

Export Processing Zones: Tools of Development or Reform Delay?

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DEDICATION

This is dedicated to my husband, John, my son Joshua and my parents, Marcia and Wes.

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ABSTRACT

EXPORT PROCESSING ZONES: TOOLS OF DEVELOPMENT OR REFORM DELAY?

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After the failure of import substitution programs many developing countries turned to export processing zones (EPZs) to promote growth and development through trade. However, in many instances, the performance of the EPZ model has been disappointing leaving many to question whether EPZs are good for reform. This dissertation will examine the institutional factors related to why EPZs emerge. Second, positing that domestic entrepreneurship is important to economic development, the relationship between EPZs and domestic entrepreneurship is examined. Third, it will examine the effects of EPZs on economic wellbeing controlling for factors which affect entrepreneurship.

CHAPTER 1

Introduction

A contingent, but frequently repeated conclusion...is that the market in 'typical' developing countries tends to be more imperfect – and hence less socially efficient in allocating goods and services – than in more industrialized societies. The idea that governments will need to intervene in order to help, support, or 'stand in for' the market more substantially in developing than in more developed societies often follows from this diagnosis.¹

1.1 Overview

Two broad industrial strategies have been used by developing countries to achieve economic growth and development. After independence many developing countries first attempted inwardly focused industrial strategies such as import substitution and infant industry protection programs. These early development strategies often created severe market distortions because of their reliance on overvalued exchange rates, strict import controls and large bureaucracies to manage international trade.² Additionally, the

¹ Christopher Colclough, "Structural Versus Neo-Liberalism: An Introduction," in *States or Markets?: Neo-Liberalism and the Development Policy Debate*, ed. Christopher Colclough and James Manor (Oxford University Press, 1991), p.2.

² Henry J. Bruton, "A Reconsideration of Import Substitution," *Journal of Economic Literature* 36, no. 2 (1998).

economies of many newly independent developing countries were increasingly more centralized as various forms of state-led and socialist systems were embraced³.

By the 1980's, however, with the failure of import substitution programs and in the face of looming financial crisis, many countries turned to export processing zones (EPZs), a form of export promotion, to liberalize and jumpstart their economies and as a way to enter the global economy through international trade. Salinger et al (1998) offer that EPZs are typically established where "reforms have been either partial or ineffective."⁴ EPZs were first used in Ireland in the 1950's⁵. However, the model soon spread to East Asia⁶ and later to Latin America and the Caribbean⁷ and then to Africa and the Middle East⁸.

EPZs are self-contained industrial sites which are established for the export of manufactures⁹ and the processing of offshore services¹⁰. The governments of many developing countries set up these zones by offering attractive incentives to investors including: lower levels of import restrictions; less restrictive labor requirements; liberal

³ See Leo Paul Dana, "Creating Entrepreneurs in India," *Journal of Small Business Management* 38, no. 1 (2000), Bruce Heilman and John Lucas, "A Social Movement for African Capitalism? A Comparison of Business Associations in Two African Cities," *African Studies Review* 40, no. 2 (1997).

⁴ B. Lynn Salinger, Anatolie Marie Amvouna, and Deidre Murphy Savarese, "New Trade Opportunities for Africa," (United States Agency for International Development, Bureau for Africa, Office of Sustainable Development, 1998), p.4.

⁵ Dorsati Madani, "A Review of the Role and Impact of Export Processing Zones," *World Bank Policy Research Working Paper* 2238 (1991).

⁶ Jing-dong Yuan and Lorraine Eden, "Export Processing Zones in Asia: A Comparative Study," *Asian Survey* 32, no. 11 (1992).

⁷ Gregory K. Schoepfle and Jorge F. Perez-Lopez, "Export Assembly Operations in Mexico and the Caribbean," *Journal of Interamerican Studies and World Affairs* 31, no. 4 (1989).

⁸ Peter Watson, "Export Processing Zones: Has Africa Missed the Boat? Not Yet!," *World Bank Africa Region Working Paper Series* 17 (2001).

⁹ Madani, "A Review of the Role and Impact of Export Processing Zones."pp.11-14.

¹⁰ International Labour Organization, *Export Processing Zones: Epz Employment Statistics* (4 February 2004 [cited October 31 2006]); available from <http://www.ilo.org/public/english/dialogue/sector/themes/epz/stats.htm>.

tax, ownership and foreign exchange regulations; and access to superior infrastructure, transport and communications technologies compared with the rest of the economy.¹¹: In return, these countries hoped to receive new and expanded employment opportunities for their populations; to attract much needed foreign direct investment (FDI) and foreign currency; and to encourage “technology transfers” and much needed “human capital development”.¹² EPZ programs were very popular and by early 2007 there were over 2,700 EPZs employing over 63 million people in developing countries and transition¹³ (See Table 1).

Table 1: Geographic Breakdown of EPZs and EPZ Employment¹⁴

<i>Export processing zones</i>		
Geographical Area	Employment	Number of zones
Asia	53,089,262	900+
- of which China	(40,000,000)	
- of which bonded factories in Bangladesh	(3,250,000)	
Central America & Mexico	4,988,459	155
Middle East	1,070,275	50
North Africa	643,152	65
Sub-Saharan Africa	816,474	90+
United States	330,000	713
South America	456,175	43
Transition Economies	1,131,462	400
Caribbean	542,163	250
Indian Ocean	189,412	1

¹¹ Madani, "A Review of the Role and Impact of Export Processing Zones."p.15.

¹² Ibid. pp.17-18.

¹³ International Labour Organization, *Export Processing Zones: Epz Employment Statistics* (14th March 2007 [cited 27 March 2007]); available from <http://www.ilo.org/public/english/dialogue/sector/themes/epz/stats.htm>.

¹⁴ Ibid.([cited).

