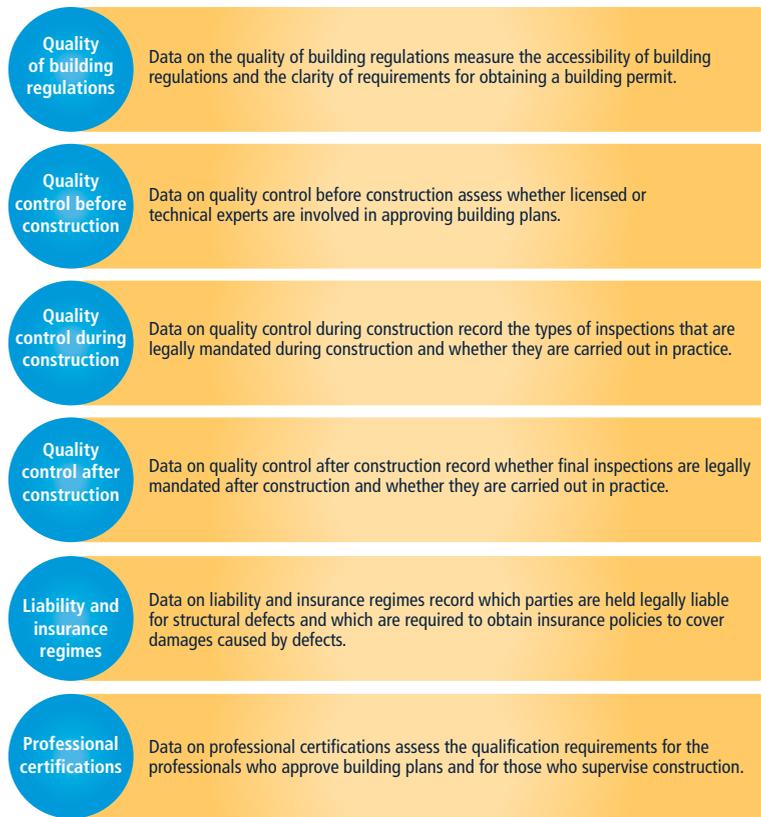


FIGURE 6.1 What the data for the building quality control index cover



HOW TRANSPARENT ARE BUILDING REGULATIONS?

Beyond causing confusion about how to proceed, construction regulations that are unclear and overly complicated can also increase opportunities for corruption. Analysis of World Bank Enterprise Survey data shows that the share of firms expecting to give gifts in exchange for construction approvals is correlated with the level of complexity and cost of dealing with construction permits.⁶ And while *Doing Business* does not directly study urban planning systems across economies, research studies have highlighted the importance of good regulations in the area of urban planning and construction, finding that regulations that restrict land use lead to higher housing costs.⁷ These higher housing costs reduce access to housing, though the same regulations that increase costs may also be improving

the amenity value of the projects that are completed and therefore enhancing property values.

To measure the quality and transparency of building regulations, *Doing Business* looks at whether the regulations are available online, are available at the relevant permit-issuing agency free of charge, are distributed through an official gazette or must be purchased. The results show that 68% of economies—ranging across all regions and income levels—have put their regulations online. Only 16 economies require that the regulations be purchased—Barbados, Belarus, Fiji, Ghana, Grenada, Honduras, Moldova, Samoa, Sierra Leone, St. Kitts and Nevis, St. Vincent and the Grenadines, Swaziland, the Syrian Arab Republic, Trinidad and Tobago, the United States (Los Angeles) and Vanuatu. And in 18 economies the regulations are not easily accessible. The rest make their building

regulations available at the relevant authority or distribute them through an official gazette.

But simply making building regulations available is not enough if the requirements for obtaining a building permit are not clearly laid out in the regulations (or on a website or in a pamphlet). Applicants need to have a list of the documents and preapprovals required before applying, so as to avoid situations where the permit-issuing authority can arbitrarily impose additional requirements. And applicants need to be aware of the required fees and how they are calculated. While almost all economies specify the list of required documents, only three-quarters make the fee schedule accessible and even fewer provide a list of the required preapprovals or of the agencies to which documents must be submitted.

Azerbaijan is one economy that has taken serious steps to make its legislation more comprehensible—by adopting a new construction code that consolidates its previous building regulations into a single framework (box 6.1).

WHERE ARE QUALITY CONTROLS IN PLACE?

