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Contents

Abbreviations

ESI	-	estimated sustainable income
GNI	-	gross national income
GRDP	-	gross regional domestic product
HDI	-	human development index
HPI	-	human poverty index
NTT	-	Nusa Tenggara Timur
Rp	-	Indonesian rupiah
TIM	-	Timor-Leste
TTS	-	Kabupaten Timur Tengah Selatan
TTU	-	Kabupaten Timur Tengah Utara
WSS	-	water supply and sanitation

Note:
In this report, "$" refers to US dollars.

Executive Summary

This report evaluates the prospects for trade and economic growth for two proximate economies in the Indonesian archipelago, Nusa Tenggara Timur (NTT), Indonesia, and the independent state of Timor-Leste (TIM). Both have very low incomes and predominantly rural populations (mainly subsistence farmers and food-insecure households), and both are at the early stages of development with limited regional and global trade linkages. TIM has historically been implicated in disruptive civil strife, which continues to pose risks to existing and prospective economic assets. However, considerable potential exists in both economies relative to today's living standards. Trade-oriented development of value-added activities associated with the primary sector, including agro food and labor-intensive light industry and services such as tourism might offer important diversification and alleviate social risks from very high current under- and un-employment rates.

A primary impediment to development appears to be real and de facto trade and investment barriers. Real trade barriers consist primarily of infrastructure deficiencies, including port and supporting transport and communication facilities, as well as soft infrastructure to facilitate more efficient trade/investment promotion and supervision. De facto trade barriers comprise a wide array of informal obstacles, including apparent underperformance of border clearance functions, bilateral contractual and market failures, and, sometimes, outright resistance on the part of some toward bilateral flows of goods, services, and persons.

Our review of available evidence suggests that increased trade could be a potent catalyst for growth in both economies, and this report assesses the prospects for such trade expansion. Importantly, our findings indicate that apparent home-market bias is a serious mercantilist fallacy, as growth of exports from more open trade would be much more robust than import growth. In particular, public and private investments to facilitate trade could increase exports as a percent of gross domestic product more than twice as fast as imports, offering both economies significant growth leverage from new external demand and savings inflows. Taken together, the results of this review strongly support an outward-oriented agenda of public and private trade facilitation, including much more determined infrastructure investments for domestic, regional, and global market access, accompanied by public and private capacity development for more effective development of trade and investment opportunities.

Introduction

Nusa Tenggara Timur (NTT) and Timor-Leste (TIM), two Southeast Asian economies that share the island of Timor in the middle of the Indonesian archipelago, have relatively low incomes, very limited economic differentiation within and between them, and a significant degree of trade isolation. Despite extensive coastal exposure, both economies are well below the trade potential of their subregion. In this report, we appraise this potential by a combination of descriptive and quantitative methods. We begin by reviewing initial conditions in both economies, with special reference to their bilateral and multilateral trade potential. Generally speaking, we find there is significant potential for local facilitation of

trade, including both investments in hard infrastructure and institutional changes that would affect the soft infrastructure of trade.

After reviewing general evidence for each economy,[1] we use econometric methods to examine their trade prospects. Our general findings suggest that both economies are well below this potential, both in bilateral trade and individually with respect to the rest of the world. One primary hindrance at present seems to be insufficient public and private investment in trade facilitating infrastructure and supporting policies and practices. In particular, port and collateral transport infrastructure are highly deficient, both in established areas and with respect to extensive available coastal access. Institutionally, active capacity for official and commercial trade and investment promotion and supervision appear to be well below international standards. Extending this analysis, we examine quantitatively what specific kinds of facilitation measures could increase trade's role in the development process of both economies. Our findings suggest that improvements in domestic trade infrastructure would make the biggest contribution, and that the potential growth dividends of this are substantial for both.

In both economies, insufficient material and institutional capacity for trade facilitation is compounded by an apparently pervasive home-market bias and informal public and private behavior reflecting this. Private behavior includes underperformance of border clearance, and contractual and market failures. Taken together, the hard and soft obstacles to trade are particularly regrettable because our findings clearly indicate that exports will respond more dynamically to trade facilitation than imports. In particular, both economies could more extensively develop and diversify their agro-food potential with greater external market access, while intensifying production and increasing value added by attracting foreign direct investment and external savings that would result from projected and sustained trade surpluses.

Taken together, the results of this review strongly support an outward-oriented agenda of public and private trade facilitation, including much more determined infrastructure investments for domestic, regional, and global market access, accompanied by public and private capacity development for more effective development of trade and investment opportunities.

The benefits of an outward-oriented development agenda will be achieved by more effectively linking both economies, thereby allowing the two economies to benefit from comparative advantages, as well as linking the two economies into the wider regional and global networks, thereby achieving important network effects.

Using a combination of descriptive and quantitative methods, we find that NTT and TIM are far from fulfilling their potential for market directed outward orientation, and that more determined approaches to trade facilitation could increase trade substantially. The approach

[1] The authors are grateful to Drew Behnke for very capable research assistance.

used here provides insights for local policy, but also more general assessment methods and lessons for other island and landlocked economies that face market access constraints.

Nusa Tenggara Timur and West Timor

Overview

NTT is one of the poorest provinces in Indonesia. Before decentralization, more than one third of the population was classified as poor.[2] After decentralization, poverty levels have fallen but are still significantly higher than the Indonesian national average. In 2004, Statistics Indonesia reported a poverty rate of 28% for NTT compared with the national Indonesian average of 17%.[3] Poverty in the province is a result of many complicated factors such as the harsh geographic climate of the region and limited amount of natural resources. Further complications arise from the fact that NTT is spread across numerous islands, creating difficult transportation challenges. Additionally, the hot and dry climate makes NTT especially prone to drought and food shortages. However, it is not just poverty that plagues this region as access to levels education and health services are limited. Because of these large developmental issues, NTT has a tremendous amount to gain through linkages with both the central Government of Indonesia, and Timor-Leste, a recent star of the development community.

Regional Administration

NTT province is scattered across 566 different islands covering a total land area of 47, 300 square kilometers. However, it is estimated that only 42 of the islands are populated and the majority of the population resides in the four major islands of Flores, Sumba, Alor, and Timor. Administratively, the province is divided into 15 districts, 203 subdistricts, and one city. West Timor contains four districts (Kabupaten Kupang, Kabupaten TTS, Kabupaten TTU, Kabupaten Belu) and the only city (Kota Kupang) in the NTT province.[4]

West Timor comprises 32% of the total NTT area and contains approximately 38% of the population. The sole city, Kota Kupang is both the provincial capital of NTT and the district capital of the Kabupaten Kupang. Additionally, Kota Kupang has become the center of trade and financial services for NTT, and contains the highest population density in the region.[5]

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[2] Suharyo, Widjajanti, Vita Febriany, Adri Poesoro, Bambang Sulaksono, Nina Tenreyro, S., and R. Barro.2002 Economic Effects of Currency Unions. *FRB Boston Series Working Paper* No. 02–4 (2002).
[3] Hadiz, Liza, ed. 2006. *Development Challenges in East Nusa Tenggara*. Jakarta: The SMERU Research Institute.
[4] Suharyo et al.
[5] Suharyo et al.

Natural Conditions

NTT is mountainous with scattered plains. The climate is considered semi-arid, with a dry season lasting between 8 and 9 months and a wet season for only 3 to 4 months. Because of these harsh conditions, the proportion of arable land is low and the productivity of both wet and dry land is low. In the dry season, many of the districts in NTT experience food scarcity, including TTS, TTU, and Belu in West Timor.

Although the conditions are difficult for agriculture, good potential exists or livestock and marine fisheries. The scattered plains of the region are suitable for cattle grazing and can support the development of the livestock industry. Additionally, the province covers a tremendous sea area, which contains a high diversity of marine products. The sea area reaches 200,000 square kilometers (four times its land area), with a 5,700-kilometer long coastline.[6]

Human Resources

In 2005, the population of NTT was 4.3 million and the population in the four districts and city of West Timor totaled 1.3 million.[7] More than 50% of the population is aged between 15 and 55 years, the age group considered to be economically active. Approximately 75% of the population works in the agricultural sector, down from 80% 10 years ago.[8]

The Human Development Index (HDI) in NTT is lower than the Indonesian average. Looking at West Timor, all four districts have low levels of health, education and purchasing power, even below the average of the NTT as a whole. The Human Poverty Index (HPI) shows a similar trend. The HPI is higher in all four districts of West Timor than the national average, indicating the high level of poverty on the island. The one bright spot in West Timor is Kota Kupang, which has relatively high levels of education, health, and purchasing power, as well as low rates of poverty.[9] Tables 1 and 2 below summarize the situation.

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[6] Suharyo et al.

[7] Kupang 344,008, TTS 409,969, TTU 221,616, Belu 358,076, and Kota Kupang 271,405. Source: BPS Nusa Tenggara Timur. 2005. *Population of Nusa Tenggara Timur by Regency/Municipality 1971, 1980, 1990, 2000, and 2005*. ntt.bps.go.id/pop/po01.htm

[8] Figure 1.

[9] Suharyo et al.

