International Growth Centre

Special Economic Zones for Myanmar

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February 2016

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IGC Policy Note: Special Economic Zones for Myanmar*

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1 Introduction

Myanmar is a developing country that ranks among the most difficult markets in the world to operate a business. Since 2010, the Myanmar government has implemented political and economic reforms aimed at spurring growth and increasing the country's participation in the global economy. One objective of these reforms is to bring about structural change that makes Myanmar more reliant on the manufacturing sector. Efforts to advance this objective centre on the creation of Special Economic Zones (SEZs), designated enclaves that facilitate imports, exports and foreign direct investment.[1]

This report examines the current state of Myanmar's industrial sector, draws comparisons to its neighboring countries, and discusses the potential impacts of SEZ policy on the economy. A key finding of the report is that even relative to other comparable countries in the region, Myanmar's economy is dominated by commodity and natural resource sectors. Its manufacturing sector is characterized by low levels of productivity and attracts only a fraction of the foreign investment into the country. According to several metrics, Burmese firms are less globally engaged than manufacturing firms in other countries and face particularly high import and export costs.

Myanmar's recent SEZ policy has the potential to reduce these trade costs, trigger productivity improvements, and jumpstart manufacturing activity. While the use of SEZs appear quite sensible in theory, they are costly for governments and success does not come easily. Although, SEZs are common throughout the world, particularly in Asia, they have not always had a positive transformative effect on developing country business climates. This report evaluates the use of SEZs and seeks to identify the pillars of their success. Three features are emphasized. In the short run, the objective of SEZs should be to create a favorable business climate to attract foreign and domestic investors. In the long run, SEZs should encourage experimentation with rules and regulations in order to understand which policies can best spur growth and be scaled up. It is also important

*We are most grateful to U Set Aung, Chairman of the Thilawa Special Economic Zone's Management Committee and his colleagues for their very valuable guidance and support. We are also grateful to Tim Dobermann, Rocco Machiavello, Paul Piveteau, Ian Porter and Andrea Smurra for extremely helpful conversations, and for excellent research assistance from Michael Rosenberg. We acknowledge funding from the International Growth Centre.

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[1]This report using the term "SEZ" to describe any geographic area with a regulatory framework that differs from national regulatory framework. This term includes: free trade zones (FTZs) that are duty-free areas offering infrastructure for warehousing and storage; export processing zones (EPZs) that are essentially FTZs with firms exporting their output to foreign markets; enterprise zones that are areas where firms receive special tax incentives; or, specialized zones that are FTZs or EPZs that are focused on one particular sector, such as electronics or petrochemicals. Readers interested in the nuances between these types of zones can consult Farole (2011).

that SEZs generate externalities to justify the pecuniary incentives governments offer firms to relocate. These externalities are important for ensuring that SEZs are not isolated islands within the economy, simply shifting employment from other parts of the economy. The report draws on the experiences of Myanmar's neighboring countries with SEZs to discuss these three ideas in detail.

The remainder of this report is organized as follows. Section 2 uses publicly-available data to analyze the current state of Myanmar's industrial sector. Section 3 discusses the recent academic research on the link between removing trade barriers and productivity. Section 4 discusses how SEZs can lower trade costs and potentially spur growth. This section describes the objectives behind SEZ policy, the key pillars that make them successful, and discusses the experiences from Myanmar's neighbors. Particular attention is given to the Thilawa SEZ which is the most developed of Myanmar's three zones. Section 5 concludes.

2 A Portrait of Myanmar's Industrial Sector

Myanmar is a developing country that ranks 136 out of 187 countries in terms of (PPP-adjusted) GDP per capita.[2] It has a (PPP-adjusted) GDP of $221.5 billion and a population of 51.4 million people.[3] Since 2010, when Myanmar introduced a series of political and economic reforms, the country has grown rapidly at 7.57 percent per year which is among the fastest growth rates in the region. Despite this growth, the country's agricultural sector accounts for 30 percent of its GDP. The industrial sector, which comprises of mining, manufacturing, construction, electricity, water, and gas, accounts for 32 percent of its GDP. Services account for the remaining 38 percent of GDP. As a comparison, Table 1 reports national account statistics for Myanmar and seven neighboring countries: Bangladesh, Cambodia, China, Laos, India, Thailand, and Vietnam. Myanmar's (PPP-adjusted) GDP per capita is $4,334, which is higher than Bangladesh and Cambodia, roughly similar to Laos, India and Vietnam, and about one-third the per capita GDP of Thailand and China.

According to available statistics, private-sector firms face considerable difficulty operating in Myanmar. The World Bank's Doing Business Ranking (row 8) places Myanmar 167 out of 189 countries. Bangladesh is the only country in the region with a lower ranking. Myanmar scores a 2.25 out of 5 (ranked 177 out of 192 countries) in the World Bank's assessment of the country's logistics, and the quality of its existing port infrastructure is rated 2.6 out of 7 (the lowest score in the region). These constraints are reflected in Myanmar's export to GDP ratio; at 16.7 percent of GDP (row 11), it is significantly lower than the average 43.5 percent in the region.

Aggregate data suggest that productivity levels in Myanmar are low. Myanmar's per capita GDP is 45 times lower than the U.S. At a proximate level, this difference is due to two components: differences in the country's access to factor inputs (e.g, labor and capital) and differences in how efficiently it deploys these inputs. The latter concept is known as *total factor productivity* (TFP). Mathematically, this relationship can be represented by the following expression that maps TFP (A), aggregate labor supply (L), and the aggregate capital stock (K) to GDP (Y): $Y = AL^{1-\alpha}K^{\alpha}$. The variable α represents the share of payments that go to capital and is typically set at $\alpha = .33$.

[2]Source: 2013 data from the International Monetary Fund.
[3]Myanmar 2014 Census.

Using estimates of total GDP, labor and capital, one can impute the TFP of a country. According to this calculation, Myanmar's TFP is estimated at 12.5 times lower than that of the U.S. Row 14 of Table 1 reports the TFP estimates for the other countries considered, with Myanmar's value normalized to 100. With the exception of Bangladesh, Myanmar's TFP is below all countries' in the region (but close to India and Cambodia's level of TFP). China and Thailand have the highest productivity levels in the region. The results imply that even if China and Thailand had the same level of capital as Myanmar, they would still be able to produce twice as much more output in a given year. Using a slightly more sophisticated calibration that accounts for differences in levels of human capital, Hall and Jones (1999) show that the vast majority of the variation in GDP across countries is due to differences in TFP. Thus, to understand how Myanmar can generate growth, one must understand the constraints the country faces in improving its productivity.

This section reviews Myanmar's recent trends in trade and foreign direct investment (FDI), and compare its trade patterns to the seven comparator countries. It also examines a recent database that collects information on Burmese firms and benchmark Myanmar's performance metrics. It ends with an analysis that infers the size of trade costs that the country's exporters and importers currently face.

2.1 International Trade

Official statistics indicate that Myanmar's trade has been increasing steadily since the mid 1990s. Figure 1 plots Myanmar's aggregate exports and imports from 1995 to 2013.[4] Exports have been growing at 12.5 percent per year which is slightly lower than the regional average of 15.4 percent (and well below the maximum annual growth rate of 24 percent by Cambodia). There has been a large compositional change in the composition of Myanmar's export destinations over time. In 1995, the majority of its exports were sent to Thailand (18 percent of exports) and Singapore (17 percent of exports). By 2013, Thailand accounted for 39 percent of exports, and China accounted for 26 percent of exports.

Myanmar's export basket is concentrated within a small set of products. Figure 2 provides a visualization of Myanmar's exports for 2012.[5] It is clear that natural resources and commodities dominate aggregate exports. Together, minerals, vegetables, wood, animal and metal sectors account for 80 percent of exports. The largest manufacturing sector is textile and apparel, which accounts for about 14 percent of exports. Drilling further down into the data reveals that even these sectors are dominated by a handful of narrow products, defined by the six-digit Harmonized System (HS) classification. Table 2 lists the Myanmar's 10 largest export products, by value, using export data that averages over the 2010-2013 period to smooth out fluctuations. One product code, "natural gas in gaseous state" (HS 271121), alone accounts for 37 percent of Myanmar's exports. "Logs" (HS 440399) account for 8.5 percent. In fact, with one exception–"Mens and boys anoraks" (HS 620193)–the ten largest export products are natural resources or commodities and account for 68 percent of the country's export earnings. In the region (see Panel B), Laos is the

[4] See Appendix 5 for details about the data sources.

[5] Source: The Observatory of Economic Complexity at http://atlas.media.mit.edu.

only country for which exports are even more concentrated in the top 10 products. Bangladesh is comparable to Myanmar but all other countries' exports in the region are about half less concentrated than Myanmar. Note that for Bangladesh, Cambodia, China, Thailand and Vietnam, their most important export is a manufactured product.

It is not surprising that a country with large endowment of natural resources is reliant on these products to generate foreign exchange. Moreover, exports from low-income countries are typically concentrated in a few products (Imbs and Wacziarg (2003), Cadot et al. (2011)). However, it is useful to compare Myanmar's export bundle to its neighboring countries that have similar levels of economic development and are located in the same geographic region. Their export bundles are shown in Figure 3. The figure conveys three important messages. First, the figure reveals that the three countries closest to Myanmar's level of economic development–Bangladesh, Cambodia and Laos–also have very concentrated export baskets. In contrast, the richer countries– China, India, Thailand and Vietnam–are more diversified. Second, compared to the former set of countries, Myanmar's exports are more concentrated in commodity and resources sectors. So while Bangladesh and Cambodia have concentrated export baskets, the majority of their export earnings are derived from the manufacturing sector and in particular, the textile industry. Laos' export basket is more comparable to Myanmar's, but its manufacturing base is more diversified with a non-trivial portion of exports coming from the chemical sector (4.37 percent of exports). This is not the case for Myanmar. Third, Vietnam, which is only about 25 percent richer than Myanmar, has a particularly diverse export basket with machinery accounting for the majority of its export earnings. As the data used by the figures cannot distinguish between gross and value added trade flows, it is likely that a bulk of Vietnam's machinery sector is included in East Asia's supply chain networks. Its value-add in that sector may be low, but nevertheless illustrates the potential export opportunities for countries within the region, including Myanmar.

TThe above statistics provide a cross-sectional snapshot of Myanmar's trade patterns. In recent years exports have grown rapidly making it useful to understand if and how trade patterns have changed over time. The common approach for this is decomposing a country's export growth into three mutually exclusive margins of adjustment: the incumbent margin capturing net export growth within product-destination pairs that were exported in the previous and current time period; the destination margin capturing net export growth within existing products to new destination pairs; and the product margin capturing net growth in new product lines that were not exported in the previous period. If export growth is dominated by the incumbent margin, this indicates that the country's exporters continue to rely on their existing products and customers rather than finding new markets or products. Table 3 reports the results of this decomposition by taking averages over three 5-year intervals: 1998-2003, 2003-2008, and 2008-2013. Column 1 indicates that Myanmar's total export growth averaged 119 percent over these intervals. The next three columns decompose this number into the three margins. It is evident that the incumbent margin accounts for the majority of the growth. Of the 119 percent growth, the incumbent margin is responsible for 70 percent (=83/119). Exports from neighboring countries also grow pre-

dominantly through the incumbent margin, though there is some heterogeneity. Virtually all of Bangladesh's and China's exports, for example, are driven by the incumbent margin, while only just over a quarter of Laos' growth comes from the incumbent margin. Cambodia, Vietnam and India are similar to Myanmar in terms of the contribution of the incumbent margin to growth. However, given the cross-sectional results noted earlier, the prominence of the incumbent margin suggests that Myanmar's exports continue to be derived from a narrow set of resource products.

It is also instructive to understand the source of Myanmar's import growth over time. Table 4 decomposes import growth over the same 5-year intervals and into the same margins of adjustment. Row 1 indicates that imports average 119 percent growth over the intervals, and again the incumbent margin–imports from existing product-destination pairs–again accounts for the vast majority of the growth. Rows 2-4 provide a separate breakdown of these margins according to intermediate inputs, capital goods and consumption goods.[6] The pattern is fairly consistent across categories with the incumbent margins dominating import growth. Rows 5-11 report the corresponding decomposition of aggregate import growth for the comparator countries. Bangladesh is an outlier in that 92 percent (65/70) of its aggregate import growth is driven by the intensive margin. Thailand and China have a similar breakdown as Myanmar. The remaining other countries have lower relative contributions of the incumbent margin to import growth than Myanmar, which suggests that these countries have broadened their range of imported varieties.

