectors are generally charged with the broader mandate of improving compliance levels rather than simply penalizing non-compliance, and they have more latitude to approach each situation differently in order to achieve this. This approach requires skilled inspectors who have a comprehensive knowledge of labor law and can weigh infringements on a case-by-case basis. The approach also

presents inspectors with more opportunities for bribery and corruption. Nonetheless, the Latin approach can achieve higher compliance over time by encouraging sustainable compliance that does not hurt employment or overburden new firms.

Enforcement in practice is generally a mix of both models

In practice, most countries apply a combination of the Anglo-American and Latin approaches to enforcement. While careful planning of enforcement strategies is necessary, it is often a lack of skills and resources that determines enforcement practice.

Early evidence on the impact of enforcement on non-compliance

Understanding how enforcement practice influences compliance is crucial for policymakers. But while several studies have measured the levels of non-compliance in various developing countries, only a few of them provide empirical evidence on the causal effects of enforcement practices on compliance.

Disentangling the interactions between enforcement and compliance

There are two likely explanations for the dearth of work exploring this causal link.

- First, data on enforcement and compliance are scarce, and finding appropriate measures for both enforcement and compliance is problematic [11].
- Second, there is an endogeneity problem due to the potentially simultaneous relationship between enforcement and compliance, which makes any causal analysis difficult. Enforcement is likely to increase compliance, as firms are more likely to comply when the probability of their being caught is higher. At the same time, however, a government agency is likely to increase the number of inspectors or enforcement resources in response to low compliance levels. The difficulty of trying to disentangle the effect of enforcement on compliance is clear.

So far, the preferred proxy for measuring enforcement is the number of labor inspectors per country (or region), which is useful as an aggregate measure but struggles to overcome the problem of endogeneity. Doing that requires the use of appropriate instruments.

Factors that influence enforcement

The recent literature on minimum wage enforcement has focused on determining which factors influence compliance (or non-compliance) in developing countries and can thus be used to guide enforcement. This approach can be loosely designated the “determinants of non-compliance” approach. Several insights have emerged from studies that take this approach.

A study on Argentina is one of the first attempts to empirically estimate the effect of government enforcement on compliance in a developing country [8]. The study uses the number of labor inspectors working in provincial public enforcement agencies as a proxy for enforcement activity and finds that the intensity of enforcement is a significant determinant of adherence to the law. A higher concentration of inspectors

is correlated with increased fines for non-compliance and suggests that this is one channel through which enforcement effectively influences compliance [8].

Another study in South Africa also uses the number of labor inspectors as a measure of the intensity of enforcement [12]. However, it finds an insignificant impact of the number of labor inspectors on compliance; the level at which the minimum wage was set had more marked effects. Despite this, in both the Argentinian and the South African studies, local labor market characteristics, most notably the unemployment rate, had a significant impact on enforcement: A higher unemployment rate was associated with lower levels of compliance.

A cross-country study presents a series of stylized facts on the incidence of enforcement. In addition to labor market characteristics, other factors such as firm size, the skill level of the workforce, and the degree of market power can all influence a firm's likelihood of being inspected and, as a result, the firm's incentive to comply with minimum wage regulations [13]. A program to increase compliance with minimum wages in Costa Rica increased average wages and compliance levels—with no significantly negative impact on employment [9]. In a sample of cities in Brazil, increased enforcement raised the level of formal employment, reduced self-employment levels, and reduced wage inequality. When stringently applied, other labor market regulations, such as those regulating firing, reduced average employment.

Stylized facts

Stylized facts are observations that have been shown to be true or are believed to hold in multiple contexts, or broad generalizations that summarize complicated statistical analyses.

Factors that influence compliance

This strand of the literature suggests that there are four composite sets of variables that are important inputs for understanding the factors that shape and influence minimum wage outputs in developing countries:

- institutional factor;
- characteristics of inspectors;
- firm characteristics; and
- local labor market characteristics.

A template based on these inputs and outputs can help policymakers derive measures and formulate strategies to ensure an optimal environment for minimum wage enforcement and compliance.