Europe	45,472	50
Pacific	145,930	14
Total (estimated)	63,118,236	2,700+

Source: International Labor Organization 2007

1.2 Problem Statement

Despite their popularity, the performance of the majority of EPZs throughout the world has been marginal.¹⁵ For example, the World Bank (1992) found that the majority of zones throughout the world were performing below expectations.¹⁶ First, the expected backward linkages with the domestic economy have not, in many cases, materialized¹⁷. Second, the anticipated technology transfers and spillovers also did not occur in many countries.¹⁸ Finally, the expense of the incentives used to create the EPZ, in terms of lost government revenues and infrastructure development may have reduced the overall welfare benefits to the host economy¹⁹. Despite the World Bank's support for the development of EPZ sites²⁰, they have been considered a second-best and temporary alternative to "economywide duty free import systems" and policies which support freer

¹⁵ There have been some countries which have experienced success with EPZs, most notably Ireland, Mauritius and more recently China.

¹⁶ The World Bank, "Export Processing Zones," *World Bank Policy and Research Series* 10500 (1992): p.15.

¹⁷ Peter G. Warr, "Export Processing Zones: The Economics of Enclave Manufacturing," *The World Bank Research Observer* 4, no. 1 (1989).

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ The World Bank, "Export Processing Zones," p.10.

trade.²¹ However, the World Bank acknowledged that once created, EPZs are very difficult to phase out.²² The World Bank states that,

An issue that has yet to be properly faced is when and how to phase out EPZs that have outlived their usefulness. EPZs have not been closed down or phased out anywhere so far, and this rigidity is a cause for concern since the land might well be more valuable for other resources.²³

An important question then becomes - *Why do EPZs exist and persist?*

Given the significance of the EPZ model as a development strategy in many developing countries, a number of important research questions arise: Do EPZs provide a sustainable path to economic development and poverty reduction for the countries which operate them? Do EPZs, for example, enable host countries to fully engage the globalization process? Do countries which create more entrepreneur-friendly business environment perform better than countries which pursue EPZ niche development strategies? How do EPZs impact domestic entrepreneurship? Is there a significant difference in entrepreneurship rates between countries which use EPZs compared to those which have pursued greater economy-wide reforms? Most importantly, under which conditions do countries using EPZs move to more comprehensive trade liberalization policies?

This dissertation aims to address these issues. In particular, it examines under which circumstances do EPZs emerge. Second, I examine how EPZs affect entrepreneurship. Finally, it examines the effect of EPZ presence on economic performance. My hypotheses are as follows:

²¹ Ibid.: pp.6-7.

²² Ibid.: p.15.

²³ Ibid.

- Hyp. 1.** EPZs are more likely to emerge in countries with higher levels of market failures and government distortions.
- Hyp. 2.** Domestic entrepreneurship is negatively affected by the existence of EPZs.
- Hyp. 3.** Economic performance is positively associated with entrepreneurial-friendly business environments; and
- Hyp. 4.** EPZ presence negatively affects economic performance.

Previous studies have presented broad descriptions of the workings of export processing zones²⁴ and others engage in a cost benefit analysis of whether EPZs have produced positive results generally or in a specific country or region²⁵. This study, however, acknowledges that EPZs have become key aspects of many countries' development strategies and examines the conditions under which countries can transition from them to fuller liberalization of their entire economies and in the process create conditions amenable to both domestic and foreign entrepreneurs operating in their economies.

²⁴ See for example, Madani, "A Review of the Role and Impact of Export Processing Zones.", U.N.C.T.C. and I.L.O., "Economic and Social Effects of Multinational Enterprises in Export Processing Zones," (Geneva: United Nations Centre on Transnational Corporations and the International Labour Organization, 1988).

²⁵ See for example, Hooshang Amirahmadi and Weiping Wu, "Export Processing Zones in Asia," *Asian Survey* 35, no. 9 (1995), Dennis A. Rondinelli, "Export Processing Zones and Economic Development in Asia: A Review and Reassessment of a Means of Promoting Growth and Jobs," *American Journal of Economics and Sociology* 48, no. 1 (1987), Andrew Schrank, "Export Processing Zones: Free Market Islands or Bridges to Structural Transformation?," *Development Policy Review* 19, no. 2 (2001), Victor F.S. Sit, "China's Export-Oriented Open Areas: The Export Processing Concept," *Asian Survey* 28, no. 6 (1988), The World Bank, "Export Processing Zones.", Yuan and Eden, "Export Processing Zones in Asia: A Comparative Study."

1.3 Chapter Synopses

In **Chapter 2**, I present an overview of three strands of literature which are vital to this dissertation. The purpose of this chapter is to integrate these diverse literatures into a coherent theory on export processing zones and their effects on entrepreneurship and ultimately economic development. First, the literature on economic development is presented. Here, the key theories in growth and development and on development strategies will be discussed. This section highlights the evolution of development policy across much of the developing world. Second, the literature on export processing zones is outlined. As there are many types of zones used for development in both developing and developed countries, it is important to precisely explain what is meant by export processing zones. The section also discusses some of the advantages and disadvantages of zones and also the ways that governments have gone about attracting foreign direct investment to these zones. An analysis of zone performance is also included. Third, the literature on entrepreneurship and development is outlined. In particular, the definition of entrepreneurship and a description of entrepreneurship in a developing country context are presented. An externalities framework for understanding ways to promote entrepreneurship in developing countries is also introduced.

In **Chapter 3**, I outline a model of EPZ emergence and the relationship between export processing zones and entrepreneurship. In addition to government created distortions, the model highlights the importance of information asymmetry, imperfect competition and demonstration, knowledge and networking externalities in the creation of EPZs and the generation of entrepreneurial opportunities in developing countries. The

greater these market failures the more likely there will be EPZs and the less likely a country is to generate productive entrepreneurial activities.

Chapter 4 is the first of the empirical analysis. Here, I examine the question of why EPZs emerge and why they locate where they do. Drawing on the model developed in Chapter 3 and the literature on market and non-market failures discussed in Chapter 2, I examine the effects of market and non-market distortions on EPZ emergence and test hypothesis 1, that EPZs emerge in countries with greater distortions and market failures. Positive findings on hypothesis 1 suggest that EPZ formation is a response to market and non-market failures.