2.2 Foreign Direct Investment and Offshoring

UNCTAD compiles FDI statistics across the world, and Table 5 reports FDI inflows for Myanmar and the comparator countries from 2010 to 2013. Myanmar averaged FDI of $2.09 billion per year, or about 4 percent of its GDP. During this period, this share was higher than other countries in the region. As seen on the right axis of Figure 1, FDI flows are up from a decade earlier when FDI inflows accounted for less than 2 percent of its GDP, but are still significantly lower than their level in the end of the 1990s. The predominant source of FDI into Myanmar is from China, which accounts for 73 percent of recent flows. In contrast, other countries (with the exception of Laos) have attracted investments from a more diversified set of countries, including the U.S. and Europe. The large share of investment from China and the sudden decrease in FDI in the end of the 1990s may stem, in part, from the economic sanctions that were imposed on Myanmar from 1997 to 2012.

Panel B of Table 5 reports the sectoral decomposition of FDI flows from 2010.[7] Virtually all of Myanmar's FDI in 2010 targeted the mining and oil sectors. On the other hand, all other countries in the region have attracted foreign investment across a more diversified set of industries, in particular within manufacturing. More recently, statistics published by Myanmar's Directorate of Investment and Company Administration (DICA) indicates that as of May 2015, investments into the manufacturing sector have increased to 10 percent of FDI while oil and power industries

[6]The BACI data is given at the 6-digit Harmonized System classification. These codes are converted into the classification of Broad Economic Categories (BEC) using a conversion table from UN Stats. This classification separates four broad categories of product: capital goods, intermediate goods, consumption goods and others. The "others" category is grouped with consumption goods in this analysis.

[7]Sectoral decompositions are only available for 2010, so they may be an outlier relative to other years.

account for 41 and 34 percent of FDI, respectively.

An alternative and more "micro" way to evaluate trends in foreign companies' decisions in the region is to examine the sourcing patterns of one major footwear company: Nike. Nike, a U.S.-based company, is the largest footwear brand in the world and offshores most of its footwear production to developing countries. Its annual reports, which are public information, provide a breakdown of its footwear production share since 1991. The production shares by major country are shown in Figure4. The figure reveals that Nike has dramatically changed its sourcing of footwear over the past twenty-five years. During the 1990s, Nike increased its reliance on Chinese producers from about 10 percent of total production to more than 40 percent. Since then, production has shifted away from China (as well as Thailand and Indonesia). The major beneficiary of rising wages in these countries has been Vietnam, which currently accounts for more than 40 percent of Nike's global footwear production. Table 6 reports the location of Nike's suppliers in Southeast Asia as of June 2015. While Vietnam and China are still the main location for Nike's supplier base, employing 341,204 and 228,732 workers, respectively, Bangladesh and Cambodia each have three factories that supply to Nike with total employment of 15,090 and 13,319, respectively. This implies that Nike has found suppliers in these two countries productive enough to integrate into its supply chain. This case study suggests that with continued economic liberalization and policy reforms, Myanmar could attract large multinational firms like Nike in the future, representing a significant opportunity for growth through integration into their supply chains.

2.3 Firm-level Statistics

In 2014, the World Bank completed its first survey of enterprises operating in Myanmar. The World Bank's Enterprise Surveys provide a comprehensive portrait of firm activity in emerging markets, and the database offers the opportunity to examine the performance of Burmese firms relative to counterparts in the neighboring countries. The Enterprise Surveys are typically formed by drawing from Census data a random sample of formal (registered) firms with five or more employees. Since no such frame was available for Myanmar, the World Bank block enumerated all registered firms in the five major cities, and then drew a stratified random sample of firms from this frame. Surveys are available for 632 Burmese firms of which 352 are in the manufacturing sector. The analysis below focuses on these manufacturing firms.

Summary statistics for Myanmar and the comparator countries are reported in Table 7. Rows 3 and 4 report that the average and median employment size of formal manufacturing firms in Myanmar is 88 and 21 employees, respectively. The median employment is slightly higher than Laos and Cambodia, but substantially below India, Bangladesh, China, Thailand and Vietnam. Figure 5 reports the full distribution employment. Like many developing countries, Myanmar's employment distribution is dominated by small firms: 45 percent of the manufacturing firms in the sample have fewer than 20 employees. Note that Bangladesh, Thailand and Vietnam are exceptions to this pattern while China and India are relatively more evenly distributed across sizes.[8]

[8]Since the Enterprise Surveys only capture formally registered firms, the employment distribution is likely skewed to the left for all the countries in the sample.

Consistent with the aggregate data reported above, the micro data confirm that among Burmese manufacturing firms, productivity levels, defined here as sales per worker, are low even relative to neighboring countries. Average sales per worker (Row 5) is $14,774; this is lower than other countries with the exception of Bangladesh. Median sales per worker (row 6) is $4,858; this, too, is significantly below productivity levels of Thailand, Vietnam and India and slightly lower than Bangladesh and Laos. Productivity levels in China are twice that of Vietnam and Thailand and more than eight times the productivity of Myanmar. Figure6 plots the distribution of this productivity measure across firms. With the exception of Cambodia, the distribution of Burmese firm productivity is shifted to the left of comparator countries. Moreover, even compared to Bangladesh and Laos, who have higher productivity distributions (shifted slightly to the right of Myanmar's curve), Myanmar's distribution is not bell shaped. This is noticeable to the right of the peak of the Myanmar productivity curve where the mass of firms drops faster compared to the analogous position in the curves for Bangladesh and Laos. Finally, Myanmar has a thinner right tail; while other countries have a handful of firms that have sales per worker in excess of several hundred thousand USD per worker, few manufacturing firms in Myanmar report revenues per worker in this range.

Row 7 reports the fraction of manufacturing firms that export products. In Myanmar, only 16 percent of manufacturing firms are engaged in export activity. This is well below Bangladesh (30 percent), China (31 percent), Laos (49 percent), Thailand (50 percent) and Vietnam (44 percent), but above Cambodia (11 percent) and comparable to India. Row 8 reveals that relative to other neighbors, with the exception of China and India, Myanmar's use of imported inputs is also much lower; only a quarter of manufacturing firms use imported inputs.[9] Row 9 reports the fraction of firms in the sample that are foreign, defined as firms that report more than 10 percent of their registered capital coming from a foreign source. Roughly 3 percent of Myanmar's firms are foreign by this metric, which is slightly higher than India and Bangladesh, but significantly lower than Cambodia and Laos.

2.4 Just How Large are Myanmar's Trade Costs?

Since Myanmar is a member of the WTO, it is officially not subject to particularly high tariff rates as it has Most Favored Nation (MFN) status with WTO member nations. As a Least Developed Country (LDC), Myanmar benefits from the most favorable regime available under the EU's Generalized Scheme of Preferences which gives duty free access to the EU for export of all products, except arms and ammunition.[10] The tariff rates on imports into the country also do not appear particularly high. Table 8 presents the average MFN applied tariffs imposed by Myanmar

[9] The relatively lower reliance on imported inputs in India and China is not surprising given the larger domestic manufacturing capacity in these two countries.

[10] Between 1997 and 2012, Myanmar faced export bans to the U.S., the European Union, Swiss, Norway, Australia and Canada. In 2012, the U.S. removed sanctions on the majority of products manufactured in Myanmar. The imports of any jadeite or rubies mined or extracted in Myanmar, articles of jewelry containing them and imports from specific blacklisted companies are still banned. See Executive Order 13651 on August 9, 2013 and Office of Foreign Assets Control's (OFAC) SDN List: https://sdnsearch.ofac.treas.gov/. The OFAC also now allows new US investments in Myanmar and allows individuals, companies, and financial institutions to conduct transactions with four of Burma's major financial entities. The European Union waived most of its sanctions on imports in May 2012. See Regulation 409/2012 of May 14, 2012.

and comparator countries on imports. Myanmar's average applied rate for the MFN countries under the WTO agreements is the lowest the region, although the weighted rates (where the weights are the imports in each of the product categories) are on the higher side in the region. Most of the MFN tariff rates have remained constant in the last 15 years.[11]

Although these direct measures of trade costs do not appear as particularly high in the region, the national accounts data, trade flows and firm-level data analyzed above all emphasize Myanmar's low manufacturing capacity and the low participation in international trade among its manufacturing firms. This suggests that while Burmese firms may not face particularly high tariff rates, other forms of trade costs in Myanmar are high. These additional trade costs include the low levels of infrastructure, delays in obtaining the necessary permits to trade, non-tariff barriers such as quotas and permits required for importing and exporting, contractual frictions, and other administrative barriers.

It is hard to quantify the size of these trade costs directly, due to a lack of data. However, it is possible to use economic theory to infer the size of Myanmar's trade costs. This can be done using a "gravity equation", which is an approach to estimate how trade flows correlate with importer and exporter characteristics. At its most basic form, the gravity equation can be represented as:

$$X_{ni} = CY_i^{\gamma} Y_n^{\beta} \phi_{ni} \tag{1}$$

where X_{ni} are the trade flows from exporter i to importer n, Y_i and Y_n reflect the size of each country's economy, ϕ_{ni} are the trade costs between the two countries, and C is a constant. Observable measures of trade costs typically include bilateral distance between the two countries, an indicator if countries were in a colony-colonizer relationship, indicators if the countries share a common border or language, and an unobserved component ϵ_{ni}: $\phi_{ni} = dist_{ni}^{\alpha_d} colony_{ni}^{\alpha_c} bord_{ni}^{\alpha_b} lang_{ni}^{\alpha_l} e^{\epsilon_{ni}}$.[12] The unobserved component has the interpretation of unobserved costs of trade that explain differences between predicted trade flows conditional on the observable variables and actual trade flows. This analysis is interested in the magnitude of the unobserved component averaged across all export and import destinations for Myanmar.

This analysis uses bilateral trade flows from BACI data averaged over the 2010-2013 period.[13] After taking the logarithm of each of the variable in the gravity equation, the following equation is obtained:

$$\ln X_{ni} = \delta + \gamma \ln Y_i + \beta \ln Y_n + \alpha_d \ln dist_{ni} + \alpha_c colony_{ni} + \alpha_b bord_{ni} + \alpha_l lang_{ni} + \epsilon_{ni} \tag{2}$$

The parameters in this linear equation (δ, γ, β, α_d, α_c, α_b, α_l) can be estimated through ordinary least squares. Panel A of Table 9 reports the results of the regression. Trade flows increase with the size of the importer and exporter, and trade flows decline with distance with an elasticity of 1.25. This means that for every one percent increase in distance, trade flows fall by 1.25 percent.

[11] Source: World Trade Organization.

[12] The observable components of trade are obtained from the GeoDist database compiled by CEPII (see Mayer and Zignago (2011) for details).

[13] See Appendix for data details.

Sharing a colonial relationship, a common border and a common language all increase trade.

Panel B of Table 9 regresses the residuals of the regression, ϵ_{ni}, on country fixed effects for Myanmar and the seven comparators. Column 1 reports the regression on exporter fixed effects, while column 2 reports the regression on importer fixed effects. The fixed effects have the interpretation of the average values in these regressions relative to the leave-out group, which is all other countries. Both Myanmar's exporter and importer dummies are below the constant coefficient, indicating that relative to the world average, it has substantially higher unobserved trade costs compared to the rest of the world. Moreover, the unobserved trade costs are the highest in the region. Bangladesh and Laos also have above-average unobserved trade costs, but they are smaller in magnitude than Myanmar. Myanmar's exporter coefficient is statistically different from the next lowest coefficient, Laos. Its importer coefficient is not different from Laos but is significantly lower than all other countries in the region.

In other words, the gravity model indicates that based on its size and distance to trading partners, Myanmar's imports and exports are below standard economic theory predictions. In the next section, the report discusses recent research on the impacts to firms of reducing trade costs.

