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Timor-Leste Growth Diagnostic

An assessment of the binding
constraints to growth

The Growth Diagnostic working group is composed of the following main contributors:

Mark Gellerson, Senior Regional Program Economist USAID/RDMA
Whitney Dubinsky, Regional Program Economist USAID/ RDMA
Brandon Fenley, Program Economist USAID/ Indonesia
Kishore K.C., Program Economist USAID/ Nepal

With additional assistance from the USAID/Timor-Leste staff of:

Rick Scott, Mission Director
Ryder Rogers, Economic Growth Officer
Candido Conceicao, Program Management Specialist
Angela Da Cruz, Program Management Specialist
Jessica Snaza, Economic Growth Officer

Special thanks to the following contributors for their additional assistance in data procurement and editing:

USAID Economic Analysis & Data Service Team (with special thanks to Cristobal DeBrey and Adriana Harvey)
Alefia Merchant Agriculture Development Officer USAID/ RDMA
Greg Leon Private Enterprise Officer USAID/ RDMA
James Gilman Economic Growth Officer USAID/Ukraine
John Thurow Agriculture Development Officer USAID/ India
Marika Olsen Agriculture Development Officer USAID/ Indonesia

Table of Contents

Chapter 1 Executive Summary	8
Chapter 2 HRV Methodology, Comparators & Growth Diagnostic Roadmap	14
Chapter 3 Timor-Leste Overview	19
Historical Context	19
Macroeconomic Performance	19
Poverty	23
Social Indicators	23
Chapter 4 Microeconomic Risks	27
Land Tenure & Property Rights	27
<i>Current Situation in Timor-Leste</i>	28
<i>Land Tenure and Property Rights as a Binding Constraint</i>	30
Regulatory Environment for Private Business	34
<i>Current situation in Timor-Leste</i>	34
<i>Enforcing Contracts</i>	36
<i>Starting a business</i>	38
Chapter 5 Infrastructure	40
Roads	41
Power	43
Chapter 6 Human Capital	46
Education and Skills	47
<i>Education Supply – Quantity</i>	48
<i>Education Supply – Quality</i>	52
Education Demand and Firm’s Perception of Education	56
<i>Education Demand – Unemployment and Labor Force Participation</i>	56
<i>Education Demand – Firm’s Perceptions of Education</i>	59
Health and Human Capital	61
Chapter 7 Expanded Agricultural Sector	71
APPENDIX A: Macroeconomic Risks	85
APPENDIX B: High Cost of Finance	91
Access to Capital (Foreign and Domestic)	92
<i>International Capital</i>	92

<i>Domestic Capital</i>	93
Financial Intermediation.....	93
Lack of Lending.....	94
<i>Why Banks Are Not Lending</i>	95
APPENDIX C: Non-Binding Microeconomic Risk.....	100
<i>Taxes and Tax Administration</i>	100
<i>Tariffs and Non-Tariff Barriers to Trade</i>	101
Corruption.....	103
<i>Current situation in Timor-Leste</i>	104
<i>Is Corruption a Binding Constraint?</i>	105
Insecurity.....	108
<i>Political Insecurity</i>	108
<i>Crime</i>	110
APPENDIX D: Market Failures.....	113
Self-Discovery and Innovation.....	113
<i>Lack of Diversity of the Export Basket</i>	115
<i>Gross Dependence on Spending</i>	116
Coordination Failure.....	117
Works Cited.....	118

Tables

TABLE 3-1 GENERAL FACTS AND FIGURES FOR TIMOR-LESTE	26
TABLE 4-1 REGISTERING PROPERTY DOING BUSINESS SCORES FOR COMPARATOR COUNTRIES.....	32
TABLE 5-1 GLOBAL COMPETITIVENESS REPORT 2011	40
TABLE 5-2 ROAD CONDITION OF NATIONAL AND DISTRICT ROADS	41
TABLE 6-1 HUMAN CAPITAL DEVELOPMENT FUND IN \$ MILLIONS.....	47
TABLE 6-2 ENROLLMENT RATES FOR TIMOR-LESTE AND COMPARATORS	49
TABLE 6-3 HIGHEST LEVEL OF EDUCATION	51
TABLE 6-4 ESTIMATED SCHOOL INFRASTRUCTURE NEEDS.....	52
TABLE 6-5 KEY LABOR INDICATORS FROM ILO LABOR SURVEY	56
TABLE 6-6 MEAN MONTHLY WAGES, RECEIVED BY MALE AND FEMALE PAID EMPLOYEES, BY SECTOR OF ACTIVITY OF THEIR MAIN JOB	57
TABLE 6-7 PERCENTAGE OF UNEMPLOYED PERSONS (ILO 'RELAXED' DEFINITION) BY SEX, LOCALITY, AND EDUCATION LEVEL (2010).....	58
TABLE 6-8 EMPLOYED PERSONS BY LEVEL OF EDUCATION AND USUAL WORKPLACE (2010).....	59
TABLE 6-9 PERCENTAGE OF CHILDREN UNDER 5 CLASSIFIED AS MALNOURISHED (BELOW 3 STANDARD DEVIATIONS)	62
TABLE 6-10 2004 DALY RATES PER 100,000 POPULATIONS, BY CAUSE (FOR ALL DISEASES THAT HAVE EFFECT TIMOR-LESTE MORE SO THAN LOW-INCOME COMPARATORS)	65
TABLE 6-11 TOP TEN NATIONAL BURDENS TO TIMOR-LESTE BASED ON 2004 DALY RATES PER 100,000 POPULATIONS, BY CAUSE.....	66
TABLE 7-1 RICE FARMERS BY DISTRICT (2000)	74
TABLE 7-2 TIMOR-LESTE'S MERCHANDIZE EXPORTS, 2004-2008 (\$ MILLION).....	74
TABLE 7-3 TIMOR-LESTE: FOOD BALANCE SITUATION.....	76
TABLE 7-4 VOLUME OF IMPORTED FRUITS AND VEGETABLES (TONS), 2010	77
TABLE 7-5 IRRIGATION AREAS AND REHABILITATED SCHEMES BY DISTRICTS (HA).....	81
TABLE 7-6 NUMBER OF TRACTORS IN TIMOR-LESTE BY DISTRICT	82
TABLE A-1 CURRENT AND CAPITAL EXPENDITURES	85
TABLE A-2 GOVERNMENT REVENUE AND EXPENDITURE.....	86
TABLE B-1 PERCENTAGE OF FIRMS WITH A BANK LOAN OR LINE OF CREDIT.....	94
TABLE C-1 WORLD ECONOMIC SURVEY CORRUPTION RELATED RESPONSES.....	107
TABLE D-1 EXPORT BASKET	115

Figures

FIGURE 1-1 BINDING CONSTRAINTS TO BROAD-BASED, MARKET-LED ECONOMIC GROWTH	13
FIGURE 2-1 HRV METHODOLOGY.....	14
FIGURE 2-2 SUSTAINED, BROAD-BASED GROWTH METHODOLOGY	15
FIGURE 2-3 COMPARATOR COUNTRIES BY WORLD BANK INCOME CLASSIFICATION.....	17
FIGURE 3-1 GDP PER CAPITA (CONSTANT 200 US\$).....	20
FIGURE 3-2 GDP GROWTH RATES (ANNUAL %).....	21
FIGURE 3-3 INFLATION RATE.....	22
FIGURE 3-4 POPULATION PYRAMID	23
FIGURE 3-5 INVESTING IN PEOPLE RADAR	24
FIGURE 3-6 GOVERNING JUSTLY AND DEMOCRATICALLY RADAR.....	25
FIGURE 4-1 PROPERTY RIGHTS FACTOR, HERITAGE FOUNDATION	30

FIGURE 4-2 WORLD BANK DOING BUSINESS SCORES	35
FIGURE 4-3 BUSINESS FREEDOM INDEX, HERITAGE FOUNDATION	36
FIGURE 4-4 ENFORCING CONTRACTS SCORES, WORLD BANK DOING BUSINESS	37
FIGURE 4-5 ENFORCING CONTRACTS: COST (% OF DEBT), WORLD BANK DOING BUSINESS.....	38
FIGURE 4-6 STARTING A BUSINESS, WORLD BANK DOING BUSINESS	39
FIGURE 6-1 PRIMARY GROSS ENROLMENT RATIO	49
FIGURE 6-2 PERCENTAGE OF REPEATERS IN PRIMARY SCHOOL, UNESCO	50
FIGURE 6-3 PERCENTAGE OF MALES AND FEMALES WITH NO PRIMARY EDUCATION, DHS	51
FIGURE 6-4 PUBLIC EXPENDITURE ON EDUCATION (PERCENTAGE OF GNI), UNESCO.....	52
FIGURE 6-5 ADULT LITERACY RATE, UNESCO & DHS	53
FIGURE 6-6 QUALITY OF PRIMARY EDUCATION, THE GLOBAL COMPETITIVENESS REPORT 2011-2012	54
FIGURE 6-7 QUALITY OF MATH AND SCIENCE, THE GLOBAL COMPETITIVENESS REPORT 2011-2012	55
FIGURE 6-8 QUALITY OF EDUCATION, THE GLOBAL COMPETITIVENESS REPORT 2011-2012	55
FIGURE 6-9 LABOR FORCE PARTICIPATION RATE, WDI & DHS	57
FIGURE 6-10 THE MOST PROBLEMATIC FACTORS OF DOING BUSINESS, THE GLOBAL COMPETITIVENESS REPORT 2011-2012	60
FIGURE 6-11 PERCENT OF UNDER-FIVES SUFFERING FROM MODERATE & SEVERE WASTING AND STUNTING, UNICEF	63
FIGURE 6-12 PREVALENCE OF UNDERNOURISHMENT, WDI	64
FIGURE 6-13 ESTIMATED PREVALENCE OF TB PER 100 000 POPULATION, WHO	67
FIGURE 6-14 BUSINESS IMPACT OF TUBERCULOSIS, THE GLOBAL COMPETITIVENESS REPORT 2011-2012	68
FIGURE 6-15 MALARIA SITUATION IN TIMOR-LESTE, 2010: AT A GLANCE	68
FIGURE 6-16 BUSINESS IMPACT OF MALARIA, THE GLOBAL COMPETITIVENESS REPORT 2011-2012	69
FIGURE 7-1 EXPANDED METHODOLOGY.....	71
FIGURE 7-2 LAND USE IN TIMOR-LESTE.....	72
FIGURE 7-3 RICE YIELD (HG/HA), FAOSTAT	73
FIGURE 7-4 MAIZE YIELD (HG/HA), FAOSTAT	75
FIGURE 7-5 BASIC FOOD SUPPLY AND DEMAND IN 2010 AND PROJECTION.....	76
FIGURE 7-6 FOOD SECURITY SITUATION IN TIMOR-LESTE.....	78
FIGURE A-1 ECONOMIC TRENDS, IMF ARTICLE IV REPORT	86
FIGURE A-2 PETROLEUM FUND, IMF ARTICLE IV REPORT	89
FIGURE A-3 TIMOR-LESTE'S ANNUAL PETROLEUM REVENUES.....	89
FIGURE B-1 PERCENT OF FIRMS IDENTIFYING THE PROBLEM AS THE MAIN OBSTACLE, WB ENTERPRISE SURVEY	91
FIGURE B-2 PERCENT OF FIRMS IDENTIFYING THE PROBLEM AS THE MAIN OBSTACLE, FIRM SIZE, WB ENTERPRISE SURVEY ..	92
FIGURE B-3 TOTAL DEPOSITS AS A PERCENTAGE OF TOTAL ASSETS, CENTRAL BANK OF TIMOR-LESTE	93
FIGURE B-4 TOTAL LOANS AS A PERCENTAGE OF TOTAL ASSETS, CENTRAL BANK OF TIMOR-LESTE	94
FIGURE B-5 SOURCE OF FIRM INVESTMENT IN FINANCE, WB ENTERPRISE SURVEY.....	95
FIGURE B-6 DEPOSIT AND INTEREST RATES, WDI	96
FIGURE B-7 PRIVATE CREDIT VS INTEREST RATE SPREAD, WDI	96
FIGURE B-8 NON-PERFORMING LOANS AS A PERCENTAGE OF TOTAL LOANS, CENTRAL BANK OF TIMOR-LESTE	97
FIGURE B-9 LOAN LOSS PROVISIONING AS A PERCENTAGE OF TOTAL LOANS, CENTRAL BANK OF TIMOR-LESTE.....	98
FIGURE C-1 PAYING TAXES, WB DOING BUSINESS	101
FIGURE C-2 TRADING ACROSS BORDERS: EXPORT, WB DOING BUSINESS	102
FIGURE C-3 TRADING ACROSS BORDERS: IMPORT, WB DOING BUSINESS	103
FIGURE C-4 CORRUPTION PERCEPTION INDEX, TRANSPARENCY INTERNATIONAL	105

FIGURE C-5 PERCENTAGE OF FIRMS EXPECTED TO PAY INFORMAL PAYMENT TO PUBLIC OFFICIALS, WB ENTERPRISE SURVEY	106
FIGURE C-6 POLITICAL STABILITY AND ABSENCE OF VIOLENCE ESTIMATE, WB GOVERNANCE INDICATORS	108
FIGURE C-7 STATE FRAGILITY: SECURITY, CENTER FOR SYSTEMIC PEACE	109
FIGURE C-8 POLITICAL STABILITY AND ABSENCE OF VIOLENCE ESTIMATE AGAINST GNI PER CAPITA, WB GOVERNANCE INDICATORS & WDI	109
FIGURE C-9 SECURITY COSTS (PERCENTAGE OF SALES), WB ENTERPRISE SURVEYS	110
FIGURE C-10 LOSSES DUE TO THEFT, ROBBERY, VANDALISM AND ARSON AGAINST THE FIRM (% OF SALES), WB ENTERPRISE SURVEYS	111
FIGURE C-11 PERCENTAGE OF FIRMS PAYING FOR SECURITY, WB ENTERPRISE SURVEYS	111
FIGURE D-1 GLOBAL COMPETITIVE, INTELLECTUAL PROPERTY SCORE.....	114

Chapter I Executive Summary

This report, created solely by economists employed by USAID, explores the constraints to growth experienced by the private sector in Timor-Leste and attempts to identify those constraints that are presently most critical or “binding.” This Growth Diagnostic study, coupled with previous studies and assessment, is meant to help the USAID Timor-Leste mission frame and build its Country Development Cooperation Strategy (CDCS) by identifying key impediments to economic growth across all sectors in Timor-Leste.

Methodology

The study, conducted from November 2011 to April 2012, applies a growth diagnostic methodology developed by USAID that expands upon the original growth diagnostic methodology developed by Hausmann, Rodrik, and Velasco (HRV). This methodology focuses on identifying the principal constraints to broad based economic growth rather than to growth per se. In addition to looking at the constraints to private investment as in HRV, this expanded methodology also focuses on factors that either limit the growth of agriculture and other rural economic activities or reduce the labor-intensity of production or the employability of the labor force. In the end, however, we had to simplify this expanded methodology to make it more consistent with the rudimentary nature of Timor-Leste’s economy and relative lack of economic data.

Using this expanded methodology, and through detailed statistical analysis, a literature review of existing studies, and interviews with private sector business owners and public officials, the team identified three key constraints to growth in Timor-Leste. When doing so, the USAID team of analysts sought a medium-term growth path that focuses on improving productivity in, and commercializing, the agricultural sector.

Analysis of Constraints to Timor-Leste’s Growth

The analysis itself looked at two broad sets of possible constraints—those limiting the growth of non-farm production and employment and those limiting the growth of agricultural production and employment.

Non-farm constraints:

Macroeconomic: Timor-Leste’s current macroeconomic position is relatively solid. The Government has a large fiscal surplus, no debt, a sustained inflow of petroleum revenues over at least the next 10 – 15 years, a substantial current account surplus (thanks again to petroleum revenue inflows and despite the fact that merchandise imports far exceed merchandise exports), and a stable currency. Because the macroeconomy is relatively stable, instability is not imposing significant costs on the economy, and individuals have little need to take “evasive actions” to minimize or avoid altogether the costs associated with such instability. Timor-Leste’s economy does face several macroeconomic challenges or risks, including: a) achieving an acceptable balance between growth and inflation; b) increasing resource mobilization from domestic taxation so as to provide a sustainable base for government spending in the post-petroleum era; and c) making public spending more effective by strengthening public financial management systems. At the moment, however, none of these risks comes even close to being a binding constraint to Timor-Leste’s growth.

High Cost of Finance: If the cost of finance is high, enterprises are unable to afford the funds they need to operate, start, or expand their businesses, which is hindering growth and employment generation. Timorese firms lack access to finance. In fact, according to the 2009 Enterprise Survey, access to finance was the third most frequently cited business obstacle that firms identified, while among small Timorese firms (5-19 employees) access to finance was the second most frequently identified obstacle

There are several reasons why access to finance is a significant problem in Timor-Leste. For one thing, the relatively high interest rate spreads (the difference between deposit and lending rates) suggests that competition and efficiency is relatively low in the financial sector and that financial intermediation is not carried out effectively. Another important factor involves the general reluctance of banks in Timor-Leste to lend. Banks are not experiencing a shortage of capital, but there is a scarcity of available loan funds. For example, the average loan to asset ratio for Timor-Leste Banks is only about 30 percent. Several factors explain banks' reluctance to lend. These include the current high level of non-performing loans (around 40 percent of total loans), the lack of legal recourse for lenders if borrowers default (mainly related to difficulties with contract enforcement), and uncertainties associated with land tenure that make it difficult for potential borrowers to use land as collateral for a loan.

Without a doubt, the high cost of finance—specifically the difficulty of accessing finance—is a serious constraint to growth in Timor-Leste. However, the root cause of this constraint lies not with the financial sector itself and the banks that comprise it, but with problems with the business enabling environment, which are considered separately under Microeconomic Risks. Thus, we do not consider the high cost of finance per se to be a binding constraint for Timor-Leste.

Microeconomic: Microeconomic risks associated with private sector investment can lead to the inability of private entrepreneurs to adequately appropriate returns. They are impediments to the efficient functioning of private enterprises and typically relate to the policies, rules, regulations, and institutions that impact firms or factors of production.

In Timor-Leste, a variety of key perception surveys, including World Bank's Doing Business and Enterprise Surveys, Transparency International's Corruption Perception Index, the Global Integrity Index, and Heritage Foundation's Economic Freedom Survey, highlighted several important microeconomic barriers to growth. The first is the lack of secure land tenure and property rights, which has been exacerbated in Timor-Leste by repeated periods of conflict and multiple changes in land tenure systems. Since property rights are not formalized, citizens, business owners, and would-be investors fear that their ownership rights will be challenged or that their property will be taken away by government or other individuals. This lack of security is a major disincentive to long-term investments in land, capital, and enterprise. At the same time, banks or microcredit lenders are unable to use land titles as collateral due to insecure property rights and inconsistent claims registries and are often either unwilling to make loans or charge much higher interest rates as a result. Such constraints on investment and credit availability clearly hinder growth.

Another microeconomic constraint relates to the weak business enabling environment in Timor-Leste. The World Bank's "Doing Business" survey, other similar studies of Timor-Leste's business and policy environment, and the team's own interviews and research consistently identified problems, high costs, and long delays associated with such processes as starting a business or enforcing contracts. Once again, these problems reduce the returns to private investment and clearly impede the development of Timor-Leste's private sector. Corruption and lack of political security are also often cited as hindering Timor-Leste's growth and development. However, there is mixed evidence concerning the significance of this impact.

In summary, we conclude that certain microeconomic constraints are important enough that they rise to the level of binding constraints to the growth of output and jobs in Timor-Leste. Specifically, weak land tenure and difficulties associated with starting a business and enforcing contracts reduce the potential returns to private investment and significantly impede firms' access to capital.

Infrastructure: Infrastructure is the backbone of any economy. Without minimally adequate infrastructure, no country can realistically hope to grow and prosper since the lack of sufficient infrastructure services raises costs, lowers productivity, undermines competitiveness, and impedes

service delivery. Roughly 70 percent of Timor-Leste's infrastructure was destroyed in the 1999 conflict, and the country is ranked below all but a few other countries in the Global Competitiveness Report when it comes to the provision of adequate infrastructure.

Timor-Leste's medium-term growth prospects depend heavily on increasing productivity and commercialization in the agriculture sector. In this context, the adequacy of Timor-Leste's road network—especially district and rural roads—is particularly important. The same is true, but to a lesser extent, for access to reliable rural electricity supply and irrigation (in selected areas of Timor-Leste). Roughly 70 percent of freight and 90 percent of passengers travel by road in Timor-Leste. In 2008, roughly 91 percent and 100 percent of national and district roads respectively were assessed to be in either poor or very poor condition. This was due to a variety of factors, including inadequate design, landslides and road failure resulting from heavy rains and insufficient drainage, and underinvestment in road maintenance. It will be exceedingly difficult for Timor-Leste's agricultural sector to progress beyond the subsistence level in the absence of significantly improved road networks.

Electricity is another roadblock to development for Timor-Leste. Progress has been slow in expanding the national electric utility's (EDTL) service coverage across Timor-Leste, improving the reliability of service, and strengthening EDTL's financial performance. Currently, Timor-Leste's power system is composed of about 58 isolated local distribution diesel powered generators, and only about one third of the population has access to electricity, generally for roughly six hours per day. Only the central parts of Dili and Baucau have 24-hour access to electricity. As a result, many of the larger electricity consumers have invested in their own standby generators. The Government of Timor-Leste does have ambitious power sector development plans and is taking steps to build two new power plants and an accompanying transmission system. In late November 2011, the first unit came on line at the Hera plant, thereby significantly increasing generating capacity available for the Dili district. However, work on the high voltage transmission network continues to be delayed, and general problems of power system access and reliability continue. Once the new generating units are completed and online, Timor-Leste will have more than enough generating capacity to meet prospective growth in demand resulting from either increased electrification of the island or growth of the economy. Nevertheless, supplying that capacity to a predominantly rural population will remain a major challenge for some time to come.

In summary, Timor-Leste has infrastructure problems across the board, and these problems clearly constrain the growth of output and jobs. A major effort backed by significant government resources is already well underway to strengthen Timor-Leste's power grid, and significant progress has already been made in addressing generating capacity shortages. In contrast, relatively little progress has been made in improving the country's road network, which will make it exceedingly difficult to develop Timor-Leste's agricultural sector and overall economy in the medium-term. Weak infrastructure—especially roads—is judged by the team of economists to be a binding constraint for Timor-Leste.

Human Capital: The 1999 crisis had a great impact on Timor-Leste's education sector when nearly 90 percent of the country's schools were either damaged or destroyed. Additionally, qualified Indonesian teachers fled the country, leaving many classrooms without instructors. The changing political situation also required schools to drastically alter their textbooks and curricula, leaving even experienced teachers struggling to meet their students' educational goals. The 2006 crisis caused additional damage to educational institutions.

The overall educational enrollment ratios in Timor-Leste are generally higher than for comparator countries, especially at the primary and tertiary levels, and they have increased in recent years. At the same time, enrollment rates are relatively low for females and children in rural areas. Despite fairly respectable enrollment rates, levels of actual educational attainment are low. For example, only about 50 percent of adults older than 15 years old in Timor-Leste are literate, which is a lower rate than nearly

all of the low middle and upper middle comparators, as well as many low income countries. For example, East Nusa Tenggara, Indonesia, has a literacy rate over 80 percent. Similarly, in the Global Competitiveness Report, Timor-Leste has the lowest score against competitors in the Quality of Primary Education indicator and scored 139th out of 142 countries overall.

There is clearly a strong demand for well educated workers in Timor-Leste. Unemployment rates are relatively low at seven percent for individuals with a polytechnic or university degree. Also, surveys suggest that an inadequately educated work force is one of the biggest problems facing businesses in Timor-Leste. This same view was found in interviews carried out with the private sector for this study.

Despite setbacks, the Timorese government has displayed a commitment to education. Educational funding as a percent of the national economy has increased in recent years; the Government has established a Human Capital Fund and the Government has laid out ambitious plans for strengthening Timor-Leste's educational system in its "Strategic Development Plan for 2010 – 2030." Nevertheless, human capital shortages continue to significantly constrain the growth of Timor-Leste's economy in a variety of ways. The private sector cannot obtain the skilled workers it needs, government capacity and effectiveness is limited by skills shortages, and the lack of basic knowledge and skills impedes efforts to enhance productivity and commercialization in the agricultural sector. For these reasons, the lack of high quality human capital is a binding constraint to Timor-Leste's development.

The team spent additional time researching, at the request of the mission, the relation between ongoing health concerns and human capital. Since human capital is a binding constraint to growth in Timor-Leste, the team explored some of the issues directly impacting the labor force and ability of the Timorese population to maximize their cognitive development. It is clear that malnutrition hinders the population's educational attainment and labor productivity. Also, based on business surveys and the burden of disease from mortality and morbidity, diseases like tuberculosis and malaria are dramatically affecting the workforce in Timor-Leste. The status of health remains a major hindrance to labor force productivity and the overall educational level of the Timorese population.

Market Failures: Market failures are generally situations in which decisions made in a free market context (without government intervention) lead to inefficient outcomes. They are typically caused by externalities, the presence of public goods that are difficult for markets to provide and allocate, and the lack of information that would allow firms and consumers to make reasonable decisions on operating a business or buying goods. In the expanded growth diagnostic model used for this study, many market failures are addressed in the microeconomic and macroeconomic risk sections, such as governments failing to establish adequate property rights or effective rule of law. Market failures considered here relate to self-discovery and coordination externalities.

There are two types of self-discovery: 1) firms discover that producing a particular good in a particular location is profitable (comparative advantage), or 2) firms discover that producing something new or in a new way is worthwhile (technological innovation). Self-discovery is less likely in a country without intellectual property rights or in countries with low barriers to entry since either or both reduce the incentives for firms to innovate or enter new markets. Timor-Leste ranks very low when it comes to protecting intellectual property and is characterized by significant market entry barriers. The characteristics of Timor-Leste's economy--including low export volumes, the complete dominance of a single export product (coffee), and the gross over-reliance on government spending to drive the economy—suggests a lack of self-discovery.

Coordination failures occur when firms fail to cooperate with each other even though cooperation could increase their profits and lower costs. Interviews with farmers, entrepreneurs, and development

partners in Timor-Leste suggest that coordination failure most frequently results from the lack of market information that can provide adequate signals up and down value chains. Particularly in the agriculture sector, which employs 80% of the population, value-chains are very poorly connected. Farmers do not always know what the market wants in terms of the mix of produce, how much, and how often; the buyers do not know farmers' abilities to grow certain produce in certain quantities and times. Furthermore, supply chains themselves are extremely underdeveloped.

Overall, market failures relating to lack of self-discovery and poor coordination are surely present in Timor-Leste. However, given the very rudimentary nature of the economy, such market failures are not critical or binding constraints to its growth.

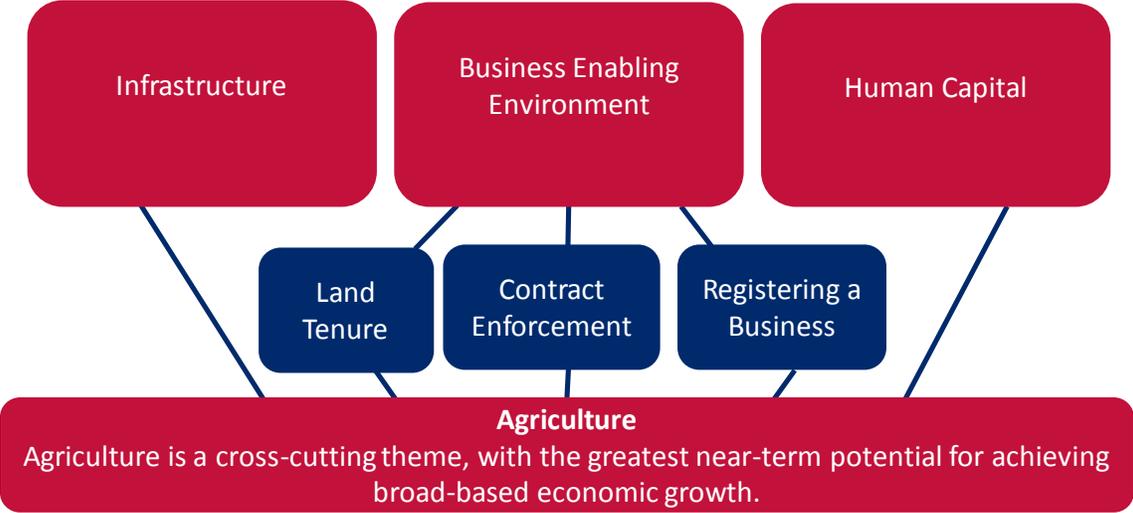
Agricultural Constraints

Timor-Leste is a predominantly agricultural economy with about 77 percent of the people living and working in the sector. There is a heavy reliance on traditional agricultural practices such as slash-and-burn cultivation (primarily in corn), the lowland cultivation of rice (both rainfed and irrigated), household gardens, harvested forest products (like tamarind, candlenut and fuel wood) and livestock production; and most agricultural outputs meet subsistence needs with relatively little being marketed commercially. The yields for the main crops are consistently very low by international norms. And Timor-Leste currently experiences a significant food deficit which is projected to last until 2020 at a minimum.

There are a number of factors which underlie the relatively weak performance of Timor-Leste's agricultural sector and ultimately hinder growth and employment generation in the overall economy. For example, while the Government has recently recruited a significant number of new agricultural extension workers, the quality of extension services remains very poor and this has recently been identified by the World Bank as an important constraint on achieving a more productive agricultural sector. Another major problem farmers face is poor access to credit. Farmers in Timor-Leste significantly lack access to credit. The three major banks in Timor-Leste operate almost entirely in Dili. Thus rural areas are served only by microfinance institutions. However, such institutions typically do not lend to agriculture (Reis, 2012) (Abel & Sequeira, 2008) because of cash flow problems and the riskiness of agriculture. Another related factor is the lack of linkages up and down the agricultural value chain, such as input suppliers, wholesalers, and processors. Because of the lack of input suppliers, wholesalers, and processors, there aren't opportunities for farmers to receive credit from these firms through "value chain financing" schemes by which these firms offer credit to farmers with whom they conduct business (DAI, 2006).

A third factor hindering the performance of the agricultural sector is weak rural infrastructure—especially poor quality or non-existent rural roads—which make it difficult and more expensive to obtain agricultural inputs and market outputs. Finally, land use and tenure issues patterns help to explain the difficulties of doing agribusiness in Timor-Leste. The lack of modern land-use protocols deters agribusiness actors from leasing land and participating in commercial agriculture. The World Bank argues that without contract enforcement and secure land tenure in rural Timor-Leste, rural development by the private sector will not grow. "[T]he potential benefits of the private sector will be more easily harnessed if investors and rural communities can be provided with a land access negotiation framework that supports the development of productive and equitable rural development partnerships and reduces the likelihood of crippling land disputes" (World Bank, 2009).

Figure I-1 Binding Constraints to Broad-Based, Market-Led Economic Growth

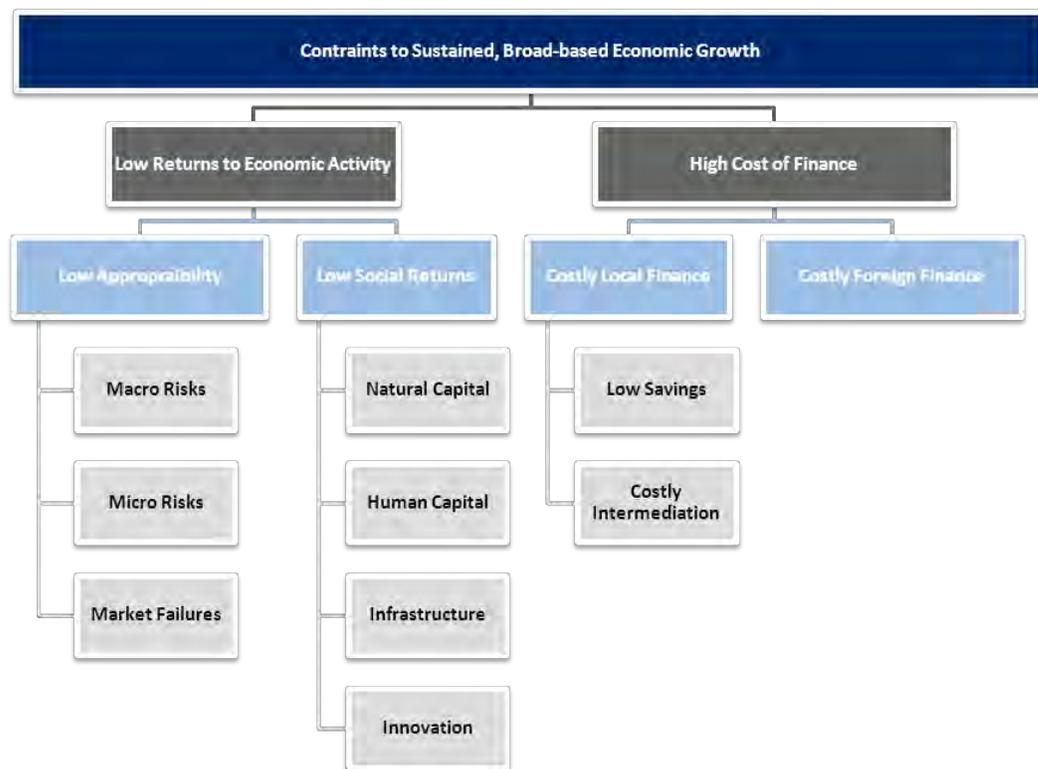


Chapter 2 HRV Methodology, Comparators & Growth Diagnostic Roadmap

The objective of this growth diagnostic analysis is to identify the most critical (or most binding) constraints to broad based growth to Timor-Leste at present, where broad based growth is defined as “growth that includes all major income groups, ethnic groups and women, and that significantly reduces poverty” (USAID, 2008). To achieve this end, an “expanded” version of the growth diagnostic methodology developed by Hausmann, Rodrik, and Velasco (HRV) was utilized (Hausmann, Rodrik, & Velasco, Growth Diagnostics, 2004).

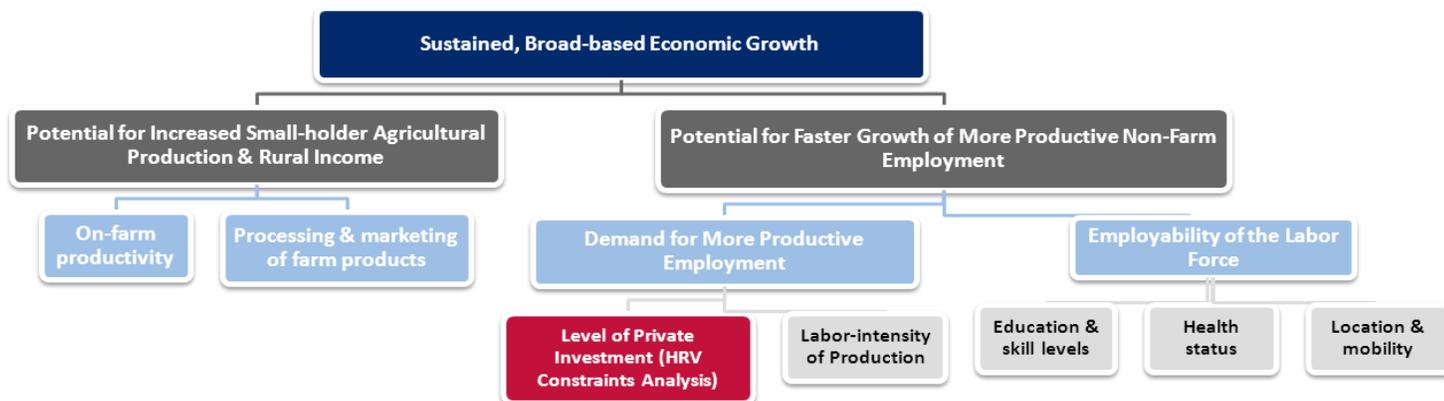
The original HRV methodology starts with an objective of private sector growth and analyzes demand and supply side constraints to private investment, which is considered to drive private sector growth. Figure 2-1 below, demonstrates the decision tree originally developed by Hausmann, Rodrik, and Velasco for identifying binding constraints to growth. In order to determine these constraints, an analyst looks at each level and determines if an input, like innovation, is holding back an economy.

Figure 2-1 HRV Methodology



In contrast, the methodology employed in this study takes as an objective sustained broad based economic growth and then analyzes constraints that can impede such broad based growth. Such constraints include: 1) the demand and supply side constraints to investment as addressed in HRV, 2)

Figure 2-2



constraints to small scale agriculture and agro-processing/marketing, and 3) constraints relating to the labor intensity of production and the “employability” of the labor force.¹

To apply the broad based growth diagnostics in practice, the analyst starts at the top of the decision tree and first assesses the likelihood as to whether or not there is apt to be one or more binding constraints further down a particular “branch”. If the answer is “no” then one concludes that the factors covered by this branch are not among the most important impediments to a country’s growth and one moves on to another branch. However, if the answer is “yes” then the analyst moves down to the various sub-branches and assesses the evidence as to where the most serious constraints to grow are. The end result is the identification of what, in the analyst’s view, are the most serious constraints or impediments to a country achieving sustained broad based growth. This does not mean that other policies or issues do not constrain the country’s broad based growth, just that they are not judged to be among the most serious constraints.

In principle, at each decision node, four tests are applied to distinguish between a binding constraint to growth and one that is not binding: First, if a constraint is binding, the shadow price associated with that constraint should be high. For example, if limited access to finance is a binding constraint, interest rates should be particularly high compared with rates in other countries. Second, a particular constraint is more likely to be binding if relaxing that constraint results in observably faster growth. Third, private agents should be making efforts to circumvent a binding constraint to growth. For example, if lack of reasonable quality rural roads is a binding constraint to growth, farmers should be observed finding alternative ways to get their products to market. Fourth and finally, the firms that survive in the face of a binding constraint to overall growth should consist disproportionately of those firms that do not depend on that constraint. For example, in an economy where finance is particularly costly, there will be relatively few firms operating in industries that rely heavily on external finance (Hausmann, Klinger, & Wagner, *Doing Growth Diagnostics in Practice: A ‘Mindbook’,* 2008).

Once on the ground in Timor-Leste, it became clear that the expanded growth diagnostic methodology for broad based growth described above would need to be modified to make it appropriate and practical. For example, and as reflected in the technical sections on Timor-Leste to follow, the

¹ See USAID, Growth Diagnostics Analytic Guide for Sustained, Broad-based Economic Growth, December 2011 (draft) for more details.

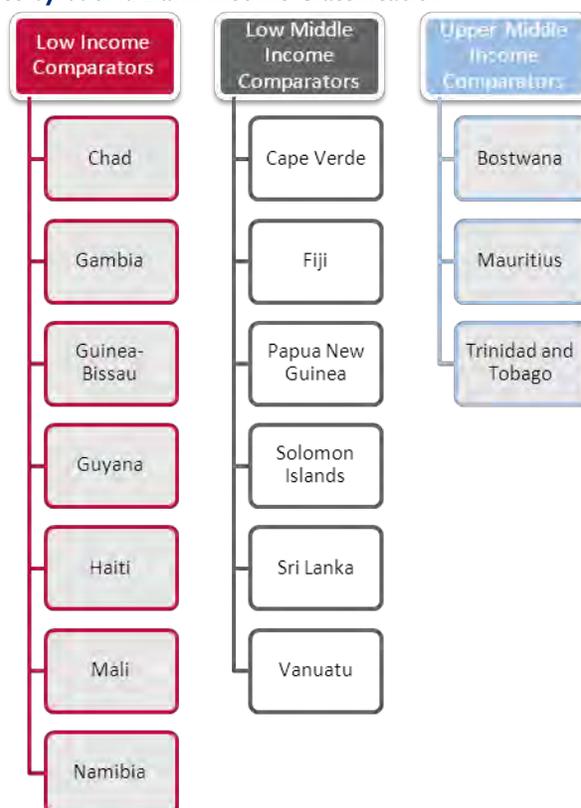
agricultural sector proved to be so rudimentary and overwhelmingly subsistence based that it was not necessary or meaningful to separately consider both the “on-farm productivity” branch and the “processing and marketing” branch. Instead, a single branch assessing, in effect, constraints to subsistence level agriculture was used. It was also quickly determined that there was little in Timor-Leste’s policy environment that discouraged labor intensive production techniques—either via a distorted domestic factor cost structure that made the use of labor relatively costly or a restrictive trade regime that reduces the cost competitiveness of Timor-Leste’s exports. Thus the branch relating to “labor intensity of production” was not worked through in detail. Finally, the branch relating to the “employability of the labor force” was not utilized since—for such a rudimentary economy—it was felt that factors relating to employability (health, education, and labor mobility) were adequately captured by the human capital node in the HRV branch of the overall methodology.

Finally, constraints analyses typically rely on comparisons between conditions in the country of interest and those in relevant comparator countries – including a set of countries at a roughly similar level of development as well as other countries that have already achieved a level of development to which the country aspires. In the case of Timor-Leste, finding meaningful comparator countries was no easy task given Timor-Leste’s rather unique characteristics—a small remote island nation, undeveloped in most ways and yet with a very significant inflow of petroleum revenue, and with a recent history of conflict. In the end, a number of comparators were identified

In order to properly gauge the current state of Timor-Leste, this analysis compares Timor-Leste against other developing nations in all sectors. The comparator countries fall into three separate economic income levels². At the time of this analysis, Timor-Leste was classified as a low middle income country. Low income countries are included in this analysis in order to have an understanding of the countries Timor-Leste should be outperforming. Additionally, upper middle income countries are included to show a benchmark of where Timor-Leste should be striving for in order to see sustained economic growth. Figure 2-3 displays the comparator countries by their World Bank Income Classification.

² The below income categories are based on the World Bank Income Classifications. “The World Bank’s main criterion for classifying economies is gross national income (GNI) per capita...Based on its GNI per capita, every economy is classified as low income, middle income (subdivided into lower middle and upper middle), or high income. Other analytical groups based on geographic regions are also used.”

Figure 2-3 Comparator Countries by World Bank Income Classification



Haiti was chosen as comparator nations for Timor-Leste because they both are island nations and much like Timor-Leste, Haiti also has been plagued by conflict in recent years. Additionally, the per capita GDP in Haiti and Timor-Leste are similar. Guinea-Bissau too was chosen because it also is a small nation ravaged by conflict and has similar GDP per capita.

Mali and Chad both have significant natural resource (gold in Mali and oil in Chad) dependency similar to Timor-Leste's reliance on oil. However, both countries are landlocked, large, and do not have similar climates to Timor-Leste. Botswana, Namibia, Guyana and Gambia were chosen because they had similar economic growth and population levels as Timor-Leste. In addition, these countries were included as comparators in the previous growth diagnostic carried out by the Government of Timor-Leste (Saldanha, Piedade, & Doraisami, 2008).

The Solomon Islands, Papua New Guinea, Fiji, Sri Lanka, Vanuatu, and Cape Verde were included because they are island nations that have similar levels of GDP as Timor-Leste. Fiji, Vanuatu, and Cape Verde were also used in a previous USAID assessment of the economy of Timor-Leste (USAID, 2008). Cape Verde was a former Portuguese colony but is more developed than Timor-Leste and so represents the growth path that Timor-Leste would aspire to. Trinidad and Tobago and Mauritius are both island nations and are upper middle income countries, whose growth path can inform Timor-Leste's.

The remainder of this paper is an in-depth analysis that outlines the binding constraints to growth in Timor-Leste. Chapter 3 outlines the current state of economic, social and demographic indicators in Timor-Leste, providing a contextual background on the country before diving into an in-depth analysis. Chapters four through six explain in-depth the binding constraints to growth in Timor-Leste based on the basic HRV methodology, specifically, microeconomic risks, infrastructure and human capital. Chapter

seven applies the broad-based growth model to the agriculture sector to determine whether there are key constraints unique to the agriculture sector. The Appendix sections include the nodes of the HRV model that were not identified as binding constraints to growth. Though not binding, these Appendixes include important information on the finance, export, microeconomic and macroeconomic sectors in Timor-Leste and can be considered important issues in Timor-Leste.

Chapter 3 Timor-Leste Overview

One of the newest countries in the world, the Democratic Republic of Timor-Leste is situated in the Eastern part of the island of Timor, with the district of Oecusse residing in the north central part of West Timor. Compared to many other islands in East Asia and the Pacific, it is rather a larger island.

