Millennium Challenge Corporation

# Sri Lanka Constraints Analysis Report

2017

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CHALLENGE CORPORATION
UNITED STATES OF AMERICA

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# Contents


**1. Country Context and Methodology** ..... 5

**1.1 Country Economic Context** ..... 5

**1.2 Constraints Analysis Methodology** ..... 8

**1.3 Constraints Analysis Process** ..... 9

**2. Summary of Binding Constraints** ..... 10

**2.1 Access to Land** ..... 10

**2.2 Policy Uncertainty** ..... 12

**2.3 High Costs of Overland Transport** ..... 13

**3. Access to Land** ..... 15

**3.1 Benchmarking Costs** ..... 16

**3.2 Price** ..... 17

**3.3 Changes vs. Changes** ..... 18

**3.4 Bypassing the Constraint** ..... 19

**3.5 Camels and Hippos** ..... 20

**4. Tax Policy Uncertainty** ..... 21

**4.1 Benchmarking Quantities** ..... 22

**4.2 Changes vs. Changes** ..... 24

**4.3 Bypassing the Constraint** ..... 26

**4.4 Camels and Hippos** ..... 27

**5. Transportation** ..... 27

**5.1 Benchmarking Quantities** ..... 28

**5.2 Price** ..... 29

**5.3 Changes vs. Changes** ..... 31

**5.4 Bypassing the Constraint** ..... 32

**5.5 Camels and Hippos** ..... 33

**6. Water** ..... 33

**6.1 Benchmarking Quantities** ..... 34

**6.2 Price** ..... 35

**6.3 Bypassing the Constraint** ..... 37

**6.4 Camels and Hippos** ..... 37

**7. Education and Skills** ..... 38

**7.1 Benchmarking Quantities** ..... 38
**7.2 "Price"** ..... 40
**7.3 Camels and Hippos** ..... 41
**8. Electricity** ..... 42
**8.1 Benchmarking Quantities** ..... 42
**8.2 Price** ..... 43
**8.3 Changes vs. Changes** ..... 44
**8.4 Bypassing the Constraint** ..... 44
**8.5 Camels and Hippos** ..... 45
**9. Labor Regulations** ..... 46
**9.1 Price** ..... 46
**9.2 Changes vs. Changes** ..... 48
**9.3 Bypassing the Constraint** ..... 49
**9.4 Camels vs. Hippos** ..... 49
**10. Is Costly Finance a Binding Constraint to Growth?** ..... 51
**10.1 Benchmarking Quantities** ..... 51
**10.2 Price** ..... 52
**10.3 Changes vs. Changes** ..... 54
**10.4 Bypassing the Constraint** ..... 54
**11. Health** ..... 54
**11.1 Benchmarking Quantities** ..... 54
**Appendix** ..... 59

# 1. Country Context and Methodology

*Sri Lanka is an island nation located in the Indian Ocean southeast of India. Its population of about 22 million people is characterized by substantial diversity with respect to ethnicity, religion, and language.*[1] *Through mostly steady but modest rates of economic growth, the country has achieved lower middle income status and significant increases in living standards. With a GDP per capita of $3,940, Sri Lanka also has the highest income per capita in South Asia (aside from the Maldives). Yet Sri Lanka's economy lags behind countries in Southeast Asia such as Thailand, even though their economies were markedly similar only a generation ago. The Constraints Analysis aims to illuminate some of the reasons for this divergence, the prospects for the country to once again accelerate economic growth, and the most binding constraints to its doing so.*

## 1.1 Country Economic Context

Following a protracted civil war from 1983 to 2009, the Sri Lankan economy has grown rapidly, with a real annualized gross domestic product (GDP) growth rate of 6.3 percent from 2010 to 2014. Post-war growth has been driven by the non-tradable sectors, driven by strong public investment in reconstruction and large infrastructure projects. Between 2010 and 2014, nearly all value-added growth came from services (71 percent), especially low-skilled service activities. Another 12 percent of growth came from construction, compared to only 8.5 percent from manufacturing and 1.1 percent from agriculture.

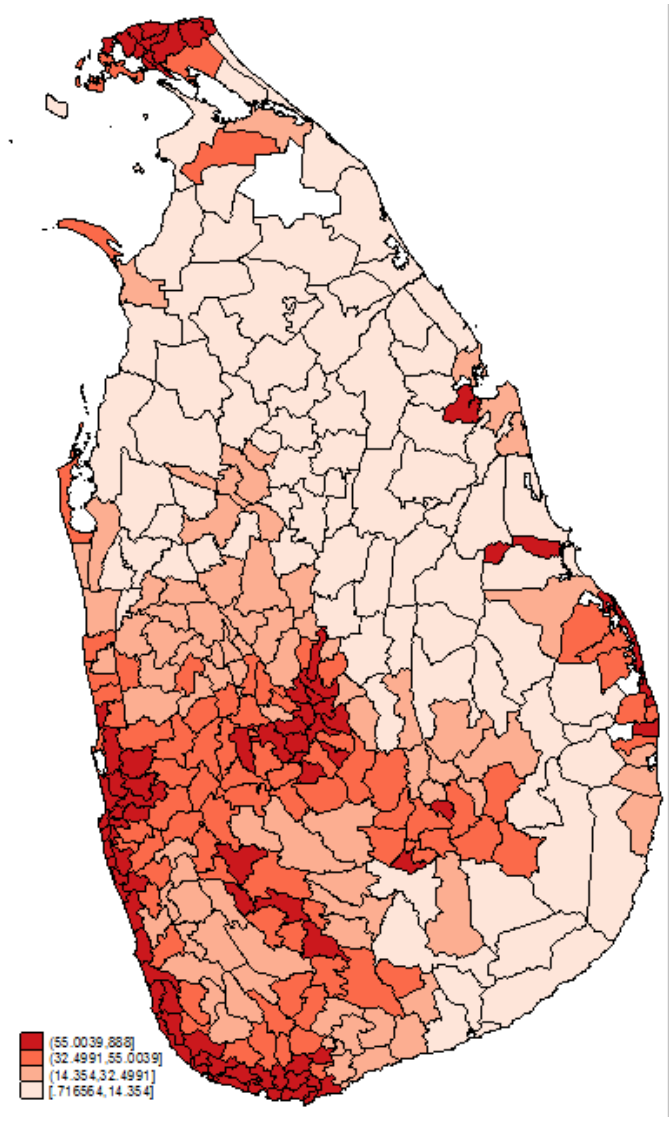
Prior to the onset of the civil war, Sri Lanka's exports were comprised chiefly of agricultural commodities such as coffee, rubber, and tea. However, beginning in the 1980s, exports began encompassing textiles and apparel, which generated much of Sri Lanka's economic growth. Although agriculture no longer dominates the economy, some commodities such as tea continue to contribute significantly to total export earnings and agriculture employs about a third of the population. Services (62 percent) and manufacturing (29 percent) now constitute most of GDP.

Although strong economic growth over time has enabled Sri Lanka to make considerable progress in reducing poverty, significant inequalities in incomes, opportunity, and living standards persist. The defining dimensions of inequality are geographical and gender-based. Concentrations of poverty remain in the northern and eastern parts of the island and among the people engaged in low-productivity smallholder and estate farming. Despite the higher headcount poverty ratios in the Northern, Eastern, and Uva Provinces,

[1] Sri Lanka is home to several different ethno-religious social groups, including Buddhist Sinhala, Hindu Tamils, and Muslim Moors as well as less numerous ethnic groups, such as Malays and Burghers. It should go without saying that costs associated with the long-running civil war were large, and peaceful co-existence among Sri Lanka's various ethnic groups and communities remains an ongoing challenge and concern.

there are substantial numbers of poor in the west and south. The poverty density, measured by the number of poor per square kilometer, is also higher in the west and south (Figure 1.1).[2]

**Figure 1.1 Number of People Living Under $1.50/day in 2005 PPP Terms per Square Kilometer, by Divisional Secretariat**




Source: Calculations based on Newhouse, Suarez Becerra and Doan (2016)

Moreover, growth has not fully involved the participation of women and members of some ethnic groups. Women are the majority of tertiary students and the working age population, yet they constitute about 35

[2] We rely on data from the World Bank's report on poverty in Sri Lanka to arrive at this conclusion (Newhouse, Suarez Becerra, and Doan, 2016). We use data from the World Bank on poverty rather than from the national statistical office because it provides for better international comparability. Note also that Sri Lanka's capital region is the country's economic engine, and focusing assistance there will presumably have poverty reduction benefits that spill over into other regions. For example, the Western Province attracts a disproportionate number of internal migrants who are motivated by economic concerns. See Section 5.2 for more.

percent of the labor force.[3] Nearly 23 percent of households are headed by women, and these face particular economic challenges.[4] In addition, women make up nearly half of all migrants, and 90 percent of women migrants are domestic and unskilled laborers facing potential abuse at the hands of employers.[5] In Sri Lanka, risks to stability and social cohesion include continuing disparities in income, employment, and access to services, especially among women and ethnic minority groups, as well as tensions around land ownership and acquisition, and resettlement. Especially in conflict-affected areas where over 700,000 internally displaced people (IDPs) returned after having been absent for a long time, resettlement has been contentious between existing occupants and returnees, especially for women and ethno-religious minorities.

Presently, the prospects for continued robust growth in Sri Lanka are troubled. Economic growth has fallen off since the high of 9.1 percent reached in 2012, and is expected to remain near or below the historical average in the near term. For the first half of 2016, GDP grew by approximately 3.9 percent year on year. Traditional exports – tea and garments – face competitive pressure from lower income countries, while overall employment is dominated by low-productivity agriculture. The lack of export dynamism has left the country without a clear set of drivers of growth for the future. Remittances, which have doubled since 2009 to nearly 10 percent of GDP, have slowed noticeably due to economic conditions in the Gulf States. While Japan and Korea helped to diversify the economies of Southeast Asia through flows of FDI in the 1980s, there has been relatively low interest in investing in Sri Lanka. Foreign direct investment (FDI) inflows have remained at an anemic level, at below 1.5 percent of GDP in each year since 2009, costing Sri Lanka opportunities for technology transfer and productivity growth.

Sri Lanka cannot continue to rely on growth led by the public sector. Tax revenues are very weak (at a bit above 12 percent of GDP in 2015), and both the fiscal deficit and external debt are high (respectively 6.9 and 55.1 percent of GDP in 2015). Indeed, these tax revenue problems are the long term focus of the three-year, $1.5 billion Extended Fund Facility that Sri Lanka and the IMF agreed to in early 2016.[6] Moreover, reliance on the public sector to drive growth has led to an economy that is less integrated with the world through trade than at any time since the 1970s. The combination of fiscal imbalance, narrow sources of foreign exchange, and lack of export dynamism leave the economy vulnerable to shocks and threaten the sustainability of growth. Increased investment by the private sector to develop dynamic, new industries will be necessary to drive growth in the future. Domestic investment seen in areas like tourism and information and communications technology (ICT) will need to be complemented by increased foreign investment, as well as increased private investment in export sectors generally.

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[3] Female labor force participation has declined from about 40% in 2006 to about 35% in 2014, and women's unemployment rates were twice as high as men's in 2014 (6.5% vs. 3.1%), according to Department of Census and Statistics (2015). Finally, women's wages are lower than men's even after controlling for sector of employment and other observable characteristics (Arunatilake et al., 2015).

[4] See Appendix Figure 1. More than one-third of women who head households are widows. The large number of female headed households and the discrimination they tend to face highlights the need for reforms to address discriminatory laws and practices particularly in terms of land inheritance patterns that disadvantage women and hinder economic productivity.

[5] Sexual gender-based violence is also high in Sri Lanka, and Sri Lanka serves as a source for men, women and children subjected to forced labor and sex trafficking, both within and outside the country. The Sri Lankan government has recently increased the effort dedicated to combatting these problems, however, and was upgraded to the Trafficking in Persons Tier 2 in 2017. See US Department of State (2017).

[6] The IMF has sought to backstop decreasing reserves driven by Sri Lanka's trade imbalance and low levels of FDI combined with past management of the exchange rate.

We argue in this report that Sri Lanka faces the following three binding constraints to private sector investment and economic growth: (1) policy uncertainty (especially tax and tariff policy); (2) inadequate access to land; and (3) poor transportation and logistics. Policy uncertainty as it relates to taxes is characterized by an accumulation of contradictory announcements from various government officials on a range of taxes, including trade-related taxes. We show that tax policy uncertainty is higher in Sri Lanka than in comparator countries and that investor optimism deteriorated as contradictory statements mounted, and we argue that this uncertainty discourages foreign firms from investing in Sri Lanka. By "access to land", we refer to the ability of private sector actors to obtain the right to operate on land that is typically owned or regulated by any of several government ministries. Finding out who owns or has regulatory authority over what is time-consuming, however, and consistent with what we heard in stakeholder consultations, recent changes to policies on foreign-owned firms' land access rights are believed to have negatively impacted foreign direct investment in the country. A third binding constraint is poor transportation services: The speeds at which goods and people move in Sri Lanka are slow and decreasing.

## 1.2 Constraints Analysis Methodology

During the first phase of MCC compact and threshold program development, MCC and selected countries jointly conduct a constraints analysis (CA) to identify the most binding constraints to private investment and entrepreneurship, and that therefore hold back economic growth. The results of this analysis enable the country, in partnership with MCC, to select activities most likely to contribute to sustained growth and poverty reduction.

MCC's CA approach builds on the work of Ricardo Hausmann, Dani Rodrik and Andrés Velasco (HRV).[7] As they point out, all developing countries face significant economic and development challenges, but not all these challenges equally restrict growth. Prioritizing is important since a country's implementation capacity, political space and financing to address these challenges are scarce and valuable. A particular strength of HRV's "growth diagnostic" methodology compared with other tools is its recognition that every country is different and the ability to prioritize across different types of issues. The methodology has been refined through experience and is designed to assess the available evidence to identify country-specific problems that most constrain growth. These problems are termed binding constraints.

To assess whether something is a binding constraint to growth, the CA methodology looks for signals that the factor of production (e.g., skill) or growth-enabling condition (e.g., macroeconomic stability) is poorly supplied, while simultaneously in high demand. For example, the quantity of credit in a country can be low, but this alone does not indicate a constrained supply of finance. The low quantity of credit may result from low demand because potential borrowers are constrained by other factors, like lack of infrastructure or an unsupportive business environment. Supply and demand dynamics can be difficult to disentangle, so to help identify when the supply of a factor is low relative to demand, there are four key questions or "tests":

1. Is the price of the factor high or is there rationing of it at the current price?
2. Are changes in the factor's availability correlated with changes in investment or growth? (referred to below as the "changes vs. changes" test);

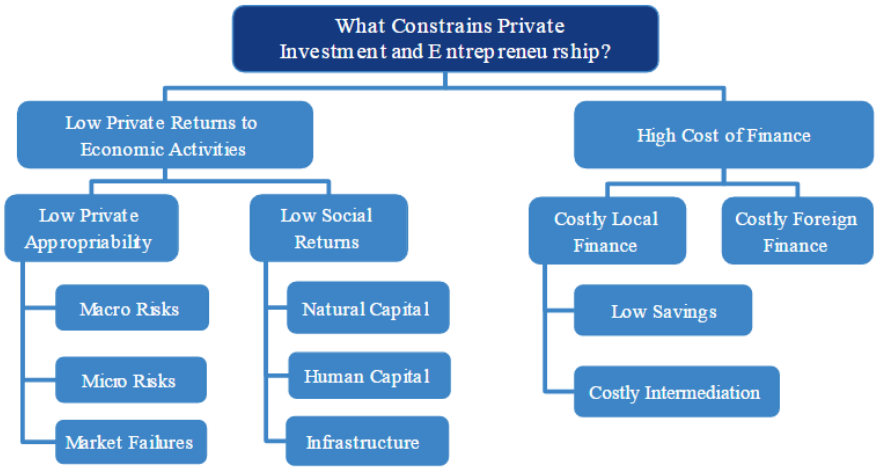
[7] See Hausman, Rodrik, and Velasco (2005).

3 Do economic agents (manufacturers or farmers, for example) incur substantial costs or risks in order to circumvent the constraint? (referred to below as the "bypassing the constraint" test);

4 Are economic agents that rely heavily on the constraining factor unable to thrive? (This is the "camels versus hippos" test: In the same way that camels, and not hippos, thrive in an environment without water, activities that do not depend on the constraining factor thrive and activities that do depend on that factor stagnate or are missing altogether.)

Whether each test can be applied to a particular factor/issue depends on the nature and availability of relevant data. Other evidence such as perception-based survey information and careful use of international benchmarking resources can complement the tests above. To organize the search for constraints among myriad issues, the HRV paper provides the following decision tree:

**Figure 1.2 HRV Decision Tree**




## 1.3 Constraints Analysis Process

Constraints analyses are conducted in full partnership between MCC and the selected country. Prior to MCC's engagement through the Threshold Program, the Government of Sri Lanka (GoSL) independently engaged the Center for International Development (CID) at Harvard University to conduct a growth diagnostic. Professor Ricardo Hausmann, one of the authors of the HRV methodology, framed the issues that a growth diagnostic should address at an economic forum in Colombo in January 2016. Given MCC's requirement to conduct a constraints analysis (CA) as the foundation for its investment programs, MCC, the GoSL, and CID agreed in March to collaborate on the CA in a unified effort.

The GoSL team for the CA is led by Mr. Charitha Ratwatte, who heads the Policy Development Office and is a senior advisor to the Prime Minister.[8] In April 2016, members of the MCC and CID teams

[8] Charitha Ratwatte (Senior Advisor); Nandaka Molagoda (Economist); Mangala Yapa (Agency for Development); Anushka Wijesinha (Ceylon Chamber of Commerce); and Rathnasiri Sirwardhane (Coordinator). Indrajit Coomaraswamy also provided critical insights prior to his appointment to head the Central Bank in July, 2016.

traveled to Sri Lanka to conduct a workshop with the GoSL team.[9][10] Separate meetings were also held with various ministries and agencies, as well as the Board of Investment (BOI), the American and Ceylon Chambers of Commerce, and other private sector and civil society stakeholders in Colombo. A subsequent mission in June included consultations and site visits in the north of the country. In addition to the in-country consultations, the MCC, CID, and GoSL teams have held regular joint teleconferences to discuss sources of data and share progress on the analysis.[11]

# 2. Summary of Binding Constraints

Through the course of the CA, MCC, CID, and GoSL teams identified several important issues. For purposes of MCC's program development process and investment criteria, MCC and the GoSL have agreed that the analysis identifies three binding constraints to economic growth: **lack of access to land, policy uncertainty, and inadequate overland transport**. The CA also revealed issues related to the future generation capacity of electricity and access to water and wastewater services for certain industries and areas of the country. The shortage of skills in science, technology, engineering and math (STEM), which the GoSL believes are needed to develop the next generation of technologically advanced industries, was identified as a problem as well. While not rising to the level of binding constraints, problems in these areas are likely constraining growth in certain sectors, and if not adequately addressed, may constrain growth more broadly in the future.

Moreover, it is becoming increasingly clear that the constraints highlighted in the CA are interrelated. The potential new industries and services that will drive Sri Lanka's future growth need high quality industrial land with integrated infrastructure, including access to wastewater services, a stable electricity supply and the ability to move goods reasonably quickly. Currently, such a combination (i) is hard to obtain in the congested Western province, (ii) is located in areas that are not sufficiently connected to other parts of the island, a fully-functioning port or airport, or people with adequate skills, or (iii) does not yet exist. Given the data that are available and their quality, the CA strongly suggests that the lack of easily accessible industrial land offering connectivity with transport and logistics corridors within and outside Sri Lanka is likely a constraint to expanding the scope and scale of investment within multiple regions of the country. Challenges with government coordination and policy uncertainty have so far hampered the GoSL's ability to overcome these problems.

## 2.1 Access to Land

Access to land is a binding constraint to growth and economic transformation as well. The state reportedly owns approximately 80 percent of the land in the country and it is held by multiple

[9] James Gerard (Threshold Programs); Barry Deren (Lead Economist); Bradley Cunningham (Economist); Aaron Szott (Economics Officer); Jean Lee (Economist); Zaidoon Khouri (FIT); Beth Roberts (FIT); Nilufar Ahmad (GSI); Sarah Lane (M&E); and Melissa LaReau (Program Officer).

[10] Daniel Stock (Growth Lab Research Fellow); Tim O'Brien (Growth Lab Research Fellow); and Ljubica Nedelkoska (Research Fellow).

[11] To conduct the constraints analysis, the coordinated research team selected the following group of comparator countries: Malaysia, Thailand, Costa Rica, China, Indonesia, the Philippines and Vietnam. These countries were chosen on the basis of Sri Lankan aspirations of one sort or another. Whenever international comparisons were made, we included as many of the comparators as data permitted.

ministries.[12] Government coordination is poor and the process of acquiring rights to develop land is slow and unclear, resulting in an inability of the government to meet the demand for land needed for new private sector investment, including for export-oriented FDI. This constraint is most problematic in the urbanized and increasingly congested Western Province. However, problems with land use and titling are prevalent throughout the country and affect manufacturing, agriculture, construction, residential and commercial development, and tourism. Restrictions on land parcel size, the absence of land titles, and longstanding laws affecting rural land use all reduce agricultural productivity and rural well-being. Moreover, existing laws disadvantage the property rights of women, further restricting the scope of women's participation in domestic investment.

Sri Lanka has carved out industrial zones in different parts of the country to maneuver around the land constraint for manufacturing but over the last several decades the development of new industrial zones has not kept pace with the demand for them. The full subscription of some industrial zones demonstrates that the concept can work as a vehicle for facilitating investment while bypassing the land constraint. On the other hand, higher vacancy rates in other industrial zones seem to be explained at least in part by geographic remoteness, compounded by the lack of either transport linkages, water access, waste management services, or a sufficiently high-quality electricity supply. These considerations should obviously be kept in mind given that the government wishes to introduce industrial zones in other regions, particularly in the north and east.

*Benchmarking*: Land in Sri Lanka is mostly state-owned and governed by a disconnected institutional structure and complex legal environment. Enterprise survey data suggest that land access is more restricted in Sri Lanka than in comparator countries. For example, unlike other comparator countries, Sri Lanka also restricts private ownership of agricultural land to 50 acres per person, which obviously prevents economies of scale from being realized in the case of large private sector agricultural investments. Doing Business indicators are also consistent with a very low quality of land administration in Sri Lanka. Consultations with the private sector reveal that transaction costs to access industrial land are very high for domestic investors and foreign investors alike, but that domestic investors are advantaged by more intimate knowledge of the system. The inability to secure land for planned investment activities has been the most common cause of investment plans being dropped or relocated to other countries in the last several years according to continuous consultations with the private sector by CID and government teams that it has worked alongside.

*Price*: Available land price information is limited, but that which is available suggests that the price of land in Sri Lanka is high overall, with very high and rapidly increasing prices in the Western Province. Land in industrial zones is not determined by price mechanisms, but rather through the administrative process of the BOI. The balance of available evidence also suggests that the time it takes to gain access to land is substantial, and can be particularly lengthy for more land-intensive investments.

*Changes vs. changes*: Recent laws negatively affecting access to land by limiting foreign land ownership and allowing for a series of government expropriations correspond with subsequent decreases in FDI.

[12] And Sri Lanka is unique in that it has upwards of 50 different ministries, which change names and responsibilities at a highly unusual pace. This results in a ubiquitous problem of overlapping responsibilities and inability to coordinate across a complex bureaucracy.

*Bypassing the constraint*: A large share of exports and most export innovation has occurred in a few export processing zones, primarily in the Western Province, that are generally at capacity. Both firms and the BOI reported that clarity of land access in these zones continues to be a draw for investment and analysis of BOI data supports this view. Some firms reported that they remain informal because of an inability to secure formal land approvals. Legal restrictions on plot size are long-standing, and the agricultural sector has evolved under this constraint, including through the use of community planning and aggregating companies.

*Camels vs. hippos*: Past drivers of export growth have had mixed land-intensity: plantation crops (high) versus garments (fairly low). Emerging growth drivers also appear mixed: tourism (fairly high) versus financial services (low).

## 2.2 Policy Uncertainty

Policy uncertainty is a binding constraint for new investment in Sri Lanka. The private sector faces frequent and unpredictable changes in tax policy, extending to trade policy, and to a lesser extent land policy. Important changes in policy are widely perceived to be *ad hoc* and policy reversals have been the norm in recent years. In addition to an unstable policy environment, implementation of existing policy is often opaque and uncoordinated across government, which adds to the policy uncertainty experienced by investors. The multiplicity of ministries, conflicts across ministries, and the tension between bureaucratic and political levels within ministries contribute to the dysfunction.

The BOI has historically had a large degree of discretionary power to provide incentives through various exemptions that have added to the complexity and difficulty of tax administration. Policy uncertainty with respect to taxes (VAT/capital gains) may be resolved in the near term as the $1.5 billion IMF program signed early this year should impose more fiscal discipline; the Inland Revenue Act, scheduled to be debated in Parliament in September, 2017, is the centerpiece of the government's efforts. The structure, complexity, and uncertainty of import duties and para-tariffs also results in a bias against new exports that is highly problematic.

*Benchmarking quantity*: Sri Lanka's tax policy uncertainty is high relative to comparators. While tax rates in Sri Lanka are not high by international standards and firms do not report tax rates as a major obstacle, tax policy uncertainty was the most ubiquitous constraint encountered when interviewing firms. This was true both when approaching firms directly and in a recent representative (anonymous) survey of firms. The policy uncertainty problem extends to trade policy, where import charges have increased over time to fill gaps in government revenues. Sri Lanka has high nominal and effective rates of protection with high variance across products. Import duties (tariffs and para-tariffs) are complex, uncertain, and their application is not transparent, which creates a bias against industries—nascent ones, in particular--that must import inputs in high quantities. This problem is compounded by numerous non-tariff barriers (NTBs) on imports and serious issues with trade facilitation.

*Changes vs. changes*: Investor sentiment appears to have been affected by a recent intensification of tax policy uncertainty. The longer-term trend of lower than expected FDI is consistent with this being a long-term and growing problem.

*Bypassing the constraint*: Firms are able to bypass many levels of uncertainty (as well as reduce their tax burden) by utilizing the BOI, a government agency which was established as a so-called "one-stop shop" for new investment. Understandably, the BOI handles a large number of investments, both local and foreign. Analysis of investment data and qualitative interviews suggest, however, that the BOI has become a less effective means of bypassing the constraint over time. Evidence also suggests that domestic firms remain informal partly to avoid policy uncertainty.

*Camels and hippos*: The scarcity of FDI, especially in manufacturing industries that are most linked with producer-driven global production networks, is consistent with policy uncertainty in tax and trade policy.

## 2.3 High Costs of Overland Transport

Available evidence indicates that weaknesses in transport and logistics infrastructure and planning is a binding constraint to economic activity in the Western Province and prospects for economic expansion in other regions of the country. Economic activity in Sri Lanka is concentrated in the Colombo metropolitan area and the surrounding Western Province and is driving internal migration and rapid urbanization—both key forces for structural change and poverty alleviation. The Western Province also hosts the major logistics centers upon which other regions of the island are currently dependent in varying degrees. Consequently, the movement of goods and people within the province is increasingly problematic, imposing mounting costs and physical limitations on growth prospects in that part of the country. This in turn hurts the growth prospects for other regions to the extent that these regions depend upon access to logistic centers and markets concentrated in the Western Province, and it similarly hurts poverty reduction via internal migration to Sri Lanka's economic powerhouse.

Connectivity concerns are also relevant in other regions of the country. The current state of transport infrastructure generally frustrates the development of inter-regional economic activity and arguably the suitability of locating investments outside the western region and near other concentrations of population on the island. Economic development in other regions would help reduce the constraints that congestion (as it affects travel time costs, labor availability, and access to land) imposes upon growth in the western region as well as promote more inclusive and geographically widespread growth.

*Benchmarking*: Overall logistics performance appears to be adequate but the quality of infrastructure is below average. The national road network is extensive, but the provision of expressways is relatively low. Congestion is a major problem in the largest urban areas, and most firms are dependent upon logistics centers in and around Colombo. Rail infrastructure is outdated and limited, especially for the transport of goods. The Colombo Port is high performing, while the port in Hambantota is currently heavily underutilized, and potential ports in Trincomalee and Jaffna have not been developed.

*Price*: Research indicates current high costs of road congestion in the Western Province (and extending into the Central Province).[13] For the road network as a whole, average journey speeds were around 26

[13] See section 10.2 for more on this. Increasing congestion is believed to be related to the low quality of bus services available to Sri Lankans in urban areas. One of the forms that this low bus service quality takes involves a high risk of female passengers being subjected to harassment; United Nations Population Fund (2017) shows that over 90% of female public transit users have

kms/hour in 2011, and were as low as 14 kms/hour in Colombo peak hour traffic. As for road surface quality, over half of the country's national road network, on which 70% of road cargo is transported, is in good condition. Less is known about the condition of provincial and other secondary access roads.[14] Evidence suggests that Sri Lanka's logistics-related importing and exporting costs are low, which can be attributable to the efficiency of the expanded port at Colombo.