3 Trade and Productivity: Theory and Recent Evidence

The analysis in Section 2 reveals several features regarding Myanmar's participation in global markets. Its exports exhibit a high degree of concentration in a narrow set of natural resources and commodity products. The trends over time suggest relatively little dynamism in its export and import product scope. The firm-level data indicate that Myanmar's manufacturing sector is dominated by small firms with low levels of productivity that are not well-integrated into global markets. While many of these characteristics are common to other developing countries, along several of these indicators, the data suggest that Myanmar is an outlier among its regional neighbors.

Classical economic theory predicts that countries gain from specializing in a narrow set of products that leverage comparative advantage (Ricardo 1817). Based on this theory, Myanmar's specialization reflects the most efficient allocation of its factor resources. However, recent research offers some evidence that specialization, particularly in sectors that have substantial price volatility, may have some adverse consequences. One concern is that concentration in these sectors contributes to aggregate volatility. For example, Koren and Tenreyro (2007) find that 50 percent of the volatility in GDP growth across countries can be attributed to specialization in sectors with high intrinsic volatility.[14] While access to financial and insurance markets could diversify this risk, market imperfections limit the ability for producers to hedge these risks fully. Industrial policies that support sectoral diversification could reduce aggregate volatility. Moreover, many analysts believe that the growth of the manufacturing sector, as opposed to resource sectors, leads to higher standards of living. For example, Matsuyama (1992) provides a theory of economic growth based on two sectors, agriculture and manufacturing. The manufacturing sector is characterized by increasing returns to scale and the rate of human capital accumulation rises with the

[14]The other 50 percent is due to country-specific risk, which in principle should fall as Myanmar continues its liberalization policies.

size of the sector. In this model, policies that encourage the manufacturing sector will increase the rate of growth in the economy; conversely, specialization in agriculture or resource-based sectors may result in an economy getting trapped and remaining underdeveloped. A recent paper by Rodrik (2013) demonstrates that labor productivity in manufacturing sectors across countries tend to converge to the world technology frontier. This result contrasts with the with the lack of unconditional convergence that has been documented using economy-wide measures of productivity. Rodrik (2013, p. 201) notes:

> These [manufacturing] industries produce tradable goods and can be rapidly integrated into global production networks, facilitating technology transfer and absorption. Even when they produce just for the home market, they operate under competitive threat from efficient suppliers from abroad, requiring that they upgrade their operations and remain efficient. Traditional agriculture, many non-tradable services, and especially informal economic activities do not share these characteristics.

SEZ policy can help promote manufacturing capacity in developing countries by lowering trade costs. Before turning to SEZs in greater detail, this section discusses recent evidence on the link between international trade and productivity of manufacturing firms, and the underlying mechanisms. The evidence is drawn from trade liberalization experiences from developing countries. The discussion considers the two broad channels through which trade liberalization can affect the productivity of the industrial sector: across firms and within-firms.

The first channel through which international trade generates productivity gains is through an improved reallocation of resources across firms. When countries lower their trade barriers, competition in the domestic economy increases and demand for a country's products improve. This places pressure on inefficient firms, benefiting the more efficient firms that are able to sell their products overseas.Melitz (2003) shows that trade will force these inefficient firms out of the market, and will cause resources to reallocate to the more efficient firms. This process improves the overall allocation of resources and aggregate productivity rises, even in the absence of any direct effects on productivity of individual firms (which is discussed below). McCaig and Pavcnik (2014) find evidence of across-firm reallocation in Vietnam in the early 2000s after the country signed a bilateral trade agreement with the U.S. Using differential changes in tariffs across industries, they find evidence that labor is reallocated away from small micro-enterprises to formal-sector manufacturing firms. Empirical support for this channel has also been shown in the case of Chile's trade liberalization. Pavcnik (2002) shows that when Chile liberalized its trade, 35 percent of firms operating at the beginning of the episode exited, and these firms tended to be the least efficient firms. Her estimates reveal that two-third of the overall improvements in aggregate productivity occur because of this across-firm reallocation channel.

For developing countries, resource (mis)allocation has significant implications for gains to trade. In countries with weak institutions, rents often accrue to politically-connected firms rather than the most productive firms. Trade policy, such as tariffs or licenses to import and export, may be subject to regulatory capture. In cases when the allocation of trading rights is not transpar-

ent, connected firms are able to secure licenses while unconnected firms are denied opportunities to trade. A stark example of this phenomenon comes from China's textile and apparel industry. Starting in the 1950s, developed countries imposed stringent quotas on apparel produced in developing countries; the regime was known as the Multifiber Arrangement (MFA). Developing countries had to allocate export licenses to their domestic apparel firms. For example, Hong Kong created an auction for firms to bid on licenses. In contrast, China's allocation mechanism to distribute licenses was murky.Khandelwal et al. (2013) quantify massive misallocation caused by the licensing regime. It was clear that the licensing institution protected China's state owned enterprises (SOE), which were substantially less productive than private sector firms. SOE market shares averaged 62 percentage points in products bound by quotas compared to 53 percentage points in similar apparel products not bound by products. Following the removal of the MFA quotas for World Trade Organization members on January 1, 2005, China's exports surged, and SOE market shares in the two groups of products immediately equalized. The data revealed substantial entry of private firms that had been blocked from exporting because they lacked the connections to obtain quota licenses prior to 2005. Moreover, these entrants had high productivity. Numerical simulations reveal that industry productivity would have been 15 percentage points higher without explicit protection to SOEs. So through trade liberalization, China benefitted from not only the direct removal of the distortions caused by the quotas, but also benefitted from removing protection of unproductive SOEs and a "leveling of the playing field".

The second main channel through which trade liberalization improves productivity is by forcing existing firms to become more efficient. The literature has identified four mechanisms that can lead to within-firm productivity improvements: managerial slack, scale effects, learning-by-exporting, and access to imported inputs.

Many analysts believe that through international trade, competition rises and this forces existing firms to reduce managerial slack. In particular, business people often believe that there is significant amount of inefficiencies (e.g., redundant labor) that keep costs elevated. Competition forces firms to whittle away these inefficiencies. Economists are generally skeptical of this mechanism because most economic models assume that firms always maximize profits ; so, any within-firm improvement in productivity must come from other mechanisms. However, recent empirical efforts that collect detailed data on firm management practices suggest that this channel is operative, even though it may be hard to isolate precisely. In a well-known study of management practices of manufacturing firms across a range of countries, Bloom and Van Reenen (2007) find evidence that firms have higher management scores in markets that are more competitive, as measured by the sector's openness to trade. They argue that when competition is high, the fear of bankruptcy is elevated which places pressures on firms to improve efficiency. In another recent study, Bandiera et al. (2013) systematically collect time-use data from chief executive officers of Indian firms. They, too, find that firms in high-competition environments (e.g., exporting firms) appear to adopt more "professional" management styles relative to firms operating in more protected industries. While neither of these studies perfectly isolates this slack mechanism, they do

suggest a link between exposure of trade and an improvement in firm efficiency.

A second mechanism through which trade can improve productivity is through scale effects. Lower trade costs mean that firms can reach more customers by exporting overseas. Access to more customers allows firms to amortize the fixed costs of adopting new technologies that can improve efficiency. For example, Bustos (2011) finds when the Latin America regional trade agreement, MERCOSUR, came into effect, Argentine firms (specifically those that export) took advantage of the enlarged access to markets by investing in computers, software, patents and research and development activity. These investments allowed firms to lower their operating costs. Similarly, using data on firms from Chile, Marin and Voigtlander (2013) find that when firms enter export markets, they simultaneously make investments in machinery which ultimately improves their efficiency levels. Scale effects should be particularly noticeable in smaller countries, or countries with underdeveloped transportation networks or high costs of intra-national shipping.

Beyond expanding market size, international trade can also expose firms to more sophisticated buyers overseas which can also lead to productivity improvements. This mechanism is particularly important for developing countries. Relative to domestic buyers, foreign buyers typically have stronger preferences for product quality, stricter adherence to pre-negotiated specifications and require shorter lead times. This forces exporters to upgrade their production and managerial practices to satisfy client demands. Moreover, buyers will often pass technical information down to exporters to help facilitate the learning process. As a result, access to foreign buyers can trigger productivity improvements; this phenomenon is known as "learning-by-exporting". de Loecker (2007) finds evidence of learning-by-exporting among Slovenian exporters; upon entry into export markets, productivity levels of exporters increase and his findings continue to hold after using matching techniques that control for potential selection biases. More recently, Atkin et al. (2014) use a randomized control trial to test the hypothesis that there is a causal impact of exporting on firm productivity. They provide a random set of Egyptian carpet producers the opportunity to produce carpets for buyers located in high-income markets. Thanks to the randomization, they can attribute any differences between treatment firms and control firms to export market access. Productivity, quality levels and profits of the carpet producers were tracked through surveys over several years. Treatment firms, those given the opportunity to export, had 15-25 percent higher profits relative to control firms at the end of the study. Moreover, they exhibited higher productivity and quality levels. Conditional on product specification (e.g., rug count, number of colors, etc.), treatment firms produced more rugs per unit of time than control firms. Moreover, they consistently manufactured rugs that achieved the intended size and weight and had straighter corners, while control firms exhibited lower quality levels. The data also reveals that these quality and productivity gains came about, in part, through explicit transfers of knowledge from the foreign buyers to the producers. Based on this evidence, it appears that the learning-by-exporting mechanism is important for firms in developing countries and helps drive within-firm productivity improvements.

While scale effects and learning-by-exporting focus on the benefits of exporting, productivity gains also come through the importing mechanism. Policymakers often singularly emphasize

the benefits of exporting and overlook how access to import markets can trigger productivity improvements for firms. While lowering tariff barriers may raise competition for domestic firms, it can simultaneously lower the costs of intermediate inputs which is a beneficial shocks to firms. Reducing input tariffs lowers prices of existing inputs as well as the costs of importing a wider range of input varieties. Macroeconomic growth models have long emphasized the importance of intermediate inputs for productivity growth (e.g., Rivera-Batiz and Romer 1991). Several liberalization episodes across developing countries have established a causal link between imported inputs and within-firm improvements in productivity; see Amiti and Konings (2007) for Indonesia, Topalova and Khandelwal (2011) for India, Yu (2014) for China, and Halpern et al. (2015) for Hungary. As discussed by Halpern et al. (2015), imported inputs are distinct from domestic inputs in two key ways: imported inputs are typically higher quality (even after controlling for prices), and b) foreign inputs are imperfect substitutes for domestic inputs. Both channels trigger productivity improvements in productivity among firms that raise their reliance on imported inputs when trade costs fall. In addition, using evidence from India, Goldberg et al. (2010) find that lower input tariffs enabled Indian firms to expand their range of product scopes. Manufacturing new products requires paying a fixed cost of production, and lower input tariffs lowers costs of production that enables firms to enter new product lines. The evidence from this line of research point to the benefits of easing barriers to import on productivity levels.

To summarize, a key objective of Myanmar's industrial policy should target improving productivity levels. A large body of empirical evidence has demonstrated that reducing the costs of trade can generate productivity gains, and as shown in the previous section, trade costs in Myanmar are high. There are a number of policy reforms that could achieve this goal, such as lowering tariffs, reducing quotas, and dismantling licenses. Governments could also use SEZs to comprehensively reduce all forms of trade costs for firms operating in particular geographic areas in the country. The next section discusses SEZ policy in detail.

4 Special Economic Zones

In January 2014, Myanmar's Parliament passed the Special Economic Zone Law that provides a legal framework for the three SEZs that are currently in the development phase: Thilawa SEZ, Dawei SEZ, and Kyauk Phyu SEZ. The Thilawa SEZ is currently the most advanced project and will be the focus of this section.[15] TThis section discusses three ideas that should be important considerations for the development of the zone. First, in the short run, the focus of the Thilawa Management Committee (TMC), the governing body of the zone, should strive to create a strong business climate to attract domestic and foreign investors. Second, since it is not obvious what specific rules and policies will attract investment, the TMC should promote policy experimentation. Finally, investment into the zone (and in particular FDI) is often accompanied by new technology and production knowledge for operations. The SEZs therefore have the potential to create positive externalities or productivity spillovers to firms operating outside the zone. However, spillovers

[15] At the time of this report, 80 percent of the land available for Phase I of the Thilawa SEZ has been allocated, 42 investment projects have been approved, and two firms have commenced operations.

from the zone are not automatic so this should be an important consideration for the TMC.