The terrain is mountainous, with highlands in the central part of the island, and a more fertile, but sparsely populated southern coast. There are two seasons: the rainy season, which has very harsh, powerful downpours, and a dry season, with very little rain, even to the point of drought. The weather extremes of the island complicate agriculture.

Despite its small size, Timor-Leste is very diverse – in terms of languages, peoples, and geography. It has over 20 languages, which include Portuguese, Tetum (the official languages), Indonesian, English (the working languages) and fifteen indigenous languages.

Historical Context

In the sixteenth century the Portuguese colonized the eastern section of the island of Timor. In 1769, the Portuguese founded the current capital city of Dili. Since the Dutch had previously claimed the western portions of the island, the colonial powers put into place the Hague Treaty of 1916, definitively creating the borders between East and West Timor. The Portuguese utilized the island nation as little more than a trading post until late in the nineteenth century, investing little in health and infrastructure.

During World War II, the Japanese occupied the island of East Timor and the mountainous interior became the scene of a guerrilla campaign, known as the Battle of Timor. The campaign lasted for a little less than a year, and although Portugal was not a combatant, many East Timorese civilians and some Portuguese colonists fought with the Allies. This fighting resulted in the deaths of between 40,000 and 70,000 Timorese.

In 1974, Portugal all but abandoned the colony and Indonesia declared East Timor as its 27th province on July 17, 1976. The Indonesian occupancy of East Timor was tarnished by constant violence. A statistical report prepared for the Commission for Reception, Truth and Reconciliation in East Timor cited at least 102,800 conflict-related deaths in the period 1974–1999 (Benetech Human Rights Data Analysis Group, 2006).

Timor-Leste declared independence in 2002 following a 1999 referendum. Over 1000 people died in a war that broke out after the referendum. From 1999-2002, the UN through the United Nations Transitional Administration in East Timor (UNTAET) took over the administration of Timor-Leste. Independence was formalized on May 20, 2002 with Xanana Gusmão sworn in as the country's first President. Timor-Leste became a member of the UN on September 27, 2002.

Since independence, Timor-Leste has suffered from intermittent social unrest and civil war. In 2006, violence broke out between different factions in the military, spread to the general public, and became so intense in Dili, the capital, that the international community intervened. The United Nations was forced to deploy security forces to restore and maintain order when unrest and factional fighting forced 15 percent of the population (155,000 people) to flee their homes.

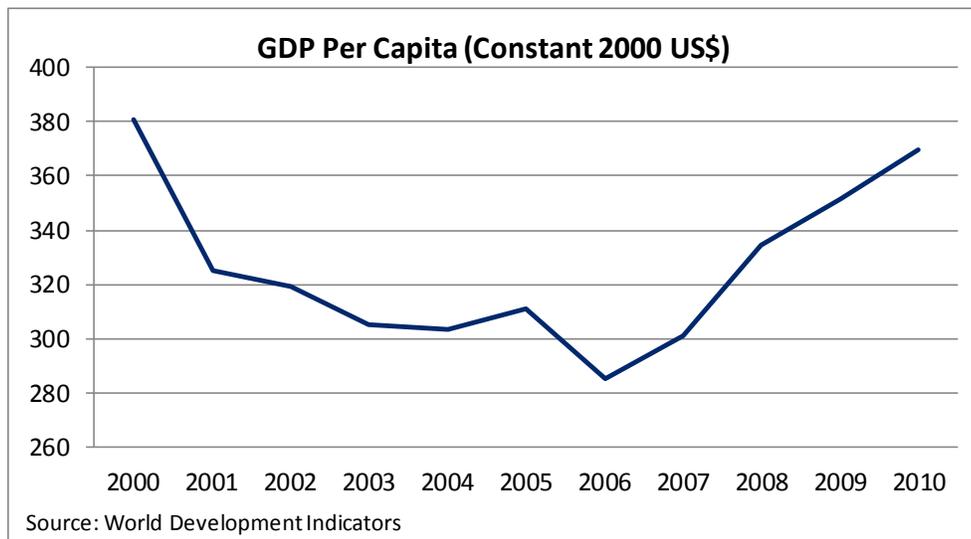
Currently, the country is still recovering from the decades of conflict and occupation and is slowly rebounding into a stable democracy.

Macroeconomic Performance

Growth

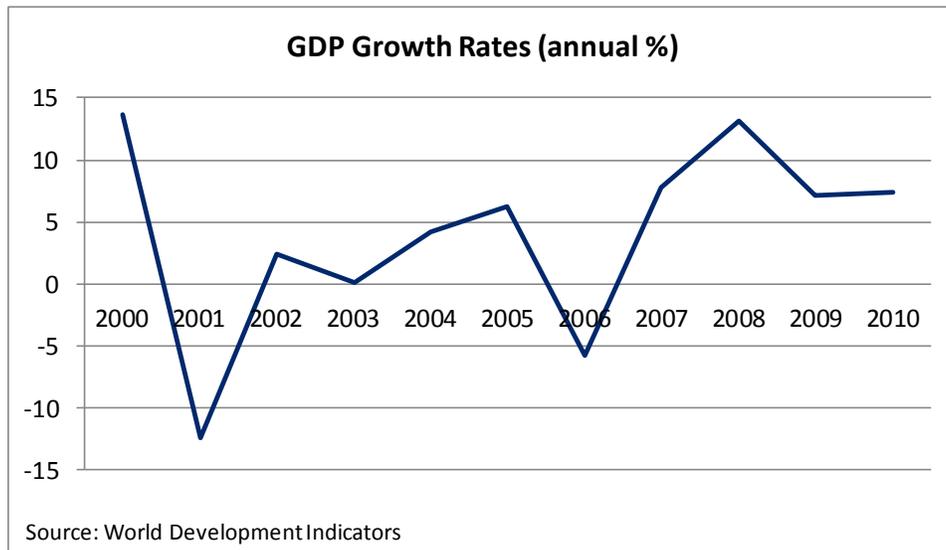
As seen in Figure 3-1 below, real non-oil GDP per capita in Timor-Leste has not yet regained the level achieved in 2000 (\$381 per capita). Real non-oil GDP per capita declined sharply in 2001 and continued a slower decline until a slight uptick in 2005, before dropping to its lowest level at \$285 per capita in 2006, during the violent outburst that year. It since followed a steady increase to \$369.5 per capita in 2010.

Figure 3-1



In terms of real growth rates (seen in Figure 3-2), in 2000, growth was in the double digits at 13.7 percent, but a major recession occurred just before independence in 2002, bringing a major reversal of -12.4 percent. Positive growth crept up, until 2006, during a major bout of violence and another recession, when growth dropped to -5.8 percent. Then growth steadily picked up afterwards, when, in 2008, it nearly reached the growth experienced in 2000 (13.2 percent). Growth since has slowed to around 7 percent.

Figure 3-2



Timor-Leste's economy is driven strongly by public expenditures, which in turn is enabled by petroleum revenues. In 2010, oil revenue constituted an immense percentage of GDP (350% of non-oil GDP or \$2.2 billion) (World Bank, 2011). That same year, the total stock of the Petroleum Fund, the account where all oil and gas revenue is initially deposited, was \$6.9 billion (Ministry of Finance, 2010). The Timorese economy is driven primarily through public spending, and will continue to be, especially while exports remain low and oil windfalls continue. Public spending's role in the economy is driven by capital investments in infrastructure, which have a multiplier effect by spurring local supply markets for construction. For instance, public capital investment expenditures accounted for 40 percent of non-oil GDP in 2010 and total public expenditures were 115 percent of non-oil GDP (World Bank, 2011). However, the reliance on oil is not sustainable, as the revenue flows from oil projects that are currently under production will end by 2025 (La'o Hamatuk, March 2007). Thus, Timor-Leste must find ways to diversify its economy away from oil.

Employment

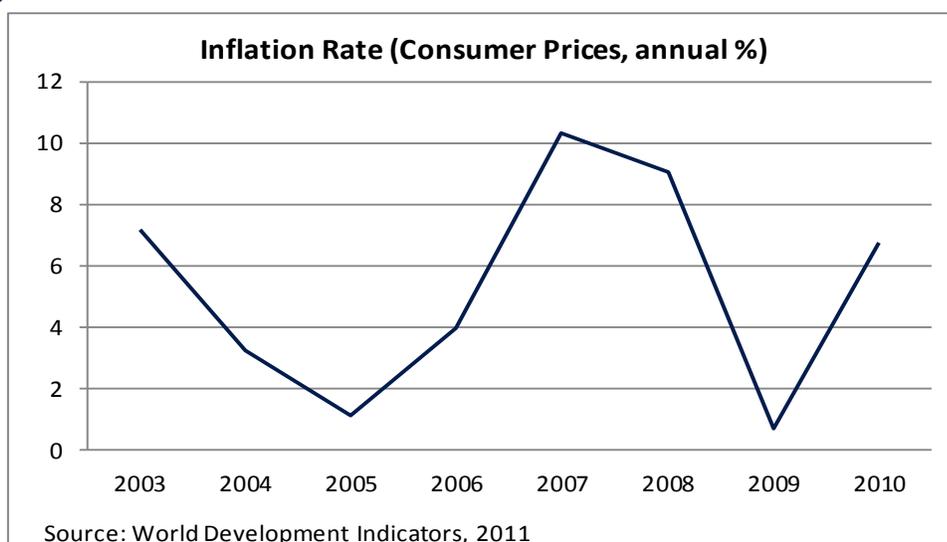
Since Timor-Leste's independence, unemployment and vulnerable employment has been high and the non-oil economy has been stagnant, while almost all of its populace work in the non-oil sector. According to the Government of Timor-Leste's 2012 Budget Book I, 70% of the labor force is vulnerably employed. In 2005, unemployment was measured at 27 percent in Dili (International Finance Corporation and Asian Development Bank, 2007). The ratio of employment to the population above 15 years of age (the working age population) has slowly increased from 65.2 percent in 2000 to 68 percent in 2009 (World Bank). Youth unemployment is especially high and is cause for alarm, due to the potential for crime and conflict. For example, during 2005 in Dili, youth unemployment (ages 15-24) was 40 percent (International Finance Corporation and Asian Development Bank, 2007). The ratio of employment to the population between ages 15-24 (youth) has steadily increased from 50.5 percent in 2000 to 59.7 percent in 2009³ (World Bank). Since the majority of the population is under age 25 (International Finance Corporation and Asian Development Bank, 2007) unemployment is expected to grow if growth does not occur in the non-oil sector, where most Timorese work.

³ NOTE: This unemployment rate differs from those addressed in the Human Capital Chapter because this is the unemployment rate overall and for youth just for Dili, while the ILO numbers in the Human Capital Chapter are national rates. Furthermore, this is the unemployment rate in 2005, while the ILO study is for 2010.

Inflation

According to the World Development Indicators (see figure below), inflation has been erratic. For instance, based on the CPI, inflation was 7.2 percent in 2003, dipped down to 1 percent by 2005, then jumped up to 10.3 percent in 2007, fell to 0.7 percent in 2009, and then jumped back up to 6.8 percent in 2010. The inflation in 2010 is explained by the rise in fuel and food prices globally coupled with the drop in the dollar relative to most of Timor-Leste's trading partners (as Timor-Leste uses the dollar). (Ministry of Finance, 2012)

Figure 3-3



Public Expenditures and Debt

Currently, the government of Timor-Leste has no public debt (Ministry of Finance, 2012) (Saldanha, Piedade, & Doraisami, 2008) however, the Budget and Financial Management Law provided the government a legal basis for borrowing money. In fact, on August 2011, the Parliament started proceedings to receive loans from the multilateral banks to fund the new Strategic Development Plan (Ministry of Finance, 2012).

While there is no public debt, because shortfalls are made up through withdrawals from the Petroleum Fund, public expenditures have greatly increased in recent years. For instance, according to the Timor-Leste 2012 Budget Book, public expenditures started out to a low of \$70.4 million in fiscal year 2003/2004, creeping up to \$170.5 million in fiscal year 2006/2007, then suddenly jumping to \$483.9 million in 2008, and increasing thereafter. In 2010, expenditures were \$758.7 million. In 2011, the Timorese government announced its Strategic Development Plan (SDP). The 2012 budget, in order to achieve the SDP, has ramped up spending on infrastructure and other capital investment projects.

Exchange Rate

Timor-Leste's economy is dollarized (uses the US dollar as its own currency), a policy strongly promoted by the International Monetary Fund (IMF) in order to control inflation. (Economist Intelligence Unit, 2011) The IMF also argues that the government does not have adequate capacity to set monetary policy, which is compounded by the lack of a financial sector in Timor-Leste. In mid-September 2011, Timor-Leste improved this capacity by establishing its first Central Bank of Timor-Leste (BCTL) (Economist Intelligence Unit, 2011).

Poverty

While Timor-Leste is currently ranked 120th out of 187 nations on the World Bank (WB) Human Development Index (HDI), it has recently shown improvements in its poverty statistics. For example, Timor-Leste's 2011 HDI of 0.495 is above the average of 0.456 for countries in the low human development group though it remains below the average of 0.671 for the East Asia -Pacific region. Within the region, Timor-Leste is most similar in population size with Fiji and the Solomon Islands, which were ranked 100 and 142, respectively.

According to the World Bank, the prevalence of poverty in Timor-Leste has decreased to 41 percent in 2010, following a record high in 2007 of 49.9 percent. The WB also estimates that in 2007, 37 percent of the population lived on \$1.25 a day or less and 73 percent lived on less than \$2 per day. Historically, poverty rates ranged in the mid-30s, but they increased substantially in 2007 due to civil unrest and decreases in agriculture productivity. These factors were coupled with a deceleration in non-oil sector growth from 2001-2007, wherein the country experienced a 12 percent decrease in non-oil GDP, despite increased GDP growth overall and strides in improving service delivery and creating state institutions.

Nevertheless, in 2008 the country began to recover as the agriculture sector rebounded. Coffee growers comprise the poorest households in the country and increases in productivity in the agricultural sector resulted in greatly improved livelihoods. During this time, consumption rates increased due to rising government spending on social protection programs and infrastructure.

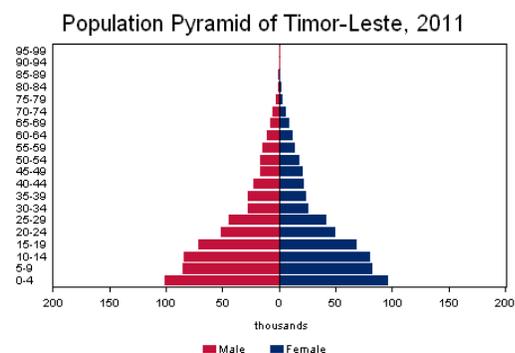
Inequality of income and wealth is currently of less concern than poverty as Timor-Leste has a Gini Index of 31.93, which is an improvement from its score of 39.52 in 2001. Timor-Leste's Gini Index is also better than its low income and lower-middle income comparators: 46.45 and 44.53, respectively. However, current numbers estimate that 41 percent of income is held by the highest 20 percent of the population.

Social Indicators

Timorese society is exceptionally young, with 50 percent of the population under 15. The other half of the population is not much older; the 15-29 year-old age group is likely to represent 40 percent of all of Timor-Leste by 2012 (National Statistics Directorate (TSD), Ministry of Finance, ICF Macro, 2010). This is coupled with one of the largest rates of fertility (5.7 births per woman) in the region. Population growth is not showing any sign of slowing, either; in 2010, population growth rose to a 5 -year high of 2.2 percent. A recent WB study cited the country as being at "crisis level" with regards to the disproportionate youth numbers. The overabundance of youth, combined with high levels of youth unemployment has led to increases in the rates of violence in the country, particularly gang-related violence and arson. According to the World Development indicators, 40 percent of people ages 15-24 were unemployed.

Primary school figures do not tell a positive tale for the education sector; nearly half the population of Timor-Leste remains illiterate. Between 10 and 15 percent of primary school aged children do not attend formal education and the dropout rate in primary school is 25 percent. Additionally, 20 percent of girls do not complete primary education. Based on calculations by the Millennium Challenge Corporation (MCC), Timor-Leste scores better than only 15 percent of its peers by income group on girl's primary education completion rate. This poor attendance permeates

Figure 3-4



SOURCE: UN World Population Prospects.
Prepared by USAID Economic Analysis and Data Services.

into secondary education where nearly 40 percent of children do not attend junior secondary school and 60 percent do not attend senior secondary school.

Student/Teacher ratios, though high, have improved greatly in the last ten years. In 2002, there were 51 students for every teacher but that ratio decreased to 30 by 2010.

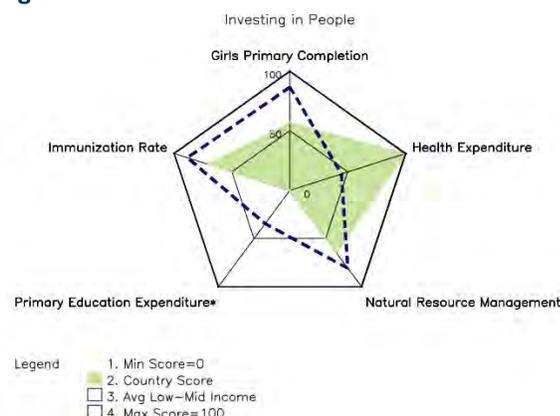
The data is worse for the higher education sector. There are only 16 tertiary institutions in Timor-Leste, which lack a formalized accreditation mechanism, quality assurance or a formal monitoring system. Funding levels for public education are low but increasing. As of 2010, public expenditure on education as percentage of GNI was 3.6 percent, up from 2 percent in 2008.

Malnutrition, mortality rates and fertility rates in Timor-Leste remain the highest in the region. The total infant mortality rate (the number of infants dying before reaching one year of age) remains high at 47 deaths per 1,000 live births. This is coupled with a high rate of maternal mortality. In 2008, the average number of deaths of women from pregnancy-related causes per 100,000 live births was 370. There is improvement, however, as both infant and maternal mortality rates have declined over the past decade.

In addition, malnutrition rates remain high for children under 5 and are the focus USG nutrition programs. In 2003, 55 percent of children were found to be well below the median threshold weight. Immunization rates, though also low, have been increasing in the last 5 years. In 2002, 56 percent and 54 percent of children were immunized against measles and DPT respectively. These levels have increased, to 72 and 70 percent respectively. However, the MCC estimated in 2011 that Timor-Leste scored better than only 13 percent of its peers by income group on overall immunization rates.

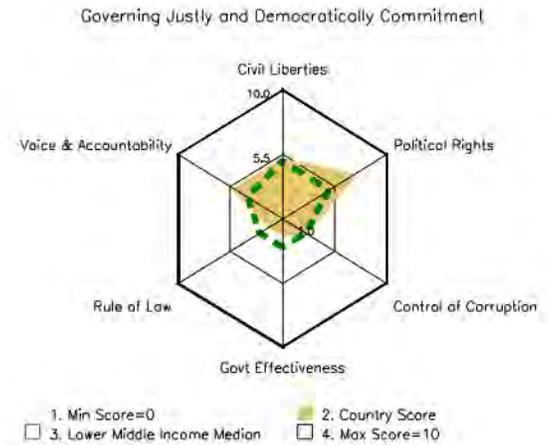
The improvements in mortality and immunization rates can be at least partially attributed to increasing investments in public health. Public sector expenditures on health per capita have increased steadily in the last ten years, from \$36 in 2001 to approximately \$73 today. The number of trained health workers is also increasing, approaching the average for the region. It is important to note, however, that the percentage of GDP spent on health expenditures in the last 5 years has decreased to 12.35 percent from a high of 17.74 in 2006. The decrease could be linked to the large influx in funds from the oil sector.

Figure 3-5



Indicators for democracy and governance tell a grim tale for Timor-Leste. Based on Transparency International's Corruption Perceptions Index, Timor's business people, academics, and risk analysts all believe the government is highly corrupt. Additionally, the World Bank Governance Indicators, Control of Corruption⁴, rates Timor-Leste below average in the region and among other Lower Middle Income countries. These reports show that Timor-Leste underperforms in its control of corruption when compared with countries with similar income levels. Based on a 2009 USAID assessment on corruption in Timor-Leste, the core problems related to corruption include: "extremely low capacity across the board, weak oversight institutions, poor access to information, and a lack of understanding of basic anti-corruption concepts. While the government has continued to take action to address corruption, widespread public criticism of corruption and the likely scale of the problem, mean that the government must commit to a sustained, visible, and substantive anti-corruption effort. "

Figure 3-6



Timor-Leste has also consistently scored low on Freedom House's Civil Liberties Index, which measures the freedom of expression and belief, association and organizational rights, rule of law and human rights, and personal autonomy and economic rights. Timor-Leste routinely scored a 4 on a scale of 1 through 7, with 1 representing the highest and 7 the lowest level of freedom. Additionally, Timor-Leste has received a 3 in 2011 on Freedom House's Political Rights index, which measures the extent to which the political system offers the voter the chance to make a free choice among candidates and to what extent the candidates are chosen independently of the state. Though these scores are low compared to other lower middle income countries (displayed in the above radar), Timor-Leste does out-score its comparators in the World Bank Governance Matters scores for Voice & Accountability, Political Rights, and Civil Liberties. However, the country lags in Government Effectiveness and Rule of Law. According to a recent World Bank study, Timor-Leste has made significant strides in governance:

"Timor-Leste's achievements are remarkable. The executive branch of the state, the Government, has been successful in establishing core planning and resource management functions that are effective, transparent...and compare very favorably with those of other low income countries. The Government has developed solid and transparent arrangements for collecting petroleum revenue, safeguarding the country's most important resource, and ensuring that sustainable income will be spent only through the budget approved by Parliament. Albeit with varying reach and quality, the Government has also succeeded in providing services in health; education; infrastructure and communications; and agriculture, fisheries, and forestry. These results have been achieved against considerable odds, including a pervasive lack of technical and management skills and lack of familiarity with the institutions needed to run the State."

However, the paper goes on to stress to the necessity of strengthening the separation of powers, as well as the capacity of the country to carry out presidential and parliamentary elections. The WB further stresses the need for the country to publish and disseminate information required to encourage public involvement in fostering accountability in the public service.

⁴Measures the extent to which public power is exercised for private gain, including petty and grand forms of corruption, as well as, "capture" of the state by elites and private interests

Table 3-1 General Facts and Figures for Timor-Leste

Series	2007	2008	2009	2010	2011
Population, Health, and Nutrition					
Population, total	1,060,770	1,079,749	1,099,887	1,124,355	
Population growth (annual percent)	2.1	1.8	1.8	2.2	
Urban population (percent of total)	26.9	27.3	27.7	28.1	
Life expectancy at birth, total (years)	60.6	61.1	61.5		
Fertility rate, total (births per woman)	5.7	5.7	5.7		
Mortality rate, under-5 (per 1,000)	66.6	62.3	58.5	54.8	
Mortality rate, infant (per 1,000 live births)	55.2	52	49.2	46.4	
Contraceptive prevalence (percent of women ages 15-49)	19.8			22.3	
Education					
Literacy rate, adult total (percent of people ages 15 and above)	50.6				
Primary Gross enrolment ratio (Male and Female)		103	109	117	
Gender parity index for gross enrolment ratio. Primary		0.95	0.95	0.96	
Gender parity index for gross enrolment ratio. Secondary. All programs		1	0.99	1.01	
Secondary Gross enrolment ratio (Male and Female)		50	58	56	
Total Enrolment in Tertiary Programs (ISCED 5A + 5 B + 6), Male and Female			16,727		
Democracy and Governance					
Freedom House: Civil Liberties Index (1 through 7, with 1 representing the highest and 7 the lowest level of freedom)	4	4	4	4	
Freedom House: Political Rights Index 1 through 7, with 1 representing the highest and 7 the lowest level of freedom.	3	3	3	3	
Transparency International, Corruption Perceptions Index Score (0-10, 10 is highly clean and 0 is highly corrupt)	2.6	2.2	2.2	2.5	
Index of Economic Freedom - Overall Score			50.5	45.8	42.8

Chapter 4 Microeconomic Risks

Chapter 3 provided a solid background on the state of social and economic conditions in Timor-Leste. The following three chapters will begin identifying and analyzing the binding constraints that are inhibiting growth in Timor-Leste. As laid out in the HRV part of the expanded growth diagnostic methodology, microeconomic risks associated with private sector investment can lead to the inability of private entrepreneurs to adequately appropriate returns. Microeconomic risks include sector-wide obstacles to investment whose impacts reach beyond the microeconomic scale. Microeconomic risks, unlike macroeconomic risks, are impediments to the efficient function of the private sector environment not related to large scale deterrents like government spending and monetary policy. Previous growth diagnostics have identified microeconomic constraints to economic growth relating to corruption, political insecurity, taxation, tariffs and non-tariff barriers to trade, and crime. The range of possible microeconomic risks changes by country depending on the policy and institutional environments.

Timor-Leste, as a relatively new nation, has an advantage over other developing economies regionally and globally as it has the opportunity to set up and enforce a legal and regulatory framework from the bottom up, and can model its rules and regulations off global best-practices. Current outstanding issues are more related to the current lack of regulatory framework than they are to the existence of unnecessary legal barriers. If Timor-Leste enacts critical legislation to create efficient administrative bodies and supports the enabling environment to private business, it will have a positive impact on economic growth.

In Timor-Leste, an initial analysis based on key perception surveys, including World Bank Doing Business, World Bank Enterprise Surveys, Transparency International, Global Integrity Index, and Heritage Foundation's Economic Freedom Survey, highlighted four distinct barriers to growth. Based on the following analysis, it is clear that the lack of return on investment is a key constraint to economic growth and investment in Timor-Leste. Our analysis found that property rights, contract enforcement, and obstacles related to starting a business were key constraints. These areas were found to be binding constraints to the economy. Additionally, issues related to corruption and political security, though not binding, are substantial concerns for the economy of Timor-Leste.

While the following chapter will address additional concerns, our analysis shows that taxation and poor international trade regulations had less of an impact than the four barriers listed above.

Land Tenure & Property Rights

As a microeconomic risk, the lack of secure land tenure and property rights permeates throughout the private sector. This insecurity is severely limiting the economic growth of this developing, post-conflict nation. The lack of a formalized system for the ownership, trade and utilization of communal lands significantly constrains potential investment. As laid out in previous USAID growth diagnostics, land tenure can be seen through two lenses:

- 1) Low appropriability due to insecure property rights and constrained land markets

Where property rights are not formalized, citizens, business owners, and would-be investors fear that their ownership rights will be challenged or that their property will be taken away at the hands of the government through nationalization or similar actions. This concern is particularly heightened in Timor-Leste, as in many post-conflict countries, where the system of property ownership has undergone two

dramatic overhauls within the last several decades. This lack of security is a major disincentive to long-term investments in land, capital, and enterprise.⁵

In the absence of formal markets for buying and selling land, investors are not offered returns to their long-term investments. More specifically, the private sector will not be able to attach monetary value to land if it cannot be formally traded. Therefore, without a formal market to buy and sell, existing investment is not improved and land is left undeveloped. Free and open markets provide the proper incentives to invest in land. “From an economy wide perspective, significant constraints on the sale, purchase and transfer of land result in inefficient allocation” (USAID, 2011).

2) Decreased investment due to High Cost of Finance and Reduced value of natural capital

In most economies, banking systems require land as collateral is needed in order to exist. Economic growth requires that borrowers can offer their land as collateral for loans. However, if banks or microcredit lenders are unable to use land titles as collateral due to insecure property rights and inconsistent claims registries, this increases risk for lenders and lowers the availability of money for borrowing. Therefore, the aforementioned lack of a formal land tenure framework reduces lending for capital investment. The lack of readily available collateral in land forces borrowers to seek loans on credit, which often have a much higher interest rate. This creates a major barrier to finance, as well as decreases in profitability for the borrower as well as higher rates of loan default.

Renewable natural resources tend to be vulnerable to misuse without clearly defined rules of ownership and tenure. Currently in Timor-Leste, large acreages of forest are susceptible to clear-cutting for fuels and farming due to a lack of formal ownership rights or to communal holdings of land. As over half of Timor-Leste is covered by forest, a majority of its land is exposed to this type of degradation.

Clearly, it is necessary to analyze the current situation in Timor-Leste regarding land tenure and property rights and to determine if a lack of a formalized land tenure law is a binding constraint to growth in the private sector.

Current Situation in Timor-Leste

The total land area of Timor-Leste is 14,870 square kilometers, occupying one half of a small island. Forests cover 54 percent of the total land area. Deforestation rates are some of the highest in the region, with total forest cover decreasing annually by 1.3 percent between 2000 and 2005. Only 13 percent of the land in Timor-Leste is arable, with 4.6 percent of the total land area being permanent cropland. These are incredibly small percentages considering that 80 percent of the country’s population is dependent on agriculture.

While the Constitution of Timor-Leste provides for an equitable distribution of land for men and women, it also limits land rights to citizens of Timor-Leste. “For national citizens, private property rights include transfer rights, and the right to just compensation if expropriated by government for public purposes.” The Constitution further formally acknowledges customary rights so long as they are not directly contradicted by laws enacted by legislation or the Constitution (USAID, 2011).

Customary law in Timor-Leste is dissimilar from the traditional communal or common property systems normally seen in rural areas. In Timor-Leste, systems of customary law are maintained by origin groups and are generally clustered by kinship rather than territory. Origin groups have license over land in most parts of rural Timor-Leste. In most cases, residential plots or gardens are “owned” and maintained by families rather than the communal group as a whole. These family plots are inherited and passed directly

⁵ Anecdotally, in Timor-Leste, homes remained without windows because homeowners felt no incentive to invest in their residences, due to owners feeling insecure in their land holdings.

among family members. Under most circumstances, plots have clear boundaries defined by the groups but generally lack formal documentation supporting the claims.

Necessarily, the customary law system heavily favors exclusionary rule. “Although there is no land market in most rural areas, there is a general sense that customary land may not be sold to outsiders. Land sales to outsiders undermine customary systems of authority. They transfer land to people who have not been incorporated into local social hierarchy” (Fitzpatrick, McWilliam, & Barnes, 2008).

Despite the large percentage of urban and agricultural lands owned by origin groups, communities have no formal claim on forestlands. However, community leaders are permitted the authority to govern their usage. “The greatest threats to biodiversity are linked to tenure issues and include habitat destruction, fragmentation, conversion, encroachment and expansion for agriculture.” Forest land is worryingly threatened by over-collection of wood for fuel and clear-cutting by communities for agricultural purposes. In fact, land is frequently cleared in order for these groups to lay claim to the property (USAID, 2011).

Currently, lasting title claims still exist from both the Indonesian period and the Portuguese period of rule. Furthermore, refugees who fled the country in 1999 still hold claim to a large percentage of land in Timor-Leste. Amidst the violence in 1999, the National Land Agency was among the first buildings destroyed, and land records were burned during the turmoil. As a result, all formal title records were destroyed, leaving no formal way to handle claims disputes (Harrington, 2006).

In the last eight years, however, the legislature has passed key legislation for land tenure. The first of note is Law 01/2003, which established a Judicial Regime for immovable property. It also established a clear definition of state property and claimed as state property all lands acquired by the Portuguese under colonization as well as that under the Indonesian regime. This created uncertainty regarding customary land ownership and overlapping government claims. Additionally, though this law created and formalized State ownership, it did not outline or permit a process to allow the state to sell lands. This remains a problem as the government cannot currently sell land for more productive use.

Another piece of key legislation is Law 12/2005, which allowed leasing between private individuals, as well as, “processes to ensure access by national or overseas investors to property and the normalization of State property to be used in commerce and industry.” (USAID, 2011) Leasing rights like these have permitted foreigners, to occupy properties in Timor-Leste, although they are still not allowed to formally own land.

Unfortunately, even with the laws described above, land legislation in Timor-Leste remains incomplete. A draft land law⁶ has been in place for several years to fill these gaps, and the international community, including USAID, has played a large part in drafting this legislation. While the document is still in draft, there are three issues that remain to be addressed: 1) there is no mechanism to convert titles from the Portuguese or Indonesian periods to a Timorese system; 2) there are no formal means for those occupying the land to apply for a title and legal ownership; and 3) there is no governmental body in place to resolve ownership disputes.

According to local think tank La’o Hamutuk, the law has been through five drafts, and not even members of parliament are sure which draft is currently being debated. However, according to La’o Hamutuk, the new draft law includes the following provisions:

- The ability for the State to rent, sell, or transfer its lands;

⁶ The write up following on the draft law is based on publicly available documentation on the draft law. At the time of preparing this document the draft law was awaiting approval by the parliament, however, as of early 2012 the President vetoed the passed piece of legislation.

- Recognition of customary land ownership;
- Recognition of the right to claim a land if one has been using another’s land peacefully, publicly, and continuously since 31 December 1998, with proper compensation paid to original owner (La’o Hamutuk, 2009).

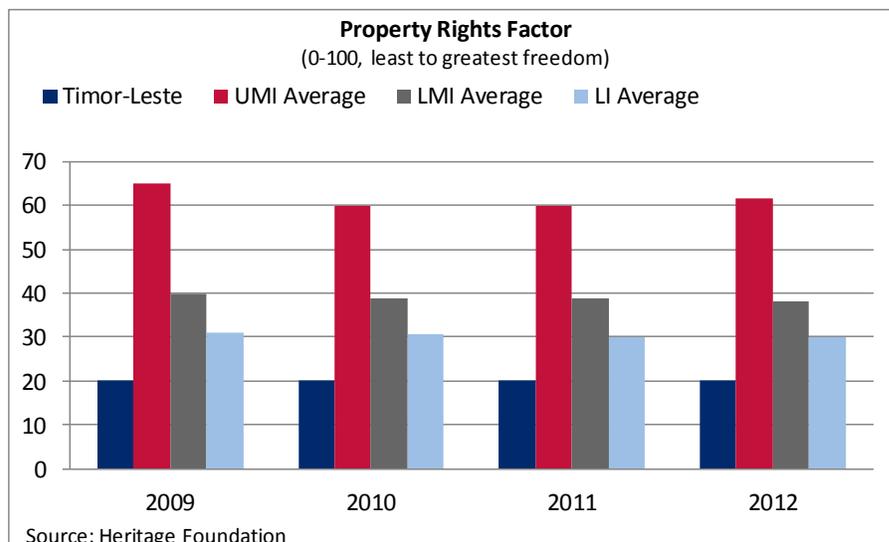
According to the Timor-Leste Chamber of Commerce, the new land law could also form a framework to regulate key aspects “related to engagement between investors and communities, including consultation obligations; the granting of third-party use rights; social, environmental and natural resource management considerations and dispute resolution” (Chamber of Commerce and Industry of Timor-Leste, 2011). Through interviews conducted with government officials, there seems to be the expectation that the current draft of the land law would be introduced to parliament in early 2012.

Progress has been made in recent years in land titling. The Timor-Leste Government sponsored a project in cooperation with USAID called Ita Nia Rai, which has begun registering undisputed land in district centers and peri-urban regions. The project is allowing occupants, either individuals or groups, to lay informal claim to lands and is mediating ownership and other claims disputes. Though the parcels they are registering are not formal land titles, Ita Nia Rai hopes that these claims will be used to feed into a larger titling system created in the future.

Land Tenure and Property Rights as a Binding Constraint

The Heritage Foundation publishes indices that measure countries’ legal framework for property rights. Based on the existing framework, Timor-Leste ranks 143rd in the world in the “Property Rights Factor,” scoring a 20 in 2012 (0-100, least to greatest freedom). These scores reflect existing mechanisms and legal bodies in Timor-Leste. The score of 20 denotes the Heritage Foundation’s evaluation that “[p]rivate property is weakly protected. The court system is so inefficient and corrupt that outside settlement and arbitration is the norm. Property rights are difficult to enforce. Judicial corruption is extensive. Expropriation is common” (Heritage Foundation, 2012). Timor-Leste’s score has not improved since first published in 2009.

Figure 4-1



The above graphic (Figure 4-1) demonstrates the average levels of comparators against Timor-Leste. For low income comparators, the average score is close to 30, which Heritage Foundation describes as having less issues of expropriation and plagued by less corruption than a score of 20. Timor-Leste scores

well below even this category, highlighting its deeply-seated land tenure and property rights issues. From the graph, it is clear that Timor-Leste lacks standard international practices for registering property, but is also well behind similar countries by lacking in the necessary legal and judicial framework to protect property ownership.

Timor-Leste also scores low on the World Bank's CPIA property rights and rule-based governance rating, a similar indicator to the Heritage Foundation's, which measures "property rights and rule-based governance, assesses the extent to which private economic activity is facilitated by an effective legal system and rule-based governance structure in which property and contract rights are reliably respected and enforced." (World Bank) Timor-Leste's annually scored a 2 (1=low to 6=high) from 2006-2009, and the average for low income comparators was consistently a 3 or higher.

In order for property rights to be a binding constraint to economic growth in Timor-Leste, businesses should be experiencing higher costs to doing business. Unlike the Heritage Foundation and CPIA scores, the World Bank Doing Business Survey of Registering Property measures how the current framework in Timor-Leste affects the private sector. Timor-Leste currently ranks 183rd in the world, tied with Micronesia and the Marshall Islands for last place. The ranking is derived from the lack of formal processes in the key measurements, number of procedures, time to register a property (days), and cost. Since no formal system exists in Timor-Leste, these raw scores do not exist. In order for Timor-Leste to score on par with comparators when proper registering mechanisms are in place, the government should look to the low middle income averages on number of procedures (5), time (74 days), and an average cost or percent property per capita of 4.6 percent. (See table below, Table 4-1, for the rest of averages from the World Bank Doing Business survey).

Table 4-I Registering Property Doing Business Scores for Comparator Countries

Country	Number of procedures		Time (days)		Cost (percent of property value per capita)	
	2010	2011	2010	2011	2010	2011
Low Income Average	6.0	6.0	103.3	109.1	9.7	10.5
Low Middle Income Average	5.0	5.0	100.8	74.4	4.6	4.6
Upper Middle Income Average	5.7	5.7	68.0	66.7	7.5	7.5

Source: World Bank Doing Business Survey

The high shadow price is a primary determinant of land tenure as a binding constraint to the economy of Timor-Leste. In other words, if land tenure is holding back the economic growth of Timor-Leste, one would expect to see a high cost of purchasing or obtaining land through formal processes coupled with a loss of potential investment. At the same time, there would be an increasing amount of disputes and conflicts, which are expensive to resolve and remove incentives to investment (USAID, 2011).

In Timor-Leste, the cost of transferring and registering land through formal processes is incredibly high and sometimes is not even possible. As discussed previously, in order to purchase land legally, a person or corporation must be Timorese. This restriction deters foreign investors from investing in Timor-Leste. In country interviews provided several anecdotes of international corporations and companies attempting to invest in long-term projects in Timor-Leste and being denied access. Specifically, notable hotel chains attempted to acquire land in Timor-Leste but were unable to complete the purchases after long negotiations and significant financial losses for the parties involved.

International and foreign-owned companies that have been able to set up in Timor-Leste are currently leasing their land and are concerned about future lease disputes and conflicting ownership issues. While providing a short-term solution, long-term leases create insecurity, which removes incentives to investing and keeps industries from expanding. Additionally, companies lose money ensuring that they have filed leases with the proper owners and conducting due diligence to ensure they have not set up on prohibited territories. The Chamber of Commerce recently published an article on “Why Leasing State Agricultural Land May Not Be a Solution.” The article describes the circumstances of a coffee estate trying to lease land from the Government of Timor-Leste, and accentuates the difficulties in leasing land in Timor-Leste.

The case of a lease issued to an investor by the Government of Timor-Leste in 2005 for 3,000 hectares of old coffee estate land in Fatubesi (Ermera district) illustrates the reasons why investors should be cautious about leasing “state” agricultural land. Although formally state land on the basis of historical inclusion in the Sociedade Agrícola Pátria e Trabalho (SAPT) plantation, this lease was issued by the state without consultation with community members from the lease area. The land has proven subject to both use rights and ownership claims by groups residing on and near the lease area. Accordingly, the lease has provided a fragile basis for the company to undertake crop improvement and management activities, and access to the site has been possible only after complex and extended negotiations with community members addressing terms of engagement, employment provisions, and land tenure aspects.

By 2011 the company had rehabilitated around 25 hectares of plantation and commenced less intense rehabilitation activities on around 70 more

hectares of the lease area. Interestingly, the fact that the lease was issued by the state appears to have acted as a disincentive to a number of smallholders who were interested in participating in the project but concerned that participation could compromise their claims to land in the lease area.

Disputes add a great deal of cost to the acquisition of land and, subsequently, to the operations costs of the private sector. This increased cost constrains entrepreneurship, increasing economic costs, which significantly decreases investment.

There are, however, differing opinions on the prevalence of these disputes and conflicts related to land tenure. A relatively recent World Bank (WB) study found that there were a low amount of land-related disputes in Timor-Leste. “[D]espite the attention given to land and property disputes in Timor-Leste, the TLSLSx survey found a relatively low incidence of land-related disputes: just 10 percent of respondents reported experiencing a land-related dispute between January 2007 and the fielding of the survey in early 2008.” However, the same survey found that 72 percent of respondents believed that land titling would diminish land-related conflict in Timor-Leste (World Bank, June 2010). The USAID Ita Nia Rai program further supported this claim in its most recent report to USAID. According to the project, their total filings as of January 2012 numbered 50,614 parcels and 54,558 claims, of which 5,520 were disputed-- just over 10 percent of all claims. However, there are arguments that large scale conflicts in Timor-Leste’s past, as well as potential future crises, can be related to property rights. Author Andrew Harrington, author of “Ethnicity, Violence, & Land and Property Disputes in Timor-Leste,” argues that the large scale conflict in 2006 can be directly attributed to “horizontal inequality in land and property access and ownership in Dili.” Through historical mistreatment of internally displaced persons from the conflict in 1999 to the lack of formal routes of land mediation, Harrington argues that with proper land tenure systems in place, the violence may not have occurred (Harrington, 2006).

There are additional reports of violence and conflict, both among claimants and towards protestors, derived from land disputes. According to World Bank surveys “40 percent of reported land disputes resulted in property damage and 10 percent involved injuries (World Bank, June 2010). The Timor-Leste Land Law and Policy Information Centre ran an online information portal. Based on their postings, in the six months prior to the analysis, more than fifteen articles cited violence related to land disputes and protests (Timor-Leste Land Law and Policy Information Centre, 2011). Though these incidents are on a much smaller scale than the crisis in 2006 was, the issues related to insecure property rights remain prevalent today.

The banking and financial systems in Timor-Leste have been hindered by the lack of formal land tenure regulations and the inability for citizens or foreigners to use land as collateral. Mindiri Bank, one of the largest banks in Timor-Leste, identified the lack of formalized systems of land titling as a key barrier to local lending. The lack of finance as a whole has held back many small businesses. When interviewed for this analysis, small business owners, especially the members of the Women’s Business Association, cited the inability to procure credit as a large hindrance to doing business due to a lack of collateral and failure of the banks to loan.

Land tenure is found to be a binding constraint in Timor-Leste due to the current state of the land tenure systems in Timor-Leste relative to comparators and the added costs to the land market associated with disputes and risk prove that the lack of adequate property rights is a binding constraint to the economy of Timor-Leste. The effects of this constraint are seen in the financial sector with the lack of formalized methods of collateral, in the environmental sector with the rapidly increasing rates of deforestation, and in the land markets with the inability for foreign investors to purchase land and for entrepreneurs to buy and sell land efficiently.

Regulatory Environment for Private Business

Onerous policies, regulations, and procedures put in place by governments can hinder economic growth by limiting possibilities for investors and adding costs to business operations. Since the creation of judicial and regulatory systems began in 2000, Timor-Leste has seen considerable improvement in the business environment. There have been improvements in important World Bank Doing Business Scores and, in some areas; Timor-Leste is beginning to outperform other, similar, countries. However, noticeable gaps in the regulatory environment still exist and are impeding badly needed growth.

The below section discusses the elements of the regulatory environment for private business which are considered constraints to growth. The elements found to be less of an issue are discussed in detail in Appendix C Non-Binding Microeconomic Risks.