Table 1: Human Development Conditions in NTT and West Timor, 2002

	Indonesia	NTT Province	Kab. Kupang	Kab. TTS	Kab. TTU	Kab. Belu	Kota Kupang
Human Development Index (HDI)	65.8	60.3	56.9	57.7	59.5	58.3	70.9
Life Expectancy	66.2	63.8	64.2	65.7	65.4	63.7	69.8
Literacy Rate	89.5	84.1	80.7	79.1	79.5	79.3	97.5
Mean Years of	7.1	6.0	5.4	5.3	5.6	5.8	10.1
Adjusted Real Expenditure per	578.8	563.1	531.6	536.1	558.2	552.9	578.8
Human Poverty Index	22.7	28.9	27.5	29.5	24.6	27.3	14.4
People Not Expected to survive	15.0	19.2	18.4	15.9	16.4	19.3	9.7
Adult Illiteracy Rate	10.5	15.9	19.3	20.9	20.5	20.7	2.5
People without Access to	44.8	46.8	36.9	49.9	33.1	42.4	19.8
People without Access	23.1	32.8	30.8	19.3	16.7	18.0	6.4
Malnourished Children under	25.8	38.8	41.8	50.5	45.1		33.9

Kab = Kabupaten, NTT = Nusa Tenggara Timur

Source: BPS, BAPPENAS, and UNDP via Suharyo et al.

Table 2: Number and Proportion of Poor People in NTT and West Timor, 2004

District/Province	Poor People (Thousand)	% Poor People
Kab. Kupang	109.0	32.68
Kab. TTS	149.5	37.38
Kab. TTU	62.7	30.65
Kab. Belu	70.4	20.51
Kota Kupang	27.8	10.65
NTT Province	1,152.1	27.86
National		16.67
District/Province	Poor People (Thousand)	% Poor People
Kab. Kupang	109.0	32.68
Kab. TTS	149.5	37.38
Kab. TTU	62.7	30.65
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National		16.67

Kab = Kabupaten, NTT = Nusa Tenggara Timur
Source: Suharyo et al.

Economic Conditions

After the 1997/1998 financial crisis, the NTT economy grew steadily. In 2001 and 2002, growth of the gross regional domestic product (GRDP) of NTT was higher than Indonesia's GDP growth, although since 2005, growth has slowed. Unsurprisingly, Kota Kupang experienced the highest growth followed by Kupang, as both areas are the largest business and trade centres in the region. Kota Kupang's high levels of growth are largely attributed to the retail trade sector and have been supported by the growth in banking facilities. There are currently banking facilities in every district in West Timor, though most are concentrated in Kota Kupang.[10]

[10] Suharyo et al.

The economy of the province is still dominated by agriculture, representing nearly 42% of West Timor's GRDP in 2004. Other large parts of the West Timor economy include trade, hotel and restaurant, transportation and communication, and other services. The detailed sectoral composition and GRDP growth rates are given in Table 3.

Poverty

Poverty is extensive in NTT and is considered to be acute in many areas, as the average income level in the region is less than one-third of the Indonesian national average. In 2004, the average income level in NTT was estimated to be Rp2.9 million per year compared to Rp9.5 million at the national level. The poverty line in Indonesia is classified as Rp102,635 per capita per month, which places approximately 1.2 million people or 27.9% of the population in poverty in 2004. Almost 90% of the poor live in rural areas, and 82% of them work in the agriculture sector. Additionally, the proportion of poor whose expenditure is far below the poverty line is estimated to be larger than the national average as well, further emphasizing the significant amount of poverty in the region.[11]

Revenue and Financing

Like most provinces in Indonesia, NTT has four main sources of revenue:

- *Dana Alokasi Unum* (DAU) or general allocation is a discretionary block grant transferred from the central government to all subnational governments to achieve fiscal equality. DAU is allocated using a national formula, which calculates entitlements based on numerous factors such as population, regional area, GRDP per capita, HDI, civil servant salary budget and spending, and level of own-source revenue and shared revenue;
- *Dana Alokasi Kusus* (DAK) or special allocation is an earmarked cash grant transferred from the central government to subnational governments to finance specific needs of the regions;

[11] Hadiz.

Table 3: Sectoral Composition and GRDP Growth in NTT and West Timor

Sectoral Composition of GRDP (%)						
Industrial origin	**Prov. NTT (2003)**	**Kab. Kupang (2004)**	**Kab. TTS (2002)**	**Kab. TTU (2003)**	**Kab. Belu (2003)**	**Kota Kupang (2002)**
Agriculture,	34.8	42.7	48.5	40.9	36.2	3.9
Mining and	1.1	0.6	0.8	1.5	0.9	1.6
Manufacturing	2.3	1.7	1.1	1.9	1.6	4.8
Electricity, Gas	1.0	0.5	0.4	0.9	0.6	2.3
Construction	5.8	9.4	4.9	6.3	4.3	5.7
Trade, Hotel and	14.3	13.6	7.3	6.4	14.8	24.8
Transport and	10.9	7.5	5.0	10.7	12.8	21.3
Financial and	3.9	1.5	2.4	4.0	5.5	5.7
Other Services	26.0	22.4	29.6	27.4	23.4	30.0
Average Growth Rate (%)						
Industrial origin	**Prov. NTT (1999-2003)**	**Kab. Kupang (2000–2004)**	**Kab. TTS (1999–2002)**	**Kab. TTU (1999–2003)**	**Kab. Belu (1999–2003)**	**Kota Kupang (1999–2002)**
Agriculture,	2.8	5.0	1.4	(1.0)	1.7	3.3
Mining and	1.8	8.2	0.9	7.8	(0.6)	0.9
Manufacturing	4.2	4.1	3.9	4.0	3.3	2.5
Electricity, Gas and	3.6	8.5	1.9	18.4	0.3	2.0
Construction	1.2	1.5	4.6	6.1	1.8	4.6
Trade, Hotel and	5.4	3.2	4.2	6.3	3.1	4.0
Transport and	5.6	5.2	3.7	5.6	6.0	10.2
Financial and	2.7	2.7	2.3	9.3	8.6	2.7
Other Services	11.1	6.5	16.2	15.5	14.3	10.1
Total	5.3	5.2	5.6	4.9	5.2	6.7

GRDP = gross regional domestic product, Kab = Kabupaten, NTT = Nusa Tenggara Timur.
Source: Suharyo et al.

- *Shared Revenues* (from tax and natural resources) are revenues generated from taxes and natural resources that are shared between the central government and the subnational governments based on a ratio found in legislation;
- *Pendapatan Asli Dearah* (PAD) or own-source revenue is revenue collected by subnational governments and may include local taxes, fees and investment income.[12]

[12] Zaini, Bastian, Diane Zhange, Adrianus Hendrawan, Muhammad Sanjaya, JohnWeohau, and Sukmawah Yuningsih. 2008. *East Nusa Tenggara Public Expenditure Analysis: Spending for People's Welfare*. Jakarta: The World Bank and BaKTI.

Out of the 32 provinces in Indonesia, NTT's per capita revenue of Rp1.3 million is the 10th lowest. However, from 2003 to 2007, total subnational revenue in NTT increased by 32% (from Rp4.6 billion to Rp6.2 billion), due largely to increases in DAU, which, together with DAK, accounted for 86% of NTT's revenues in 2007. NTT's high dependency on grants from the central government signal that is has few sources of revenue based on the local economy (such as natural resources) or generated by the local government (such as local taxes). NTT's own-source revenue or PAD has increased by 29% from 2003 to 2007, but its contribution to total revenue has remained steady at 7%. NTT's levels of PAD are lower than the Indonesian subnational average of 20%.[13]

Looking specifically at West Timor, the contributions of PAD revenues are far below the provincial rate. In TTU and Belu, they contribute less than 5%. Additionally, the PAD revenues of Kupang and TTU from 2004 to 2005 decreased both in absolute value and percentage terms. Since West-Timor's own-source revenue is so low, even more revenues must come from the central government. As of 2005, the TTU and Belu provinces had 90% of total revenues from DAU sources.

Expenditures

From 2003 to 2007, NTT's expenditures increased by 30%, in line with the corresponding increase in revenues from the central government. The largest budget allocation in NTT is government administration (31% in 2007) followed by education (25%). Other significant sectors include infrastructure (15%) and health (9%). Since 2003, government administration and education expenditures have fallen slightly while infrastructure and health expenditures have increased.[14]

Infrastructure

NTT's mountainous and island topography makes both communications and transportation difficult. Existing sea transport infrastructure has fulfilled various community needs. There are 22 seaports equipped with piers, and 12 traditional ports where various sea transport vessels dock regularly. The largest port is Tenau port in Kota Kupang, and is of export standard. However the Atapupu port in Belu received the vast majority of imports in 2005 with 3,049,382 tons of unloaded cargo versus just 274,179 tons at Tenau[15]. There are 13

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[13] Zaini, Bastian, Diane Zhange, Adrianus Hendrawan, Muhammad Sanjaya, John Weohau, and Sukmawah Yuningsih. 2008. *East Nusa Tenggara Public Expenditure Analysis: Spending for People's Welfare.* Jakarta: The World Bank and BaKTI.

[14] Zaini, Bastian, Diane Zhange, Adrianus Hendrawan, Muhammad Sanjaya, John Weohau, and Sukmawah Yuningsih. 2008. *East Nusa Tenggara Public Expenditure Analysis: Spending for People's Welfare*. Jakarta: The World Bank and BaKTI.