Institutional factors include the penalty structure for failing to comply with minimum wage regulations, the number of minimum wages, the resources allocated to enforcement, and the conduct of awareness campaigns. All play a role in shaping the levels of non-compliance with minimum wage legislation, but their importance varies with the country and labor market context.

The individual characteristics of inspectors can influence how effective they are at achieving compliance. These individual characteristics include:

- education;
- experience; and
- gender.

Firm characteristics affect the observed levels of enforcement and non-compliance with minimum wage legislation in an economy. Important characteristics include the size of the firm, the distance from the enforcement agency, the number of previous violations, and foreign ownership share.

Finally, local labor market characteristics, such as the unemployment rate, the average wage rate relative to the minimum wage, and the levels of unionization, also play a crucial role.

Considerable work remains to be done to better understand these four sets of variables. Improved descriptive and econometric work is needed to generate a comprehensive set of stylized facts to explain the factors that influence firms' compliance decisions and to understand their comparative importance. After that, the challenge is to gather these variables into a production function approach that estimates their effect on non-compliance levels within an economy.

LIMITATIONS AND GAPS

The literature implicitly assumes that minimum wage laws are adequately or perfectly enforced, when that is clearly not the case, especially in developing countries.

Both the data and the research in this area are at a very early stage. Evidence is scant, and data are not always available.

Very little is known about the factors that lead to violations of the minimum wage. While the literature on the effects of the minimum wage is fairly mature, researchers are just beginning to understand the levels of enforcement, how to measure enforcement, and the ultimate determinants of enforcement. Consider the practical issue of how to measure enforcement and compliance, in particular how to calculate non-compliance rates. In general, non-compliance is measured simply as the percentage of workers in a country who are paid below the applicable minimum wage. This is a fairly blunt measure, which remains silent on the extent of the underpayment.

Several studies have measured the levels of non-compliance in various developing countries, but only a small number of these provide empirical evidence on the causal effect that existing enforcement efforts have on compliance. The question of how enforcement efforts influence compliance is crucial for policymakers, and there are two likely explanations for the dearth of work exploring this causal link:

- First, data on enforcement and compliance are scarce, and finding appropriate measures for both enforcement and compliance is problematic.
- Second, there is a problem of endogeneity due to the potentially simultaneous relationship between enforcement and compliance, which makes any causal

analysis difficult. Enforcement is likely to increase compliance, as firms are more likely to comply if the probability of their being caught is higher, but at the same time governments are likely to increase the number of inspectors or enforcement resources if compliance levels are low. The difficulty of trying to disentangle the effect of enforcement on compliance is clear.

To date, the preferred proxy for measuring enforcement has been the number of labor inspectors per country (or region), which is useful as an aggregate measure but struggles to overcome the problem of endogeneity, in the absence of appropriate instruments.

A convenient method has been devised for measuring non-compliance: adapting the FGT class of poverty measures to minimum wage analysis to create an index of minimum wage violation.

SUMMARY AND POLICY ADVICE

The new index of violation is a potentially powerful policy tool. It can be used to guide where to channel enforcement resources and to conduct subsequent work on compliance, as it allows researchers to analyze the level and depth of non-compliance. This method of measurement could also aid policymakers in the large number of countries where such information remains unknown. Understanding new measurement approaches and early evidence on the determinants of enforcement can enrich the engagement between enforcement officials and researchers in developing country labor markets.

Institutional, individual, firm, and local labor market characteristics constitute an important composite set of dependent variables, critical as inputs for understanding the output of minimum wage violations and for explaining non-compliance with the law.

Several policy approaches to enforcement are possible, with the selection depending on local circumstances.

Acknowledgments

The author thanks an anonymous referee and the IZA World of Labor editors for many helpful suggestions on earlier drafts. He also thanks Natasha Mayet and Benjamin Stanwix for many helpful suggestions on earlier drafts. Further support from participants at the IZA World of Labor Minimum Wage Workshop in Frankfurt, June 4, 2013 (in particular, Pierre Cahuc, Gary Fields, Tim Gindling, Alexander Kritikos, and David Margolis) is gratefully acknowledged. The paper is based in part on Bhorat, H., and B. Stanwix. *Minimum Wage Enforcement in the Developing World*. Development Policy Research Unit Policy Brief PB 13/29, May 2013.