Current situation in Timor-Leste

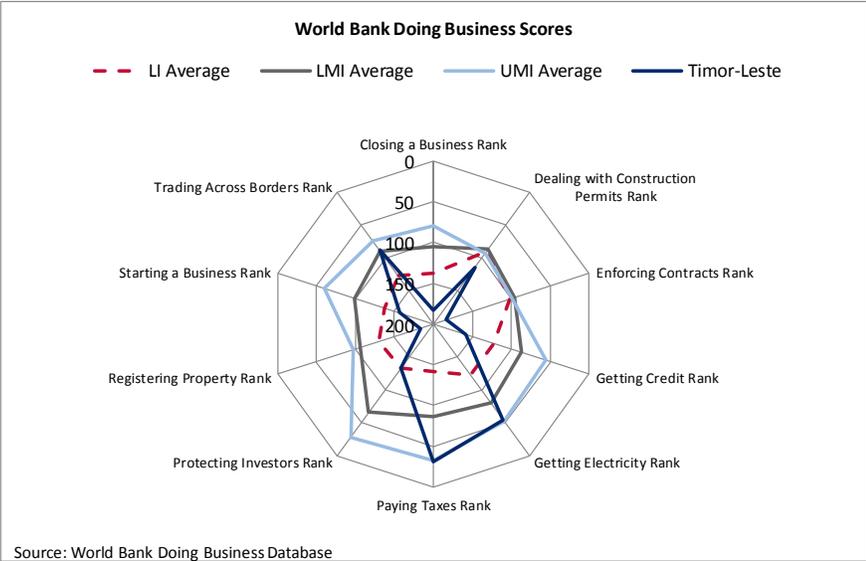
In the past seven years, the government has begun establishing the necessary legislation for a functional commercial sector. The Law on Commercial Companies (also known as the Commercial Societies Act, Law No. 4/2004) formally recognizes commercial companies such as limited liability partnerships and joint stock companies and institutes international commercial standards. These standards include “a distinct and separate legal personality upon the filing of a Memorandum of Association; the requirement for ordinary and extraordinary general meetings; paid-up capital requirements; profit participation and voting rights of shareholders” (PricewaterhouseCoopers, 2009). The World Bank has noted that this law, though an important step, lacks harmonization and has yet to become fully functional (World Bank, 2006).

Business Registration Code (Decree Law No. 6/2007) creates the framework and processes for the businesses registration process. This law was followed by the Law on External Investment (Law 5/2005), which attempts to promote foreign investment in Timor-Leste and includes “a minimum investment of \$US100,000 to obtain certain concessions granted under the law; the equal treatment of foreign and national investors including guarantees on the right to the private ownership of assets/title to property; the right to employ foreign workers, however an external investor is also obliged to employ Timorese and promote their vocational training and technical skills; a tax credit of \$US300 for every permanent Timorese worker during the first five years of business (and up to 15 years for projects of national interest e.g. infrastructure projects); an exemption from tax on reinvested dividends related to the periods of tax credit (as above); import duty and tax exemptions for the import of certain capital assets; import duty and tax exemptions for fuel (except petrol) used for the production of electric power where no public supply of power is available; rental concessions for leases of State buildings in rural areas; a potential special investment agreement/special legal regime for activities of national interest; and the authorization and registration requirements for external investors to ensure investment is in accordance with the objectives of the National Development Plan” (PricewaterhouseCoopers, 2009). Though these goals are lofty, most of them are not enforced and inconsistencies in application persist across government agencies and offices.

Law 10/2011, which goes into effect on March 15th 2012, formalizes the civil code in Timor-Leste and is modeled after the Portuguese civil code which preceded it. The law includes five parts: 1) General Law; 2) Contract Law; 3) Property Law; 4) Family Law; and 5) Law of Succession. Though the passing of this law marked an important success for the government and people of Timor-Leste, major concerns have been expressed by the Judicial System Monitoring Programme about the lack of consultation with religious and origin groups, and the inadequate study of social, cultural and traditional practices of Timor-Leste prior to the formulation of the law.

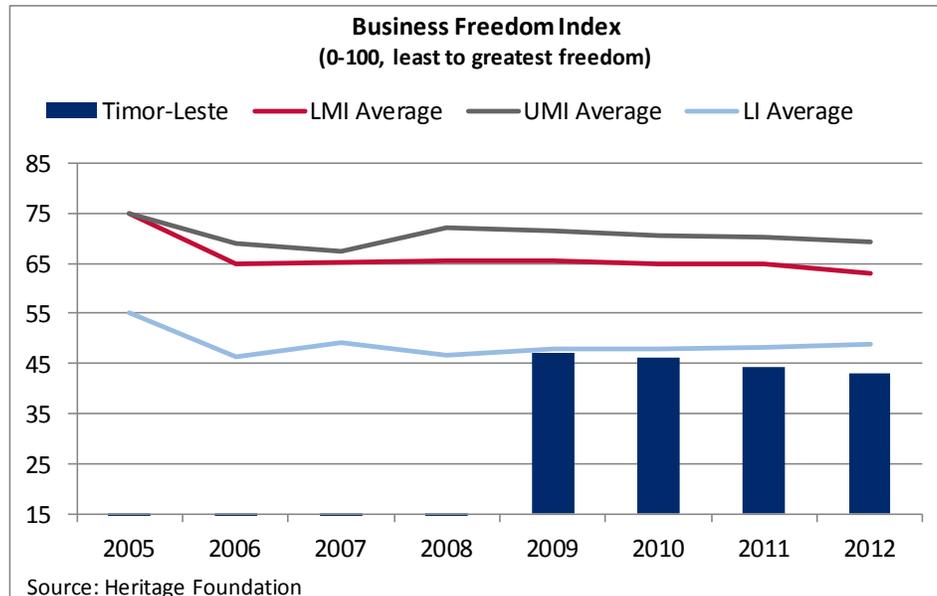
Even though Timor-Leste has shown improvement in private sector regulation, it remains one of the lowest ranking countries in internationally recognized indicators on the business enabling environment. Overall, Timor-Leste ranks 168th out of 183 countries in the World Bank Doing Business Indicators. The following graph shows the overall performance of Timor-Leste against the averages of comparator countries. The Doing Business scores for Timor-Leste appear to be consistent with in country interviews, identifying Contract Enforcement and Days to Start a Business as limitations holding back private sector growth.

Figure 4-2



The Heritage Foundation publishes an indicator, similar to the World Bank that rates the overall state of the business “freedom.” Figure 4-3 compares the score for business freedom against the income category comparator. Timor-Leste scores lower than all average comparators (43.1 in 2012 and 44.2 in 2011), with scores decreasing in the past four years. Only Chad, Haiti and Guinea-Bissau scored lower amongst the comparators. The Heritage Foundation found that “[t]he overall freedom to launch and operate a business [in Timor-Leste] remains constrained by the burdensome regulatory environment. Despite considerable reductions, the minimum capital requirement for establishing a business remains about twice the level of average annual income” (Heritage Foundation, 2012).

Figure 4-3



For the sake of this analysis, certain aspects of the regulatory environment have been identified based on interviews with business owners and government officials. These areas were explored further to test if they act as binding constraints to the economy. Two areas stand out as heavily influencing the day-to-day functionality of businesses in Timor-Leste. The first is the lack of formal framework to ensure contract enforcement, and the other is the complicated processes associated with starting a business. Other areas however, including taxes and trade, have been found to have less of an impact on the private sector.

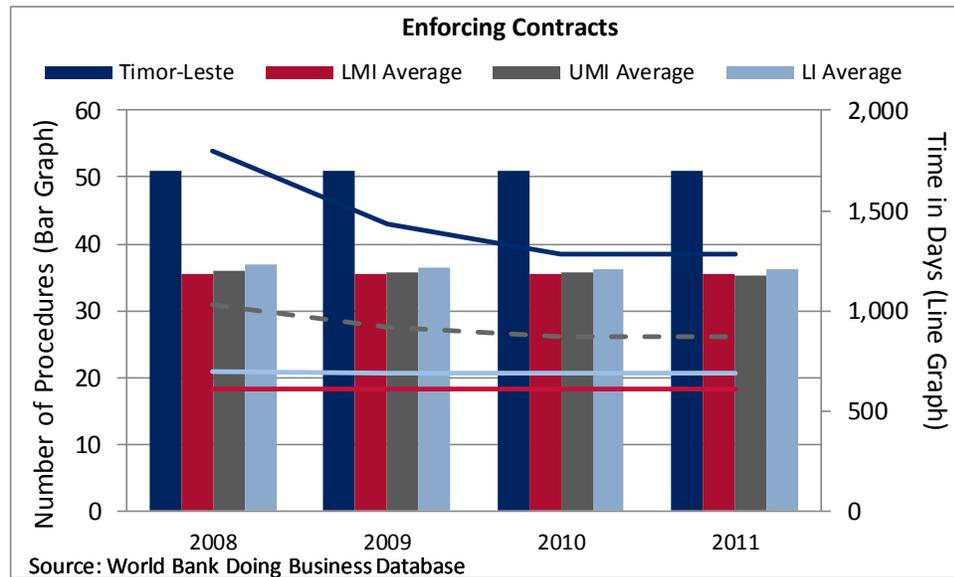
Enforcing Contracts

Similar to land tenure and property rights, contract enforcement is necessary to ensure that transactions operate fairly and consistently. Low-cost and impartial contract enforcement procedures provide incentives for the creation of complex commercial agreements and, thereby, facilitate trade and economic growth. Proper frameworks for contract enforcement and dispute resolution ensure that enterprises can engage in long-term investment. However, in the absence of proper frameworks, companies cannot use contracts for financing, are forced to rely solely on cash-based transactions.

A proper set of contracting institutions also has powerful equality promoting effects. Fair, transparent, and low-cost enforcement of contracts opens the way for competition and market participation of low- and middle-income individuals, reducing the inherent risk in transacting business. Alternatively, in countries with poorly developed contract enforcement, those with the lowest economic, gender, and ethnic status are most disadvantaged. Large and politically powerful interests tend to be more able to operate in such environments despite the lack of regularized institutions due mostly to political connectedness.

According to the latest World Bank Doing Business Surveys, Timor-Leste is ranked 183rd out of 183 countries in enforcing contracts. In 2011, there were 51 procedures in place to file a contract related complaint, distributed across filing and services, trial and judgment and enforcement of judgment. The average number of procedures for low income comparators and low-middle income are 36 and 35 respectively. The following graphic demonstrates the number of procedures required to file a claim in Timor-Leste against comparator countries. The number of procedures has also not changed since 2004, implying little has been done in legislation to correct this pitfall.

Figure 4-4

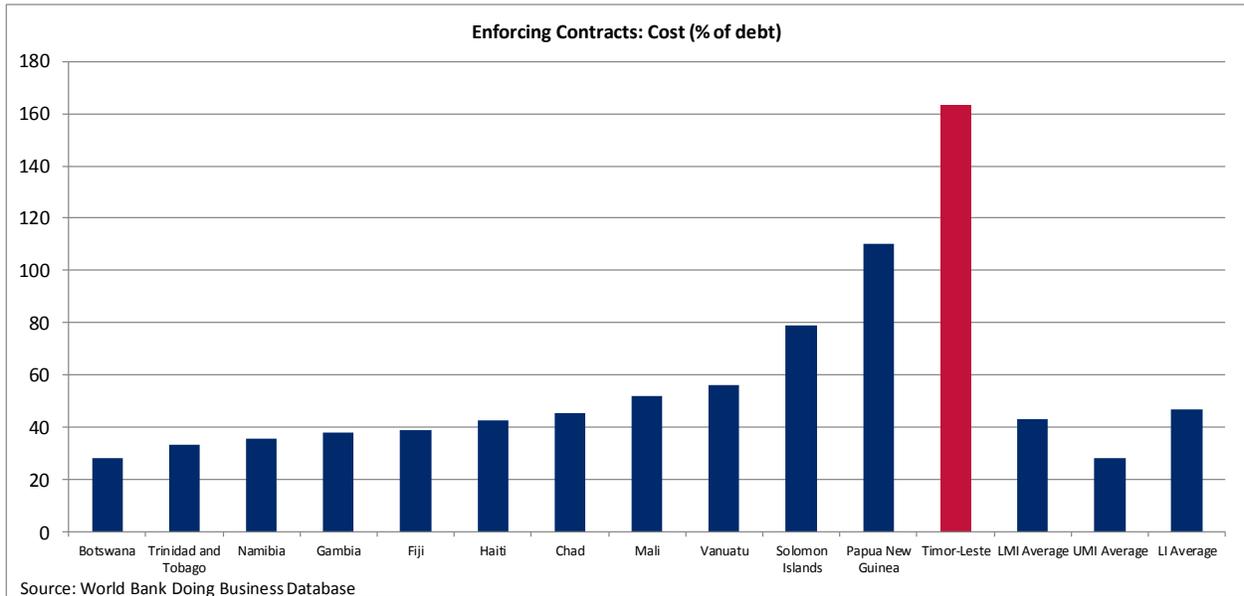


Contract enforcement times in Timor-Leste are also unduly long, averaging 1,285 days (approximately 3.5 years). The longest delay in the process is the trial and judgment period, which takes up to 1,055 days. According to a 2010 World Bank study, there are only 17 judges operating in Timor-Leste and there is “little capacity to enforce contracts outside of Dili,” so the legal institutions simply cannot handle contract enforcement-related claims.

The government cited the lack of judges as a significant concern in its Justice Sector Strategic Plan. In it, the government identifies one of the major challenges as strengthening “the corps of judges in sufficient numbers to implement all the judicial bodies foreseen in the Constitution, and recruiting and training staff to perform administrative functions so that judges are relieved of such tasks” (Council of Coordination for Justice, 2010). Due to an ever-growing backlog, judges are focuses on criminal proceedings and are often unable to take up commercial or civil cases (World Bank, 2006).

Magistrates also lack the training and knowledge of commercial law to properly rule on such cases. Moreover, as of 2011 there is no legislation in place to regulate commercial contracts. It is believed that the draft civil code discussed previously will introduce these procedures. However, since it has yet to be enacted, the final form of this law cannot be predicted (World Bank, June 2010).

Figure 4-5



Costs associated with claims are also incredibly high in Timor-Leste. Costs in Timor-Leste are close to 50 percent higher than in the closest comparator, Papua New Guinea. The average cost as a percent of the claim associated with filing in low income countries is 47 percent and currently Timor-Leste’s costs are 163 percent. The graph above shows Timor-Leste against all comparators in terms of cost as a percentage of the claim. This high cost de-incentivizes investors and claimants from filing and engaging in any sort of contract based businesses.

In well-regulated economies, contracts which are seen to be enforceable can often be used as collateral to secure a loan. However, based on conversations with the larger banks in Timor-Leste, they are unable to enter into such contract-secured financial transactions because contracts are not enforced by the country’s judicial system. Even in the event banks were able to use land titles as collateral, there is no framework in place for banks to action the property in event of default. Anecdotally, small businesses are using government-issued construction contracts as small scale loans, however, these exchanges are usually informal processes between persons familiar with each other. “Improving and expediting contract enforcement could facilitate the acceptance of other forms of collateral by banks.” (WB 2010)

Based on poor international performance in Doing Business Indicators and the high additional costs associated with the contract claims, the overall lack of judicial and legislative framework is a binding constraint to growth in Timor-Leste.

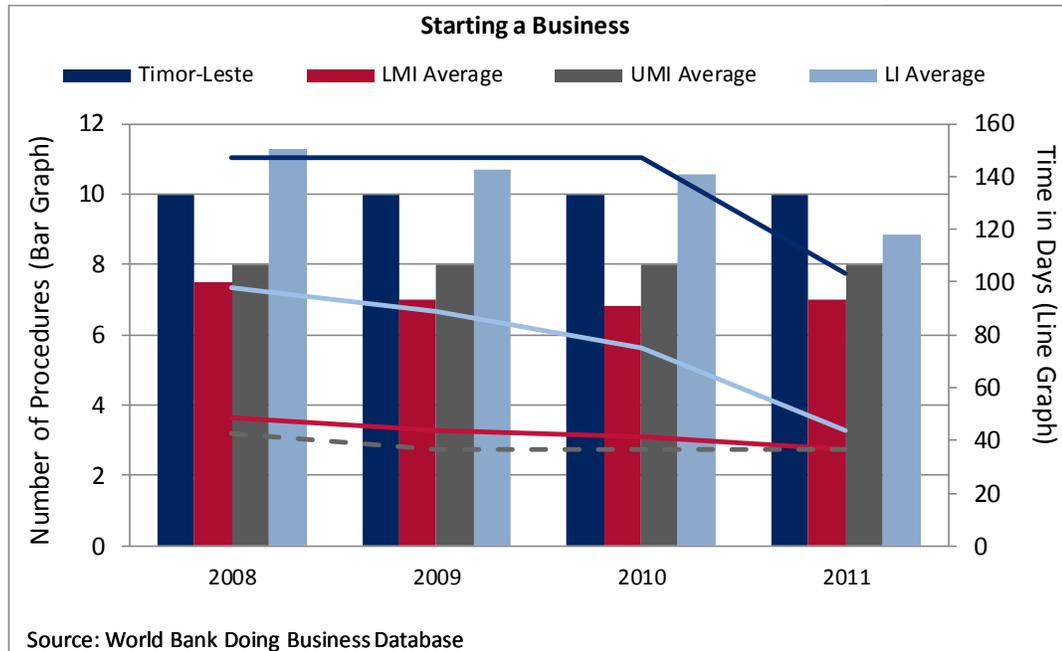
Starting a business

Another measurement of the efficiency of the commercial framework is the difficulty of starting a business. When the costs associated with starting a business are a binding constraint, one sees higher than averages costs incurred due to onerous registration requirement or long periods of time needed to complete such procedures.

Based on the World Bank Doing Business indicators, Timor-Lest scores poorly relative to comparators in “Starting a Business.” In 2011, Timor-Leste ranked 157th out of 183, scoring only higher than Haiti and Chad amongst comparators. Figure 4-6 displays the number of days and procedures it takes to open a new business in Timor-Leste. In 2011, there were 10 procedures in the process, averaging 103 days.

The longest delay in the process was the time to “publish statutes in the official gazette” and “apply for temporary business license at the Ministry of Tourism, Commerce and Industry.”

Figure 4-6



Minimum cost requirements to open a new business in Timor-Leste are also high relative to international comparators. The minimum amount of capital expenditure needed to start a business in Timor-Leste is 227 percent higher than the average income per capita, which is higher than that of comparator low middle income countries, which average 6 percent of income per capita. Amongst low middle countries, only Cape Verde had a minimum percentage higher than zero. Timor-Leste also scores above the average for low income countries (159 percent). However, Namibia, Gambia and Guyana require no minimum amount of capital.

Therefore, based on poor performance against international standards and high minimum costs entrepreneurs must invest, the difficulty of starting a business is a binding constraint to economic growth in Timor-Leste.

Chapter 5 Infrastructure

Infrastructure is the backbone of any economy; and without minimally adequate infrastructure no country today can realistically hope to grow and prosper since the lack of sufficient infrastructure services raises costs, lowers productivity, undermines competitiveness, and impedes service delivery. In short, inadequate infrastructure lowers the potential return to most investments and, in turn, impedes investment, job creation, and growth.

Roughly 70 percent of Timor-Leste's infrastructure was destroyed in the 1999 conflict. So when Timor-Leste emerged as an independent country in 2002, it faced the monumental task of re-building most of its infrastructure. While some limited progress has been made, Timor-Leste still faces daunting infrastructure challenges. Two thirds of the populations are living without electricity, one third lack access to improved drinking water, and 60 percent go without adequate sanitation facilities. Port services are below average for developing Asia and ICT services are limited, unreliable, and relatively costly due *inter alia* to lack of competition in the sector.

Table 5-1 Global Competitiveness Report 2011

Country	Overall Infrastructure Rank	Overall Infrastructure Score	Transport & Infrastructure	Roads	Railroad	Port	Air	Electricity & Phone	Electricity	Mobile Phones (Percent)
Timor-Leste	138	2.1	2.28	2.14		2.61	3.15	1.87	1.81	53.42
Chad	139	2	2.54	3		2.74	3.16	1.46	1.5	23.29
Gambia	80	3.7	3.94	4.45		4.88	4.78	3.51	4.4	85.53
Guyana	102	3.1	3.07	3.77	2.19	3.65	3.95	3.18	3.01	73.61
Haiti	142	1.6	1.63	1.74	1.23	1.84	2.08	1.6	1.49	40.03
Mali	113	2.8	2.94	3.26	2.35	3.69	3.65	2.62	3.39	47.66
Namibia	58	4.2	4.38	5.35	4.03	5.51	5.02	4.07	5.61	67.21
Cape Verde	109	2.9	3.35	3.94		3.76	4.35	2.47	1.87	74.97
Sri Lanka	60	4.1	4.06	4.54	3.78	4.89	4.89	4.19	5.03	83.22
Botswana	92	3.5	3.49	4.43	2.96	3.86	4.1	3.46	3.54	117.76
Mauritius	54	4.3	4	4.14		4.71	5.14	4.65	5.1	91.67
Trinidad and Tobago	53	4.4	3.67	3.86		3.89	5.02	5.04	5.46	141.21
UMI Average	66.33	4.07	3.72	4.14	2.96	4.15	4.75	4.38	4.70	116.88
LMI Average	84.50	3.50	3.71	4.24	3.78	4.33	4.62	3.33	3.45	79.10
LI Average	105.67	2.90	3.08	3.60	2.45	3.72	3.77	2.74	3.23	56.22

Source: World Economic Forum, Global Competitiveness Report 2011

Table 5-1 summarizes the overall quality of various types of infrastructure in a variety of countries (and groups of countries) including Timor-Leste. It should come as no surprise that Timor-Leste scores well below average for virtually every type of infrastructure. With an overall ordinal rank of 138, Timor-Leste's overall infrastructure endowment is judged to be worse than most countries in the Global Competitiveness Report rankings for 2011. Specifically, over 60 percent of surveyed firms in Timor-Leste identify access to reliable electricity supply as a major constraint. Only about 21 percent of firms identify transport in Timor-Leste as a major constraint. However, and as elaborated on at the end of this section, the poor condition of Timor-Leste's roads is likely to be a more serious constraint going forward to the development of the critical agricultural sector.

Roads

The current road network in Timor-Leste is largely a product of the Portuguese colonial period as modified during the more recent period of Indonesian control up to independence. Roughly 70 percent of freight and 90 percent of passengers travel by road in Timor-Leste. As shown in Figure 1, the main national road corridors run: 1) along the north coast from the Indonesian border in the west through the capital Dili and then eastward to the second largest city, Baucau, and beyond to Com; and 2) along the south coast, where the GOTL is hoping to spur further agricultural development and the growth on an on-shore petroleum industry via the Tasi Mane project which is planned to include the Suai Supply Base cluster, the Betano Refinery and Petrochemical Industry cluster, and the Beão LNG-Plant cluster. Complementing these two coastal roads are five north south connectors running across the mountainous spine of the island. Taken together, these coastal roads and north – south connectors constitute Timor-Leste’s national road network.

In addition to nearly 1400 km. of national roads, there are about 260 km. of district roads which link population centers to the national roads. This core network of national and district roads is supplemented by 716 km of urban roads in Dili and several smaller towns and cities, and more than 3,000 km of rural roads—typically undeveloped tracks—providing access to villages and more remote areas with agricultural potential. There are also approximately 450 bridges in the road network.

The road network is generally constructed to Indonesian pavement standards of 3.2 meters or 4.5 meters width with lined masonry drains and two lane steel truss bridges. Even such limited road widths are often compromised by actual terrain conditions such as landslides or potholes. As a result, many road segments are very narrow—making it difficult for vehicles coming from opposite directions to pass each other.

According to what is apparently the latest road condition survey, carried out by the ADB in 2008, the national road network is largely deteriorated and is no longer maintainable. Many roads are often impassable during the rainy season due to landslides and road wash out.

Table 5-2 Road Condition of National and District Roads

	Portion of		Network by Condition			
	Road (km)	Condition (percent)	National (km)	District (percent)	Total (km)	(percent)
Fair	122	9	0	0	122	8
Poor	351	26	9	4	360	22
Very Poor	879	65	249	96	1,128	70
Total	1,362	258	258		1,610	

Source: ADB (2008). *Technical Assistance to Timor-Leste: Preparing the Road Network Development Project*. Manila.

Timor-Leste’s roads are in this state of disrepair for a variety of reasons. In many cases, roads were not properly designed, lack sufficient drainage capacity, or are structurally unsound. Due to the steep terrain, ground conditions, and local climate, slope instability is a major problem and frequent slips result in significant damage to the road network (as well as potential risk to road users). Many roads are often impassable during the rainy season due to landslides and road failure. Under investment in systematic road maintenance has also been a chronic problem.

Looking forward, the GOTL faces a number of challenges when it comes to addressing deficiencies in the country's road network. These include⁷:

Weak planning and implementation capacity. The Directorate for Roads, Bridges, and Flood Control (DRBFC) within the Ministry of Infrastructure (MOI) has lead responsibility for roads and is seriously handicapped by shortage of technical staff. This has affected its operational capacity for strategic planning, procurement and administration of new infrastructure contracts, and timely maintenance of the existing road network. MOI is keen to expand its capacity by hiring more staff, but is constrained by the limited availability of skilled human resources and better incentives offered by the private sector.

Insufficient road maintenance finance and practices. The road network lacks a well-planned routine and periodic maintenance program. The annual maintenance expenditure needs for national roads are estimated at \$20–\$30 million. However, the Government allocated only about \$3.7 million in 2009 for the maintenance of all categories of roads. DRBFC does not have a functioning system for setting performance targets and for planning and programming periodic road maintenance activities. Most road works on the core road network are implemented reactively by the local communities, through DRBFC, but supervisory guidance has not been provided sufficiently and on time, leaving the quality of the works in question.

Difficult terrain, geology, and weather conditions. Terrain, geology, and weather conditions considerably increase the cost of providing and maintaining roads. Mountain roads are prone to erosion and landslides in the rainy season, while coastal plain roads, especially in the south, are prone to flooding. During the 8-month rainy season from November to June, a large part of the road network, including large sections of the national road network and a number of district roads, becomes impassable after heavy rains.

Limited capacity of national contracting industry. Private companies have implemented road projects in Timor-Leste, but they are not ready to undertake large-scale road projects independently. The main capacity constraints of these contractors are financial resources and technical and managerial skills. Most of the consulting work for large projects is performed by foreign companies since the capacity of local consulting firms is still underdeveloped.

Right-of-way. The legal foundation for the right-of-way for roads has not been established in Timor-Leste. When roadworks require additional land, the Government negotiates with the owners or users on a case-to-case basis. There are no specific laws or guidelines concerning land acquisition and compensation. The first land law of Timor-Leste (Law No.1/2003) was passed in March 2003 but does not provide a legal basis for declaring customary land to be public land belonging to the state. A new land law being prepared by the Government is expected to address these issues.

In recent years, a number of donor activities have focused on improving Timor-Leste's roads and strengthening the ability of the GOTL to plan, contract for, and maintain its road network. For example, to address skill shortages at the MOI and DRBFC, the ADB has supported the MOI with a multi-year TA program and Japan is funding a twinning program with the Indonesian Government to focus on technical and management training for MOI engineering staff. Recent projects by ADB, JICA, EU and World Bank focus on rehabilitating a number of national, district, and rural roads. As described in its Strategic Development Plan, the GOTL itself plans to rehabilitate key national and district roads between now and 2015 with a view towards having all such roads rehabilitated to an international

⁷ See ADB, Proposed Asian Development Fund Grant Democratic Republic of Timor-Leste: Road Network Development Sector Project, October 2009 for more details.

standard by 2020. The GOTL also plans to rehabilitate all rural roads to a minimum standard by 2020 using local contractors. Towards this same end, the GOTL established a multi-year infrastructure fund in its 2011 budget with funding of approximately \$320 million in FY 2011 and additional planned funding of over \$2 billion through 2015. The bulk of this funding will go towards establishing a stronger power generation and transmission grid for Timor-Leste, but significant funds will also go for road improvements.

This infrastructure fund (and a similar fund for human capital development) is intended to support and fast track the implementation of the Government's newly approved Strategic Development Plan. The infrastructure fund will be governed by a board consisting of the Prime Minister and relevant line ministers, with the objective of centralizing decision making so as to ensure that projects are coordinated between line ministries and integrated within the SDP.

A National Development Agency (ADN) will be established under the Prime Minister and staffed with technical expertise to quality control project submissions to ensure specifications and costings are appropriate. The ADN will also provide supervision and monitoring of projects.

In summary, Timor-Leste's mountainous terrain inevitably makes road transport slower and more expensive than in places with more level terrain. Even if roads in Timor-Leste were much improved that would still be the case. But there is no doubt that the generally poor state of Timor-Leste roads, especially for the district and rural roads, has a negative impact on the country's development. Road transport is a slow and bumpy process—often damaging agricultural products and imposing high maintenance costs on vehicle owners. Poor road transport also has other, more indirect, negative impacts on development. For example, it makes it harder for agricultural extension workers to reach farmers and more difficult for microfinance providers to reach potential borrowers. One might argue that the extreme lack of development and commercialization in Timor-Leste's agricultural sector to date makes the negative development impact of poor rural roads less serious at present. However, if Timor-Leste's medium term development objective is to increase productivity and commercialization in the agricultural sector with a view towards substituting domestic production for imported agricultural products and expanding exports of a few selected agricultural products, then the poor state of Timor-Leste's roads is a serious impediment to its development.

Power

As recently as 1985, only about 4 percent of households in Timor-Leste were electrified. But thanks to concerted efforts by PLN, the Indonesian state power utility, by 1998 the household electrification rate has risen to about 30 percent. Despite this progress, in 1998 Timor-Leste had the second lowest electrification ratio among the various Indonesian provinces. The events of 1999 resulted in widespread destruction of almost all power sector assets, including administrative buildings, power stations, power lines, and associated records and documentation. Most managers and technicians who worked on the power system also departed.

In 2000, the United Nations Transitional Authority in East Timor (UNTAET) established Electricidade de Timor-Leste (EDTL) from the remnants of the PLN power system and associated staff, placing international personnel in managerial positions. The United Nations (UN) led intensive efforts to restore the power system with bilateral support from the governments of Australia, Japan, Norway, Portugal, United Kingdom and United States. ADB administered assistance to the power sector under the Trust Fund for East Timor (TFET). Progress in re-establishing legal frameworks and managerial capacities was slower than anticipated. It was not until June 2001 that EDTL's relationship to the East Timor Public Administration (ETPA) was legally defined, and not until August 2001—immediately prior to the end of the UN administration—that EDTL gained the right to charge Dili consumers for

electricity. This right was extended to customers in the districts only in February 2003. Responsibility for the administration of EDTL was transferred to East Timor Transitional Administration (ETTA) in August 2001, and after independence in May 2002, to the Government of Timor-Leste.

Progress in re-building the power system in Timor-Leste was further slowed by the crisis in 2006, which led to the termination of a management contract for EDTL which had been signed earlier with Companhia de Electricidade de Macau (CEM). In 2007, a five year management services contract was awarded to Manitoba Hydro International to take full management responsibility for Electricidade de Timor-Lest (EDTL). MHI provided a team of individuals to fill the positions of Director-General of EDTL, senior management, and technical staff, as well as training and services for EDTL's operation. Responsibilities included the day-to-day management of the utility, medium term planning of the utilities business, financial management, loss reduction, collections, and capacity building.

Progress has been slow in expanding EDTL's service coverage across Timor-Leste, improving the reliability of service, and strengthening EDTL's financial performance. Currently, Timor-Leste's power system is composed of about 58 isolated local distribution diesel powered generators that in total produce about 40 MW of electricity. Only about one third of the population has access to electricity, generally for roughly six hours per day; and only the central parts of Dili and Baucau have 24-hour access to electricity. Even there, however, there are still regular outages and voltage surges which impose costs in terms of lost output and damaged equipment. And many of the larger electricity consumers have invested in their own standby generators, thus imposing additional costs on them and the economy as a whole. Another serious problem is that while electricity tariffs are relatively high, fewer than 50 percent of customers actually pay their bills.

The GOTL does have ambitious plans—as described in its Strategic Development Plan and as reflected in steps taken to build two new power plants and an accompanying transmission system. Specifically, the GOTL tendered in mid-2008 for 120 MW of generating capacity on the north coast at Hera (east of Dili) and for 130 MW of generating capacity at Betano (on the south coast and well situated for hoped for future petroleum-related development) and for an accompanying high voltage transmission network that would for the first time establish a nationwide power grid for Timor-Leste. An initial contract for construction of the new generation and transmission capacity was signed in October 2008. Unfortunately, complications led to the initial contract for the power plants being terminated and re-awarded—resulting in significant delays and a near doubling of costs from \$367 million to \$628. In late November 2011, the first unit came on line at the Hera plant, thereby significantly increasing generating capacity available for the Dili district. These new units have the ability to burn either fuel oil or natural gas. However, work on the high voltage transmission network continues to be delayed, and general problems of power system access and reliability continue. Once the new generating units are completed and online, Timor-Leste will have more than enough generating capacity to meet prospective growth in demand resulting from either increased electrification of the island or growth of the economy. But supplying that capacity to a predominantly rural population will remain a major challenge for some time to come. Renewable sources of energy—solar, wind etc.—may be viable for certain applications in selected remote areas.

Conclusion

This section began by making the general case that countries cannot hope to develop today without at least a minimally adequate stock of infrastructure. From the discussion above it is clear that Timor-Leste is sorely deficient when it comes to infrastructure. There is no national power grid and power—where and when it is available at all—is costly and unreliable. Similarly, national roads are limited and poorly maintained, while district and rural roads are in even worse shape. Other types of infrastructure—telecommunications, water/wastewater, and ports—also fall well below the levels found in comparator

countries. This analysis of Timor-Leste's infrastructure concentrates on what is judged to be the two types of infrastructure that are judged to be most important, at present to the country's development. These are power and roads. While both types of infrastructure have serious deficiencies, the Government has a much more credible plan in place to tackle the power sector; and that plan is backed with significant budget resources. Thus there is reason to believe that fundamental weaknesses with the power sector have a reasonable probability of being mitigated over the next few years. The likelihood of similar progress with roads is judged to be lower; and the continuing costs to the economy—which is and will continue to be predominantly rural for years to come—from poor roads will remain high—especially since a more productive and commercialized agricultural sector should be a key medium term development objective for the country. For all of these reasons, we consider Timor-Leste's poor road network to be a binding constraint to the country's growth.

Chapter 6 Human Capital

Based on key indicators of workforce performance and interviews with the private sector, it is evident that the educational capacity and the lack of workforce discipline is a binding constraint on the growth of Timor-Leste's economy. While difficult to prove empirically, it is clear from meetings with private sector and government officials that this issue permeates the country.

Within the framework of a growth diagnostic analysis, low/poor human capital inhibits long-term economic growth by limiting the returns to investment due to a low capacity of human resources. This occurs either because human resources have become too expensive or they are non-existent in the country. According to the basic HRV model, “[i]ncreasing the supply of human capital through a greater health and education effort is expected to lead to a faster accumulation of these assets and hence to a higher level of income.” (Hausmann, Rodrik, & Velasco, *Growth Diagnostics*, 2004) For the sake of this analysis, it is important to not only explore the broad educational attainment (in terms of highest education reached and gross enrollment ratios), but to also analyze the skill level of the employed population. Education in Timor-Leste is, therefore, an issue of both access and availability of education and the quality of the lessons and the skills graduates obtain.

According to economists Eric Hanushek and Ludger Woessman, authors of *The Role of Cognitive Skills in Economic Development*, returns to education are not met merely through school attainment, but through the development of a high level of cognitive skills. They advocate that the important measure of education is not school attendance, but rather the quality and applicability of that education. Their study finds that, “cognitive skills have powerful effects on individual earnings, on the distribution of income and on economic growth,” especially in developing countries (Hanushek & Woessman, 2008). This study is particularly applicable in Timor-Leste as, while enrollment rates are high, the private sector still notes a gap in educational attainment. Therefore, for this analysis, it will be necessary to address the quantity and availability of schooling, as well as the quality of the education.

The education sector was greatly impacted by the crises in Timor-Leste's past. In 1999, nearly 90 percent of the country's schools were either damaged or destroyed. Additionally, many qualified Indonesian teachers fled the country, leaving many classrooms without instructors. The changing political situation also required the drastic alteration of textbooks and curriculum, leaving even experienced teachers struggling to meet the educational goals of their students. While there was additional damage to educational institutions during the 2006 crisis in 2006, these were on a much smaller scale and had less impact on the quality and quantity of education available (UNESCO, 2009).

Despite setbacks, the Timorese government, most notably the Ministry of Education, has displayed a commitment to education. In 2011, the Prime Minister introduced a “Strategic Development Plan,” which highlighted the need for the government to invest more prominently in improving access to education, quality of schooling, and reaching measurable learning outcomes. They have supported this effort by creating the Human Capital Fund, which allocates a certain percentage of state expenditures and revenues from the petroleum fund into a long-term education-focused endowment. This endowment is intended to support lasting improvements in education, specifically investments in improving schools and classrooms conditions. The most recent State Budget Book showed proof of this commitment, as displayed in Table 6-1. As articulated in the Budget Book, the fundamental objectives of the fund are to “finance training and human resource development; provide a whole, across Government coordinated approach; provide certainty in the negotiation and execution of contracts that extend beyond one year; and promote transparency and accountability through improved systems of reporting” (Ministry of Finance, 2012). It is important to note that the continued funding of the Human Capital fund is largely reliant on proper and continuous management of the Petroleum Fund (see Box 1.)

Table 6-1 Human Capital Development Fund in \$ millions

	2010	2011	2012	2013	2014	2015	2016
HCDF	0	25	30	35	40	45	45

Source: State Budget 2012 Overview, Book 1

Education and Skills

Since the 1970s, Timor-Leste has experienced three different types of education systems. During the colonial period, from 1511-1975, the Portuguese initiated a European education structure. This structure relied heavily on Portuguese as the primary language, isolating the majority of citizens without these language skills. Only an elite class of Timorese men was formally educated. (National Statistics Directorate (TSD), Ministry of Finance, ICF Macro, 2010) The basic system consisted of three cycles lasting from ages six to fifteen, with six to nine being categorized as primary education and ten to fifteen as secondary education. The secondary education cycle included cycles from ages ten to twelve and from ages thirteen to fifteen.

When the Indonesian occupation began in 1975, the government implemented a different structure and style of education. The Indonesian government allowed the general public to access education, which was new to the Timorese people. However, the Indonesians changed the main teaching language to Indonesian, which was not prevalent in Timor-Leste. Despite the language issue, the Indonesian teachers were dedicated to providing a quality education to all the country's children. The basic education system also changed to six years of primary education, three years of lower secondary education, and three years of upper secondary education (National Statistics Directorate (TSD), Ministry of Finance, ICF Macro, 2010). The Indonesian government invested heavily in the country's education system, adding schools and increasing the number of textbooks, but the 1999 crisis saw a rapid depletion teachers and materials.

The current system, initiated by the Timorese government and supported by the international community (specifically UNESCO and the World Bank) began in October 2008. It includes six years of primary education for children ages six to eleven and three subsequent years of secondary education. The secondary education system uses two modalities, general secondary education and technical professional secondary education. The Early Childhood Care and Education (ECCE) system is not compulsory and is generally provided by private, church, or community-based institutions (UNESCO, 2009).

The official language of the education system remains a topic for discussion in the Ministry of Education. Currently, courses are taught in Portuguese and Indonesian Indonesia, with very little education in the Timor-Leste's indigenous languages. According to a 2006 UN Development Report, less than five percent of the population of Timor-Leste is proficient in spoken Portuguese. Tetum, the dominant indigenous language, is rarely taught in formal public school. The same report indicated that there are also 16 other indigenous languages, including Galole, Mambae, and Kemak which are spoken by a significant portion of the population.

In the government, as well as the donor community, vocational schools have become popular in Timor-Leste. The government and private sector rely on vocational training programs to build the capacity of their workforces. Timor-Leste and donor agencies are heavily invested in vocational training schools in order to quickly close educational gaps in the population.

In the past five years, the demand for tertiary education has grown significantly. According to the Ministry of Education, the enrollment of women in tertiary education has increased by 70 percent since 2009. In 2011, there were eleven universities operating (down from seventeen in 2009), of which nine

were fully accredited. The government has supported these institutions by establishing formal commissions and associations dedicated to the continuation of quality educations in Timor-Leste. The National Commission for Academic Assessment and Accreditation was formed in 2006 in order to create standards for accreditation (Government of Timor-Leste, 2010).

Two issues currently holding back the tertiary system in Timor-Leste are the lack of regulatory frameworks and the dearth of interest by the poorest of the poor in enrolling. The government has recognized the need for “new regulatory frameworks and funding mechanisms, for public and private institutions,” specifically there is a need for a National Qualifications Framework and an “efficient management system to coordinate all government interventions in higher education” (Government of Timor-Leste, 2010). The lack of framework and high quality accreditation is hurting the quality of higher education. Private sector entrepreneurs frequently criticized the quality of a tertiary education in interviews, as a result of the lack of formal framework (specifically quality control and lofty educational standards).

Despite the fact that the institutions are in place, there remains few students enrolled in tertiary education. “Higher education in Timor-Leste suffers from problems of access, quality and relevance. The low [gross enrollment ratio] is caused, among other things, by poverty” (Government of Timor-Leste, 2010).

In order to understand the ability of the supply of Timor-Leste’s education to meet the market demand, it is necessary to analyze both the quality and quantity of education. Based on empirical evidence and interviews and surveys with the private sector, it is clear that the quality of education is a binding constraint to the economy despite higher enrollment rates higher than the regional average. The following sections will compare the state of the education system in terms of enrollment and retention. Though it would appear that enrollment is not an issue in Timor-Leste, participation in schooling and repeaters are holding back education level of the populace.

Education Supply – Quantity

The overall enrollment ratios in Timor-Leste are better in comparison to comparator countries, and despite significant decreases in gross enrollment ratios⁸ before the 2006 crisis, the last three years have seen significant improvement in male and female enrollment in primary school. Graph 6-1 demonstrates that Timor-Leste outperforms comparator countries from the three income averages.

⁸ The ‘Gross Enrollment Ratio’ is defined by the Statistics as the total enrollment within a country “in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to this level of education.”

Figure 6-1

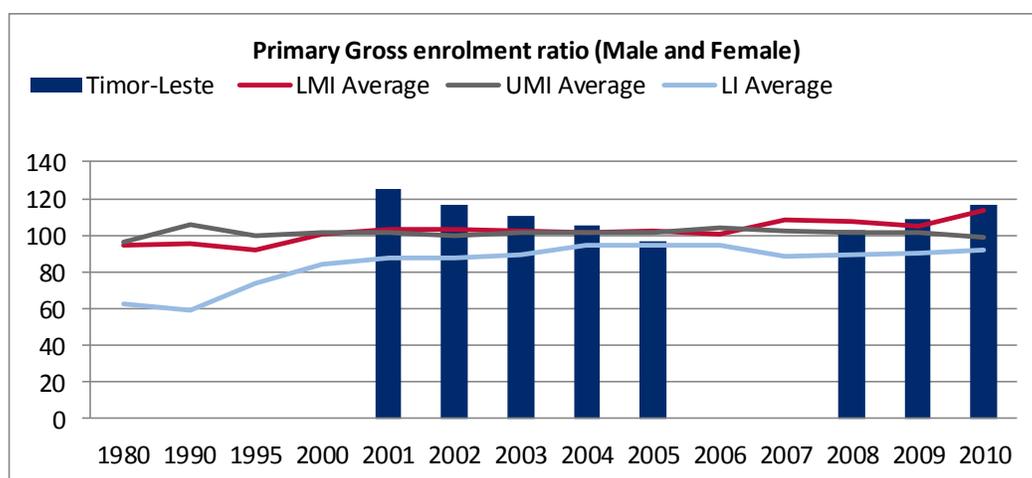


Table 6-2 displays the enrollment ratios for Timor-Leste and comparators at all levels. Secondary enrollment ratios in Timor-Leste are below the averages for the comparators, but still scores higher than comparators like Chad, Vanuatu and Guinea-Bissau. Tertiary enrollment is much higher in Timor-Leste than in all other comparators, and reflects the increased attendance in tertiary education.