Beyond good regulations, an effective inspection system is also critical in protecting public safety. Without an inspection system in place, there is no mechanism to ensure that buildings comply with proper safety standards, increasing the chances of structural defects. And as a first step, having technical experts review the proposed plans before construction even begins can reduce the risk of structural failures later on.

Quality control before construction

In almost all economies (178 of 189) a government agency is required to verify that the building plans are in compliance with the building regulations—and in 19 of these economies plans must be reviewed

BOX 6.1 A new building code in Azerbaijan

In September 2012 the government of Azerbaijan adopted a new Urban Planning and Construction Code. Most of the code's provisions came into effect on January 1, 2013, and a series of implementing laws and regulations have followed. The new code consolidates construction regulations into a single framework covering everything from the issuance of building permits to inspections of construction, qualification requirements for construction professionals and the issuance of occupancy permits. Among the noteworthy features introduced by the code: a simplified administrative procedure for small projects, time limits and a list of required documents for the construction authorization process, and a registry for certified professionals along with a list of the functions they should perform. The code also classifies construction projects into four categories based on their risk and complexity, eliminating the need to obtain a building permit for low-risk projects. Finally, the code serves as the foundation for the new one-stop shop for building permits at the Ministry of Emergency Situations.

both by a government agency and by either the national association of architects or an independent expert (a firm or an individual). In 9 economies plans may be reviewed by the national association of architects or an independent expert alone without the involvement of a government agency. Ukraine is the only economy where construction plans do not need to be reviewed before a building permit is issued. For projects like the warehouse in the *Doing Business* case study, the builder simply needs to submit a declaration of the commencement of construction works.⁸

In 32 of the economies where a government agency reviews and approves the plans (13 of them in Sub-Saharan Africa), no licensed architect or engineer is part of the committee that approves the plans.

Instead, the plans are simply reviewed by a civil servant who may not have the necessary technical qualifications or expertise.

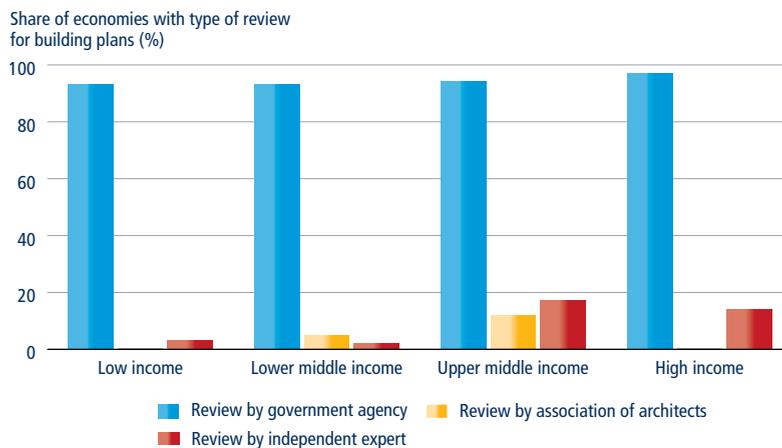
While low-income economies rely almost solely on government agencies for the review, high-income economies tend to involve independent experts in the process (figure 6.2). And 13 economies, all of them upper middle or high income, require that plans be reviewed by both a government agency and an independent expert—Australia; Bosnia and Herzegovina; Bulgaria; France; Germany; Hong Kong SAR, China; Latvia; Lebanon; Maldives; Montenegro; Serbia; Singapore; and Spain.

Quality control during construction

Quality control during construction is vital to ensuring the safety of a building. It also helps in identifying possible defects as they occur. Economies use different types of inspection systems. Forty-six economies do not involve a government agency at all but instead allow a supervising engineer or firm to take responsibility for ensuring the safety of the building. Twenty-three of them allow the building company to rely on an in-house engineer to supervise construction, 16 require the building company to hire an external supervisor or firm, and 7 require supervision by both an in-house engineer and an external engineer. Many other economies have a mixed system, requiring the use of an in-house or external supervising engineer while also having a government agency conduct its own inspections.

The practice of having an in-house engineer conduct inspections during construction is most common in Europe and Central Asia (used in 73% of economies) and East Asia and the Pacific (56%) (figure 6.3). Requirements to hire an external supervising engineer or firm to conduct inspections are not common, including among economies in Europe and Central Asia and the OECD high-income group. However, in some OECD high-income economies, such as Australia, Iceland and New Zealand, an external firm generally conducts certain types of inspections. No economy in South Asia requires the use of an external firm to conduct inspections, and very few do so in Latin America and the Caribbean.