Next, I test the hypothesis that domestic entrepreneurship is negatively affected by the existence of EPZs in **Chapter 5**. Positive findings on hypothesis 2 suggest that EPZs hamper domestic entrepreneurship.

In **Chapter 6**, I test hypothesis 3, that economic performance is positively associated with entrepreneurial-friendly business environments and hypothesis 4, that EPZ presence is negatively associated with economic wellbeing. Positive findings on these hypotheses suggest that reforms which support entrepreneurship in both the domestic sector and the export sector leads to strong growth and meaningful development.

In **Chapter 7**, the major contributions of this dissertation are discussed and policy conclusions are presented. The questions which are asked in this dissertation have not been well explored in the existing literature. Are EPZs the engine of growth for the economies which use them? And if not, why do they persist? This dissertation will add

to the study of EPZs and economic development using the literature on trade and industrial policy, development and entrepreneurship. In particular, this dissertation will extend the knowledge of this field by examining whether countries become stuck in an EPZ trap? Additionally, this dissertation's focus on entrepreneurship in developing countries as a development alternative is important.

CHAPTER 2

Literature Review

2.1 Introduction

In this chapter I discuss three strands of literature which comprise the core theories of this dissertation. The first covers the development literature including colonial development policies, import substitution and export promotion. Next, I explore the emergence of export processing zones as an important development tool. I define EPZs and critique the performance of these zones. Finally, in the third section of this chapter, I examine the literature on entrepreneurship and development.

2.2 Development Policy in Review

The search for policies to bring about both growth and development has been the focus of economic discovery since the very beginning of the science. While economic growth relates to the expansion of an economy based on its current structure, economic development implies “a process of structural transformations” leading to an overall higher growth trajectory²⁶. That the former colonies in Africa, much of Asia, Latin America and the Caribbean have experienced abysmal growth since independence is not

²⁶ Richard Brinkman, "Economic Growth Versus Economic Development: Towards a Conceptual Clarification," *Journal of Economic Issues* 29, no. 4 (1995): p.1183.

a new proposition. Easterly (2001) pointed out that despite modest growth in the 1960's and 1970's, from the 1980's onwards, economic growth in developing countries has been stagnant. This stagnation has persisted in spite of extensive reforms removing growth reducing distortions²⁷. It is, therefore, important to examine the historical framework for growth and development.

Krugman (1995) pointed out that the 'conventional wisdom on economic development' changed considerably over the years²⁸. Early development policy focused on attracting foreign investment and was characterized by an emphasis on free and open markets and "stable currencies" backed by gold²⁹. Then, in response to the tumultuous and disruptive economic conditions of the Great Depression and the two World Wars, countries began to place more restrictions on their economies³⁰. As countries attempted to industrialize in order to absorb the surplus labor from their agriculture sectors³¹, they found that the "import restrictions, imposed at first largely for balance of payments reasons, soon became valued as a way to promote industrialization"³². By the 1980's, with the development failures of import-substituting countries evident, and with the apparent success of the outward-oriented, fast growing Asian countries, economic

²⁷ William Easterly, "The Lost Decade: Developing Countries' Stagnation in Spite of Policy Reform 1980-1998," *Journal of Economic Growth* 6 (2001): p.135.

²⁸ Paul Krugman, "Cycles of Conventional Wisdom on Economic Development," *International Affairs* 71, no. 4 (1995).

²⁹ *Ibid.*: pp.725-26.

³⁰ *Ibid.*: p.726.

³¹ Raul Prebisch, "Commercial Policy in the Underdeveloped Countries," *The American Economic Review* 49, no. 2 (1959): p.52.

³² Krugman, "Cycles of Conventional Wisdom on Economic Development," p.726.

development's 'conventional wisdom' changed³³. Countries were advised to pursue export promotion strategies in order to achieve rapid growth and development.³⁴

2.2.1 Early Development Policy: The Evolution of Government Distortions in Developing Economies

Rodrik (2006) offers out that government policy is an important component of economic development.³⁵ He points out that two countries with similar resource endowments can have drastically different growth and development outcomes.³⁶ However, a country's development policy emerges over time. Many developing countries, coming out of decades of colonialism, faced the important challenge of constructing economic systems where economic development focused on its citizens. The colonial period in Africa, Latin America, the Caribbean and Asia, established a center-periphery economic system of state-led extraction and primary production with little benefits accruing to the colonized populations.³⁷ Storr (2002) finds that,

That colonialism on net "benefited" the colonized is a myth. A myth that has roots in the same logic that was used to "justify" colonialism in the first place and that has "legs" only because of the existing poverty of information about the extent of development the first colonialist encountered. Colonialism, it should not be forgotten, was conquest – economic, social, political, religious and cultural conquest – that was attended by the destruction of whole societies, the enslavement, dislocation and/or disenfranchisement of millions, the theft of land and the pirating of resources.³⁸

³³ Ibid.: p.730.

³⁴ Ibid.: p.731.

³⁵ Dani Rodrik, "Industrial Development: Stylized Facts and Policies," (2006).

³⁶ Ibid.

³⁷ Prebisch, "Commercial Policy in the Underdeveloped Countries," p.251.

³⁸ Virgil Storr, "All We've Learnt: Colonial Teachings and Caribbean Underdevelopment," *Journal Des Economistes et Des Etudes Humaines* 12, no. 4 (2002): p.11.

International trade, based on extraction and forced production, was one of the driving forces behind colonization³⁹. It is, therefore, not surprising that trade policy features prominently in any discussion of the colonial period. An important aspect of the period was the development of large state bureaucracies to manage colonial production and trade. Acemoglu et al (2001), for example, offer that, “the Spanish crown...set up a complex mercantilist system of monopolies and trade regulations to extract resources from the colonies.”⁴⁰ Similar controls were placed on African colonies by the French, British, Belgian and Dutch.⁴¹ In the Belgian Congo, “tax rates on Africans...approached 60 percent of their incomes during the 1920’s and 1930’s”⁴² in order to compel Africans to provide their labor on the colonial plantations. In South East Asia, Booth (2007) points to “the centralization” of taxation as an important focus of colonial policy to fund the large infrastructure projects which were needed to support the production and export of agricultural goods⁴³; however, “the expansion in public expenditures meant that public-sector employment grew rapidly, and with it spending on salaries, wages, and pensions.”⁴⁴ In Kenya, Fahnbullen (2006) offers that because of a complex licensing

³⁹ Stephen A. Resnick, "State of Development Economics," *The American Economic Review* 65, no. 2 (1975): p.319.