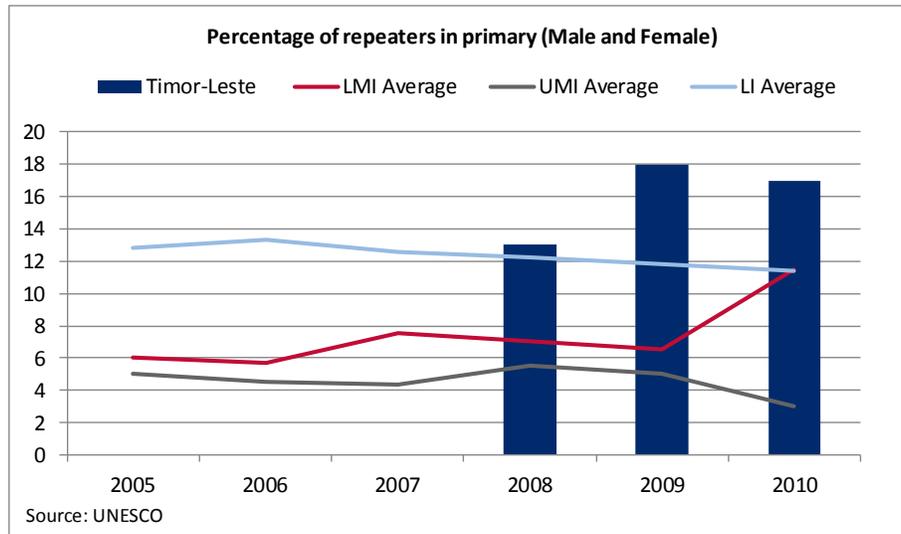
Table 6-2 Enrollment Rates for Timor-Leste and Comparators

	Country	Primary Enrollment				Secondary Enrollment				Tertiary Enrollment	
		Gross		Net ⁹		Gross		Net		Gross	
		2009	2010	2009	2010	2009	2010	2009	2010	2008	2009
	Timor-Leste	109	117	79	85	58	56		37		17
Low Income	Chad	92	90	60 (2002)	62 (2003)	25	26	10 (2002)	11 (2003)	2	2
	Gambia	87	83	72	66	55	54			4	
	Guinea-Bissau		123		74			34 (2005)	36 (2006)		
	Guyana	85	85	78	81	93	91			11	11
	Mali	79	80	61	62	35	38	28	29	5	6
	Namibia	107		85						9	
Low Middle Income	Cape Verde	110	110	93	93	85	88	66	66	12	15
	Fiji	105		97		86		85 (2006)	84 (2007)	16 (2004)	16 (2005)
	Solomon Islands							34 (2006)	31 (2007)		
	Sri Lanka	95		94							
	Vanuatu	110	117			49	55	45	47	5 (2003)	5 (2004)
Upper Middle Income	Botswana	108 (2006)	108 (2007)	86 (2006)	86 (2007)	79 (2006)	80 (2007)	59 (2006)	59 (2007)	7 (2005)	7 (2006)
	Mauritius	99	99	93	93	89	89	74 (2004)		25	
	Trinidad & Tobago	104		93				68 (2004)	66 (2005)		

Source: UNESCO

⁹The Net Enrolment Ratio (NER) is defined by the UNESCO Institute for Statistics as enrolment of the official age-group for a given level of education expressed as a percentage of the corresponding population

Figure 6-2



Even though enrollment ratios are high there are larger problems plaguing the education system, beginning at the primary level, which are constraining the economy. The Ministry of Education reported that in 2010, less than 54 percent of six-year olds had begun the first grade and that children were taking too long to master basic education skills. According to the Ministry, it takes on average 11.2 years for a child to complete schooling to grade six. Therefore, the rate of repeaters is significantly high in Timor-Leste.

The level of repeaters in Timor-Leste is exceptionally high, scoring considerably higher over the low income and low middle income comparators. Repeaters, as defined by UNESCO, measure the total number of pupils who are enrolled in the same primary grade (or level) as the previous year, expressed as a percentage of the total enrollment in that grade (or level) of education. In other words, the series measures the lack of progression of primary students. The concern is that this level may have improved slightly in the past year, but drastic regression in 2009 does not display promising changes in educational policy or curricula. As a whole, 16 percent of children in Timor-Leste repeat grades (UNESCO, 2009). According to the World Bank, the average age in grade 1 is one year more than the official age, and the average ages in grades 2 and 3 are nearly two years higher than the official age. These figures demonstrate that there is a true issue in the education system that begins in primary education and continues throughout the education system (World Bank, 2010).

One of the more distressing figures is the high incidence of females and rural household members without any schooling at all. Though lower than the more extreme low income comparators, the percentage of females without education was 37 percent compared to about 30 percent of males. A notable comparator in this analysis is the district of East Nusa Tenggara, a province of Indonesia located in the eastern portion of the Lesser Sunda Islands, including West Timor. The reason for this comparison is not only to compare Timor-Leste against like geography and climate, but also to include districts that were privy to similar standards and resources under the Indonesian government. The percentage of people in this district without schooling is significantly lower.

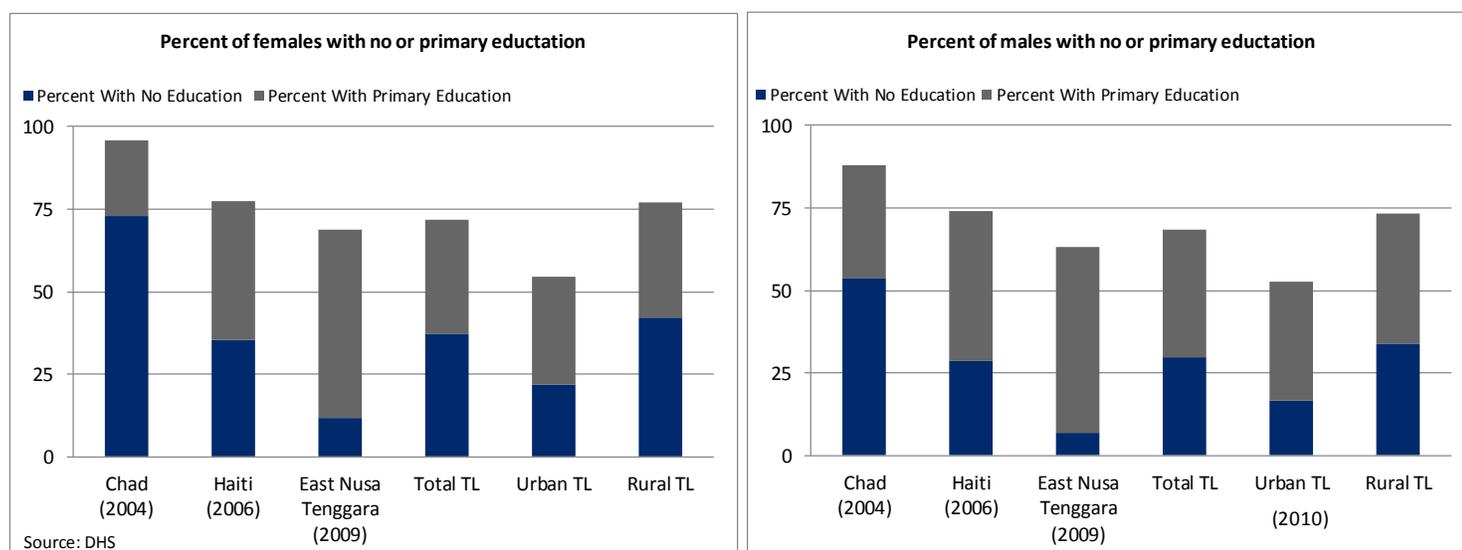
Table 6-3 Highest Level of Education

Country	Percent With No Education as Highest Level		Percent With Primary Education as Highest Level	
	Percent With No Education, Female	Percent With No Education, Male	Percent With Primary Education, Female	Percent With Primary Education, Male
Chad (2004)	73	53.7	23	34.1
Haiti (2006)	35.4	28.6	42	45.5
Mali (2007)	73.4	63.9		
Namibia (2006)	14.6	15.6		
East Nusa Tenggara (2009)	11.7	7	57.2	56
Total TL (2010)	37.4	29.6	34.5	38.7
Urban TL	21.9	16.5	32.5	36
Rural TL	42	33.8	35.1	39.6

Source: DHS

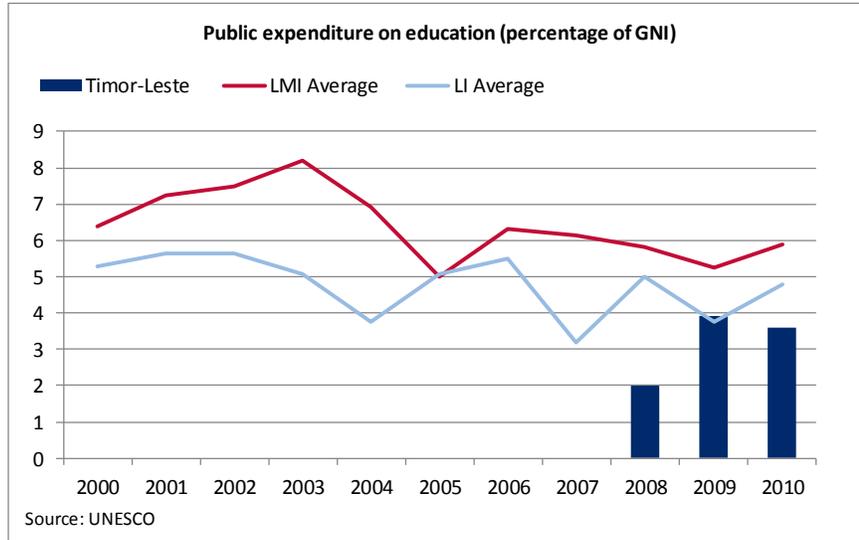
There is a noticeable lack of education in the country, but the graphics further display the discrepancy between rural and urban households. Over 40 percent of females in rural communities have no education. Based on interviews with government officials and the private sector in Timor-Leste, one issue holding back the implementation of formal education system is the lack of applicable curricula and a cohesive and consistent decision on language. The formal education system remains in either Portuguese or Indonesian. Nevertheless, the Ministry of Education currently encourages teachers to teach in native tongues. However, this is neither formalized nor decreed by law. The lack of a national language is a consistent problem in both government and educations systems

Figure 6-3



Despite the poor percentage of households without formal education, the government truly is making strides to improve the educational infrastructure in Timor-Leste. Aside from the commitment to education seen in the Human Capital Fund, the government is also working to improve the yearly allocation to education. Figure 6-3 displays the uptick in state expenditures on education as a percentage of Gross National Income. Though the percentage is showing improvements, levels remain significantly lower than low income and low middle income comparators (averages for upper middle income countries were not appropriate for this series).

Figure 6-4



Still, the government remains committed to increasing the school infrastructure. Essentially, according to the government’s strategy on education, the current administration intends to increase the number of functional schools in Timor-Leste by 38 percent and classrooms by 22 percent by 2015. The substantial amount of resources currently available through the Human Capital Fund could fund this essential investment.

Table 6-4 Estimated school infrastructure needs

	Existing facilities*		Estimate of facilities to be constructed/rehabilitated			
	2011		2015		2030	
	Schools	Classrooms	Schools	Classrooms	Schools	Classrooms
Pre-School	180	2,820	253	758	169	506
Basic	1,309	13,553	502	3,012	335	2,008
Secondary	80	6,400	64	1,280	43	853
Total	1,530	22,773	819	5,050	547	3,367
*70 percent of existing facilities are in a precarious condition and will require repairs and renovations very shortly						

Source: Ministry of Education, National Strategic Development Plan

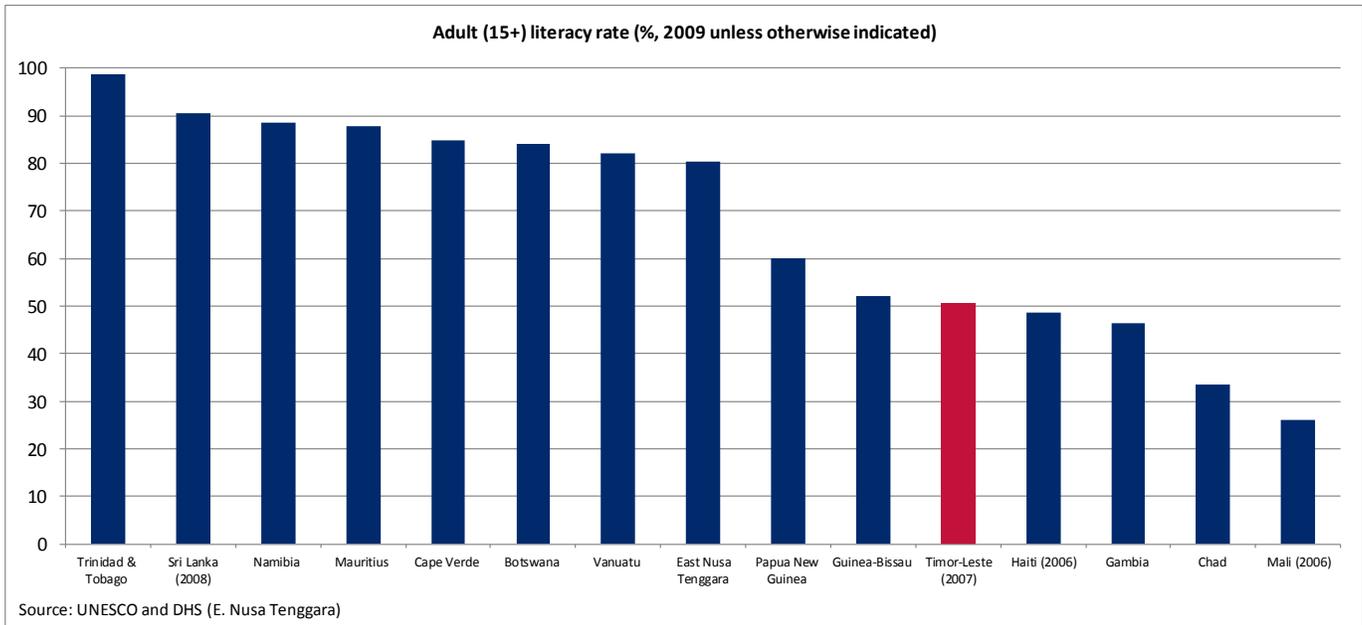
Education Supply – Quality

The literacy rate is a key measurement of the quality of education in Timor-Leste. According to UNESCO and DHS figures (displayed in Figure 6-5), only 50.6 percent of adults older than fifteen in Timor-Leste are literate. When compared to similar countries, there is a noticeable discrepancy. Timor-Leste falls behind nearly all of the low middle and upper middle comparators, and only scores higher than a handful of low income countries. East Nusa Tenggara, Indonesia, has a literacy rate over 80 percent.

The literacy issue is also clearly displayed in the World Bank’s 2010 early grade reading assessment. According to the assessment, “[m]ore than 70 percent of students at the end of grade 1 could not read a single word of the simple text passage they were asked to read. 40 percent of children were not able to read a single word at the end of grade 2; and the share of children scoring zero dropped to about 20 percent at the end of grade 3. The assessment provides clear evidence that many children spend years in

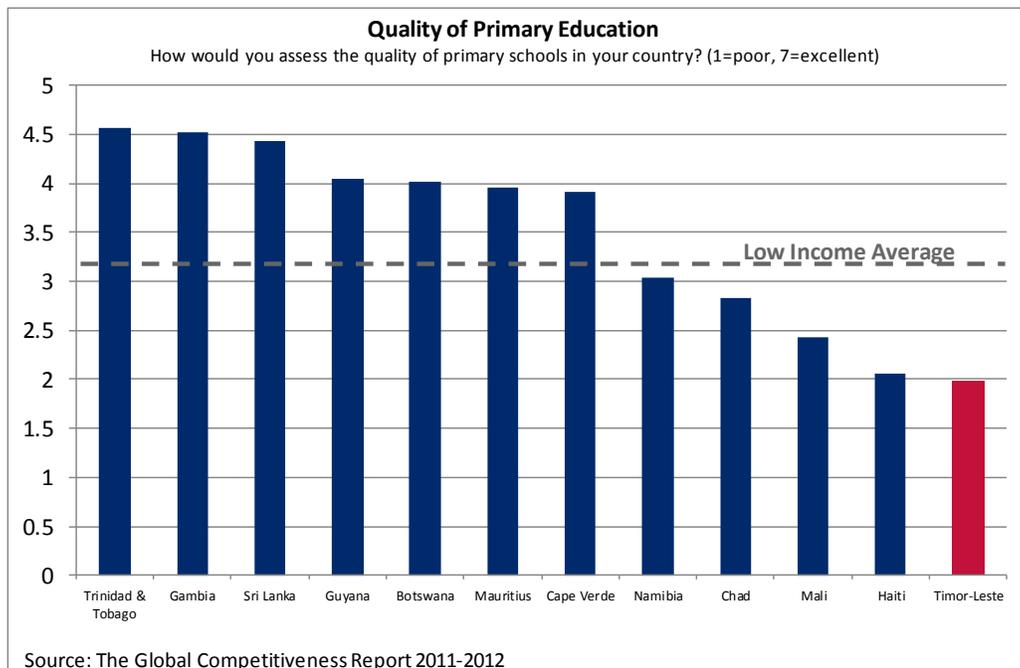
primary schools in Timor-Leste without learning to read. The fact that children do not gain this most fundamental learning skill is a major contributor to the high rates of grade repetition and drop outs in Timor-Leste’s primary schools.” (World Bank, 2010)

Figure 6-5



The study concluded that two clear issues were constraining the quality of primary education. The first was the language issue described earlier. The study reported 5 out of 10 children reported speaking a language other than Portuguese or Tetum at home, and 8 out of 10 reported they spoke no Portuguese at home. The World Bank found that one of the key factors associated with the overall performance of children was the use of the language spoken in class. “Students whose teacher speaks both Tetum and Portuguese in the classroom performed better than children whose teacher speaks only one of the two languages or the local language” (World Bank, 2010).

Figure 6-6



Moreover, the World Bank found that the overall skill base of teachers, especially in reading, needs to be improved in order for children to perform better in Timor-Leste. Primarily, the study stressed the need for a more reading-focused teacher training and the extreme need for educational tools like books and, on a larger scale, libraries. The Government of Timor-Leste responded to this assessment with the purchase of materials primarily in Tetum.

Further support of issues related to education quality can be viewed in the World Economic Forum's Global Competitiveness report. According to the Global Competitiveness Report, Timor-Leste has the lowest score against competitors in the Quality of Primary Education and scored 139th out of 142 countries overall. The low score (which is consistent over the past three years) demonstrates that the private sector has a low perception of the quality of primary education. Timor-Leste ranks in the bottom across all of the education specific indicators present in the Competitiveness Report, including 130th in the overall quality of the education system and 140th in the quality of math and science education. The low ranking is also coupled with scores that were considerably lower than the average of the low income comparators. These striking scores demonstrate the true issues relating to the private sector's perception of the education system, discussed more fully in the next section.

Figure 6-8

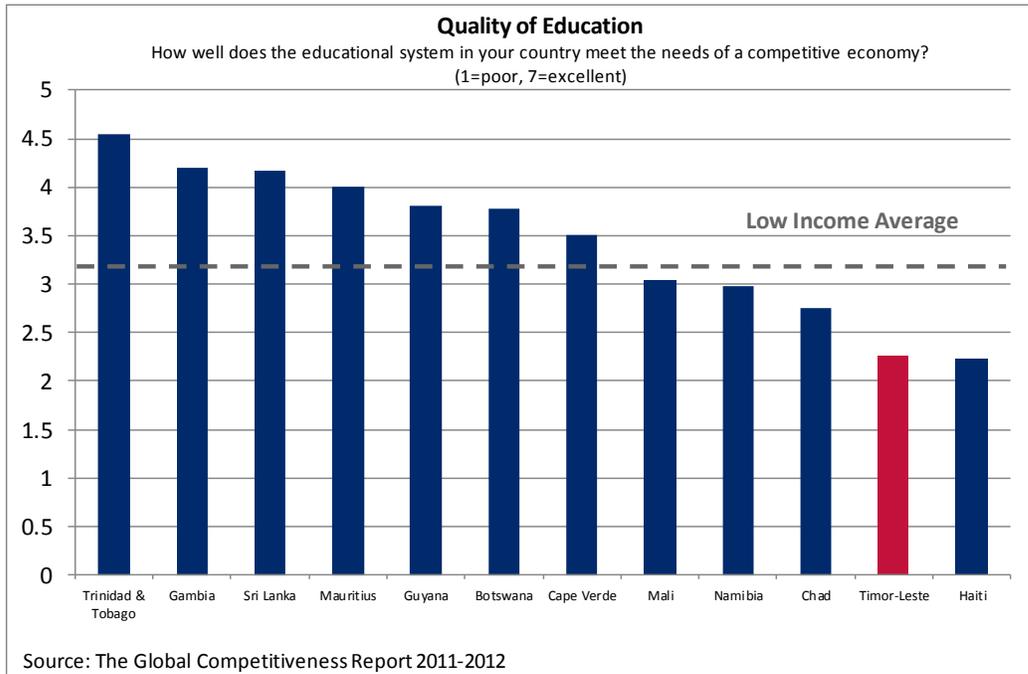
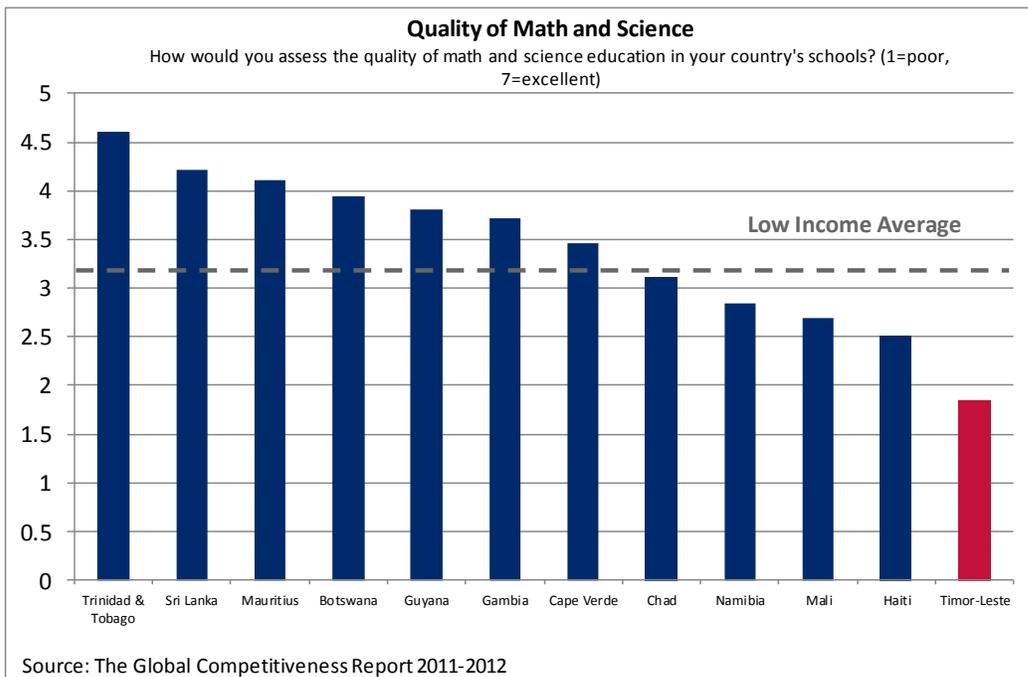


Figure 6-7



Education Demand and Firm's Perception of Education

As described previously, there are issues related to not only the quantity and access to education, but also the quality of education. In order to clearly understand the labor force, one must analyze the demand for skilled workers in Timor-Leste. If a lack of skills and an inadequately trained workforce is a binding constraint, there should be a low unemployment level for skilled and trained individuals, as well as high returns to education.

Education Demand – Unemployment and Labor Force Participation

In 2010, the International Labor Organization conducted a formal study of Timor-Leste's workforce. The survey sampled 4665 households throughout Timor-Leste. For the sake of this survey, ILO also applied their "relaxed" definition of unemployment, which defines a person as unemployed if they were not working last week but were available to work."

Table 6-5 Key Labor Indicators from ILO Labor Survey

	Labor force participation rate (percent)	Employment to population ratio (percent)	Informal employment rate (percent) ¹⁰	Vulnerable employment rate (percent) ¹¹	Unemployment rate (percent)	Inactivity rate (percent)
Timor-Leste	41.7	40.2	17.8	69.9	3.6	57.4
Urban	42.3	39.3	20	42.1	6.9	57.7
Rural	41.5	40.6	16.9	80.3	2.2	58.5
Male	56.2	54.4	13.5	65.9	3.1	43
Female	26.9	25.7	26.5	78.5	4.6	72.2

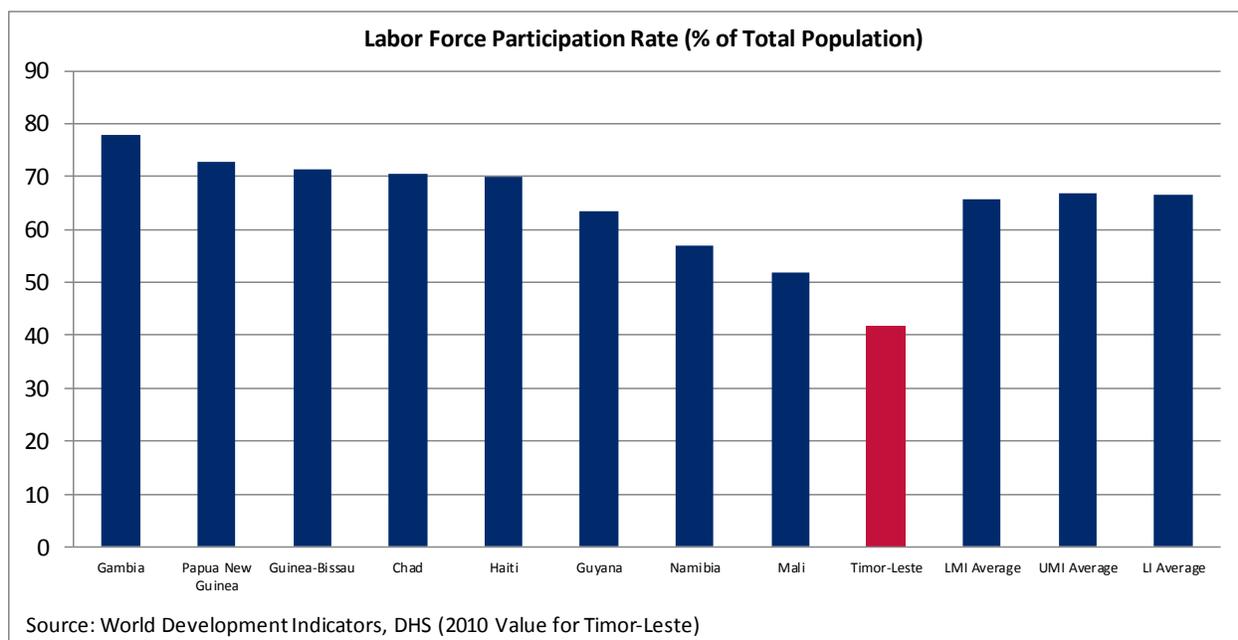
Source: ILO

The unemployment rates displayed above for Timor-Leste are actually quite low and are on par with the Southeast Asia regional average of 3.6 percent. However, the overall labor force participation ratio (LFPR) is considerably lower for Timor-Leste than comparators. The LFPR is defined as the proportion of the relevant group who are currently economically active. Based on Figure 6-9, Timor-Leste is underperforming all comparators on Labor Force Participation and is considerably lower than the averages. The above table also demonstrates a clear difference between males and females as the levels for females are almost half of those for men.

¹⁰ ILO defines informal employment by taking the number of people working in the informal sector and include the group of persons who produce goods or services for the household's own use, but exclude anyone whose terms of conditions at work suggest that they have a fairly permanent relationship to their job

¹¹ ILO defines vulnerable employment as the sum of own-account workers and contributing family workers, taken as a proportion of total employment. "It is a measure of those with relatively precarious working situations. These two status groups are considered as more vulnerable, because these people are unlikely to have formal work arrangements or access to benefits or social protection programmes, and they are more at risk to the effects of economic cycles."

Figure 6-9



Previous estimates by the World Bank have calculated high rates of return on education on monthly wages. According to the World Bank (though published by the Government of Timor-Leste) a person who has graduated from primary school earns 44 percent more than those with no schooling, junior secondary school graduates compared to wages of those with no schooling increases 74 percent and senior secondary increases 91 percent.¹² Unfortunately this data is not published in time series, so it is not possible to compare these improvements over time or calculate how effective tertiary education is (Saldanha, Piedade, & Doraisami, 2008).

Table 6-6 demonstrates that sectors with higher educational needs pay higher than the mean wage for the country, with the manufacturing, financial and international community paying the highest rates. Therefore, education has trended to increase incomes. However, LFPR coupled with low completion rates suggest that the students in Timor-Leste lack the capacity to complete schooling and earn the added gains.

Table 6-6 Mean monthly wages, received by male and female paid employees, by sector of activity of their main job

	Male	Female	Both
Manufacturing	249	392	285
International Organizations	273	200	269
Financial & Insurance	204	310	256
Arts & Entertainment	248	261	252
Information & Communication	219	308	234
Professional & Scientific	259	158	219
Education	187	183	186

¹² The report did not include an estimate for tertiary education or vocational training

	Male	Female	Both
Construction	184	198	185
Total/Mean	173	176	174
Electricity etc.	192	125	165
Health & Social Work	164	162	163
Households as employers	222	76	149
Water supply	145	-	145
Other service activities	203	96	144
Agriculture	143	147	143
Transportation & Storage	139	164	140
Public Administration	131	197	135
Administrative & Support	132	165	134
Wholesale & Retail Trade	137	115	128
Mining & quarrying	93	166	105
Accommodation & Food	105	102	103

Source: ILO

Unemployment levels in Timor-Leste based on education level and locality display educational trends. First, in both rural and urban areas, persons with advanced (tertiary) degrees lower levels of unemployment. Thus, there is certainly a demand for people with advanced degrees, especially in the rural areas. The second trend is that there is a clear issue of unemployment in the rural sector for citizens without schooling. That being said, the rural unemployment numbers could be skewed by subsistence farmers or by the large amount of youth unemployment.

Table 6-7 Percentage of unemployed persons (ILO 'relaxed' definition) by sex, locality, and education level (2010)

Highest Level of Education Completed	Urban			Rural			Timor-Leste		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
None/Pre-primary	4.6	8.4	6	34.1	46.2	39.4	16.9	26	20.6
Primary/Pre-secondary	35	16.3	27.7	28.4	7.9	19.4	32.2	12.4	24.1
Secondary/Technical	45.9	69.6	55.2	33.7	46	39.1	40.8	58.6	48.1
Polytechnic/University	14.5	5.8	11.1	3.8	0	2.1	10.1	3.1	7.2
Total	100	100	100	100	100	100	100	100	100

Source: ILO

The largest quantity of people with secondary degrees cannot locate work, as displayed below in Table 6-7. Table 6-8 (also from ILO) displays the employment patterns by education in order to explain the bizarre patterns in unemployment. The most common profession for those with secondary or vocational training is in shops offices; however the amount relative to the number of jobs on the farm appears incredibly low. It is also incredibly likely that the poor quality of secondary education is leaving the population ill-suited for available jobs. It is possible that economic growth in the non-oil sector may be too slow to absorb this class of worker or that the growing oil sector is not utilizing the local population for employment. The next section will address how the average firms in Timor-Leste view the quality and applicability of education.

Table 6-8 Employed persons by level of education and usual workplace (2010)

	Level of education completed				Total
	None or preprimary	Primary or pre-secondary	Secondary, vocational	Polytechnic, university	
At home	12,000	7,000	3,000		23,000
At client's or employer's home	2,000	3,000	1,000		6,000
Enterprise, shop, office, etc.	6,000	16,000	31,000	8,000	61,000
On a farm or agricultural plot	89,000	32,000	10,000		132,000
Construction site	2,000	3,000	1,000		5,000
Fixed stall in the market/street	7,000	5,000	1,000		13,000
Without fixed location/mobile	3,000	3,000	1,000		7,000
Other	2,000	2,000	1,000		5,000
Total	124,000	70,000	49,000	9,000	252,000
Urban					
At home	2,000	3,000	2,000		7,000
At client's or employer's home	1,000	1,000			3,000
Enterprise, shop, office, etc.	3,000	10,000	17,000	5,000	34,000
On a farm or agricultural plot	7,000	4,000	1,000		12,000
Construction site	1,000	1,000			2,000
Fixed stall in the market/street	3,000	2,000	1,000		7,000
Without fixed location/mobile	2,000	2,000	1,000		5,000
Other					1,000
Total	19,000	23,000	22,000	6,000	70,000
Rural					
At home	10,000	5,000	1,000		16,000
At client's or employer's home	1,000	1,000			3,000
Enterprise, shop, office, etc.	3,000	6,000	14,000	3,000	27,000
On a farm or agricultural plot	82,000	28,000	9,000		120,000
Construction site	1,000	2,000	1,000		3,000
Fixed stall in the market/street	4,000	3,000			7,000
Without fixed location/mobile	1,000	1,000			2,000
Other	2,000	1,000			4,000
Total	105,000	47,000	26,000	3,000	181,000

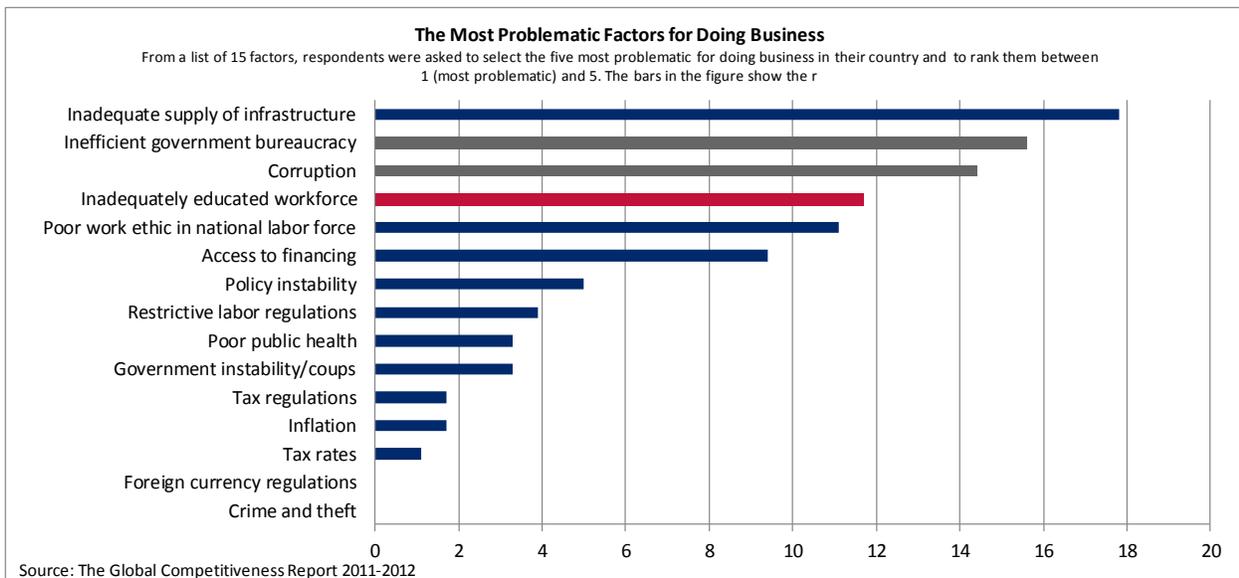
Source: ILO

Education Demand – Firm's Perceptions of Education

Based on interviews with the private sector, it is clear that firm's view education as a key issue. The need for improvement of the education sector is captured both in the Global Competitiveness Report and the World Enterprise Survey, which measures key constraints to growth. There appears to be conflicting views in these two reports on the firm's perception of how much the lack of human capital is holding back Timor-Leste's economy.

Graph 6-10 displays the top issues as reported by respondents of the Global Competitiveness Report. The chart summarizes the factors “business executives” identified as the key issues to doing business in Timor-Leste’s economy and is based on a 2011 Executive Opinion Survey conducted by the World Economic Forum. An inadequately educated workforce appears fourth in the list of most important constraints. However, there are key linkages between the “inefficiency of government bureaucracy” and corruption (which come in second and third as key constraints) to the lack of education in the country.

Figure 6-10



In county interviews with the private sector aligned with the results of the Global Competitiveness Report. Business owners noted that government bureaucracy in Timor-Leste was a major deterrent to business; however, they cited the lack of education or capacity of government officials as underlying problem. Government officials in Timor-Leste are capable and generally enthusiastic, but, based on the in-country assessment; there is a noticeable education gap within the ranks of the officials. The National Strategy Plan of Timor-Leste notes this gap in its long-term sustainable plan: “There are currently substantial skill gaps across [the] civil service and only a limited number of civil servants have higher education qualifications. An intensive civil service human resources development program is required that is linked to [the] strategic and workforce development approaches” (Government of Timor-Leste, 2010).

Corruption in Timor-Leste is also heavily correlated with a lack of education and understanding of governmental processes. According to the 2009 Corruption Assessment by USAID, “[a] crucial barrier to effective anti-corruption policy is the lack of understanding of central anti-corruption concepts by key actors.” In other words, the researchers found that corruption issues in the country were due to a lack of a formal understanding of concepts like conflict of interest and were less about the lack of education. “This was particularly true in the case of conflicts of interest – even when framed in a specific example; many interlocutors did not appear to see the potential conflicts of interests related to hiring family members or having relatives bid on contracts. However, even some high-level figures did not grasp the concept of access to government information – a fundamental and widely used anti-corruption tool.” For additional information on Corruption see section in Appendix C Non-Binding Microeconomic Risks.

Based on the World Enterprise Surveys (World Bank sponsored firm-level survey of a representative sample of an economy's private sector), nineteen percent of firms identified an inadequately educated

workforce as a major constraint. Over 25 percent of businesses in the manufacturing sector found that the workforce was a key constraint, and 27 percent of medium-sized businesses found that the workforce was a major constraint to their businesses. In fact, laborer's low skill levels ranked third in major constraints identified by medium-sized businesses. Additional surveys of the urban sector found similar results. "Employers...think that in comparison with managerial and administrative workers, manual and service workers come into the firm with low qualifications." Views like this further support the lack of quality in primary and secondary education.

Overall, based on interviews conducted in-country, empirical data, and firms' survey perceptions, it is clear that there is a noticeable lack of human capital in Timor-Leste. Even though there has been considerable investment in education, levels of access and quality remain low, and the overall education level of the population is below all comparators. Based on the above data, including the firms' perceptions and the current state of the education system, it is clear that the lack of human capital in Timor-Leste is a binding constraint.

Health and Human Capital

Health has various effects on individuals' and a country's well-being and most importantly for this analysis lasting economic outcomes for instance lost days worked, which translates into lower income for the person in poor health and reduced productivity from the firm employing that individual.

Health issues also have effects on the productivity of labor as those in poor health are cannot work as efficiently as they could with better nutrition and overall health. Thus the overall health and nutritional well-being of the workforce is an important element of human capital.

Malnutrition has both direct and indirect effects on the productivity of the workforce. In 2008, the WHO sponsored a series of papers that analyzed the effects of malnutrition in low income countries. The paper "Maternal and child nutrition: consequences for adult health and human capital" argued that malnutrition in early life can cause permanent deficiencies that could last generations. The scientists identified correlations between malnutrition and height, less schooling and reduced economic productivity. Overall they proved that undernutrition affects cognitive development by causing damage to the brain, impairing motor development and altering the way in which individuals learn (Victora, Adair, Hallal, & al., 2008). Additional work by Harold Alderman, Hans Hoogeveen and Mariacristina Rossi found that children who are malnourished have lower schooling and delay school entry (Alderman, Hoogeveen, & Rossi, 2009). Therefore, malnutrition directly effects the educational attainment of the population, as well as, causes long term damage to the workforce.

In addition to malnutrition, the prevalence of infectious diseases can severely hamper the productivity of a workforce. Specifically, tuberculosis, malaria, HIV/AIDs can cause losses in productivity, income and can deplete the overall supply of labor.

It is important when addressing the issues related to health to not only look at the existence of disease and long term malnutrition, but to also explore the effects the diseases have on the private sector. Malnutrition and infectious are often linked for a combined negative impact. Literature shows that malnutrition decreases one's immune-system so that they are more susceptible to disease – and patients who are infected with latent TB are more likely to progress to active TB. Patients with HIV are more likely to acquire AIDS.

The Global Competitiveness Reports data series on the business impact of TB, Malaria and HIV offer an interesting insight into how the private sector perceives the effects of malnutrition and diseases. The previous section has argued that human capital is a binding constraint to growth in Timor-Leste. The

following will argue that a part of this issue is due to long-term and widespread health and nutrition issues.

Malnutrition

Malnourishment is one of the largest health issues facing Timor-Leste. According to the Demographic and Health Survey conducted in 2009-2010 58 percent of all children under the age of five are stunted and 33 percent are severely stunted. Additionally, 19 percent of all children under the age of five are wasted and seven percent are severely wasted (National Statistics Directorate (TSD), Ministry of Finance, ICF Macro, 2010).

Table 6-9 Percentage of children under 5 classified as malnourished (below 3 standard deviations)

	Height for Age	Weight for Height	Weight for age
Residence			
Urban	21.5	4.5	9.7
Rural	36.1	7.7	17
District			
Aileu	16.7	29.8	12
Ainaro	43.8	6.7	17
Baucau	39.6	5.5	17.5
Bobonaro	45	6.8	18.8
Covalima	36.8	4.4	13.2
Dili	16.1	4.1	7.9
Ermera	48.9	6.8	23.6
Lautem	18.7	2.9	6.7
Liquica	34.7	5.1	14.6
Manatuto	21.2	10.8	8.7
Manufahi	37.1	5.6	13.5
Oecussi	40.6	9	28.5
Viqueque	25	9.3	12.7

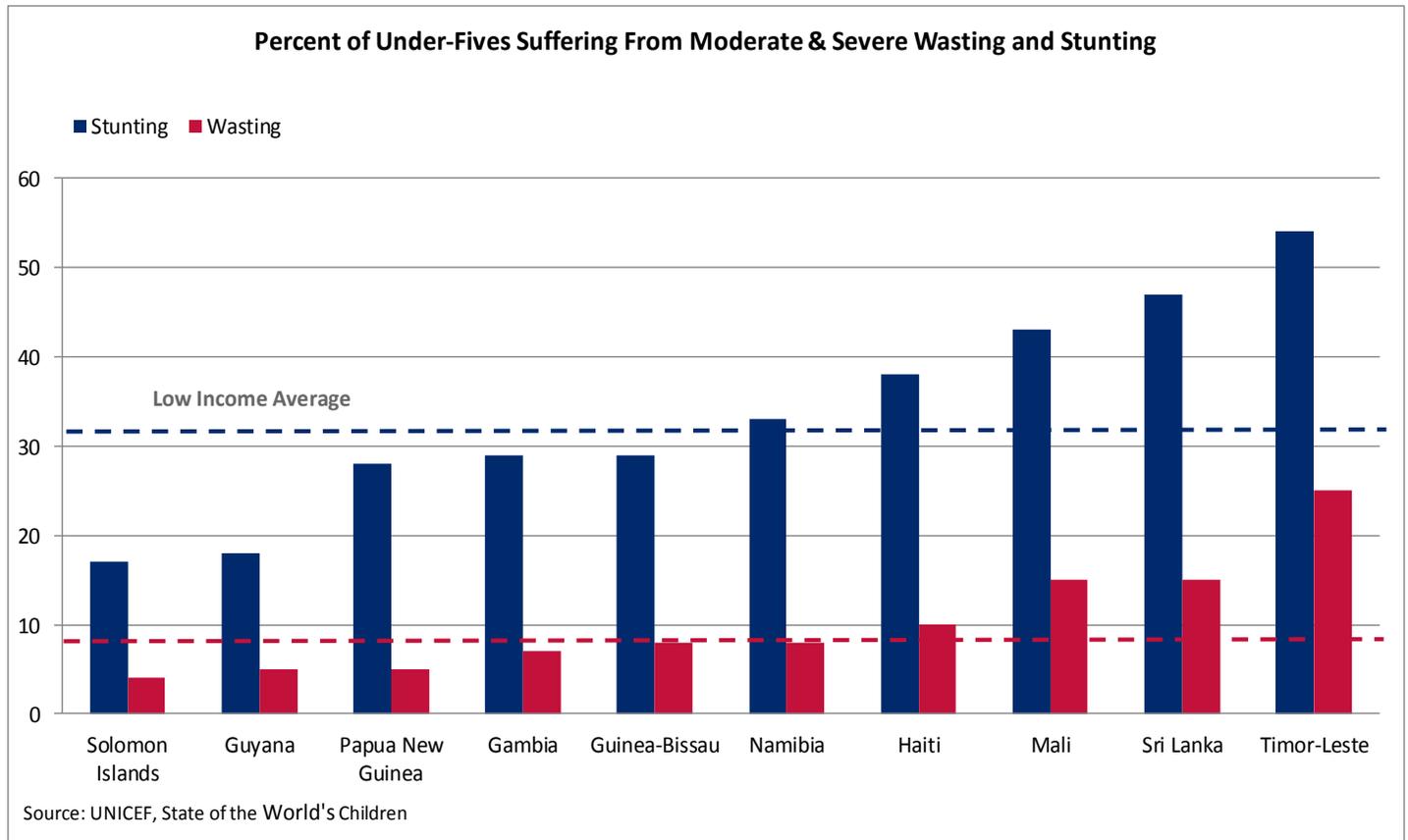
Source: DHS

WHO has created cut-off points to indicate the severity of the malnutrition. If the child's weight for height is less than three standard deviations of normal children than the child suffers from severe acute malnutrition and is considered to be severely wasted. Similarly, chronic malnutrition looks at the ratio of height for age. The above table more fully demonstrates the gravity of the situation in Timor-Leste. The table displays the percent of children that fall below the median (three standard deviations) the WHO Child Growth Standards.