*Changes vs. changes*: Following the completion of the Southern Expressway, districts south of Colombo on the western coast through which the new road passes saw changes in outward migration in comparison to other nearby areas, which suggests some increase in perceived economic opportunities there; measures of investment show increased post-expressway relative to comparison districts, but other measures of structural transformation show comparison districts doing better.

*Bypassing the constraint*: Industrial zone occupancy has a tight relationship with connectivity to Colombo. This is likely the result of closer locations providing easier access to port services and/or agglomeration externalities in the Western Province. In addition, increasing volumes of cargo are transported to the Colombo Port at night to avoid congestion. Large numbers of informal transport (three-wheelers) may be a response not only to a demand for a more economical form of transport, but also to their ability to negotiate traffic congestion more easily than other forms of public transport.

The subsequent chapters of this report provide additional detailed evidence on each potential constraint. We begin with the 3 constraints which were determined to be binding. We subsequently cover non-binding constraints (in accordance with the HRV approach). Figure 2.1 below provides a preview of the results of our analysis.

been harassed while riding. This phenomenon might in turn help explain low female labor force participation. Transport planning could contribute to women's safety through ensuring regular service, avoiding overcrowding of waiting areas and vehicles, and providing adequate training and supervision of bus drivers, conductors and other personnel on the protection of female clientele

[14] The ADB has an ambitious program to improve provincial and rural roads throughout the country.

**Figure 2.1 Summary Heat Map of Examined Potential Constraints**

| | Benchmarking quantity | Test 1 Are prices/rationing high | Test 2 Correlations | Test 3 Circumventing the constraint | Test 4 Camels and hippos | Conclusion |
|---|---|---|---|---|---|---|
| Land | | | | | | Binding |
| Policy Uncertainty / Taxation | | | | | | Currently binding - but may be relaxed in the future if the underlying issue of low revenue can be addressed |
| Transportation | | | | | | Transportation is currently a binding constraint to geographically-balanced development, and it appears set to constrain growth moving forward |
| Water | | | | | | Water supply and waste water treatment are potentially constrained in certain locations |
| Electricity | | | | | | Not binding in recent years, but the adequacy of future generation is not assured |
| Education | | | | | | Not binding overall, but specific skills are in short supply |
| Labor regulations | | | | | | Not binding, but somewhat problematic |
| Finance | | | | | | Not binding, but banks are risk averse and there is potential to improve access to startup capital |
| Health | | | | | | Not binding based on how favorably Sri Lanka performs relative to comparators |

# 3. Access to Land

Land is a key factor of production in many sectors, and access to land plays a role in both enabling economic growth and determining the distributive consequences of growth. In Sri Lanka, land markets are characterized by high levels of state ownership. Land is also governed by a disconnected institutional structure and a complex legal environment, with overlapping control and regulatory claims. There are longstanding legal restrictions on landholding such as those on plot size, limiting consolidation and the development of commercial agriculture. Largely because of the issues in state land, and also because of poor land administration systems for private land, it is hard for investors to know how to approach obtaining land for new investment. Land also has a gender and social dimension in Sri Lanka. The large number of female headed households and the discrimination they tend to face, highlights the need for policy and legal reforms to address discriminatory laws and practices. This is particularly true in land inheritance patterns and resettlement practices that disadvantage women and hinder economic productivity.[15]

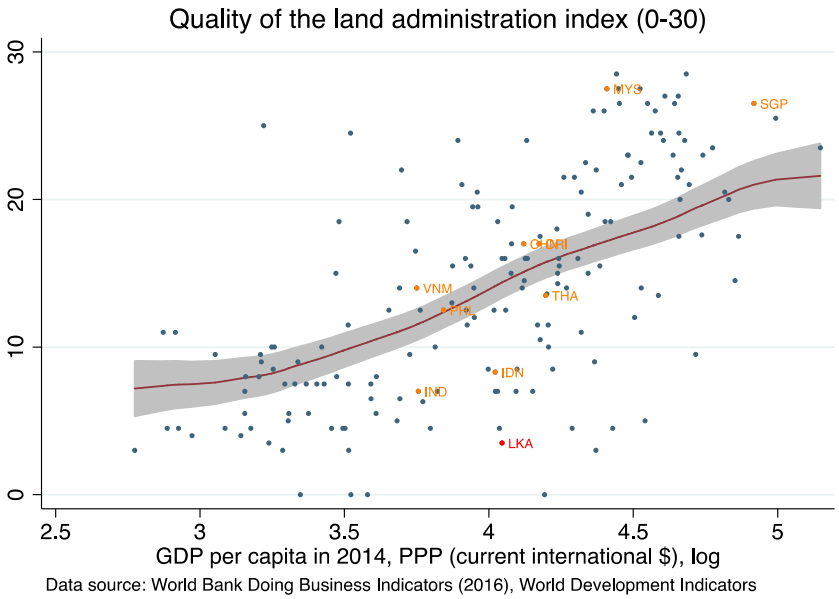
This report identifies land as a binding constraint to economic growth in Sri Lanka. The evidence for this is presented below.

[15] Not surprisingly, the numbers of female heads are higher in conflict-affected provinces. Most of these women are widows, but some are married, divorced/separated or never married. The application of different customary, religious, and family laws according to respective legal codes of different communities also affect the ability of widows or single women to gain or retain long-term assets, such as land and houses. This was a factor in the ability of single women to maintain their property rights throughout the conflict and, in terms of resettlement, post-conflict. There are reports that the distribution of land and housing for female-headed households has been problematic, with women not receiving the same due process considerations as male-headed households. The loss of assets during the conflict may have made it difficult to marry daughters, potentially adding to vulnerability and violence against women and girls. Land and houses are commonly used as dowry, especially in Tamil communities.

## 3.1 Benchmarking Costs

Doing Business indicators for 2016 show that Sri Lanka's institutional quality in land administration is very low (Figure 3.1).

**Figure 3.1 Quality of the Land Administration Index**




Firms report that access to land is a major constraint to their operations and growth. According to Enterprise Survey data from 2011, firms and particularly small and medium enterprises report that land is one of the primary obstacles to their operations and growth, if not the primary obstacle (Figure 3.2, Appendix Figure 2). Firm interviews and anecdotal reports suggested that firms prefer owning private land over leasing state land. The World Bank Enterprise Survey corroborate this and shows that most firms own land. Additionally, firms owning land are far less likely to see land access as a constraint than firms leasing or renting land (Figure 3.3).

**Figure 3.2: Percent of Firms Identifying Land as the Main Obstacle (Latest Year Available)**

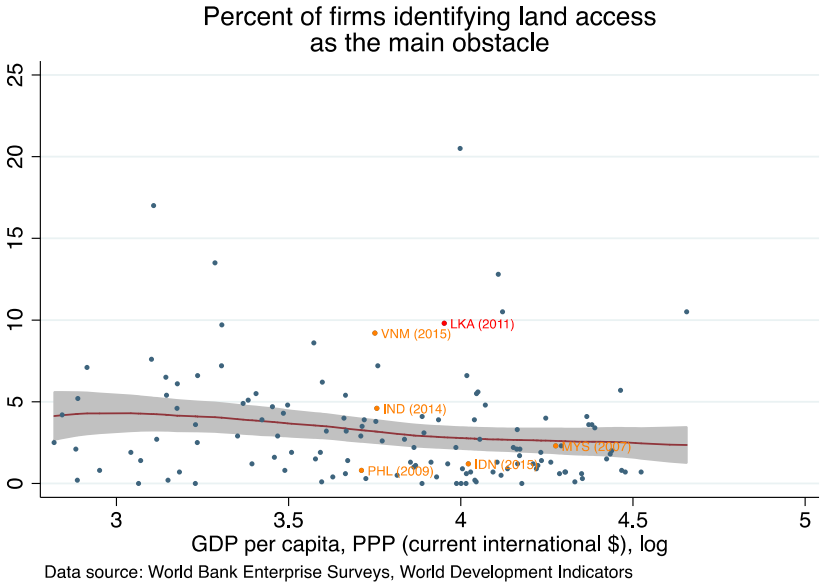
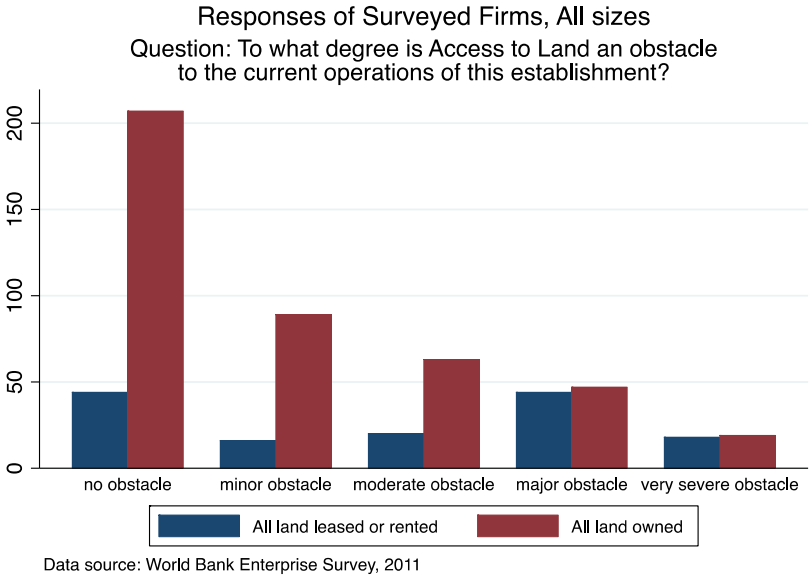



**Figure 3.3 Access to Land as an Obstacle by Land Ownership Status**




## 3.2 Price

The analysis of land prices is limited by the lack of availability of reliable data. However, the available data from a commercial website (lankapropertyweb.com) suggest that land prices in Sri Lanka are high (Appendix Figure 3). The price in Colombo is approximately $30,000 per perch or $4,800,000 per acre. The time required to lease land is low according to Investing Across Borders (Appendix Figure 4 and Appendix Figure 5), while Doing Business data shows that time to register property is rather high whereas costs are not (Figure 3.4 and Figure 3.5). However BOI data on approval dates suggest that land-

intensive investments (tourism, agriculture) face a lengthy approvals process due to land-related approvals issues (Appendix Figure 6). Thus, overall the evidence on price is mixed.[16]

**Figure 3.4 Time to Register Property, Doing Business**

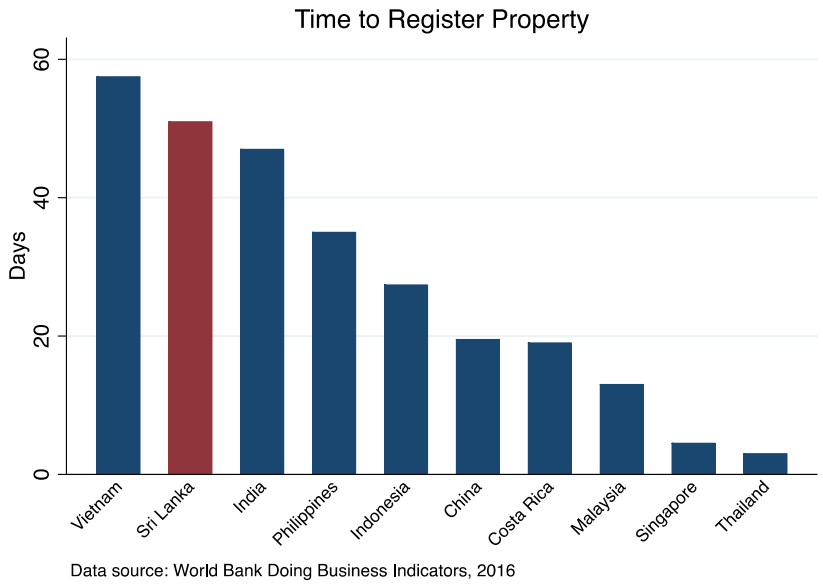
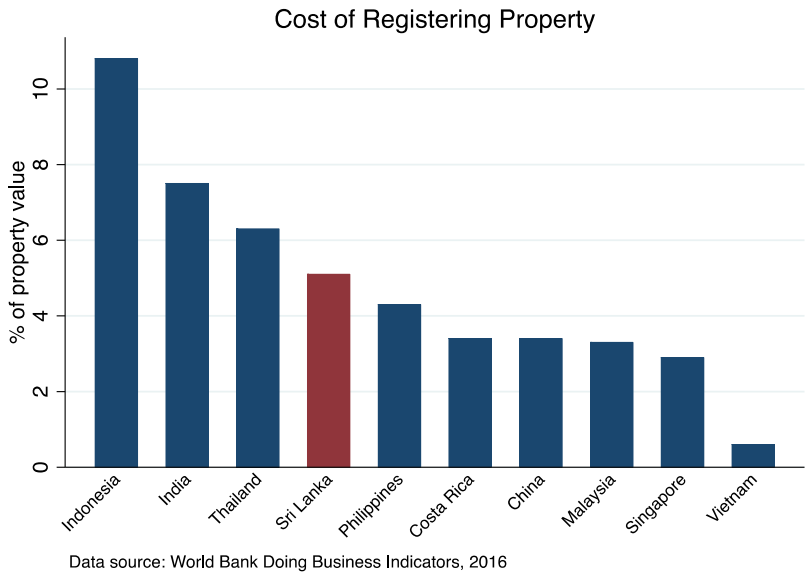



**Figure 3.5 Cost of Registering Property, Doing Business**




## 3.3 Changes vs. Changes

We look to a recent set of legal changes affecting foreign land ownership to better understand the effects of changes in restrictions in land markets on changes in growth. A land law enacted in 2014, retroactive

[16] More recent analysis by Harvard's Center for International Development suggests that prices for commercial land may not be particularly high, but that prices do not accurately reflect the scarcity of land for commercial purposes.

to 2013, restricted the sale, transfer or lease of land, properties and condominiums to foreigners, foreign companies, and local companies with more than 50 percent foreign shareholding (KPMG, 2015). The new law also temporarily introduced a land lease tax of 15 percent for foreigners, although this provision was removed in 2015. Information from the Board of Investment (BOI) indicates that the institution of this law was contemporaneous with a sharp drop in FDI, with particular impacts on property development, manufacturing, ICT and agriculture.

Additional research shows evidence that land market restrictions can affect outcomes related to growth. The World Bank paper "Do Land Market Restrictions Hinder Structural Change in a Rural Economy", which uses the instrument of historical malaria prevalence, provides convincing evidence that land restrictions in Sri Lanka (under the Land Development Ordinance of 1935) decrease the probability of being engaged in wage employment in services and manufacturing, but especially services (using 2002 HIES data.) The authors argue that this is evidence that the land restrictions in question inhibit structural change through the channel of "migration costs" and its impact on transformation to more productive sectors of employment, rather than through collateral or property rights mechanisms.

## 3.4 Bypassing the Constraint

The evidence is mixed and incomplete on whether firms incur important costs to bypass this constraint. Firm interviews suggest that one important reason why Board of Investment Export Processing Zones (EPZs) are in high demand is the relative clarity of land approvals in the zones compared to outside of the zones. Investments in EPZs do not receive tax or other policy incentives above and beyond BOI-supported investments outside EPZs. However, data on BOI Zones actually show that vacancy rates are somewhat high in some zones that are far from Colombo, suggesting that access to productive land is more of a constraint closer to Colombo (Figure 3.6 and Table 3.1).

**Figure 3.6 Locations of Export Processing Zones in Sri Lanka**

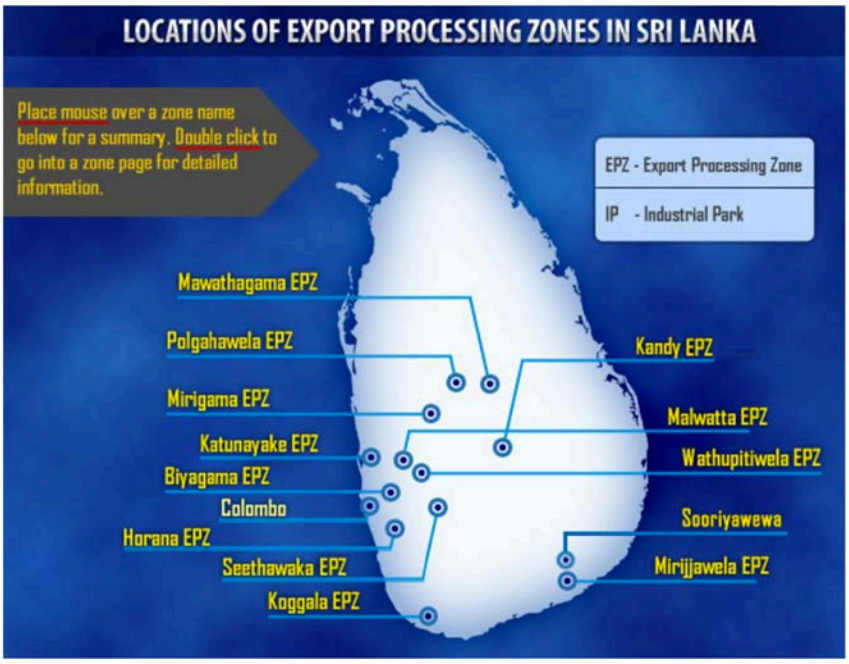


**Table 3.1 Vacancy Rates for EPZs in Sri Lanka**

| EPZ/ IP | Year of inauguration | Industrial Area (Acres) | No. of Industries in Commercial Operation | Distance from Colombo (Km) | *Land Vacancy* |
|---|---|---|---|---|---|
| Katunayake EPZ | 1978 | 306 | 84 | 27 (highway), 32 (normal) | *3.9%* |
| Biyagama EPZ | 1986 | 256.19 | 57 | 24 | *0.0%* |
| Koggala EPZ | 1991 | 195 | 22 | 132 | *10.4%* |
| Kandy IP | 1994 | 81.5 | 23 | 133 | *14.7%* |
| Seethawaka EPZ | 1999 | 183.3 | 27 | 47 (low road), 57(high road) | *6.3%* |
| Mirigama EPZ | 1998 | 171.49 | 9 | 65 | *3.1%* |
| Malwatta EPP | 1998 | 26.41 | 6 | 38 | *1.9%* |
| Wathupitiwala EPZ | 1999 | 66.34 | 18 | 44 | *0.0%* |
| Horana EPZ | 1999 | 180.22 | 19 | 50 | *5.3%* |
| Wagawatta IP | 2004 | 60.51 | 6 | 50 | *0.0%* |
| Polgahawela EPZ | 2000 | 39.65 | 5 | 77 | *29.0%* |
| Mawathagama EPZ | 2000 | 30.27 | 7 | 108 | *32.6%* |
| Mirijjawila EPZ | 1999 | 323 | 5 | 235 | *64.7%* |

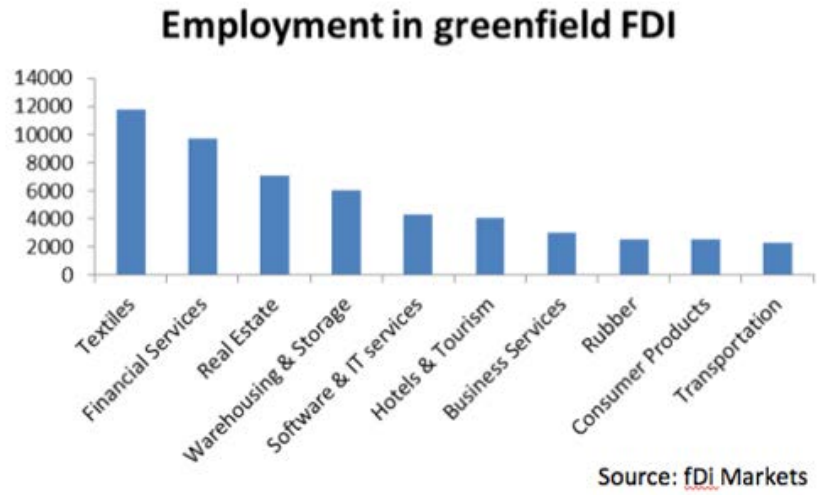
Source: BOI

There does not appear to be any major problem with informal construction on land with poorly defined property rights. However, some firms report that they remain informal because of an inability to secure formal land approvals. In addition, the Enterprise Survey does not have a question on paying a bribe to secure land, but Sri Lanka does not look too bad on other bribes that are likely related (Appendix Figures 7 and 8).

## 3.5 Camels and Hippos

The evidence is mixed and incomplete on whether firms that are not dependent on land flourish while firms that are dependent on land do not.. An attempt to build an indicator of land use-intensity by industry from the Annual Surveys of Industry (ASI) failed due to a high non-response rate on the land value question. In the past, drivers of growth have mixed land-intensity: plantation crops have high land intensity while garments have low land intensity. Emerging growth drivers also appear mixed: tourism has fairly high land intensity while knowledge services/IT have low land intensity. For FDI, the picture is also unclear (Figure 3.7).

**Figure 3.7 Employment in Greenfield FDI**




In summary, this chapter presents several different types of evidence that land is a binding constraint to economic growth in Sri Lanka. First, Sri Lanka is an outlier in terms of the percentage of firms that report access to land as the primary obstacle to growth The time to register property is high relative to comparators and the indications we have are that monetary prices are high as well. Third, it is possible that a change in land administration law depressed FDI, and there is some evidence that land restrictions prevent the movement of labor out of agriculture. Fourth, on whether firms bypass the land constraint, an important piece of qualitative evidence is that firms prefer land in EPZs because of the difficulties in obtaining land elsewhere. Finally, on whether firms reliant on land do not flourish while firms not reliant on land do, we find mixed evidence. Overall, we conclude that land is a binding constraint to growth in Sri Lanka.

# 4. Tax Policy Uncertainty

Private sector participants in consultations held in Sri Lanka most commonly reported that the most severe problem facing the economy was policy uncertainty. This was very commonly mentioned as the limiting factor for investment, for firms of all sizes. The policies that the private sector leaders consulted had issues with were related to the tax regime, and in particular what kinds of taxes their firms were responsible for paying and the associated tax rates.[17] In the first two quarters of 2016, when our consultations took place, newspapers frequently featured stories containing (often contradictory) statements from officials on changes to who or what was subject to which tax and at what rate.[18] This was in the context of increasing pressure from the IMF to improve tax revenue collection (via some

[17] To be sure, tax policy is certainly not the only kind of policy subject to speedy change in Sri Lanka. We briefly mention other ways in which policy uncertainty is problematic for firms in Sri Lanka at the end of this section.

[18]See http://www.ft.lk/article/541567/ft and http://www.ft.lk/article/560582/Supreme-Court-blocks-bill-raising-rate-of-VAT or a sense of the types of tax issues that were publicly fought over. Also, on the magnitude of tax rates in particular, there is conflicting evidence on how much of a problem rates are for firms: Appendix Figure 9 shows that firms are not especially bothered by tax rates in Sri Lanka, while World Bank (2017) finds that the overall tax rate in Sri Lanka (as a percentage of profits) is high at more than 55%. One possible explanation for the discrepancy is that the Doing Business indicator considers only what effectively is paid by a simulated firm as codified in law, as opposed to the rate that firms end up paying in practice. In any case, the sheer number of dimensions along which tax policy uncertainty exists suggests that it is highly problematic for firms.

combination of higher rates and an increase in the tax base) and reduce a growing budget deficit. In the words of the chief economist of the Ceylon Chamber of Commerce (CCC), problems associated with tax regime uncertainty had been present for many years—Sri Lanka reportedly has a long history of "midnight gazettes", i.e. tax changes announced in the dead of night--but have been particularly pronounced since November, 2015.[19] This was only a few months after the parliamentary elections which led to the formation of the current coalition government, and when the 2016 budget was presented. News articles on proposed amendments to the bill were being published within a month, and the uncertainty continued for the next several months.[20]

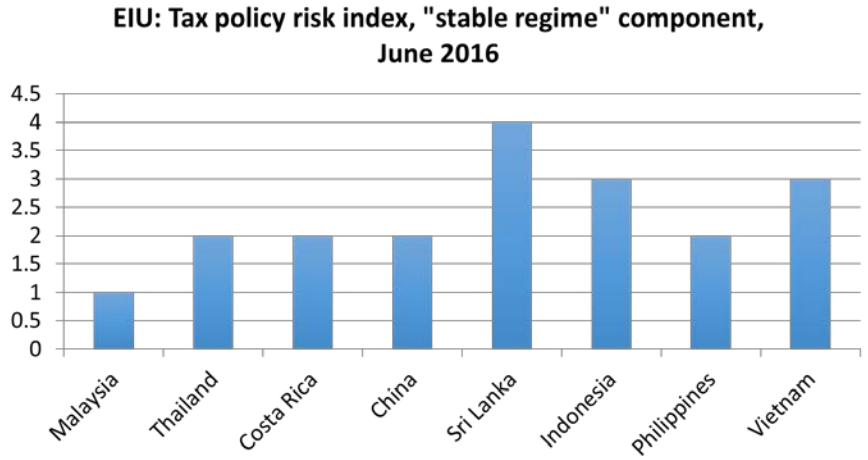
For an extended period, firm owners received conflicting information from seemingly credible sources on which taxes applied to them and how much they were responsible for paying. Consequently, firm owners felt they were more uncertain about investing back into their businesses, which would in turn have implications for growth. These are also the kinds of conditions that foreign investors might be particularly keen to avoid. By way of illustration, the CCC chief economist reported hearing from an individual whose firm was considering investing in Sri Lanka, in large part because of the absence of a capital gains tax. After news that a capital gains tax might be put into place, the firm reportedly remained interested; presumably a sufficiently low capital gains tax rate would be acceptable. But when the firm reached out to the Finance Ministry for details on the proposed capital gains tax, they were told that they would have to wait 6 months for a response, at which time the firm abandoned consideration of investing in Sri Lanka. This anecdote, while not conclusive evidence, neatly encapsulates the way in which such tax policy uncertainty limits investment. The following sub-sections will provide evidence that it does so to a degree that is binding for growth.

## 4.1 Benchmarking Quantities

Survey data makes clear that tax policy uncertainty is a problem for firms in Sri Lanka. The Economist Intelligence Unit's Tax Policy Risk Index had (as of June, 2016) Sri Lanka doing as poorly as any of its comparators. Moreover, this poor index score is driven entirely by Sri Lanka's performance with respect to the "stable regime" component of the index (where higher values indicate perceptions of higher risk; Figure 4.1).[21]

[19]Skype conversation with Anushka Wijesinha on May 11, 2016 (EST).
[20]See http://www.dailymirror.lk/100087/sri-lanka-amends-2016-budget-amid-public-protest.
[21] Sri Lanka's performance with respect to the other components of the index relative to comparator countries is at least adequate.

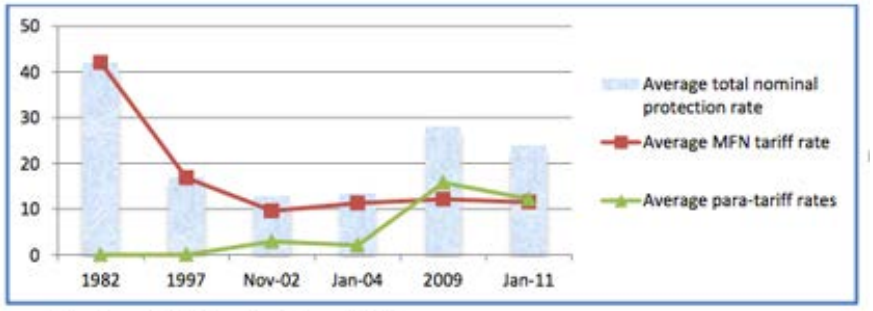
**Figure 4.1 Economist Intelligence Unit Tax Policy Risk Index, "Stable Regime" Component**




These EIU data were supplemented by a survey of 164 of Sri Lanka's "key corporate leaders" conducted by the CCC and Lanka Business Online in early 2016.[22] The results of that survey make it clear that tax policy uncertainty was a key problem for Sri Lankan private sector actors, with 88% of respondents reporting being either "somewhat concerned" or "extremely concerned" with tax policy changes.[23] Thus multiple sets of survey data-based results are consistent with the anecdotal evidence.

Another type of policy uncertainty that could be especially discouraging to foreign investors has to do with Sri Lanka's tariffs and what are referred to as para-tariffs, or any import charges.[24] Para-tariffs are complex (numerous para-tariffs vary at the product level), uncertain (they change frequently), and non-transparent (with changes in schedules and firm-level exemptions not generally being widely observable). They have increased over time to fill gaps in government revenue even as tariffs themselves have shrank (Figure 4.2).

**Figure 4.2 Tariff and Non-Tariff Protection Over Time**




Source: derived from data in Pursell and Ahsan (2011)

Perhaps most importantly, these para-tariffs are believed to confer advantages upon incumbent firms (who are reportedly frequently exempted from having to pay) at the expense of new firms, including would-be

[22] See Ceylon Chamber of Commerce (2016).
[23] Rates of concern were similarly high with respect to overall economic policy and domestic political stability.
[24] See Kaminski and Ng (2013) for more.

foreign firms otherwise interested in investing in Sri Lanka.[25] The latter set of firms has difficulty knowing in advance which charges they will have to pay and which they will not, and this is believed to discourage investment.[26] Finally, since import charges correspond to types of goods, and export diversification would presumably require the importation of new kinds of inputs, the uncertainty that this system of para-tariffs creates likely discourages that diversification.