Competing interests

The IZA World of Labor project is committed to the *IZA Guiding Principles of Research Integrity*. The author declares to have observed these principles.

© Haroon Bhorat

REFERENCES

Further reading

Basu, A., N. Chau, and R. Kanbur. "Turning a blind eye: Costly enforcement, credible commitment, and minimum wage laws." *Economic Journal* 120 (March 2010): 244–269.

Benassi, C. *The Implementation of Minimum Wage: Challenges and Creative Solutions*. ILO/Global Labor University Working Paper No. 12, March 2011.

Key references

- [1] Kanbur, R., L. Ronconi, and L. Wedenoja. *Labor Law Violations in Chile*. Cornell University Working Paper No. WP 2013-10, February 2013. Online at: <http://dyson.cornell.edu/research/researchpdf/wp/2013/Cornell-Dyson-wp1310.pdf>
- [2] Bhorat, H., R. Kanbur, and N. Mayet. "A note on measuring the depth of minimum wage violation." *Labor: Review of Labor Economics and Industrial Relations* 27:2 (2013): 192–197. Online at: DOI: 10.1111/labr.12010
- [3] Lemos, S. "Minimum wage effects in a developing country." *Labor Economics* 16:2 (2009): 224–237.
- [4] Nguyen, C. *The Impact of a Minimum Wage Increase on Employment, Wages and Expenditures of Low-Wage Workers in Vietnam*. MPRA Paper No. 36751. Munich: Personal RePEc Archive, 2010.
- [5] Maloney, W., and J. Nunez. "Measuring the impact of minimum wages: Evidence from Latin America." In: Heckman, J., and C. Pagés (eds). *Law and Employment: Lessons from Latin America and the Caribbean*. Chicago, IL: University of Chicago Press, 2003.
- [6] Bhorat, H., R. Kanbur, and B. Stanwix. *Estimating the Impact of Minimum Wages on Employment, Wages and Non-Wage Benefits: The Case of Agriculture in South Africa*. DPRU Working Paper No. WP 12/149, 2012.
- [7] Bhorat, H., R. Kanbur, and N. Mayet. "The impact of sectoral minimum wage laws on employment, wages, and hours of work in South Africa." *IZA Journal of Labor and Development* 2:1 (2013). Online at: <http://www.izajold.com/content/2/1/1> DOI: 10.1186/2193-9020-2-1
- [8] Ronconi, L. *Enforcement and Compliance with Labor Regulations*. Institute for Research on Labor and Employment, University of California, Berkeley, Working Paper, 2008.
- [9] Gindling, T. H., N. Mossaad, and J. D. Trejos. *The Consequences of Increased Enforcement of Legal Minimum Wages in a Developing Country: An Evaluation of the Impact of the Campaña Nacional de Salarios Minimos in Costa Rica*. IZA Discussion Paper No. 8253, 2014. Online at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2460156
- [10] Piore, M., and A. Schrank. "Toward managed flexibility: The revival of labor inspection in the Latin World." *International Labor Review* 147:1 (2008): 1–23.
- [11] Ronconi, L. "Enforcement and compliance with labor regulations in Argentina." *Industrial and Labor Relations Review* 64:4 (2010): 719–736.
- [12] Bhorat, H., R. Kanbur, and N. Mayet. "Minimum wage violation in South Africa." *International Labor Review* 151:3 (2012): 277–287.
- [13] Almeida, R., and L. Ronconi. "The enforcement of labor law in the developing world: Some stylized facts from labor inspections." Paper presented at the 7th IZA/World Bank Conference on Employment and Developing, New Delhi, November 5–7, 2012.

The full reference list for this article is available from the IZA World of Labor website (<http://wol.iza.org/articles/compliance-with-minimum-wage-laws-in-developing-countries/>).