It is clear from the table that an incredibly large percentage of children fall in the severely underweight and under height categories, especially in the rural areas of Timor-Leste. The district of Ermera performs the poorest, with 49 percent of children below the healthy norm in height for age and 23-26 of the children underweight.

The following graphic displays the levels in Timor-Leste against comparator countries.¹³ As is apparent in the graphic, Timor-Leste is underperforming all of the comparators with available data. The country-weighted average of the percentage of children under five years suffering from moderate and severe stunting across low income comparators is 31 percent, while the country-weighted average of the percentage of children under five years suffering from moderate and severe wasting across low income comparators is eight percent. It is apparent that Timor-Leste has a considerable issue with malnutrition in the early formative years.

Figure 6-11

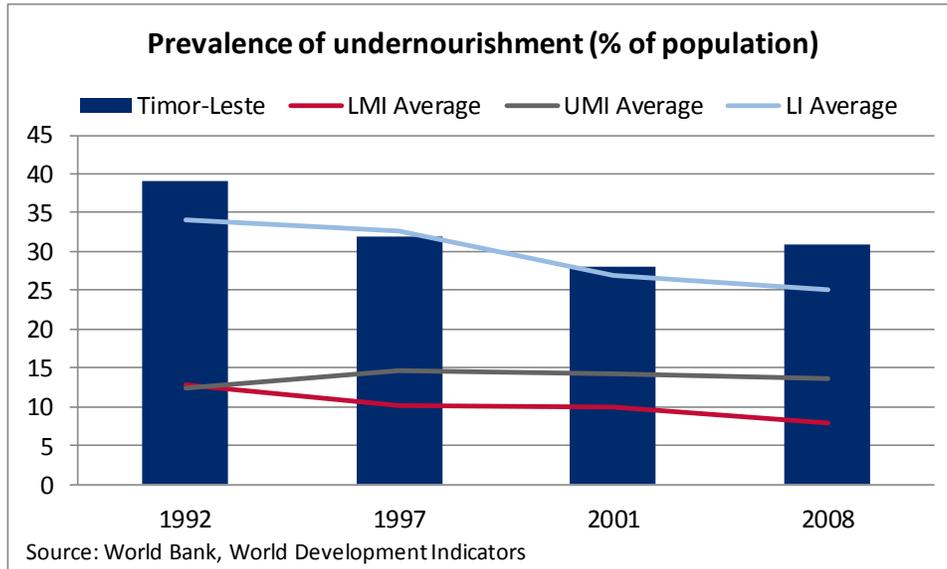


The Demographic and Health Survey argues that some of the contributing factors to the stunting and wasting in children are a result of poor micronutrient intake. The lack of necessary nutrients can cause mental disability and chronic malnutrition, which can increase the risk of death and stunt educational and mental growth (National Statistics Directorate (TSD), Ministry of Finance, ICF Macro, 2010). A 2009-2010 study found that only 4 percent of surveyed households in Alieu consume a diversified diet of food that contain protein, dairy, vegetables and fruit, breads and cereals as well as fat and sugar. The same study found that 66 percent of the population of Bobonaro had trouble obtaining any food in the previous 30 days. Naturally, this district had the country's highest rate of stunting, 73 percent, according to the government's 2009-2010 Demographic and Health Survey (TIMOR-LESTE: Chronic malnutrition among world's highest, 2011).

¹³ It is important to note that this information for Timor-Leste does not match the DHS data, since the years and source are different. But for the sake of comparison the values from State of the World's Children have been displayed rather than the most recent DHS data. Discrepancies are due to different years and accounting methods.

The problem of malnourishment continues into adulthood. According to the World Development Indicators in 2008, 31 percent of the population as a whole was malnourished, considerably more than the low income average of 25 percent of the population. The following graphic demonstrates that the level of undernourished falls lower than comparators.

Figure 6-12



Research by Behrman, Alderman and Hoddinott establish links between malnutrition, hunger and cognitive development. According to their study “poorly nourished children tend to start school later, progress through school less rapidly, have lower schooling attainment and perform less well on cognitive achievement tests when older, including into adulthood” (Behrman, Alderman, & Hoddinott, 2004). These findings align with Harold Alderman, Hans Hoogeveen and Mariacristina Rossi. However, Behrman, Alderman and Hoddinott, link these poor schooling results to productivity in the long-term. They argue that malnourished children receive less education, late enrollment leads to a lower expected lifetime earnings and have a “long-term impairment of intellectual ability” (Behrman, Alderman, & Hoddinott, 2004).

Infectious Diseases

Like nutrition, infectious diseases are highly prevalent in Timor-Leste. Malaria, tuberculosis (TB), and HIV have had a detrimental effect on workforce productivity. As a whole, infectious diseases lowers productivity by decreasing the amount of time workers can spend on the job and increases job turnover, increases mortality, and increases the impact of morbidity on a worker even if they still go to work (in terms of decreased cognitive and physical malfunction). Also, the burden of care can be a huge indirect impact for all three diseases. In order to understand the effects of infectious diseases on Timor-Leste, it is necessary to analyze the prevalence levels and the private sector interpretation of the impact of the disease.

In order to determine the disease worth exploring, one can look at the Disability-Adjusted Life Year rates published by the WHO. The DALY is a measure used by the WHO to quantify the burden of disease from mortality and morbidity. One DALY can be thought of as one lost year of "healthy" life. The sum of these DALYs across the population, or the burden of disease, can be thought of as a

measurement of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability. DALYs for a disease or health condition are calculated as the sum of the Years of Life Lost (YLL) due to premature mortality in the population and the Years Lost due to Disability (YLD) for incident cases of the health condition (Health statistics and health information systems). The below table lists the DALY rates for all diseases that have effect Timor-Leste more so than low-income comparators. Though this chart does not identify all the problem areas, it does point us in the direction of the huge issues plaguing Timor-Leste, including TB, Malaria and Syphilis. An interesting statistic under Neuropsychiatric conditions is the large number of time lost to depression.

Table 6-10 2004 DALY rates per 100,000 populations, by cause (for all diseases that have effect Timor-Leste more so than low-income comparators)

	Timor-Leste	LMI Average	UMI Average	LI Average
Communicable, maternal, perinatal and nutritional conditions				
Infectious and parasitic diseases	10,101	3,488	10,810	16,808
Tuberculosis	1,741	512	340	1,062
STDs excluding HIV	704	212	238	361
Syphilis	509	44	22	129
Malaria	4,611	562	17	3,711
Tropical-cluster diseases	497	96	97	633
lymphatic filariasis	497	69	-	288
Leprosy	10	2	3	3
Japanese encephalitis	78	10	-	-
Noncommunicable diseases				
Malignant neoplasms	548	775	904	781
Colon and rectum cancers	53	25	74	31
Trachea, bronchus, lung cancers	73	38	79	30
Ovary cancer	19	28	34	14
Leukemia	66	49	57	31
Neuropsychiatric conditions	2,873	2,622	2,933	2,899
Unipolar depressive disorders	1,191	814	873	75
Parkinson disease	24	12	15	12
Migraine	156	83	93	98
Sense organ diseases	1,313	1,070	1,470	1,124
Refractive errors	504	243	254	210
Hearing loss, adult onset	416	402	364	273
Cardiovascular diseases	1,659	2,253	2,608	2,090
Rheumatic heart disease	111	53	21	38
Ischaemic heart disease	724	810	1,219	543
Respiratory diseases	588	790	686	878
Chronic obstructive pulmonary disease	232	278	112	167
Oral conditions	129	122	129	127
Periodontal disease	6	5	6	5
Edentulism	38	34	40	26
Injuries	2,430	2,951	2,323	3,556
Unintentional injuries	1,827	2,489	1,503	2,547

	Timor-Leste	LMI Average	UMI Average	LI Average
Falls	266	211	97	164
Drownings	174	163	157	135
Intentional injuries	602	462	820	1,009
Self-inflicted injuries	235	211	250	211

Source: WHO, 2004

Another way to present the similar information is to identify the top ten issues that are a national burden to both private sector in terms of loss of population and overall burden to the country.

Table 6-11 Top Ten National Burdens to Timor-Leste based on 2004 DALY rates per 100,000 populations, by cause

Disease/ Disorder/ Malady	DALY Burden
Malaria	4,611
Tuberculosis	1,741
Neonatal infections and other conditions	1,443
Birth asphyxia and birth trauma	1,420
Unipolar depressive disorders	1,191
Prematurity and low birth weight	1,103
Diarrhoeal diseases	1,037
Ischaemic heart disease	724
STDs excluding HIV	704
Other unintentional injuries	677

Source: WHO, 2004

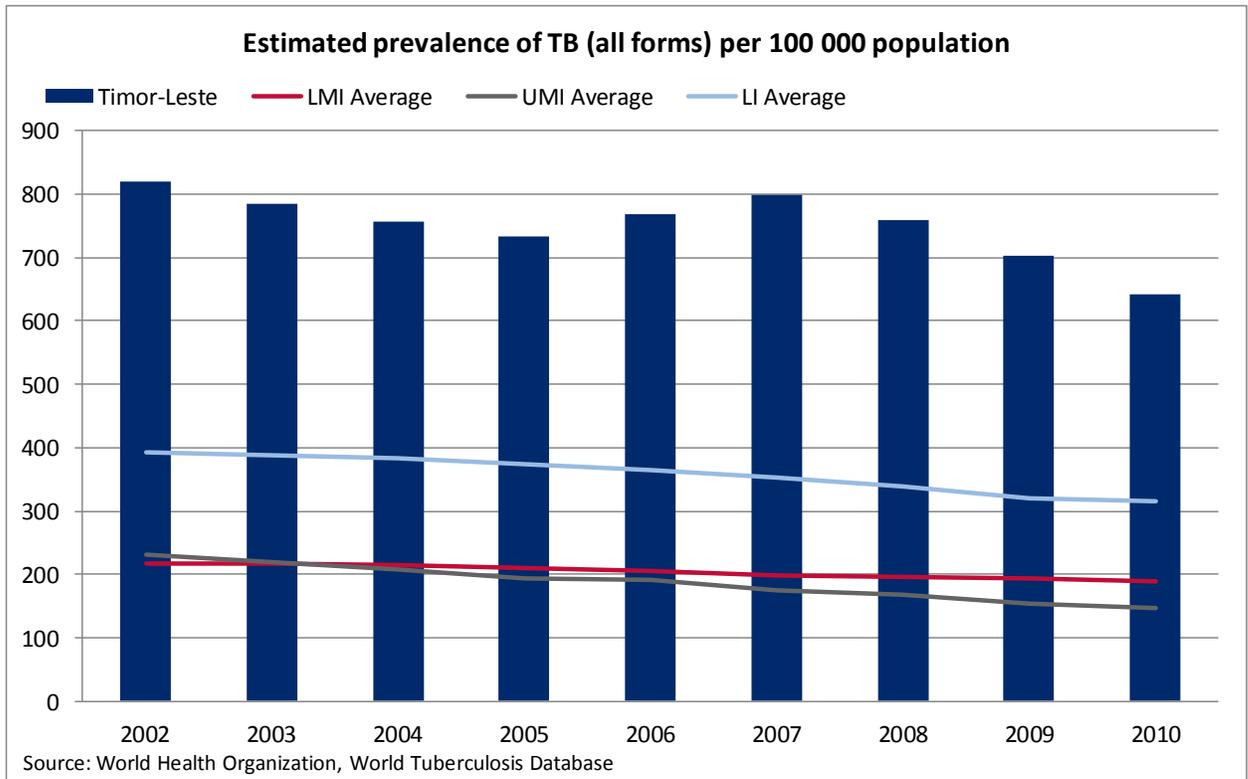
As identified Malaria and Tuberculosis are the leading diseases affecting the populace, however it is clear top issues are also neonatal infections, birth traumas and depressive disorders. The following sections will address some of these concerns and attempt to determine if they contribute greatly to the human capital constraint to growth. It is important to note that the health analysis below addresses health concerns in terms of human capital. In other words, the below analyzes the direct effects diseases and maladies have on the workforce.

Tuberculosis

As it is clear from the table the burden of disease experienced by the Timorese population for TB is considerably higher than other comparators. The DALY for TB in 2004 was 1,741 or in other words the Timorese population is hindered significantly more in terms of lost years of healthy life compared to low income comparators.

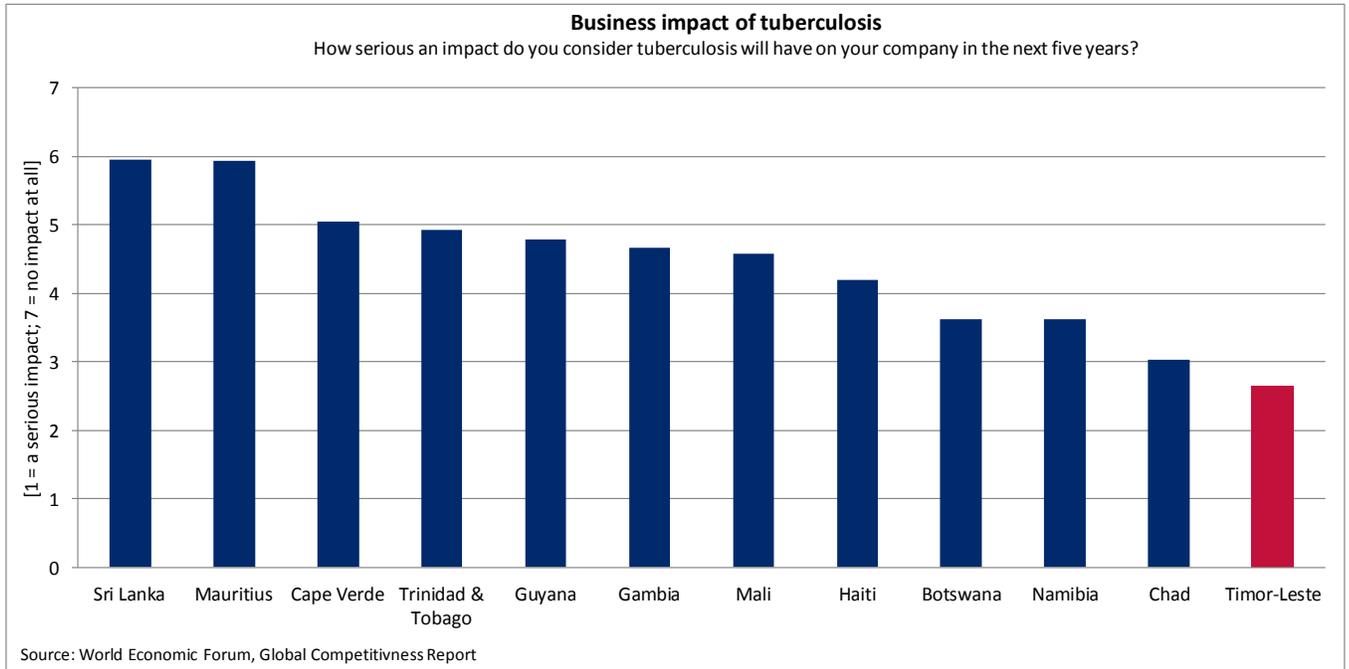
The estimated prevalence of TB is significantly higher than the average of its comparators. As is apparent in the below graphic, TB in Timor-Leste is nearly double the low income average comparator at 643 per 100 000 population. Though as the graphic shows, the prevalence of TB in Timor-Leste is on a downswing, which can be attributed to the dramatic increase in case detection and treatment (Government of Timor-Leste, 2010).

Figure 6-13



Despite the improvements in TB, the business sector still views the disease as having a serious and continuing to impact the private sector. When asked “how serious an impact do you consider TB is/will have on your company in the next five years” companies in Timorese scored the impact at 2.62 with 1 being a serious impact and seven being no impact at all. As the below chart displays, this is the lowest and poorest of all comparators where data was available. In other words, Timorese companies view TB as a true problem for their productivity.

Figure 6-14



Malaria

Like TB, Malaria has an extremely presence high prevalence in Timor-Leste. The number of cases of confirmed malaria has increased from 15,212 in 2000 to 48,137 in 2010. However, the malaria deaths declined from 68 in 2006 to 58 in 2010 showing a decrease of 14.7%. The incidence of malaria in children under five is incredibly high (World Health Organization).

Though according to the WHO, levels of detection and prevention have improved in Timor-Leste through malaria testing and bed nets. Close to 50 percent of the total population is currently covered under programs for bed nets, putting the total availability for effective bed nets are 245, 831. The following table displays more information for malaria in Timor-Leste:

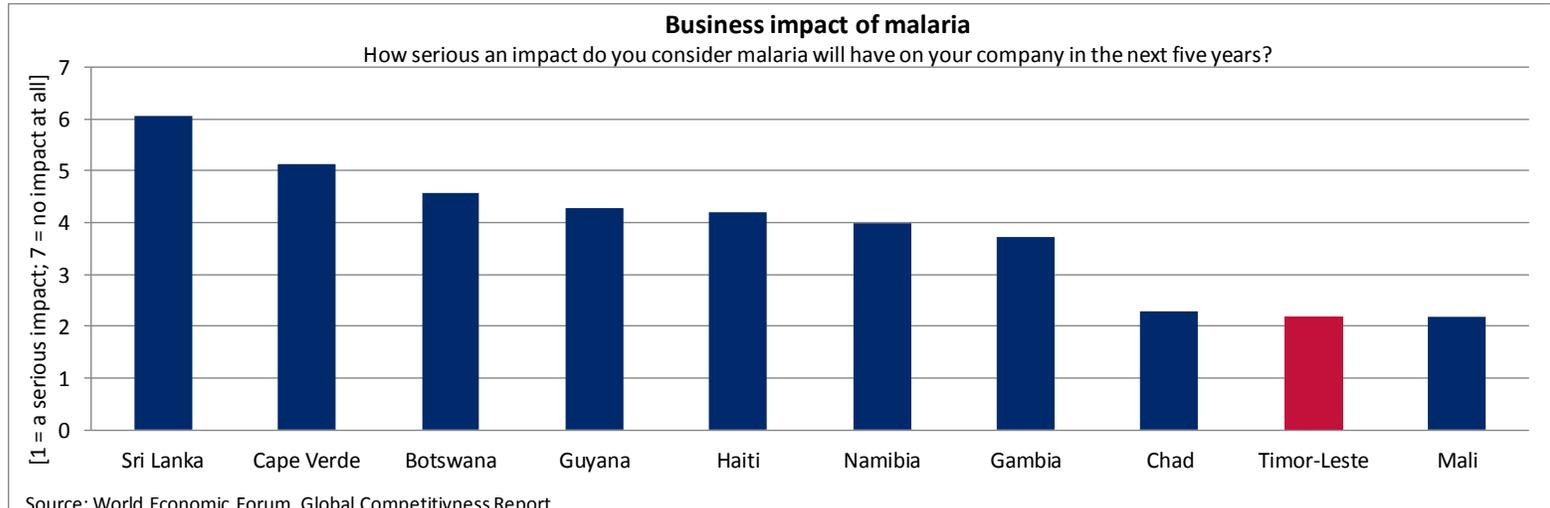
Figure 6-15 Malaria Situation in Timor-Leste, 2010: At a Glance

Total population	: 1.15 million
Population in malarious areas	: 1.15 million
Number of lab confirmed malaria cases	: 48,137
Number of probable malaria cases	: 71,321
Number of deaths due to malaria	: 58 (Reported)

Source: WHO

Similar to the situation with TB, though there have been some improvement in treatment for malaria, the private sector still views it as an ongoing threat. When asked “how serious an impact do you consider malaria is/will have on your company in the next five years” companies in Timorese scored the impact at 2.19 with 1 being a serious impact and seven being no impact at all. This is the lowest score amongst comparators, but is also a lower score than TB. This can be interpreted as a grave threat to the success of the private sector.

Figure 6-16



Mental Health

Mental illness is important to address in the context of human capital because it has both direct and indirect economic costs for Timor-Leste. Direct costs include the burden on health care and social services. If there is an inadequate level of mental health specialists, the costs to other health services will increase due to complaints on physical issues that may reflect untreated emotional problems such as depression. Indirect costs are generated from suicide, violence, loss of income, reduced productivity, social incapacity, bizarre behavior, poor parenting and functioning in families, dependency on others, and social disruption caused by persons with severe behavioral disturbances. There are also key interactions between mental health and physical ailments “persons with chronic physical health problems, especially chronic diseases such as malaria or TB, are much more likely to develop mental disorders such as depression. Mental illness also increases the risk of adverse physical outcomes such as self-harm, risk-taking, poor diet, increased drug, alcohol and tobacco use and poor compliance with treatment for health problems” (Ministry of Health, 2005).

The mental health situation in Timor-Leste continues to be both a serious concern and a contentious issue. According to the Ministry of Health, mental disorders in 1990 were estimated to contribute 12 percent of the global disease burden and they estimate that rate to reach 15 percent in 2020. Additionally they estimate that depression was the fourth largest contributor to the global disease burden in 1990 and is predicted it will rank second of all diseases by 2020 (Ministry of Health, 2005). The 2004 DALY rates show that currently unipolar depressive disorders are the fifth largest contributor to disability in the population. According to population-based studies conducted by the Ministry of Health the most common disorders in Timor-Leste are depression, anxiety and stress disorders.

Depression is also a key side effect of Post-Traumatic Stress Disorder (PTSD). PTSD is a condition that

can develop in an individual, post exposure to a traumatic event. The traumas can range from those that are directly experienced, for example, being threatened with death, to those that are witnessed (a family member being threatened with death. According to a population based survey in 2000 following issues in 1999 and prior to the violence in 2006, Timor-Leste was found to have a prevalence rate of 34 percent for PTSD. A large percentage of the population have experienced or been touched by “violence torture and persecution, the death or disappearance of family members and friends as well as the loss of home and property” (Ministry of Health, 2005). The Ministry of Health also believes factors including poverty, unemployment, malnutrition, age structure and the lack of mental health resources contribute to the prevalence of depression in Timor-Leste.

The lack of services to treat mental issues is definitely holding back the productivity of the workforce. According to a paper by Derrick Silove and Susan Reese in 2008, epidemiological data they estimated that 300 mental health workers would be required to treat those adults with disabling mental disorder (Silove & Rees, 2008 Vol. 6). As of the time of Silove and Reese’s study the newly established National Mental Health Program only employed 15 workers. Neither the strategy published by the Ministry of Health or the National Development strategy for the country point to increasing the number of mental health care workers. It is clear if the situation is to improve that mental health specialists are needed in Timor-Leste (Silove & Rees, 2008 Vol. 6).

Unfortunately there is no data on the direct effects or opinions of the private sector on the mental health situation in Timor-Leste.

Overall, malnutrition, disease and mental health issues are a considerable and growing issue in Timor-Leste. Without a long-term study of the effects malnourishment has in early years and the long-term decreases in potential wage earnings and productivity, it is difficult to conclude that malnourishment is a binding constraint to growth in Timor-Leste. However, it is viable to conclude that the level of undernourishment is way above all comparators and is one of the highest in the world. Therefore, the low human capital levels and the lack of educational attainment can be partially attributable to malnourishment. And since human capital itself is a binding constraint, investments in health could be another avenue to improving human capital.

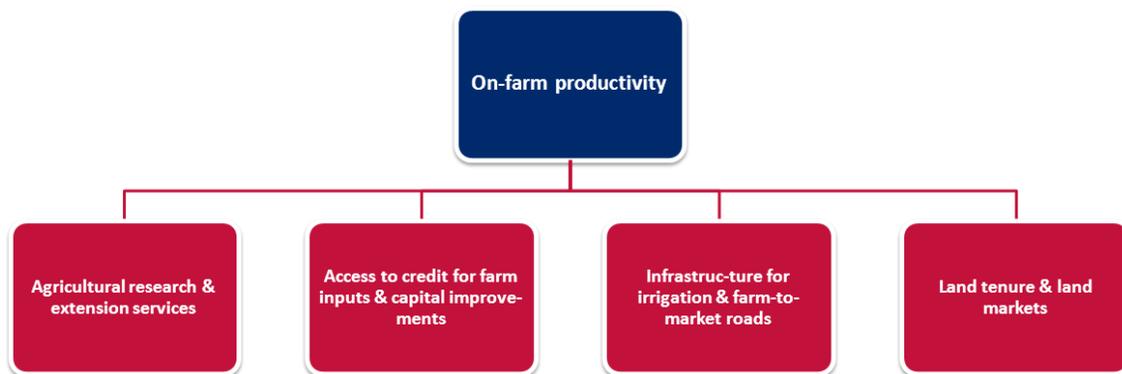
There are similar issues in making assumptions about the effect of disease and health issues on human capital. Based on surveys from the private sector, it is clear that the health of the working population is in question and these diseases will have long-term effects on the overall business sector. However, without long-term analysis (and better disease data availability), it is hard to assume the prevalence of communicable diseases and mental health is a binding constraint.

Chapter 7 Expanded Agricultural Sector

Considering the fact that Timor-Leste is a predominantly agricultural economy where 77 percent of Timorese depend on the agriculture or their livelihoods, the expanded growth diagnostics framework serves as the useful methodology for investigating factors that impede agriculture sector growth, which ultimately contributes to the broad-based economic growth. The broad-based model argues that, productive employment is the key variable for increasing domestic demand and can be increased by augmenting agricultural production and incomes in rural areas. Growth in the agriculture sector increases household food security and reduces household poverty. Based on the framework, this section will also explore the potentials for improvements in this area.

Due to the lack of “processing and marketing of farm products” outlined in the expanded methodology, the primary objective of this section is to address on-farm productivity. For sustained, broad-based growth, one would expect to see key inputs on the farm that feed directly into “on-farm productivity.” These inputs would include: agricultural research and extension services, access to credit for farm inputs and capital improvements, infrastructure for irrigation and for to-market roads and clearly defined land rights and markets.

Figure 7-1 Expanded Methodology



The following chapter will outline the state of agriculture and farming in Timor-Leste, and then walk through these inputs, highlighting the success or problems in each.

Current Situation in Timor-Leste

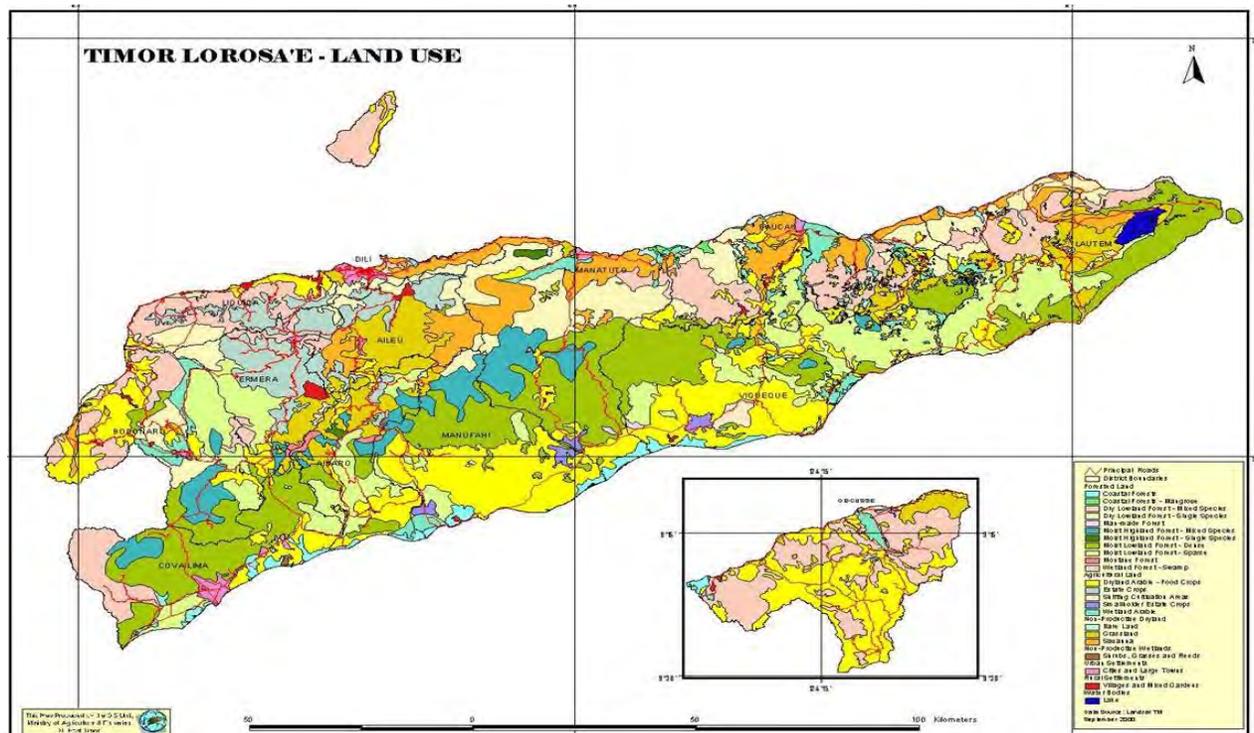
About 75 percent of the total population depends on agriculture for livelihood. It is therefore essential to understand the factors affecting this sector and the hindrances to long-term growth and increased productivity. Timor-Leste, with an area of about 15,000 km², has an extremely mountainous terrain. Most economic activities are concentrated along the plains in the northern and southern corridors of the island. The climate is tropical with a large percentage of the rainfall occurring in the summer. The annual means vary from 600mm in the North-West to 3,000 mm in the highlands (Borges, 2009). However, this rainfall is distributed extremely unevenly (da Costa, 2003).

Generally, agricultural cycle in Timor-Leste begins with the arrival of the northeast monsoon which lasts from October through December. The planting of maize and other garden crops begins at that time. Rice is planted in lowland areas in December and January in the northern regions and, a month or two later on the southern coast. During the second rain peak in the south, from May to June, farmers plant a

second crop of maize or irrigated rice.

According to an OXFAM report about 41 percent of the total land area (14,500 km²), is suitable for crop and livestock (Oxfam Australia, 2007). The map below highlights the areas which are considered to be suitable for crop production (highlighted in yellow color).

Figure 7-2



Source: East Timor Agricultural land use, presentation slides by David Ives, MAF, East Timor and Adalberto Ferreira, ALGIS manager

Timor-Leste is heavily reliant on traditional agricultural practices. The most commonly used systems are slash-and-burn cultivation (primarily in corn), the lowland cultivation of rice (both rainfed and irrigated), household gardens, harvested forest products (like tamarind, candlenut and fuel wood) and livestock production (da Costa, 2003). Cropping systems vary in each of the separate regions. The northern lowlands utilize the river waters for rice irrigation and have dry-land farming focused primarily on maize. The northern slopes of Timor-Leste have irrigated rice farms in the Bacau region and mixed crops of cassava, maize, long beans and peanuts, while the northern highlands are home to rice fallows. The southern slopes and highlands produce mainly maize, beans and root vegetables (Tilman da sa Benevides, 2003).

Of an estimated 139,000 rural households, around 54,000 (39 percent) were engaged in subsistence farming. A 2004 Agricultural Rehabilitation Survey (ARP) found that the farm households owned less than 1 hectare and 24 percent of households own less than 0.5 hectare of agricultural land and 60 percent own between 0.5 and 2 hectares. The government of Timor-Leste published in 2003 that the average per capita holdings per person is 0.4 hectares (Oxfam Australia, 2007).

According to 2002 household surveys, 81 percent of households growing crops produce maize, 68 percent grow cassava, and 44 percent grow sweet potatoes. Only 26 percent of households growing

crops participate in rice (in all ecosystems) and 28 percent participate in coffee (Tilman da sa Benevides, 2003). The typical farm in Timor-Leste is unable to generate a high level of household or personal income from limited property sizes (Borges, 2009).

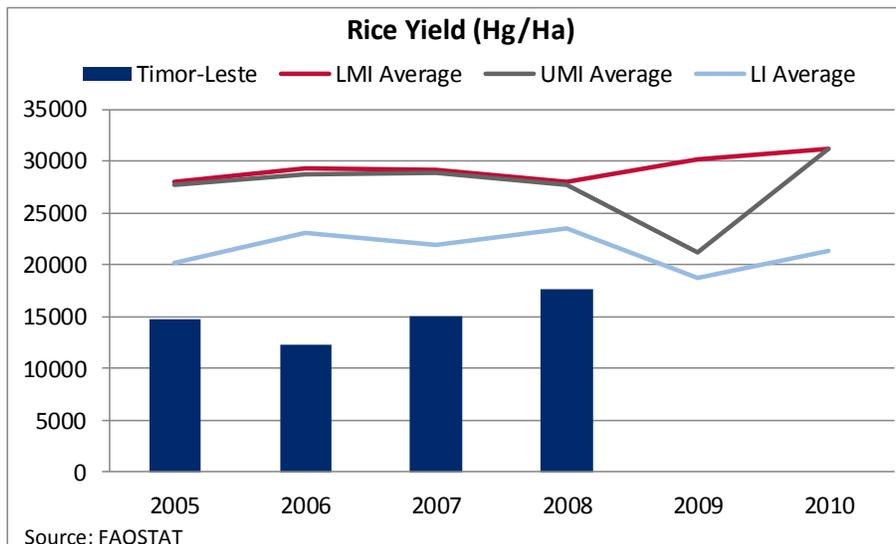
Rice

Rice is the main staple food in Timor-Leste and is widely grown. However, rice production in Timor-Leste is not sufficient to meet the ever-growing domestic demand. As a result, Timor-Leste is a net importer of rice and a large percentage of these imports remain subsidized. These subsidies are a continual burden on the government's budget (Noltze, Schwarze, & Qaim, 2012). In 2010, 90 percent of Timor-Leste's rice imports come from Thailand and 10 percent originate in China (International Trade Center). Additionally, in 2001, smuggling accounted for close to 30,000 tons of rice (da Costa, 2003).

According to a recent Oxfam report, rice yields vary from 1.2 to 1.5 t/ha with peaks around 1.8 t/ha in areas where water is readily available for irrigation throughout the growing period. On average the study found that households farming rice in Oecusse district planted 0.7 hectares, and yielded on average 1.9 ton per hectare. Estimated rice yields in 2007 for all irrigated rice areas was projected to be 1.4 t/ha (Oxfam Australia, 2007).

Based on FAO data, rice yields in Timor-Leste fall considerably behind all comparators with a yield of 17,587 hg/ha¹⁴. The figure below shows how significantly behind comparators Timor-Leste is. These poor yields have been attributed to irrigation systems that are in great need of repair, the complete lack of irrigation, and the lack proper post-harvest processing units (da Costa, 2003).

Figure 7-3



As mentioned earlier, only 26 percent of households in Timor-Leste produce rice, however these figures vary drastically by region. The below table looks at the percent of households in each district that identify themselves as rice farmers, noting that a large percentage fall in Viqueque, Oecusse and Bobonaro. However on average very few households produce rice and much of the production of rice is consumed by the farmer and his family. In the urban districts, imported rice is cheaper to purchase at markets than the locally grown rice. This is partially attributable to the rice subsidies (da Costa, 2003).

¹⁴ Yield units were changed from t/ha in order to do cross country comparisons. Discrepancies in the differences in yields may be attributed to different methodology and calculations by FAO and Oxfam.

Table 7-1 Rice Farmers by District (2000)

District	Number of people living where rice is farmed	Share of people where rice is the main crop
Viqueque	60,967	66%
Oecussi	41,247	30%
Bobonaro	28,511	60%
Covalima	25,462	46%
Manatuto	19,082	29%
Lautem	18,337	35%
Baucau	13,736	36%
Manufahi	12,925	17%
Aileu	10,869	27%
Ermera	7,327	15%
Ainaro	4,125	12%
Dili	2,178	5%
Liquica	1,864	2%

Source: WB "East Timor Policy Challenges for a New Nation"

The consumption and production patterns of rice in Timor-Leste are important in understanding food security and agricultural incomes. A 2001 Household survey, explored the patterns of consumption and production of rice by income quartiles. With the poorest 20 percent of households, 64 percent of production is consumed by the farmer and his family. This proportion is relatively similar for all quintile groups, being 69% for the wealthiest 20 percent of households. However, richer rice farmers can dispose of more of their home-grown crop and because they have more quantity to spare and better access to markets. It is also interesting to note that, the consumption of local rice is significantly lower for the wealthiest 20 percent of households, reflecting consumer choice in this grouping towards imported rice that may be of more consistent quality, more convenient packaging as well as more easily available (World Bank, 2002).

Coffee

Timor-Leste's non-oil exports primarily consists of coffee, accounting for 86 to 99 percent of the exports since 2004. The major importers are Germany, the United States, Indonesia and Singapore. The quantities of vanilla, hardwood, candlenut, candlenut oil, cattle, and handicraft exports are almost negligible. Timor-Leste's domestic production structure is very narrow and, more importantly, it is not competitive yet to achieve export growth and diversification. The recent studies by the World Bank indicate that there is significant scope for increasing coffee yields and exports, and a similarly positive export outlook appears to exist for several other agricultural products, some of which are already being exported (World Bank, August 2010).

Table 7-2 Timor-Leste's Merchandize Exports, 2004-2008 (\$ million)

	2004	2005	2006	2007	2008
Exports (fob)	7.0	8.1	9.0	7.0	12.7
Of which: Coffee	6.9	7.6	8.6	6.0	12.6
Others (vanilla, wood, handicraft)	1.0	0.5	0.4	1.0	0.1

Source: Timor-Leste authorities; and readjusted IMF 2009 data.

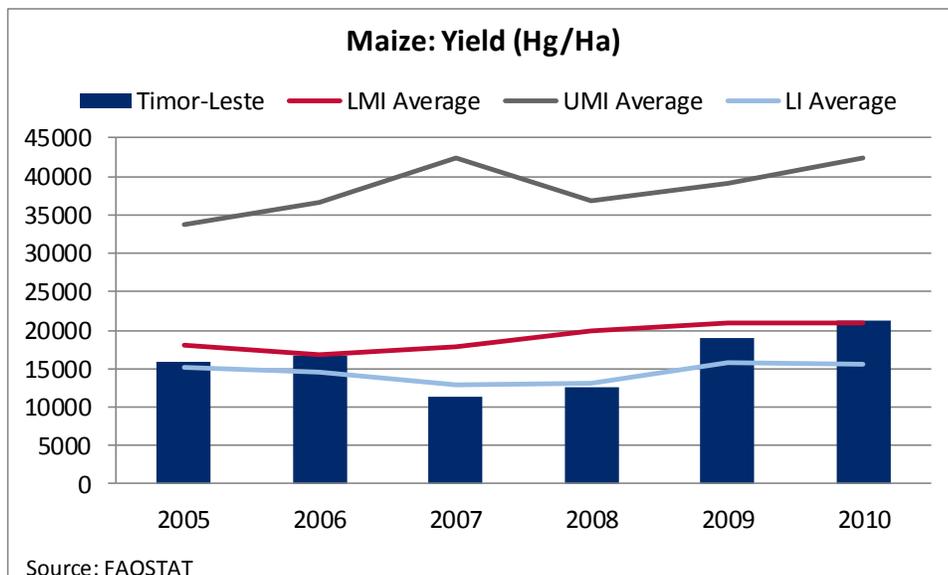
The coffee processors reported that on average they achieve 66 percent exportable quality, with the remainder being lower grade and waste. This shows significant levels of losses and is much higher than, for example, the 20 percent lower grade and loss encountered in Indonesia. The country has great potential to grow coffee both for increasing export earnings and reduce poverty. According to a World Bank study, with improved technology the gross margin could be increased to \$500 from existing \$ 120 per hectare, increase in per labor earnings and production increase by four times thereby significantly increasing annual export earnings. In 2009, 67,000 households grew coffee in the country and majority of them were poor households (World Bank, August 2010).

Other Staple Crops

According to the Oxfam report, an average of 160,000 hectares is planted to maize or rice annually – with 85 percent to maize and 15 percent to rice (Oxfam Australia, 2007). Based on surveys in the Oxfam study, 82 percent of surveyed households in Oecusse and 63 percent in Covalima districts planted maize as the principal crop. The national average maize yield is estimated to be between 1.1 t/ha and 1.5t/ha (Oxfam Australia, 2007).

According to FAO in 2010, 70,255 hectares of land in Timor-Leste were harvested for maize. As shown in the graphic below, the Yield (Hg/Ha) averaged 21,193, higher than the low-income average of comparator countries of 15,540 Hg/Ha.

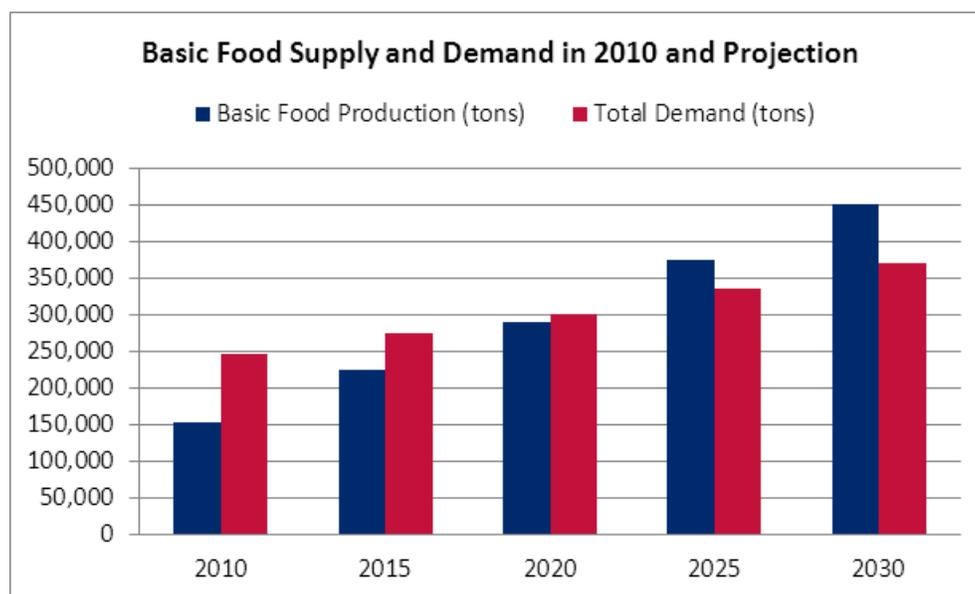
Figure 7-4



Food Security

The country will remain food deficit until 2020, taking almost a decade to feed its fast growing population (Government of Timor-Leste, 2010). The basic food supply is less than the demand for all the years until 2020, beginning to have the surplus only after 2025 (Government of Timor-Leste, 2010). In 2010, food demand was almost 250,000 tons in comparison with 150,000 tons of production, a gap almost as large as the country’s annual production.

Figure 7-5



Source: Timor-Leste Strategic Development Plan, 2011-2030

There has not been a significant increase in the crop productivity and production for several crops and roots over recent years. The net production for rice is negative for all the years under review, although overall basic food balance is positive after 2020.