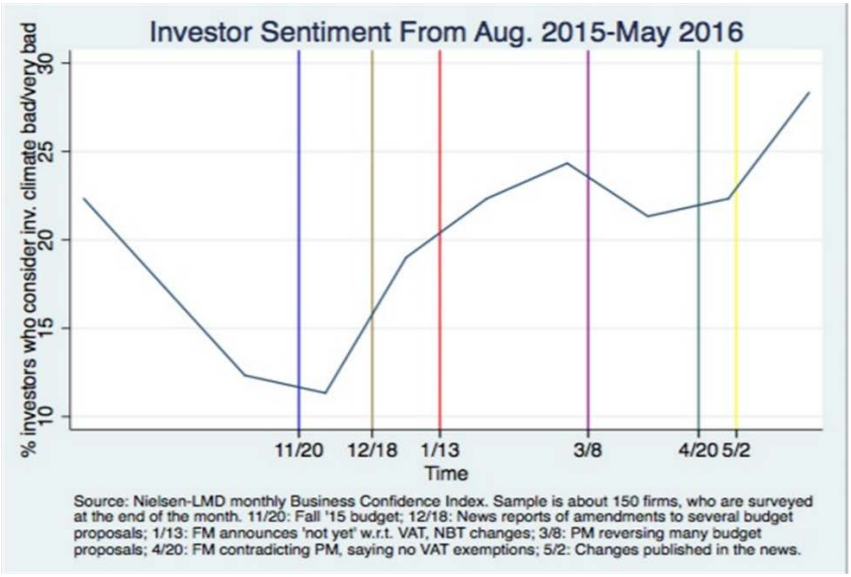
## 4.2 Changes vs. Changes

In addition to data on the scale of tax policy uncertainty in Sri Lanka, we also sought evidence that the reported increase in uncertainty was related to changes in investor sentiment and actual investment.[27] More specifically, we gathered newspaper articles from Sri Lanka's Daily FT newspaper and unclassified economics-related cables from the US Embassy in Colombo to get a sense of when tax policy-related news was being made between January, 2015 and June, 2016. For data on investor sentiment, we reached out to employees of Nielsen Sri Lanka, who in conjunction with the business magazine LMD conduct a monthly business confidence survey of roughly 150 firm owners and managers.[28] Investment data comes from Sri Lanka's Department of Census and Statistics, it takes the specific form of gross fixed capital formation, and it is observed quarterly.

Data on the share of investors who feel the investment climate is currently poor or very poor is displayed in Figure 4.3 below, for the period from August, 2015 to May, 2016.[29] The colored vertical lines in the figure correspond to important tax policy-related news events. The initial budget presentation made in November, 2015 represents a low point for investor pessimism, and as the contradictory tax policy announcements accumulate, investor optimism tends to deteriorate.[30]

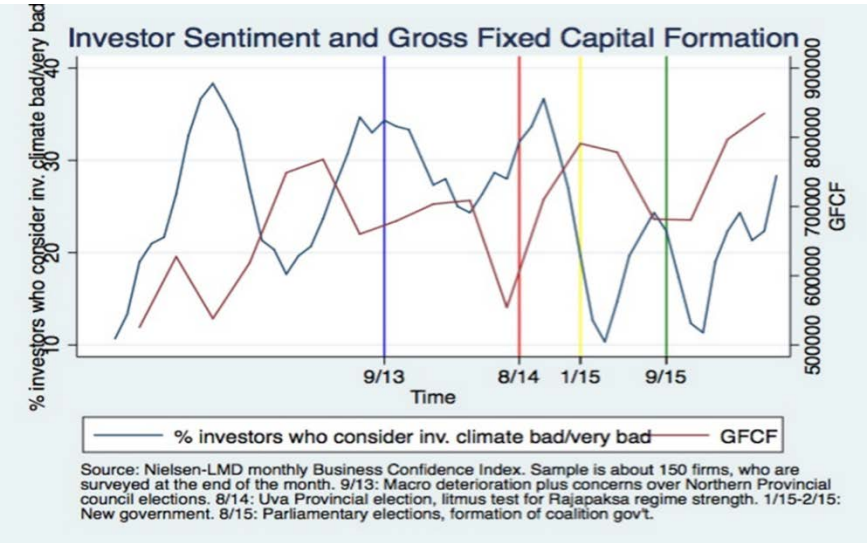
[25] IPS (2015) write that, "The system appears to be highly discretionary, with research and anecdotal evidence suggesting that it favors individuals and groups with lobbying skills and access to bureaucrats and politicians."
[26] Firm interviews confirm the presence of a duality where existing exporting industries benefit from trade protections while potential new export industries are disadvantaged. Firms in established export industries did not raise the issue of import charges as a constraint and cited various exemptions that they receive. Firms in other industries did report constraints (e.g., the packaging industry, household appliances).
[27] Ideally, we would have considered an outcome like GDP per capita as well. Given how recently tax policy had seemed to become problematic for the Sri Lankan economy and the lags with which statistics on things like GDP per capita become available, however, we were unable to consider outcomes like the latter.
[28] In an attempt to highlight actual time series variation in investor sentiment rather than noise, we present the 3-month moving average of the share of survey respondents who see the current investment climate as either poor or very poor.
[29] This range was chosen to allow us to focus on the aforementioned period of greatest uncertainty, namely November, 2015 on.
[30] See Figure 4.4 for a sense of how pronounced the rate of this deterioration was in historical terms.

**Figure 4.3 Investor Pessimism Levels and Tax Policy Changes**




A different type of policy uncertainty seems to affect investor sentiment starting from an earlier period of time. In particular, as Figure 4.4 makes clear (below), there is an observable relationship between events which call into question the stability of existing political regimes on the one hand and investor sentiment on the other: Investor pessimism increased in response to elections whose results did not bode well for the former (Rajapaksa) regime. The figure shows the co-movement of investor sentiment with actual investment. On the other hand, the inverse relationship displayed over most of the time period in question breaks down right when tax policy uncertainty was reportedly greatest (from late 2015 on). The evidence on how tax policy changes might have affected key economic outcomes over time is therefore somewhat mixed.

**Figure 4.4 Major Political Events, Investor Sentiment and Gross Fixed Capital Formation**



## 4.3 Bypassing the Constraint

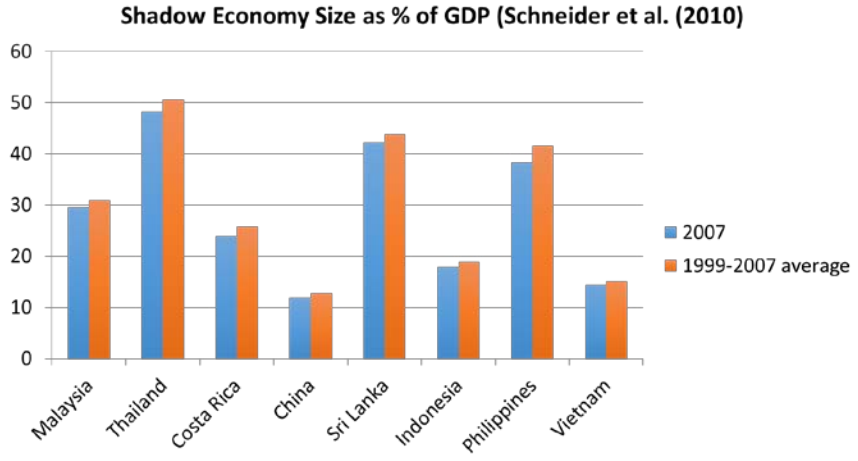
For many years, large firms could deal with tax policy uncertainty by setting up investments in Sri Lanka via the BOI. In addition to assisting with things like land acquisition, going through the BOI also typically resulted in greater certainty surrounding investors' taxpaying obligations. Consultations revealed, however, that the BOI has gone in recent years from being a kind of "one-stop shop" to simply being "one more shop", i.e. an additional government organization to have to deal with and that is no longer effective at minimizing bureaucratic hurdles.

In what other ways might firms be attempting to avoid constraints associated with tax policy uncertainty? There is evidence to suggest that (mainly domestic) firms remain informal in part to avoid having to pay taxes. De Mel, McKenzie and Woodruff (2013) find that 46% of the small informal firms they study report that tax responsibilities and visits by tax officials are one of the main reasons they do not formalize.[31] IPS (2014) makes a more direct claim:

> "The lack of policy consistency instills fear in SMEs that once they formalize, they may be subject to unfavorable policy conditions which they may never be able to get out of once caught in the tax net."

If firms are remaining informal to avoid tax policy uncertainty, we would expect the informality rate in Sri Lanka to be relatively high. According to Schneider et al. (2010), this is what we do in fact observe.[32] The authors provide estimates of the size of the "shadow economy" (as a share of GDP) for the great majority of countries, which allows us to compare Sri Lanka to its neighbors.[33] As Figure 4.5 (below) shows, Sri Lanka has a larger shadow economy than all of its comparators save for Thailand.

**Figure 4.5 Shadow Economy as a Percentage of GDP**




That Sri Lanka's economy is disproportionately informal is corroborated by the fact that in the Enterprise Survey data, the most frequently reported problem that firms face is competition from the informal sector.

[31] See De Mel, McKenzie and Woodruff (2013).
[32] See Schneider and Williams (2013).
[33] The shadow economy is defined by the authors to include, "all productive economic activities that would generally be taxable were they reported to the state (tax) authorities."

This suggests that the informal sector might be larger in Sri Lanka than is the case for otherwise comparable countries. The available evidence, therefore, is consistent with tax policy uncertainty being sufficiently problematic for firms that their avoidance behavior is observable.

Tax policy uncertainty is especially costly for potentially larger informal firms, which are typically the drivers of economic transformation and productivity growth. The results of De Mel, McKenzie and Woodruff (2013) suggest that for the vast majority of the (small) firms they study, informality does not seem to impose costs in terms of foregone profits[34]. For larger, foreign-owned firms, however, informality would be a far less viable option. Indeed, the Enterprise Survey data strongly suggests that this is the case: While domestic firms in Sri Lanka operate informally before formalizing for longer than their counterparts in most comparator countries (which is more support for the notion that informality rates are high), foreign-owned firms there report never having operated informally.[35] This is not the case in several of Sri Lanka's comparator countries.

### 4.4 Camels and Hippos

If foreign firms in Sri Lanka are not in a position to respond to tax policy uncertainty in the way that domestic firms do, might they simply avoid investing in Sri Lanka? This would of course be consistent with what we regard as one of Sri Lanka's key economic problems, which is the relatively low amount of FDI that the country currently attracts. The evidence here is consistent with Sri Lankan firm composition being disproportionately domestically owned due in part to the desire of foreign firms to avoid tax policy uncertainty. In addition, domestic formal firms are relatively scarce, as stated above.

Stakeholder consultations, surveys, developments that were reported in the news, and additional empirical evidence described above lead us to conclude that tax policy uncertainty is currently a binding constraint to growth in Sri Lanka. The IMF's engagement with Sri Lanka has seemed to help mitigate the worst of the uncertainty, and given how long that involvement is scheduled to last, it is not clear how long tax policy uncertainty will remain an important problem in Sri Lanka.[36] What does seem clear is that this recent bout of tax policy uncertainty might accurately be characterized as one of several manifestations of a more general phenomenon, whereby firms are surprised by drastic policy changes that have serious impacts on the way they do business.

## 5. Transportation

Modern economies require developed transportation and logistics networks and capabilities. Being a small island, Sri Lanka is mostly dependent on roads for the domestic transport of goods and people, while international transactions rely on air and seaports (principally in Colombo). Rail and air are also available for domestic transportation but are less utilized, perhaps due in part to the modest economies of scale that Sri Lanka's limited size allows.

We interpret the evidence presented below as indicating that transportation is highly likely to present a binding constraint to growth in the short to medium run. Transportation problems in Sri Lanka's Western

[34] More specifically, De Mel, McKenzie and Woodruff (2013) find that while formalization does increase average firm profits, the treatment and control firm profits, "distributions are extremely similar to one another right up until they very top tail, where they diverge."
[35] See Appendix Figure 10.
[36] At the time of writing, Sri Lanka and the IMF were negotiating over the third of seven planned-for tranches of funds.

Province have disproportionate economic consequences, given the sheer amount of economic activity which takes place in and around Colombo, plus the capital's importance as the key logistical and shipping link between firms in other parts of the island and the rest of the world. The fact that congestion in the Western Province is set to worsen, then, is therefore substantially problematic. The evidence (on road speeds both inside and outside Colombo, the nature of inter-provincial links and, to a lesser extent, the impacts of the Southern Expressway) is also consistent with the possibility that transportation problems have already helped to hobble the geographic distribution of economic activity towards the area around the capital at the expense of other parts of the island.

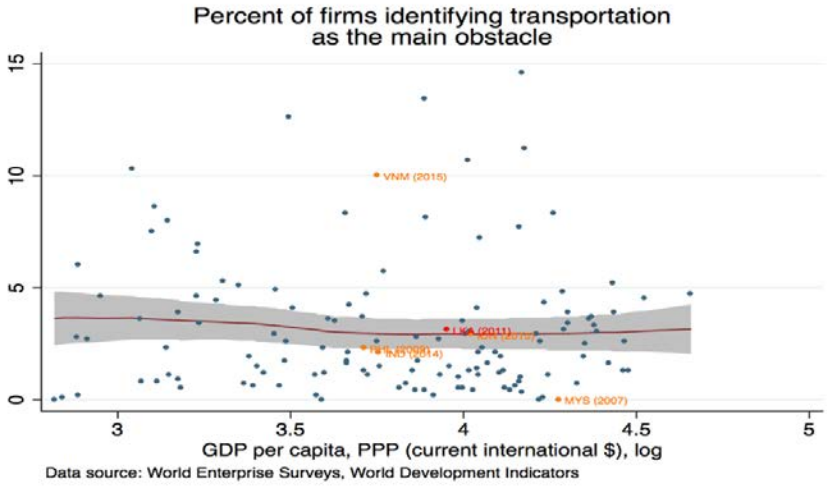
## 5.1 Benchmarking Quantities

Sri Lanka's transport network is on part with that in comparator countries, with the exceptions of trade-related and rail infrastructure. The road network is particularly dense, and substantial rebuilding of the national road network took place in the north and east of the country following the conclusion of the long-running civil war. Recent data from the Ministry of Ports and Highways suggests that 90% of national roads are of either "good" or "satisfactory" quality, but data for regional road quality was not available. The overall measure of the Logistics Performance Index has Sri Lanka performing as expected given its income level.[37]

The quality of Sri Lanka's trade and transport-related infrastructure is less encouraging. Sri Lanka underperforms other countries of similar income level.[38] The quantities of passengers and freight transported by air are also mostly commensurate with Sri Lanka's income level, while the quantity of goods that travel by rail are low relative to GDP.[39][40] Arguably, Sri Lanka's high road density may have contributed to, or compensated for, the limited use of its rail network.[41] Finally, consistent with the evidence described here, few Sri Lankan firms report that transportation represents the "main" obstacle (given Sri Lanka's income level, Figure 5.1).

[37] See Appendix Figure 11.
[38] See Appendix Figure 12.
[39] See Appendix Figures 13 and 14.
[40] See Appendix Figure 15.
[41] It should also be noted that across Sri Lanka's provinces, road density mostly tracks population density closely. See Appendix Figure 16. An alternative interpretation of roads' high modal share relative to rail in Sri Lanka could be that outdated and limited rail infrastructure makes the already dense road network more congested.

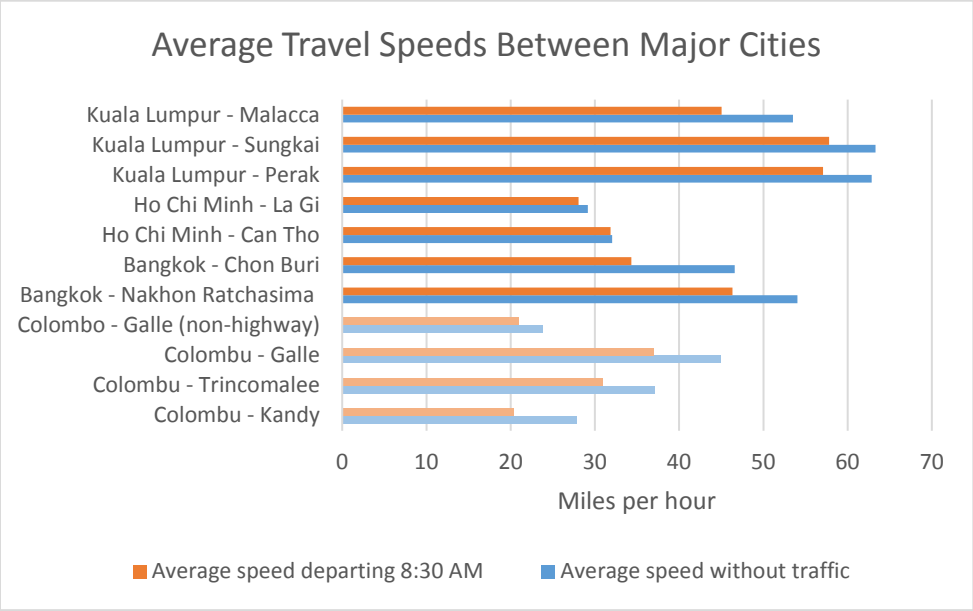
**Figure 5.1 Percentage of Firms Identifying Transportation as the Main Obstacle**




## 5.2 Price

The speeds at which vehicles travel on Sri Lankan roads constitutes an indicator of the transport costs that firms face, especially in transportation-intensive sectors. Using data from Google Maps, travel speeds on major routes are shown to be lower in Sri Lanka than in comparator countries, averaging just over 20 mph on two major routes (Figure 5.2).[42]

**Figure 5.2 Travel Speeds Between Major Cities**




Source: Google Maps

[42] Speeds are shown for scenarios assuming traffic is present for an 8:30 AM departure and where it is assumed not to be present for a midnight departure.

A more detailed look at the trip from Trincomalee to the Port of Colombo—which is reportedly an important route from an export standpoint—reveals how and why speeds are low (Figure 5.3).[43] National roads in Sri Lanka are subject to urban traffic jams, as they pass through city centers and towns in ways a proper expressway never would. On the route in question, the urban center of Kurunegala has to be negotiated rather than bypassed.

**Figure 5.3 Travel Speeds Between Trincomalee and Colombo**

| Start location | Start time | Finish location | Finish time | Travel time (hours) | Distance travelled (miles) | Travel speed (miles/hour) |
|---|---|---|---|---|---|---|
| Trincomalee | 9:00 | Thambalagamuwa | 9:22 | 0.37 | 11.6 | 31.5 |
| Thambalagamuwa | 9:22 | Kantale | 9:44 | 0.37 | 12.2 | 33.4 |
| Kantale | 9:44 | Alut Oya | 10:04 | 0.33 | 13.3 | 39.9 |
| Alut Oya | 10:04 | Karandagaswewa | 10:26 | 0.37 | 15.1 | 41.2 |
| Karandagaswewa | 10:26 | Inamaluwa | 10:44 | 0.30 | 10.9 | 36.5 |
| Inamaluwa | 10:44 | Galewela | 11:10 | 0.43 | 13.7 | 31.5 |
| Galewela | 11:10 | Gokarella | 11:50 | 0.67 | 14.7 | 22.1 |
| Gokarella | 11:50 | Kurunegala | 12:30 | 0.67 | 13.4 | 20.1 |
| Kurunegala | 12:30 | Dambadeniya | 1:10 | 0.67 | 17.6 | 26.5 |
| Dambadeniya | 1:10 | Kudagammana | 1:40 | 0.47 | 12.1 | 25.8 |
| Kudagammana | 1:40 | Katunayake | 2:20 | 0.67 | 14.7 | 22.0 |
| Katunayake | 2:20 | Colombo-Katunayake Expressway (near Kandana) | 2:36 | 0.40 | 11.2 | 28.0 |
| Colombo-Katunayake Expressway (near Kandana) | 2:36 | Port of Colombo | 3:16 | 0.58 | 16.6 | 28.4 |

Source: Google Maps

The problems of urban and interregional travel speeds are closely related. This connection is particularly strong for Colombo, where domestic market and international export opportunities make it the terminal point for products from other regions. Colombo is the island's economic engine, and is responsible for upwards of 40% of national GDP. Logistics Performance Index data on the cost to import and export goods from Sri Lanka (Figure 5.4) also makes clear that, even if absolute costs of transporting goods or people are not very high in Sri Lanka given its small size, costs per kilometer could be much lower.

**Figure 5.4 Logistics Performance Index Domestic Cost to Import/Export**

| | Sri Lanka | Vietnam | Income: Upper middle income |
|---|---|---|---|
| Export time and cost / Port or airport supply chain | | | |
| Distance (kilometers) | 53km | 36km | 236km |
| Lead time (days) | 2 days | 1 days | 2.4 days |
| Cost (US$) | 579US$ | 237US$ | 1285US$ |
| Export time and cost / Land supply chain | | | |
| Distance (kilometers) | 61km | 43km | 513km |
| Lead time (days) | 1 days | 1 days | 2.9 days |
| Cost (US$) | 391US$ | 274US$ | 1607US$ |
| Import time and cost / Port or airport supply chain | | | |
| Distance (kilometers) | 64km | 31km | 318km |
| Lead time (days) | 2 days | 1 days | 3.2 days |
| Cost (US$) | 662US$ | 281US$ | 1384US$ |
| Import time and cost / Land supply chain | | | |
| Distance (kilometers) | 33km | 25km | 489km |
| Lead time (days) | 1 days | 1 days | 2.8 days |
| Cost (US$) | 433US$ | 354US$ | 1488US$ |
| Shipments meeting quality criteria (%) | 76.16% | 75.97% | 79.72% |
| Number of agencies - exports | 4 | 4 | 3.2 |
| Number of agencies - imports | 4 | 4 | 3.5 |
| Number of documents - exports | 3 | 3 | 3.7 |
| Number of documents - imports | 4 | 5 | 3.9 |
| Clearance time without physical inspection (days) | 1 days | 1 days | 2 days |
| Clearance time with physical inspection (days) | 3 days | 2 days | 3.6 days |
| Physical inspection (%) | 48.67% | 53.5% | 24.18% |
| Multiple inspection (%) | 4.51% | 6.79% | 10.09% |

The cost of transportation-related restrictions on the movement of goods and people in Sri Lanka is estimated to be quite high. By one rigorous estimate, the sum of costs from congestion and problems with public transport (avoidable delays, vehicle breakdown and passenger waiting times) in the Western

[43] See Appendix Figure 17.

Province alone came to more than US$400 million in 2006, or around 5% of provincial GDP.[44] It is also estimated, and confirmed in MCC stakeholder consultations, that at least 30% of agricultural produce is destroyed between the farm gate and the final market destination. A contributing factor to the high spoilage may be slow travel speeds due to poor rural and national road quality, albeit data on this is limited. Post-harvest losses also arise from poor use of packaging and inappropriate handling.

Importantly, problems associated with congestion are expected to worsen with a high degree of certainty. Daily average road speeds in Sri Lanka (Colombo District) are estimated to decrease from 26 km/hour to 19 km/hour (22 km/hour to 14 km/hour) between 2011 and 2031. Peak hour speeds are forecast to be as low as 11 km/hour and 9 km/hour in Sri Lanka and Colombo District, respectively, by 2031.[45] Relative to the 2012 Colombo peak hour speed of around 14 km/hour, this represents a substantial decline.

The problem of congestion in the capital likely has substantial impacts on other parts of the country. To the extent that firms in other parts of the island depend on logistics services (based largely in and around Colombo), access to the Port of Colombo or the capitol's international airport for export opportunities, or access to the portion of the domestic market located in and around Colombo, then congestion in the greater Colombo area has impacts well beyond the capital.

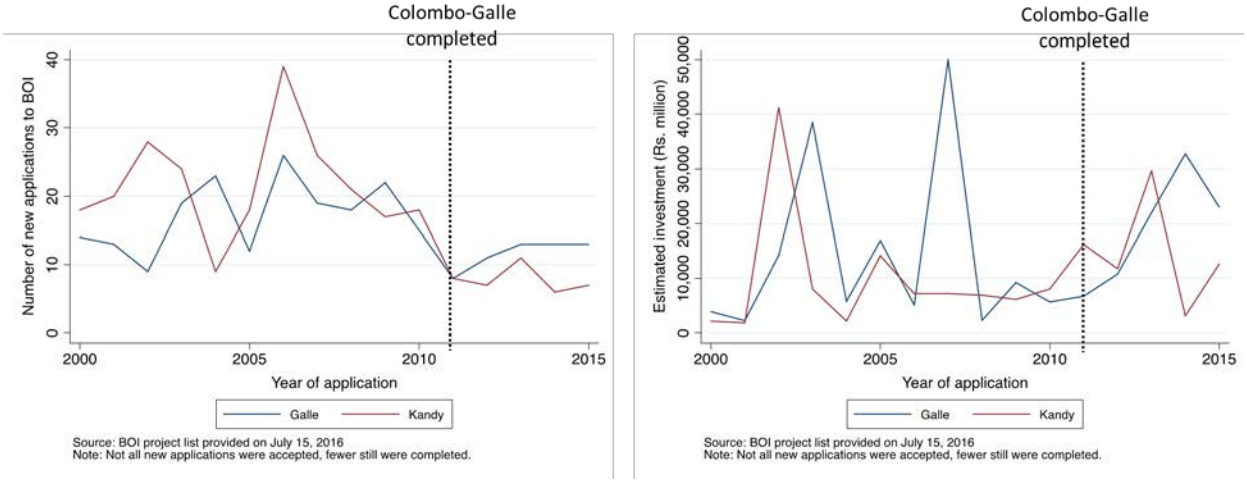
The Western Province is also Sri Lanka's preeminent destination for economic migrants, and one of the greatest opportunities for people from remote areas to escape poverty. More specifically, according to the Department of Census and Statistics, more than 37% of Sri Lanka's cross-district internal migrants have settled in just the three Western Province districts, and roughly a third of these migrants reported moving because of employment opportunities (as opposed to less than 13% of migrants to other, non-Western Province districts).[46] For multiple reasons, then, solving transportation problems in and around Colombo is expected to have impacts in other regions.

## 5.3 Changes vs. Changes

The available evidence weakly suggests that investment has increased in places that have benefited from decreases in transportation-related constraints in recent years. In 2011, Sri Lanka's first and only proper expressway was completed, linking Colombo to the Southern Province. If anything, this seems to have led to more investment in Galle District (which is close to the new Southern Expressway) relative to Kandy District (which seems roughly comparable given historical trends). In particular, as data displayed in Figure 5.5 below show, the number of applications the BOI received regarding investments in Galle was higher than those for Kandy after the Southern Expressway was in place.[47] Also, it appears that the aggregate value of investments made (through the BOI) was higher in Galle post-expressway.

[44] See Kumarage (2010). We assume an exchange rate of LKR 153.52/US$1. In November, 2015, the Finance Minister suggested that the limited dependability of public transportation could help explain Sri Lanka's low female labor force participation rate.
[45] These decreases assume a "business as usual" scenario. See World Bank (2012).
[46] Seehttp://www.statistics.gov.lk/PopHouSat/CPH2011/index.php?fileName=FinalReportE&gp=Activities&tpl=3.
[47] Not all new applications were accepted by the BOI, however, and fewer still were actually completed, so this is an imperfect indicator.

**Figure 5.5 Investment in Galle and Kandy Before and After Completion of the Southern Expressway**




An anecdote illustrates how the completion of the Southern Expressway is also reportedly partly responsible for decreasing the vacancy rate in the Koggala Enterprise Processing Zone (in the far south of the country) from around 50% to around 10%. More specifically, Kumarage (2010) argues that that initially high vacancy rate was driven in part by Koggala's continued dependence on goods shipped to and from the Port of Colombo, and the relatively long time it took to get there.

On the other hand, data from the Annual Survey of Industries fail to provide support for the possibility that any sort of structural transformation took place in the Southern Province (relative to the Central Province) following completion of the Southern Expressway. Industry-wide growth rates in Galle and surrounding areas between 2010 and 2012 (relative to the 2008-2010 period) appear to have been lower than the rate in Kandy.[48] Finally, there is also data (from Sri Lanka's Bureau of Foreign Employment) to suggest that emigration from the Southern Province was low post-expressway opening as compared to emigration from the Central Province, which is consistent with economic optimism in the former Province[49]. We therefore conclude that, if anything, relieving the transportation constraint south of Colombo seems to have slightly increased investment there.