[15] BPS Nusa Tenggara Timur. 2005. *Cargo Loaded/Unloaded and Cattle by Port, 2005*. ntt.bps.go.id/tran/st02.htm

domestic airports in NTT, though some are rarely used. Roads are difficult to build and maintain in West Timor because of its mountainous terrain. The main road extends for 2,900 kilometers (km), although some parts are badly damaged, creating an obstacle for the distribution of major agricultural products.[16] In total, there are approximately 5,800 km of improved road throughout West Timor.[17] Many villages are still difficult to reach and villagers often have to walk long distances just to reach the market.[18]

The telecommunications industry is at a very early stage with the vast majority of private fixed-line subscribers residing in Kota Kupang. In 2005, there were 34,000 such subscribers in West Timor, 26,000 of which were from Kota Kupang. Sanitation-wise, NTT fares much better. Approximately 76% of NTT households have access to some form of sanitation facility. Although still lower than the national average (by 5 percentage points), it is well ahead of neighbouring provinces. Additionally, more than 60% of NTT's households have access to private sanitation, higher than the national average. Access to safe water however is very low, especially compared to the national average. In 2006, more than 39% of households did not have access to safe water, a rate that is almost 20 percentage points higher than the national average. The low rainfall in the region certainly contributes to this problem, and it is common for many residents to travel long distances to retrieve water for daily use. Additionally it is believed that NTT's high incidence of diarrhea may be caused by lack of safe water facilities.[19]

Another infrastructure problem in NTT is access to public electricity. As of 2006, only 36% of households had access to public electricity, which is significantly below the national average and neighboring regions.[20]

Table 4: Cargo Loaded and/or Unloaded and Cattle by Port, 2005

Port	Cargo (Ton)		Cattle (Head)	
	Unloaded	Loaded	Unloaded	Loaded
Tenau	274,179	172,961	41,148	57,261
Atapupu	3,049,382	21,353	0	15,935
Wini	615	50	0	939

Source: BPS.

Education

Improvements in education can be seen through the HDI from increases in the proportion of adults who can read and write, and in the mean years of schooling. However, even though

[16] Suharyo et al.
[17] BPS Nusa Tenggara Timur. 2004. Length of Road by Regency/Municipality and Status 2004 (km). ntt.bps.go.id/tran/lt01.htm
[18] Suharyo et al.
[19] Zaini.
[20] Zaini.

these educational levels have increased, they are still below the national average. Furthermore when looking at disaggregated indicators of education, problems of gender inequality and access to education arise. Indicators show that NTT has the second-highest proportion of population who has not finished any form of formal education. More than 74% of the population over 10 years old did not finish their education, and of those that did, most only completed elementary school. Although the enrollment rate for primary schooling in NTT is similar to the national level, at middle and high school levels, the gaps become clear. The enrollment rate for middle schooling in NTT is 47% compared to 66% nationally, and at high school levels are 19% in NTT compared to 27% nationally.[21]

Health

NTT also faces some significant health and nutrition problems. Communicable diseases, especially malaria and tuberculosis (TB), are still big problems. The province faces high maternal and infant mortality rates, often exacerbated by malaria and TB.[22] Hunger and malnutrition are also common in NTT, especially during the dry season. In 2006, one in three people experienced a health problem in the previous month, which is higher than the national rate of one in four. From 2003 to 2007, total regional health spending increased by 40%, resulting in improved access to health services. In 2006, 14% of sick people utilized a public health facility, which is significantly higher than the national rate of 5%. Additionally, 43% of NTT's households have received some form of free public health service compared to 15% at the national level.[23]

Agriculture

NTT's economy relies heavily on agriculture, representing more than 40% of the GRDP and employing about 75% of the workforce. Looking specifically at West Timor, Kupang is the main producer of cattle, accounting for almost 25% of the entire region's production. Other important agricultural products in Kupang include peanut, mung bean, rice, soya bean, and kapok. Kupang also has a fishery industry that produces fish, seaweed, squid, and sea cucumber. TTS produces cassava, sweet potato, soybean, mung bean, and betel nut. The major products in Belu are mung bean, sorghum, tobacco, betel nut, cacao, kapok, coffee, and cashew nut. TTU's largest agricultural products are peanut and kapok.[24]

Most communities in West Timor manage their agricultural businesses by cultivating several commodities simultaneously. For example, it is common to plant food crops, cultivate plantation crops, gather forest products, raise livestock, and on the coastal communities, cultivate seaweed or become fisherman all concurrently. However, the plots that households work on are often very small with less than half and hectare on average. In animal husbandry, families generally only raise one to three large livestock, most often cattle. In livestock fattening, people are normally only hired to look after the animals, receiving a

[21] Zaini
[22] Hadiz
[23] Zaini and Figure 2
[24] Suharyo et al.

single payment from owners. With forest products, the community generally relies on gathering rather than planting. Agro-industries such as palm sugar and coconut oil are mostly dependent on family workers and have very limited capital. Palm sugar and coconut oil can be found all over West Timor, and some villages have become production centres for these industries, particularly in TTS.[25]

There are significant formal and informal agricultural product trade regulations in West Timor. In general, the charges on agro-food and other products sold for interisland trade are greater than the charges on food crops and agro-industrial products. Most regulated are forestry products followed by large livestock, fisheries, plantation, food crops, and agro-industrial products.[26] Additionally, agricultural traders can expect informal charges in a variety of ways. For example, at the border crossing between Belu and Timor-Leste, traders had to pay as much as Rp1 million just to access a border market. Other examples include informal charges at roadside checkpoints. Between Atapupu in Belu and Tenau in Kota Kupang, a trader can be subjected to 20 checkpoints adding unknown costs plus time delays. For many traders this acts as a strong disincentive and they prefer to sell products in Atapupu even though prices are higher in Tenau.[27]

The vast majority of traded agricultural products are exported to other regions, most notably Surabaya and to a lesser extent to South Sulawesi and Bali. Products exported include cattle, tamarind, candlenut, cashew nut and seaweed. Almost all of the products exported to these other islands are not traded in local markets, as interisland traders usually go to producers directly. There are only a few interisland traders who enjoy monopolistic conditions through the relatively isolated, limited quantities and established business connections in Surabaya.

Timor-Leste

Overview

The Democratic Republic of Timor-Leste was officially recognized in May 2002, after its separation from Indonesia in 1999. In the process, an estimated 70% of private homes and public buildings were destroyed, leaving the country's infrastructure devastated.[28] Although great strides in nation building have been achieved, the country remains plagued by violence. Riots are common and recent assassination attempts on both the president and prime minister underscore the volatility of the country. Timor-Leste is among the poorest countries in Asia, beset by numerous health as well as social problems, but significant growth potential remains. However, potential for growth in Timor-Leste is good. The

[25] Suharyo et al.
[26] Table 5
[27] Suharyo et al.
[28] World Bank. 2005. *Country Assistance Strategy for Timor-Leste FY 06-08: Creating the Conditions for Sustainable Growth and Poverty Reduction*. Washington, DC.

international community is providing determined security and development support and the Government currently enjoys substantial revenues from offshore oil and gas exploitation.

Country Administration

Located on the eastern part of the Island of Timor, Timor-Leste includes an enclave located in West Timor known as Oecussi, and two islands, Atauro and Jaco. The country's combined land area is about 14,610 square kilometers, divided into 13 districts, 67 *postos* (subdistricts), 498 *sucos* (villages) and 2,336 *aldeias* (hamlets), with Dili the capital.[29] A process of administrative decentralization is currently under way, as the country experiments with giving districts more autonomy.

Natural Conditions

Timor-Leste's natural conditions are like those of West-Timor, a mountainous region that is hot and humid. As a very poor country, most inhabitants presently rely heavily on the country's natural capital, including subsistence cultivation and forest exploitation. With 73.5% of the population living in rural areas, 95% of whom live by farming, this natural capital is extremely important. This dependence combines with high population growth rates to exert significant pressure on the country's natural resources. For example, it is estimated that Timor-Leste is losing 1.2 % of its forest cover annually as a result of slash and burn agriculture and fuel wood extraction. This is one of the highest deforestation rates in the region, and it contributes to landslides and flash flooding that further compromise the country's weak infrastructure.[30]

Table 5: Timor-Leste Economic Indicators

Output and Prices	2002	2003	2004	2005	2006e/
GDP (non-oil) real growth rate, %	-6.7	-6.2	0.3	2.3	-1.6
Inflation, % change	9.5	4.2	1.8	0.9	5.7
GNI, current USD million	352	349	507	692	847
Non-oil GDP	343	336	339	350	356
Oil and gas income	9	13	168	342	492
Population, thousands	892	922	952	983	1015
Non-oil GDP per capita	385	364	356	356	351
GNI per capita, $	395	378	532	704	835

GDP = gross domestic product, GNI = gross national income.
Source: Economic and Social Development Brief.

[29] WHO. 2004. *Country Cooperation Strategy 2004-2008: Democratic Republic of Timor-Leste*.Geneva.
[30] World Bank and ADB. 2007. *Economic and Social Development Brief*. *Brief*. Washington, DC.