This section discusses some practices, both positive and negative, that have emerged from international experience with SEZs. Many developing countries before Myanmar have used SEZ policy as a strategy for fostering economic development. The first industrial zone was established in Ireland in 1959 and prior to the 1970s, the majority of zones were located in industrial countries. Developing countries, particularly those in Asia, began to integrate SEZ policy into their strategy for economic development. Today, there are more than 4,000 formally registered zones around the world (Economist, 2015). Although predominantly concentrated in South-East Asia, zones have been created in areas ranging from Eastern Europe to Sub-Saharan Africa. This section focuses mainly on the experiences and lessons learned from China, India and Bangladesh.

4.1 The Business Climate

The immediate objective of SEZ policy should be to attract domestic and foreign firms to invest into the zone. The classic way to promote investment is to offer benefits through tax incentives, tax holidays, and drawbacks that allow firms to import without paying duties. For example, in China, investors in the zones were offered a 15 percent corporate tax rate, half of what domestic firms outside the zones faced. Zonal firms were also exempt from local income taxes (Yuan et al., 2010). Another hallmark of China's SEZ policy was the use of duty drawbacks that encouraged firms to process imported inputs for re-export (Naughton, 2007). While this may appear to be a small benefit, particularly if tariff rates are already low, it is important to realize that international trade has increasingly become dominated by trade in intermediate inputs (Yi, 2003). Historically, exporters sourced intermediate goods from domestic suppliers which were used as inputs for final products that were exported. According to Johnson and Noguera (2014), the ratio of value-added to gross exports–a widely used ratio to quantify the magnitude of global supply chains–has fallen from 65 percent in 1970 to around 45 percent by 2010. Firms increasingly rely on global supply chains to source their inputs, making duty drawback policies valuable. To take an extreme example, imagine a firm imports a product, provides a minuscule value added, re-exports the product to its foreign partner and this process repeats four times; and, suppose the tariff rate is 5 percent. If the product value is $100, the firm will pay $20 in tariffs just because of the "back-and-forth" nature of this transaction. Duty-draw back schemes eliminate tariffs on intermediate inputs that are used for exports, and encourage firms to "plug" into global supply chains. Moreover, these imported components may also directly improve firm productivity as discussed in Section 3.

While financial incentives are important, they are not the only considerations for firms. Beyond pecuniary incentives, the SEZ should strike to enhance the business climate through improved infrastructure and trade facilitation. While disentangling the impacts of investment climate and tax incentives is difficult, Farole (2011) provides suggestive evidence using data from 77 countries that infrastructure and trade facilitation contributes significantly to the success of a SEZ, while incentives (e.g., tax breaks) have no measurable impact. This suggests that alleviating these binding constraints on firms are more important than the direct effects of tax incentives.

Illustrating this point further, not all SEZs granting tax breaks have succeeded in attracting in-

vestment. In 2005, India announced a comprehensive SEZ policy that was established by the SEZ Act.[16] The policy is relatively new so it may be a premature to draw conclusions. Yet, many analysts believe that despite benefits that included an income tax exemption on export revenue (100 percent for the first five years and 50 percent for the next five years), duty-free import procurement and exemption from Central Sales Taxes, India's SEZs have underperformed relative to expectations. As of 2014, although 625 SEZs had been formally approved across the country, only 152 sites were operational. In a recent government audit (Comptroller and Auditor General of India, 2014), it was found that the SEZs collectively employed 284,785 people, well short of the projected total of 3,917,677. Investments and exports were 41 and 25 percent below projections, respectively.

SEZs in Bangladesh, on the other hand, appear to have improved its business climate and attracted significant investment. In 1983, the country created its first Export Processing Zone in Chittagong, the second largest city in the country. The original policy initially targeted high-tech investment, and it was only when the zone shifted towards attracting labor-intensive sectors–garment and textiles– that it succeeded in attracting foreign investments that capitalized on the country's labor abundance. Since then, Bangladesh's zones have attracted more than $3.5 billion in investments by more than 400 enterprises, and annual exports from the zones average $5 billion and account for about 16 percent of Bangladesh's aggregate exports.[17]

This difference in the performance of zones between Bangladesh and India is reflected in firm level statistics. Using the Enterprise Surveys, one can compare the characteristics of firms that have located inside and outside zones in India and Bangladesh; see Panel A of Table 10.[18] Zonal firms in Bangladesh are substantially larger than firms located outside the zone: average and median employment is 2026 and 525, respectively, compared to the average and median of 218 and 32, respectively. Average and median sales per worker of the firms inside the zones are 14 percent and 25 percent higher. They are also much more likely to engage in exporting and importing. In India, firms located inside zones report higher median and average levels of employment, and report paying higher wages. However, the fraction of firms that export is not substantially higher than firms located outside the zones (24 percent versus 16 percent). Moreover, average productivity levels, as measured by sales per worker, are if anything lower for zonal firms (median productivity levels are 16 percent higher). While this fact could imply that there have been large spillovers to firms outside the zones, enough to offset differences in productivity levels, the more likely explanation is that the SEZs in India have not attracted sufficiently high productivity firms inside the zones.

What are the determinants of creating a supporting business climate for Myanmar? Using data from the Myanmar's Enterprise Survey, Figure 7 shows the main obstacles faced by domestic and foreign firms in Myanmar. For 65 percent of the foreign firms which should dominate inside the Thilawa SEZ, access to electricity is the main constraint. This indicates the need to provide a steady

[16] India had experimented with SEZs prior to 2005, but the 2005 Act created formal legislation to expand the use of zones across the country.

[17] http://epzbangladesh.org.bd/

[18] Among the set of countries this report analyzes, it is only possible to identify firms that locate inside zones for India and Bangladesh.

supply of electricity for firms inside the SEZ. Ensuring that the plant has adequate capacity and stable distribution to supply the zone is equally important. In many developing countries with weak infrastructure, governments ensured that SEZs have stable electricity and water, and have efficient transportation networks to the ports. For example, Lesotho worked with its national electricity board to ensure that power to its SEZs was stable (Farole, 2011); this resulted in power outages of less than 2 hours per month (15 times lower than the rest of the economy). For Bangladesh and India, Panel B of Table 10 reports the average number of days to obtain an electrical connection and the share of firms experiencing power outages, as well as the time needed to obtain other public services. Along each of these metrics, firms that operate within Bangladesh's SEZs report substantially easier access to infrastructure. For example, compared to the average of 100 days required by firms outside the zones to obtain an electricity hookup, zonal firms report only about a one month delay. While three quarters of firms outside zones experience regular power outages, the number falls to 40 percent of zonal firms. However, in for India, there is no clear evidence that firms inside SEZs have an easier access to infrastructure. If anything, it takes a few more days for them to get access to electricity in average. This likely reflects India's poor implementation of SEZs. Nevertheless, in both countries, the standard deviations indicate that firms inside SEZs face less uncertainty in the different administrative processes noted above. In the case of Thilawa, the recent allocation of a contract for a gas-fired power generation plant to supply firms inside the Thilawa SEZ demonstrates that the TMC is taking access to basic public utilities seriously.

Countries also often use SEZs to sidestep pre-existing regulatory procedures that impose high operating costs for firms. Many zones offer "one-stop" clearances that enable firms to obtain all necessary permits in a single step, which in principle should decrease delays and uncertainty around securing permits through multiple governmental agencies. Given the short lead times that international buyers require, particularly in the garment sector, delays caused by long procedures to obtain regulatory compliance and customs unlocking can be costly for producers. This makes single-stop clearances an effective way to reduce trade costs, which as noted in Section 2.4 are large in Myanmar. Again using the data available on zones for India and Bangladesh, Panel B of Table 10 shows the number of days to clear customs, get an import license or obtain a construction permit for firms inside and outside the zones in Bangladesh and India. In the two countries, clearing customs is easier for firms inside the zones. However, in India, getting import and construction permits take longer for firms inside the zones which again is not supportive of a strengthening of the business climate inside zones.

The TMC has established a One Stop Service Center (OSSC) which should significantly improve the business environment, reducing the number of bureaucrats with which investors must engage. The Thilawa website will soon provide a way for investors to submit their investment application online. The TMC has also committed to specific turnaround times for many procedures like investment approval (30 days) and company incorporation (2 days) but has not yet formulated an explicit policy for other procedures, such as foreign or local worker registration or the approval of the Master List and the Material List which specifies the goods that will not require a

license to be imported. The TMC has also been granted the ability to grant long-term land leases (e.g., 50 years with a possible 25-year extension) for investors inside the zones and to provide guarantees against land expropriation.[19]

To insure efficiency of the administration supporting investors in the zone, Myanmar's government should try to align TMC incentives with its long-run objectives ensuring coordination across levels. In India, a non-trivial amount of land that had been originally acquired through the SEZ Act had been "de-notified" with the land diverted towards other purposes. This suggests that rather than using the SEZ policy to procure land for its intended purposes, developers used the SEZ Act to circumvent the traditional routes to acquire land. Moreover, the majority of Indian states did not enact state-level legislation to match the central SEZ Act which resulted in a lack of coordination between Central and State level governments (Comptroller and Auditor General of India, 2014). For example, the Noida SEZ was delayed 7 years because the local authority did not approve the floor to area ratio, despite official approval by the central government. The lack of coordination across government hierarchies introduces considerable uncertainty for businesses, and may be an additional reason for why India's SEZs remain underperforming.

Finally, a major hurdle to attract foreign investment is likely to be Myanmar's relative weak legal regime. Myanmar's ranking on contract enforcement in the Doing Business Indicators is 187 out of 189 countries. The average time to resolve a dispute is 1160 days, more than twice the East Asian regional average. One way to improve contract enforcement inside the zone would be to offer strong arbitration rules to ensure impartiality and quick deliberations in contract disputes. The TMC could look at China's experience with strengthening the legal regime inside its zones. For example, the Shanghai Free Trade zone is currently experimenting with reforms to introduce best-practices with arbitration rules drawn from the West (Economist, 2014).

4.2 Policy Experimentation

Given that the specifics of policies to strengthen the business climate are not known *ex ante* to Myanmar's policy makers, the SEZs should promote *policy experimentation*. Research has established that strong institutions are necessary for economic growth (Acemoglu et al., 2005). Economists define institutions as "the rules of the game in a society or, more formally, the humanly devised constraints that shape human interaction" (North, 1990). According to this view, firm location decisions will take into account the strength of property rights, the reliability of infrastructure, and the transparency and predictability of the regulatory framework that affects business transactions. Yet reform-minded policymakers in developing countries often face political economy constraints to implementing institutional reforms. For example, Acemoglu et al. (2006) show that vested interests can lead to development traps because it becomes difficult to reduce entry barriers that protect politically-connected, but inefficient, firms.[20] The question, then, is how to mitigate these political

[19] In Bangladesh, the SEZ rented pre-built factory units for shorter periods for risk-averse investors that wanted to started operations quickly, and allowed for 30-year leases for long-run investors that wanted to construct their own facilities (Shakir and Farole, 2011).

[20] Economist Paul Romer has made a similar point citing an example of an electricity board in a developing country that loses money because of a policy that mandates subsidized electricity. The board has little incentive to expand

constraints that prevent policymakers from implementing better policies. SEZs can act as a powerful catalyst for change. This can allow governments to use SEZs to experiment with new rules and institutions, and if the regulatory framework within the SEZ is particularly effective, this can act as a competitive force for other locations outside the zone to reform their own local policies.

Policy experimentation has been pervasive among China's SEZs, and many of the country's reforms originated out of its SEZs. In 1980, the Chinese government established four special economic zones in Shenzhen, Zhuhai, Shantou and Xiamen. At the time, China had just started its economic transition towards a more market-oriented society two years earlier. While economists generally believe that strong institutions and stable macroeconomic policies are necessary for growth, there is no single blueprint to guide a transition towards a more liberalized economy. Policies need to be tailored to each economy's institutional environment. The Chinese government understood this and used SEZs as laboratories to experiment with new institutions. SEZs had the legislative authority to develop municipal laws and regulations along the basic lines of national laws and regulations, including local tax rates and structures to govern and administer these zones.