## 5.4 Bypassing the Constraint

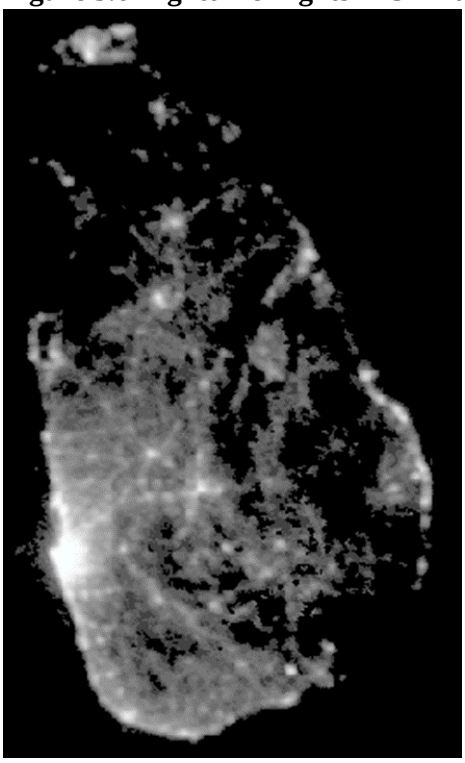
What might individuals or firms be doing to try and bypass constraints associated with costly transportation? Due diligence work revealed that firms reportedly ship goods to the Port of Colombo at night in an attempt to avoid congestion (Dalberg, 2016). It is unclear what the private costs are for the firms to do so. One way in which firms might be attempting to bypass constraints surrounding slow interregional travel speeds in particular is by locating in or around Colombo. In particular, distance to Colombo is found to be an important predictor of an Enterprise Processing Zone's vacancy rate (see section 3.4). This would be consistent with firms seeking to avoid costly trips between their own facilities in outlying areas and the logistics, import and export opportunities that Colombo provides. Finally, the increase in the numbers of three-wheelers (from 49% of all vehicles in the Western Province in 2002 to 59% in 2009, for example), could be due in part to the maneuverability advantage they possess in the face of congestion.

[48] See Appendix Figure 18.
[49] See Appendix Figure 19.

## 5.5 Camels and Hippos

Are transportation constraints affecting the composition of firms that are able to thrive in Sri Lanka? In the absence of data on both firms' transportation costs and profits (which would allow us to address this question most directly), we instead consider the geographic distribution of economic activity in the country. We argue this is useful—even if the conclusion we draw is ultimately merely suggestive—given that logistics centers, the Port of Colombo and Sri Lanka's main international airport are located in or near the Western Province. Given this, if transportation problems increase the cost of private sector operations, we would expect economic activity to disproportionately take place in the Western Province. According to nighttime lights data, which are used as a proxy measure of economic activity, this is arguably what we observe (see Figure 5.6 below).[50] Although this image suggests that the area around Sri Lanka's capital is especially economically important, however, a more formal comparison with similar images from comparator countries would be required to reach stronger conclusions.

**Figure 5.6 Nighttime Lights in Sri Lanka**



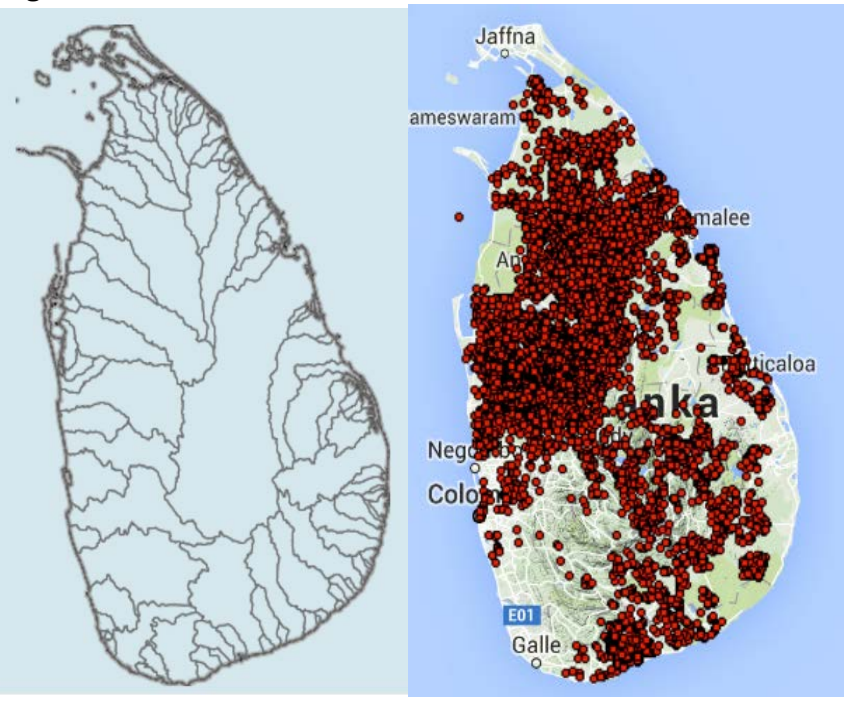
Source: National Oceanic and Atmospheric Administration

# 6. Water

Sri Lanka is a water abundant country, as shown in data from IWMI and CGIAR (Figure 6.1), but water supply and wastewater treatment are potentially constrained in particular locations. Our constraints analysis identifies four types of evidence which show mixed evidence for water as a constraint in Sri Lanka.

[50] These data come from the National Oceanic and Atmospheric Administration, and are available at https://ngdc.noaa.gov/eog/dmsp/downloadV4composites.html.

**Figure 6.1 River Basins and Locations of Small Tanks in Sri Lanka**




Source: IWMI, CGIAR

## 6.1 Benchmarking Quantities

Access to improved water and sanitation is high for households, but wastewater treatment access of the type needed by firms is low. Figure 6.2 shows that WDI data indicate that the percent of population in Sri Lanka with access to an improved water source is above that for countries with similar GDP per capita. Similarly, Figure 6.3 shows that the percent of population with access to improved sanitation facilities is well above that for countries with similar GDP per capita. However, information from the IBNET Water Supply and Sanitation Blue Book for 2013-2014 indicates that there are gaps. For example, only 3 percent of households were connected to a wastewater network in 2009, the most recent year for which data are available. Water service coverage and the operational efficiency of water delivery are fair but leave room for improvement: while water coverage was 80 percent, Sri Lanka does not have 24-hour coverage and the rate of non-revenue water is somewhat high. Each of the water and sanitation indicators are comparable to that of Indonesia, the Philippines and Vietnam, but worse than those for higher income countries such as China.

**Figure 6.2 Percent of Population with Access to an Improved Water Source**

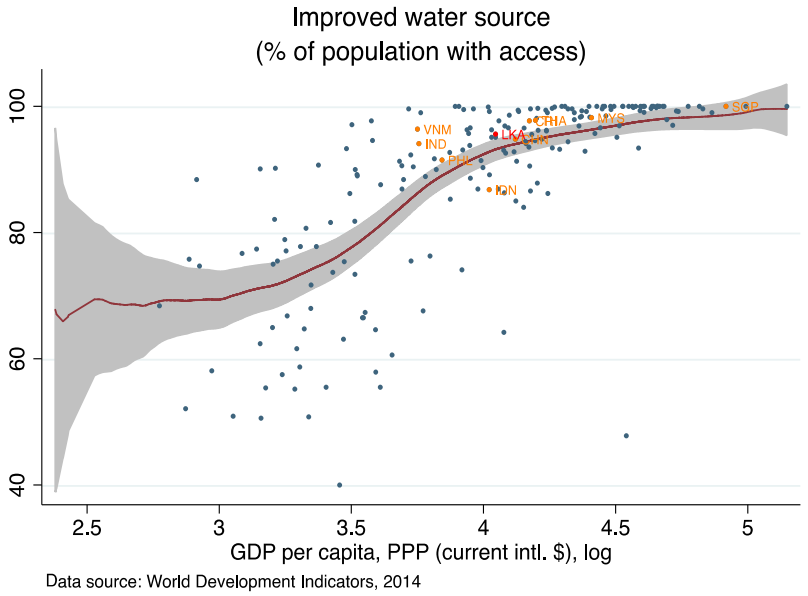
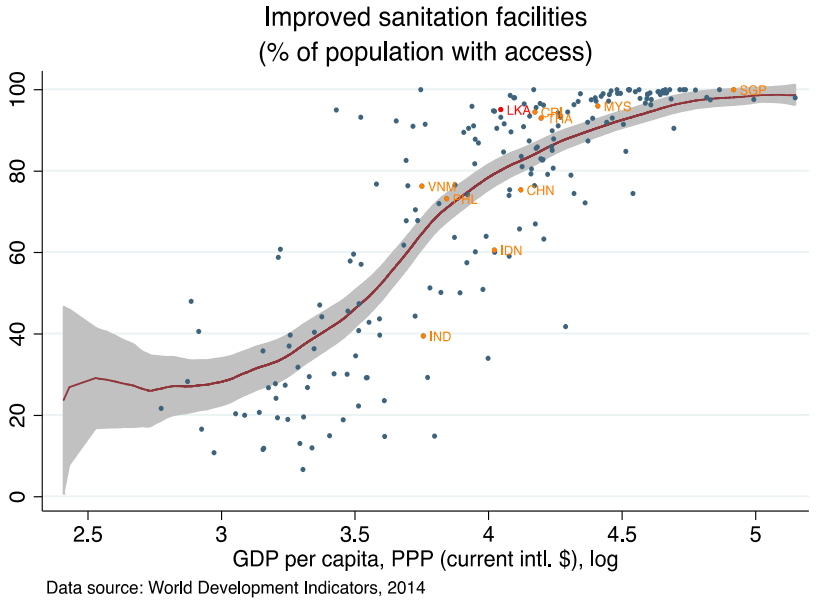



**Figure 6.3 Percent of Population with Access to Improved Sanitation Facilities**




## 6.2 Price

Price data indicate that Sri Lanka's water tariffs, especially for wastewater, are somewhat high – at upper-middle income levels – and much higher than those in India (see Table 6.1 using data from the 2015 World Tariff Survey from Global Water Intelligence for comparators). According to the National Water Supply and Drainage Board and the Board of Investment, Sri Lanka's regulated tariffs on water and sewerage are as follows (calculated using an exchange rate of LKR 145 = $1):

- Water tariff ($/m$^3$):
    - Commercial: $0.50
    - Industrial: $0.39
    - BOI Zones: $0.50
- Sewerage tariff ($/m$^3$):
    - Commercial: $0.27
    - Industrial: $0.44
    - BOI Zones: $0.08

In addition, WDI data indicate that industrial water withdrawals appear to have plateaued at a level lower than that would have been expected based on Sri Lanka's GDP per capita (Appendix Figure 20) and certain industrial zones are not able to meet the water demands of their firms (Appendix Figure 21), according to data from the BOI.

There is also evidence of unmet investor demand for wastewater treatment services. Investor-side demand exists in high-polluting industries. BOI project-level data contains at least 15 different Section 17 applications under the category "Other industrial & chemical products", including detergents, soaps, bio-fertilizers and cosmetic products, which were rejected over the past 15 years.[51] In total, estimated employment for these projects at the time of application was over 1,400 new jobs. Also, entry and growth in these industries may be constrained by the lack of water treatment infrastructure. The Director of Zones at BOI noted that high polluting industries must locate in specialized zones to manage the waste but that most zones are not equipped to handle major wastewater treatment. He reported that there is currently investment demand from chemical industries and rubber product manufactures that cannot be met. He noted that the problem is not merely a shortage of wastewater facilities but limitations of the natural capacity of many parts of the country to handle effluent (ex: effluent from Biyagama EPZ enters the water supply for Colombo). A firm in Biyagama EPZ independently noted the same shortage of capacity in the majority of zones.

[51] Section 17 is a classification at the BOI for exporting companies that provides numerous administrative supports and exemptions of certain fees. Historically, the exact supports received by each Section 17 company have been highly discretionary and varied between companies. However, the BOI was stripped of its ability to award discretionary tax holidays and rate reductions in 2016.

**Table 6.1 Average Tariffs and Water Usage in Selected Major Countries**

Average tariffs ($/m$^3$) and water usage in selected major countries

| Country | Combined tariff | Water tariff | Wastewater tariff | Change % | Domestic use l/head/day | No. of cities |
|---|---|---|---|---|---|---|
| Denmark | $7.15 | $3.48 | $3.67 | 2.5% | 131 | 2 |
| Australia | $5.64 | $2.82 | $2.82 | 1.7% | 340 | 5 |
| Germany | $5.56 | $2.63 | $2.93 | 1.2% | 127 | 10 |
| United Kingdom | $4.37 | $2.12 | $2.25 | -2.1% | 150 | 8 |
| France | $3.73 | $1.92 | $1.81 | 0.9% | 150 | 7 |
| Canada | $3.32 | $1.92 | $1.40 | 5.9% | 274 | 5 |
| United States | $3.70 | $1.53 | $2.17 | 4.7% | 340 | 51 |
| Poland | $3.11 | $1.29 | $1.82 | 1.8% | 125 | 6 |
| Spain | $2.11 | $1.49 | $0.62 | 1.2% | 265 | 6 |
| Brazil | $2.01 | $1.05 | $0.96 | 13.9% | 174 | 7 |
| Portugal | $1.88 | $1.19 | $0.69 | -6.8% | 161 | 3 |
| Japan | $1.79 | $1.01 | $0.77 | 0.0% | 373 | 13 |
| Italy | $1.71 | $0.85 | $0.86 | 7.8% | 190 | 6 |
| Turkey | $1.49 | $1.08 | $0.41 | 8.4% | 217 | 8 |
| Russia | $0.72 | $0.44 | $0.29 | 8.3% | 248 | 13 |
| South Korea | $0.92 | $0.63 | $0.28 | 3.3% | 183 | 7 |
| Mexico | $0.85 | $0.72 | $0.13 | 7.5% | 183 | 10 |
| China | $0.56 | $0.41 | $0.15 | 6.1% | 95 | 25 |
| India | $0.14 | $0.12 | $0.02 | 5.4% | 139 | 17 |

Source: 2015 World Tariff Survey, Global Water Intelligence

## 6.3 Bypassing the Constraint

We also find suggestive evidence that firms seek ways around the lack of wastewater treatment supply. Sanitation-intensive firms report that there are few options to bypass the wastewater constraint, but one option is to locate in a limited number of industrial zones that have the capacity to handle high volumes of effluent. This is in an environment in which data from the Board of Investment confirm that a significant number of applications to manufacture industrial and chemical products in Sri Lanka have been rejected over the last 15 years.

## 6.4 Camels and Hippos

The evidence is mixed on whether firms intensive in water are able to flourish in Sri Lanka. The country lacks exports in pharmaceuticals, chemicals, paper, metals, and other heavy industry. On the other hand, it does have important exports of textiles and rubber products.

Overall, we find evidence that a lack of water-related service is an issue, but no evidence that it is a binding constraint to growth in Sri Lanka. While water is a plentiful resource, access to wastewater treatment for industry and manufacturing appears limited, and prices are on the high side relative to what could be expected at its current level of development. Firms attempt to bypass the constraint by locating in EPZs with treatment facilities, but it is unclear that this is costly for them. Sri Lanka has some industries intensive in water and wastewater treatment. Therefore, we do not conclude that a lack of water and sanitation services are binding constraints to growth in Sri Lanka.

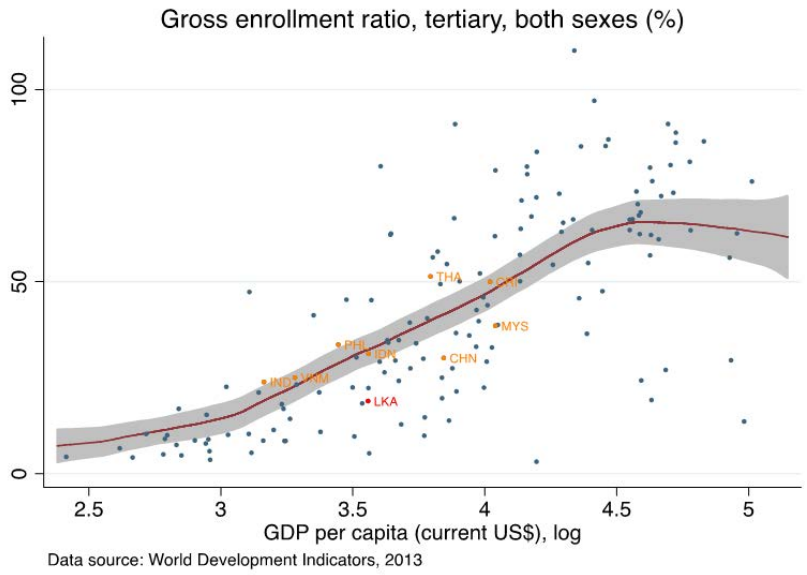
# 7. Education and Skills

An educated workforce is a crucial input for any sophisticated economy, and important for attracting foreign direct investment. Workers in Sri Lanka seem to be sufficiently educated such that education does not present a binding constraint to growth. High primary and secondary enrollment rates in Sri Lanka are reflected in the country's high literacy rate of 92.6 percent.[52] For context, Sri Lankan educational institutions are managed by 3 ministries at the central government level, as well as by Provincial Councils. At the tertiary level, there are no private universities, and access to tertiary education is therefore constrained by the limited capacity of Sri Lanka's public universities.

## 7.1 Benchmarking Quantities

Primary and secondary education is practically universal in the country. Tertiary completion and enrollment are each lower than in several of Sri Lanka's comparator countries, however (Figure 7.1).[53]

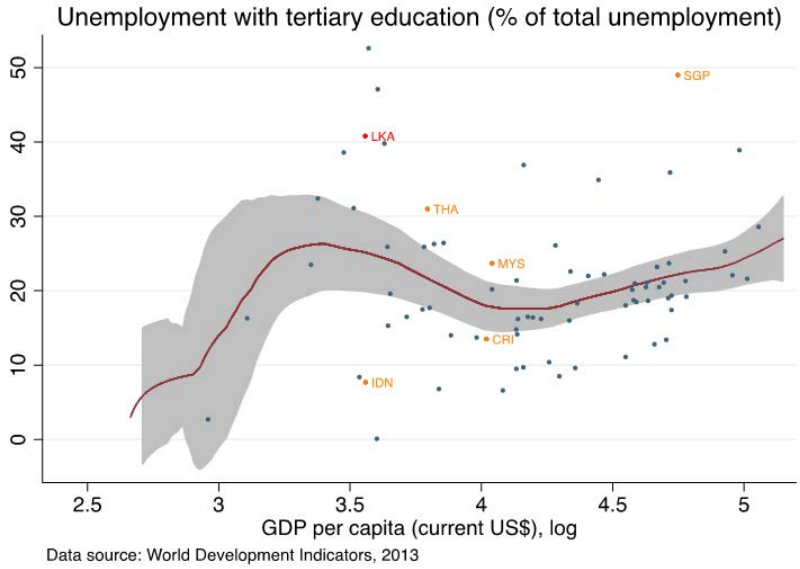
**Figure 7.1 Tertiary Gross Enrollment Ratio**




But tertiary degree holders are still unemployed at a relatively high rate given Sri Lanka's GDP per capita (Figure 7.2). This is not consistent with the demand for tertiary skills exceeding supply as would be the case if education were a binding constraint to growth.

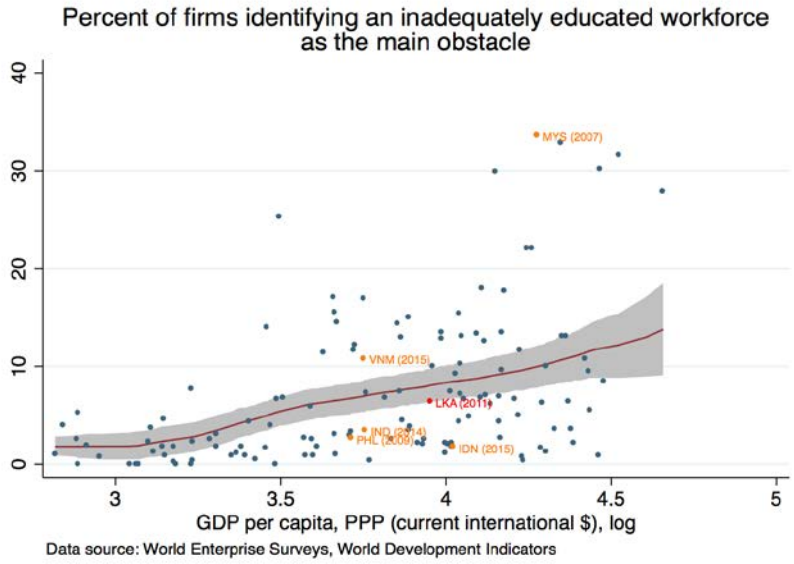
[52] See Central Intelligence Agency (2017).
[53] See Appendix Figure 22.

**Figure 7.2 Unemployment among Tertiary Degree Holders**



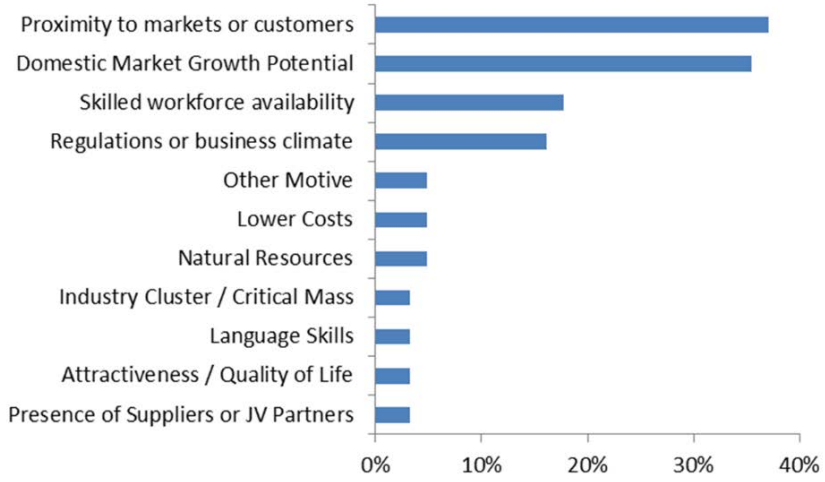

Moreover, according to Enterprise Survey data, firms in Sri Lanka are less likely to report that the education level of the workforce is a serious obstacle than the country's GDP would predict (Figure 7.3).

**Figure 7.3 Percent of Firms Citing Workforce Education as a Constraint**




And the skill level of Sri Lanka's workforce is one of the more commonly provided reasons that foreign firms were interested in investing in Sri Lanka according to a Dun and Bradstreet survey (Figure 7.4).

**Figure 7.4 Percentages of Firms Reporting Reasons That Foreign Firms Were Interested in Investing in Sri Lanka**




Source: Dun and Bradstreet

## 7.2 "Price"

Multiple analyses of the returns to human capital suggest that skilled labor has not been in particularly high demand in recent years. More specifically, while according to Montenegro and Patrinos (2014) returns to secondary education in Sri Lanka are comparable to returns in comparator countries, tertiary returns are low and declining (again relative to comparators).[54] This same decline in tertiary returns is also evident in Household Income and Expenditure Survey data collected in 2009 and 2012, and in Labor Force Survey data collected between 2010 and 2014.[55] Moreover, this decline in the returns to education seems to be explained by an excess supply of skilled labor. According to Labor Force Survey data, about 916,000 net new graduates were added to the labor market between 2010 and 2014, while only about 725,000 net new jobs were added. The surplus of supply was present amongst new graduates with a Bachelor of Arts degree or higher, in particular, with about 20,000 new Bachelor's degree holders ending up as surplus.[56] These facts are not consistent with a skills shortage representing an economy-wide constraint to growth.

We also explored whether or not there may be a shortage of specific types of skilled labor. We found that there does not seem to be a surplus of university graduates with engineering, IT and medical training; employment in each of these categories was close to full for the 2012-2014 period. Results from the World Bank's 2012 STEP Survey also suggests that specific skills are in short supply relative to demand. For example, employers report skills constraints—e.g., 'finding workers with previous experience', 'TVET of workers'—as having larger impacts on firm success than either labor regulations or costs. The skills most subject to unmet demand include the ability to communicate in English, specific technical skills, and soft skills, whereas cognitive skills were in plentiful supply (and the 'general education of workers' was highlighted as a constraint only very infrequently). It is also the case that foreign workers in Sri Lanka are disproportionately highly skilled with respect to managerial and technical capabilities, but on the other hand, Sri Lankans working abroad with similar occupational profiles greatly outnumber the

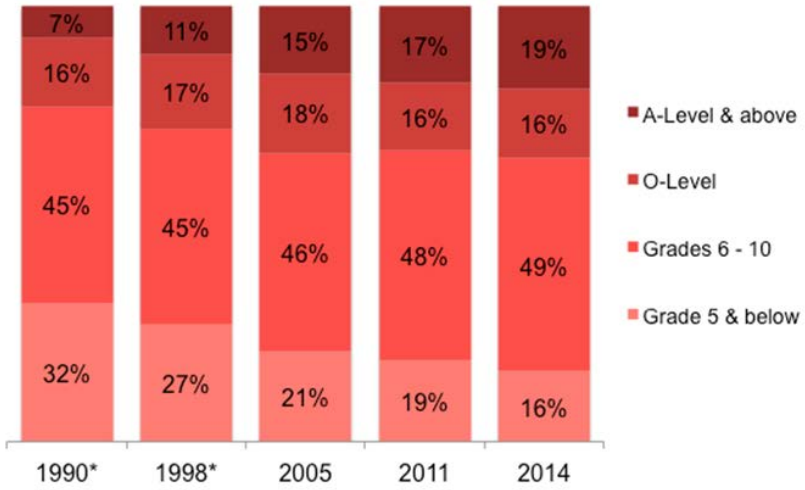
[54] See Appendix Figure 23.
[55] See Appendix Figure 24 and Appendix Figure 25, respectively.
[56] See Appendix Figure 26.

skilled foreigners working in the country. The evidence therefore suggests that when it comes to particular skills, there is little slack in supply relative to demand, but that this particular labor market tightness does not go so far as to indicate that human capital overall represents a binding constraint to investment. In principle, a targeted expansion of tertiary education is likely needed in the medium term to supply reliably in the long term (i.e., when demand increases) adequate numbers of appropriately trained STEM graduates.

## 7.3 Camels and Hippos

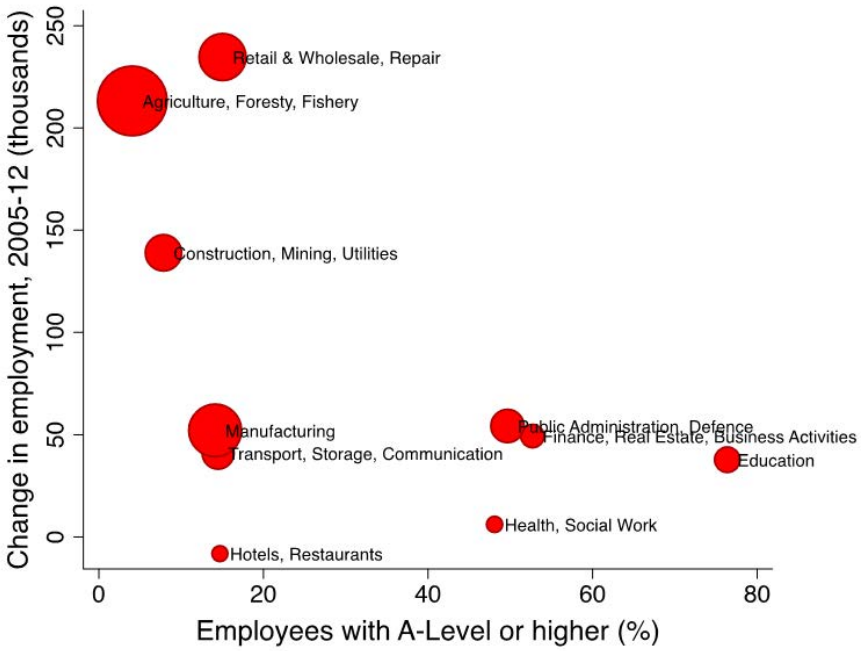
Has the supply of skilled graduates affected the composition of firms which find it profitable to operate in Sri Lanka? It does not seem so: The combination of Labor Force Survey and Household Income and Expenditure Survey data show that, even as the proportion of skilled workers in the workforce has slightly risen in recent decades (Figure 7.4), job creation between 2005 and 2009 was fairly low-skill-intensive (Figure 7.5).

**Figure 7.4 Educational Breakdown of the Workforce Over Time**




Source: Labor Force Surveys

**Figure 7.5 Industry Change in Employment Over Time as a Function of Proportion of Skilled Employees**




Source: Household Income and Expenditure Surveys
Note: Circle size is proportional to 2012 employment share.

For the economy as a whole, the supply of human capital does not seem to be low relative to demand for it. This is not necessarily the case for specific occupations, and mostly under possible future scenarios at that. In particular, there is evidence to suggest that in particular fields at the high end of the skills distribution, greater investment in related human capital will be important and useful if and when demand for those skills increases beyond previous levels.

# 8. Electricity

The supply of electricity is regarded as a key input into more modern forms of economic production. It is particularly relevant for the kinds of FDI-intensive manufacturing and service provision that we argue Sri Lanka needs to attract more of to achieve sustained economic growth. We study whether or not the supply of electricity in Sri Lanka has adequately allowed the economy to grow, and given the importance of advance planning in the sector, we briefly consider the future outlook given current supply and demand. For context, the Ceylon Electricity Board controls all major functions associated with the generation, transmission, distribution and retailing of electricity in Sri Lanka. Thermal sources (coal and oil) represent around 54% of installed generation capacity, while hydropower accounts for about 42% and other renewables (wind and solar) the remaining 4%.