Table 6: General Surface of the Core Road Network in 2005

Road Network	National		District		Total	
	(km)	%	(km)	%	(km)	%
A. Paved						
Good or fair	791	61	211	42	1022	56
Poor or very poor	506	39	291	58	797	44
Subtotal (A)	*1,297*	*100*	*502*	*100*	*1,799*	*100*
B. Unsealed						
Good or fair	0	0	43	14	43	10
Poor or very poor	108	100	267	86	375	90
Subtotal (B)	*108*	*100*	*310*	*100*	*418*	*100*
Total	1,405		812		2,217	

km = kilometer.

Source: Minc and Gajewski.

Human Resources

According to the 2004 census, Timor-Leste population was 923,198 and projected to exceed a million by 2006.[31] The country is very young, with 49% under 15 and 17% of the population under 5 years of age. Population growth is estimated at 4% a year and 4.8% a year in rural areas.[32] Underlying the rapid population growth rate is a total fertility rate of 7.8 children per woman, one of the highest in the world.[33] Human capital is seriously undermined by limited access to education and skilled employment opportunities. In terms of Human Development Indicators, Timor-Leste ranks 158 out of 177, the lowest in Asia.[34] The Human Poverty Index (HPI) is comparable, with Timor-Leste ranking of 95 out of 108.[35]

Perhaps the most serious human challenge facing the country now is the large population of displaced citizens. More than 2 years after the country began a civil conflict in April 2006, about 10% of the population (~100,000) remained displaced. A third of these people are internally displaced and live in refugee camps in the capital city. The remaining displaced people live outside of camps, with family and friends, exerting further stress on an already poor population.[36] The lack of residential infrastructure compounds this problem and represents a significant loss of national assets and/or saving.

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[31] World Bank and ADB. 2007. *Economic and Social Development Brief*. *Brief*. Washington, DC.
[32] World Bank and ADB. 2007. *Economic and Social Development Brief*. *Brief*. Washington, DC., and *WHO Country Cooperation Strategy 2004–2008: Democratic Republic of Timor-Leste*.
[33] Manring.
[34] Conroy, John. 2005. *Timor-Leste: Access to Finance for Investment and Working Capital*. Washington, DC: The World Bank.
[35] Manring.
[36] International Crisis Group. 2008.*Timor-Leste's Displacement Crisis*. Dili/Brussels.

Economic Conditions

Economic performance for Timor-Leste has been extremely volatile because of the country's history of conflict. In 1999, post-referendum violence caused real non-oil GDP to fall by more than 30%. Over the next 2 years, growth improved thanks to enormous donor inflows and real non-oil GDP increased by more than 15% in both 2000 and 2001. However, after independence in 2002, real non-oil GDP fell again by 6.7% and 6.2% in 2002 and 2003 with sharp reduction of donor inflows. The period 2003–2006 was punctuated by intermittent conflict and stability, with a heavy toll on growth. Yet more conflicts in 2006, combined with severe drought, brought down real non-oil GDP to 2.9% for the year.[37] When violence subsided, the economy picked up sharply in 2007 and 2008 (IMF estimated 16.2% and 4.7% respectively).[38] Although this recovery appears to be continuing, overall, the non-oil economy contracted more than 5% in real terms from 2002 to 2006 (Table 5).[39]

From 2004, when Timor-Leste began pumping natural gas from deposits in the Timor Sea, revenues have averaged approximately $100 million per month. The funds are deposited into a Petroleum Fund whose assets in just 1 year reached 240% of non-oil GDP. This represents an important resource for national development, but non-oil GDP will remain the primary determinant of livelihood for most of the population.[40] The petroleum sector operates as an enclave, with only the most minimal employment and income linkages. Still, oil royalty revenue made up an estimated 58% of Timor-Leste's gross national income (GNI) and is expected to increase to two-thirds by 2011.

Although there is no structural linkage between the two economies, harnessing these revenues will be essential to help transform the traditional economy.[41] Looking at non-oil activity, Timor-Leste is somewhat similar to West Timor as both are very low-income economies with subsistence-bound rural majorities. Agriculture represented 32.2% of non-oil GDP in 2006, but its significance is much greater because most agricultural output is still for home consumption and not marketed. Market agriculture is growing, however, and so will farm incomes. Agriculture's GDP share has increased by almost 5 percentage points since 2002. Agriculture's relative expansion came at the expense of both industry falling from 16% to 13% of GDP since 2002, and services, which fell from 57% to 55%.[42]

Poverty

Poverty is ubiquitous in Timor-Leste, with approximately 40% of the population living below an absolute national poverty line of $0.55 a day.[43] A 2001 poverty assessment by the World Bank also highlights considerable inequality, mainly across the rural-urban divide, and

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[37] Manring and *Economic and Social Development Brief*.
[38] *The Economist Intelligence Unit*. 2008.*Country Report: Timor-Leste*.London.
[39] Manring.
[40] Manring.
[41] Manring.
[42] Manring and Figure 3.
[43] UNDP. 2008. *United Nations Development Assistance Framework 2009-2013*: *Democratic Republic of Timor-Leste*. New York.

regionally. For example, 14% of the population in the urban areas (Dili and Baucau) live below the poverty line, compared to 40% in other areas and 47% in rural areas. Fully 86% of the rural population report experiencing food shortages for 4 months per year on average, with more adverse conditions in the central and western regions than in the less mountainous east.[44] These conditions appear to persist in 2004 data, and the 2006 UN Human Development Report found "the poorest two-fifths of the population account for less than 18% of total expenditure, while the riches two-fifths account for 66%."[45,46]

Infrastructure services are an essential catalyst for escaping poverty, but for the country's rural majority, access to these services is negligible. In urban areas, 70% of people have access to safe drinking water, sanitation, and electrification. Only 45% of rural inhabitants have access to drinking water, 33% to sanitation, and merely 9% to electrification.

Revenue and Financing

Timor-Leste is in a special situation because of the large revenues it receives from petroleum exploitation. To avoid problems such as corruption and wasteful spending, the government has implemented several mechanisms, most notably creation of a Petroleum Fund. All oil revenues are deposited into the Fund by the Banking and Payments Authority, which then invests all the proceeds in global financial markets to ensure intergenerational equity and fiscal stability. Only interest income on these investments is available to the central government, and an annuity of about $400 million appears to be sustainable under this arrangement.[47] At the end of March 2008, total savings amounted to nearly $2.6 billion.[48] Revenues are expected to expand even further when a new (Greater Sunrise) oil field begins production in 2013, but Timor-Leste is currently in a very healthy fiscal situation with a 2006 budget surplus exceeding 110% of non-oil GDP.

Expenditures

Despite a strict investment plan with oil revenues, the government has been increasing expenditure aggressively, and public spending tripled over 2004 to 2007.[49] More worrisome is the recent large increase in planned expenditures in 2008 and 2009. In August 2008, parliament approved a midyear budget more than doubling planned expenditures. The 2009 budget will be Timor-Leste's largest ever ($681 million), of which 86% will come from the Petroleum Fund and significantly exceed the "Estimated Sustainable Income" (ESI) of $408 million.

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[44] World Bank. 2005. *Country Assistance Strategy for Timor-Leste FY 06-08*: *Creating the Conditions for Sustainable Growth and Poverty Reduction*. Washington, DC.
[45] Manring.
[46] Watkins, Kevin. 2006. *Human Development Report 2006*. New York: UNDP.
[47] *Economic and Social Development Brief*.
[48] Creane and Rasmussen.
[49] Creane, Susan, and Tobias Rasmussen. 2008. *Democratic Republic of Timor-Leste: Selected Issues and Statistical Appendix*. Washington, DC: International Monetary Fund.

Compounding this uncertainty is the formula used by the Ministry of Finance to calculate the ESI, which may overestimate in light of uncertainties in the world oil market and financial system. For example, the official calculation assumes that oil will sell for $60 a barrel, but if oil prices were to average $40/barrel, ESI will be $170 million less than the current estimates. This amount is equal to the total budgets of the ministries of health, education, and social solidarity. Despite these uncertainties, the government currently plans to spend more than ESI in current and future budgets.[50] Thus fiduciary management of the oil funds may be wavering.

Only limited information could be found on Timor-Leste's historical public expenditures. Public health expenditures have increased from 6.2% of non-oil GDP in 2000 to 8.8 % of non-oil GDP, while education spending represented only 2% of non-oil GDP in 2005/06.[51] In the current (2009) budget, the largest increases are for salaries and capital infrastructure, and both have raised questions. Expenditures for government salaries and services are proposed to increase by 94% over the 2008 budget and 138% over the 2007 budget. Once implemented, salary increases are difficult to roll back, and the larger percentage of these increases is slated to go towards those who make decisions and have power (such as in parliament or the prime minister's office).