Table 7-3 Timor-Leste: Food Balance situation

	2010	2015	2020	2025	2030
Annual Losses (% of total production)	25%	20%	15%	10%	5%
Basic Food Production					
Rice (ha)	50,000	63815	70000	70000	70000
Rice (Mt/ha) (grain)	1.0	1.2	1.4	1.7	2.0
Rice (Mt grain) (adjusted for losses)	37,500	61262	85085	107100	134330
Maize (ha)	76,500	80494	83169	85625	87080
Maize (Mt/ha) (grain)	1.25	1.54	1.89	2.33	2.5
Maize (Mt grain) (adjusted for losses)	71,719	99168	133611	179556	206815
Roots/Tubers (ha)	8,499	8943	9240	9513	9675
Roots/Tubers (Mt/ha)	7.5	8.35	9.29	10.33	11.49
Roots / Tubers (Mt) (adjusted for losses)	47,807	59739	72964	88442	105607
Total Basic Food Production (Mt)	157,026	220169	291660	375098	446752
Basic Food Balance					
Rice (Mt grain)	-76,317	-59608	-49959	-27340	-5868
Maize (Mt)	-438	23127	54759	98524	124408
Total Grain (Mt)	-76,755	-36481	11800	71184	118540
Roots/Tubers (Mt)	-7,306	1509	12118	25422	40840
Basic Food Balance (Mt)	-84,061	-34972	23918	96606	159380

	2010	2015	2020	2025	2030
Basic Food for Livestock Production (Mt)	0	0	0	75000	125000
Adjusted Basic Food Balance (Mt)	-84,061	-34972	23918	21606	34380

Source: Timor-Leste Strategic Development Plan, 2010-2030

Timor-Leste is not only a net importer of basic staples, but also produces insufficient fruits and vegetables. The country imports large quantity of fruits and vegetables from neighboring countries, Indonesia and Australia. In 2010, the country imported large quantities of particularly carrot and potatoes.

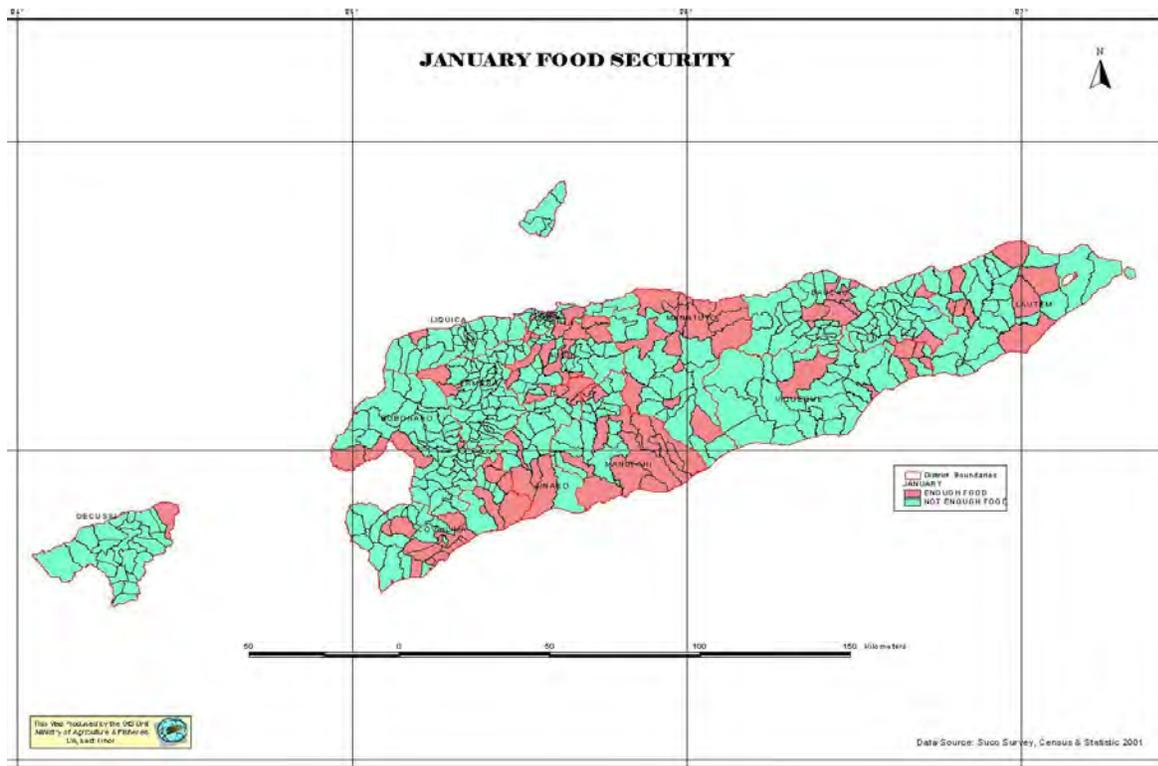
Table 7-4 Volume of Imported Fruits and Vegetables (tons), 2010

Commodity	Imports (tons)
Cabbage	86
Chili	137
Carrot	1,666
Onion	786
Garlic	86
Shallot	485
Potato	1,149
Soybean	845
Tomato	24
Apple	36
Orange	31

Source: Ministry of Agriculture, Timor-Leste, 2011

The food insufficient areas, shaded green in the map below, reveal that the country is severely food deficit. According to a report by the Ministry of Agriculture, rice is grown by 25% of the households, 55.4% grow maize, 51.4% cassava, 42% vegetables, 41.6% coconut and 27% grow coffee. Nevertheless, due to low productivity, whatever is produced is insufficient to meet domestic demand. Significant opportunities exist to increase production, assuming increases in agricultural investment. The increased production of rice and other staple crops will not only aid in food security to the rural households but will also save money which otherwise be spent for importing the staple crops.

Figure 7-6 Food Security Situation in Timor-Leste



Timor-Leste has the potential to grow a large variety of products such as coconut, candlenut oil, bamboo products, and green beans. However, the lack of critical transportation and storage infrastructure and unavailability of modern agricultural inputs impede the sector’s growth. Yields could be increased with the use of inputs such as improved seed and fertilizer, but for most small farmers such investments were not worthwhile due to the limited marketing opportunities, comparatively low farm-gate prices and competition from cheaper imports. Medium and long-term storage of commodities is rarely utilized in Timor-Leste to take advantage of off- seasonal increases in price. Most products are sold a few months after harvest. Very few marketing institutions exist in Timor-Leste to guide policy or set standards for weights, measures and quality grades.

Agriculture Research and Extension services

Extension is an important service that the government or private sector can provide rural farmers, a majority of Timor-Leste’s population. Extension services disseminate the latest agricultural in order to increase productivity, food supply, and farm incomes, which reduce poverty and increase food security. However, extension and research services in Timor-Leste are limited and basic.

In terms of research services, the Ministry of Agriculture and Fisheries has established four regional research centers in Aileu, Baucau, Maliana, and Oecussi districts (Abel & Sequeira, 2008). According to Abel and Sequeira (from a Ministry of Economy and Development Commission) these research centers have “made good progress” in introducing new seed varieties and crop trials (Abel & Sequeira, 2008).

In terms of extension services, around 400 extension workers have been recruited, enabling one extension agent to be placed in each rural village (suco). Extension agents are supervised by district heads and supported by sub-district coordinators. However, the quality of the extension service remains quite poor due to underfunding (World Bank, August 2010). In fact, the 2010 World Bank’s Diagnostic

Trade Integration Study found the poor quality of extension services to be one of the greatest constraints to achieving a competitive agriculture sector (World Bank, August 2010).

In particular, extension agents are not able to travel to areas most in need of outreach. Neither do they have what they need to provide service, such as educational materials, tools, seeds, and other necessary instruments. Extension agents, also, do not have exposure to outside technologies or crop and livestock breeds that would be viable opportunities for farmers, and they do not have adequate in-service training to maintain and increase the capacity of current extension agents. Furthermore, extension services do not have the resources or training to distinguish between the differing needs of Timor's vastly different farmer types and geographic typographies, such as low-land and high-land agriculture or subsistence and commercial farming (World Bank, August 2010).

During Indonesian rule, Timor-Leste had a well-staffed (700 agents) agricultural extension service but extension agents told farmers what and how to grow, providing them with free agricultural inputs (seeds and agrochemicals). However, this type of system created a culture of dependence among farmers, so they are less skilled at making their own production decisions and in procuring their own agricultural inputs, and they expect free inputs as in the old Indonesian system (World Bank, August 2010).

Access to Credit

Financial access is an important aspect of any business, though it can be particularly difficult for farmers. Farmers have a relatively harder time obtaining financing because of cash flow problems in agriculture: farmers need cash early in the growing season to plant and raise crops, but do not obtain a payout until several months later, after harvest. This makes it difficult for farmers to pay loan payments that are due every month. Furthermore, farming is a volatile and risky venture, as the revenue farmers receive at payout is significantly affected by weather events such as droughts, floods, and the like.

Farmers in Timor-Leste significantly lack access to credit. All three banks in Timor-Leste operate almost entirely in Dili. Those outside Dili only operate in urban areas (Asian Development Bank, October 2010). As further explored in the appendix on finance, rural areas are then only served by microfinance institutions. These microfinance institutions, however, are not lending in agriculture because of cash flow problems and the riskiness of agriculture (Reis, 2012) (Abel & Sequeira, 2008). According to a 2002 study, 48 percent of farmers borrow from traders, 14 percent from their social network, and the rest cannot find a lender at all (Abel & Sequeira, 2008).

One of the main reasons why the agriculture sector has not had adequate access to finance is that there aren't many linkages up and down the agricultural value chain, such as input suppliers, wholesalers, and processors. Thus few bankable opportunities exist for financial institutions to lend in the agriculture sector. Moreover, because of the lack of input suppliers, wholesalers, and processors, there aren't opportunities for farmers to receive credit from these firms through "value chain financing" schemes, in which these firms offer credit to farmers with whom they conduct business (DAI, 2006).

In terms of microfinance institutions, most concentrate lending on small market traders, particularly vegetable market traders, but are not involved in agriculture outside of this. IMfTL (Instituicao de Microfinancas de Timor-Leste), a government-owned non-bank financial institution, provides seasonal crop lending, but has high delinquency rates (around 25 percent with 30 days overdue). Other organizations, such as NGOs and agricultural cooperatives, offer some credit to farmers. However, many of the credit schemes offered by NGOs are on a limited scale and are heavily subsidized. CCT (Co-operative Café Timor), a USAID funded agricultural cooperative, offers cattle to farmers for fattening who then share 30 percent of the net earnings from sale of the cattle with CCT (DAI, 2006) (Timor, 2012).

Infrastructure

As noted in the Infrastructure Constraint section of this analysis, Timor-Leste's infrastructure is weak across the board. Businesses frequently cite inadequate infrastructure as one of the main impediments they face. This is actually a reflection of the quality of infrastructure services in urban areas since that is where the vast majority of industries in Timor-Leste are located. When it comes to rural, agricultural areas, the availability of needed infrastructure is an even bigger, although largely undocumented, problem. As noted earlier, roads are estimated to carry 70 percent and 90 percent respectively of freight and passengers in Timor-Leste and these percentages are likely higher in rural areas. Despite this, a recently completed EC survey suggests that about 90 percent of rural roads are in either bad or very bad condition and, apart from donor-funded road projects, routine maintenance is all but nonexistent.

Additionally, there is currently no fully-interconnected electric grid in Timor-Leste. Electricity is supplied only in limited areas via small local networks. This is in the process of changing as the Government is investing heavily in additional generation capacity and in building a transmission network to connect this new capacity to local load centers. Reliability of electricity supply will increase substantially in the more urban areas of Timor-Leste. However, the extension of electricity supplies to more rural and agricultural areas is unlikely to be achieved in the immediate future. It seems very likely, therefore, that in the near to medium term the availability and reliability of electricity supply will remain a serious issue in rural areas.

It was noted earlier in this analysis that the Government's budget has increased rapidly in recent years fueled by Petroleum Fund revenues. Spending on capital development has also increased sharply--especially with the creation in 2011 of an Infrastructure Fund with an initial allocation of almost \$600 million. Approximately 75 percent of this fund is allocated for electricity generation and transmission. The Fund also includes smaller allocations for village level housing and small scale infrastructure, such as solar power, water/sanitation, and roads, and other decentralized development programs that fund similar types of rural infrastructure. On a more pessimistic note, the Government's 2011 budget made no provision for the rehabilitation and maintenance of rural roads. In addition, technical and managerial capacity constraints in both public and private construction sector seriously limit the Government's capacity to manage and implement investments in infrastructure—especially in rural areas. Many new small contractors have appeared at the local level in response to recent government contracting opportunities, but they typically lack the technical skills, experience, and discipline needed for effective contract management.

In summary, the findings for rural infrastructure, as it relates to agriculture, are very similar to what was determined previous for infrastructure more broadly. Namely, the growth of the rural agricultural sector is seriously constrained by infrastructure weaknesses--especially for rural roads. It is very important for these rural infrastructure constraints be addressed if the agricultural sector is to become more productive and commercialized.

Irrigation

Rainfall and its distribution are the main determinants of agriculture production. The island is divided by a mountain range lying east to west, which creates a relatively dry northern coastal region. The northern side of the island is generally hot and dry for much of the year with a wet season lasting 4-6 months. The southern half is characterized by a longer wet season (7-9 months) with two rainfall peaks due to the influence of the southeast monsoon. Over generations, farmers have adapted to local conditions, selecting crop varieties best suited for inter-cropping under existing conditions, and for their storage qualities rather than yield.

There is a lack of irrigated land in the country that provides fewer options for crop diversification. According to one JICA study, only about 19,750 hectares were reported to be under irrigation of the potential irrigation area of about 71,258 ha.

Table 7-5 Irrigation Areas and Rehabilitated Schemes by Districts (ha)

District	Design	Functional (2005)	Non Functional (2005)	Rehabilitation completed (2005)		Total Rehabilitated	Total Functional	Balance to Rehabilitate	
Aileu	597	184	413	271		271	455	142	
Ainaro	6,076	3,000	3,076	745		745	3,745	2,331	
Baucau	15,191	9,556	5,635	2,270	1,650	3,920	1,3476	1,715	
Bobonaro	7,327	3,593	3,734	1,094	230	1,324	4,917	2,410	
Covalima	5,003	2,033	2,970	2,550	695	3,245	5,278	-275	
Dili	350	65	285	20	15	35	100	250	
Ermera	2,345	1,055	1,290	698	50	748	1,803	542	
Lautem	6,658	3,593	3,070	2,282	209	2,491	6,084	574	
Liquica	1,866	293	1,573	633		633	926	940	
Manatuto	12996	4,876	8,120	1,722	720	100	2,542	7,418	5,578
Manufahi	3,102	1,118	1,984	1,230	670	1,900	3,018	84	
Oecussi	1,659	1,109	550	443	111	554	1,663	-4	
Viqueque	8,088	4,259	3829	1,270	1,860	3,130	7,389	699	
Total (Ha)	71,258	34,734	36,529	15,228	720	5,590	21,538	56,272	14,986
Percent	100	49	51			59	79	21	

Source: MAF, 2007

Fertilizers

In Timor-Leste there is no proper mechanism of supplying fertilizers and high yielding seed varieties. Due to low household income, Timorese farmers cannot afford appropriate fertilizers and pesticides when made available by the government. Subsistence farming results in low levels of production and productivity, and farmers have limited skills or support to be more business focused. Agricultural activities have not taken into consideration the comparative advantage of each region. Additionally, a scattered settlement pattern has hindered the development of farmers' associations and shared learning. Most crops are grown solely to provide food for family consumption and there is relatively little trading as only 25% of rice grown in Timor-Leste is traded.

Mechanization and Tractors

Mechanization and the use of advanced farming technologies in Timor-Leste remain incredibly light. As displayed in the table below, researchers estimate that there are only 188 tractors in all of Timor-Leste and this figure includes hand tillers and non-operational tractors. For comparison, this number is higher than World Bank estimates for Cape Verde (56) and Guinea-Bissau (19), but remains quite a bit lower than the remaining comparators where data is available. For instance, more advanced comparators like Botswana and Trinidad & Tobago have numbers higher than 4,000 and low-middle comparators like Papua New Guinea higher than 1,000.

According to scholars at the Institute of Natural Resources in New Zealand, Timorese farmers "had little or no understanding of what was necessary for maintenance [of tractors] and that spare parts were

difficult to obtain.” In other words, even in districts where tractors and advanced tools were present, farmers were unable to maintain the investments and utilize them properly (Viegas, 2003).

Table 7-6 Number of Tractors in Timor-Leste by District

District	1997/1998	Aug-00
Aileu	9	6
Ainaro	9	11
Oecussi	72	6
Baucau	42	37
Bobonaro	127	22
Covalima	14	17
Dili	6	7
Ermera	14	6
Lautem	24	7
Liquica	6	6
Manatuto	13	29
Manufahi	47	20
Viqueque	34	14
Total	417	188

Source: “Agricultural mechanisation: managing technology change”

Additionally, when the machines were placed in remote districts, it was nearly impossible to keep them fueled and serviced. Farmers found that the machines ceased to work at inconvenient times, which were naturally related to when the machines were being over used or greatly stressed during peak cultivation periods. The farmers found this type breakdown not worth the long term investment (Viegas, 2003).

Storage

Storage related losses are estimated to be as high as 30 percent across Timor-Leste. A large percentage of these post-harvest losses is attributed to pests and microorganisms, specifically weevils, rats, mice and fungal degradation. The fungal issues affect primarily the sweet potato and cassava, whereas weevils cause a large percentage of losses in maize. A recent study by the Seeds for Life program in Timor-Lest found that 63 percent of cultivars were damaged by weevils when stored for nine months (Borges, 2009).

However, the same study found that the grain and cultivar damage could be avoided through the understanding and use of airtight storage receptacles. The receptacles eliminate the oxygen, thereby killing pests (Borges, 2009). Unfortunately, areas and farmers not receiving donor funding through programs like Seeds for Life, do not have the know-how or the resources to take up these practices and they continue to be plagued by significant post-harvest losses. The application of capital inputs and research could greatly decrease the effects of this issue.

Land tenure issue

The earlier section on land tenure studied property holdings as private sector investment and banking collateral. Generally, this type of land use is located in major cities and accordingly, in the case of Timor-Leste, this study has focused thus far on Dili. However, land use and rural landholdings in the surrounding districts can differ significantly, as do the methods of land inheritance and land market transactions.

According to the World Bank, there are .15 hectares of arable land per capita in Timor-Leste, comparable to Botswana or Fiji. Additionally, 11 percent of the land in Timor-Leste is considered arable, comparable to Cape Verde (15 percent) or Guinea-Bissau (10.7 percent).

Laura Yoder's "Tensions of Tradition: Making and remaking claims to land in the Oecusse enclave" outlines the land use patterns and inheritance traditions in the northern coastal district and, although her accounts are not perfectly accurate for all rural landholdings throughout Timor-Leste, they are generally quite representative. Agricultural holdings in Oecusse include house yards, swidden fields¹⁵, flooded rice fields and village commons (also referred to as unclaimed land) (Yoder, 2012). Land use permissions vary in each type of property. However, customary land rights are normally dependent on societal systems and on settling patterns after marriage (Henriques, Narcisco, & Branco, 2011).

House yards are the lands closest to the homes and are used for seasonal mixed gardens that may include root crops, corn and vegetables. In the highland areas of Oecusse the most "enduring claim" to land ownership is the building of a house and planting trees. In fact, if someone allows another person to build a home on his or her land, they permanently forfeit their future claim on that land. "The permanent nature of these land transfers makes landowners reluctant to release fertile or well-situated land to another...but requests for agriculturally marginal land for house building are still granted."

Swidden fields are any land that has been used to create swidden gardens and are subject to enduring claim by lineage. The farmers, hailing from groups of varying size, clear vegetation by burning the land, and choose an area to plant. In Oecusse, these groups are open to all peoples regardless of status. The groups are formed when landowners decide the time is appropriate to crop and "indicates this decision by chipping the tree bark along paths near the chosen area, usually by May." Essentially, the group members are borrowing the land, but pay no rent or harvest share to the property owner. By contrast the property rights for flooded rice fields are very different. These fields are individually owned and may be sold with no restrictions on ownership or transaction outside residents (Yoder, 2012).

Finally, a large part of the undeveloped areas of the Oecusse region are used as common land for animal grazing, or for harvesting firewood or construction materials. However, non-residents are not permitted to use the land or its products without permission from customary authorities including village elders or local government authorities (Yoder, 2012).

Land use patterns help to explain the difficulties of doing agribusiness in Timor-Leste. The leasing of land plays a very little role in day-to-day business. The lack of modern land-use protocol deters agribusiness actors from leasing land and participating in commercial agriculture. This was exemplified in Chapter 4, in which Timor Global had difficulty acquiring land for coffee plantations. The World Bank argues in its briefing note "Contracts, Land Tenure and Rural Development in Timor-Leste" that without contract enforcement and land tenure in rural Timor-Leste, rural development by the private sector will not grow. "[T]he potential benefits of the private sector will be more easily harnessed if investors and rural communities can be provided with a land access negotiation framework that supports the development of productive and equitable rural development partnerships and reduces the likelihood of crippling land disputes" (World Bank, 2009).

On the other hand, there are a large number of authors and experts who argue that land tenure may not be the solution for rural development and food security in Timor-Leste. Tim Anderson, an expert on customary land law, argues that land reform could cause two large problems for Timor-Leste. His first argument is that rapid land reform, like that seen in the USAID land reform project, could allocate previously "unused" lands to agribusiness. As described earlier, in districts like Oecusse, many peoples rely on this unused or common land to raise cattle and supplement their livelihoods. Additionally,

¹⁵ A swidden field is an area cleared for temporary cultivation by cutting and burning the vegetation.

Anderson feels that land reform is focused heavily on large agribusiness and export promotion and it discredits the small farm (Anderson, 2009).

Keeping in mind the use and importance of these communal lands not only to local custom, but also to food security of the rural landless poor, it is possible to focus land reform on leasing rights, allowing for future contract farming. Options in an updated legal framework could include establishing opportunities for customary groups to grant long-term leases over land, establish templates for leasing to be used by community leaders, and create institutions to monitor these leases (Fitzpatrick, McWilliam, & Barnes, 2008). Ultimately, large-scale agribusiness institutions could be plausible in Timor-Leste. This will heavily depend, however, on creating secure land rights, such as better opportunities for large-scale leasing rights to complement current customary laws, and coupling these new rights with proper, impartial contract enforcement.

Conclusion:

Timor-Leste's yields of the major cereals and roots are low compared to comparator nations. Agriculture is done at the subsistence level, practicing the traditional systems of cultivation. Timor-Leste is a net importer of food grains, fruits and vegetables. Although the country has potential for growth of the agriculture sector given its diverse landscape, priority to the agricultural sector is lacking in terms of investment.

The country has not been able to reap the benefits of increased agricultural output that come from pursuing appropriate policies and programs in agriculture. Farmers in rural areas lack know-how due to inadequate extension services as well as access to inputs. Limited infrastructure, such as road networks, irrigation facilities and access to rural finance are the key binding constraints to the agriculture sector growth. Therefore, following the broad based growth framework, inadequate rural roads and lacking agricultural inputs impede increases in farm productivity and production. Although land tenure is a major issue in urban areas, particularly in the capital city Dili, preventing private sector lending, it is not really the key impediment for increasing on-farm productivity.

Timor-Leste should invest more in agriculture, not only to feed its growing population but also for import substitution, and should reinvest the increased income in the agro-processing and marketing of the products. Thus, the multiplier effect of the increased income will help stimulate growth.

APPENDIX A: Macroeconomic Risks

Most countries need reasonable macroeconomic stability in order to grow and prosper. High levels of inflation, significant fluctuations in the exchange or interest rate, or large fiscal deficits tend to deter private investment and make it difficult for a country to achieve sustained economic growth and poverty reduction. Specifically, large fiscal deficits tend to reduce the pool of savings that is available to finance private investment, while significant inflation and exchange or interest rate fluctuations or distortions increase economic risk and uncertainty which are anathema to private investors. Overall, while macroeconomic stability does not ensure growth, countries that lack such stability have found it very difficult to sustain growth. For all of these reasons, macroeconomic stability is one of the factors considered under the demand side of our analysis. Lack of such stability makes it difficult to realize adequate returns on private investments, thereby hindering the growth of private investment, the growth of employment, and ultimately overall growth in an economy.

As noted earlier, the Government of Timor-Leste faces a relatively unique set of challenges and opportunities when it comes to managing the macro economy. These challenges center on how to utilize the large flow of resources generated by off-shore oil production to build a sustainable foundation for Timor-Leste's growth and development without either wasting these resources or jeopardizing macroeconomic stability.

As noted in the introduction, real non-oil GDP growth has been relatively robust in Timor-Leste since the last major civil disturbances in 2006 and averaged over 10 percent from 2007-2011. Such growth has been driven primarily by public expenditure as total Government spending has increased at an annual rate of over 30 percent since 2008, with most of this increase coming in 2011 – 2012. Current expenditures grew annually by about 13 percent over the same period, while capital expenditures—primarily on infrastructure and specifically electricity—increased much more rapidly at about 55 percent annually (as shown in Table A-1).

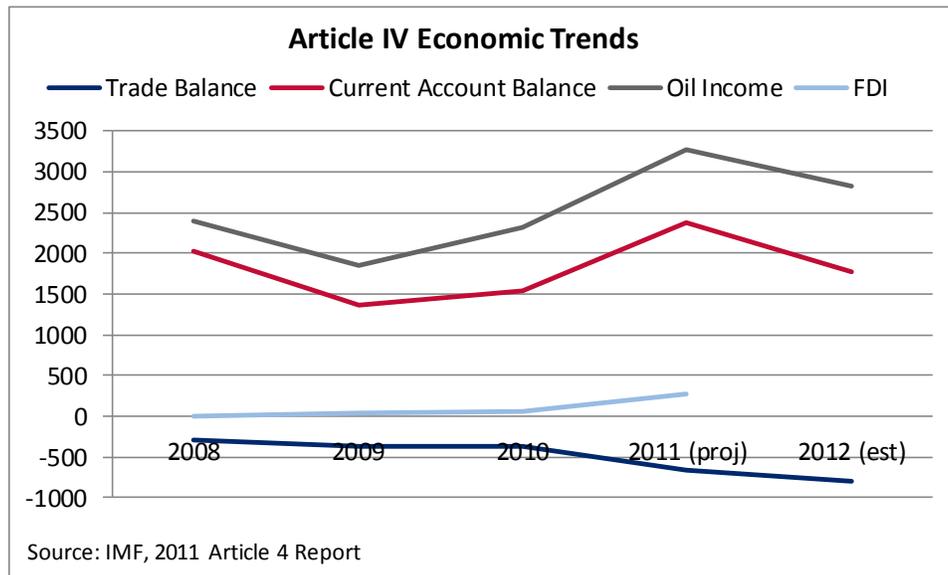
Table A-1 Current and Capital Expenditures

	Current Account Expenditures	Capital Account Expenditures
2008	410	184
2009	405	222
2010	527	268
2011 (proj)	559	647
2012 (bud't)	679	1084

Source: IMF, 2011 Article 4 Report

Merchandise exports (excluding oil/gas) have been fairly stable and insignificant (on the order of \$10 - \$25 million annually) and amount to only about 5 percent or less of merchandise imports, thereby yield a negative and growing trade imbalance. In contrast, Timor-Leste's current account balance remains strongly positive due to very significant petroleum revenues. However, it is projected to decline over time due to increasing government spending. Foreign reserves (mostly in the Petroleum Fund) are sufficient to cover approximately 170 months of imports. Finally, foreign direct investment has been low in recent years although with a significant jump in 2010.

Figure A-1



Despite recent growth in Timor-Leste being driven primarily by public expenditure, the GOTL’s fiscal balance has been strongly positive since at least 2005; with total government revenues significantly exceeding total government expenditures (see Table A-2). Just as for the current account surplus described above, however, increased government spending will likely cause this fiscal surplus to diminish or disappear altogether over time. The current fiscal surplus is due entirely to the windfall of petroleum revenues that the GOTL receives since the Government’s tax effort (total tax revenues, excluding monies from petroleum, relative to GDP) was consistently less than 2 percent from 2008-2011. The sustained fiscal surplus that the GOTL has maintained in recent years also means that there is no “crowding out” of private investment by deficit financing since it is not needed. Finally, the GOTL has no public debt at present and consequently there is currently no risk to macroeconomic stability due to excessive public borrowing.¹⁶

Table A-2 Government Revenue and Expenditure

	Total Government Revenue	Government Expenditure	Non-Oil Government Revenue
2008	2453	594	53
2009	1910	627	66
2010	2407	794	84
2011 (proj)	3372	1206	111
2012 (bud’t)	2227	1763	136

Source: IMF, 2011 Article 4 Report

The GOTL utilizes the US dollar as the national currency. Adoption of the US dollar eliminates the ability of the Government to implement an independent monetary policy. This may be just as well since the IMF observed in its 2010 Article IV Report that “running an independent monetary policy would be extremely difficult given the absence of a well-functioning financial market and given limited administrative capacity.” The general view is that dollarization has served Timor-Leste well and there

¹⁶ As noted below, Timor-Leste’s fiscal position would be adversely impacted if world petroleum prices were to decline significantly.

are no plans to change the country's exchange rate policy. Of course, dollarization makes Timor-Leste susceptible to imported inflation if the dollar depreciates against other leading currencies, which it has modestly over much of the last decade. Dollarization also limits the Government's policy tools when it comes to controlling inflation.

Inflation in Timor-Leste has generally been moderate since independence—generally in the low to middle single digit range. However, after declining to roughly 1 percent in 2009, inflation rose to close to 10 percent in 2010 and an estimated 13 percent in 2011—well above the rates experienced in most other Asian low income countries. In general, inflation in Timor-Leste has largely been imported—reflecting cost push pressures primarily from increases in international food and energy prices. Recently, however, inflation has become more broad-based with demand pressures causing relatively rapid price increases in some sectors of Timor-Leste's economy such as housing and construction. Such demand pressures are fundamentally the result of the GOTL's decision to frontload capital spending to improve the country's poor infrastructure. Such increased capital spending is being financed by withdrawals from the petroleum fund in excess of the estimated sustainable income generated by the fund.¹⁷ Large increases in public sector salaries in recent years (on the order of 25 percent in both 2009 and 2010) have also contributed to inflationary pressures. In light of growing concerns over inflation, the IMF has suggested the possibility of smoothing out the Government's proposed rapid rise of infrastructure spending during the next five years as a means of maintaining sustained high growth and making progress towards meeting infrastructure needs while moderating inflationary pressures.

¹⁷ Estimated sustainable income (ESI) is defined to equal 3 percent of Timor-Leste's total petroleum wealth, which includes the current petroleum fund balance plus the net present value of future petroleum fund receipts.

Box 1: The Petroleum Fund

The Petroleum Fund of Timor-Leste was established by the enactment of the Petroleum Fund Law Number 9/2005 in August 2005 with the intent of ensuring the management of Timor-Leste's petroleum resources for the benefit of both current and future generations. The Petroleum Fund is integrated into the State Budget and is required to be prudently managed and operate in an open and transparent fashion. The Government of Timor-Leste, represented by the Minister of Finance, is responsible for the overall management and investment strategy of the Petroleum Fund. While operational management of the Fund is the responsibility of the Central Bank per an agreement with the Minister of Finance signed in 2005

The Petroleum Fund was established to help Timor-Leste avoid Dutch Disease and the adverse effects of the "resource curse"—corruption, wasteful spending and inflation—that many countries with significant endowments of non-renewable extractive resources have experienced to the detriment of long-term planning, fiscal responsibility, and the development of non-oil productive sectors of the economy. It was modeled on Norway's sovereign wealth fund, with revenues invested conservative in government bonds of the United States, United Kingdom, European Union, Australia, and Japan. Beginning in late 2010, up to 4 percent of fund revenues are invested in global equities.

The law establishing the Fund defined an estimated sustainable income (ESI) as the maximum amount that the Government can be withdrawn from the fund annually while still retaining sufficient resources in the Fund to allow an equal amount to be withdrawn in all subsequent years. Specifically, the ESI is defined as 3 percent of the country's total petroleum wealth, which equals the current Fund balance plus the present value of projected future petroleum receipts. Only oil fields with approved development plans and firm investment commitments are included in the ESI calculations. This means that at present only the currently producing BayuUndan and Kitan field are included, while the Greater Sunrise field is not since it does not have an approved development plan. In fact, the ESI is a benchmark to guide Government withdrawals from the Fund and not a fixed ceiling. Annual Government withdrawals from the fund can exceed the ESI so long as the Government provides Parliament with a detailed explanation of why it is in the long term interest of the country and also documents the resulting future reduction in ESI.

In September 2005, approximately \$250 million of petroleum royalties were transferred to the Fund. Subsequent deposits of petroleum revenues brought total deposits in the Fund to roughly \$1 billion by the end of 2006. The first withdrawal from the fund was for \$120 million in March 2007; and in 2007 and 2008 Fund withdrawals equaled the ESI. Starting in 2009 and continuing through 2011, however, Fund withdrawals significantly exceeded ESI. That is, Fund withdrawals as a percent of the country's total petroleum wealth (as defined above) were: 3.8 percent in 2009, 4.8 percent in 2010, 4.3 percent in 2011, and a proposed 7.2 percent in the 2012 budget. Nevertheless, Fund inflows consistently exceeded withdrawal over the entire life of the Fund so that the Fund balance grew from \$250 million in 2005 to approximately \$9 billion by the end of 2011 (see Figure A-2).

Looking ahead, petroleum revenues from the existing BayuUndan and Kitan fields are projected to diminish towards zero over the next 10 - 12 years, with revenues from the Greater Sunrise field possibly beginning to accrue roughly 5 - 6 years after construction begins and continuing in the range of \$500 million - \$1 billion for 20 - 25 years. See Table (see Figure A-3).

An estimated sustainable income (ESI) formula – a guideline for the maximum amount the government should spend from its petroleum fund – is supposed to ensure annual withdrawals for public spending are limited to amounts that will allow the fund to last for many generations after oil and gas reserves are exhausted.

Originally, the fund's ESI had been set at 3 percent of the country's present and expected future oil and gas wealth. However, the government has been overspending:

Figure A-2 Petroleum Fund, IMF Article IV Report

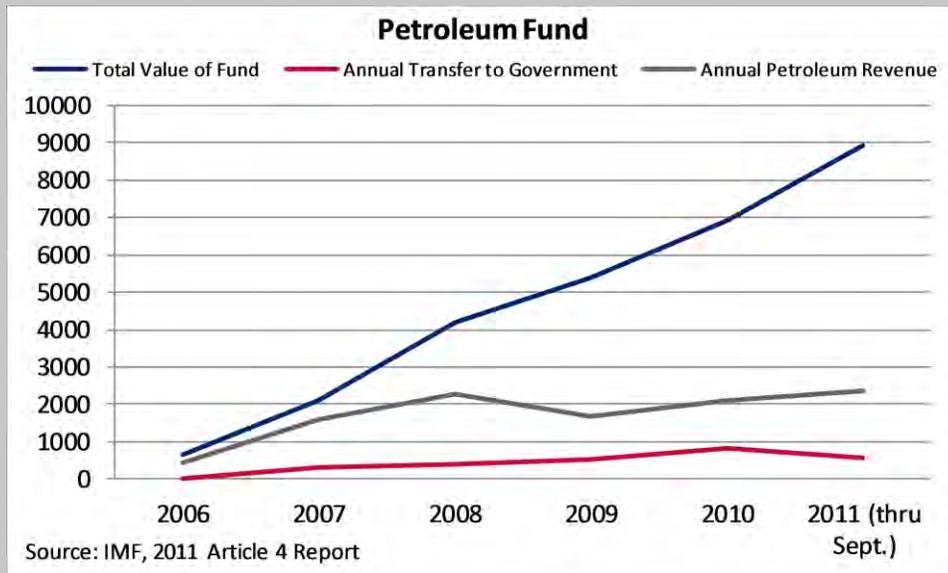
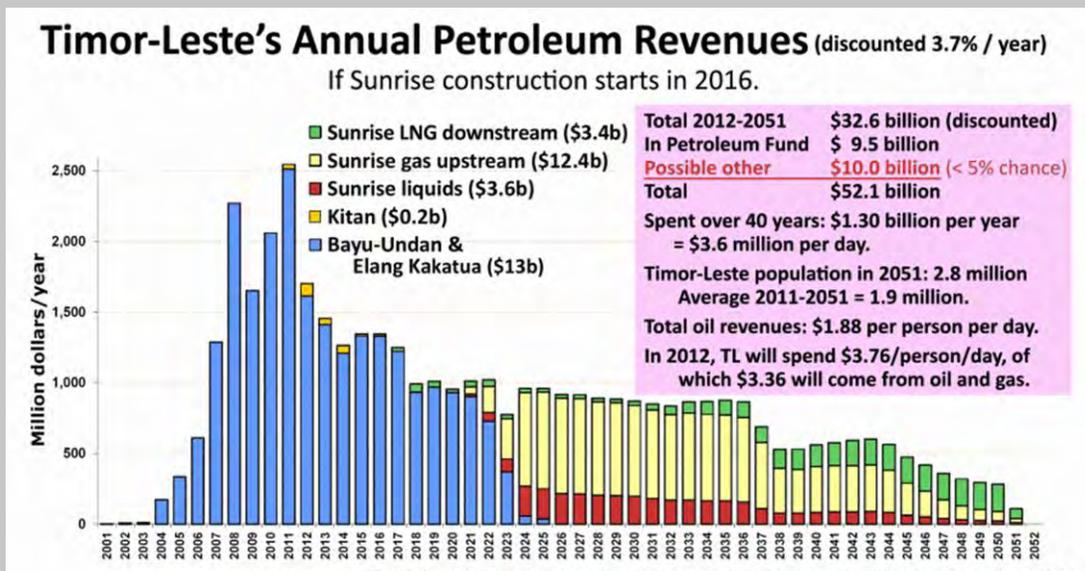


Figure A-3 Timor-Leste's Annual Petroleum Revenues



As noted above, Timor-Leste's long term growth prospects depend to a significant degree on the Government's ability to invest petroleum revenues effectively so as to lay the foundation for future sustained private sector led growth. The GOTL recently developed and adopted an ambitious Strategic Development Plan for 2011 – 2030. It focuses on the development of three key growth sectors, agriculture, tourism, and petroleum, and three key support sectors, infrastructure, human capital, and banking/finance, so as to achieve upper-middle income status by 2030. The successful implementation of this plan will require a concerted nation-wide effort involving all segments of Timor-Leste's society and all branches of the government. Toward this end, the Government in 2011 established the Infrastructure Fund to facilitate the development of large multi-year projects. The Government also established the National Development Agency to supervise project implementation and the Procurement Commission

to assist with the procurement of large scale infrastructure projects. However, adequately staffing out these new entities will remain a major challenge.

Of particular relevance to this Macro Risks section is the adequacy of the GOTL's public financial management system, which is fundamental if the country's revenues—from petroleum or otherwise—are to be effectively planned, budgeted, expended and monitored in support the Strategic Development Plan objectives. A recent study by the IMF found significant improvements in Timor-Leste's public financial management—especially relating to comprehensiveness of fiscal information, fiscal transparency, funding predictability, and the timeliness and quality of financial statements (van Eden, Bessette, Pedastsaar, & Nayer, 2010). However, substantial weaknesses remain, including weak or non-existent internal or external audit, weak budget planning and implementation capacity in line ministries, and issues of integrity relating to procurement and tax administration. Finally, the IMF noted the continued heavy reliance of the public financial management system on foreign experts.

As Timor-Leste moves forward with a development strategy that aims to use its off-shore petroleum resources to lay the foundation for sustained private sector led growth, it will confront a number of macroeconomic challenges and risks. These include:

- Challenge: In the absence of effective monetary policy, implementing a robust plan to invest government resources to address critical capacity and infrastructure shortages without generating excessive inflationary pressures. Risk: High inflation can hinder private sector growth and investment via appreciation of the real effective exchange rate and increase poverty.
- Challenge: Reducing the Government's extreme reliance on mobilizing resources from a single product—petroleum. Risk: At present, a large long term reduction in world petroleum prices would significantly lower fiscal revenues, jeopardize Timor-Leste's macroeconomic stability, and reduce the Government's ability to finance its Strategic Development Plan. For example, the IMF estimates that a permanent fall of petroleum prices to \$50 per barrel would reduce the estimated sustainable income from petroleum by almost 40 percent.
- Challenge: Increasing resource mobilization from domestic taxation so as to provide a sustainable base for government spending in the post-petroleum era. Risk: Inadequate domestic resource mobilization in the medium term will jeopardize Timor-Leste's efforts to foster and sustain private sector led growth.
- Challenge: Making public spending more effective by strengthening public financial management systems. Risk: Given still weak public financial management systems and skill shortages, public investments may be allocated and spent so as to have sub-optimal development impacts.

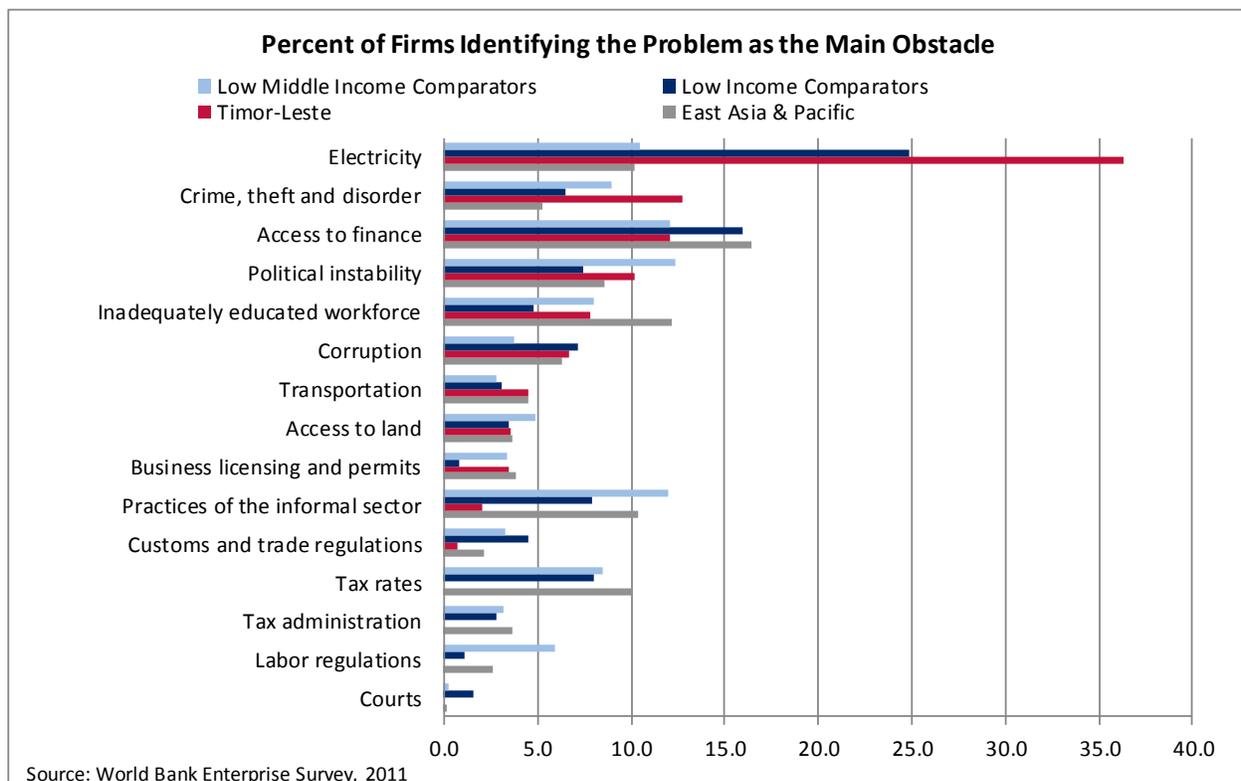
While these are daunting challenges that the Government of Timor-Leste must successfully address if it is to meet its development objectives in the medium term, the fact remains that Timor-Leste's current macroeconomic position is relatively solid. The Government has a large fiscal surplus, no debt, a sustained inflow of petroleum resources over at least the next 10 – 15 years, a substantial current account surplus (thanks again to petroleum revenue inflows and despite the fact that merchandise imports far exceed merchandise exports), and a stable currency. The macroeconomy is relatively stable, with the result being that instability is not imposing significant costs on the economy, and individuals have little need to take “evasive actions” to minimize or avoid altogether the costs associated with macroeconomic instability. Thus while Timor-Leste's economy does face macroeconomic challenges or risks, none of them rises to the level of a binding constraint.

APPENDIX B: High Cost of Finance

One of the main factors in the growth diagnostic framework that determines the level of economic growth is the cost of finance. If the cost of finance is high, enterprises may be unable to afford the funds they need to operate, start, or expand their businesses, and thus growth and employment generation are hindered. In the September 2008 Mindbook on the HRV model (Hausmann, Klinger, & Wagner, *Doing Growth Diagnostics in Practice: A 'Mindbook', 2008*) the cost of finance is high because of two aspects: low access to capital (through low domestic savings or poor access to international capital) and poor domestic financial intermediation (from insufficient competition, high risk, and high cost of bank operations).