⁴⁰ D. Acemoglu, S. Johnson, and J. Robinson, "The Colonial Origins of Economic Development: An Empirical Investigation," *American Economic Review* 91, no. 5 (2001): p.1375.

⁴¹ Ibid.

⁴² Ibid.

⁴³ Anne Booth, "Night Watchman, Extractive, or Developmental States? Some Evidence from Late Colonial South-East Asia," *The Economic History Review* 60, no. 2 (2007).

⁴⁴ Ibid.

system, African farmers were not allowed to compete with colonial coffee exporters.⁴⁵

Additionally, some colonial industrialists were granted the right to exist as monopolies.⁴⁶

These strong state-led institutions were found to continue “long after the colonial regime ended.”⁴⁷ Fahnbullen (2006) concluded that,

The colonial economy not only created a weak socio-economic base from which post-independence states could launch their development projects, but it also sowed the roots of socio-economic problems that would prove decisive in shaping the patterns of development after Independence.⁴⁸

Colonial economic policies, therefore, set an important platform for the economic policies which followed in many developing countries. An important realization, then, is that post colonial policies emanated from and, in most cases, continued economic systems which were already rife with market imperfections which acted as barriers to market entry.

At the time of independence, for many developing countries strong government planning policies were supported by the major international development agencies. Krugman (1995) finds that “35 years ago...the key elements of a successful development strategy were government planning and import substitution...it was widely taken for granted that centrally planned economies, whatever their other weaknesses, were very

⁴⁵ Miatta Fahnbulleh, "In Search of Economic Development in Kenya: Colonial Legacies & Post-Independence Realities," *Review of African Political Economy* 33, no. 107 (2006): p.35.

⁴⁶ *Ibid.*: p.34.

⁴⁷ Acemoglu, Johnson, and Robinson, "The Colonial Origins of Economic Development: An Empirical Investigation," p.1376.

⁴⁸ Fahnbulleh, "In Search of Economic Development in Kenya: Colonial Legacies & Post-Independence Realities," p.35.

good at generating industrial growth.”⁴⁹ Krugman (1995) explained that, “almost all serious people endorsed the idea of development through import-substituting industrialization, so of course it had to be right.”⁵⁰

Prebisch (1959), one of the major proponents of import substitution, found that “industrialization is an inescapable part of the process of change accompanying a gradual improvement in per capita income”.⁵¹ Prebisch (1959) sets out a two-country model consisting of an advanced country specializing in industrial goods and a periphery country producing primary goods. The economy of the periphery is characterized by surplus labor and “disguised unemployment” in the traditional sector from which the modern, industrial sector can draw its labor⁵². Finally, the income elasticity of demand for imported industrial goods is higher in the periphery country than in the advanced country⁵³.

The periphery economy has a choice of how to industrialize by either increasing its production for export or for domestic consumption. For Prebisch (1959), import substitution was the most efficient way for developing countries to achieve industrialization and income growth⁵⁴. Indeed, Prebisch (1959) offered that even if a developing country chose to increase its exports and experienced an increase in income, because of its relatively high income elasticity demand for imports, there would be a large corresponding increase in import demand. Therefore, domestic production of the

⁴⁹ Krugman, "Cycles of Conventional Wisdom on Economic Development," p.718.

⁵⁰ Ibid.: p.729.

⁵¹ Prebisch, "Commercial Policy in the Underdeveloped Countries," p.251.

⁵² Ibid.: p.252.

⁵³ Ibid.: p.253.

⁵⁴ Ibid.: pp.253-54.

imported good (i.e. import substitution) would still be required.⁵⁵ Among Prebisch's (1959) policy recommendations were high tariffs, export taxes and production subsidies to domestic producers.⁵⁶ While countries could have chosen to increase exports to produce the foreign currency to import these industrial goods, Singer (1999) offers that industrializing developing countries "would find it initially easier to produce for an existing and known domestic market than for an unknown global market."⁵⁷

Bruton (1998) offered that import substitution was a necessary strategy for developing countries because these economies needed to provide protection to their new "infant" industries.⁵⁸ It was also generally thought that developing countries needed to produce the goods that advanced countries produced in order to avoid the "poverty trap" of continuously producing low value goods with volatile prices.⁵⁹ To achieve industrialization through import substitution, countries used a number of market distorting tools such as overvalued exchange rates, "a variety of tariffs, import licenses, and exchange controls".⁶⁰ Bruton (1998) points out that "import substitution policies had created major distortions and had thereby resulted in a misuse of resources."⁶¹ Bruton (1998) sums up nicely the motivation for import substitution. He states that,

To industrialize, given the existence of already industrialized and highly productive economies (the North), the countries of the South must protect

⁵⁵ Ibid.: p.254.

⁵⁶ Ibid.: pp.256-57.

⁵⁷ Hans Singer, "Beyond Terms of Trade-Convergence and Divergence," *Journal of International Development* 11, no. 6 (1999): p.911.

⁵⁸ Henry J. Bruton, "A Reconsideration of Import Substitution," *Journal of Economic Literature* 36, no. 2 (1998): p.904.

⁵⁹ Ibid.: p.905, Ricardo Hausmann, Jason Hwang, and Dani Rodrik, *What You Export Matters* (National Bureau of Economic Research Cambridge, Mass., USA, 2006).

⁶⁰ Bruton, "A Reconsideration of Import Substitution," p.908.