While large increases in capital infrastructure can be productive, the vast majority of the current infrastructure budget is slated for a 3-year, $381 million central electric generation system and national transmission line. Although electrification is essential to Timor-Leste's development, this project has a number of questionable features. Firstly, it is based on heavy oil technology, which is very dirty and hard to mange. Such power plants are much bigger than any project yet imagined in Timor-Leste, and will create huge financial obligations with a 30–50 year lifecycle.[52] Other 2009 expenditure categories include goods and services (36.4%), capital and development (30.2%), transfers (14.1%), salaries (13.7%), and minor capital (5.6%).[53]

Transport

Transport development in Timor-Leste presents a tremendous opportunity for social and economic development. A large percentage of roads in the country are in poor condition, and sections fail regularly during the rainy season, separating rural populations from towns and markets. The core road network comprises 1,405 km in national roads and 812 km in 2,217 km of district roads. This network can be further broken down between paved (asphalt concrete and surface treatment) and unsealed roads (gravel and earth roads). Most of the paved roads are in good or fair condition (56%). However only 11% of the unsealed roads are considered in good or fair condition. Furthermore, the vast majority of roads are not part of the core network, and includes over 3,000 km of rural roads that are in poor condition.[54]

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[50] Scheiner, Charles. 2009. *General State Budget 2009: Who Does it Benefit?* Dili: La'o Hamutuk.
[51] Manring.
[52] Scheiner.
[53] La'o Hamutuk. 2009 *RDTL State Budget for 2009*. www.laohamutuk.org/econ/OGE09/08OJE2009.htm
[54] Minc, Marcelo, and Gregory Gajewski . 2007. *Road Sector Investment Planning in the Pacific: An Example of Good Practices in Timor-Leste*. Manila: ADB.

The physical environment largely determines the road network. There is currently a main arterial road that runs along the northern coast and serves economic activity in Dili and trade connections by sea and to the west. Connections to the southern coastal zone must cross both a mountainous and midland area, home to steep lands of unstable rock and poor soils that are highly susceptible to erosion and landslides. Additionally the road network in the southern region is very vulnerable to flooding and erosion, and access is frequently cut at high-risk locations during the wet season. Therefore the focus on future development on roads should be focused in these two regions, as a high quality road networked is needed to support the economy in the south and midlands.

The implementation of this road network can be crucial with connecting the majority of agricultural production with Dili and export ports in the north and the market of NTT (and more importantly linkages to the greater Indonesian market) along the eastern southern coast.[55] The estimated total of all roads is 6,040 km. Additionally there are approximately 317 bridges with an average length of 34 meters; half of the bridges are less than 10 meters long.[56] A high-quality 10-year road sector investment plan is in place that underpins the Transport Sector Investment Program. However, this program is largely focused on the core road network, without complementary support for rural feeder roads to improve market access for the rural majority.

The only international port in Timor-Leste is located near the center of the capital, Dili. It has a wharf length of 300 meters and can concurrently accommodate two large vessels drafting up to 7 meters. Roll-on-off facilities are also available for front-loading vessels. In 2001, a little more than 300,000 tons of freight passed through the Dili Port, and imports accounted for about 85% of this movement. By 2003, 22,000 containers moved through the port comprising 310,000 tons, but 95% of incoming containers were reexported empty. Direct shipping services operate to Australia (Darwin), Indonesia (Surabaya), Malaysia (Kota Kinabalu), and Singapore.

Other small wharfs or jetties are located at Hera, Tibar, Com, Caravela, the enclave of Oecussi, and the island of Atauro. Development of a new international port has been considered, but the costs of development and suitable road links would be substantial, and are unlikely to be justified. Without complementary policies to promote upstream export supply chain development, this expansion would serve primarily facilitate imports since containers for export are already seriously underutilized. The most feasible alternative port would be at Tibar, a few km to the west of Dili. In addition to freight, the Dili port serves as a ferry terminal offering a 300-person ferry service to Oecussi (twice weekly) and Atauro (once weekly).[57]

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[55] Paterson, William, David Bray, and Koji Tsunokawa. 2005. *Timor-Leste Transport Sector: Outline of Priorities and Proposed Sector Investment Program.* Washington, DC: The World Bank.

[56] Paterson, William, David Bray, and Koji Tsunokawa. 2005. *Timor-Leste Transport Sector: Outline of Priorities and Proposed Sector Investment Program.* Washington, DC: The World Bank.

[57] Paterson, William, David Bray, and Koji Tsunokawa. 2005. *Timor-Leste Transport Sector: Outline of Priorities and Proposed Sector Investment Program.* Washington, DC: The World Bank.

Other possible port developments are increasing flows through south coast ports served by landing barges. Studies conducted by ADB show that there is sufficient potential cargo to support a weekly coastal landing barge service. However, the barging is not cost competitive at distances less than 800 km. There are also other increased costs from cargo transfer at the wharf or landing, risks of damage, and longer transit time. Overall, a coastal barge is uncompetitive, especially when compared to reasonable road access alternatives (such as access to the port in Dili or direct access to NTT).[58]

The major airport in West-Timor is the Presidente Nicolau Lobato International Airport in Dili, whose 1,850-meter runway can accommodate B727 and similar midsized commercial aircraft. No other airports have regular public passenger services. Baucau airport (120 km from Dili), was previously used by Indonesian military and can accommodate B747 and similar aircraft with reduced take-off weight.[59]

Telecommunications

Telecommunications access in Timor-Leste is extremely limited and expensive. Only 5% of the population, mostly from Dili, have access to basic telephone or data service. Fixed lines are especially limited, with only 2,300 subscribers. Mobile subscribers are more numerous at 63,000, yet this is still a vast minority of the population. Internet access is also costly, and there were only 650 registered subscribers by 2005. Improving access to affordable and reliable telecommunications services should be high a development priority. However, this issue is complicated by restrictive domestic market structure that severely limits autonomous investment. The sole telecommunications operator, Timor Telecom, holds a 15-year monopoly in the form of a build-operate-transfer concession. Current laws and regulations confer monopoly power that probably stifles competition and keeps prices high, resulting in such limited telecommunications access. It is estimated that competition in the market would increase the amount of mobile subscribers by at least 200,000 within 2–3 years.[60]

Water Supply and Sanitation

Assessing water supply and sanitation (WSS) in Timor-Leste is complicated by fragmentary and/or inconsistent data. Nationwide, approximately 13% of families have home water connections and community taps serves 16%. Urban water supply estimates vary greatly depending on the definition. For example if access to 24-hour continuous piped safe water is the benchmark, then only about 25% of Dili households meet this requirement. Rural sanitation coverage estimates for 2004 was 19% while estimates for the total population were 33% in 2002.[61] Moreover, there is a widespread lack of awareness about health and sanitation issues among rural populations. It is estimated that large numbers of children 5 years old and younger die because of lack of potable water and poor sanitation practices. Harsh mountainous topography, poor road infrastructure, and common incidences of

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[58] ADB. 2002. *Transport Sector Master Plan for East Timor*. Manila.
[59] ADB. 2002. *Transport Sector Master Plan for East Timor*. Manila.
[60] *Economic and Social Development Brief*. ADB. 2005
[61] *Country Strategy and Program Update 2006–2008: Democratic Republic of Timor-Leste*. Manila.

drought further compound WSS problems. Currently, government effort to build up rural water supplies is limited. The majority of rehabilitation and improvement of WSS facilities and services has been funded by external donors since 2000.[62]

Electricity

Much like West Timor, Timor-Leste has a small and fragmented electric power system, suggesting important potential for regional cooperation. In 2007, approximately 43,500 households in Timor-Leste had access to electricity, representing an overall electrification rate of 22%. The main power station is based in Dili and serves 26,500 customers, giving the capital and its surrounding area an electrification rate of 85%. Rural households however have extremely limited access to electricity, with only 5% coverage. One of the main reasons of such limited access is that Timor-Leste's power generation is dependent on imported diesel fuel, resulting in one of the most costly electrical supply systems in the world. The current user price only covers a fraction of the total cost, requiring significant subsidy support. Diversification of power generation as well as improved revenue collection is needed to reduce the high program costs.[63]

Education

With such a large youth population, education can play an extremely important role for the future of Timor-Leste. There has been some progress in this context since independence, but improvements in scope and quality have been significantly offset by the need to accommodate a rapidly rising school age population. The most recent data shows that 77% of youth are literate, reflecting Timor-Leste's high primary enrolment rates (74.1%) in 2004/2005. However, Timor-Leste also has high dropout rates as children get older, indicative of the low-income status of the country. Of children in primary school, only 47% were estimated to have reached grade 6 in 2001. Secondary school enrolment rates were merely 26% in 2003, and of these students only 34% completed junior secondary and 27% completed senior secondary school.[64] These statistics do little to measure the quality of education, which is difficult to quantify. One study in 2006 found that 80% of grade 3 students failed to meet minimum learning standards in mathematics, and there are numerous challenges in language studies. The national language is Portuguese, yet the vast majority of people speak Bahasa Indonesian or Tetum. Less than 50% of school children speak Tetum as their native tongue and even fewer speak Portuguese, yet these are the two languages of instruction in classrooms. This presents many children with difficult linguistic and conceptual problems in the classroom.[65]

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[62] *Economic and Social Development Brief*.
[63] *Economic and Social Development Brief*.
[64] Manring.
[65] *Economic and Social Development Brief*.