## 8.1 Benchmarking Quantities

The quantity of electricity consumed in Sri Lanka does not signal that its supply is constraining the island's economy. In particular, World Development Indicator (WDI) data show that power consumption per capita relative to GDP per capita is in line with comparators.[57] Similarly, WDI data shows that Sri

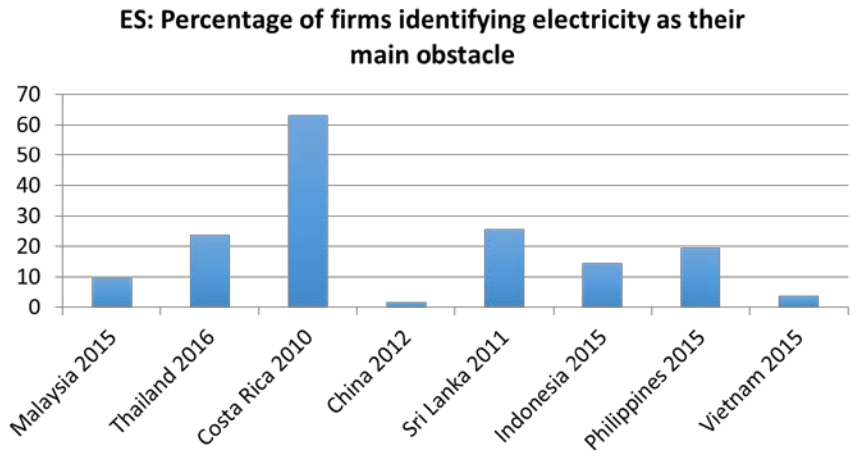
[57] See Appendix Figure 27.

Lanka's transmission and distribution losses are on the order of 10-12% of generated output, which is quite close to loss levels in several comparator countries.[58] Neither of these suggests that the quantity supplied, however, is so low that we would worry about a negative impact on the economy.

## 8.2 Price

Data which speak to the magnitude of the shadow price of electricity once again do not clearly show that electricity presents a higher order problem for the economy. We rely here (and below) on data from the World Bank's 2011 round of Enterprise Surveys (ES). These data possess the virtue of speaking directly to multiple aspects of the economics of electricity, but they were collected sufficiently far back in time that things might have changed in the meantime.[59] In any case, existing problems seem to be manageable: The proportion of respondents who identify electricity as the main obstacle their firm faces in Sri Lanka is mostly in line with comparator countries (Figure 8.1). The possibility that electricity does not carry with it a high shadow price is further supported by Sri Lanka's relatively high access rate given GDP (according to WDI data).[60]

**Figure 8.1 Percentage of Firms Identifying Electricity as Their Main Obstacle**



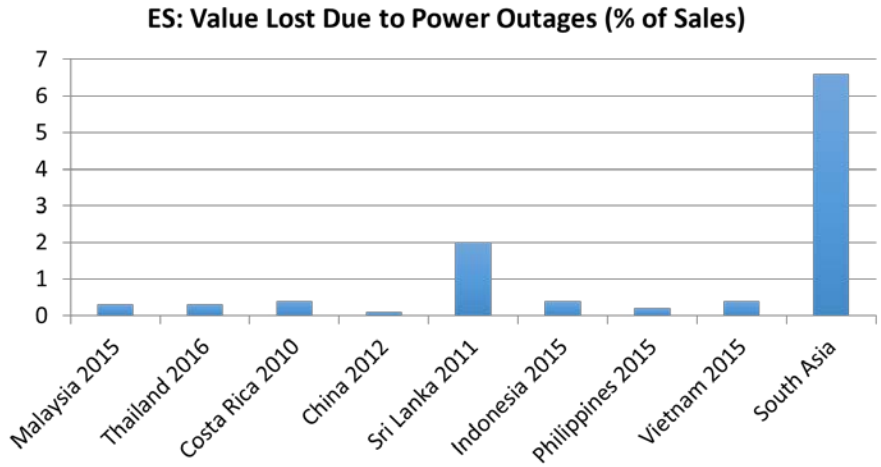

Source: Enterprise Surveys

Data on the tariffs electricity consumers face combined with data on power outages provide more evidence of the adequacy of supply relative to demand. Data from RMA Energy Consultants shows that, while there is substantial cross-subsidization built into the electricity tariff structure, prices are not especially high relative to comparator countries.[61] To the extent that tariffs do not fully reflect the cost of providing electricity, however, this tariff data needs to be considered jointly with outage data.[62] Here, the Enterprise Survey data on the frequency and duration of power outages also fail to indicate inadequate

[58] See Appendix Figure 28.
[59] For what it's worth, the consultations MCC held with stakeholders strongly suggest that the conclusions described here are currently relevant.
[60] See Appendix Figure 29. Also note that access is not uniformly high, however, and electrification rates are lowest in the north and to a lesser extent east of the country according to data from the Ceylon Electricity Board (Appendix Figure 30).
[61] See Appendix Figure 31.
[62] If the prices consumers pay are low but power outages are common, then the supply of electricity is likely inadequate.

supply.[63][64] Perhaps most tellingly, the same conclusion follows from examination of another variable measured in the Enterprise Surveys, the value of output lost to power outages (as a percentage of sales, Figure 8.2). Overall, then, there is little to indicate that the shadow price associated with electricity is high in Sri Lanka.

**Figure 8.2 Value Lost Due to Power Outages (% of Sales)**




Source: Enterprise Surveys

## 8.3 Changes vs. Changes

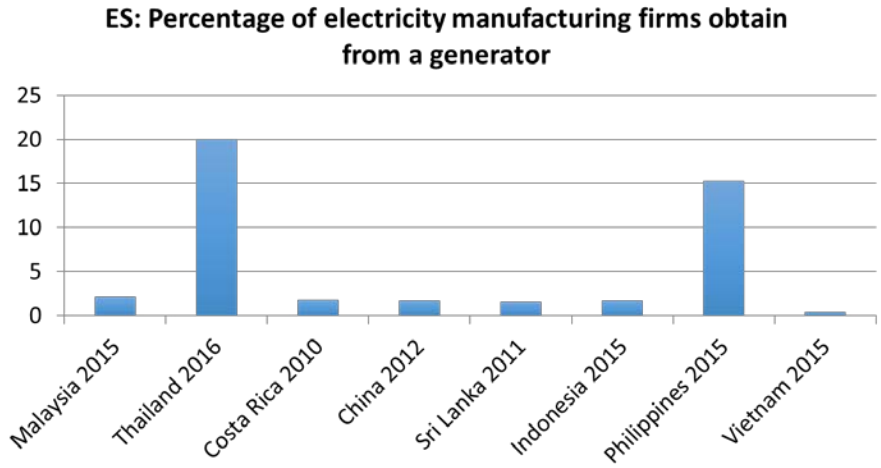
Time series data display what appears to be a relationship between load shedding and GDP growth.[65] Of course, this would not be particularly surprising; as stated, electricity is important to the Sri Lankan economy. More importantly, however, this last episode of load shedding ended in 2001 and the provision of electricity has not seemed to have been as problematic in recent years.

## 8.4 Bypassing the Constraint

Enterprise Survey data also allows us to consider how firms might be seeking to circumvent any electricity-related constraints. That data shows that the amount of electricity that firms obtain from generators is small in absolute terms as well as relative to firms in comparator countries (Figure 8.3). Generator access is high, however, which might be consistent with the aforementioned past episodes of load shedding.[66] The fact that this equipment is at many firms' disposal but has not been used suggests electricity problems are limited.

[63] See Appendix Figures 32 and 33.
[64] While consultations revealed some concern over outages related to grid vulnerability, data from a panel discussion at Sri Lanka's Electrical Engineering Society in 2015 suggest that outage frequency and durations are at manageable levels. In particular, according to the Ceylon Electricity Board, the average outage duration (SAIDI) in the North Western Provinces was 66 hours per customer per year and the average interruption frequency (SAIFI) was 124 times per customer per year in 2012. Quantities are similar for other provinces, and comparable according to the Lanka Electricity Company (LECO). Finally, we heard from a single printing firm owner that voltage inconsistency presented substantial problems for his firm's operations.
[65] See Appendix Figure 34. It should be noted that it was reported to us in stakeholder consultations that this relationship was plausibly causal.
[66] See Appendix Figure 35.

**Figure 8.3 Percentage of Electricity Manufacturing Firms Obtain From a Generator**

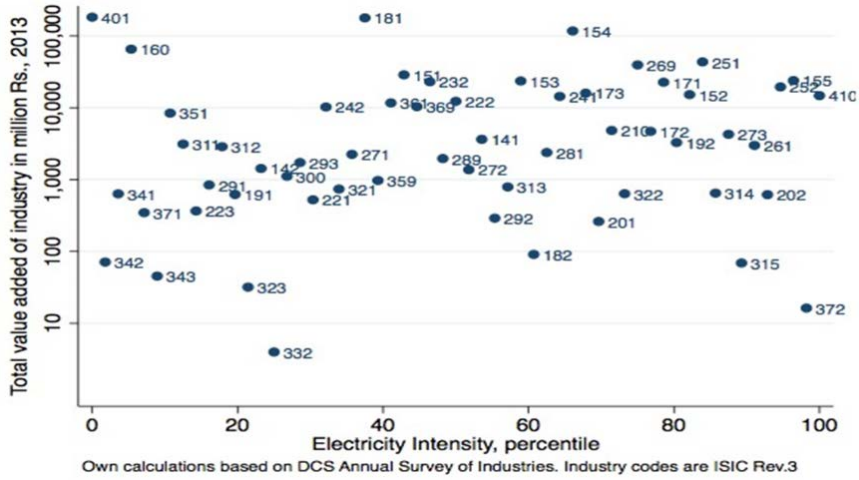



Source: Enterprise Surveys

## 8.5 Camels and Hippos

It is also important to consider whether the firms that exist and thrive in Sri Lanka are especially electricity-non-intensive, in which case the evidence that electricity is not a substantial economic problem in Sri Lanka would be missing an important part of the story. Data from the Department of Census and Statistics' Annual Survey of Industries, however, provide no support for the notion that energy-intensive sectors are less than sizable parts of the Sri Lankan economy (Figure 8.4). The same data fail to show that those kinds of firms have grown more slowly in recent years.[67] Electricity provision in Sri Lanka does not seem to be hobbling the composition of firms with respect to electricity use, and the case that electricity is not a major problem for the Sri Lankan economy is strengthened.

**Figure 8.4 Industry Value Added as a Function of Electricity Intensity (Electricity Expenditures/Value Added at the Industry Level)**




[67] See Appendix Figure 36.

Given the substantial lags with which electricity investments go from the planning to the operational stage, it is also important to consider the adequacy of plans for future electricity investment and provision. Here, there could be a cause for some concern, as Sri Lanka has not been moving forward with the advanced planning or construction of any of the major generation assets scheduled to into enter operation by 2020 (according to the Ceylon Electricity Board's Long Term Generation Expansion Plan 2015-2034).[68] It is not clear when widespread electricity supply shortages might begin, but if recent trends hold and peak demand for electricity continues to grow sufficiently slowly, then Sri Lanka would still have time to implement generation-increasing plans in time. In conclusion, while past episodes of load shedding seem to have demonstrated that the provision of electricity is important for Sri Lanka's economic well-being, there is very little in a substantial amount of data to suggest that electricity currently represents a binding constraint to growth.

# 9. Labor Regulations

Well-functioning labor markets are an important part of a modern economy. In particular, restrictive minimum wage and severance policies are believed to increase the costs of reallocating workers across jobs.[69] The World Bank's Systematic Country Diagnostic suggests that the severance-related restrictions that firms are required to make are especially costly in Sri Lanka, and we turn now to our evaluation of whether these or other labor regulations seem to represent a binding constraint to growth.[70]

## 9.1 Price

We start by considering the severity of Sri Lanka's labor market regulations relative to comparators. According to Doing Business indicator data, requirements for third party approval of employee dismissals are strict, and associated severance payments are costly. On the other hand, regulations such as those on pre-separation notification periods, probationary periods, and retraining are not strict (Figure 9.1).

[68] See Ceylon Electricity Board (2015). Generation plans which have since been scrapped included a large coal power plant at Sampur, which is consistent with the Sri Lankan government's stated intention to phase out coal powered plants in favor of cleaner gas and petroleum production and the expansion of renewable energy sources.
[69] See Besley and Burgess (2004).
[70] See World Bank (2015).

**Figure 9.1 Doing Business Indicators of Labor Regulations**

| | Redundancy rules | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Maximum length of probationary period (months)[d] | Dismissal due to redundancy allowed by law? | Third-party notification if one worker is dismissed? | Third-party approval if one worker is dismissed? | Third-party notification if nine workers are dismissed? | Third-party approval if nine workers are dismissed? | Retraining or reassignment?[e] | Priority rules for redundancies? | Priority rules for reemployment? |
| ***Sri Lanka*** | ***n.a.*** | ***Yes*** | ***Yes*** | ***Yes*** | ***Yes*** | ***Yes*** | ***No*** | ***Yes*** | ***No*** |
| **Bangladesh (Dhaka)** | 3.0 | Yes | Yes | No | Yes | No | No | Yes | Yes |
| **Bangladesh (Chittagong)** | 3.0 | Yes | Yes | No | Yes | No | No | Yes | Yes |
| **China (Shanghai)** | 6.0 | Yes | Yes | No | Yes | No | Yes | Yes | Yes |
| **China (Beijing)** | 6.0 | Yes | Yes | No | Yes | No | Yes | Yes | Yes |
| **Costa Rica** | 3.0 | Yes | No | No | No | No | No | No | No |
| **India (Mumbai)** | 3.0 | Yes | Yes | No | Yes | No | No | Yes | Yes |
| **India (Delhi)** | 3.0 | Yes | Yes | No | Yes | No | No | Yes | Yes |
| **Indonesia (Jakarta)** | 3.0 | Yes | Yes | Yes | Yes | Yes | Yes | No | No |
| **Indonesia (Surabaya)** | 3.0 | Yes | Yes | Yes | Yes | Yes | Yes | No | No |
| **Malaysia** | n.a. | Yes | No | No | Yes | No | No | No | No |
| **Philippines** | 6.0 | Yes | Yes | No | Yes | No | No | Yes | No |
| **Singapore** | 6.0 | Yes | No | No | No | No | No | No | No |
| **Thailand** | 4.0 | Yes | No | No | No | No | No | No | No |
| **Vietnam** | 1.0 | Yes | No | No | Yes | Yes | Yes | No | No |

Source: Doing Business database.
* Data were collected jointly with the World Bank Group's Women, Business and the Law team.

d. Not applicable (n.a.) for economies with no statutory provision for a probationary period.
e. Whether compulsory before redundancy.

| | Redundancy cost | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Notice period for redundancy dismissal (for a worker with 1 year of tenure, in salary weeks) | Notice period for redundancy dismissal (for a worker with 5 years of tenure, in salary weeks) | Notice period for redundancy dismissal (for a worker with 10 years of tenure, in salary weeks) | Notice period for redundancy dismissal (weeks of salary)[c] | Severance pay for redundancy dismissal (for a worker with 1 year of tenure, in salary weeks) | Severance pay for redundancy dismissal (for a worker with 5 years of tenure, in salary weeks) | Severance pay for redundancy dismissal (for a worker with 10 years of tenure, in salary weeks) | Severance pay for redundancy dismissal (weeks of salary)[c] |
| ***Sri Lanka*** | ***4.3*** | ***4.3*** | ***4.3*** | ***4.3*** | ***10.8*** | ***54.2*** | ***97.5*** | ***54.2*** |
| **Bangladesh (Dhaka)** | 4.3 | 4.3 | 4.3 | 4.3 | 5.0 | 25.0 | 50.0 | 26.7 |
| **Bangladesh (Chittagong)** | 4.3 | 4.3 | 4.3 | 4.3 | 5.0 | 25.0 | 50.0 | 26.7 |
| **China (Shanghai)** | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 21.7 | 43.3 | 23.1 |
| **China (Beijing)** | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 21.7 | 43.3 | 23.1 |
| **Costa Rica** | 4.3 | 4.3 | 4.3 | 4.3 | 2.8 | 15.2 | 25.1 | 14.4 |
| **India (Mumbai)** | 4.3 | 4.3 | 4.3 | 4.3 | 2.1 | 10.7 | 21.4 | 11.4 |
| **India (Delhi)** | 4.3 | 4.3 | 4.3 | 4.3 | 2.1 | 10.7 | 21.4 | 11.4 |
| **Indonesia (Jakarta)** | 0.0 | 0.0 | 0.0 | 0.0 | 17.3 | 60.7 | 95.3 | 57.8 |
| **Indonesia (Surabaya)** | 0.0 | 0.0 | 0.0 | 0.0 | 17.3 | 60.7 | 95.3 | 57.8 |
| **Malaysia** | 4.0 | 8.0 | 8.0 | 6.7 | 1.7 | 33.3 | 33.3 | 22.8 |
| **Philippines** | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 21.7 | 43.3 | 23.1 |
| **Singapore** | 1.0 | 4.0 | 4.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Thailand** | 4.3 | 4.3 | 4.3 | 4.3 | 15.0 | 30.0 | 50.0 | 31.7 |
| **Vietnam** | 0.0 | 0.0 | 0.0 | 0.0 | 8.7 | 21.7 | 43.3 | 24.6 |

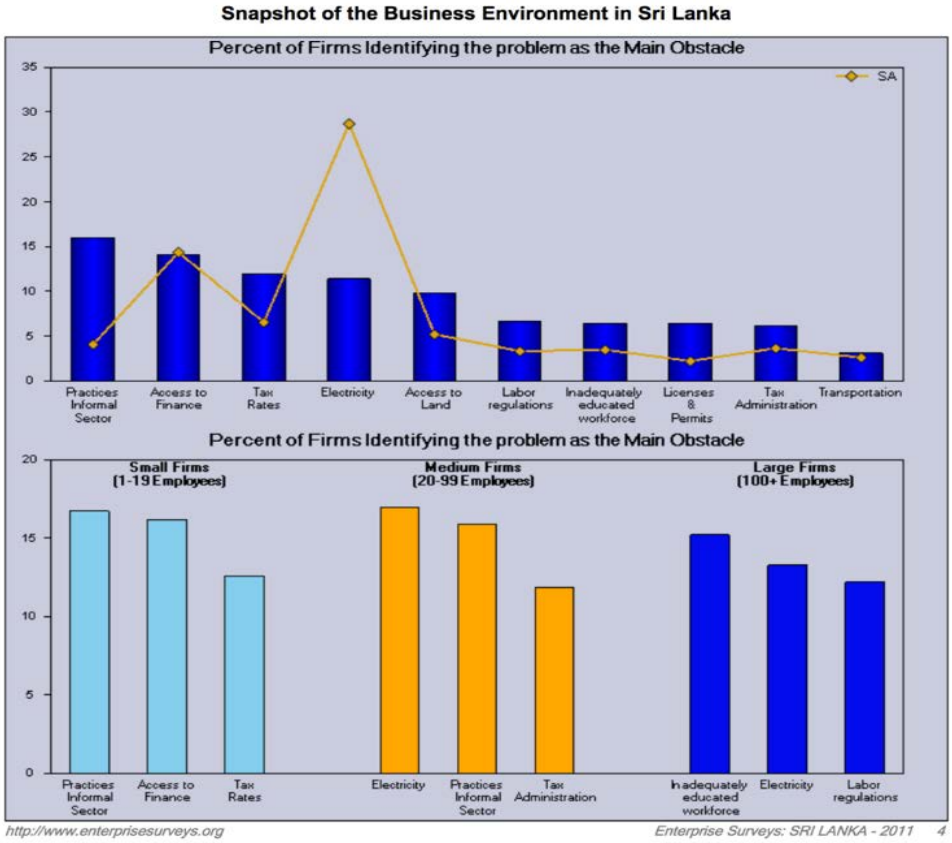
Source: Doing Business database.
* Data were collected jointly with the World Bank Group's Women, Business and the Law team.

c. Average for workers with 1, 5 and 10 years of tenure.

As to how these rules might affect firms, as Figure 9.2 below shows, the percentage of firms identifying labor regulations as the main obstacle they face (according to Enterprise Survey data) is at least as high in Sri Lanka than in South Asian comparator countries.[71] So the severity of particular labor regulations does seem to be pronounced, and there is some evidence that these regulations matter to firms.

[71] See Appendix Figure 37 for data on the percentage of firms who report labor regulations as a main obstacle, as a function of GDP.

**Figure 9.2 Main Obstacles that Firms Face**




We consider a different aspect of labor market regulations to better understand the potential value to firms of easing one labor market regulation, the minimum wage. It seems unlikely to bind in Sri Lanka compared to other countries: In absolute terms as well as relative to value added per worker, the minimum wage is not high according to Doing Business indicators (again relative to log GDP per capita as obtained from WDI data).[72] This one aspect of labor regulations, we therefore conclude, does not seem to present substantial problems for firms. Nonetheless, to the extents that labor market regulations are enforced and workers need to be let go, then the difficulty of obtaining approvals for dismissals means the 'price' of risks associated with the need to eventually resize a firm's labor force or lay off unproductive workers is high.

## 9.2 Changes vs. Changes

Unfortunately, we did not identify any of the kinds of changes to the severity of the severance restrictions that would allow us to test whether key economic outcomes are affected in turn. We take the opportunity to note, however, that the Termination of Employed Workers Act, which is the reason for the severance restrictions firms face, dates to 1971 and therefore did not preclude Sri Lanka's first bout of structural transformation from taking place (ten years later).

[72] See Appendix Figure 38 and Appendix Figure 39.

## 9.3 Bypassing the Constraint

Are labor market regulations sufficiently onerous that firms engage in costly constraint avoidance behavior? Firms do seem to have found ways to get around the severance constraints. P. Jayawardena of Sri Lanka's Institute for Policy Studies shows that permanent workers make up less than half of all public and private workers; other types of workers that firms can employ include temporary workers, contractors, and trainees, and these positions are not subject to severance regulations.[73][74] De Mel, McKenzie and Woodruff (2013) also provide evidence that firms seek to avoid TEWA restrictions: 24% of the informal firms they interviewed cited the severance-related payment contributions that the TEWA requires firms to make on workers' behalf as a main cause of their decisions to remain informal.[75] Also, for a relative handful of the firms the authors studied, the costs of informality in terms of foregone profits are substantial. Overall, then, while firms do seem to be evading strict labor market regulations, it is not clear that the strategies they employ end up being costly for most of them.

## 9.4 Camels vs. Hippos

There is no evidence that labor regulations result in Sri Lankan firms being disproportionately labor non-intensive. Using data from the Department of Census and Statistics' Annual Survey of Industries, we construct industry-level totals of value added, plus 2 separate measures of industry-level labor-intensiveness: salary intensity, defined as the within-industry average of firms' total wages and salaries paid relative to value added; and employment intensity, defined as the within-industry average of firms' numbers of employees relative to value added. By comparing each of the latter 2 variables to the industry value added variable, we get a sense of whether or not industries that rely more heavily on labor tend to produce less value added in the economy. As Figures 9.3 and 9.4 below show, there is no evidence that this is the case. In fact, Sri Lanka's biggest sector of manufactured exports (garments, industry code 181) is particularly labor-intensive.

[73] See http://www.ips.lk/talkingeconomics/2014/06/26/sri-lanka-needs-a-new-framework-for-precarious-workers/.

[74] Our colleagues at Harvard University's Center for International Development reported visiting a factory where more than one-third of employees were classified as trainees.

[75] See De Mel, McKenzie and Woodruff (2013).

**Figure 9.3 Industry Value Added as a Function of Salary Intensity (Total Wages and Salaries Paid/Total Value Added at the Industry Level)**

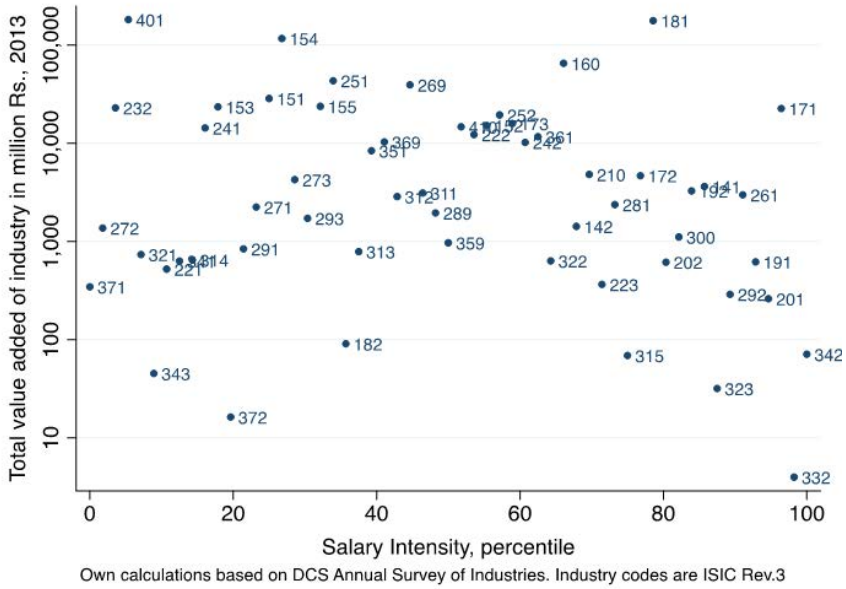
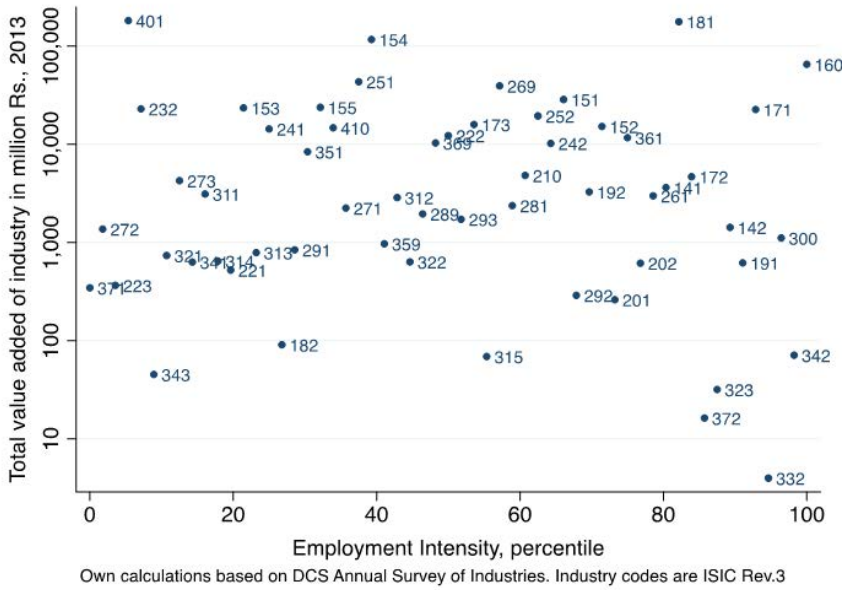



**Figure 9.4 Industry Value Added as a Function of Employment Intensity (Number of Employees/Total Value Added at the Industry Level)**




It is also not the case that labor-intensive industries have demonstrated any tendency to grow more slowly in recent years. In particular, when we replace the industry value added variable described above with industry-level growth rates in total value added between 2009 and 2013, we see no evidence that labor-intensiveness has meant slower growth at the industry level.[76]

[76] See Appendix Figure 40 and Appendix Figure 41.

In conclusion, despite the severity of some aspects of labor regulations in Sri Lanka, it is not clear that labor-intensive firms cannot thrive or that firms have much difficulty coping with labor market restrictions. This latter possibility is certainly consistent with what was reported in stakeholder consultations. Indeed, it seemed that finding and holding onto the right quality of employees was a bigger concern for firm owners than was incurring costs associated with shedding bad employees.

# 10. Is Costly Finance a Binding Constraint to Growth?

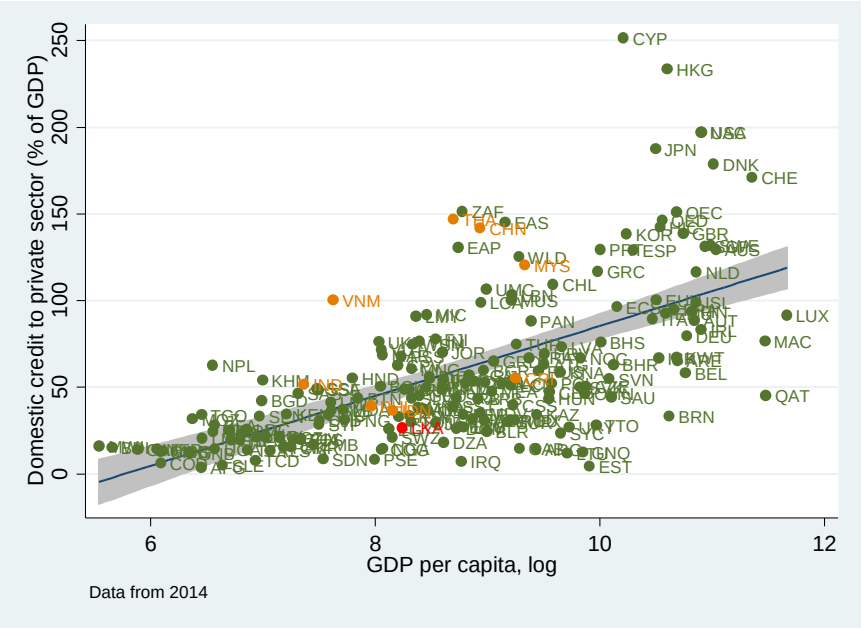
The ability of firms to access capital through financial markets is a key enabler of growth. In the Sri Lankan context, however, it appears that costly or weak access to finance is not a binding constraint to growth but rather that the financial system is operating at a level that can support economic growth. While the quantity of credit is somewhat low, this appears to be due more to demand-side issues (returns to investment and/or appropriability) rather than to constraints in the supply of finance. There is some concern that banks are overly conservative in their lending practices, and venture capital and other sources for start-up capital will likely need to play a larger role going forward.[77]

## 10.1 Benchmarking Quantities

In terms of levels, Figure 10.1 uses data from the World Bank's World Development Indicators to show that domestic credit to the private sector as a percentage of GDP is low relative to levels that which would be expected at Sri Lanka's GDP per capita (see red dot labelled "LKA"). However, there are a large number of banks and bank branches. Non-performing loans are low, which may reflect an overly conservative financial system. There are however possible distortions resulting from the two state-owned banks.