⁶¹ Ibid.: p.917.

their economies from imports from the North and concentrate on putting in place new activities that will produce an array of manufactured products currently imported.⁶²

Import substitution was not successful. Indeed, the expected productivity and technology improvements and the “indigenous learning processes” needed to sustain high incomes did not emerge.⁶³ Baldwin (1969) demonstrated that the infant industry argument for protection often fails because even when a “protective duty” has been provided, there is “no guarantee that individual entrepreneurs will undertake greater investment in acquiring technological knowledge.”⁶⁴ Indeed, a derived externality of import substitution programs was the existence and persistence of inefficient industries and market distortions⁶⁵.

2.2.2 Later Development Policy: Export Promotion

With the failure of import substitution throughout much of the developing world and the success of the newly industrializing Asian countries, development practitioners began to focus on the promotion of exports as a means of development.⁶⁶ Krueger (1980) points out that the “experience has been that growth performance has been more

⁶² Ibid.: p.904.

⁶³ Bruton, "A Reconsideration of Import Substitution," pp.919-20.

⁶⁴ Robert E. Baldwin, "The Case against Infant-Industry Tariff Protection," *The Journal of Political Economy* 77, no. 3 (1969): p.298.

⁶⁵ Ibid. See also William F. Steel, "Import Substitution and Excess Capacity in Ghana," *Oxford Economic Papers* 24, no. 2 (1972).

⁶⁶ Paul Krugman, "Cycles of Conventional Wisdom on Economic Development," *International Affairs* 71, no. 4 (1995): p.725.

satisfactory under export promotion strategies".⁶⁷ Indeed, because open economies are exposed to world prices derived from global productivity differences, domestic resources can be more efficiently allocated compared to countries where distorted domestic prices are the main guide for a country's production mix.⁶⁸ Outward oriented trade policies also allowed for the generation of scale economies, without the use of monopolies, because production is geared towards a large international market.⁶⁹ Keesing (1967), for example, found that even for small countries "the severe handicap of smallness cannot be abolished; but it can be minimized under an outward-looking strategy" because of the economies of scale associated with exporting to larger markets.⁷⁰ To be sure, the small size of developing countries' domestic markets often led to production inefficiencies which in "the absence of competition result[ed] in low-quality high-cost production."⁷¹

Balassa (1988), for example, points out that,

Exports make it possible for developing countries to overcome the limitations of their domestic markets in exploiting economies of scale and ensuring full capacity utilization.⁷²

An export orientation also generated needed foreign exchange to fund capital investments thereby alleviating foreign exchange shortages which plagued many less developed economies and in the process eliminated the need for government intervention "in

⁶⁷ Anne O. Krueger, "Trade Policy as an Input to Development," *The American Economic Review* 70, no. 2 (1980): p.288.

⁶⁸ *Ibid.*: p.289.

⁶⁹ Anne O. Krueger, "Why Trade Liberalization Is Good for Growth," *The Economic Journal* 108, no. 450 (1998): p.1515.

⁷⁰ Donald B. Keesing, "Outward-Looking Policies and Economic Development," *The Economic Journal* 77, no. 306 (1967): p.314.

⁷¹ Krueger, "Why Trade Liberalization Is Good for Growth," p.1515.

⁷² Bela Balassa, "The Lessons of East Asian Development: An Overview," *Economic Development and Cultural Change* 36, no. 3 (1988): p.S280.

determining which industries should be encouraged or in allocating scarce foreign exchange in a regime of quantitative restrictions.”⁷³ Keesing (1967) had previously pointed out those inward-looking strategies “permit[ed] a high degree of government intervention” compared to outward oriented economies.⁷⁴ Sapsford and Garikipati (2006) offers that international trade can have a positive effect on economic growth, and therefore on poverty, because trade allows for a more efficient use of resources and exposes domestic producers to larger, more competitive markets which encourages productivity improvements.⁷⁵

However, Rodrik (2006) finds that countries must turn to the production of “non-traditional” exports in order to experience the growth effects of liberalization.⁷⁶

Developing countries have traditionally been exporters of raw materials and agricultural products. However, to fully experience the growth effects of an outward orientation, non-traditional manufactured exports were needed. Akyuz and Gore (2001), for example, conclude that development requires the production of increasingly more complex exports.

They state,

Rapid and sustained economic growth in the most successful developing countries have involved a process of late industrialization in which the production structure has shifted from the primary sector to manufacturing alongside a progressive move from less to more technology- and capital intensive activities both within and across sectors, allowing countries to

⁷³ Krueger, "Why Trade Liberalization Is Good for Growth," p.1516.

⁷⁴ Keesing, "Outward-Looking Policies and Economic Development," p.303.

⁷⁵ David Sapsford and Supriya Garikipati, "Trade Liberalisation, Economic Development and Poverty Alleviation," *The World Economy* 29, no. 11 (2006): p.1577.

⁷⁶ Dani Rodrik, *Industrial Development: Stylized Facts and Policies* (2006 [cited 21 March 2008]); available from <http://ksghome.harvard.edu/~drodrik/industrial%20development.pdf>.

build competitiveness in a range of activities established in more advanced countries.⁷⁷

Export diversification is expected to involve technology transfers. However, it is not enough to simply “import” the technology for these transfers to occur. Instead countries must “master” the technology which requires improvements in human and physical capital⁷⁸. Indeed, Lucas (1993), explaining the East Asian Miracle, offered that it was the continuous increase in human and physical capital⁷⁹ which enabled exporting firms to produce an updated and new mix of goods with higher potential “learning spillover technolog[ies]” over time.⁸⁰ Investment in human and physical capital was perhaps one of the most important factors leading to Asian economic success when compared with the African decline. Akyuz and Gore (2001) find that investment booms from the proceeds of export and other foreign exchange earnings generally did not occur in Africa as they did in many Asian countries.⁸¹

Export diversity is also related to economic growth through its potential for improvements in productivity. Weiss (2005) points out that exporting can generate important productivity spillovers.⁸² Hausmann, Hwang and Rodrik (2006) construct an index of countries’ exports and rank their export mixes them based on the income level of

⁷⁷ Yilmaz Akyüz and Charles Gore, "African Economic Development in a Comparative Perspective," *Cambridge Journal of Economics* 25 (2001): pp. 266-67.