Institutional autonomy also enabled zones to experiment with more flexible labor markets and incentive-based compensation. For example, in the early period of the Shenzhen SEZ, it was the only place in the country where employee wages comprised of both a flat wage as well as a wage linked to performance. Yuan et al. (2010) note that by the mid 1980s, other parts of the country began adopting incentive-based pay. Later, Shenzhen was the first place in China to implement a minimum wage, a pension insurance and other worker protections.[21] Both Zheng (2010) and Li et al. (2010) note that the SEZs also fostered labor mobility into the zone by facilitating hukou transfers and providing housing and subsidized education for employees' children.[22] China also began their experiment of loosening price controls within the zone, and based on these results, the reforms were implemented nationally 10 years later (Zheng, 2010). In China's case, there was no clear antecedents from other countries as to how to liberalize these two institutional details of the Chinese economy (limits to internal migration and limits to market-based price setting), and hence the zones were valuable in fascilitating policy experimentation.

In addition to experimenting with reforms to product and labor markets, China used its SEZs to experiment with capital market reforms (although reforms to capital markets have generally followed labor and product market reforms). Shenzhen was also the first area in China to allow foreign banks to operate from within China. The zone was also the first one to loosen foreign exchange control in China by establishing the first foreign exchange transaction centers. The first securities company in China was registered in Shenzhen in 1987 and the nation's first stock exchange, the Shenzhen Stock Exchange, was established in 1990. More recently, the country is be-

electricity access because of these subsidies. But while some policymakers may wish to change electricity prices, it will face opposition from the beneficiaries of the subsidized rates.

[21] In March 2013, the Myanmar parliament passed the Minimum Wage Law replacing the Minimum Wage Act from 1949. The law created a National Committee in charge of negotiating with the Union Committee, the Region Committee and the State Committee on the level of the minimum wage and then setting it in the country as a function of sectors and skills. In September 2015, the country's first minimum wage has come into effect at a rate of 3,600 Kyat ($2.80) for an eight-hour work day.

[22] In China, the hukou is an internal passport-type system that determines the residency of each individual.

ginning to experiment with opening up its capital account inside the Shanghai SEZ. The Chinese currency control system used to distinguish between transactions under the current account and the capital account, and required foreign investors to open separate bank accounts for both. In 2013, this regulation was first removed in the Shanghai SEZ and further expanded to 16 Chinese main financial reform cities in 2014. In March 2015, this reform was scaled up to the rest of the economy.[23] Companies and business that are incorporated can now register their foreign currency transactions with a qualified bank, considerably reducing the time needed to set up new companies. Moreover, foreign investors need only submit an annual report on inbound and outbound investments instead of submitting documentation on a transaction basis. In Myanmar's case, in August 2012, the Parliament passed the Foreign Exchange Management Law. Currently, the Myanmar Kyat is non-convertible and non-negotiable outside Myanmar. Outward remittances of foreign currency are in general restricted and in most cases require approval from the Central Bank of Myanmar that is given upon presenting documents supporting legitimate expenditures. Debt investment or offshore loans paid back offshore require the approval of the Central Bank of Myanmar. Further easing of currency and capital markets could be easily tested inside the zones.

IIn China's case, decentralization and the relative autonomy given to local governments spurred competition across zones in the policy space. For example, in 1994, the central governments of China and Singapore entered an agreement to establish the Suzhou Industrial Park (SIP) in Suzhou, located about 100 kilometers from Shanghai. From the perspective of the Singapore government, which had a long history of using SEZs to attract investment, SIP offered an opportunity to leverage resources that were scarce in the Singapore economy: land and cheap labor. At the time, China was trying to attract FDI and believed that operating the park in conjunction with the Singapore government would provide foreign investors with assurances they needed to invest in an emerging market. This central-government-approved zone attracted 133 projects and $3.7 billion in investments by 2001. However, the success of this zone spurred local Suzhou officials to invest in a provincial-government-approved zone, Suzhou New District (SND), which offered fewer tax incentives but was a lower-cost alternative to SIP (Economist, 1998). This zone was also successful in attracting investment which suggests that local policymakers were able to learn successfully how to operate SEZs, and perhaps more importantly, precisely what policy changes were required to improve business conditions for firms.

To summarize, China's experience with SEZs appears to follow the popular Chinese adage: "cross the river by feeling the stones". They were part of China's experiment to manage the transition path from a socialist economy to a market-based economy, a process that Heilmann (2008) refers as "experimentation under hierarchy". While it was not exactly clear if any specific policy would be successful, implementing changes in specific locales, policymakers observed what worked and what did not. This is an important takeaway from China's experience with SEZs. In the Myanmar context, the three SEZs currently planned can serve as laboratories for economic reforms to product, labor and capital markets. With sufficient autonomy, this could lead to different

[23]Source: "China Eases Currency Controls, Allowing Free Exchange of Foreign Currency Capital", China Briefing, April 24, 2015 (http://bit.ly/1YFodJl).

policies and regulations implemented by the different management committees. Launching three SEZ simultaneously therefore offers an opportunity to experiment with different frame- works to help grow Myanmar's industrial sector.

In order to evaluate the effects of all the policies being tested in the Thilawa SEZ or Myanmar's other SEZs, implementing a Monitoring and Evaluation program is essential. The only way to know if policies are working is to have objective data to allow for a statistical analysis that can identify the impacts and cost effectiveness of each of the policy reforms implemented in the zone. In fact, the monitoring and evaluation of programs are now considered best-practice for international development projects and are increasingly being required by funding institutions. The methodology to monitor and evaluate the zone would rely on regular and voluntary surveys of firms and workers over time that track key performance metrics (e.g., employment, output, exports).

4.3 Generating spillovers

As discussed in Section 4.1, SEZs impose a cost on society through forgone revenues from tax incentives, duty drawbacks, and infrastructure investment that is specific to the zone. For example, according to India's Comptroller Auditor General, SEZs in India had given $16.62 billion dollars in tax abatements since the beginning of the SEZ policy.[24]

In order to justify the formation of zones, the societal gains must exceed these costs. Its important to note that SEZs cannot, of course, solve the issue of unemployment and underemployment for countries. In China, the four historical economic zones only accounted for 2 percent of national employment (Zheng, 2010) and in Bangladesh the zones are estimated to have generated more than 400,000 jobs, 0.5 percent of national employment.[25] Therefore, SEZs should not be seen as a pressure valve to alleviate the lack of economic development. In fact, it is possible that the creation of a SEZ simply shifts the location decision of a firm from outside the zone to inside the zone, with no net impact on aggregate employment. Equivalently, if workers are perfectly mobile across locations, incentivizing firms to locate withi zones will simply cause labor to reallocate away from firms outsize the zone, again leaving the overall employment rate within the economy constant. SEZs may also exacerbate distortions within the economy and lead to lower welfare as a result of lost revenue from the tax cuts (Kline and Moretti, 2014).

The potential long-run benefits of SEZs are that they generate externalities that benefit workers and firms located outside the zone. These externalities can come in various forms. For example, there may be explicit linkages between zonal and non-zonal firms through selling or buying of intermediate inputs and/or through the movement of workers. The externalities could also be implicit through "ideas" radiating out from the zone. The hope is that these forms of externalities improve the productivity of firms operating outside the zones by incorporating more efficient and better practices from firms operating inside zones. As discussed in Section2, productivity levels

[24]The official number is 83,104 crore rupees (one crore is 10 million) which coverts to $16.62 billion under an assumption of Rs. 50 to $1 exchange rate.

[25]http://epzbangladesh.org.bd/

in the manufacturing sector in Myanmar are low and generating spillovers from the zones for the domestic economy should be one of the long-run priority of the Myanmar government.

SEZs do not automatically generate positive externalities. In fact, the literature has documented both positive and negative impacts of foreign direct investment on domestic firms. In the case of Lithuania, for example, Javorcik (2004) finds evidence of productivity spillovers from downstream foreign firms to upstream domestic suppliers. However, Aitken and Harrison (1999) find a negative correlation between foreign investment and the impacts on domestic firm productivity, which they interpret as a market-stealing effect with foreign firms capturing gains at the expense of domestic firms. Neither of these studies focuses explicitly on SEZs, but given that foreign firms are more likely to locate inside SEZs, it suggests that while there is a potential for positive spillovers to firms located outside the zone, these spillovers are not automatic. Indeed, in some cases, many zones might not even have the potential of creating productivity spillovers as productivity levels inside the zones might not be significantly higher than the ones outside the zones. For example, as noted in Section 4.1, in India, productivity levels inside the zones are lower than outside the zones.

China's SEZs appear to have generated productivity spillovers. Quantifying the impact of SEZs is challenging: zones are often placed in areas that receive complementary business-friendly reforms making it hard to separate the effects of the zone from these other policies, and the metrics such as productivity are typically measured with error. The best evidence of the impacts of China's SEZs come from Wang (2013) who uses a difference-in-differences methodology to track outcomes in Chinese municipalities. That paper finds that municipalities that first introduced SEZs experienced more technological progress (by 1.6 percentage point) than municipalities that introduced SEZs at later periods.

What steps could the TMC take to help facilitate spillovers? Article 75 of Myanmar's SEZ Law requires plants operating in the zone to shift their skilled labor force towards Myanmar citizens; 75 percent of the skilled workforce must be Burmese citizens after four years of operations. This is one way to foster training and skill upgrading of local workers, although the regulation does not specify penalties for firms that do not abide by the regulation. To further encourage skills development, the Thilawa SEZ has created a vocational institute to train workers, and the institute should work closely with firms to learn what skills are in demand. An additional advantage of training workers at the vocational institute is that it shields firms from the cost of training workers who may then leave shortly thereafter. The TMC should facilitate the movement of workers from inside to outside the zone (and vice versa) by reducing search and labor mobility costs. One example to encourage labor mobility in China was a policy in the Shenzhen zone whereby workers were only allowed to sign three-year contracts with firms located in the zone, and had to find a job outside the zone after this period. Some workers capitalized on their experience acquired in the SEZ and formed new companies (White, 2011). In the Masan Zone in South Korea, it is estimated that about half the workers that were trained moved to Korean domestic electronic companies (Jenkins et al., 1998). In Taiwan, the government organized a program where workers from firms

inside its SEZs offered advice on production methods and quality control to potential suppliers' factories outside the zones (White, 2011). Some of these policies could be tested in the Thilawa SEZ. The counterbalance to these policies of encouraging worker mobility is that it may decrease the incentives of firms inside the zone to invest in costly training. Striking the right balance is a difficult task, but the creation of the vocational institute mitigates this concern.

Generating spillovers for the domestic economy could also take the form of backward or forward linkages between the zones and the rest of the economy. The benefits of these linkages has been shown for Bangladesh in a recent study by Kee (2015). She finds evidence that FDI into Bangladesh has generated significant backward linkages with domestic suppliers. Using data collected explicitly to examine spillovers, she finds evidence for positive, non-pecuniary externalities that foreign firms exert on a domestic firm when the two firms share an intermediate input supplier. Foreign firms demand higher quality and a greater variety of inputs from their suppliers. In turn, other downstream domestic firms benefit from quality upgrading, variety expansion, and productivity improvements by domestic suppliers. To identify the effect, Kee (2015) examines a policy change by the European Union that relaxed rules of origin requirements on the least developed countries, which included Bangladesh. The shared-supplier spillovers are strongest in the subset of products that experienced an expansion in FDI caused by the policy change. While the paper does not explicitly study zones, a key objective of Bangladesh's SEZ policy is to attract FDI and it is reasonable to conclude that the zones have generated spillovers for the economy in this particular dimension. And while the study only examines particular spillovers through backward linkages, it is an important finding for assessing the overall impacts of SEZs on Bangladesh's economy.