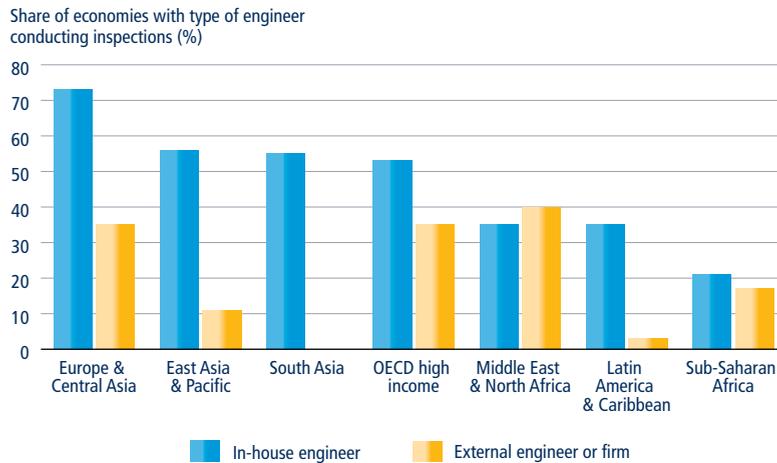
FIGURE 6.2 Upper-middle-income and high-income economies are more likely than others to require that independent experts review building plans



Source: *Doing Business* database.

Note: The percentages shown in the figure are based on data for 189 economies, though for economies in which *Doing Business* collects data for two cities, the data for the two cities are considered separately.

FIGURE 6.3 Having in-house engineers conduct inspections is more common than having external engineers or firms conduct them



Source: *Doing Business* database.

Note: The percentages shown in the figure are based on data for 189 economies, though for economies in which *Doing Business* collects data for two cities, the data for the two cities are considered separately.

Inspections conducted by a government agency are generally of three types: *unannounced or unscheduled inspections* (also known as random inspections), which can occur at any time and at any stage of a construction project; *phased inspections*, which occur at specific stages of construction, such as at excavation, foundation and so on; and *risk-based inspections*, which occur if warranted (for example, for buildings of a certain size, location or use). Sub-Saharan African economies tend to rely on random inspections, mostly because of a shortage of qualified staff. Random inspections are sometimes done simply to verify that a building permit has been issued. But they can also become rent-seeking opportunities. In most cases, however, especially in low-income Sub-Saharan African economies, these random inspections do not take place in practice, even if required by law.⁹

The majority of economies that rely on a government agency for quality control use either phased or risk-based inspections, though only a few of these opt for risk-based inspections (figure 6.4). Phased inspections are most common in South Asia and East Asia and the Pacific, used in more than half the economies in each of these regions. Risk-based

inspections are most common among OECD high-income economies, though used in only about a quarter of this group.

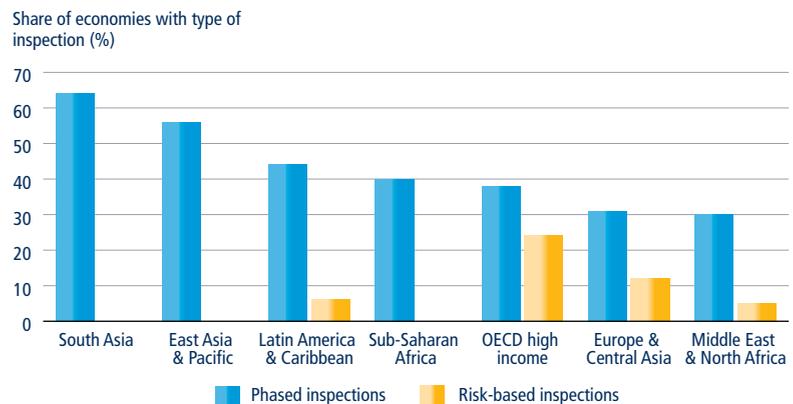
Twenty-two economies have no legal requirement for inspections of any type during construction. But inspections are still conducted as a matter of practice in 9 of these economies—Angola, Brazil (Rio de Janeiro), Equatorial Guinea, Gabon, the Marshall Islands, Panama, Samoa, São Tomé and Príncipe and the United

States (New York City). On the other hand, in 10 economies inspections rarely occur in practice even though they are required by law.