[77] Women entrepreneurs have been identified as an untapped source or "new engine" for economic growth, given Sri Lanka's demographics. Women constitute over 31% of SME entrepreneurs, but they are statistically less likely to access private equity or venture capital (Oxfam and Institute of Policy Studies of Sri Lanka 2014). The majority of women entrepreneurs are in micro-enterprises, a large number of which operate in the informal economy and are grouped into gender stereotypical sectors (i.e., food processing and textiles). The ability to post collateral (sometimes with valued at 200% more than the actual loan amount) is sometimes necessary for receiving credit (World Bank 2015). This would be a substantial barrier to business for most SMEs, but especially for women since land titles are often not registered in a woman's name and she may not have control over other household assets or resources. Lack of access to capital is a core constraint to female entrepreneurship, with female managers and the types of industries in which they predominate facing evident barriers and implicit gender bias. Other identified limitations include, unequal share of family and household responsibilities, limited mobility after dark and concern about reputation, less business know-how and financial literacy, lack of access to networks. There is also a shortage of high-quality and well-targeted business development services (BDS) that is affordable, cover more diverse geographical areas or regions, and is capable of meeting the needs of entrepreneurs who wish to establish small and medium-sized enterprises. Private sector BDS has mostly catered to larger businesses and the government and donor agencies target services to the poor rather than "entrepreneurs" with limited finances.

**Figure 10.1 Domestic Credit to the Private Sector vs. GDP per Capita**

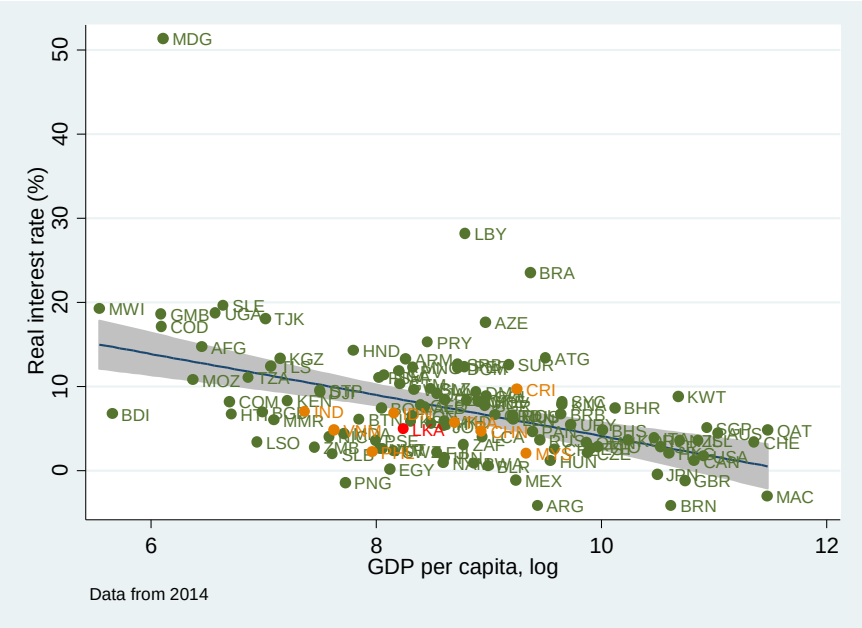



Source: WDI

## 10.2 Price

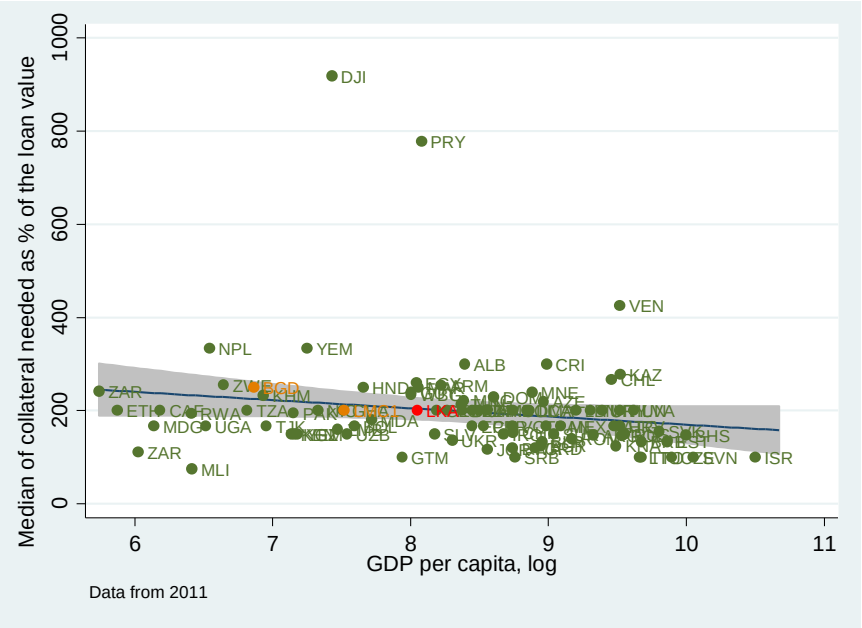
In terms of the direct price of financing to firms, interest rates are low or comparable to those of competitors at around 5 percent (Figure 10.2), and collateral requirements are consistent with other countries at similar GDP per capita (Figure 10.3).

**Figure 10.2 Real Interest Rate vs. GDP per Capita**




Source: WDI

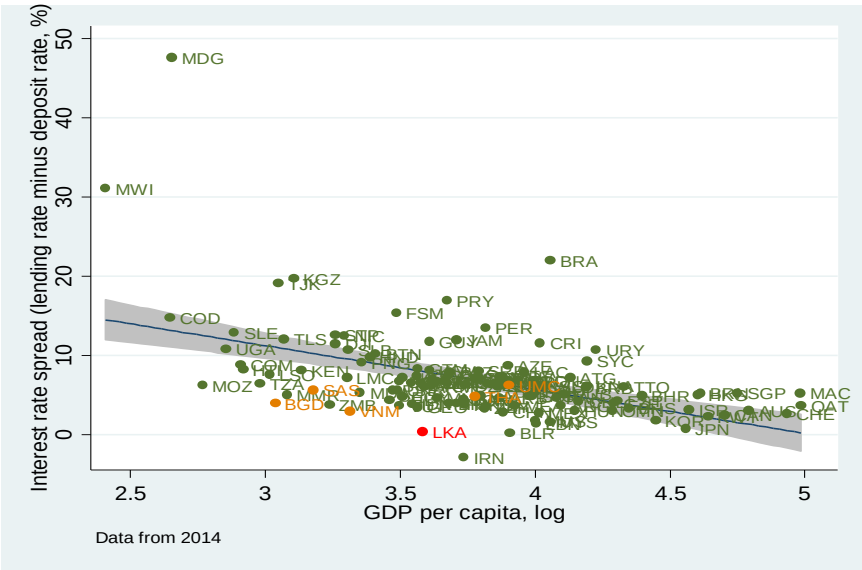
**Figure 10.3 Collateral Required as Percentage of Loan Value vs. GDP per Capita**




Source: WDI

Moreover, the spread between deposit and lending rates is better than most comparators (Figure 10.4), suggesting that financial intermediation is reasonably efficient, and it has declined over the last five years – possibly a peace dividend.

**Figure 10.4 Deposit-Lending Rate Spread and GDP per Capita**

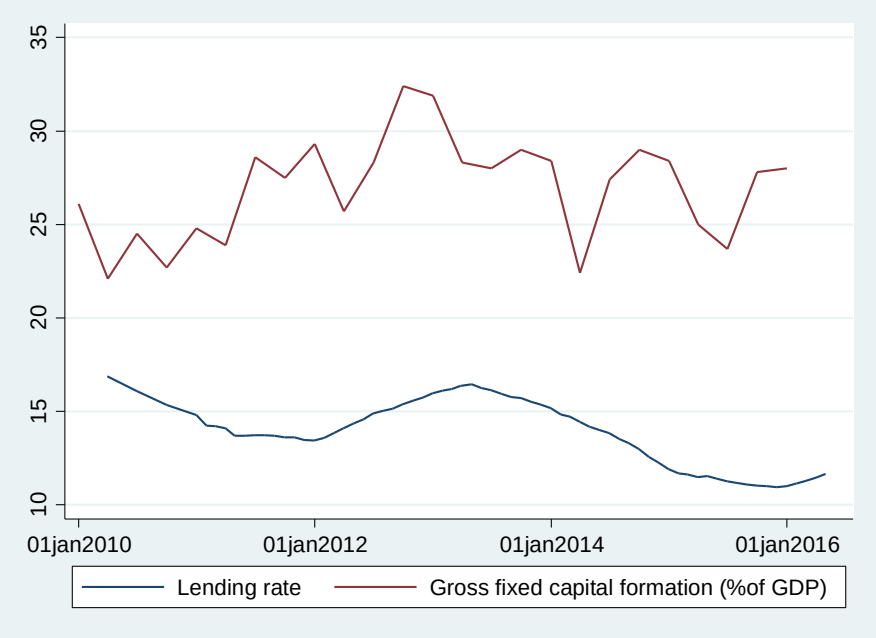



Source: WDI

## 10.3 Changes vs. Changes

Data from the World Bank's WDI show that reductions in the interest rate do not correlate with higher investment. If anything, there is a positive correlation between interest rates and investment (Figure 10.5), suggesting that changes in lending levels appear to be demand-driven rather than supply-driven. This pattern of movements in the financial market's equilibrium indicates that finance is not a binding constraint (Appendix Figure 42).

**Figure 10.5 Lending Rate vs. Gross Capital Formation**




## 10.4 Bypassing the Constraint

Firms often use banks to finance investment and rarely go to other sources of financing such as supplier credit, indicating that they are not acting to circumvent a constraint in this area. Enterprise Survey data indicate that the proportion of investments financed by banks is 35.4 percent, which is high relative to other South Asian countries.

Finally, the possibility of government borrowing crowding out the private sector is a concern. However, at this stage it does not appear to be constraining firms access to finance.

# 11. Health

A healthy workforce is an important part of a well-functioning economy. When mortality or morbidity rates are sufficiently high, for example, then labor costs increase and foreign investment might be difficult to attract. Health care in Sri Lanka is free at point of service and universal, and health care outcomes compare favorably to those in the comparator countries we have been considering.

## 11.1 Benchmarking Quantities

Sri Lanka does so much better than comparator countries with respect to health outcomes that we concluded health does not represent a binding constraint solely on the basis of benchmarked health

outcome data (and stakeholder consultations). First, WDI data reveals that Sri Lanka's mortality rates are low (Figure 11.1).[78]

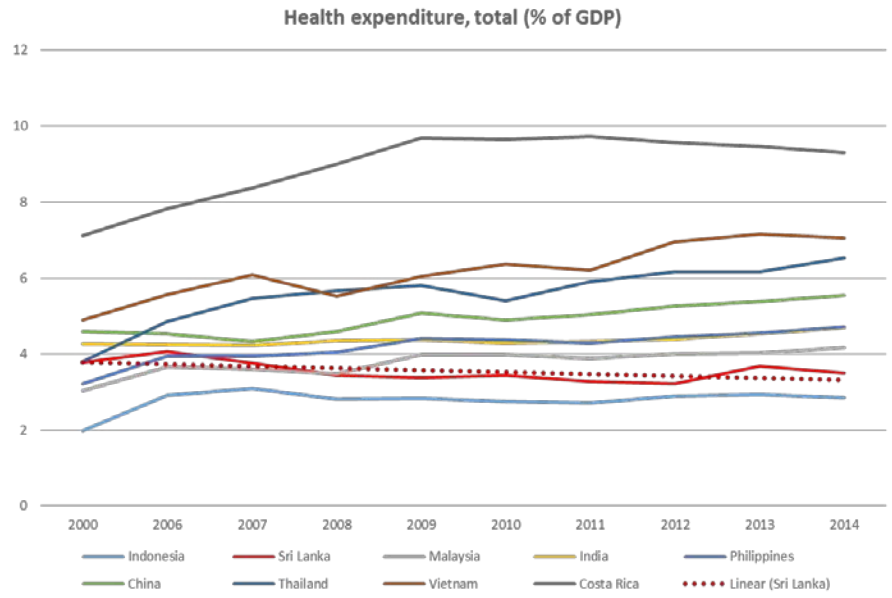
**Figure 11.1 Mortality Measures for Sri Lanka and Comparators**

| Mortality Indicators | Sri Lanka | Vietnam | Philippines | China | Thailand | Indonesia | Malaysia | Costa Rica |
|---|---|---|---|---|---|---|---|---|
| Life expectancy at birth (years) | 75 | 76 | 69 | 75 | 75 | 71 | 71 | 79 |
| Life expectancy at 60 (years) | 20 | 22 | 17 | 19 | 21 | 18 | 18 | 23 |
| Health life expectancy at birth (years) | 65 | 66 | 60 | 68 | 66 | 62 | 62 | 69 |
| Under-five mortality rate (per 1000 live births) | 10 | 24 | 30 | 13 | 13 | 29 | 29 | 10 |
| Maternal mortality ratio (per 100 000 live births) | 29 | 49 | 120 | 32 | 26 | 190 | 190 | 38 |
| Deaths due to HIV/AIDS (per 100 000 population) | 0.8 | 12.1 | 0.1 | 2.8 | 31 | 10.8 | 10.8 | 2.9 |
| Deaths due to malaria (per 100 000 population) | 0 | 0.1 | 0.1 | 0 | 0.2 | 3.8 | 3.8 | 0 |
| Deaths due to turburculosis among HIV-negative people (per 100 000 population) | 5.9 | 19 | 27 | 3 | 12 | 25 | 25 | 0.67 |
| **Probability of dying, 2012 (%)** | | | | | | | | |
| Before age 15, all causes | Sri Lanka | Vietnam | Philippines | China | Thailand | Indonesia | Malaysia | Costa Rica |
| male | 5 | 11 | 14 | 7 | 7 | 15 | 5 | 5 |
| female | 4 | 8 | 11 | 6 | 5 | 12 | 4 | 4 |
| Before age 70, all causes | | | | | | | | |
| male | 51 | 54 | 68 | 46 | 52 | 60 | 52 | 36 |
| female | 31 | 31 | 49 | 36 | 33 | 48 | 38 | 26 |
| Between ages 15 and 49 from maternal causes | 1 | 1 | 4 | 1 | 0 | 5 | 1 | 1 |
| Between ages 30 and 70 from 4 major NCDs | 18 | 17 | 28 | 19 | 16 | 23 | 20 | 12 |

Source: WHO 2012, 2013 data
Country Health Profiles

The number of years lived in less than ideal health are also not particularly high.[79] Moreover, Sri Lanka achieves these respectable health outcomes at relatively low cost: Health expenditures as a proportion of GDP are lower in Sri Lanka than in all but one comparator country (Figure 11.2).

**Figure 11.2 Health Expenditure as a Percentage of GDP**




Source: WDI

[78] There is also not a large gender gap in mortality rates.
[79] See Appendix Figure 43. These data come from the Institute for Health Metrics and Evaluation's Global Burden of Disease Data Tool, available at http://www.healthdata.org/gbd.

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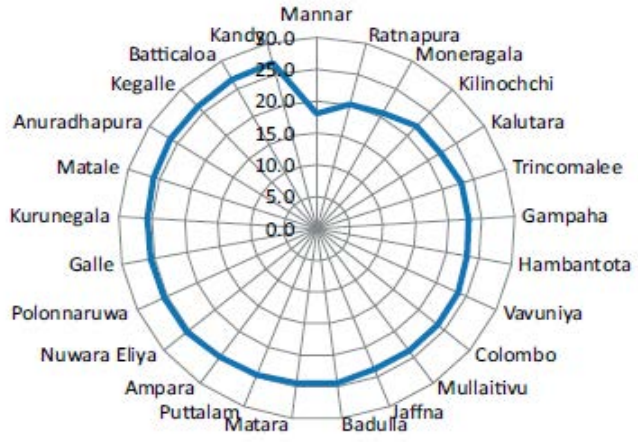
# Appendix

## Appendix Figure 1

**Female-headed households by districts and characteristics**



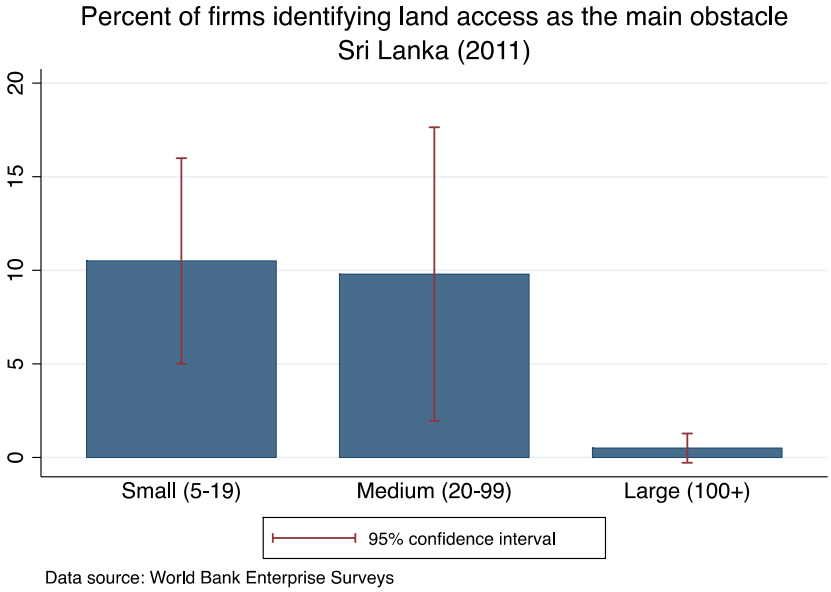

**Age**
- ✓ Over 60% are under 60
- ✓ Highest concentration is in 40-59 age group
- ✓ 20% are below 40

**Education**
- ✓ 7% have no schooling (twice the national average)
- ✓ 27% have only primary education

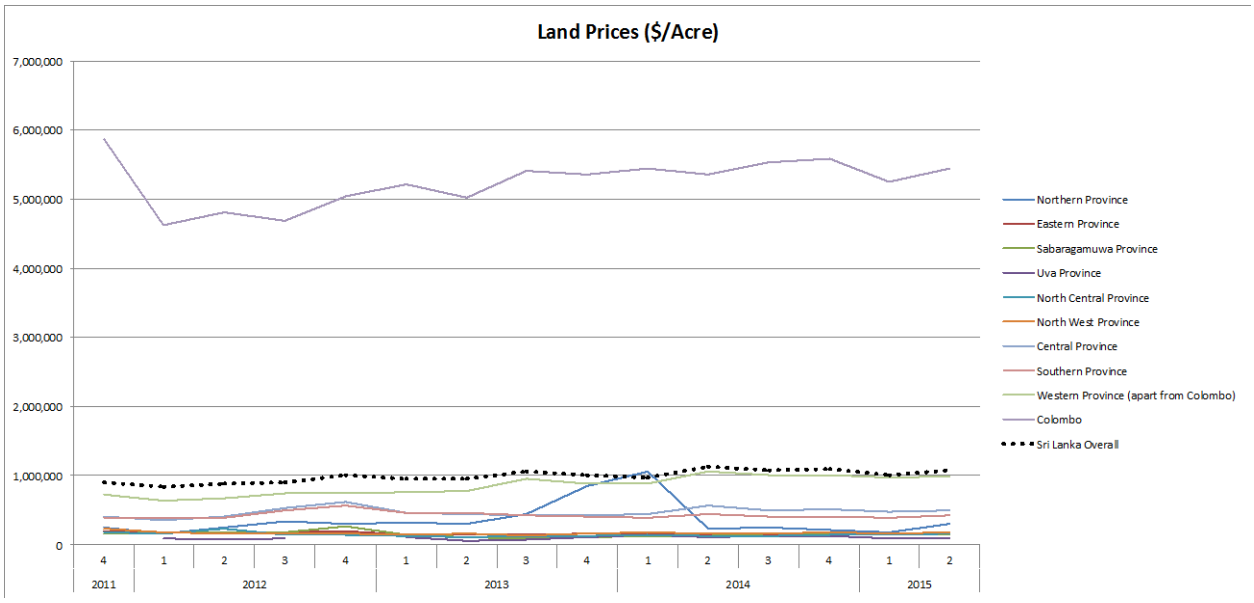
**Employment**
- ✓ Employment is below 35%
- ✓ In the estate sector 52% are employed, but in precarious employment
- ✓ 22% indicated that they are unable (or too old) to work

Source: Adapted from UNFPA (2016), "Bringing Generations Together for Our Sri Lanka," G2G Voices, UNFPA Inter-generational Dialogues (29 March 2016).