In the case of Thilawa, the list of approved investments suggests that many firms inside the SEZ will need inputs supplied from outside the SEZ. The SEZ law states that the goods transported from outside the zone for use by firms inside the zone shall be regarded as goods exported from Myanmar, which may serve to enhance the potential for linkages. But given that trade costs in Myanmar are large (see Section 2.4), firms outside the zone may be quite unproductive and less attractive suppliers for zonal firms relative to international suppliers. Myanmar's government could facilitate trade with firms inside the SEZ by reducing the red tape associated with export activities for domestic plants. In the Dominican Republic, one of the first country to use SEZs in South America, those linkages were formed very late in part because up to 1993 (the zones started in the 1980s), domestic firms needed an export license to sell products in these zones, which was very difficult to obtain (Jenkins et al., 1998). In South Korea, the government offered preferential access to foreign inputs and technical assistance to firms supplying inputs to firms inside the zones. When firms inside the zones started operations in 1971, only 3.5 percent of their inputs were supplied by domestic firms; 4 years later, this share increased to 25 percent (White, 2011). The TMC could also promote the matching of buyers and sellers by, for example, providing zonal firms with a list of firms in the Yangon region that are producing the relevant inputs or through networking events. For example, in a randomized experiment conducted by Fafchamps

and Quinn (2013), the authors find significant positive effects on the performance of firms that were encouraged to network amongst each other.

This discussion suggests that policymakers should not be misled by direct performance metrics, such as revenues, employment and exports–generated by the SEZ. While such metrics are important for determining the health of an SEZ, determining the overall success of SEZ policy requires understanding the impacts on the broader domestic economy and answering some of the following questions: Have firms in the SEZ formed links with firms outside the SEZ? Is there a sharing of knowledge and best practices that can help improve productivity? Are local governments observing the operation of the zone and noting which policies foster economic activity? Are there explicit policies emulated by other parts of the economy? Successful SEZs are those that generate spillovers and foster institutional reforms in the broader economy.

5 Conclusion

Despite impressive recent growth rates, Myanmar's manufacturing sector is still underperforming compared to other countries in the region. The country's exports are low and concentrated in a few products, mainly natural resources. Manufacturing firms in Myanmar have low productivity levels and face high trade costs, relative to comparator nations and have lower levels of integration in global markets.

This report has assessed the potential for SEZs to increase Myanmar's international integration and promote its manufacturing sector. It draws from experiences from Myanmar's neighbors to highlight best practices for the implementation of its SEZ policy. In the short run, improving the business climate should be the priority of the TMC. Perhaps more importantly, SEZs should be a laboratory for policy experimentation given that it is not ex ante known which policies can foster economic development. A rigorous Monitoring and Evaluation program using objective data is essential for determining which policies and rules work and which do not. Finally, SEZs should generate spillovers that benefit the rest of the economy, workers and firms outside the zone. Myanmar's SEZs are at early stages of development and the time is ripe for the country to capitalize on this promising opportunity to foster economic growth.

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Tables and Figures

Table 1: Macroeconomic Statistics for Myanmar and Comparator Countries

	Myanmar	Bangladesh	Cambodia	China	India	Laos	Thailand	Vietnam
GDP (PPP) (Billions)	$221.5	$496.0	$46.1	$16 173	$6 784	$31.6	$964.5	$475.0
Population (Millions)	51.4	156.6	15.1	1357.4	1252.1	6.8	67.0	89.7
GDP per capita (PPP)	$4 334	$2 882	$3 056	$11 886	$5 456	$4 666	$14 136	$5 295
2010-2013 Avg GDP per capita growth	7.57%	6.71%	7.00%	10.00%	7.50%	7.71%	5.50%	6.46%
Agriculture share of GDP	30.5%	16.3%	33.8%	10.0%	18.0%	27.6%	11.1%	18.4%
Industry Share of GDP	32.0%	27.6%	25.7%	43.9%	30.7%	33.1%	38.2%	38.3%
Service Share of GDP	37.5%	56.1%	40.5%	46.1%	51.3%	39.3%	50.7%	43.3%
Doing Business Ranking	167	174	127	84	130	134	49	90
Logistics Performance Index Ranking	177	131	97	32	63	162	40	56
Quality of port infrastructure (out of 5)	2.6	3.5	4.0	4.5	4.2	2.6	4.5	3.7
Exports (% of GDP)	16.7%	19.5%	65.7%	26.4%	25.2%	37.2%	73.6%	83.9%
Capital stock (% of GDP)	168%	216%	137%	294%	249%	189%	408%	272%
Total Factor Productivity (Myanmar = 100)	100	90	110	280	115	142	227	125

Notes: Table reports 2013 economic statistics for Myanmar and seven comparator countries. The Doing Business Rankings are the latest available (2016). Source: The World Bank's World Development Indicators, IMF, ADB and Myanmar 2014 Census. Capital Stock and TFP were computed by the authors; see text for details. Myanmar's TFP was normalized to 100.

Table 2: Top 10 Export Products for Myanmar

Panel A: 10 largest products exported by Myanmar

Rank	Export Share	HS Code	Product Description
1	39.4%	271121	Natural gas in gaseous state
2	8.5%	440399	Logs, non-coniferous nes
3	6.0%	071331	Urd,mung,black or green gram beans dried shelled
4	3.3%	710310	Precious, semi-precious stones unworked, partly worke
5	2.7%	071390	Leguminous vegetables dried, shelled
6	2.1%	440333	Logs, Keruing/Ramin/Kapur/Teak/Jongkong/Merbau/etc
7	2.0%	620193	Mens, boys anoraks etc, of manmade fibres, not knit
8	1.7%	400121	Natural rubber in smoked sheets
9	1.3%	100630	Rice, semi-milled or wholly milled
10	1.3%	260900	Tin ores and concentrates

Panel B: Share of the ten largest products in total exports

	Export Share of Top 10 Products	Largest HS Code (%)	Production Description
Myanmar	68.3%	271121 (39%)	Natural gas in gaseous state
Bangladesh	63.0%	610910 (15%)	T-shirts, singlets and other vests, of cotton, knit
Cambodia	47.0%	490700 (14%)	Documents of title (bonds etc), unused stamps, etc…
China	21.7%	847120 (6%)	Digital computers with cpu and input-output units
India	35.7%	271000 (19%)	Oils petroleum, bituminous, distillates, except crude
Laos	74.9%	740311 (27%)	Copper cathodes and sections of cathodes unwrought
Thailand	25.5%	847193 (7%)	Computer data storage units
Vietnam	31.3%	852520 (10%)	Transmit-receive apparatus for radio, TV, etc

Notes: Panel A reports the ten largest products exported by Myanmar over the period 2010-2013. Panel B reports the share in total exports of the ten largest products and the top product for each country. A product is defined as a six-digit Harmonized System (HS) classification code; there are approximately six thousand HS codes. Source: BACI data

Table 3: Export Decomposition

Country	Export Growth (1)	Incumbent Margin (2)	Destination Margin (3)	Product Margin (4)
Myanmar	119%	83%	8%	28%
Bangladesh	78%	75%	2%	0%
Cambodia	184%	124%	23%	37%
China	118%	110%	7%	1%
India	120%	92%	25%	3%
Laos	206%	59%	48%	100%
Thailand	68%	58%	9%	2%
Vietnam	161%	115%	42%	3%

Notes: Table reports a decomposition of total exports into three mutually-exclusive margins of adjustment. The incumbent margin captures growth between two periods in existing country-product pairs. The destination margin captures net export growth to new destinations within existing products. The product margin captures the contribution of new products to export growth. The numbers in columns 2-4 exactly sum to column 1 (due to rounding, this may not be evident in the table). The numbers reflect the averages of three 5-year intervals: 1998-2003, 2003-2008, and 2008-2013. Source: BACI Data.

Table 4: Import Decomposition

Country	Import Growth (1)	Incumbent Margin (2)	Origin Margin (3)	Product Margin (4)
Myanmar				
All Products	119%	101%	15%	3%
Intermediates	107%	85%	15%	7%
Capital	139%	115%	28%	-4%
Consumption	139%	132%	8%	-1%
Bangladesh	70%	65%	6%	-1%
Cambodia	141%	85%	38%	18%
China	137%	117%	20%	0%
India	157%	110%	45%	2%
Laos	153%	117%	25%	11%
Thailand	87%	76%	11%	1%
Vietnam	162%	114%	46%	3%

Notes: Table reports a decomposition of total imports into three mutually-exclusive margins of adjustment. The incumbent margin captures growth between two periods in existing country-product pairs. The origin margin captures net import growth from new origins within existing products. The product margin captures the contribution of new products to import growth. The numbers in columns 2-4 exactly sum to column 1 (due to rounding, this may not be evident in the table). The numbers reflect the averages of three 5-year intervals: 1998-2003, 2003-2008, and 2008-2013. Source: BACI Data.

Table 5: Composition of Foreign Direct Investment Inflows

Panel A: Foreign Direct Investment In-flows

	Total inflows (in million $) (1)	% of GDP (2)	Europe (3)	United States (4)	China (5)	Asia (except China) (6)	Rest of the World (7)
Myanmar	2,087	3.8%	5%	0%	73%	22%	0%
Bangladesh	1,235	1.0%	26%	7%	8%	40%	19%
Cambodia	1,110	8.2%	7%	2%	26%	58%	7%
China	120,928	1.6%	9%	5%	-	10%	76%
India	29,004	1.6%	30%	4%	1%	15%	50%
Laos	293	3.5%	3%	0%	50%	19%	28%
Thailand	9,127	2.4%	19%	9%	6%	22%	44%
Vietnam	8,197	5.8%	9%	1%	16%	37%	37%

Panel B: Foreign Direct Investment In-flows by sector

	Year (1)	Agriculture & Forestry (2)	Mining, oil and gas (3)	Textile and garments (4)	Other or unspecified secondary (5)	Electricity, gas, water & Transports (6)	Other or unspecified tertiary (7)
Myanmar	2010	0%	98%	-	1%	0%	1%
Bangladesh	2011	1%	0%	25%	13%	37%	24%
Cambodia	2012	22%	0%	37%	1%	1%	39%
China	2010	2%	1%	-	47%	4%	46%
India	2012	0%	1%	-	37%	11%	51%
Laos	2011	12%	26%	-	5%	-	57%
Thailand	2011	1%	4%	-	65%	2%	28%
Vietnam	2012	1%	1%	-	72%	5%	21%

Note: Panel A reports FDI flows averaged over 2010-2013. Column 1 reports total values. Column 2 reports values as a share of GDP. The decomposition by origin is computed with the UNCTAD FDI bilateral statistics taking an average over the 2010-2012 period. Panel B reports the decomposition of FDI in-flows by sector. As this decomposition is not available for all years, colum 1 reports the most recent year for which the decomposition is available.
Source: UNCTAD

Table 6: Location of Nike's Factory Suppliers, June 2015

	Factories (1)	Employment (2)
Bangladesh	3	15,090
Cambodia	3	13,319
China	180	228,732
India	19	28,165
Thailand	29	31,770
Vietnam	68	341,204

Notes: Table reports data on Nike's factory suppliers in selected countries as of June 2015. Source: Nike website.

Table 7: Firm-Level Statistics from World Bank Enterprise Surveys

	Myanmar (2014) (1)	Bangladesh (2013) (2)	Cambodia** (2013) (3)	China (2012) (4)	India (2014) (5)	Laos (2012) (6)	Thailand (2006) (7)	Vietnam (2009) (8)
Total firms in sample	632	1442	472	2700	9281	379	1043	1053
Total manufacturing firms in sample	352	1179	269	1793	7165	109	1043	263
Average employment	88	283	111	131	70	72	258	190
Median employment	21	32	14	40	28	17	85	60
Average sales per worker (2014 $ per worker)	$14 774	$14 115	$72 921	$74 957	$41 970	$43 146	$109 633	$36 142
Median sales per worker (2014 $ per worker)	$4 858	$5 900	$2 648	$39 842	$17 913	$5 048	$23 254	$19 379
Share of firms that export	16%	30%	11%	31%	16%	49%	50%	44%
Share of firms that use imported inputs	25%	50%	37%	16%	7%	45%	40%	63%
Share of foreign firms	3%	2%	12%	6%	1%	13%	22%	14%
Average monthly wage* (2014 $)	$95	$94	$122	$533	$226	$196	$406	$253

Note: Descriptive statistics are given for firms in the manufacturing sector only. To calculate the share of firms that are foreign, a cutoff of 10% foreign ownership of the registered capital is used *The monthly wage is computed as the monthly cost of labor of permanent workers including benefits **The questionnaire and sampling weights are different for Cambodia. Weights are computed with the actual number of firms enumerated in the sampling frame while for other countries, firms that are not eligible are excluded to compute weights. Monthly labor costs are not observed; instead, we report wages of unskilled labor. Source: World Bank Enterprise Surveys.