Quality control after construction

While inspections during construction are an important element of quality control, verifying that the completed building was built in accordance with the approved plans and is safe for use is equally important. Builders sometimes deviate from the approved plans. This is often done to save money, such as when it costs less to get a building permit for a smaller building. But the consequences can be serious. For example, if structural calculations are done for a two-story building but the builder adds more levels, this can put excessive stress on the foundation and lead to the collapse of the building (similar to the Rana Plaza case). While some of these issues can be detected through quality control during construction, requiring a final inspection allows a last check for issues that might have been overlooked earlier and is essential to ensuring the safety of the building. Once the building passes this final inspection, a completion certificate, certificate of conformity or occupancy permit is generally issued.

FIGURE 6.4 Risk-based inspections are more common in OECD high-income economies than in other regions



Source: *Doing Business* database.

Note: The percentages shown in the figure are based on data for 189 economies, though for economies in which *Doing Business* collects data for two cities, the data for the two cities are considered separately.

Economies use different approaches for the final inspection. Among the 189 economies covered by *Doing Business*, 84% (159 economies) require one or more government agencies to conduct the inspection. Where a joint inspection is required, it is often done by the permit-issuing authority and the civil defense department (or its equivalent). In the 100 economies that allow either an in-house engineer or an external engineer or firm to provide supervision during construction, this engineer is often required to submit a final report to the permit-issuing authority attesting that the building was built in accordance with the approved plans and regulations. Eleven economies require this report only from an in-house engineer, 5 require it only from an external party, and only Greece requires it from both parties (without a final inspection by a government agency). Yet 50 economies that require this final report from an in-house or external engineer still require a final inspection by a government agency.

All economies in the OECD high-income group and in Europe and Central Asia require a final inspection by law (figure 6.5). South Asia and East Asia and the Pacific have the smallest shares of economies that do so—though the shares are still quite large, at 82% and 85%. Among the 176 economies worldwide that require a final inspection, 15% rarely

implement it in practice—the majority of them in Sub-Saharan Africa.

Thirteen economies have no legal requirement for a final inspection—Afghanistan, the Comoros, Equatorial Guinea, Ethiopia, Guyana, Kiribati, Liberia, Maldives, the Marshall Islands, the Federated States of Micronesia, Nicaragua, Samoa and the Republic of Yemen—almost all of them low- or lower-middle-income economies. But in two of these economies—the Comoros and Samoa—a final inspection still commonly occurs in practice.

WHO IS HELD LIABLE FOR STRUCTURAL FLAWS?

When defects are discovered during construction, they are more likely to be easily remedied. But defects are often discovered only after the building has been occupied. Remedying defects at that stage can be both costly and time-consuming. So it is important that the responsible party be held liable and that the parties involved in the building design, supervision and construction obtain insurance to cover the costs of any structural defects.

Under contract and tort laws there can be a warranty period for the liability, a period that can be extended for an additional cost to the owner (because the builder will need

to pay an additional premium to the insurance company). In Belize, New Zealand and the United Kingdom, for example, the warranty period can range from one to three years after the building is completed. During this period the building contractor must repair any defects. Contractors commonly hold insurance to cover these costs even if not required to do so by law.

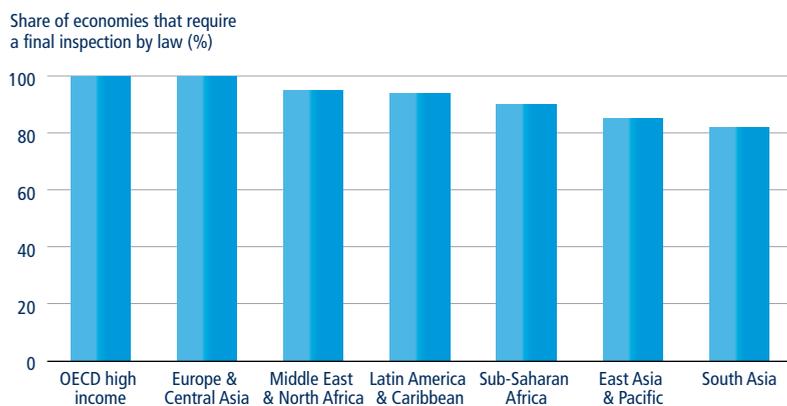
In other economies, however, liability is generally shared by the contractor and the architect, often for 10 years. In Australia, for example, both the contractor and the architect must have insurance for 10 years. But even among high-income economies, very few make this insurance mandatory.