⁷⁸ Economic Commission for Africa, "Trade Liberalization and Development: Lessons for Africa," *ATPC Work in Progress* 6 (2004): p.23.

⁷⁹ Robert E. Lucas, "Making a Miracle," *Econometrica* 61, no. 2 (1993): p.258.

⁸⁰ *Ibid.*: p.259 and pp.66-67.

⁸¹ Akyüz and Gore, "African Economic Development in a Comparative Perspective," p.267.

⁸² John Weiss, "Export Growth and Industrial Policy: Lessons from the East Asian Miracle Experience," *Asian Development Bank Institute Discussion Paper* 26 (2005):p.9.

the countries which produce them.⁸³ They find that there are important similarities between the products that wealthier countries export and those which poorer countries export.⁸⁴ In their analysis, they find that countries, which have shifted to the production of goods which are associated with high productivity, also have high growth.⁸⁵ Although, they acknowledge that the ability to switch to more productive goods is associated with human capital factors⁸⁶, they find that,

...anything that pushes the economy to...specialize in good(s) with higher productivity levels-sets forth a dynamic (if temporary) process of economic growth as emulators are drawn in to produce the newly discovered high-productivity good(s).⁸⁷

Indeed, Hausmann, Hwang and Rodrik (2006) conclude that countries should attempt to correct the market failures which reduce the incentives for entrepreneurs to enter new markets and produce new products which are associated with higher productivity.⁸⁸ De Pineres and Ferrantino (1997), in their study of export diversification in Latin America, find that the increase in product varieties across that region has generally been beneficial for reducing the economic instability associated with “excessive export specialization.”⁸⁹

The ECA (2004a) finds that the Asian miracle countries implemented industrial and trade policies with the specific goal to diversify their production by “build[ing] connections between internal markets and exports” - thereby encouraging vertically

⁸³ Ricardo Hausmann, Jason Hwang, and Dani Rodrik, *What You Export Matters* (National Bureau of Economic Research Cambridge, Mass., USA, 2006).

⁸⁴ *Ibid.* p.3.

⁸⁵ *Ibid.* p.9 and p.17.

⁸⁶ *Ibid.* p.14.

⁸⁷ *Ibid.* p.9.

⁸⁸ *Ibid.* p.17.

⁸⁹ Sheila Amin Gutierrez de Piñeres and Michael Ferrantino, "Export Diversification Trends: Some Comparisons for Latin America," *The International Executive* 39, no. 4 (1997).: p.476.

integrated industries.⁹⁰ Similar conclusions were drawn in Ali et al (1991), where it was suggested that “more attention should be devoted to analyzing the potential for enhancing the growth and stability of export earnings through vertical diversification.”⁹¹ Ali et al (1991) find, in their review of the export performance in Malawi, Tanzania and Zimbabwe, that between 67% and 89% of the exports base consisted of “coffee, cotton, sugar, tea and tobacco”.⁹² These economies could therefore benefit from greater intra-industry deepening and diversification.⁹³

2.3 Export Processing Zones

EPZs are liberal policy areas within an economy which are established to encourage FDI and are devoted to the manufacture of exports. The first EPZ was established in Ireland in 1959⁹⁴. However, by the early 1960’s, as East Asian economies began to transition from import substitution-based industrialization⁹⁵, they also established EPZ’s in addition to encouraging the growth of their domestic export-producing markets⁹⁶. Eventually, Latin American economies also turned away from

⁹⁰ Economic Commission for Africa, "Trade Liberalization and Development: Lessons for Africa," p.23.

⁹¹ Ridwan Ali, Jeffrey Alwang, and Paul B. Siegel, *Is Export Diversification the Best Way to Achieve Export Growth and Stability?: A Look at Three African Countries* (Southern Africa Dept., Africa Regional Office, World Bank, 1991): p.36.

⁹² Ibid. p.1.

⁹³ Ibid. p.36.

⁹⁴ Madani, "A Review of the Role and Impact of Export Processing Zones," p.12.

⁹⁵ Stephan Haggard, Byung-kook Kim, and Chung-in Moon, "The Transition to Export-Led Growth in South Korea: 1954-1966," *The Journal of Asian Studies* 50, no. 4 (1991).

⁹⁶ Jing-dong Yuan and Lorraine Eden, "Export Processing Zones in Asia: A Comparative Study," *Asian Survey* 32, no. 11 (1992): p.1032. Madani, "A Review of the Role and Impact of Export Processing Zones," p.18. Madani (1999) finds that Asian NICs established EPZs after industry had already been developed.

import substitution to EPZ's⁹⁷ as their economies faced severe balance of payments crises which, in some cases, also led to political crisis.⁹⁸ Caribbean countries had only experimented with import substitution on a limited basis as their economies were heavily reliant on the export of agricultural products, tourism and, for some countries, banking services – all important sources of foreign currency⁹⁹. However, by the 1980's, Caribbean countries also embraced the export processing zone model in response to the United States' Caribbean Basin Initiative, an agreement which gave preferential access to the US market for manufactures from the Caribbean Basin region which met certain criteria¹⁰⁰. African countries were perhaps the last to move to outward-oriented strategies and to use EPZs¹⁰¹. Indeed, a number of African economies were still categorized as closed in 1994.¹⁰²

2.3.1 Definitions of EPZs

The International Labor Organization (ILO) together with the United Nations Centre on Transnational Corporations (UNCTC)¹⁰³ and the World Bank¹⁰⁴ have produced

⁹⁷ Douglas Bennett and Kenneth E. Sharpe, "Transnational Corporations and the Political Economy of Export Promotions: The Case of the Mexican Automobile Industry," *International Organization* 33, no. 2 (1979): p.177-78, Diana Alarcon and Terry McKinley, "Beyond Import Substitution: The Reconstruction Projects of Brazil and Mexico," *Latin American Perspectives* 19, no. 2 (1992): p.72.

⁹⁸ Anne O. Krueger, "Virtuous and Vicious Circles in Economic Development," *The American Economic Review* 83, no. 2 (1993): pp.352-54.