Health

Much like West Timor, Timor-Leste faces a broad range of health problems. Communicable diseases such as diarrhea, TB, and malaria are common. For example, in 1999, over 130,000 cases of malaria were reported and it is estimated that over 2.5% of the adult population has TB.[66] Rates of child and maternal mortality, along with child malnutrition are also quite high. In 2003, the child mortality rate was 83 per 1,000, and nearly two-thirds of children under 5 were underweight. With some of the highest fertility rates in the world matched by a low rate of attendance by skilled health personnel during childbirth, maternal mortality rates are high estimated at 660 per 100,000 births.[67]

During the heavy fighting of 1999, more than 80% of the country's health facilities were either damaged or destroyed. At the same time, Timor-Leste saw a flight of their doctors and other health professionals, leaving the health system near ruin.[68] Since independence, reconstruction of health facilities has been conducted through a trust fund supported by donors, but progress has been limited due to sporadic violence, insecurity, and a scarcity of skilled personnel. Only recently has the number of health workers begun to approach norms for the region. However, Timor-Leste still needs more effectively distributed, trained, and supervised health personnel.[69]

Agriculture

Agriculture is by far the most important component of Timorese livelihoods, with 80% of the population is dependent on it. Furthermore, a third of households rely on subsistence agriculture exclusively and 98% of people use firewood as their primary source of energy. Timor-Leste's major farm commodities are food crops (maize, rice, peanut, cassava, and sweet potato), tree crops (candlenut, coconut, coffee, cinnamon, and cloves) and livestock. Coffee is the country's primary non-oil export and approximately 28% of the households earn some form of income from coffee.[70] In 2005, coffee exports equalled $7.6 million, with 49.2% going to the United States followed by Germany (20.7%) and Portugal (12%).[71] Coastal fisheries appear to have significant economic potential, but they are also vulnerable to overexploitation. Offshore resources include tuna, deep-sea snappers, and deep-sea shrimp, but the sustainable quantities of these resources remain very uncertain.[72]

Timor-Leste's agricultural growth rate is well below the nation's rate of population growth, and along with frequent severe adverse weather events and social and political unrest, Timor-Leste regularly suffers serious deficits of staple cereals. Food insecurity is common, with only 36% of the population estimated to be food secure and 43% insecure or highly

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[66] *WHO Country Cooperation Strategy 2004-2008: Democratic Republic of Timor-Leste*.
[67] *Economic and Social Development Brief*.
[68] *WHO Country Cooperation Strategy 2004-2008: Democratic Republic of Timor-Leste*.
[69] *Economic and Social Development Brief*.
[70] *Economic and Social Development Brief*.
[71] *Country Report: Timor-Leste*.
[72] *Economic and Social Development Brief*.

vulnerable.[73] The most recent Food and Agriculture Organization report on global food security lists Timor-Leste as a country in a food crisis from high food costs.[74] Another statistic shows that in December and January, 70–80% of villages report food shortages. In response to these food shortages, Timor-Leste imports about 55,000 metric tons (MT) of rice and other cereals each year.[75] This helps the country's urban sector, but adversely affects rural populations as it puts downward pressure on prices of local farm output and incomes.

Since so many people are engaged in agriculture, raising farm output and income is a chief development priority. This can be done by raising agricultural productivity, and the potential for this appears high since Timor-Leste field crop yields are among the lowest in the region (1.4 MT/ha for maize and 1.5 MT/ha for paddy rice).[76][77] Productivity can be raised through improved seed varieties, improving water management, and better animal husbandry practices. Other key priorities include development of more effective agricultural markets, policies promoting as investment in value-added and export commodities, and better information on prices and export opportunities.

Because it remains the primary economic activity in both economies, agriculture also represents the greatest potential for increased exports. Facilitating increased quantities will be difficult, however, as the vast majority of farmers are confined to subsistence farming by high market access barriers, inadequate information, and low savings.

Coffee is the most important export related crop, representing three-quarters of total non-petroleum exports in 2006. However, coffee export growth has remained stagnant in the last 5 years, and other export opportunities such as vanilla and groundnuts have developed even less.[78] Despite these shortcomings, most economists still advocate the promotion of coffee production for export, as it is a clear comparative advantage product for Timor-Leste. The raw material (green coffee cherry) is of excellent quality and has the advantage of being organic, yet most of the final product is not of export quality because the coffee sector being very disorganized, with very low yields and poor processing and product quality. When coffee farmers were surveyed about the main problems they faced, 82% complained about a lack of buyers for their product. Other significant problems included lack of transportation equipment (49% said it was a main problem), and 15% listed bad roads (multiple answers were allowed).[79] These answers reveal the essential roles that market information (and thus communications infrastructure) and access (transportation) infrastructure play in facilitating export growth.

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[73] Manring
[74] FAO. 2008. *The State of Food Insecurity in the World: 2008*.Rome.
[75] *Economic and Social Development Brief*.
[76] *Economic and Social Development Brief*.
[77] Postharvest losses up to 25% or more contribute to such low yields. (Manring)
[78] Manring.
[79] World Bank. 2001. *East Timor: Survey of the Coffee Sector*. Washington, DC.

Table 7: International Balance Trade of NTT, 1982–2005

Year	NTT ($ '000) Export	Import	Import Balance
1982	10,294	86	10,208
1983	6,275	1,017	5,258
1984	10,583	2,913	7,67
1985	13,597	1,255	12,342
1986	22,051	591	21,46
1987	14,283	1,584	12,649
1988	10,529	3,073	7,456
1989	7,773	7,436	377
1990	6,103	6,024	79
1991	7,79	1,098	6,692
1992	7,63	2,835	4,795
1993	9,563	20,288	-10,725
1994	24,75	6,857	17,893
1995	16,514	3,42	13,094
1996	24,473	8,009	16,464
1997	13,339	4,121	9,218
1998	9,543	35,603	-26,06
1999	2,423	129,119	-126,696
2000	14,501	14,827	-326
2001	54,631	48	54,583
2002	20,742	16,46	4,282
2003	21,65	5,907	15,743
2004	9,086	607	8,479
2005	17,401	2,059	15,342

NTT = Nusa Tenggara Timur.
Source: BPS.

Imports and Exports

The Timor-Leste export industry is still in its infancy and faces many serious development challenges. Freight shipping, essential to any island economy, is severely underdeveloped, as evidenced by the fact that the only suppliers of freight shipping services are located in Dili and no more than a dozen companies exist in the entire country. Currently, the standard procedure is for producers or traders to carry their goods in passenger vehicles, simply paying an extra fee for their cargo. Larger businesses will use their own vehicles or rented vehicles to transport goods. Regardless, the development of the freight transportation industry will be a necessary condition for significant export industry development.[80]

[80] Minc and Gajewski 2007.

While a port upgrade is being considered, this primarily stimulate more imports until complementary infrastructure can overcome domestic obstacles to realizing more export potential. In a business-as-usual scenario, ADB predicts over 500,000 tons of imports by 2030 compared to slightly under 100,000 tons of export. In 2000, approximately 60% of international cargo arrived in containers with the remainder as break bulk cargo. However, the ratio of containers is expected to rise to 80% by 2030.[81] The large imbalance between imports and exports implies that many containers will continue to be sent out empty unless more determined commitments are made to upstream export facilitation.[82]

As will become clearer in the following empirical section, expanding exports will rely on more determined commitments to develop upstream components of the export supply chain. Most noticeably, Timor-Leste must work on its business regulatory environment. According to the Word Bank/International Finance Corporation's *Doing Business* reports, Timor-Leste ranks the second worst in the world for ease of doing business (174 out of 175 countries surveyed).[83] There are several reasons for Timor-Leste's low ranking, including critical gaps in land law, land and property registration, leasing and collateral, bankruptcy, business licensing, accounting and auditing, and competition policy among others.[84] Most administrative procedures are burdensome and expensive (for example in 2007 it took 51 procedures, 1,800 days, and an average cost of 163% of the claim to simply enforce a contract).[85] The country's combination of hard and soft infrastructure deficiencies imposes very high business costs on actual and potential exporters.

Supporting business services, such as accounting, auditing, and private law practices are virtually nonexistent. Perhaps the most important area to improve in terms of agricultural export facilitation is the establishment of more transparent and enforceable land rights (also important for private sector development generally). With undefined or ambiguous land laws, farmers have limited incentive to invest in their agricultural capital, an essential step to raise yields, product quality, and commensurate incomes.[86] In addition to improving the business regulatory environment, there are very limited services from microfinance institutions. Demand for microfinance is believed to be substantial, demonstrated by surveys conducted in 2004 that showed a market of 275,000 to 435,000 potential small borrowers.[87] Despite this, the number of microfinance institutions has shrunk from nine to four, and only two are actively lending. Microfinance is necessary to supply credit to subsistence framers who move to commercial transactions, and thus its role in small enterprise and export facilitation is crucial.[88] All in all, the list of work to be done if very long and these shortcomings must be addressed in conjunction with trade facilitation.

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[81] Figure 4.
[82] Figure 5.
[83] *Economic and Social Development Brief*.
[84] The World Bank. 2006. *Timor-Leste: The Business Regulatory Environment*. Washington, DC.
[85] Manring.
[86] *Economic and Social Development Brief*.
[87] Conroy 2005.
[88] Manring.