In more than 60% of economies in all regions except Sub-Saharan Africa, the architect who designed the plans or the construction company will be held liable for any defects, but not the supervising engineer or the agency that conducted inspections during construction (figure 6.6). In most cases, who is held liable depends on the origin of the defect. For example, if the defect was a result of an error at the design stage, the architect is usually held liable. In 22% of economies no party is held liable by law.

Having insurance to cover costs that arise from structural defects benefits all parties involved, from clients to contractors. It ensures that damages will be covered if defects are detected once the building is occupied—and when parties know they are protected, this can encourage more construction. Having insurance to protect against the high costs from potential damages can be particularly important for small and medium-size construction companies.

More than half of economies (57%) do not require any party to purchase insurance to cover structural defects, nor is insurance commonly purchased as a matter of practice. While these economies may require that companies purchase professional liability insurance or workers' compensation insurance, *Doing Business* looks only at whether insurance must be purchased

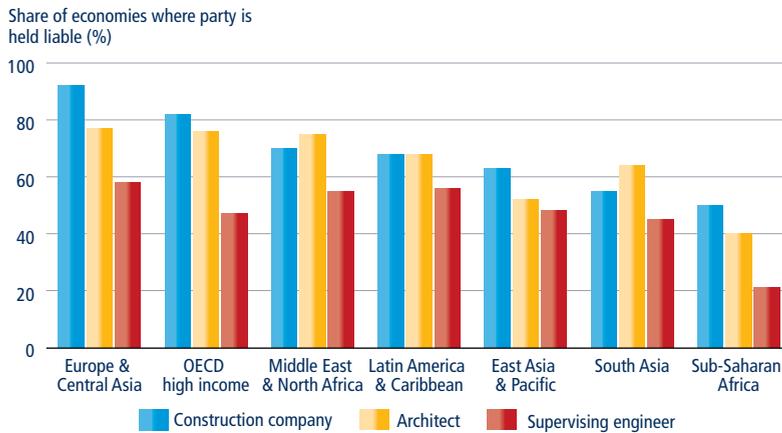
FIGURE 6.5 Almost all economies require a final inspection by law



Source: *Doing Business* database.

Note: The percentages shown in the figure are based on data for 189 economies, though for economies in which *Doing Business* collects data for two cities, the data for the two cities are considered separately.

FIGURE 6.6 In economies around the world, the architect or construction company is most likely to be held liable for structural defects



Source: *Doing Business* database.

Note: The percentages shown in the figure are based on data for 189 economies, though for economies in which *Doing Business* collects data for two cities, the data for the two cities are considered separately.

to cover defects found after the building is completed. Among the 51 economies that do require such insurance by law, 75% of them require the construction company to have the insurance. Only 15 economies require the supervising engineer or the agency that conducts inspections to hold insurance. And in 30 economies where insurance is not required by law, most construction companies and architects nevertheless purchase insurance as a matter of practice.

construction on-site. The professionals reviewing building plans are required to have a university degree in architecture or engineering in 84% of economies—and must be a registered member of the national association of architects or engineers in 62%. But only 46% of economies require these professionals to have a minimum number of years of practical experience, and only 28% require them to pass a qualification exam. And 20 economies have no qualification requirements for the professionals who review building plans.

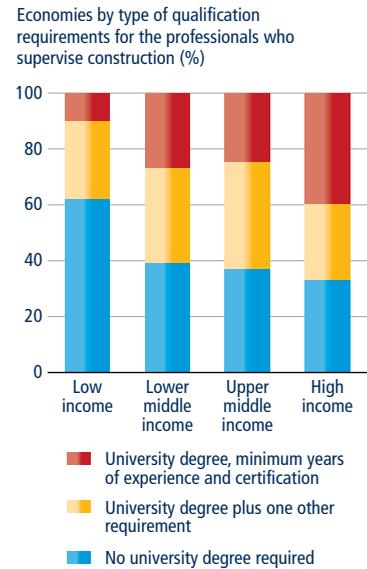
WHAT CERTIFICATIONS ARE REQUIRED?