⁹⁹ See Kempe Ronald Hope, *Economic Development in the Caribbean* (New York: Praeger Publishers, 1986): p.46., Esther C. Suss, Oral H. Williams, and Chandima Mendis, "Caribbean Offshore Financial Centers: Past, Present, and Possibilities for the Future," *IMF Working Paper*, no. WP/02/88 (2002): pp.5-6.

¹⁰⁰ Schoepfle and Perez-Lopez, "Export Assembly Operations in Mexico and the Caribbean."

¹⁰¹ Watson, "Export Processing Zones: Has Africa Missed the Boat? Not Yet!."

¹⁰² Ibid. and Jeffrey Sachs et al., "Economic Reform and the Process of Global Integration," *Brookings Papers on Economic Activity* 1995, no. 1 (2005): p.24. See Table 3.

¹⁰³ U.N.C.T.C. and I.L.O., "Economic and Social Effects of Multinational Enterprises in Export Processing Zones."

¹⁰⁴ The World Bank, "Export Processing Zones."

two comprehensive surveys of the key issues involved in the creation of export processing zones and the benefits and costs of operating them. Export processing zones are considered “one of many policy instruments used to promote non-traditional exports”¹⁰⁵ and to secure “foreign exchange earnings, employment, income, and spillover benefits, including learning by locally owned firms.”¹⁰⁶ Krueger (1998) clarifies that while outward-orientation strategies focus mainly on the removal of policies which prevented the growth of the export sector;¹⁰⁷ export promotion actually goes further to create “more incentives for producing for export than for the domestic market.”¹⁰⁸ EPZs are, therefore, a form of export promotion. Notwithstanding the positive aspects associated with EPZs and the support provided by the World Bank for a number of EPZ projects, they are considered to be a first and temporary step towards greater trade liberalization¹⁰⁹ and integration into world markets for the countries which use them.

The definitions of an export processing zone provided by the World Bank, the ILO and the UNCTC offer important insights into the rationale for their existence. The World Bank (1992) states that an EPZ is,

An industrial estate, usually a fenced-in areas of 10 to 300 hectares, that specializes in manufacturing for export. It offers firms trade conditions and a liberal regulatory environment.¹¹⁰

The UNCTC/ ILO (1988) definition emphasizes the importance of foreign investment and the host country’s incentives,

¹⁰⁵ Madani, "A Review of the Role and Impact of Export Processing Zones," p.11.

¹⁰⁶ The World Bank, "Export Processing Zones," p.2.

¹⁰⁷ Krueger, "Why Trade Liberalization Is Good for Growth.": p.1514.

¹⁰⁸ Ibid.

¹⁰⁹ The World Bank, "Export Processing Zones," pp.1-2 and pp.10-13.

¹¹⁰ Ibid.: p.7.

An EPZ could be defined here as a delineated industrial estate which constitutes a free trade enclave in the customs and trade regimes of a country, and where foreign manufacturing firms produce mainly for export benefit from a certain number of fiscal and financial incentives.¹¹¹

These definitions highlight two important aspects of EPZs. First, EPZs generally consist of an industrial area, separated from the domestic economy by policy and, in some cases, physical barriers. These barriers create a separate economic space in which export production occurs. Wong and Chu (1984), in their description of typical EPZs in Asia as “industrial estates” usually “under 100 hectares in area”, highlight the nature of the EPZs as an identifiable, ring-fenced space.¹¹² Other zones in Thailand, Colombia, Jamaica, the Dominican Republic and Kenya follow similar patterns.¹¹³ However, some EPZs are broader. In China, for example, EPZs have been extended to “entire cities and regions”¹¹⁴ or to the “entire territory” as in the cases of Hong Kong, Singapore¹¹⁵ and Mauritius¹¹⁶.

Second, the definitions highlight that EPZs provide liberal and flexible policy environments to attract foreign investment. Sit (1988) suggests that because investment climates in developing countries were “often deterrents to the establishment of export industries”, business policies and regulations needed to be streamlined in the EPZ “in order to generate a meso-investment climate conducive to the development of export

¹¹¹ U.N.C.T.C. and I.L.O., "Economic and Social Effects of Multinational Enterprises in Export Processing Zones," p.4.

¹¹² Kwan-Yiu Wong and David K. Y. Chu, "Export Processing Zones and Special Economic Zones as Generators of Economic Development: The Asian Experience," *Geografiska Annaler* 66, no. 1 (1984).p.3.

¹¹³ The World Bank, "Export Processing Zones," p.11.

¹¹⁴ U.N.C.T.C. and I.L.O., "Economic and Social Effects of Multinational Enterprises in Export Processing Zones," p.6.

¹¹⁵ *Ibid.*, p.4.

¹¹⁶ Jean-Pierre Singa Boyenge, "Ilo Database on Export Processing Zones," (Geneva: International Labour Organization, 2003).

industries with foreign participation” along a country’s comparative advantage.¹¹⁷ In addition, multinational firms were often targeted because they were thought to offer “access to market information, distributional channels, and international marketing skills that [were] not available to domestic firms”¹¹⁸.

2.3.2 EPZ Incentives

Host governments also continue to provide a range of incentives to attract firms to the EPZs. Many host countries constructed and financed move-in ready industrial sites for their EPZ occupants.¹¹⁹ Between 1977 and 1990, for example, the World Bank provided \$87 million in loans to the governments of 5 countries for 6 EPZ site development projects and technical assistance programs in EPZ management and promotion¹²⁰. Madani (1999) identified that the typical EPZ’s incentive package included (a) lower levels of import and export restrictions, (b) less restrictive labor requirements, (c) liberal tax, ownership and foreign exchange regulations, and (d) access to superior infrastructure and information and communications technologies compared with the rest of the economy.¹²¹

An analysis of the policies used by the “Asian miracle” countries, in their approach to export promotion, reveals many similarities with the other EPZ countries

¹¹⁷ Victor F.S. Sit, "China's Export-Oriented Open Areas: The Export Processing Concept," *Asian Survey* 28, no. 6 (1988): p. 666.