Trade Potential

The positive and sustained expansion in the export-oriented Asian region over the last generation has affirmed the role of trade as a potent catalyst for economic growth. Moreover, growth in a globalized economy, with complementary flows of foreign direct investment and the technology transfers this entailed, has dramatically improved labor productivity and real wages in outward-oriented Asian economies. For these reasons, it is reasonable to ask if the economies of NTT and TIM are at or near their trade potential and, if not, what kind of policies might advance their progress in this direction. In this section, we apply state-of-the-art econometric techniques to examine these questions.

Beginning with early insights related to location theory (e.g., Tinbergen [1962]), and more intensively with a renaissance of interest in economic geography (e.g., Helpman and Krugman [2001], Eaton and Kortum [2001]), the interaction between trade costs, market access, and growth potential has been studied in a vast research literature. While many results and conclusions are specific to individual cases, general methods and insights have also emerged. Of particular relevance are econometric techniques of gravity model estimation and simulation to impute unrealized trade and growth potential. Although this approach has been established for some time (Anderson [1979] and Bergstrand [1985]), a more recent body of work has developed more robust econometric techniques and global data resources to improve our insight regarding trade potential.[89]

In this study, we use the latest techniques of log gravity estimation (Manning and Mullahy [2001], Anderson and Wincoop [2001ab]) and a global database (Wilson et al [2004]). This approach specifies a pairwise tradeflow model in logarithmic form, given by:

$$\ln(V_{JI}) = \beta_1 \ln(100+TARIFF_{JI}) + \beta_2 \ln(PEJ) + \beta_3 \ln(REJ) + \beta_4 \ln(SIJ) + \beta_5 \ln(PEI)$$

$$+ \beta_{14}\delta ADJ + \beta_6 \ln(CEI) + \beta_7 \ln(REII) + \beta_8 \ln(SII) + \beta_9 \ln(GNP_I) + \beta_{10} \ln(GNP_J)$$

$$+ \beta_{11} \ln(GNPPC_I) + \beta_{12} \ln(GNPPC_J) + \beta_{13} \ln(DIST_I) + \beta_{14}\delta_{ADJ} + + \beta_{14}\delta_{Language} + \varepsilon$$

In this complex expression, I and J stand for the importer and exporter respectively, parameter β's are linear coefficients, and ε is the standard error term. Other variables are defined as follows:

- V_{JI} - value of goods exported from J to I;
- $TARIFF_{JI}$ - applied bilateral trade-weighted average ad valorem tariff;

[89] Many contributors have advanced this new research agenda, including Feenstra et al:1997, 2001, Frankel and Rose 2002, Haveman and Hummels 2006, Helpman, et al 2004.

- PE_J, RE_J and SI_J - index numbers (between 0 and 1) scoring reflecting trading conditions in the exporting country, including port efficiency, regulatory environment, and service sector infrastructure;
- PE_I, RE_I and SI_I - likewise proxy trade facilitation measures in the importing country;
- For the importing country, we include one additional measure i.e. "customs environment" or CE_I;
- GNP variables are the usual macro flow aggregates used in gravity models;
- DIST measures the distance between bilateral capitol cities;
- Two additional dummy variables are added for adjacent economies and common bilateral language.

Using a sample of over 7,000 bilateral trade flows, Wilson et al (2004) estimated the above specification, and it represents the state-of-the-art for gravity models of trade potential. The results are summarized in the table below, and form the basis for our assessment of trade prospects for the NTT and TIM economies.

Table 8: Gravity Model Regression Results

Variable	Coefficient	SE
Constant	-10.771***	1.549
Tariff Rates	-1.163***	0.318
Port Efficiency of Importer	0.338*	0.16
Port Efficiency of Exporter	0.938***	0.146
Customs Environment of Importer	0.486*	0.199
Regulatory Environment of Importer	0.264	0.144
Regulatory Environment of Exporter	0.580***	0.131
Service sector infrastructure of Importer	0.657**	0.224
Service sector infrastructure of Exporter	1.943***	0.217
GNP of Importer	0.915***	0.014
Per capita GNP of Importer	-0.210***	0.037
GNP of Exporter	1.241***	0.014
Per capita GNP of Exporter	-0.251***	0.029
Geographical Distance	-1.225***	0.025
Adjacency dummy	0.426***	0.108
Common language dummy	0.823***	0.061
Adjusted R-square	.755	
Number of observations	7,904	

GNP = gross national product, SE = sampling error.
Source: Wilson et al (2004).

To conduct this trade assessment, we simulate potential trade flows for the two economies, assuming distances from Indonesian data, and calibrating the model with the trade facilitation variables so that it conforms to initial trade values for the two economies. Of

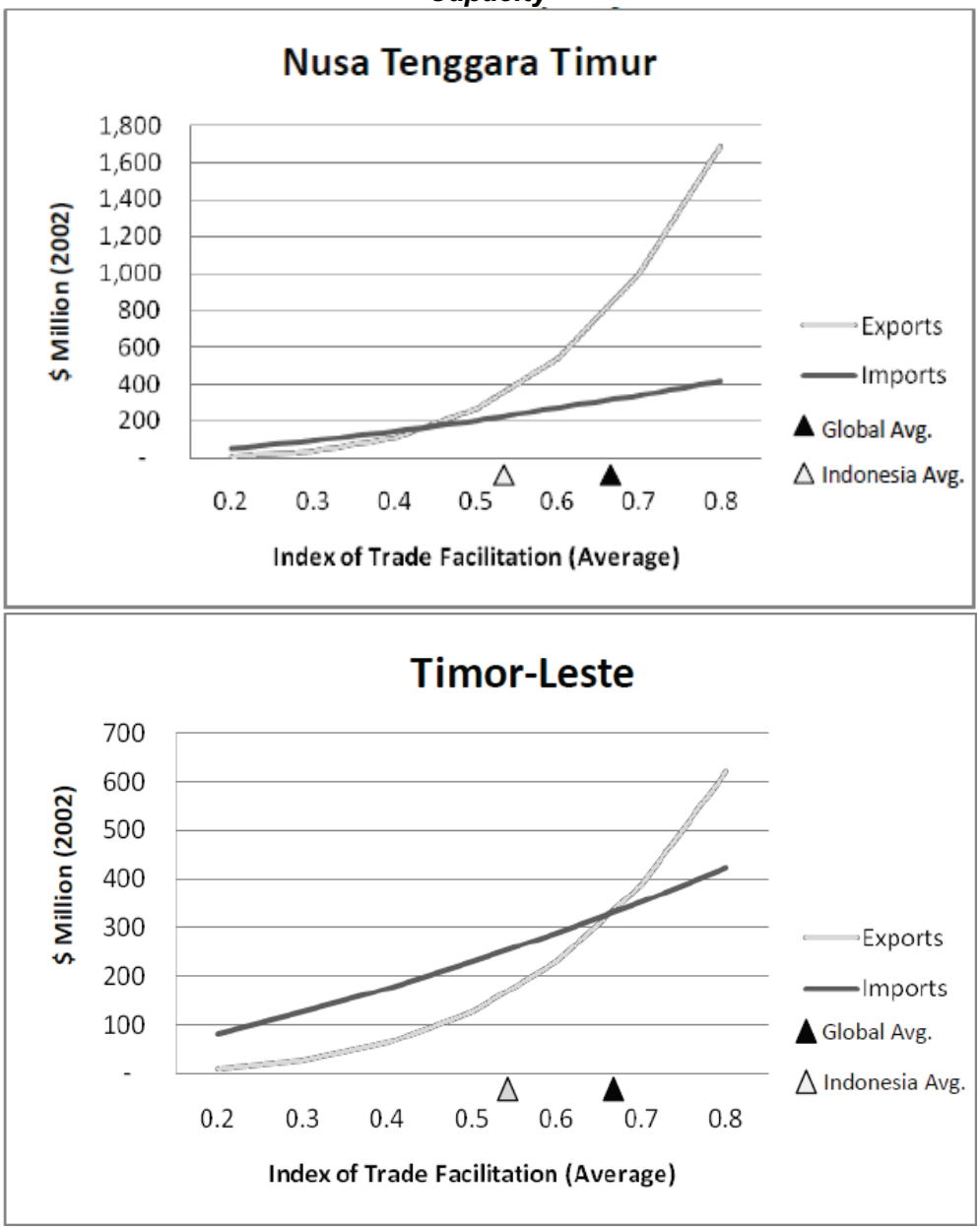
particular significance in this calibration exercise was setting the initial trade facilitation indexes. For the Wilson et al (2004) database, these are estimated independently for individual economies. In the case of NTT and TIM, we calibrated them to fit the gravity model to initial trade levels for both economies. The resulting imputed indexes reflect the actual trade performance of trade facilitation infrastructure of the four kinds studied here (port efficiency, regulatory environment, and service sector infrastructure, and customs performance).

For both economies, the estimated indexes were significantly below averages for the global economy, the region, and even comparable economy groupings. For TIM, an average index of 0.3 compares with 0.67 globally, 0.55 across Southeast Asia, and 0.47 for Indonesia. The comparable average index for NTT was 0.2. In both cases, these calibrated trade facilitation indexes suggest seriously deficient trading capacity in all four categories.