Table 8: Current Tariff Rates imposed by Destination Countries

	Simple average MFN applied tariff rate	Trade weighted average MFN applied tariff rate
Myanmar	5.6%	9.8%
Bangladesh	13.6%	8.4%
Cambodia	10.9%	8.9%
China	9.9%	4.7%
India	13.5%	7.0%
Laos	9.7%	13.2%
Thailand	11.4%	6.2%
Vietnam	9.5%	5.4%

Note: The table reports the average tariff rates imposed by each country on imports. For most countries, the year is 2013, but a few go back up to 2009. Source: WTO, World Bank and authors' own calculations from BACI and WITS

Table 9: Gravity Equation Estimates

Panel A: Gravity regression estimates

	(1)
GDP exporter	1.200***
	(0.007)
GDP importer	0.921***
	(0.007)
Distance	-1.253***
	(0.02)
Common Language	0.968***
	(0.044)
Colonial Relationship	0.824***
	(0.085)
Shared border	0.878***
	(0.116)
Constant	-33.903***
	(0.31)
R-squared	0.67
Observations	24671

Panel B: Regression of residuals on country dummies

	Exporter fixed effects	Importer fixed effects
	(1)	(2)
Myanmar	-1.385***	-1.990***
	(0.198)	(0.221)
Bangladesh	-0.059	-0.440*
	(0.151)	(0.224)
Cambodia	1.453***	-0.178
	(0.174)	(0.162)
China	1.208***	1.022***
	(0.084)	(0.156)
India	0.468***	0.836***
	(0.103)	(0.150)
Laos	-0.761***	-1.623***
	(0.186)	(0.275)
Thailand	2.397***	1.717***
	(0.089)	(0.154)
Vietnam	2.383***	1.860***
	(0.104)	(0.171)
Constant	-0.044**	-0.019
	(0.016)	-(0.015)
R-squared	0.02	0.02
Observations	24671	24671

Notes: Panel A presents the estimates from the gravity equation. All variables are in logs. Exports are in $1000,GDP in $ and Distance in kms. Exports and GDP are averaged over the 2010-2013 period. Panel B presents the regression of all the residuals of the gravity equation on specific countries exporter dummies (column (1)) and importer dummies (column (2)). Standard errors are in parethesis. Significance * .10; ** .05; *** .01. Sources: BACI data, the WDI of the World Bank, the GeoDist database from CEPII

Table 10: Firm-Level Statistics for Firms Operating Inside and Outside Zones

Panel A: Metrics of Firm Performance

	Bangladesh (Inside Zones) (1)	Bangladesh (Outside Zones) (2)	India (Inside Zones) (3)	India (Outside Zones) (4)
Average employment	2026	218	116	67
Median employment	525	30	70	25
Average sales per worker (2014 $ per worker)	$15 974	$14 059	$33 597	$42 465
Median sales per worker (2014 $ per worker)	$7 350	$5 883	$20 870	$17 391
Share of firms that export	76%	28%	24%	16%
Share of firms that use imported inputs	86%	49%	9%	7%
Share of foreign firms	28%	1%	2%	1%
Average monthly wage* (2014 $)	$83	$94	$295	$222

Panel B: Statistics on Access to Infrastructure and Obtaining License

	Bangladesh (Inside Zones) (1)	Bangladesh (Outside Zones) (2)	India (Inside Zones) (3)	India (Outside Zones) (4)
Number of firms	58	1121	393	6772
Average number of days to get an electrical connection	31 (98)	100 (99)	59 (9)	50 (47)
Share of firms experiencing power outages	41%	76%	78%	62%
Average number of days to get a water connection	2 (3)	50 (62)	.	74 (89)
Share of firms experiencing water supply insufficiencies	7%	70%	29%	23%
Average number of days to clear customs (exports)	8 (18)	9 (12)	4 (3)	6 (7)
Average number of days to clear customs (imports)	6 (13)	12 (17)	4 (3)	6 (6)
Average number of days to get an import license	1 (1)	24 (40)	37 (29)	21 (37)
Average number of days to get a construction permit	2 (2)	68 (64)	43 (22)	36 (34)

Note:In Panel A, to calculate the share of firms that are foreign, a cutoff of 10% foreign ownership of the registered capital is used. In Panel B, standard deviations for a subset of variables are noted in parantheses. For both panels, statistics are reported for only manufacturing firms. Source: World Bank Enteprise Surveys

Figure 1: Aggregate Exports, Imports and Foreign Direct Investment

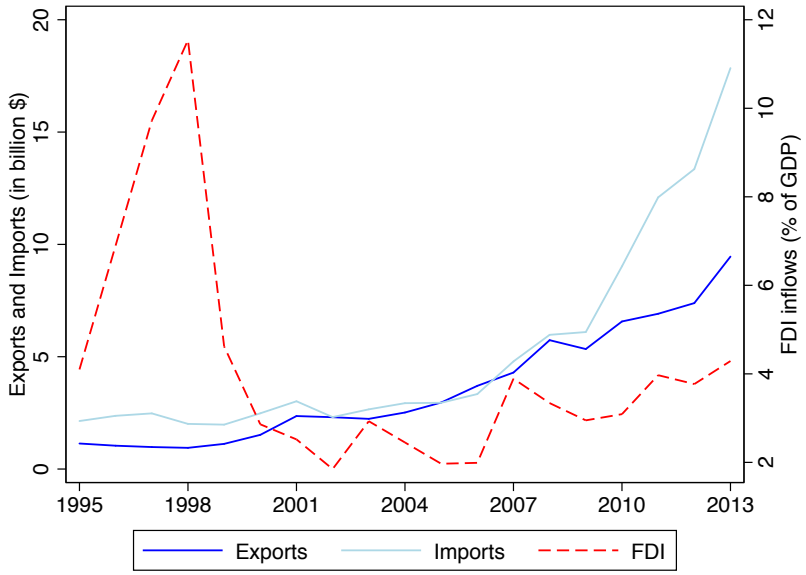
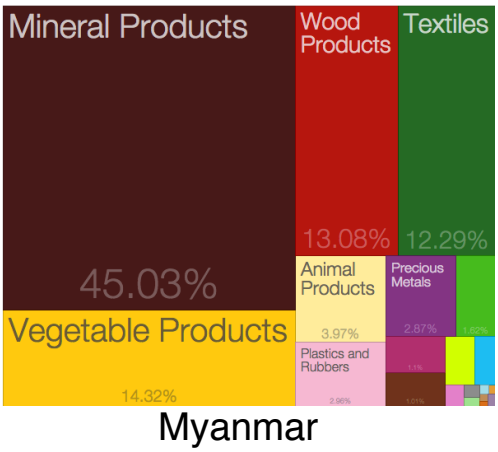
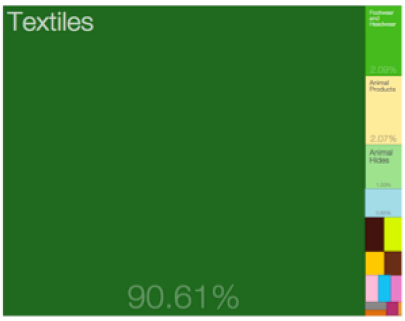


Figure 2: Sectoral Composition of Myanmar's Exports



Source: http://atlas.media.mit.edu

Figure 3: Sectoral Composition of Neighboring Countries' Exports



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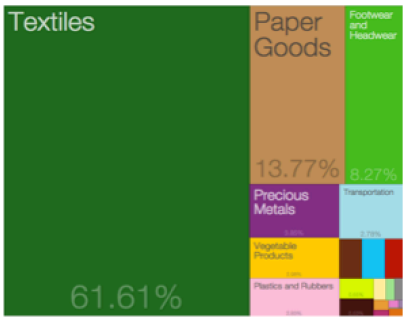

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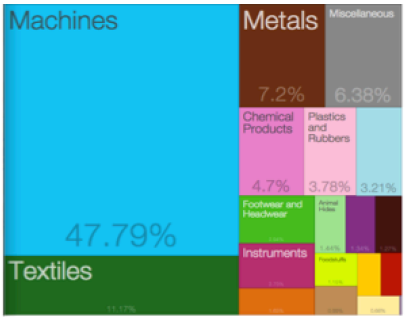
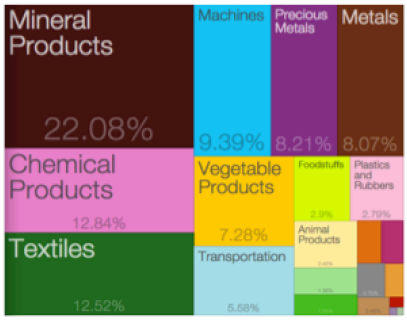
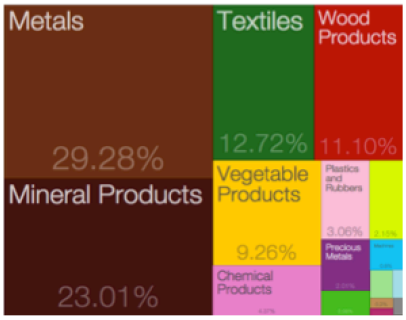