## Appendix Figure 2

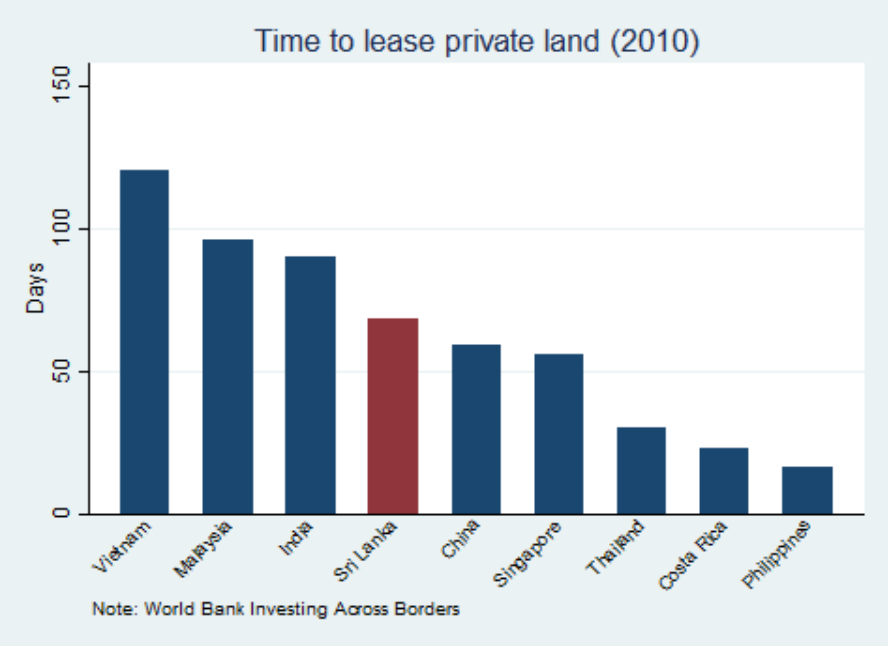



## Appendix Figure 3

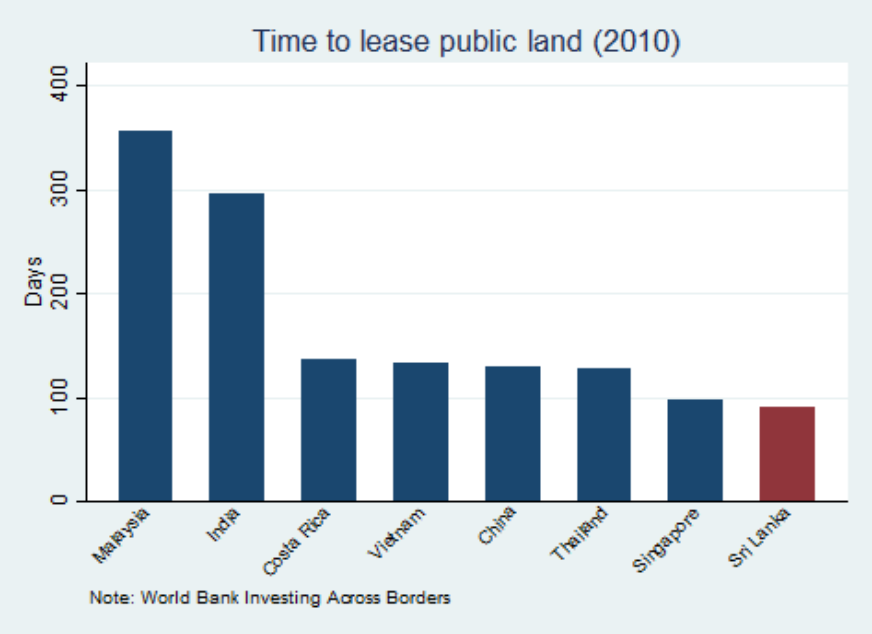



Source: lankapropertyweb.com

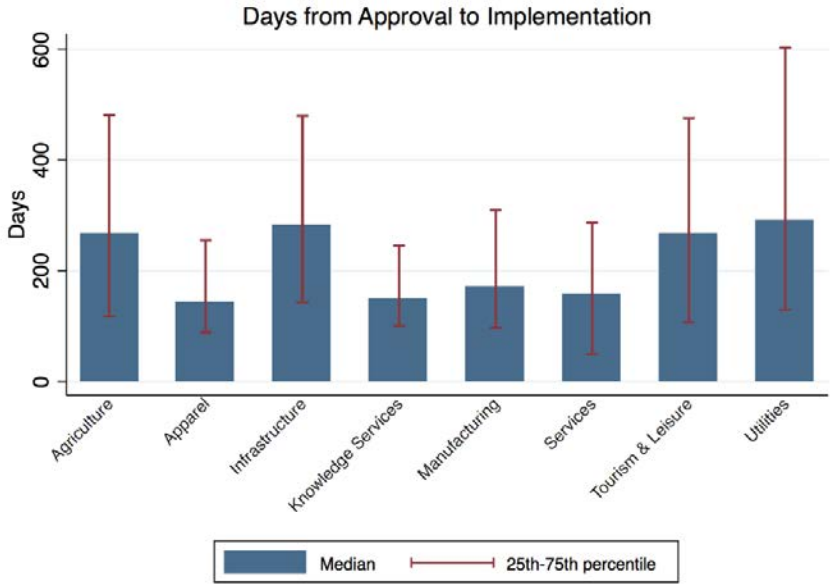
**Appendix Figure 4**




**Appendix Figure 5**

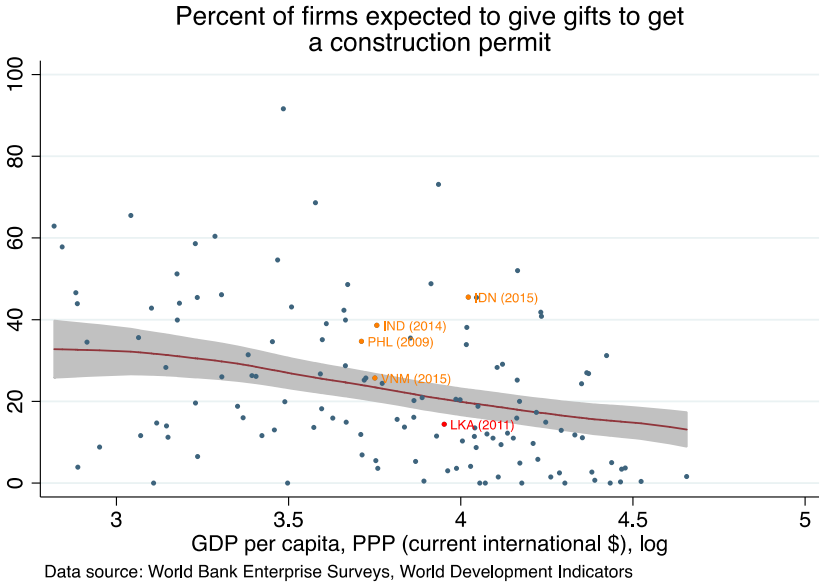



**Appendix Figure 6**

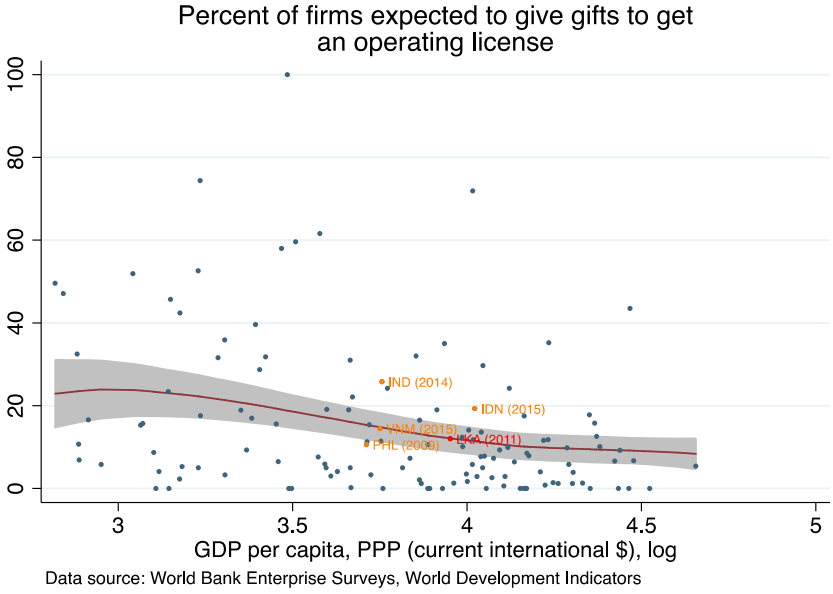



Source: BOI

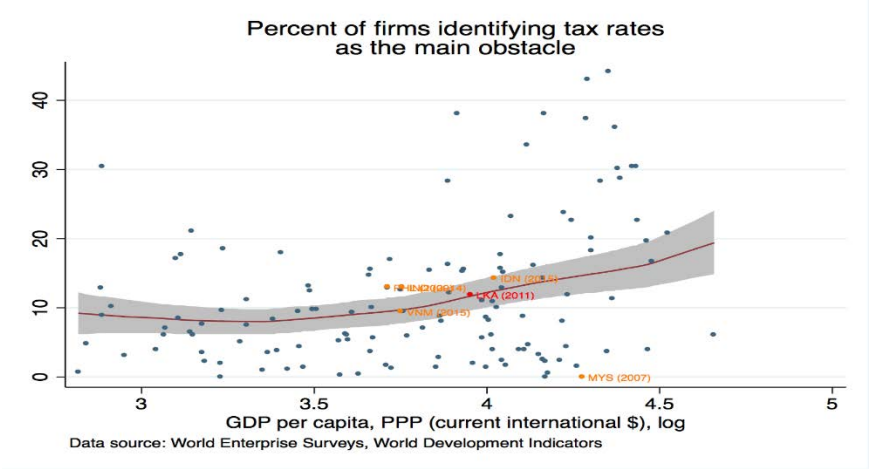
**Appendix Figure 7**



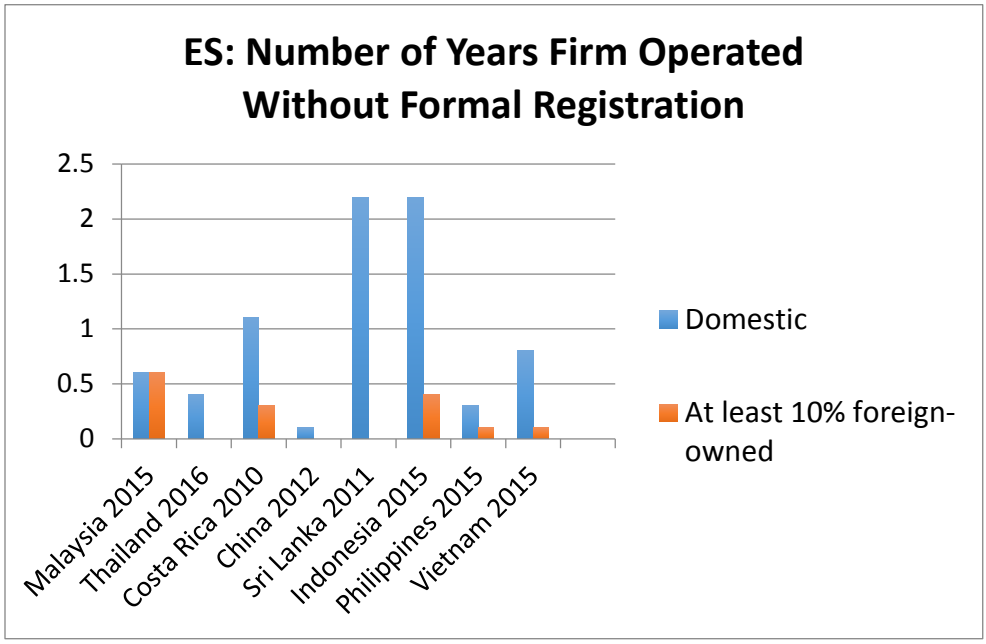

**Appendix Figure 8**




**Appendix Figure 9**

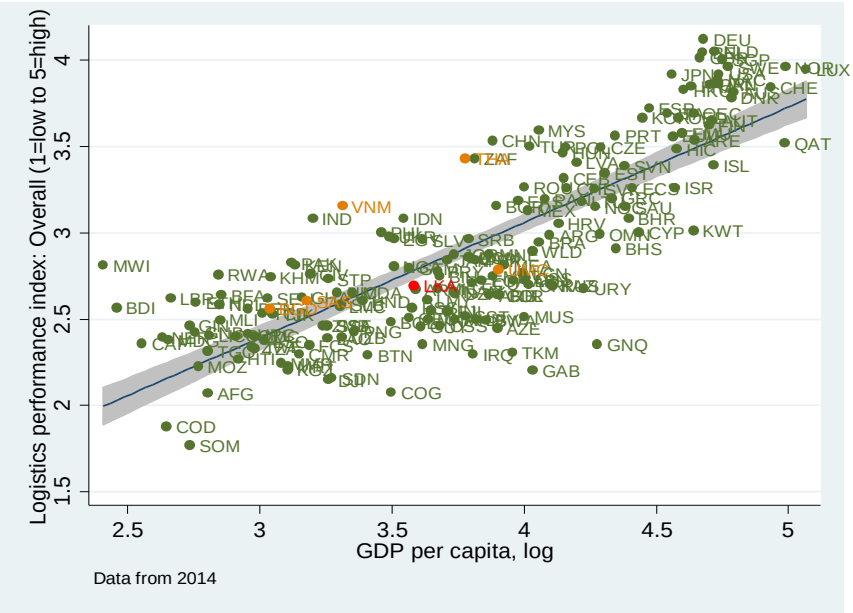



**Appendix Figure 10**



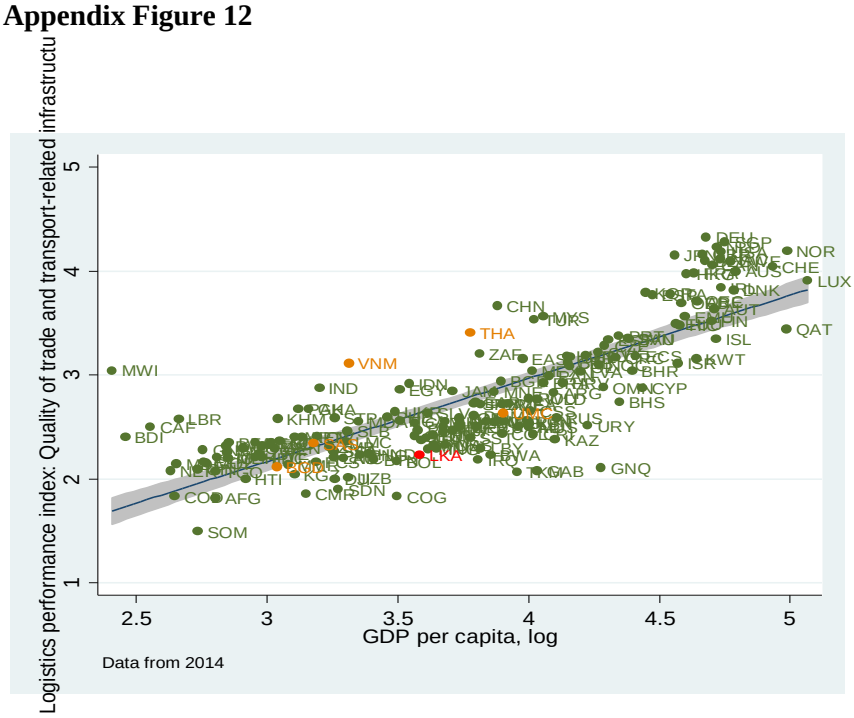

Source: Enterprise Surveys

**Appendix Figure 11**



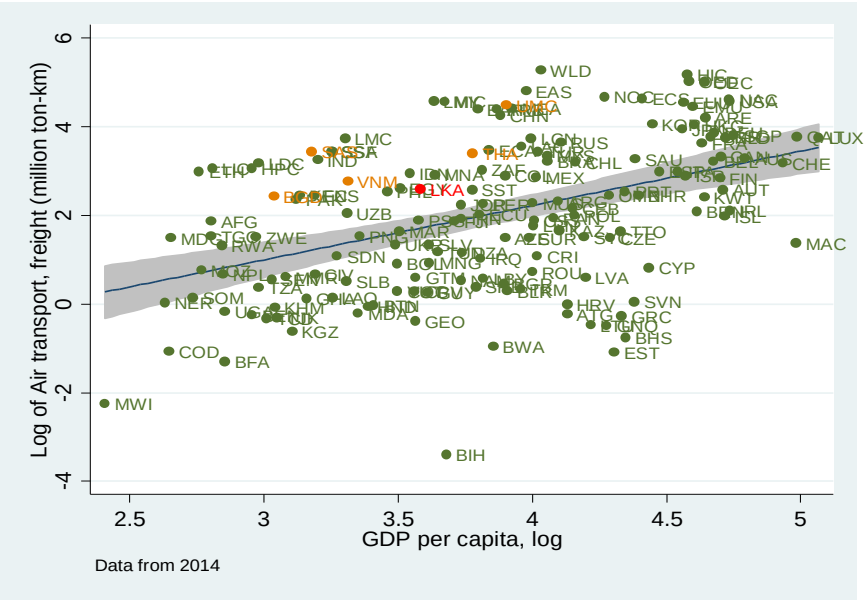

Source: Logistics Performance Index

**Appendix Figure 12**



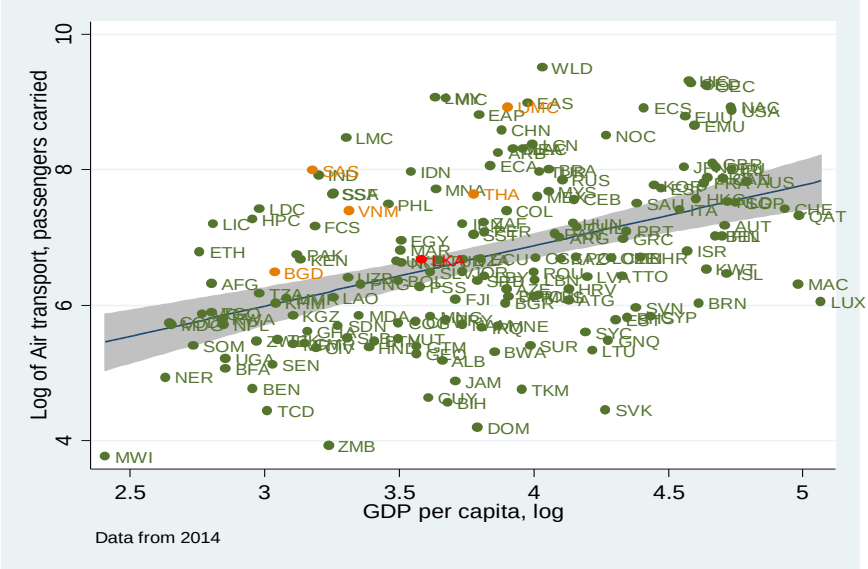

Source: Logistics Performance Index

**Appendix Figure 13**



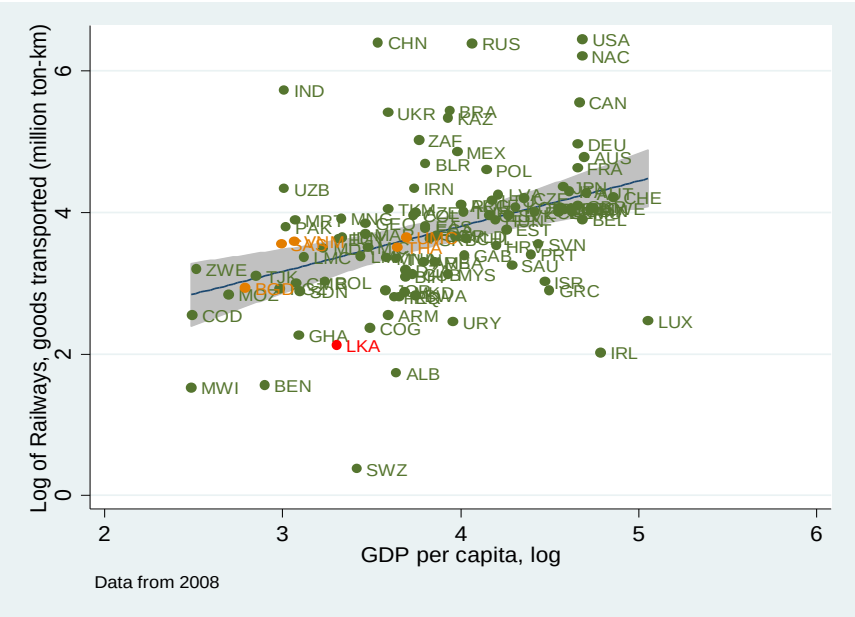

Source: WDI

**Appendix Figure 14**



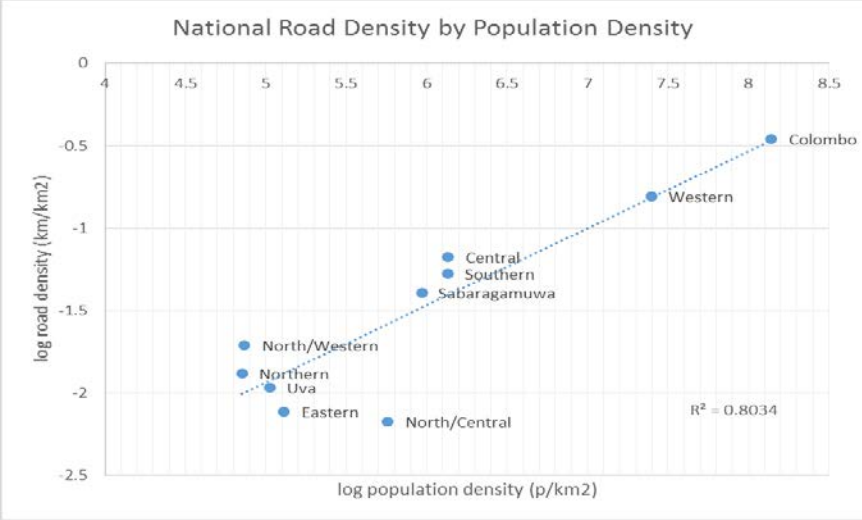

Source: WDI

**Appendix Figure 15**



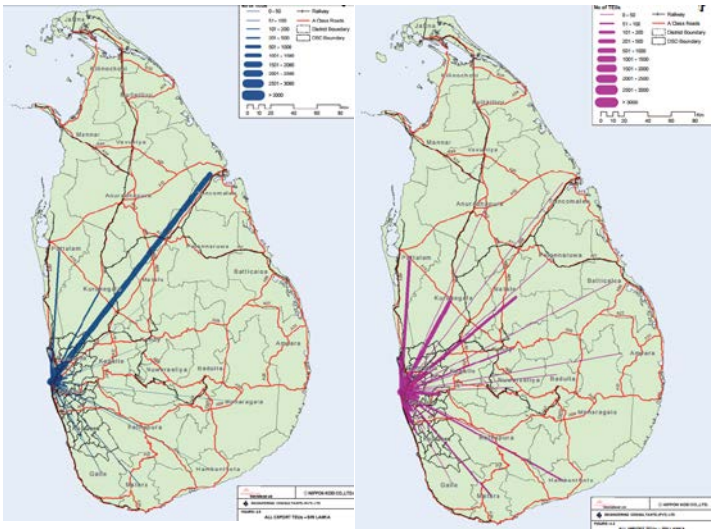

Source: WDI

**Appendix Figure 16**



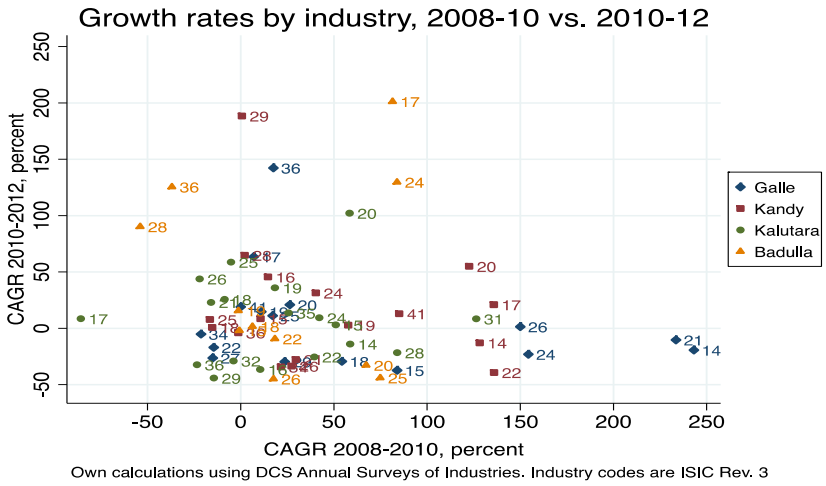

Source:

**Appendix Figure 17**

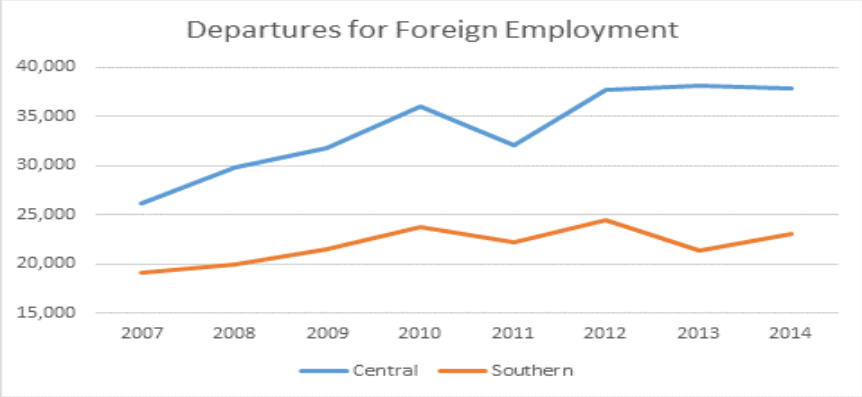


Source: JICA

**Appendix Figure 18**

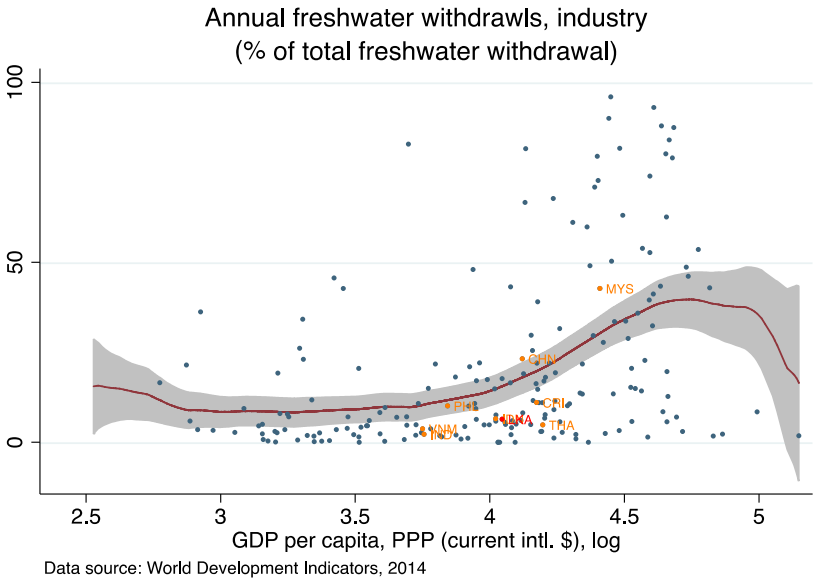



**Appendix Figure 19**

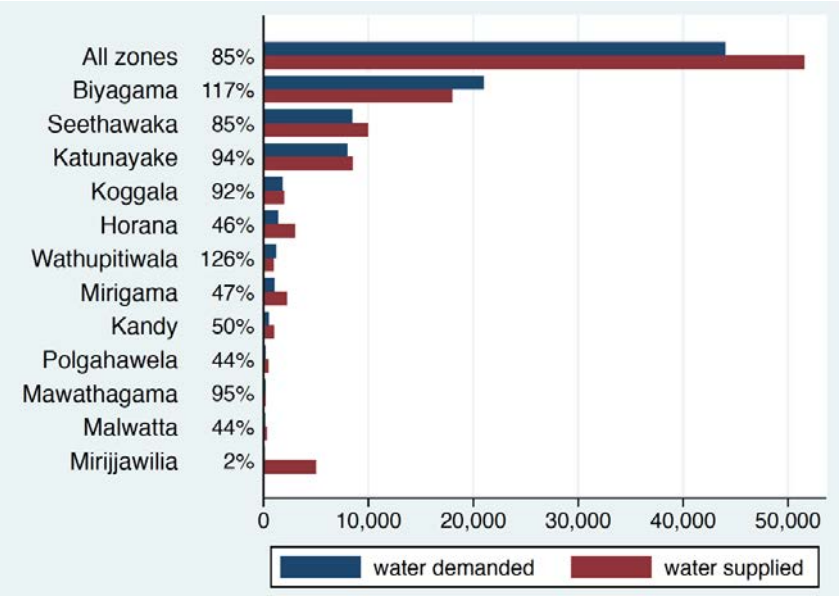



Source: Bureau of Foreign Employment

**Appendix Figure 20**

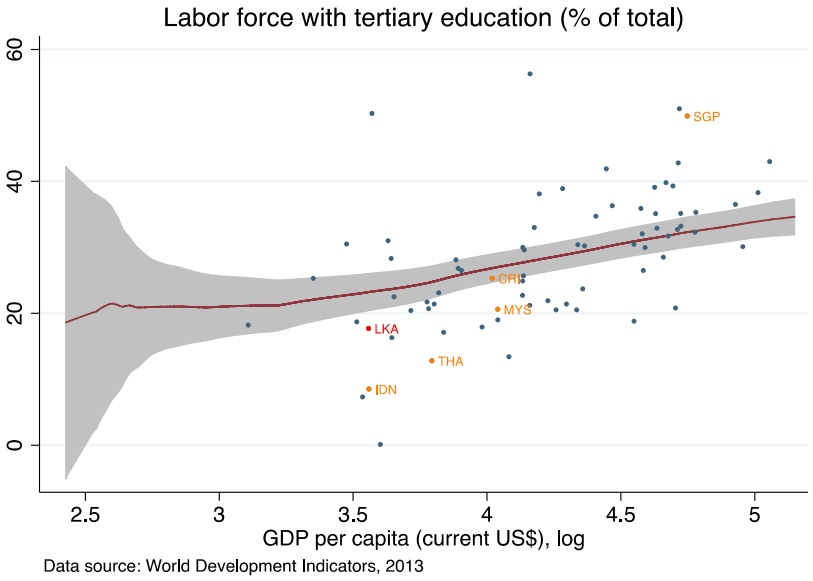



**Appendix Figure 21**

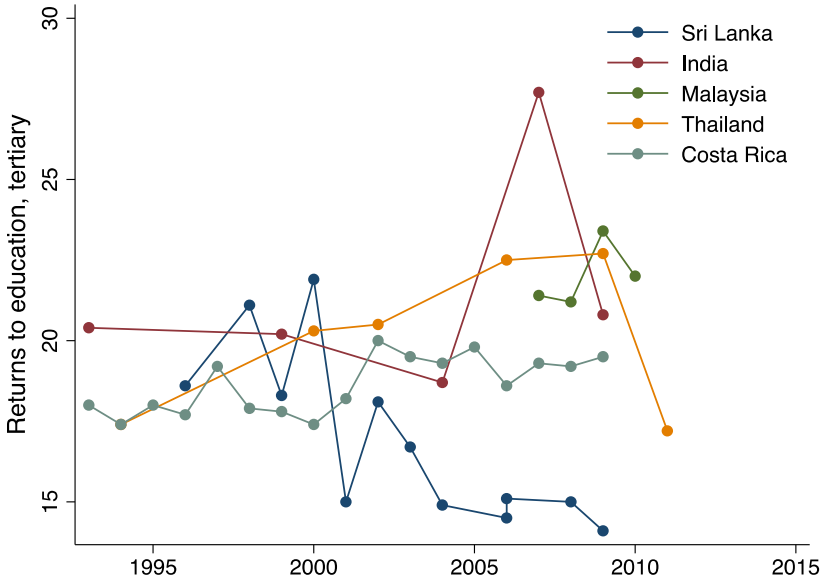



Source: BOI

**Appendix Figure 22**

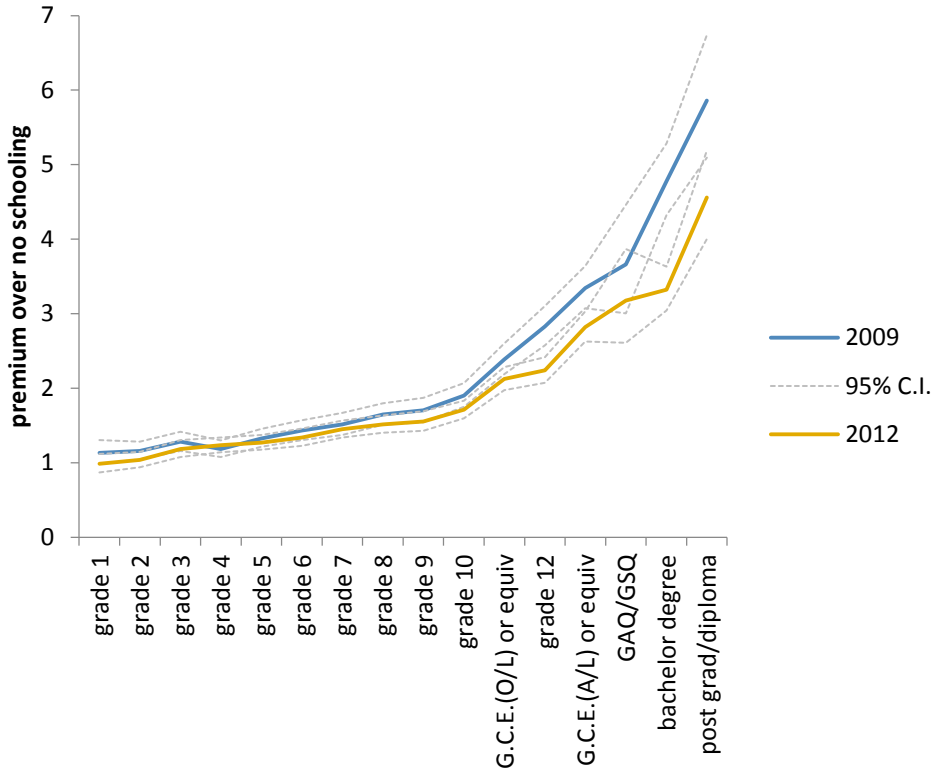



**Appendix Figure 23**



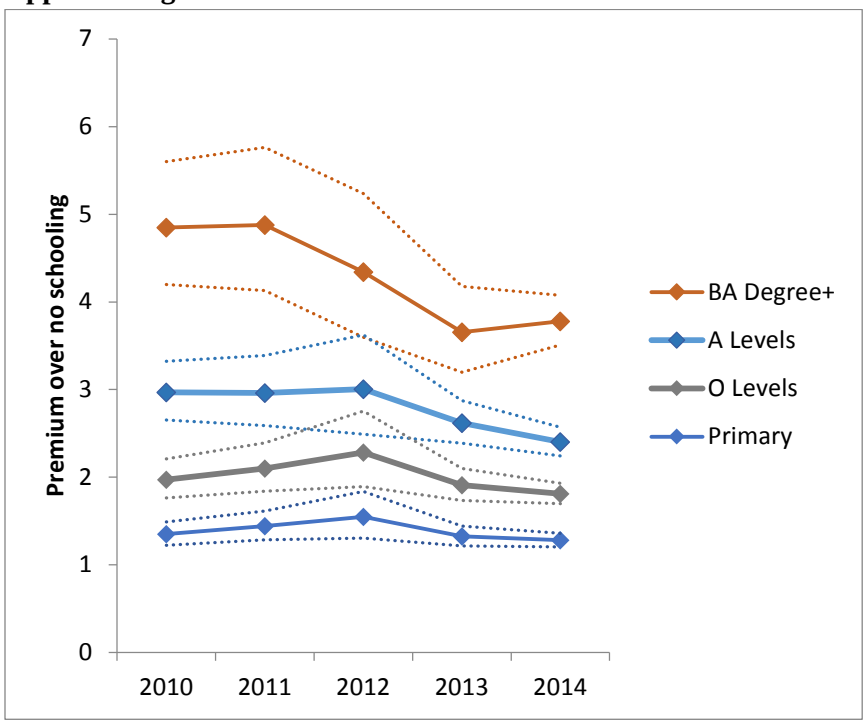

Source: Montenegro and Patrinos (2014)