The professionals who conduct inspections ensure safety standards for buildings, so it is important that they be certified and have the necessary technical qualifications. Similarly, the individuals who review and approve building plans need to have a technical background in architecture or engineering to understand whether the plans meet the necessary safety standards.

Most economies have more stringent qualification requirements for the professionals responsible for verifying that building plans are in compliance with the building regulations than for those who supervise

The professionals who supervise construction on-site are required to have a university degree in engineering, construction or construction management in 73% of economies—and required to be a registered member of the national association of engineers in 53% of economies, the majority of them high-income economies. Most economies that have at least two qualification requirements for the professionals who supervise construction (one being a university degree) are also high-income economies (figure 6.7). Like the professionals who review building plans, those who supervise construction on-site are rarely required to have a minimum number of years of practical experience

FIGURE 6.7 Most high-income economies have at least two qualification requirements—including a university degree—for the professionals who supervise construction



Source: *Doing Business* database.

Note: The percentages shown in the figure are based on data for 189 economies, though for economies in which *Doing Business* collects data for two cities, the data for the two cities are considered separately.

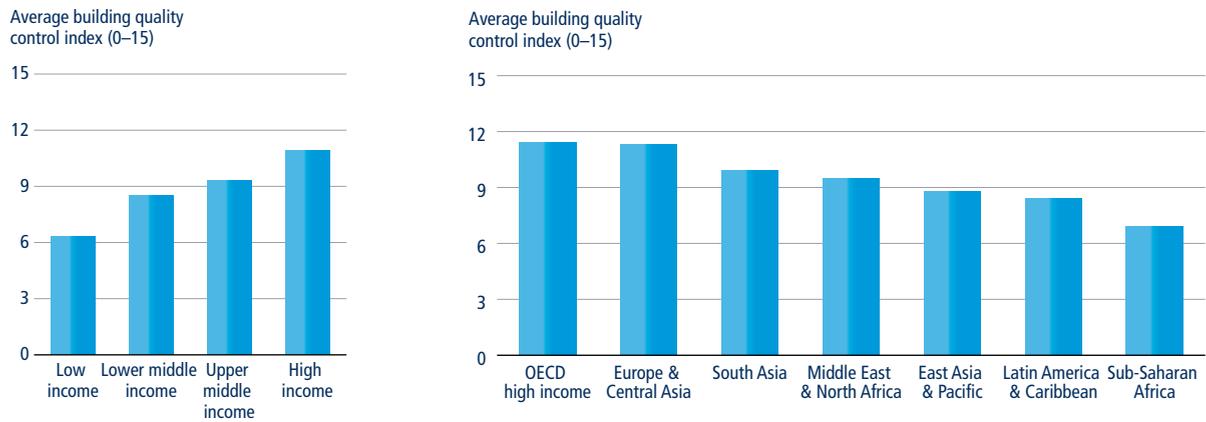
or to pass a qualification exam. And in 28 economies they are subject to no qualification requirements.

WHY DOES THE QUALITY MATTER FOR ALL?

The quality of a construction permitting system matters in ensuring the safety of construction and consequently of citizens. In general, high-income economies have better quality control and safety mechanisms (figure 6.8). Most of these economies not only have put the necessary safety controls in their legislation but also have been able to effectively implement them in practice.

The quality of a construction permitting system also matters in reducing corruption—something to which the construction industry is particularly susceptible in

FIGURE 6.8 High-income economies have better quality control and safety mechanisms



Source: Doing Business database.

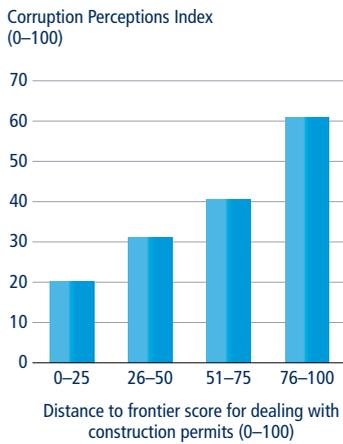
economies around the world. Transparency and clarity in building regulations can reduce opportunities for corruption. Indeed, the findings show that economies with greater quality and efficiency in their

construction permitting system tend to have lower levels of perceived corruption (figure 6.9).