Timorese firms do lack access to finance. Of the main obstacles identified by most firms in the World Bank Enterprise Surveys¹⁸, access to finance was the third most identified (12.1 percent) (see Figure B-1).¹⁹ However, access to finance in Timor-Leste does not appear much worse than any of its comparators. For instance, the percentage of firms that identify access to finance as the main obstacle is on par with Low Middle Income comparator countries but less than all other comparators. However, as seen in Figure X, access to finance is a particular problem for small firms in Timor-Leste, but notably not one for large firms. Among small Timorese firms (5-19 employees), access to finance is the second most identified main obstacle (with 16.4 percent of such firms identifying this as a main obstacle).

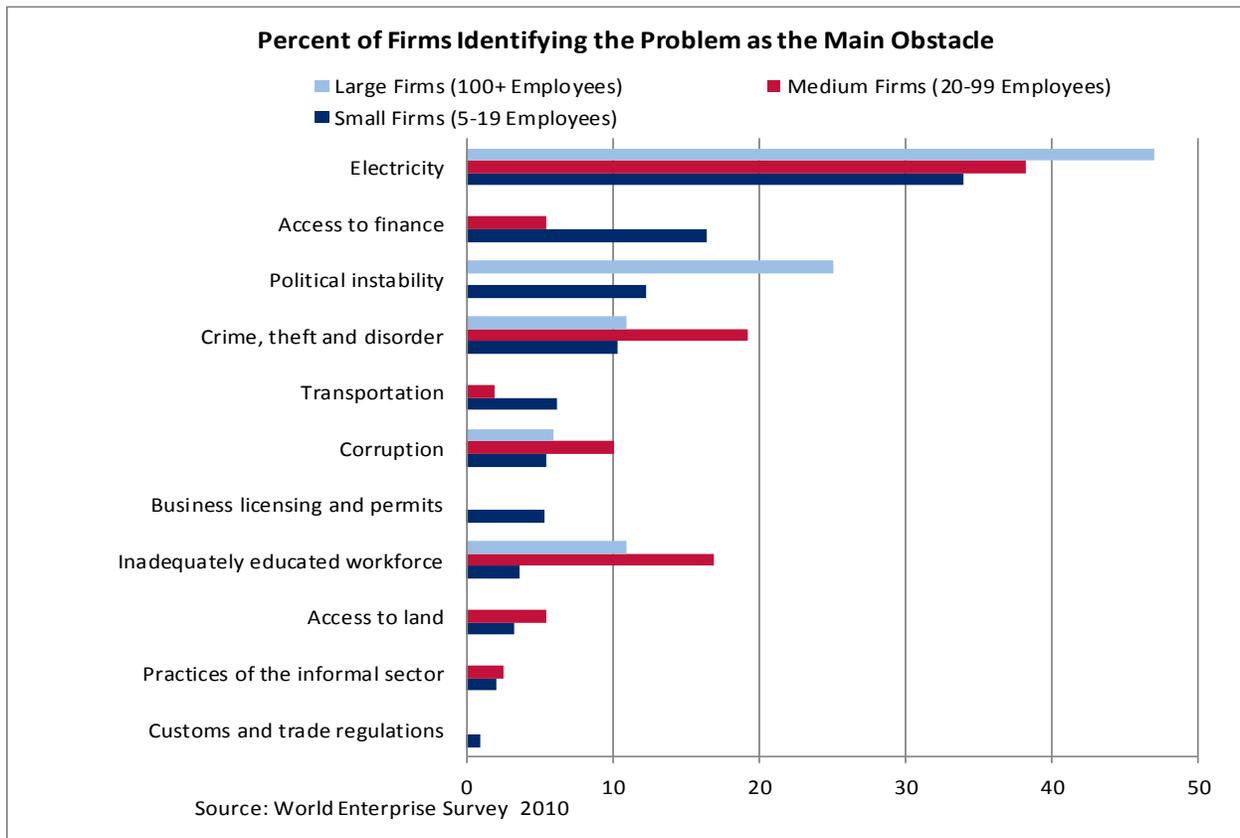
Figure B-1



¹⁸ We used the most recent available Enterprise Survey for each country. Haiti, Solomon Islands, and Papua New Guinea did not have available data.

¹⁹ The particular section of the Enterprise Survey we cite requires firms to rank constraints (what the “main obstacle” is as opposed to another obstacle). However, in another part of the survey, firms are also asked to list the problems they face (multiple “major constraints” can be listed). In this particular part of the survey, 20.8% of firms identified access to finance as a major constraint, indicating that even among firms that did not rank it as the most serious problem; enough firms see it as an important problem.

Figure B-2



Access to Capital (Foreign and Domestic)

An important factor determining the cost of finance in a country is the supply of capital, both foreign and domestic. When an adequate supply of capital is available, financial institutions are able to lend funds to enterprises at reasonable rates.

International Capital

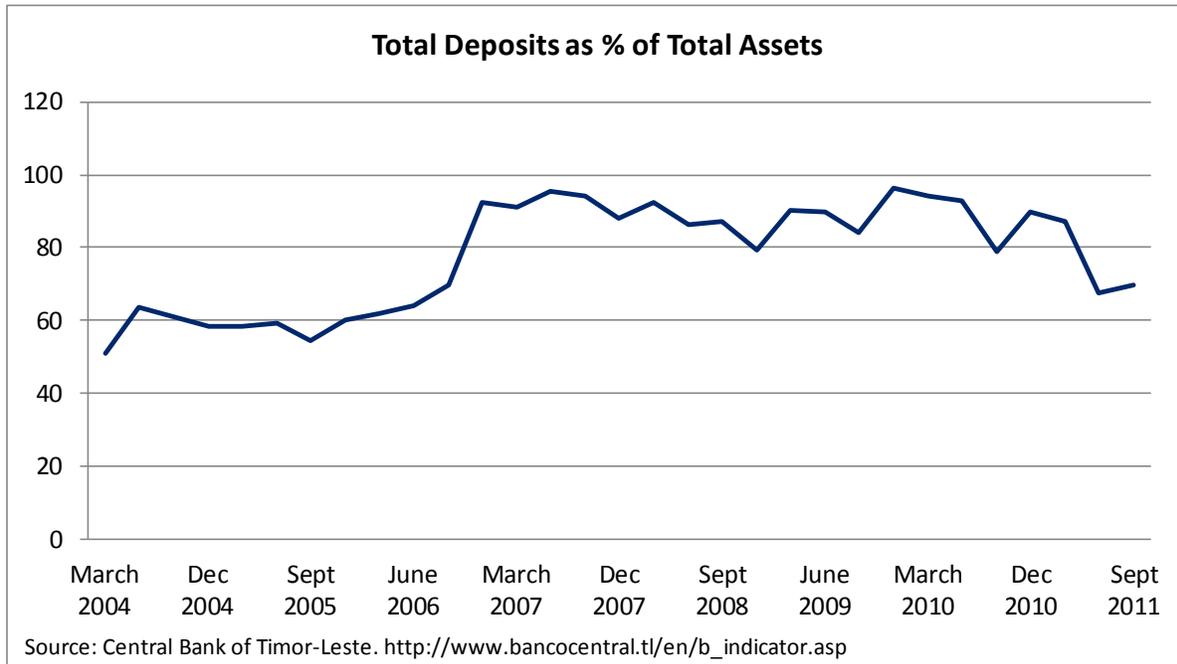
In terms of international finance, the flow of international finance is quite free, as there are no known restrictions on capital flows into or out of Timor-Leste. However, there is likely a large risk premium to investments and lending because of the history of civil unrest within the country, such as the large violent surge that occurred in 2006. Either way, since the Timorese financial market is quite undeveloped and does not have sophisticated financing mechanisms or financial securities (stocks, bonds, derivative contracts like futures), the most likely way for international capital to enter the market is through direct equity stakes. However, from interviews with bankers and firms, foreign firms that operate in Timor-Leste have been able to borrow from banks in Timor-Leste if those firms have assets in other countries where those banks operate.

Foreign direct investment in Timor-Leste has only recently taken off: According to the World Development Indicators, from 2003-2007, net inflows of foreign direct investment as a percent of GDP stayed between 0.3 and 2.6 percent. However, starting in 2007, they started to take off, reaching 7.97 percent and skyrocketing in 2010 to nearly 40 percent.

Domestic Capital

The domestic supply of capital is not constrained because of the large domestic supply of bank deposits. This is evident in Figure 3 by the substantial amount of bank deposits relative to total bank assets. When banks have a large amount of deposits as compared to their total assets, they have a large supply of cash which they are able to lend. Notice that total bank deposits as a percent of total bank assets have hovered around 60 percent from the second quarter of 2004, sharply increased to over 90 percent in the last quarter of 2006, hovering near that level until the second quarter of 2011. Later we will return to the significance of the year 2006.

Figure B-3

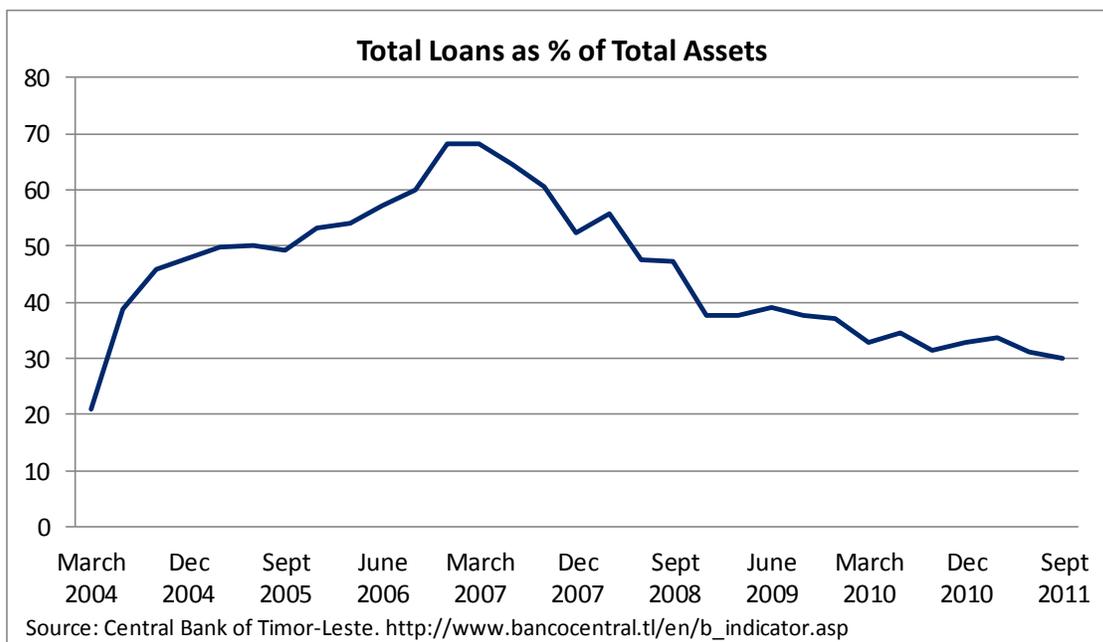


Because banks are flooded with deposits, international capital is free to enter, and FDI is increasing sharply, there clearly is adequate supply of foreign and domestic capital. Thus financial access is not limited due to a shortage of capital for lending.

Financial Intermediation

Financial intermediation refers to the role financial institutions, like banks, play in collecting and aggregating deposits from individuals wanting to save funds and then lending those funds to those needing credit. We have seen in the previous discussion that the supply of capital is not an issue. However, we will see in the discussion that follows that lending is not occurring despite demand. Therefore, the major problems in the financial sector in Timor-Leste are in financial intermediation.

Figure B-4



Lack of Lending

As mentioned above, many firms have identified financing as an important constraint. The fact that they have expressed this concern illustrates that there is demand for lending. However, according to data from the Central Bank of Timor-Leste, banks are not lending the vast majority of deposits they own. As seen in Figure 4, banks quickly ramped up lending to a substantially high amount (68.3% of total assets in the first quarter of 2007), and then steadily stopped lending to an equally substantially low amount (29.96% of assets in the third quarter of 2011). Again, we will return to the significance of 2006 later.

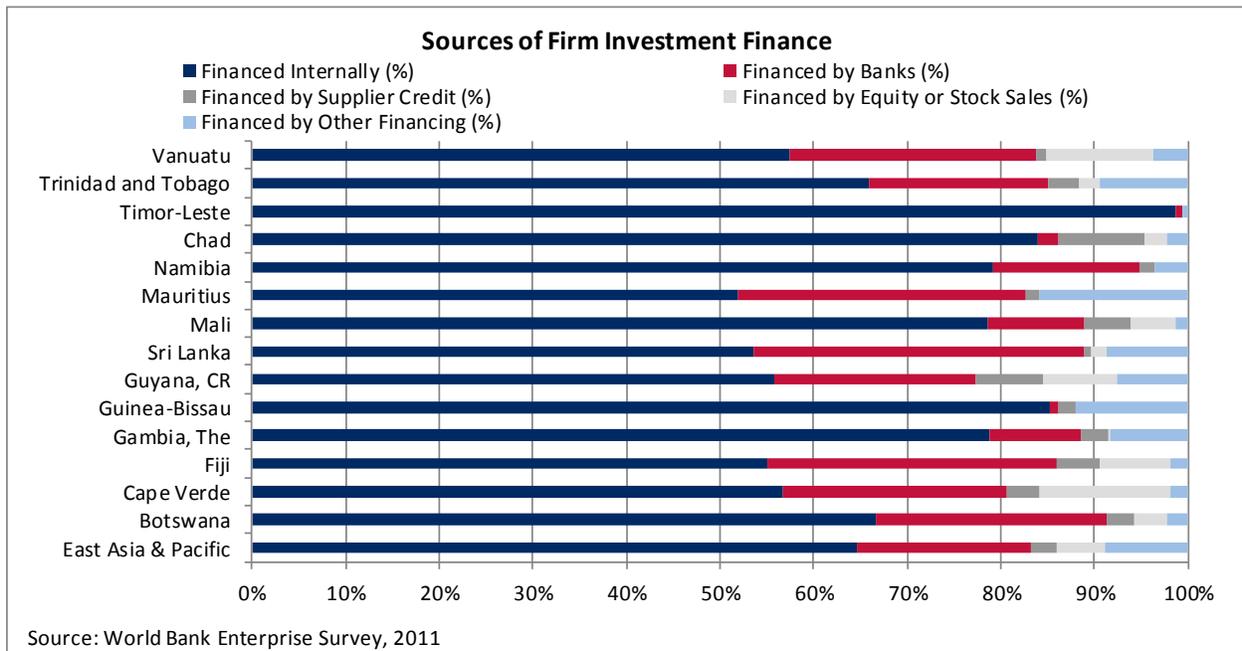
The lack of lending is further illustrated by the low percentage of firms with a bank loan or line of credit and the lack of diversity of financing sources, as seen in the Enterprise Surveys. Only 6.9% of firms in Timor-Leste have a bank loan or line of credit. This percentage is far below its comparators, as seen in table I below (among its comparators individually, only Guinea-Bissau has a lower percentage of firms with bank credit).

Table B-I Percentage of Firms with a Bank Loan or Line of Credit

Upper Middle Income	Lower Middle Income	Low Income	East Asia & Pacific	Timor-Leste
50.4	41.4	21.9	40.4	6.9

Source: World Bank Enterprise Surveys

Figure B-5

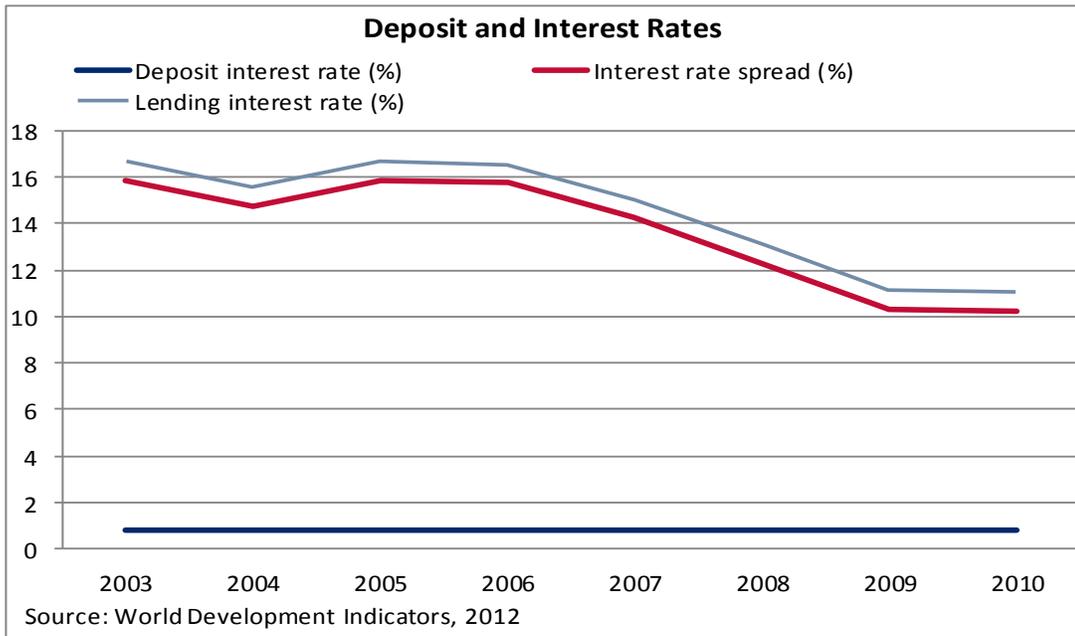


Why Banks Are Not Lending

There are many reasons why a bank would not lend, besides a shortage of capital: regulations and laws may be too restrictive and make lending too costly, the riskiness of borrowers is too high in that country, banks are not operating efficiently or there is not enough competition within the banking sector, or there is no recourse to lenders if borrowers default on their loans. We will explore these reasons.

Interest rate spreads, the difference between the rates at which banks lend and at which they pay on deposits, are a measure of banking efficiency and competition. High spreads indicate low competition and efficiency, as existing banks generate above average profits by paying low rates on deposits but charging high rates on loans. As seen in Figure 6, despite the large amount of deposits, deposit rates have been consistently low (close to 0.8% since 2003). However, lending rates have been quite high (around 16%), although they have come down (11.03% in 2010). Therefore, interest rate spreads have been very high, never falling below 10%. As you can see in the scatter plot below, Timorese interest rate spreads are high as they are above most countries' spreads, and above many of its comparators. So does this indicate inefficiency of financial intermediation, low competition, or both?

Figure B-6



There are three private banks in Timor-Leste: Bank Mandiri, ANZ, and CGD (Caixa Geral de Depositos) (Asian Development Bank, October 2010). All three banks are foreign-owned (Indonesian, Australian, and Portuguese, respectively.) There is also one government-owned financial institution,

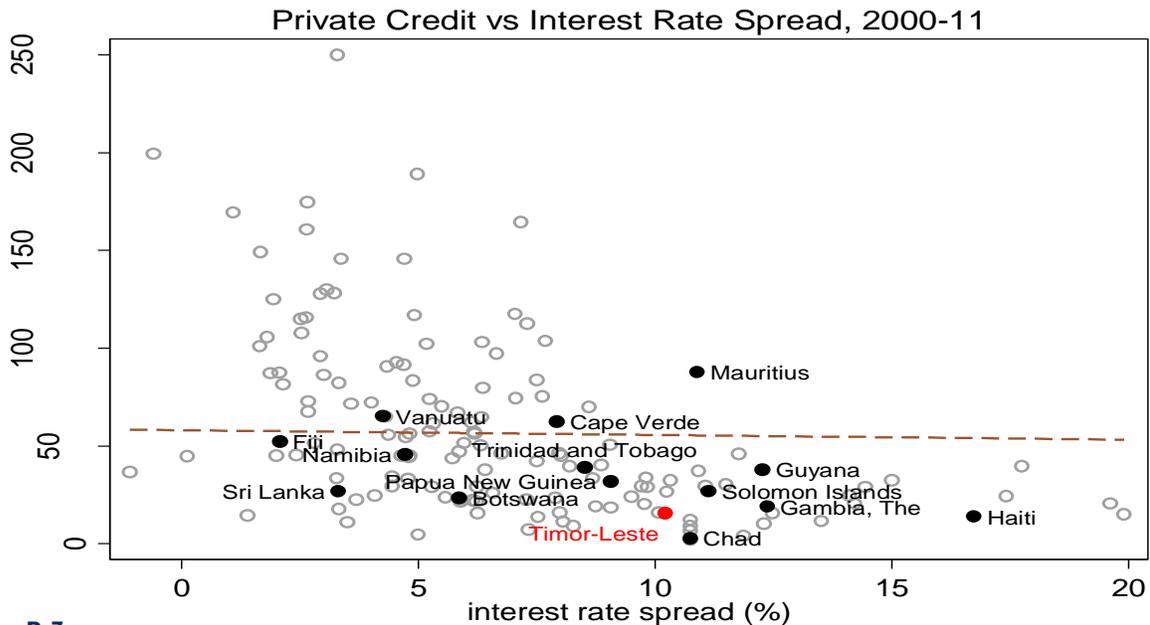


Figure B-7

Source: World Development Indicators, 2011

which is applying for a banking license: IMfTL (Instituicao de Microfinancas de Timor-Leste). Timor-Leste is a small country, so this may not be such a small number of banks. However, the ADB has said these banks have their own niche market, and do not compete against each other. Furthermore, the three

foreign banks only serve Dili, with the exception of CGD, which has 7 district branches. (Asian Development Bank, October 2010) The two largest microfinance institutions, Moris Rasik and Tuba Rai Metin, serve the rest of Timor-Leste. Moris Rasik operates in all districts and has 13,000 clients. However, there are some remote parts of the districts without roads and so those clients cannot be accessed. (Reis, 2012) Tuba Rai Metin has around 3000 clients and operates in 6 districts around Dili. (Asian Development Bank, October 2010)

Foreign banks do little or no outreach outside of Dili because of poor infrastructure and the resulting high cost of having branches outside of Dili, and the fact that the foreign banks' home office regulations often prevent them from operating outside of Dili due to the higher risk of operating there. (Reis, 2012) (Yani, 2012) Furthermore, there is only one cash distribution center (the Banking and Payments Authority in Dili) and so banks must absorb the cost and risk of transporting cash to their branches outside of Dili, which is quite high due to the poor state of infrastructure and low security. Therefore, the sheer cost of operating in Timor-Leste is quite high. (Asian Development Bank, October 2010)

Bank officials the team interviewed identified the major reason for their unwillingness to lend as the large amount of non-performing loans. As can be seen in Figure 7, the percent of non-performing loans to total loans spiked to around 30% after 2006 and then rose further to around 40% by 2010. The spike in 2006 is also reflected in the percent of loan loss provisioning to total loans, as seen in Figure 8. Here we see provisioning was under 10% and then shot-up to above 50% and has maintained that level since the end of 2006. These bad debts occurred all of a sudden following the outbreak of violent unrest in Timor-Leste in 2006. People were killed and businesses were destroyed or abandoned. As seen in Figure 3 and 4, this event also corresponds to when deposits relative to assets rose and lending dropped precipitously. Thus violence and instability became a major hindrance to lending and to business investment and operations, in effect, driving up the cost of financial intermediation.

Figure B-8

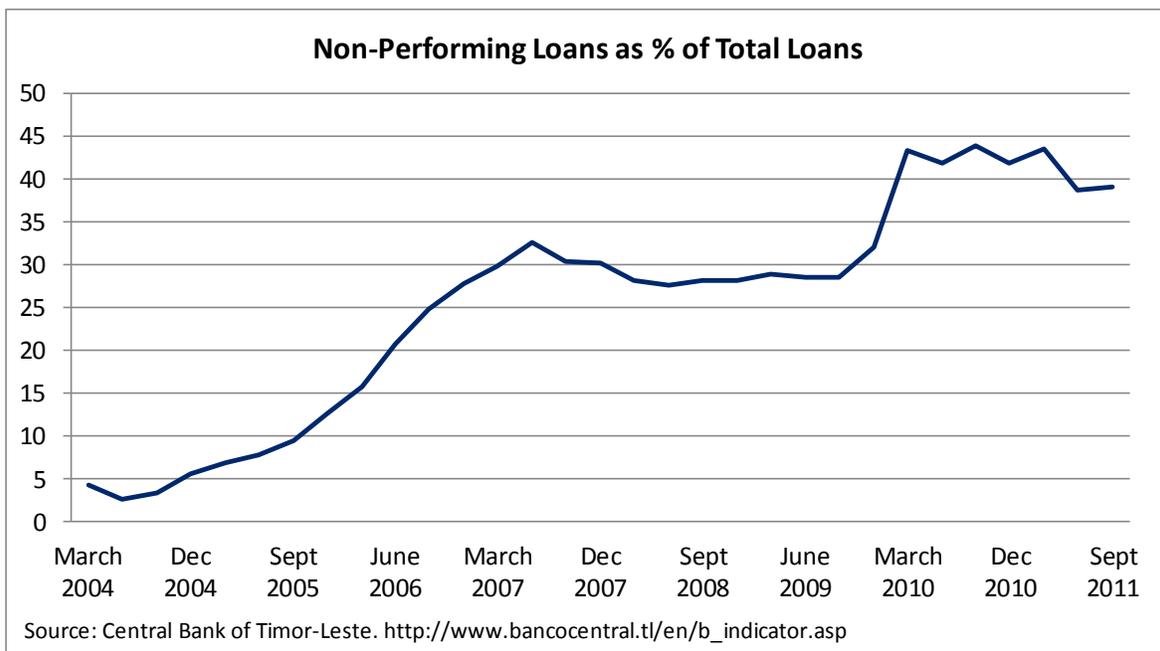
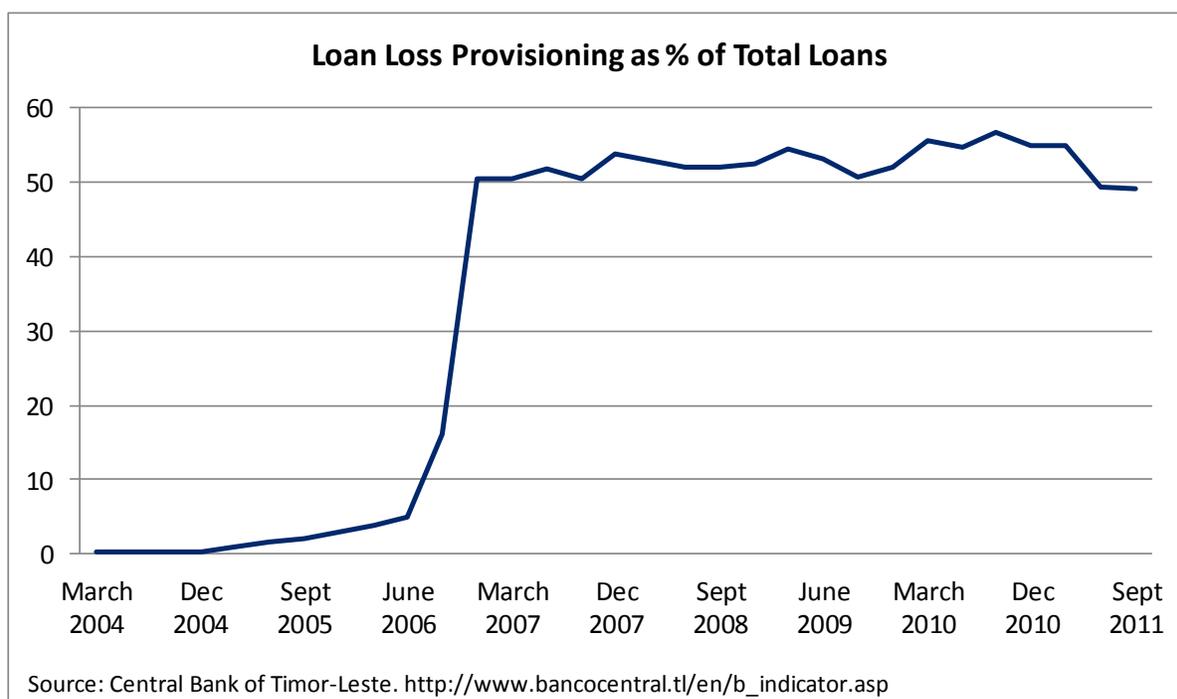


Figure B-9



Furthermore, there is very limited legal recourse for lenders if borrowers default. This was confirmed by the team's interviews with banking officials, microfinance institutions, and entrepreneurs. There is also evidence of this in the World Bank's Doing Business Report, as discussed in section 3, under "Enforcing Contracts." For example, from 2004-2008, it took an average of 1800 days and 51 procedures to enforce a contract. Furthermore, there is no private or public credit registry system in Timor-Leste (World Bank IFC, 2011). Without a credit registry, lenders are unable to adequately assess the credit worthiness of a customer. Finally, since loans are financial contracts, lenders are reluctant to lend without an efficient and functioning justice system to enforce these contracts and enable banks to seize assets, such as collateral or mortgaged assets.

Another major impediment to bank credit identified among interviewed borrowers and bankers is the lack of secure land tenure. Land is often the principal asset of a potential borrower, and the lack of secure land tenure typically means land cannot be used as collateral for a loan. Unfortunately, the 2009 Enterprise Survey did not have data on the amount of collateral needed for a loan, or those applicants turned down for a loan due to lack of collateral, like other Enterprise Surveys have. However, it was identified as a problem by every entrepreneur we interviewed. This is further discussed in section 6 "Microeconomic Risks" under "Land Tenure and Property Rights."

In summary, a number of factors increase the risk and cost of financial intermediation and limits access to finance. These include the lack of security, as evidenced by the violence and civil unrest in 2006; the lack of lender and borrower protection and legal recourse if borrowers default; the lack of creditable property rights; poor infrastructure; and low financial literacy.

Lack of access to finance is a significant impediment to investment and growth in Timor-Leste due to poor financial intermediation. However, we argue that the main driver of this constraint comes from factors within the private appropriability / government failure "branch" of the growth diagnostic decision tree: notably, from the lack of land tenure in order to have adequate collateral (government failures in property rights), the potential for civil unrest and the resulting disincentive to lend (government failures

in security), the lack of legal recourse for lenders and borrowers (lax legal and regulatory environment), poor physical and financial infrastructure, and a lack of business acumen so that businesses are not bankable or have high default risk (low human capital). Thus we do not find the high cost of finance (or the lack of access to finance) by itself to be a heavily binding constraint to growth in Timor-Leste.

APPENDIX C: Non-Binding Microeconomic Risk

The subsectors discussed in this section are microeconomic risks traditionally analyzed under the HRV Growth Diagnostic. However, these microeconomic risks are less crucial constraints to growth than those identified in chapter four. The below sections on taxes and tax administration and tariffs will argue that neither of these issues are true concerns in Timor-Leste. However, this section also included corruption, political insecurity and crime. Though these remain real issues in Timor-Leste based on private sector businesses and international indicators, corruption, political insecurity and crime are not binding constraints to growth. It is important to note that as Timor-Leste progresses both economically and politically the issues in this Appendix can easily become more and more important.

Taxes and Tax Administration

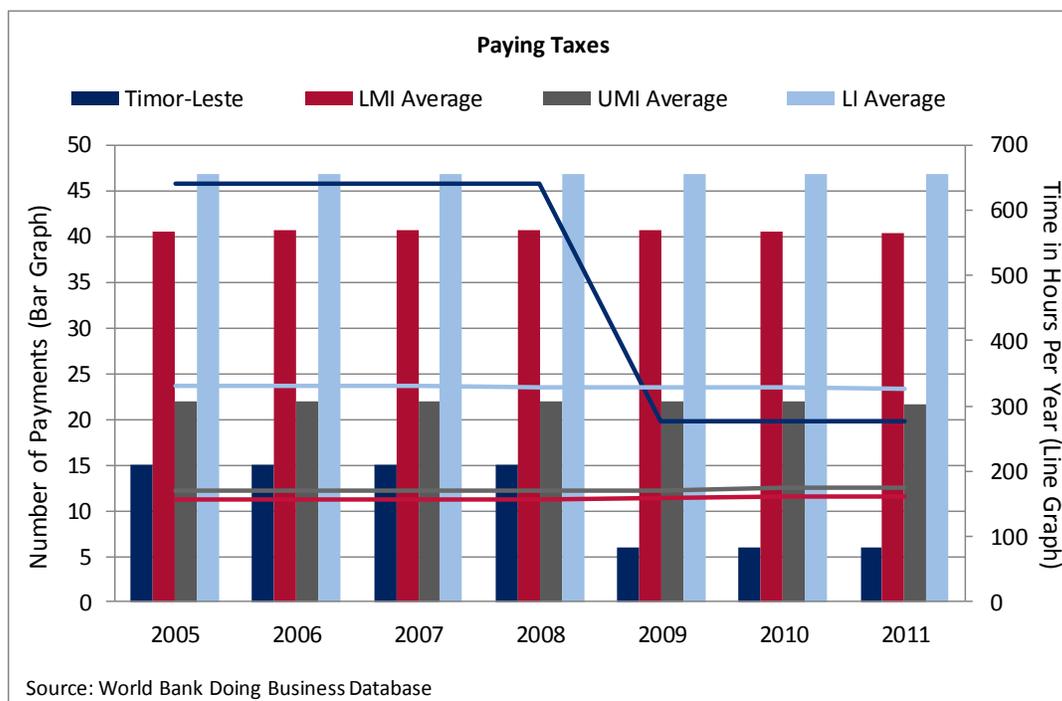
The prevalence of poorly designed tax systems in developing nations hinders those countries' private sector growth by adding additional and inconsistent costs to business. If tax rates are too high, they reduce returns on investments, thereby reducing investment and growth. Additionally, tax administration can cause risk or additional costs to enterprises, ultimately deterring investment or incentivizing participation in the informal sector. However, these issues are not prevalent in Timor-Leste. In fact, in private sector business owners praised the Timorese tax code, calling it transparent and consistent.

In 2008, Timor-Leste introduced a new tax code designed to simplify the existing system. According to the 2010 WB Paying Taxes report, the new code “transform[ed] the tax regime for businesses. It cut the profit tax rate from 30% to 10%, allowed all depreciable assets to be fully written off in the year of purchase and abolished the alternative minimum tax and the withholding tax on interest. Corporate income tax is now paid in quarterly rather than monthly installments when turnover is less than \$1 million, with simple rules for its calculation. The time required for paying taxes fell by 364 hours a year.”

On the other hand, La'o Hamutuk argues that the ten percent corporate (which was a significant reduction for large corporations) put into place in 2008 was essentially a \$2 billion gift to oil companies operating within Timor-Leste. “If the new law is applied to this project, government revenues from the LNG plant will be reduced from around \$3.6 billion to \$1.1 billion over the plant's lifetime, which will increase the profits of the companies operating the project.” The organization also felt that the new tax code could cause Timor-Leste to “become a place for hiding money or other illicit activities of international actors. For example, [it could] become a place for laundering dirty money, or a conduit to funnel money to other countries. This problem arises because Timor-Leste uses the U.S. dollar, the currency used by international criminals.” (La'o Hamutuk, 2008) However, there is not data to support this assertion at the moment.

The 2012 World Bank “Paying Taxes” report praises Timor-Leste for its tax code and ranks it as one of the easiest places to pay taxes, given the small number of payments per year. Graph C-1 shows how well Timor-Leste performs on number of payments per year.

Figure C-1



Timor-Leste scores lower than all the average income categories in number of payments per year and has shown considerable improvement in the past three years in the hours per year businesses commit to handling taxes. Therefore, taxes are not a constraint to growth in Timor-Leste.

Tariffs and Non-Tariff Barriers to Trade

Law and regulations imposed upon free trade are a common deterrent to economic growth in developing nations. High tariff and non-tariff barriers to trade, such as import and export regulations and processes, cause considerable additional costs to business. Free and open trade allows for private sector to fully benefit from international business and investment. In cases where trade relation laws and regulations are a binding constraint, the private sector is severely impeded by tariffs, duties and processes on imports and exports.

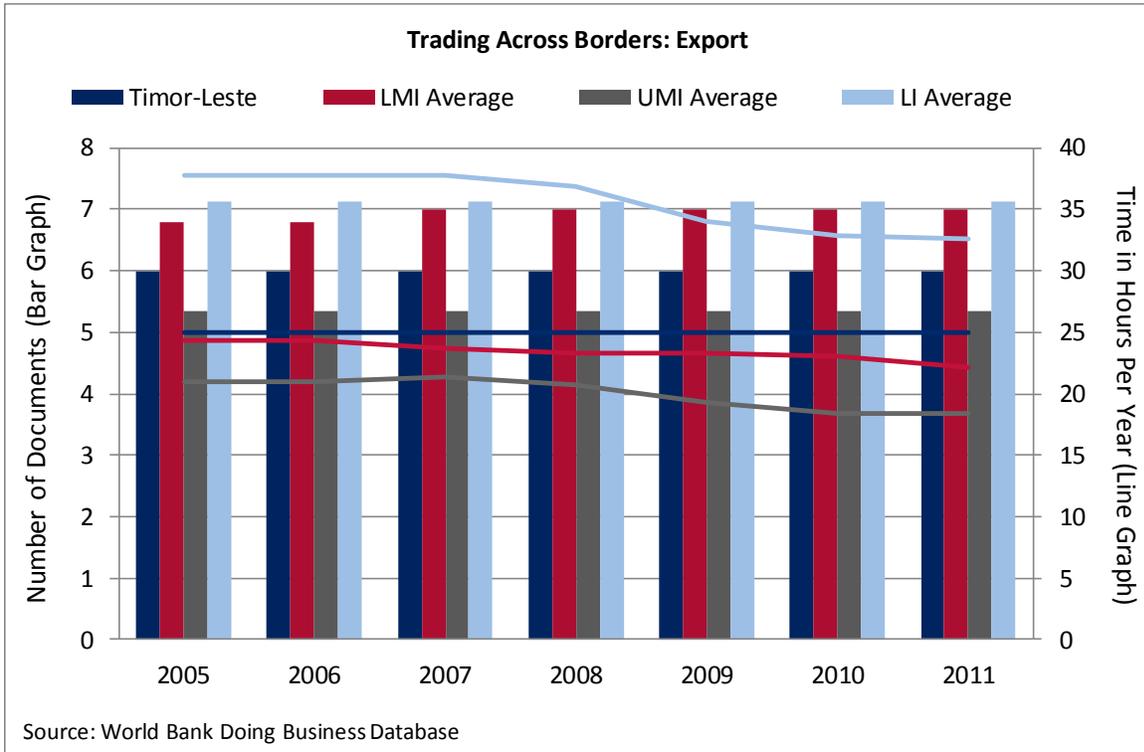
In terms of quotas and duties, Timor-Leste is an open economy. Goods that are imported into Timor-Leste are subject to an import duty, excise tax, a sales tax and customs fees. The customs duty on imports is six percent of the value of goods and is consistent across all products. Specific products are subject to excise taxes, which average twelve percent of the excise value, with a few exceptions²⁰. There are additional fees for processing, inspection and warehousing. However, compared to most developing nations these rates are low, transparent and consistent.

Heritage Foundation rates the overall Trade Freedom in Timor-Leste at 73 out of 100. The score is an aggregate of tariff and non-tariff barriers to trade. Timor-Leste outscores the averages for both low income and low middle income comparators and scores higher than Trinidad and Tobago. According to the Heritage Foundation, the score is high due to the constant duty on imports, but “non-tariff barriers continue to distort trade activity.” (Heritage Foundation, 2012)

²⁰ These include 120 percent of the excise value for fireworks and ammunition.

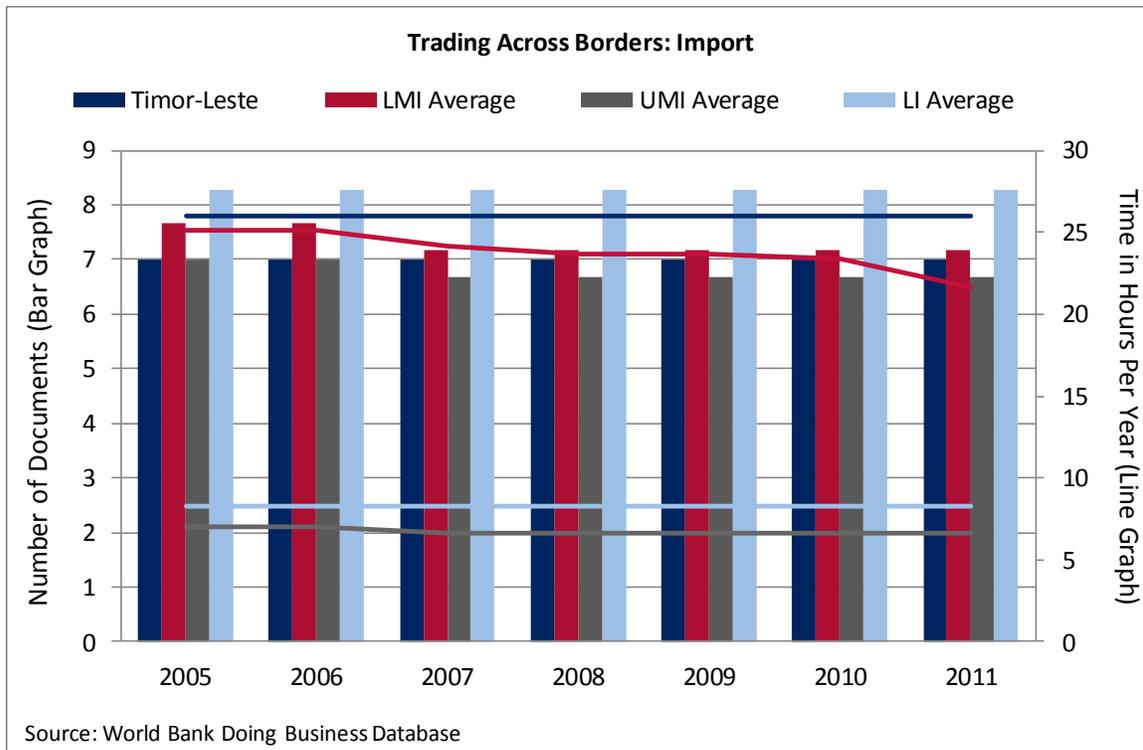
Based on the World Bank Doing Business Indicators, Timor-Leste is positioned 89th out of 183 countries in “Trading across Borders.” The ranking is based on the number of days and procedures involved in exporting and importing in Timor-Leste. As displayed in Graph C-2, Timor-Leste outperforms both low income and low middle income comparators in number of procedures and time to export. This includes the time it takes to prepare documentation, clear customs and technical control, handling at ports and terminals and inland transportation. Port handling takes the most time, averaging ten days.

Figure C-2



The numbers for imports are similar to those for exports, as displayed in graph C-3 Timor-Leste scores better than the average of low and low middle income comparators in the number of procedures. However, the amount of time to import remains high. This can be attributed to the quarantine regulations. Larger business owners in Timor-Leste cited bureaucracy as a hindrance to business. In particular, large business owners complained about confusion at the port quarantine. It was unclear to businesses who was in charge of the quarantine authorities and how specifically these processes were regulated.

Figure C-3



The lack of clarity at customs could be related to the sheer quantity of departments involved with imports and exports in Timor-Leste. Within in the government of Timor-Leste, several departments manage and regulated international trade. The Ministry of Development is charged with the design, execution, coordination and assessment of trade policies. Within the Development Ministry, the Institute for Business Development is responsible for foreign investment and the Commerce Department is responsible for international licensing and property. However, the Customs Service, which is under the Ministry of Finance, is charged with the Customs regime and collecting duties, taxes and fees. At the same time, TradeInvest Timor-Leste, which is directly under the Prime Minister directly, works to attract exports. The Ministry of Foreign Affairs is tasked with international agreements for example ongoing efforts with the ASEAN Secretariat. (UNESCAP, 2008)

Another issue identified by private sector entrepreneurs was the lack of Sanitary and Phyto-Sanitary (SPS) standards, which have yet to be established by the government. These standards and certifications are necessary for Timor-Leste to export to developed nations. In order to perform this type of certification, the government would need to invest in a national laboratory that could “secure the linkages between basic and applied research sciences” and ensure the country was meeting the appropriate levels of sanitation. (IBM Belgium s.a. with Berlioz, DMI & Maxwell Stamp, 2010)

Despite the bureaucratic issues the lack of SPS certification, the trade regime in Timor-Leste is positive and improving.