**Appendix Figure 24**




Source: Household Income and Expenditure Surveys

**Appendix Figure 25**




Source: Labor Force Surveys

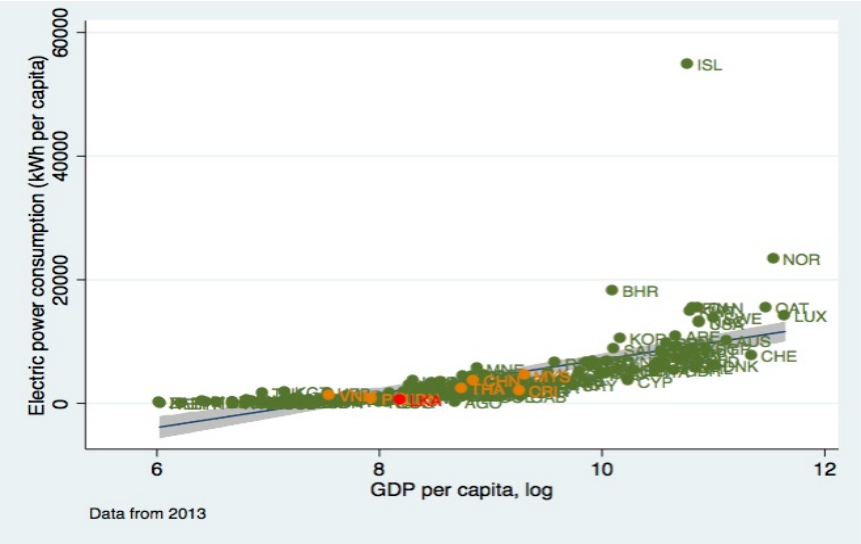
Note: 95% confidence intervals displayed

**Appendix Figure 26**

| | Net new jobs | | Net new graduates | | Supply surplus | |
|---|---|---|---|---|---|---|
| | Change 2010-2014 | Annualized growth | Change 2010-2014 | Annualized growth | Total | % of net new graduates |
| All | 725,420 | 2.3% | 915,620 | 1.6% | 190,200 | 20.8% |
| A Levels | 369,250 | 6.9% | 493,360 | 5.4% | 124,110 | 25.2% |
| BA and higher | 111,600 | 11.2% | 131,470 | 8.8% | 19,870 | 15.1% |

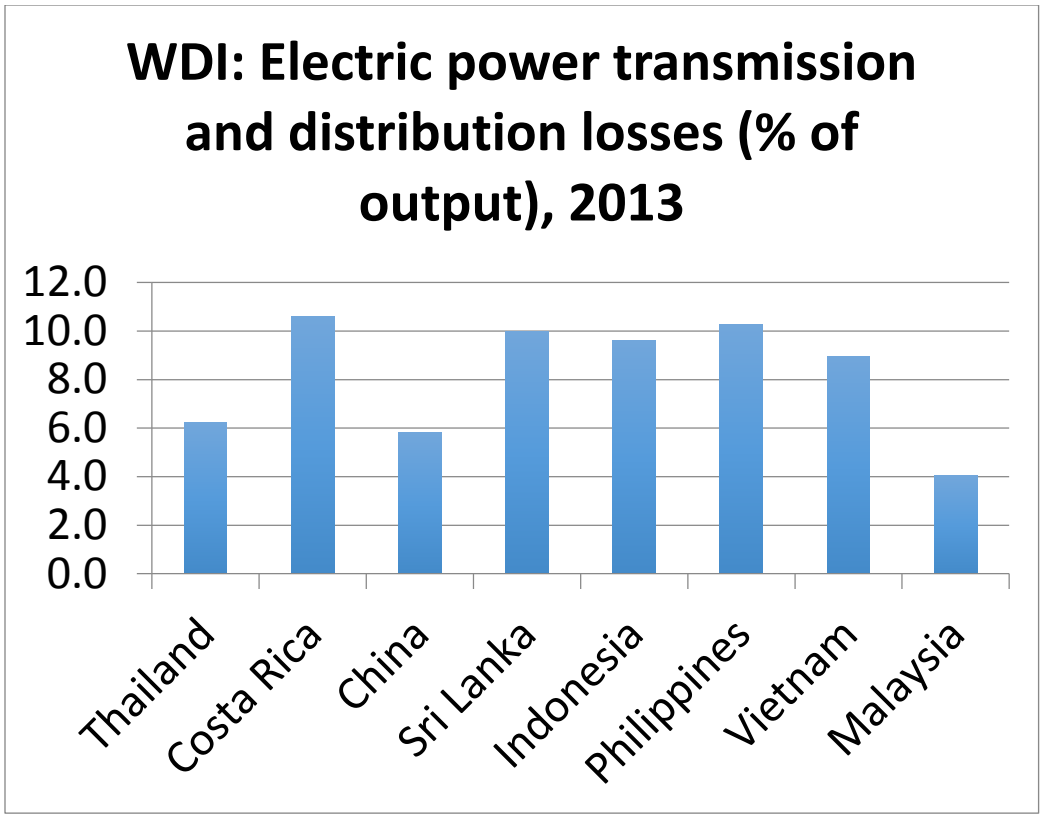
Source: Labor Force Surveys

**Appendix Figure 27**



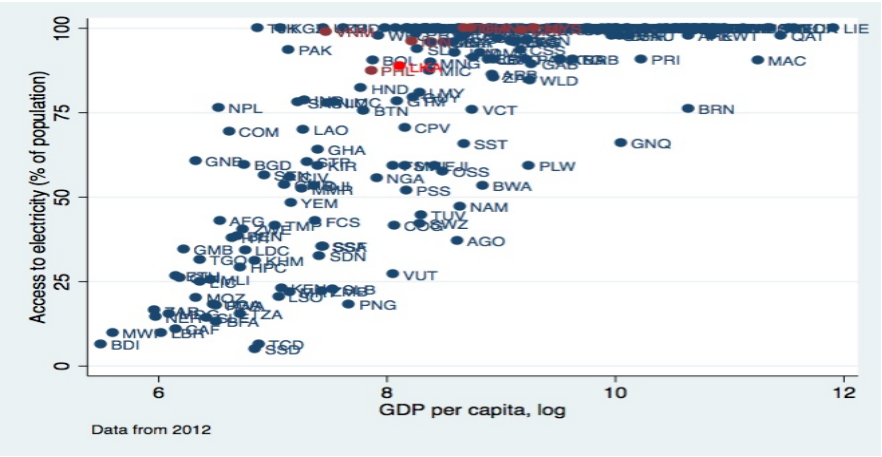

Source: WDI

**Appendix Figure 28**



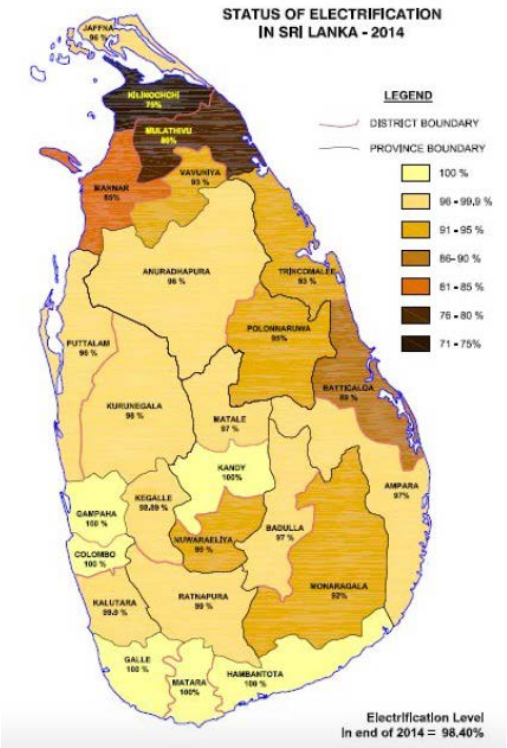

Source: WDI

**Appendix Figure 29**




Source: WDI

**Appendix Figure 30**



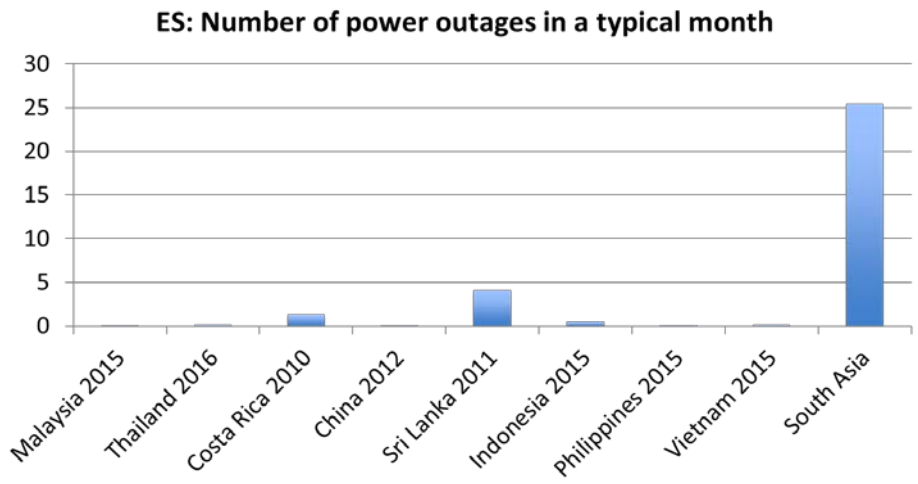

Source: Ceylon Electricity Board (2015)

**Appendix Figure 31**

| Customer | Class | Electricity Usage (kWh/mth) | Maximum Demand (kW) | Avg. unit price in USD, Oct. 7, 2015 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | China | Malaysia | Philippines | Sri Lanka | Thailand | Vietnam |
| Household | Small | 30 | - | 0.08 | 0.05 | 0.11 | 0.02 | 0.01 | 0.07 |
| | Medium | 90 | - | 0.08 | 0.05 | 0.16 | 0.07 | 0.09 | 0.07 |
| | Large | 180 | - | 0.08 | 0.05 | 0.20 | 0.16 | 0.10 | 0.07 |
| | Very Large | 600 | - | 0.09 | 0.09 | 0.23 | 0.27 | 0.11 | 0.10 |
| Commercial | Small | 1,000 | - | 0.12 | 0.12 | 0.20 | 0.15 | 0.12 | 0.11 |
| | Medium | 58,000 | 180 | 0.12 | 0.12 | 0.19 | 0.18 | 0.11 | 0.10 |
| | Large | 600,000 | 1500 | 0.12 | 0.12 | 0.19 | 0.17 | 0.11 | 0.10 |
| Industrial | Small | 5,000 | - | 0.11 | 0.10 | 0.18 | 0.09 | 0.12 | 0.07 |
| | Medium | 65,000 | 180 | 0.11 | 0.11 | 0.18 | 0.11 | 0.11 | 0.07 |
| | Large | 270,000 | 600 | 0.11 | 0.09 | 0.18 | 0.11 | 0.11 | 0.07 |
| | Very Large | 1,050,000 | 2250 | 0.11 | 0.09 | 0.15 | 0.11 | 0.11 | 0.06 |

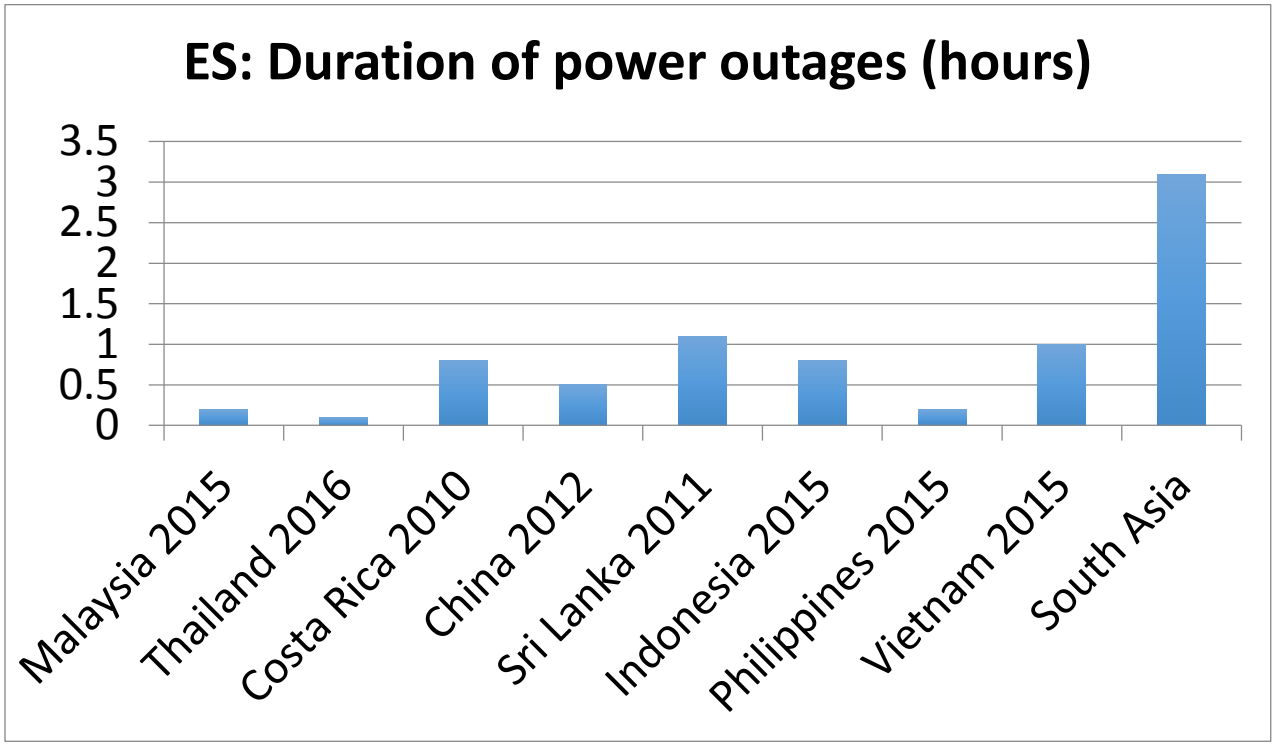
Source: RMA Energy Consultants

**Appendix Figure 32**



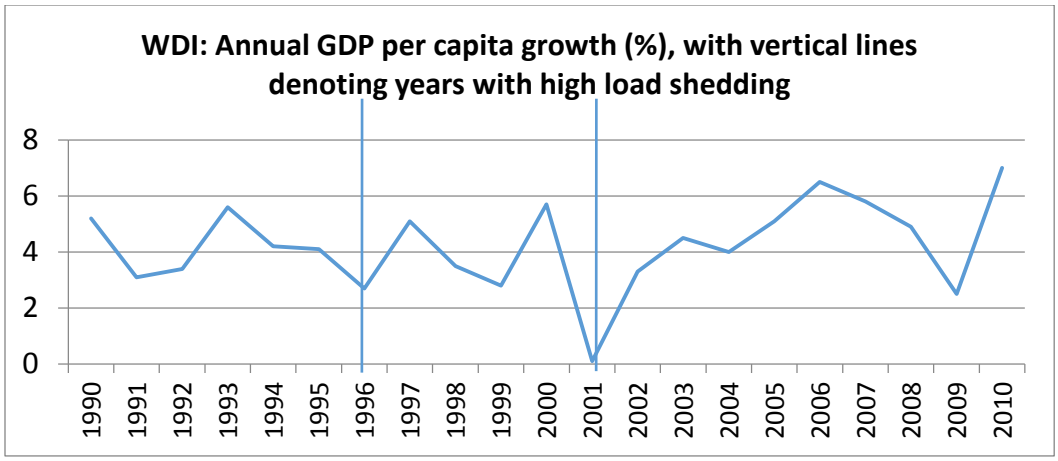

Source: Enterprise Surveys

**Appendix Figure 33**



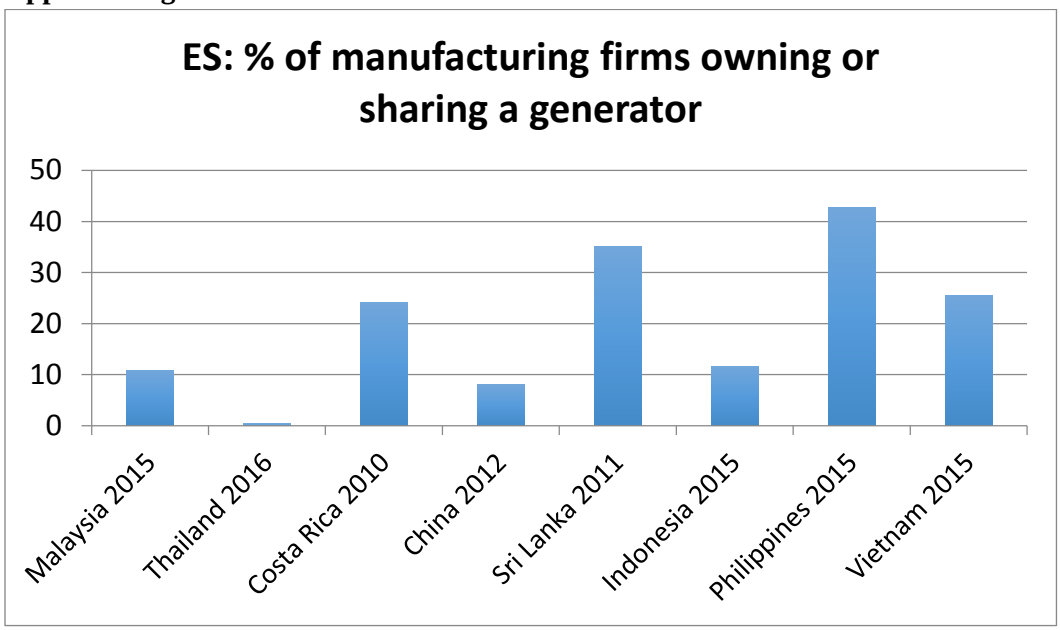

Source: Enterprise Surveys

**Appendix Figure 34**



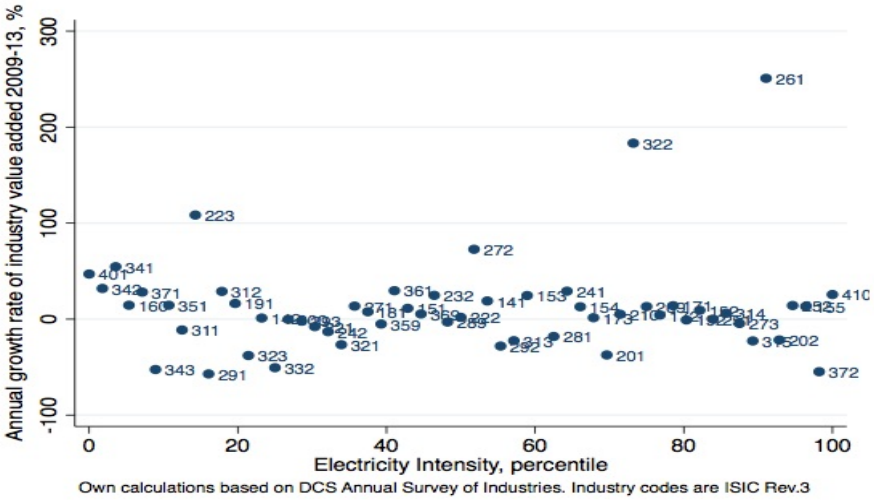

Source: WDI

**Appendix Figure 35**

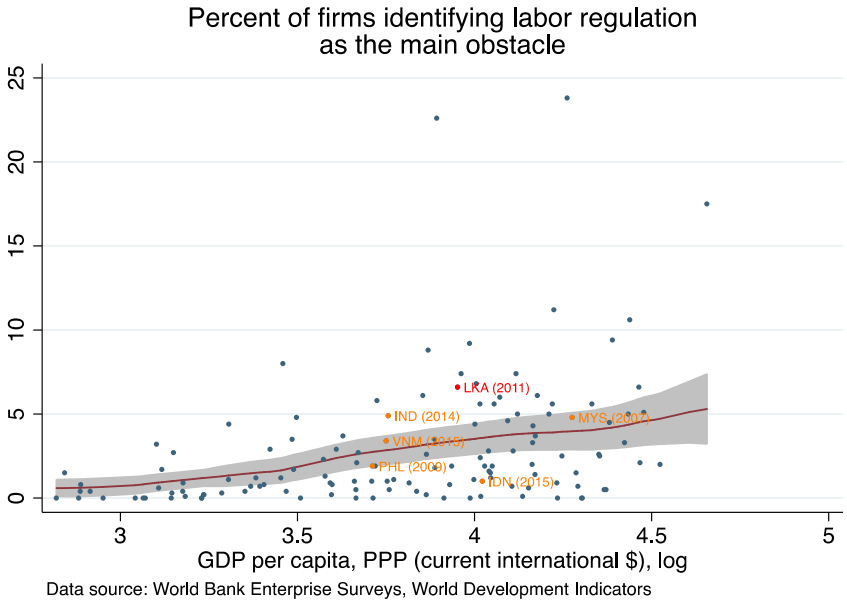



Source: Enterprise Surveys

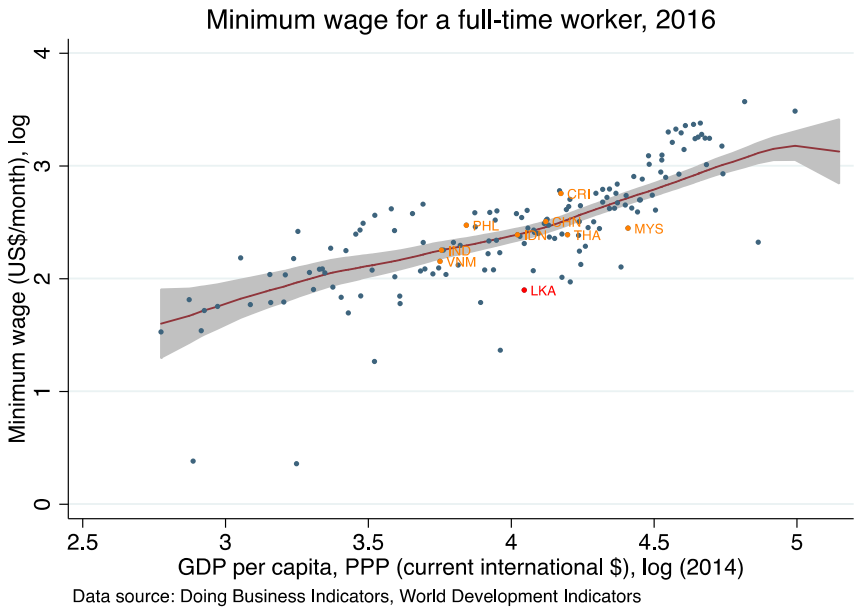
**Appendix Figure 36**



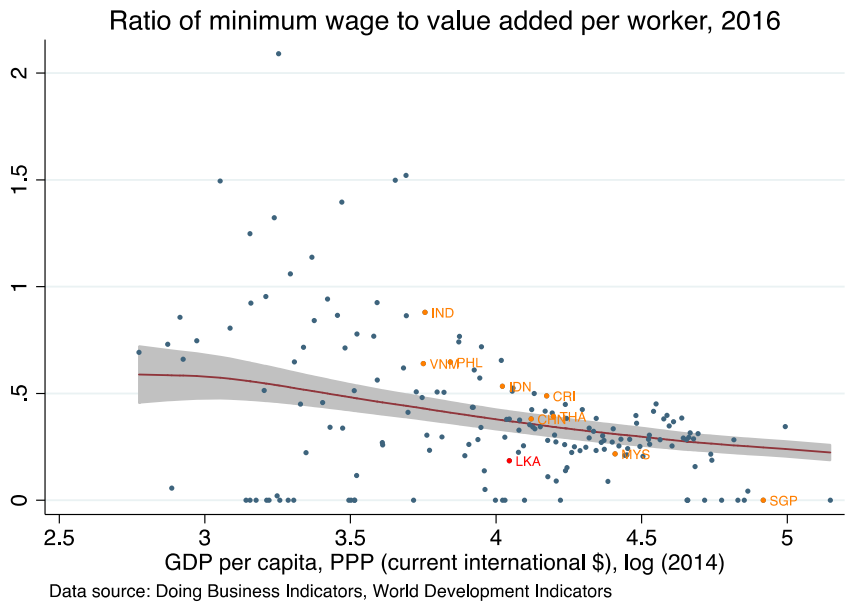

**Appendix Figure 37**




**Appendix Figure 38**



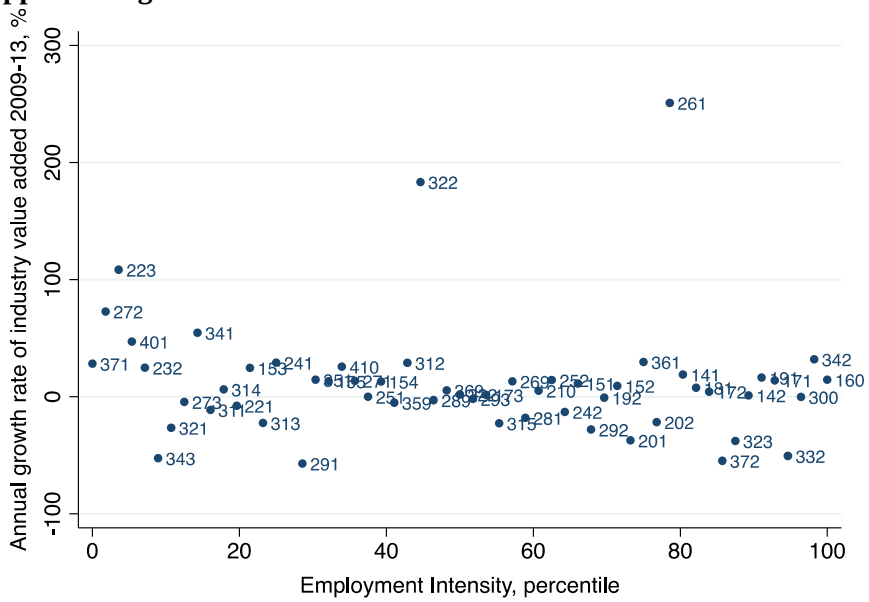

**Appendix Figure 39**




**Appendix Figure 40**

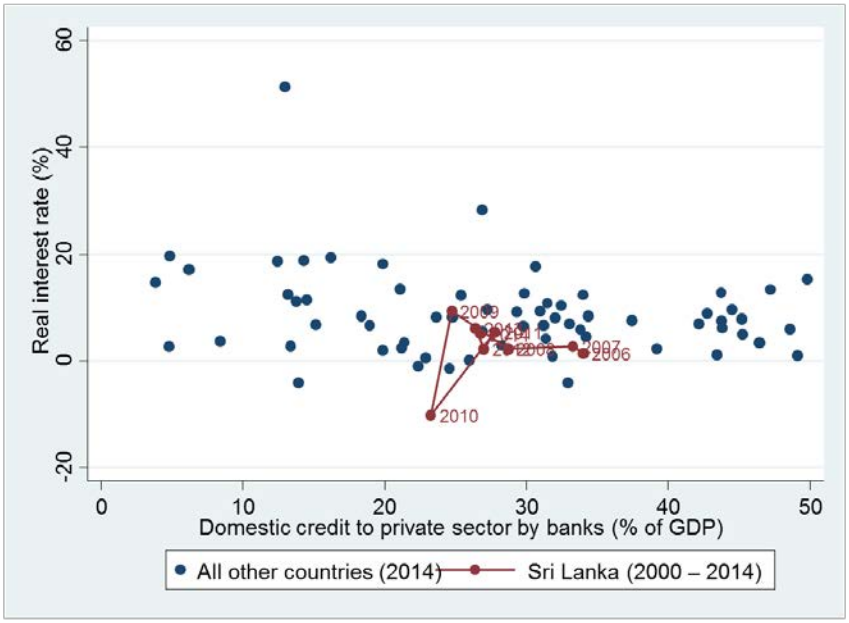
Own calculations based on DCS Annual Survey of Industries. Industry codes are ISIC Rev.3

## Appendix Figure 41




Own calculations based on DCS Annual Survey of Industries. Industry codes are ISIC Rev.3

## Appendix Figure 42




Source: WDI

**Appendix Figure 43**

**Years Lived in Less Than Ideal Health (YLDs)**

**2013**

**(years per 100 000 population, all ages, not age-standardized)**

| Country | mean | lower bound | upper bound |
|---|---|---|---|
| Sri Lanka | 9679 | 7158 | 12614 |
| Denmark | 13229 | 9942 | 17084 |
| France | 13224 | 9941 | 16901 |
| Germany | 15284 | 11390 | 19600 |
| United Kingdom | 13464 | 10068 | 17269 |
| United States | 13634 | 10219 | 17402 |

**Global Burden of Disease Data Tool**

**http://www.healthdata.org/gbd**

**Source: Institute for Heatlth Metrics and Evaluation**