Moreover, the data show that efficiency goes hand in hand with quality. Economies with a more efficient construction permitting system also tend to have better quality control and safety mechanisms (figure 6.10). Most of these economies have managed to put in place systems that avoid burdensome procedures and

excessive documentation requirements while still ensuring the necessary reviews of building plans by qualified professionals and the necessary safety checks during construction.

FIGURE 6.9 The greater the quality and efficiency of the construction permitting system, the lower the level of perceived corruption in an economy



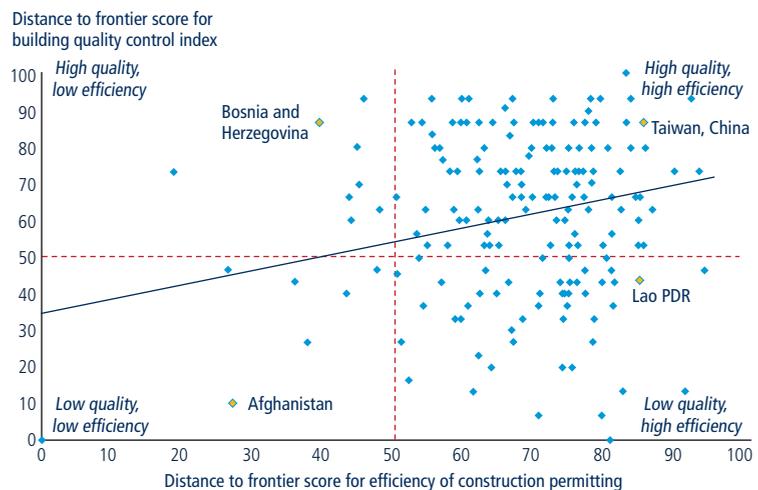
Sources: Doing Business database; Transparency International data (<https://www.transparency.org/cpi2014/results>).

Note: A higher score on the Corruption Perceptions Index indicates a lower level of perceived corruption. Data for the Corruption Perceptions Index are for 2014. Economies for which no data are available for the index are excluded from the sample. These are Antigua and Barbuda, Belize, Brunei Darussalam, Equatorial Guinea, Fiji, Grenada, Kiribati, Maldives, the Marshall Islands, the Federated States of Micronesia, Palau, San Marino, the Solomon Islands, St. Kitts and Nevis, St. Lucia, Tonga, Vanuatu, and West Bank and Gaza. The relationship is significant at the 1% level after controlling for income per capita.

CONCLUSION

Introducing the new building quality control index has expanded the coverage of the dealing with construction permits

FIGURE 6.10 Economies with a more efficient construction permitting system tend to have better quality control and safety mechanisms



Source: Doing Business database.

Note: The figure compares the average distance to frontier score for indicators of the efficiency of construction permitting (procedures, time and cost to comply with the formalities to build a warehouse) with the distance to frontier score for the building quality control index. The sample includes all 189 economies. The relationship is significant at the 5% level after controlling for income per capita.

indicators. Data for this index cover such key elements as the transparency and quality of building regulations, the quality control mechanisms for supervising construction, and liability and insurance regimes. The findings show that having the necessary quality control and safety mechanisms in place matters in reducing corruption and that economies with more efficient construction permitting systems also tend to have better quality control and safety mechanisms.

NOTES

This case study was written by Marie Lily Delion, Anushavan Hambardzumyan, Joyce Antone Ibrahim and Ana Maria Santillana Farakos.

1. Moullier 2009.
2. De Soto 2000.
3. Agence France Presse, "Nigeria Approves Building Code," *News24.com*, August 3, 2006, <http://www.news24.com/>. Because many cases go unreported, the actual figure is probably higher.
4. Associated Press, "Bangladesh Official: Disaster Not 'Really Serious,'" *USA Today*, May 3, 2013; "Nexus of Politics, Corruption Doomed Rana Plaza," *Dhaka Tribune*, April 26, 2013.
5. Ali and Ahmed 2015.
6. World Bank 2009.
7. Glaeser, Gyourko and Saks 2003, 2005.
8. This applies to projects in categories I-III as defined in Ukraine's Law on Regulation of Urban Development of March 12, 2011.
9. For the data on whether inspections during construction and the final inspection occur in practice, respondents were asked to assess whether these inspections occur in practice all the time, most of the time or not at all. In cases where respondents gave varied responses, the team conducted thorough follow-up with additional respondents to resolve the differences.