Within the enabling environment the regulations and laws associated with imports and exports are not a binding constrain on the economy of Timor-Leste.

Corruption

Economic analysis has shown that corruption effects even the highest macroeconomic level indicators. Corruption has a negative impact on the ratio of investment to GDP (Mauro, 1995), and there is a strong correlation between per capita incomes and corruption index rankings (Kaufman & Kraay, 2002).

The risks and costs of corruption cause market inefficiencies and distort economic growth. As payments extorted by government officials are an added tax to the cost of doing business.

“A strong rule of law helps to reduce risk or at least make it easier to estimate accurately by creating institutions and laws that are predictably – not idiosyncratically – enforced. Risks therefore are higher in an economy characterized by administrative corruption, rent-seeking officials, or a plethora of firms seeking to capture the state. If risk can be lowered through a rule of law that successfully mitigates corruption, investors are more likely to enter the market in greater numbers and dollars” (Webster, 2002). Therefore, where corruption is a binding constraint, the costs of business in terms of time and the payments to government officials will rise.

USAID conducted a formal assessment of the state of corruption in Timor-Leste in 2009. The study identified the following core issues in Timor-Leste: 1) extremely low overall capacity, 2) weak oversight institutions, 3) poor access to information, and 4) a lack of understanding of basic anti-corruption concepts (USAID, 2009). However, though corruption permeates Timor-Leste, the purpose of this analysis is to determine if it has acted as a binding constraint to economic growth in the private sector.

Current situation in Timor-Leste

Timor-Leste has worked diligently the past several years to establish anti-corruption legislation. However, there remain noticeable gaps in the legal and institutional frameworks.

Normative frameworks to combat the prevalence of corruption include provisions on freedom of information, asset disclosure, conflicts of interest, whistleblower protection and public participation in government decision making. The constitution of Timor-Leste provides for the freedom of information, however, there is not currently a law implementing it. The government hopes that by 2015, legislation will be drafted to provide citizens with a right to access information held by the government, as long as it is not against the public interest. However, in order for laws like this to take effect, Timor-Leste must strengthen its information and file management processes as well as its networked computer storage systems (Government of Timor-Leste, 2010).

Aside from a few very specific provisions, there is no system for asset disclosure by high government officials. Moreover, there are no implemented rules governing conflicts of interest and few understand the concept. Similarly, there is no broad code of ethics applicable to civil servants. Also, there are currently no whistleblower protection rules. However, the government intends to introduce specific regulations to protect citizens from harassment and liability for making disclosures in the public interest. (Government of Timor-Leste, 2010) Additionally, there are no systematic provisions for public participation in government decision making.

In August 2009, the Government of Timor-Leste attempted to combat some of the ongoing concerns by creating the Anti-Corruption Commission. The commission was tasked with the investigation, education and prevention of corruption in Timor-Leste. Unfortunately, the commission does not have prosecutorial authority and relies heavily on the Office of the Prosecutor General. The commission was granted so few abilities that, according to La’o Hamutuk, the “Anti-Corruption Commission (ACC) is so weak that we fear that it will be ineffective” (La’o Hamutuk, 2009).

The overall corruption assessment in 2009 found that, “[w]hile the government has continued to take action to address corruption, widespread public criticism of corruption and the likely scale of the problem, mean that the government must commit to a sustained, visible, and substantive anti-corruption effort. Similarly, the legal framework is not yet complete, and key institutions provided for in the 2002 Constitution – the Supreme Court and the external audit body – have still not been created. The newly

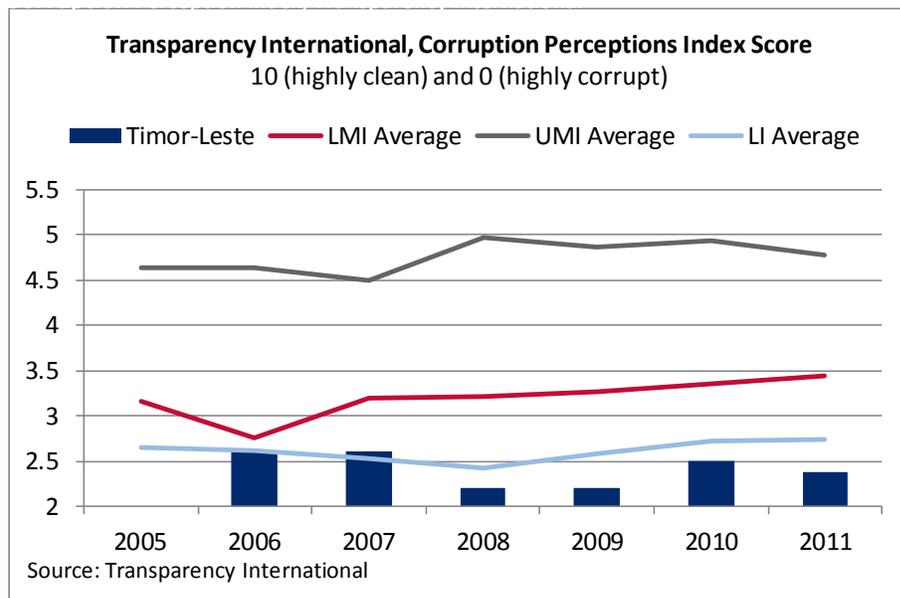
created Anti-Corruption Commission faces an immediate obstacle in the selection of its first Commissioner, and some interlocutors questioned whether it will manage to get off the ground” (USAID, 2009).

Is Corruption a Binding Constraint?

International indicators on corruption tell a grim tale for Timor-Leste against comparators. Transparency International, one of the leading think tanks on corruption, maintains ratings which reflect the perception of corruption in a given year.

In 2011, Timor-Leste scores 2.4²¹ out of 10 (a higher score indicates that people believe the country is less corrupt), ranking 143rd least corrupt out of 183 countries. Unfortunately, the 2011 score was worse than the 2010 score of 2.5 and the ranking slipped significantly (with 2010 ranking being 125th out of 178). In 2011, Timor-Leste is seen as having equal corruption with oil exporters Azerbaijan, Mauritania, Russia and Nigeria, who rank worse than 78 percent of the countries in the report.

Figure C-4



The Transparency International score is troubling because it measures the opinions of the population, rather than gauging the actual level of the regulatory framework in place. However, in 2010, Freedom House (U.S.-based non-governmental organization that conducts research and advocacy on democracy, political freedom and human rights) published scores in its “Countries at the Crossroads Report” rating the environment to protect against corruption. Scores range between 0 and 7, with 7 indicating strongest performance, based on expert examinations of issues related to corruption.²² Timor-Leste received 2.98 out of 7, improving from 2.77 in 2006. The report cited improvements in transparency as the main driver for the change. “Budget debates are thorough and reported on extensively over community radio and television, arousing public interest throughout the districts. Parliamentary rules of procedure provide for all standing committees to examine the draft budget and

²¹The rating for Timor-Leste is calculated from five ratings published by other agencies (ADB, Global Insight, World Bank and World Economic Forum)

²²Specific issues include 1) Is the government free from excessive bureaucratic regulations, registration requirements, and/or other controls that increase opportunities for corruption? 2) Is state activity in the economy (including public enterprises and privatizations) regulated in a manner that minimizes opportunities for corruption? 3) Does the state enforce the separation of public office from the personal interests of public officeholders? 4) Are there adequate financial disclosure procedures that prevent conflicts of interest among public officials (e.g., Are the assets declarations of public officials open to public and media scrutiny and verification)?

submit their opinions to a committee tasked with preparing a consolidated final report on the budget before the draft law is debated and voted on by Parliament” (Freedom House, 2010). Despite the low score, the progress shows the improvement in the framework.

In spite of the low perception scores and poor regulatory framework, corruption is not as much of an issue in the private sector. Based on the World Enterprise surveys, only 19 percent of businesses expect to pay an informal payment to a public official in order to get things done. The percentage is significantly less than other low income comparators. Figure C-5 shows that Timor-Leste outperforms Chad, Gambia and Guinea-Bissau and also significantly outperforms the low income average. However, the percentage was higher for medium sized firms and firms with more than ten percent foreign ownership (28 and 26 percent respectively).

Figure C-5

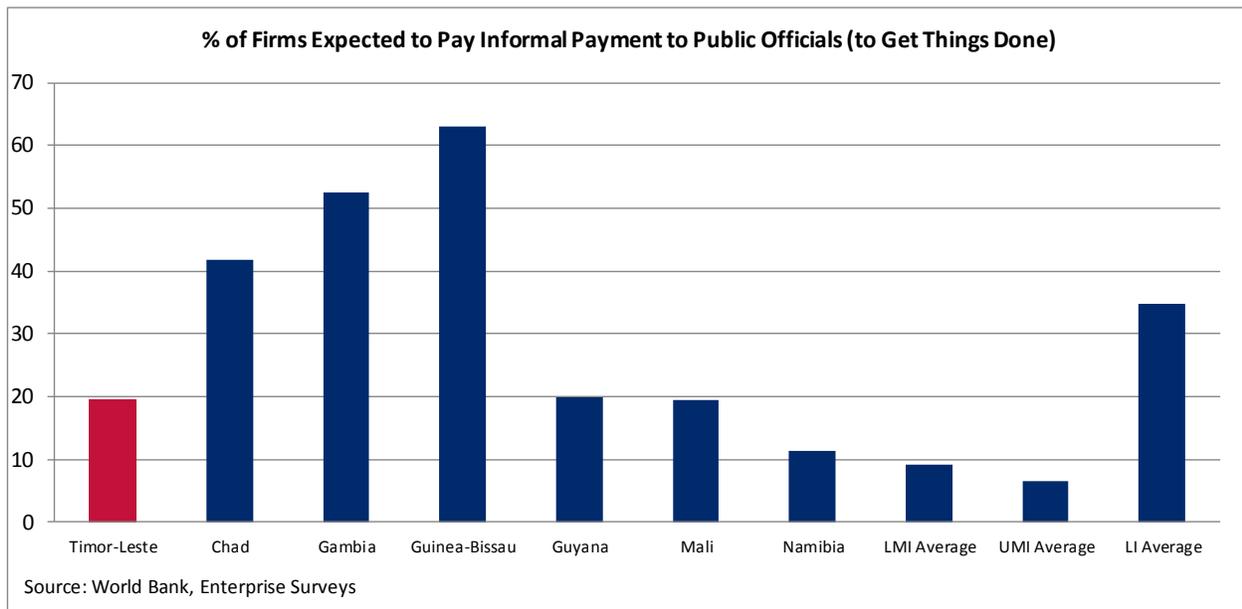


Table C-2 displays the complete set of survey results for Timor-Leste from the World Enterprise Survey in 2010. Despite the low scores on the international indicators, international and Timorese businesses have fewer issues related to corruption. The survey questions the businesses on the necessity to “pay off” public officials in each sector. “Getting a water connection” scores highest overall (22 percent of businesses complaining about additional costs), however, this is low compared to most developing nations.

Despite the poor regulatory environment, there is insufficient data and proof that corruption is a binding constraint against growth in Timor-Leste.

Table C-I World Economic Survey Corruption Related Responses

Subgroup Level	Subgroup	Bribery index (% of gift or informal payment requests during public transactions)	Percent of firms expected to give gifts...								Value of gift expected to secure a government contract (% of contract value)
			to public officials "to get things done"	to get an operating license	to get an import license	to get a construction permit	to get an electrical connection	to get a water connection	in meetings with tax officials	to secure government contract	
TOTAL		8.4	19.4	5.0	11.6	19.6	17.8	22.7	2.6	16.8	3.1
Manufacturing	Sector	9.1	17.8	5.6	17.5	25.6	15.1	28.2	3.3	17.4	5.7
Services	Sector	7.9	20.4	4.7	10.3	17.0	19.0	17.9	2.2	16.5	2.0
Small (5-19)	Size	8.7	17.6	5.5	8.0	10.2	18.5	27.6	2.7	16.9	4.0
Medium (20-99)	Size	8.7	27.9	5.6	20.6	24.7	14.9	19.8	3.4	23.5	2.7
Large (100+)	Size	4.9	0.0	0.0	0.0	n.a.	n.a.	n.a.	0.0	0.0	0.0
Timor-Leste	Location	8.4	19.4	5.0	11.6	19.6	17.8	22.7	2.6	16.8	3.1
Direct exports are more than 10% of sales	Exporter Type	n.a.	n.a.	n.a.	n.a.	0.0	0.0	0.0	n.a.	0.0	0.0
Non-exporter	Exporter Type	8.4	19.9	5.2	10.8	19.6	18.3	20.3	2.8	17.1	3.2
Domestic	Ownership Type	7.8	18.1	4.4	11.2	19.7	15.8	29.5	1.7	18.4	3.8
More than 10% foreign ownership	Ownership Type	10.9	25.9	8.0	14.7	n.a.	27.4	n.a.	5.9	10.2	0.1

Source: World Enterprise Survey 2010

Insecurity

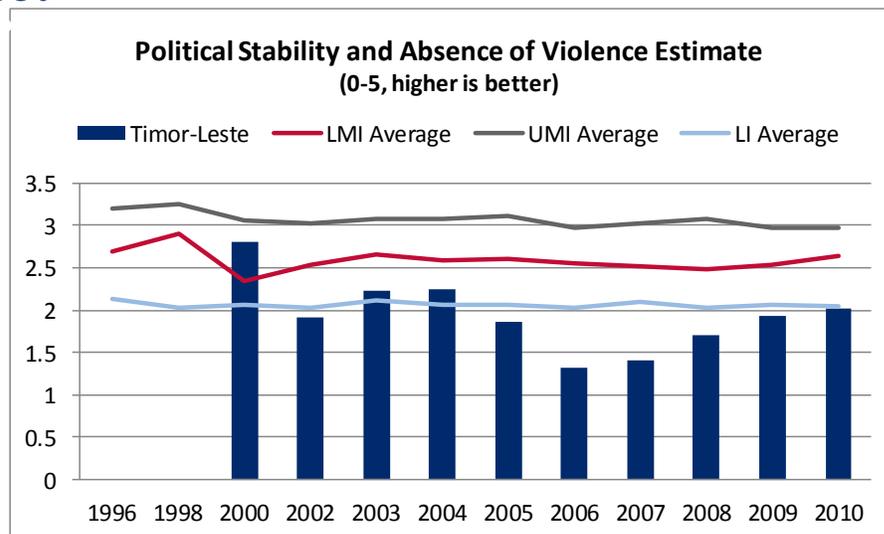
An important microeconomic risk to the business environment of Timor-Leste is insecurity. For the sake of this analysis insecurity refers to both the political insecurity in the Timorese civil society, as well as, the ongoing concerns related to crime. Crime and political insecurity deter businesses from investing large quantities of money into the private sector in fear of losing the investment. For political insecurity the losses could be due to rioting and crime can cause substantial losses to inventories.

Given the political situation described in the introduction, it is natural to assume that the recent instability in Timor-Leste could be acting as a deterrent to long-term investment in Timor-Leste and thereby, inhibiting growth. The following section explores the political instability and crime and security issues in Timor-Leste and determines whether these are a binding constraint to growth.

Political Insecurity

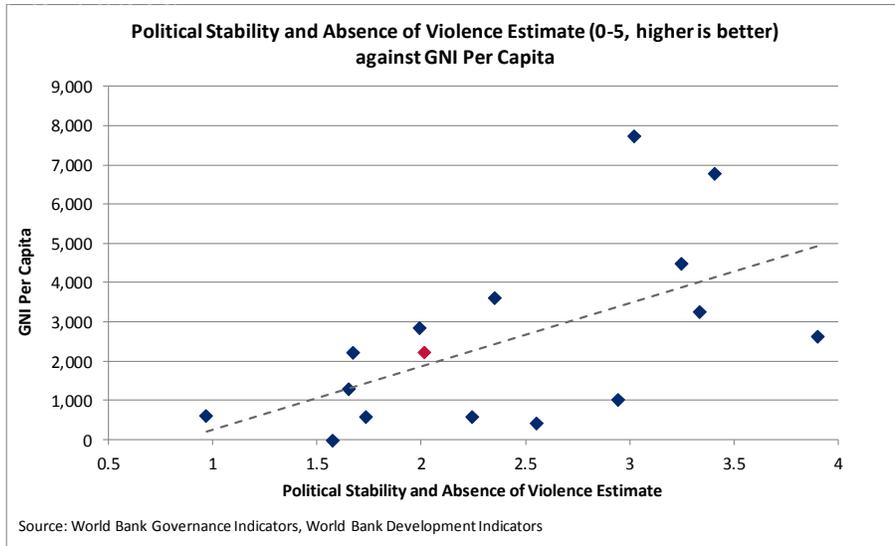
Timor-Leste's current status in political stability is on par with comparators. World Bank's Governance Matters "Political stability and Absence of Violence" Indicator measures the "perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism." The scores attempt to measure the current state of insecurity in the country given conflict, demonstrations and ethnic tensions. Figure C-6 below displays Timor-Leste against the comparators and two trends are noticeable. First the political situation since the 2006 violence, is clearly improving and though Timor-Leste scores below the comparator averages, it

Figure C-6



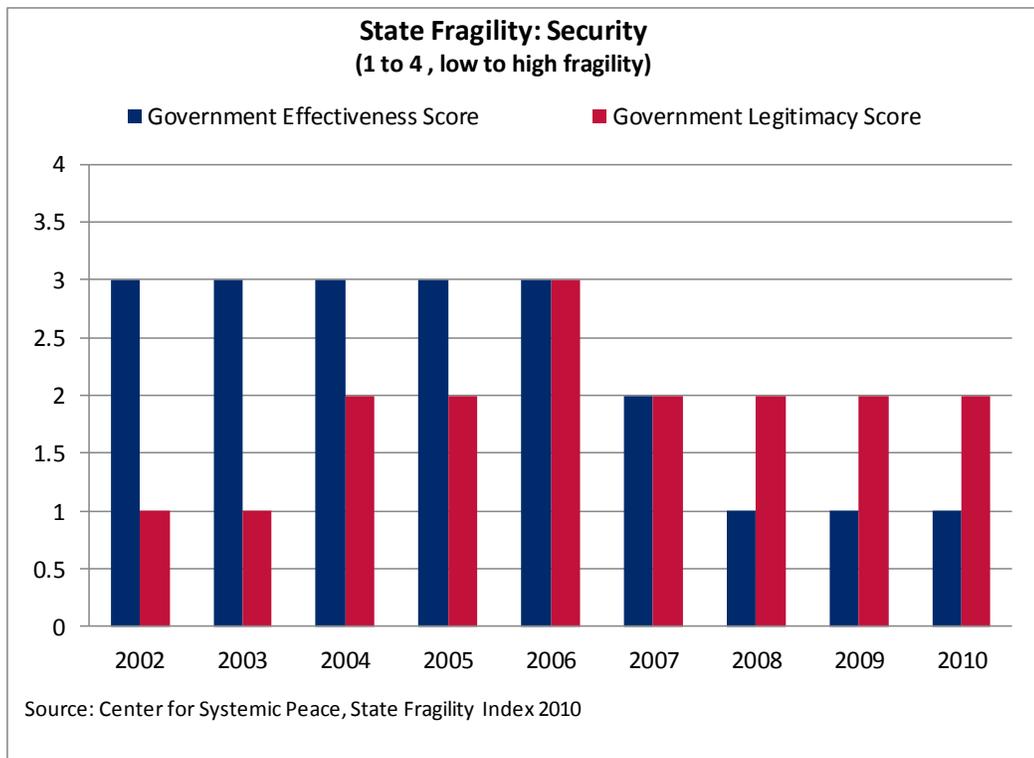
out performs comparators like in 2010 Chad, Guinea-Bissau, Guyana, Haiti, Papua New Guinea and Sri Lanka. Figure 4-11 demonstrates that Timor-Leste (shown in red) scores above the trend line of its comparators. In other words, given the level of GNI per capita and the political instability in each comparator, Timor-Leste scores above average in 2010.

Figure C-8



Based on international fragility indices, that measure of general security, vulnerability to political violence and state repression, Timor-Leste is performing well against comparators, as well as over time. The State Fragility Index, published by the Center for Systemic Peace, attempts to gauge the overall effectiveness and legitimacy of the government to handle security. Figure 4-10 shows that both the government effectiveness in its ability to maintain order has improved drastically since 2006. Also, the overall scores for government legitimacy, or the government’s validity according to the populace, have remained constant since the spike in 2006, though there is room for improvement.²³

Figure C-7



²³ Please note for the sake of this analysis the fragility indices were rescaled from 1 to 4 (low to high fragility) from the original 0 to 3 to be able to show improvement graphically.

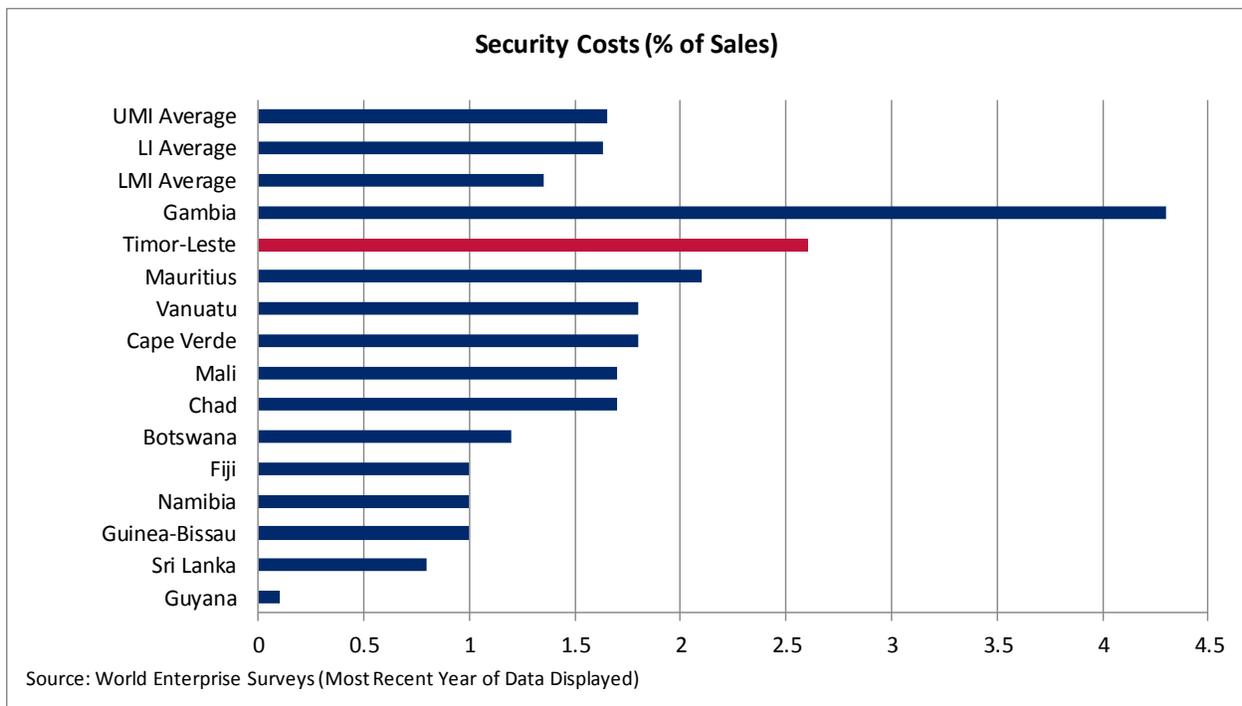
The political situation is improving and that is visible in international measures of security. Unfortunately, it is hard to quantify and measure the effects of the political situation on the private sector, especially in the long term, but based on the overall improvement in the situation since massive upheaval in 2006 and the consistent and ongoing elections in Timor-Leste (without incidents), it is fair to argue that the political situation is not a binding constraint to growth.

Crime

Crime, theft, and disorder is the second most identified main obstacle identified by firms in Timor-Leste, according to the Enterprise Survey (12.7% of firms identified this as the main obstacle). Of medium-sized firms, this was also the second most identified main obstacle, with 19.2% of such firms identifying it as a main obstacle. Furthermore, 38.5% of firms identified crime, theft, and disorder as a major constraint.

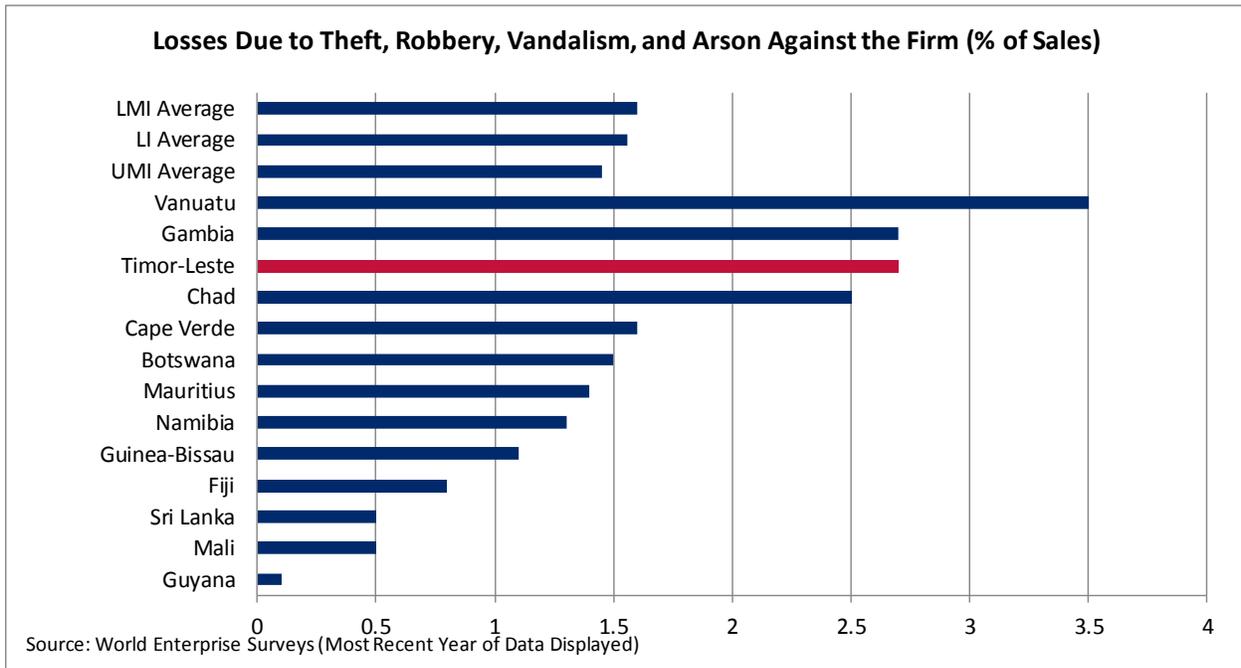
The cost of security is higher than in Timor-Leste than nearly all comparators. Security costs (in terms of the direct costs incurred for security and the direct losses from crime) are 2.6 percent of sales in Timor-Leste, while average for low income comparators and low middle income comparators are both 1.6 percent.

Figure C-9



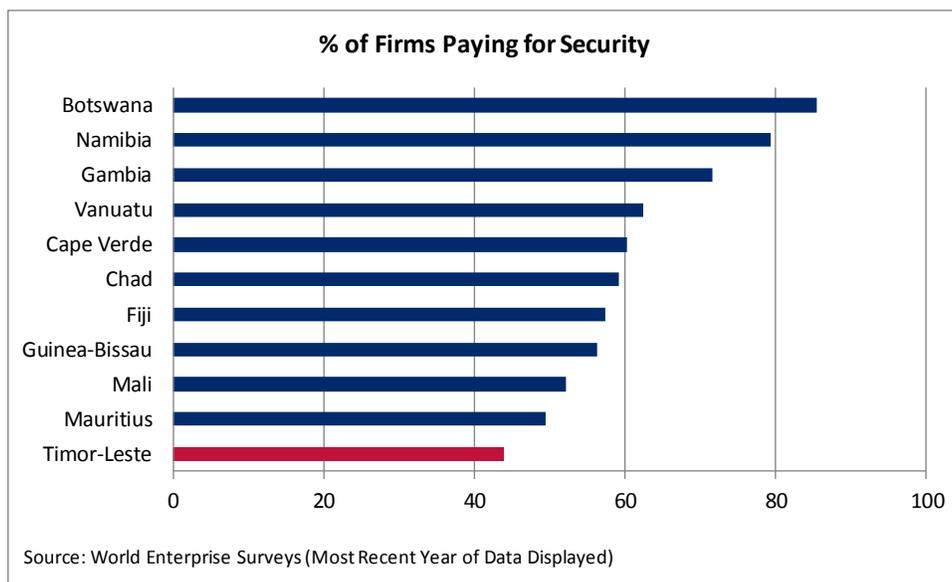
Also firm losses due to theft, robbery, vandalism, and arson are 2.7 percent of sales with only Gambia and Vanuatu scoring lower. The average firm losses in low income and low middle income based on the averages are 1.5 and 1.6 percent respectively.

Figure C-10



With the large percentage of losses and the amount spent on security, one would assume that a great deal of companies would be investing in security. In fact, one of the determinants of binding constraints laid out in the methodology is a large quantity of businesses doing successful by circumventing the problem. However, this is not the case in Timor-Leste. In fact, only 44 percent of firms invest in security, with only 27 percent of small-businesses. It is important to note, however, that 71 percent medium sized firms invest in security. Therefore, though the issue is large and affects business as a whole, it is not the priority investment for the small business holder.

Figure C-11



Based on the minimal percentage of firms investing in security, improved stability and capability of the government to effectively handle security issues, insecurity is currently not a constraint to growth in Timor-Leste.

APPENDIX D: Market Failures

Market failures are situations in which decisions made in a free market context (without government intervention) lead to inefficient outcomes. Such market failures can occur due to externalities (such as pollution), the presence of public goods (like security and national defense) which are difficult for markets to provide and allocate, and the lack of information that would allow firms and consumers to make reasonable decisions on operating a business or buying goods. In the HRV model and the expanded model used for this study, many market failures are addressed in the microeconomic and macroeconomic risk sections, such as governments failing to finance, regulate, or establish the basic foundations that make markets function properly, such as property rights or the rule of law. As such, in this section, we discuss market failures relating to self-discovery” and coordination externalities.

Self-Discovery and Innovation

For any country to grow economically, it must determine what it can produce cheaper than other countries and specialize in that venture. In other words, countries must find their comparative advantage. However, that raises an important question: how can a country *find* and exploit its comparative advantage? Information and knowledge on a country’s comparative advantage is not widely-known by all. Entrepreneurs must investigate, try, and experiment in order to discover this knowledge. The process by which firms find their locality’s comparative advantage (i.e. – find and exploit profitable business opportunities) or discover new technologies is called self-discovery.

There are two types of self-discovery: Firms can discover that producing a particular good in their particular location is profitable (comparative advantage) or firms can discover that producing something new or in a new way is worth-while (technological innovation). The second type of self-discovery (innovation) is more obvious: to invent a new technology, a firm must undergo a costly research and development process. That effort is rewarded as the new technology would make that firm more efficient (no matter its location) or would make that firm the sole producer of a new, desired product. The first type of self-discovery may require better explanation. In this type, firms gather information to determine the cost structure and returns to producing particular goods and services at a particular location (as this information is not readily known by everyone and the costs and earnings potential of certain enterprises varies across locations). Firms then exploit the production of something in which their location has a comparative advantage.

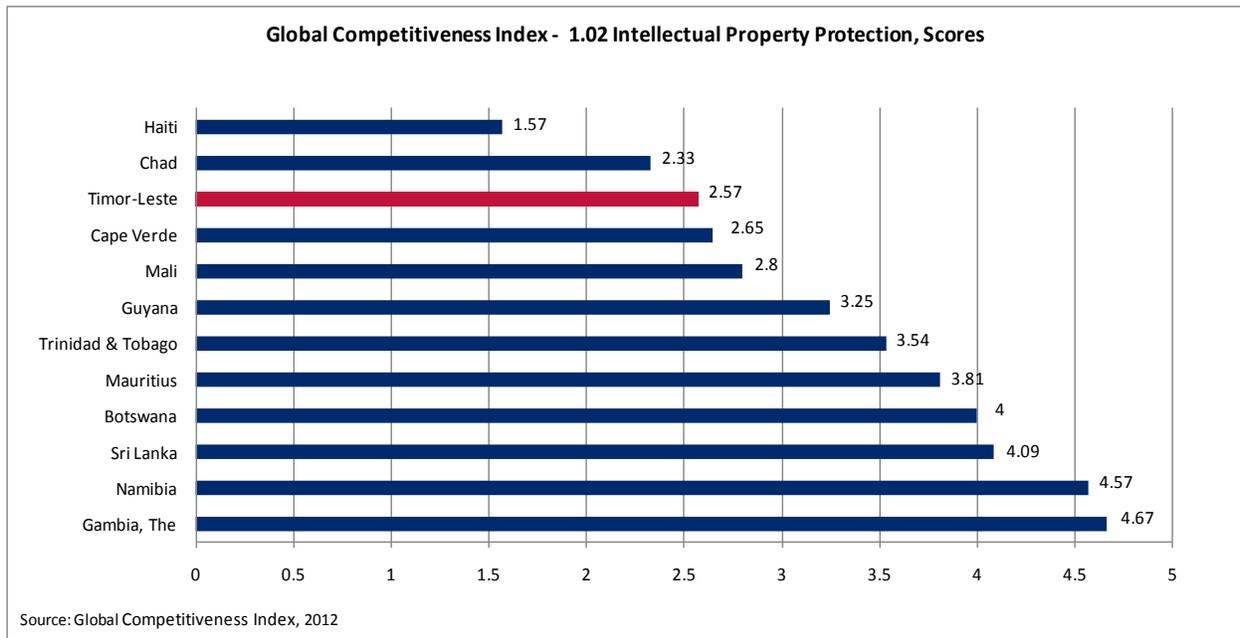
Countries, then, want to promote self-discovery in the private sector, as it increases economic growth and makes that country’s economy more competitive. However, the free-rider problem discourages self-discovery. As previously stated information on the cost structure and returns from production of particular goods in a particular location or of a new innovation is not readily available, but must be investigated and discovered by firms. When firms find these opportunities and become successful, other firms which did not undergo the effort and costs to find these opportunities imitate the discoverer of these ventures. Thus the imitating firms free-ride on the discoverer’s efforts and benefit from this opportunity without having borne the costs of discovering it. This lowers the returns an innovator earns from their discovery. Because of this risk, firms in economies where imitation cannot be prevented do not exploit opportunities of self-discovery. Thus the economy as a whole does not evolve and find the opportunities which make it competitive.

Self-discovery is less likely in a country without intellectual property rights or in countries with low barriers to entry. Without adequate protection of intellectual property, firms are not incentivized to spend research and development dollars to create new innovations as other firms will quickly imitate them and steal profits they would have earned from their innovation. Similarly, if barriers to entry are low, firms can easily enter a certain market and imitate the discoverers of a profitable opportunity or

innovation. (The theory just outlined is from the Hausmann and Rodrik 2003 paper entitled “Economic Development as Self-Discovery.”)²⁴ (Hausmann & Rodrik, Economic Development As Self-Discovery, 2003)

In terms of protecting intellectual property, Timor-Leste ranks quite low– only better than Chad and Haiti, among its comparators (see the below figure, where the lower a country’s score, the weaker is protection of intellectual property). Thus innovators are not able to retain the earnings they could obtain from their discovery.

Figure D-1



As discussed in the “Starting a Business” section of the “Microeconomic Risks” chapter, Timor-Leste ranks the third worst among its comparators in starting a business and requires a substantially longer period of time to start a business. Thus, barriers to entry are high in Timor-Leste. Though high barriers to entry are bad for efficiency and competition, this actually encourages self-discovery as it prevents other firms from entering a market in order to imitate a self-discovering firm.

As discussed above, the high barriers to entry and low intellectual property protection exhibited in Timor-Leste have opposite effects in encouraging self-discovery. Thus, it is not certain which effect is most dominating. At most, we can say the conditions conducive for self-discovery partially exist.

It would be more informative, then, if we can find the effects or symptoms of the problem (if we can find that not enough self-discovery is occurring). One measure of whether firms in an economy are discovering a country’s comparative advantage in a particular product or are innovating to find relatively more efficient production processes is the diversity of a country’s export basket. When a country performs well in the export market and has a more diverse export basket, it means firms are continually finding and exploiting the various profitable opportunities that result from a particular country’s

²⁴ A very good description of self-discovery and the Hausmann and Rodrik 2003 paper can also be found in the USAID El Salvador Growth Diagnostic for the Partnership for Growth.

comparative advantage in various products or have found a more efficient production process than others. In other words, if a country's export basket is increasingly diversified, it suggests that self-discovery by firms is proceeding effectively.

Lack of Diversity of the Export Basket

Timor-Leste's self-discovery problems are illustrated by the extreme lack of diversity in its export basket: Timor-Leste exports very little outside of oil. Besides oil, only coffee is its major export, while the volume of other exports (only agricultural commodities) is very small. According to GoTL data, from 2004-2008 merchandise exports as a percent of GDP stayed relatively constant – around 2.5%. During the same period, coffee exports as a percent of total merchandise exports hovered around 90%. Much of the coffee exports go to Starbucks in the U.S. (Timor, 2012), thus Timor-Leste relies on a single buyer for a large portion of its most important non-oil export. Data on oil exports are not available as detailed data on oil and gas production, trade, and services is lacking. The other exports that have been overshadowed by coffee include vanilla, hardwood, candlenut, candlenut oil, cattle, and handicrafts. The United States is the most important destination for Timorese exports, with Germany and Indonesia following. (World Bank, August 2010)

Table D-1 Export Basket

millions of USD, not include oil and gas	2004	2005	2006	2007	2008
merchandise exports (FOB)	7.8	8.1	9	7	12.7
of which: coffee	6.9	7.6	8.6	6	12.6
of which: other	1	0.5	0.4	1	0.1
re-exports	98	36.2	52.2	na	36.5

Source: World Bank Diagnostic Trade Integration Study (DTIS), Aug 2010

However, trade is rather one-sided, as imports are huge, compared to exports, and so Timor-Leste is very import dependent. For instance, according to the trade data in the Diagnostic Trade Integration Study, merchandise exports as a percent of merchandise imports have been in the single digits since 2004. (World Bank, August 2010)

Gross Dependence on Spending

We can further see the lack of self-discovery in Timor-Leste by looking at the lack of diversity in domestic industries. Timor-Leste's economy is completely dominated by oil and natural gas revenues and public expenditures. Oil revenue amounts to an enormous sum of GDP: receipts from oil in 2010 (\$2.2 billion) were 350% of non-oil GDP, and grew by 25% from the previous year. Much of this oil and gas revenue fund the national government: According to the Strategic Development Plan 2011-2030, oil revenues in 2011 funded 90% of the government budget. At the same time, public spending is the lead instrument in economic growth, and will continue to be, especially while the export base is quite small and oil revenues are so substantial. Most economic activity is through construction financed through government contracts to the private sector. For instance, public capital investment expenditures accounted for 40% of non-oil GDP in 2010 and total public expenditures were 115% of non-oil GDP. (World Bank, 2011)

In the early 2000s, the agriculture sector was the dominant sector, before the rapid growth of publically funded infrastructure contracting after oil revenues soared (Government of Timor-Leste, 2010). Although, the agriculture sector is still the largest employer employing 80% of the population. (Sendall, 2006) (World Bank, August 2010)

According to the Strategic Development Plan 2011-2030, 70% of households rely on some sort of agriculture for their livelihood. While agriculture is the largest employer, most farmers are not doing so on a commercial basis, as 40% of farmers are subsistence farming. (Silcox, Struthers, Liu, & da Silva, 2010) However, 68% of those in paid employment in rural areas work for the public sector (Government of Timor-Leste, 2010). Moreover, most off-farm jobs are in construction projects financed through oil revenue. (United Nations Development Programme, 2011)

While now Timor-Leste relies on public spending to drive growth, the reliance on oil is not sustainable, as the oil projects that are currently producing will end by 2025 (La'o Hamatuk, March 2007). Thus, Timor-Leste must find ways to diversify its economy away from oil, and find its comparative advantage before oil windfalls cease. Unfortunately, the private sector has not yet found what Timor-Leste should diversify into from oil. Anecdotally, from interviews with economists and business associations, the private sector in Timor-Leste has not been interested in finding (or discovering) new ventures outside of its dependence on government infrastructure contracting.

In summary, low export volumes, the complete dominance of a single export product (coffee), and the gross over-reliance on government spending to drive the economy (construction contracts) in Timor-Leste provide evidence for the lack of self-discovery. However, what is causing this is less certain or is multi-faceted. Theory (Hausmann & Rodrik, Economic Development As Self-Discovery, 2003) explains that firms do not put forth the effort in self-discovery because of the threat of imitation from other firms. However, it seems that the lack of self-discovery in Timor-Leste may not necessarily be caused by the threat of imitation alone or may not even be the main cause. Consistently, our interviewees spoke of the inability of the private sector to think beyond government contracts, a significant culture of donor and government dependence, the lack of basic business skills in the private sector, and the lack of an entrepreneurial culture. Thus, Timor-Leste just may not have the market information, human capacity within entrepreneurs, and incentives to foster the self-discovery needed to find its comparative advantage. As such, perhaps other constraints discussed in the analysis play a critical role in addressing this issue and growth in general.

Though we cannot be certain of the cause of it in Timor-Leste, the lack of self-discovery is a worrisome phenomenon that must be addressed to create sustainable growth in Timor-Leste. With the private sector currently able to generate 400 new jobs each year, while 15,000 enter employment annually

(United Nations Development Programme, 2011) finding other viable sources of growth and employment for Timor-Leste should be a priority.

Coordination Failure

Coordination failures are when firms fail to cooperate with each other even though cooperation could increase their profits and lower costs. This kind of coordination does not refer to collusion, but refers to coordination that would even benefit consumers by lowering costs of all firms with the resulting savings being passed on to consumers, providing a more stable supply for the industry, or other such collective benefits.

Based on interviews with farmers, entrepreneurs, and development partners involved in the private sector, there is a lack of market information that can provide adequate signals up and down value chains. Particularly in the agriculture sector, which employs 80% of the population, value-chains are very poorly connected. Farmers do not always know what the market wants, in terms of the mix of produce, how much, and how often; the buyers do not know the ability of farmers to grow certain produce in certain quantities and times; and some buyers trained on a grading system are not properly pricing the higher quality produce they buy.

Furthermore, the input supply chain is extremely undeveloped. Even in Aileu, the district just outside Dili, farmers must travel to Dili to access agricultural input suppliers. There are many anecdotes of farmers even being too intimidated to go into small shops to buy inputs, such as seeds and fertilizer.

There are no consumer protection laws or phytosanitary standards²⁵ in place (Sendall, 2006), which hinders trade, as some countries will not import from countries without them. While this has not hindered exports up until now, Indonesia has announced that in 2010, it will no longer accept imports without sanitary and phytosanitary certifications. (World Bank, August 2010) Besides coffee, there are no regulations on commodity quality grades or standardized weights and measures. Instituting grading and standardizing weights and measures enables buyers and sellers to more easily assess what they are trading and negotiating. It is a vital market coordination mechanism. (Sendall, 2006)

In terms of agriculture, there is a limited but inconsistent wholesale trading market for commodities. Such wholesale trading occurs, but only for major commodities and only during harvest times, when volumes are high. Afterwards, when volumes are low and more dispersed, farmers must sell their produce directly to consumers on their own in local markets. Thus wholesale markets that enable consistent supply and storage are missing in the Timorese economy. Indonesian traders in Indonesian West Timor said the absence of a private or public wholesale market in Timor-Leste forced them had to establish their own buyer networks and storage/transport facilities to ensure a steady supply and adequate quality to export to Indonesia. This illustrates a very real opportunity for the Timorese private sector that is not being exploited. (Sendall, 2006)

While coordination failures abound, the coffee industry was able to circumvent these problems. Addressing other constraints could also help correct some of these problems. For instance, basic education which could improve producers' ability to evaluate their costs and revenue in order to make rational business decisions, enabling market signals to be properly evaluated and thus function properly. Because the private sector is so rudimentary and undeveloped now, it seems this constraint is less critical at this stage than others identified in the study.

²⁵ Sanitary and Phytosanitary standards are also discussed in Appendix B under "Tariffs and Non-Tariff Barriers to Trade"

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1300 Pennsylvania Avenue, NW
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