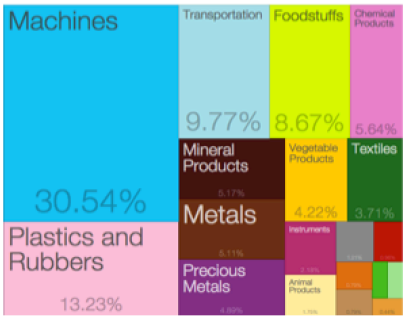
China



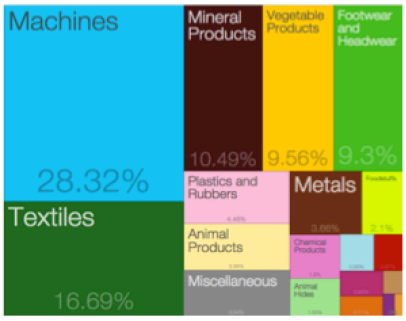
India



Laos

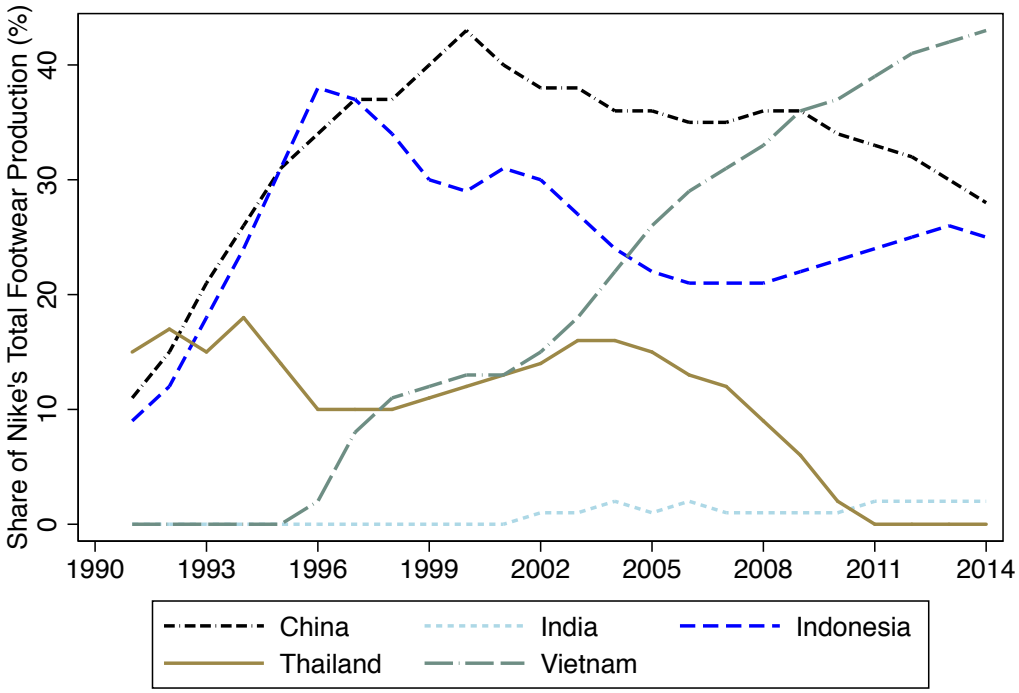


Thailand



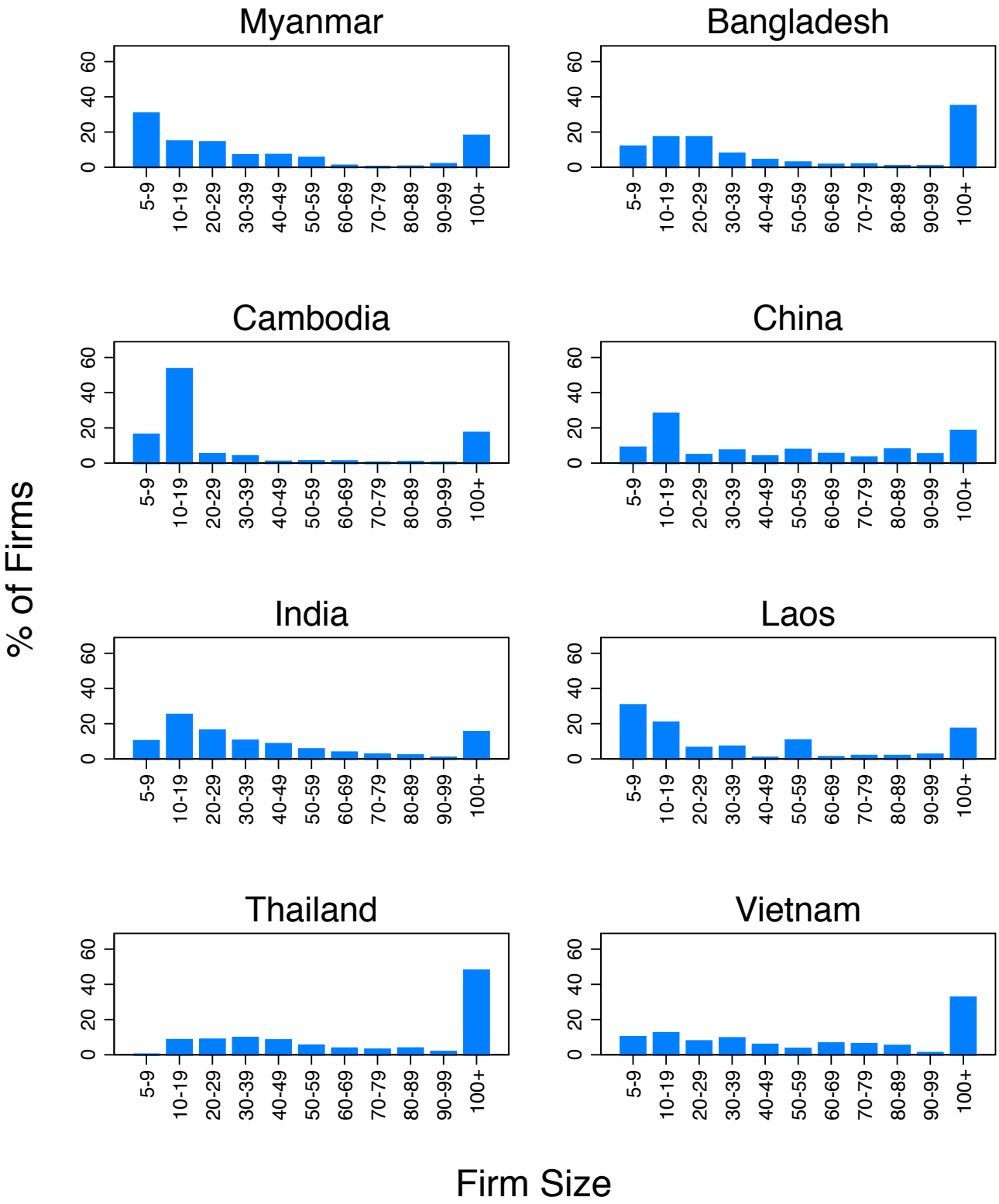
Vietnam

Figure 4: Nike's Footwear Sourcing Patterns, 1991-2015



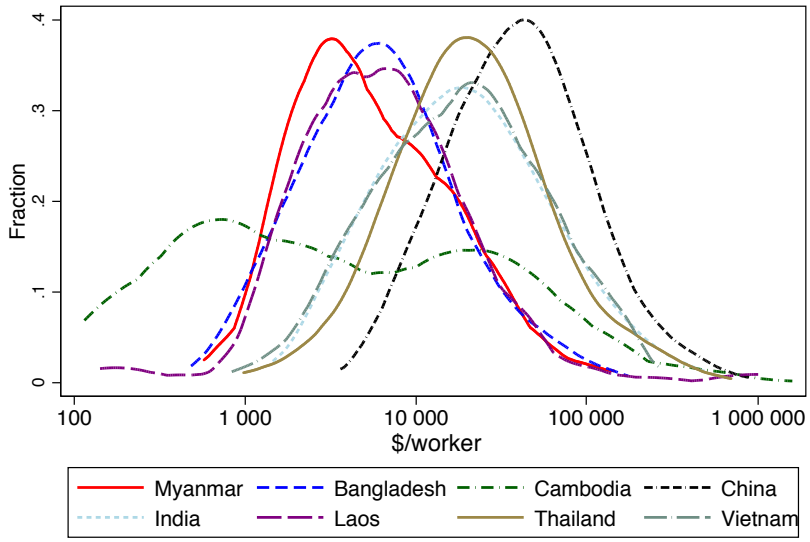
Source: Nike annual reports

Figure 5: Distribution of Employment



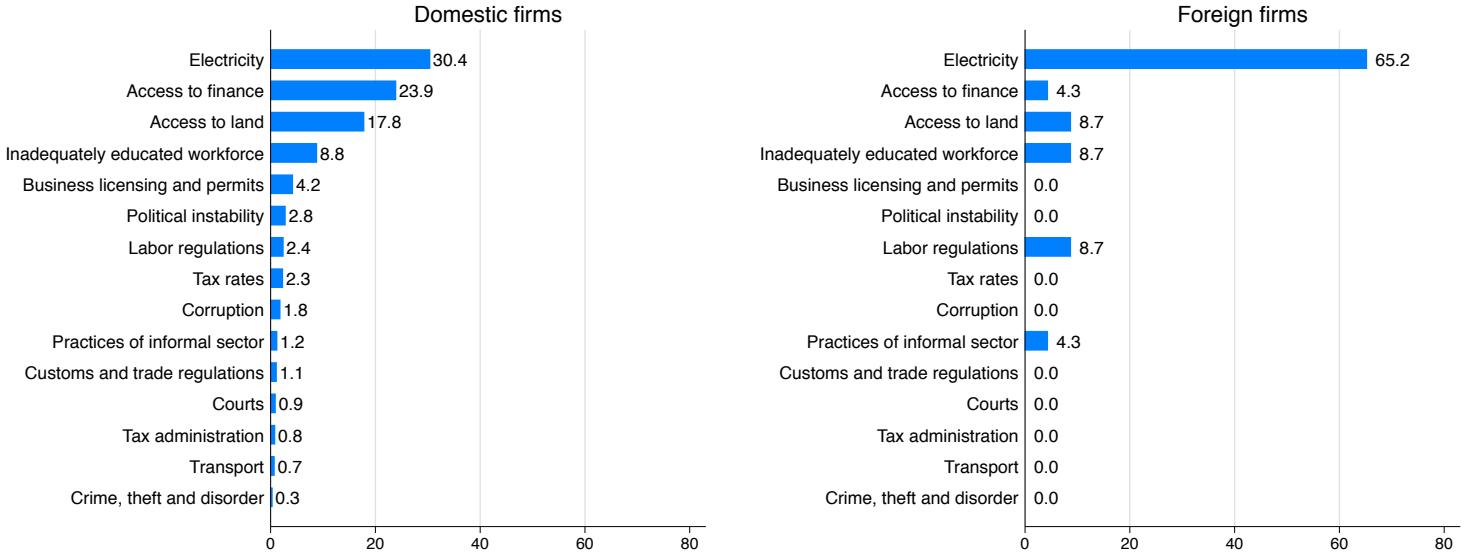
Note: Size is measured by the number permanent workers.
The sample includes firms in the manufacturing sector only and excludes firms with less than 5 workers.
Source: World Bank Enterprise Surveys

Figure 6: Distribution of Sales per Worker



Note: The top and bottom 1% of the distribution were censored to produce the density graphs.
Source: World Bank Enterprise Surveys

Figure 7: Main obstacles faced by manufacturing firms in Myanmar



Data Appendix

Capital Stock and TFP

Capital Stock is estimated using the perpetual inventory method from Hall and Jones (1999). For all countries, data on Gross Fixed Capital Formation (GFCF) is obtained from the WDI from 1990 to 2013, with the exception of Vietnam and Laos for which data is available only starting in 1994 and 2000 respectively. For Myanmar, as GFCF is not available from 2005 onwards, data from the World Statistics Pocketbooks compiled by UN Statistics is used. To obtain the capital sock, the initial level of capital in 1990 is used and total capital stock is $GFCF_{1990}/(g + \delta)$, where g is calculated as the average geometric growth rate from 1990 to 2000 and δ is the depreciation rate of capital, assumed to be 6 percent.

BACI data (Exports and Imports)

The source is BACI data from CEPII, a consolidated version of the COMTRADE (United Nations) database that deals with mirroring issues between reporting countries. A precise description of how the data is constructed can be found in Gaulier and Zignago (2010). In the case of Myanmar, as the country hasn't reported exports and imports to the UN, the data corresponds to exports and imports as reported by partner countries. In order to identify mirroring problems, exports and imports as reported by Myanmar Central Statistical Organization (CSO) and by the BACI database for the year 2010 have been compared. While there is very little difference between exports reported by the two sources, total imports as reported by partner countries are approximately twice the value that is reported by Myanmar CSO. 81 percent of this gap comes from two countries, China and Thailand, which share a common border with Myanmar. This difference is likely to be due to smuggling across borders, and so the BACI database is used for all graphs and tables in this report.

FDI statistics

Panel A of Table 5 presents statistics on Foreign Investment for the subset of countries studied in this report. Values for total FDI are computed from the data center from the UNCTAD taking averages. The decomposition by origin is computed from the bilateral FDI statistics from UNCTAD taking averages over the period 2010-2012. Importantly, the values for FDI do not match between bilateral statistics and the data center of UNCTAD. Bilateral statistics are likely to correspond to approved investments (OECD investment policy report in Myanmar 2014) but the data description from UNCTAD was unable to support this hypothesis.

World Bank Enterprise Surveys

The World bank enterprise surveys provides firm-level surveys, carried out by private contractors with top managers of firms, of a representative sample of an economy's private sector. The questionnaires and methodology used are usually the same from one country to another. However, in our set of countries, the questionnaire is very different for Cambodia. In particular, labor costs are observed directly through wages whereas for the rest of the countries labor costs are

computed by taking total labor costs and dividing by the number of employees. In Thailand, only firms in the manufacturing sector were selected for the survey. For all the countries presented in this paper, the most recent survey is used.

The sampling methodology for Enterprise Surveys is stratified random sampling. In a simple random sample, all members of the population have the same probability of being selected and no weighting of the observations is necessary. In a stratified random sample, all population units are grouped within homogeneous groups and simple random samples are selected within each group. The sampling weights take care of the varying probabilities of selection across different strata. The strata for the Enterprise Surveys are firm size, business sector, and geographic region within a country. Ideally the survey sample frame is derived from the universe of eligible firms obtained from the country's statistical office. Sometimes the master list of firms is obtained from other government agencies such as tax or business licensing authorities. In all data exercises in this paper, the median weights are used; the median weights correspond to establishments for which it was possible to directly determine eligibility and those that rejected the screener questionnaire or an answering machine or fax was the only response. Readers interested in the methodology used in each survey should refer to the implementation reports for each of the countries presented here, provided on the following website: http://www.enterprisesurveys.org/

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