The two figures below represent simulations of growth in (non-oil) exports and imports for both economies, assuming that trade facilitation improves monotonically over time. For example, if these economies attained regional trade efficiency levels, trade in both directions would increase by from eight to fifteen fold, even assuming other initial conditions remain constant. In a more dynamic setting, it is reasonable to expect more rapid and sustained expansion. As both regions approached global trade efficiency levels, exports would overtake imports, even with respect to current initial conditions. For NTT, this overtaking would be more rapid and occur sooner. For TIM, since we do not account for oil in this present context, overtaking would also proceed faster.

Of particular relevance is the fact that exports in both countries expand at over twice the rate of imports. The fundamental reason for this is simply very low per capita initial incomes in both economies. External demand offers sustained growth leverage because of its scale and larger average import shares in counterpart economies, while domestic demand in these very poor areas will emerge more slowly. The significance of this finding is of course that outward orientation contracts home market bias. Far from threatening domestic economic activities, more rapidly expanding exports increase aggregate domestic demand as well as total savings available for domestic capital formation. In short, both economies, although at early stages of economic emergence, seem very attractive candidates for export-oriented development.

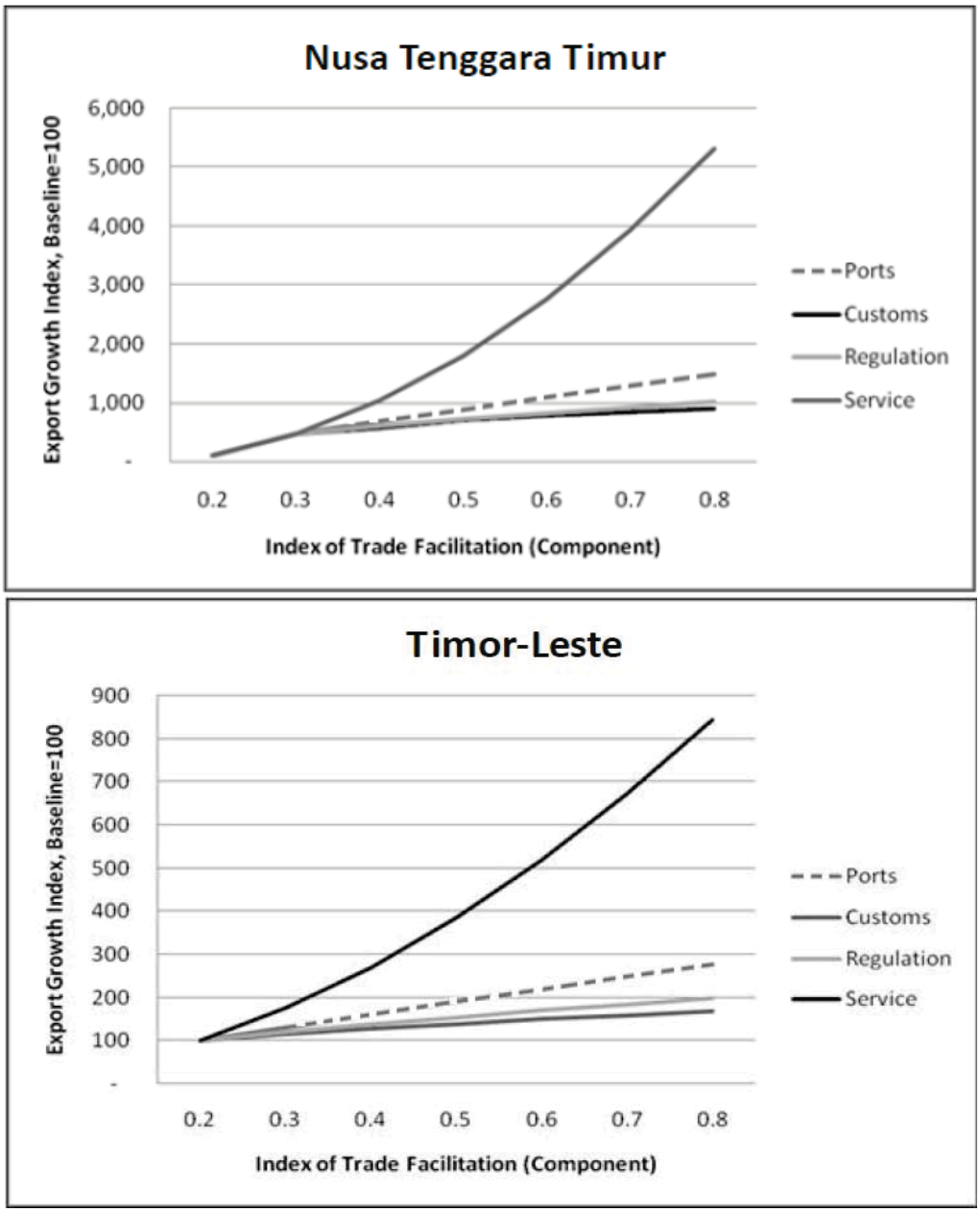
Figure 1: ***Trade Growth Potential with Respect to Infrastructure and Institutional Capacity***



The results above examine trade development with respect to an overall average score for trade facilitation, but the Wilson et al (2004) results indicate that each of the four *components makes a different contribution to exports and imports. To see how export* promotion can be accelerating if priorities are assigned across trade facilitation mechanisms, we simulated export potential with respect to each for both economies. The results in the figure below clearly indicate that trade service capacity has the biggest potential export

dividend, followed by infrastructure. Although the latter must keep pace with rising trade, trade service promotion has the advantage of being relatively less expensive, highly diversified, and more eligible for public–private partnership. Indeed, in light of these results it might make sense to promote more private resource allocation to trade services while public resources are committed to infrastructure.

Figure 2: Export Growth with Respect to Components of Trade Facilitation



Conclusions

The greatest potential for economic growth through linkages between these two countries would be the immediate development of trade facilitating infrastructure. Our analysis suggests that both economies are well below their trade potential and that exports have much more upside potential than imports. The reasons for the former are very low levels of initial infrastructure and institutional capacity. For the latter, our estimates suggest that (non-energy) exports could sustainably grow more than twice as fast as imports, most fundamentally because of very low initial domestic per capita incomes. External demand and savings have the power to confer essential growth leverage on both economies, diversifying their predominantly subsistence-based agro-food activities and increasing value added in all primary sectors. To achieve this, however, will require "learning" market access on the part of a large rural subsistence sector that is well below production potential. Such learning, as well as higher agricultural productivity, can be strongly facilitated by domestic and boundary infrastructure that reduce trade and transport margins, promote local and regional market integration, and technology-knowledge diffusion. In addition to this, more determined policies are needed to facilitate upstream export supply chain development. This would include, but not be limited to, more extensive domestic transport infrastructure, more clearly defined land rights, agricultural extension services, microcredit, and better information for smallholder producers regarding market conditions.

By working together, West Timor and Timor-Leste can create an extensive road network across the region uniting both countries. This will have numerous benefits, most notably promoting market access within and between both countries, allowing a greater opportunity for specialization and trade. This can be especially beneficial for Timor-Leste, as it can provide access to NTT traders who have established connections with the important Surabaya market in Indonesia. Furthermore, poverty is greater in the mountainous region of Timor-Leste, so increasing access to NTT and cross-border markets might allow farmers in this region a greater market for their goods. Additionally, current levels of telecommunications in both countries are low and a massive effort should be undertaken. There is significant unrealized potential for these two countries to work together as a more integrated regional network could significantly lower transactions costs. With a scaled-up network, rural residents will be better able to access market information, which in turn should benefit the largely agricultural societies. Another level of infrastructure development that would benefit both countries would be the creation of a regional energy grid. By uniting all the disjoint power sources into one regional grid, costs could be potentially lowered with the utilization of smart grid technology. Not only would this be more efficient and sustainable, but also it would significantly lower energy costs and increase access to more consumers. Through the creation of a regional road, telecommunications, and energy network, agriculture markets could be significantly improved, which would provide great benefits to vast majority of the region's citizens.

Implementing this may prove to be extremely difficult given the history between Timor-Leste and West Timor. However it appears both areas are ready to move forward from their past and are willing to coordinate for the growth potential. Financing for large infrastructure projects might also be difficult. Although West Timor receives very little money from local

sources, it does receive a significant amount from the central Government of Indonesia. Additionally, Timor-Leste has large reserves of revenue to tap into both from oil production and international donors. Although Timor-Leste must remain careful about fiscal spending, it could prioritize appropriate infrastructure projects in its expenditures. Additionally, since both West Timor and Timor-Leste will be working together, the overall costs of the projects could be shared further, making these goals more attainable.

More research on these two economies is desperately needed to support effective policy formulation and implementation. Timely and detailed data remain very fragmentary and unreliable, seriously undermining domestic policy, private stakeholder participation, and multilateral negotiation.

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Trade and Growth Horizons for Nusa Tenggara Timur and Timor-Leste

The paper evaluates the prospects for trade and economic growth for Nusa Tenggara Timur in Indonesia and the independent state of Timor-Leste. Both economies have very low incomes and predominantly rural populations. Both are at the early stages of development with only limited regional trade linkages. Increased trade could be a potent catalyst for growth as export growth would be much more robust than import growth. Investments to facilitate trade could increase exports as a percentage of gross domestic product by more than twice as fast as imports, offering both economies significant growth leverage from new external demand and savings inflows.

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