¹¹⁸ Bennett and Sharpe, "Transnational Corporations and the Political Economy of Export Promotions: The Case of the Mexican Automobile Industry." p.191.

¹¹⁹ U.N.C.T.C. and I.L.O., "Economic and Social Effects of Multinational Enterprises in Export Processing Zones," p.3.

¹²⁰ The World Bank, "Export Processing Zones," p.11.

¹²¹ Madani, "A Review of the Role and Impact of Export Processing Zones," p.15.

throughout the developing world, but also many important differences. For example, Asian governments provided subsidies and access to cheap credit for exporters¹²². However, these incentives were usually tied to stringent export targets¹²³. Amsden (1991) found that instead of viewing subsidies as a “giveaway”, in successful East Asian economies, subsidies were linked to “concrete performance standards with respect to output, exports, and eventually, R&D.”¹²⁴ Glick and Moreno (1997) also find that trade policy was able to create a competitive environment for exporters and entrepreneurs, despite government intervention. They state that, “government support was by and large given to firms according to their success in the market place, particularly world markets”.¹²⁵

While the previous discussion indicated the types of incentives that were provided by EPZ countries (i.e. the supply side), other studies have considered the types of incentives and conditions that foreign investors find attractive (i.e. the demand side). Rolfe et al (1993), in their study of 103 businesses in 17 countries subject to the Caribbean Basin Initiative, found that the ability to repatriate profits, import duty exemptions, preferential tax agreements and subsidies were highly sought after incentives.¹²⁶ Drabek and Payne (2001), using an index of transparency, offer that greater transparency (an indication of the clarity and predictability of a country’s policies

¹²² Haggard, Kim, and Moon, "The Transition to Export-Led Growth in South Korea: 1954-1966." pp. 867-68.

¹²³ Ibid.: p.866.

¹²⁴ Alice H. Amsden, "Diffusion of Development: The Late-Industrializing Model and Greater East Asia," *The American Economic Review* 81, no. 2 (1991): p.284.

¹²⁵ Reuven Glick and Ramon Moreno, "The East Asian Miracle: Growth Because of Government Intervention and Protectionism of in Spite of It?," *Business Economics* 32, no. 2 (1997): p.23.

¹²⁶ Robert J. Rolfe et al., "Determinants of Fdi Incentive Preferences of M.N.E.'S," *Journal of International Business Studies* 24, no. 2 (1993): p.343.

and institutions) was significantly and positively related to FDI inflows.¹²⁷ Jansen and Nordas (2004) discover that when total trade flows are considered, rather than “bilateral trade patterns”, variables measuring a country’s domestic institutions such as the rule of law, governance and corruption levels were statistically significant¹²⁸. Finally, Hope (1989), referring to periods of socialism and nationalization in Guyana and Jamaica in the 1970’s, finds that political orientation can affect foreign investment flows.¹²⁹ Indeed, Jodice (1980) reports that between 1960 and 1976 there were over 400 instances of expropriations of foreign firms in developing countries.¹³⁰

2.3.3 EPZ Performance

Many EPZs have not met with the same success as those in South Korea and Taiwan.¹³¹ The World Bank (1992) found that most of the successful EPZs (measured in terms of employment, occupation rates, export levels, value added, and FDI inflows) were in Asia, the Dominican Republic and Jamaica; while the majority of zones throughout the world were found to be performing below expectations.¹³² First, backward linkages with the domestic economy may not be generated, particularly for “assembly-type work” using inputs “sent over directly from the parent company, assembled in the

¹²⁷ Zdenek Drabek and Warren Payne, "The Impact of Transparency on Foreign Direct Investment," *World Trade Organization Staff Working Paper* ERAD-99-02 (2001): p.19.

¹²⁸ Marion Jansen and Hildegunn Kyvik Nordas, "Institutions, Trade Policy and Trade Flows," *World Trade Organization Staff Working Paper* ERSD-2004-02 (2004): p.21.

¹²⁹ Kempe Ronald Hope, "Private Direct Investment and Development Policy in the Caribbean: Nationalism and Nationalization Scared Away Foreign Investors but Reagan Initiative's Luring Them," *American Journal of Economics and Sociology* 48, no. 1 (1989).

¹³⁰ David A. Jodice, "Sources of Change in Third World Regimes for Foreign Direct Investment, 1968-1976," *International Organization* 34, no. 2 (1980): pp.182-85.

¹³¹ Rondinelli, "Export Processing Zones and Economic Development in Asia: A Review and Reassessment of a Means of Promoting Growth and Jobs," p.93.

¹³² The World Bank, "Export Processing Zones," p.15.

zone and then shipped out again.”¹³³ Alarcon and McKinley (1992) find that this was particularly the case in the Mexican maquiladoras where there were “weak linkages with the rest of the Mexican economy” and relatively low and declining value added in export production.¹³⁴ Warr (1989), describing the “footloose” nature of transnational operations, offered that substantial linkages may not develop between the foreign firms operating in EPZs and the domestic economy because the international group may prefer, for strategic reasons, not to become entrenched in the host country’s economy.¹³⁵ Park (2000), in a study of the determinants of sourcing arrangements for US multinational firms, found that production inputs were usually obtained from higher-cost developed countries rather than low-cost sources because of quality factors and delivery reliability.¹³⁶ Fitting (1982) points out that China decided to offer economic incentives to EPZ occupants to encourage these important linkages with the non-zone economy¹³⁷. Finally, Schrank (2001) offers an alternative explanation for the absence of strong linkages with the rest of the economy – that the relevant domestic market may not have been sufficiently industrialized to take advantage of any possible linkages¹³⁸. As an example, the well developed South Korean industrial environment, where “EPZs inspired a demonstration

¹³³ Wong and Chu, "Export Processing Zones and Special Economic Zones as Generators of Economic Development: The Asian Experience," p.9.

¹³⁴ Alarcon and McKinley, "Beyond Import Substitution: The Reconstruction Projects of Brazil and Mexico." p.84.

¹³⁵ Warr, "Export Processing Zones: The Economics of Enclave Manufacturing.": p.75.

¹³⁶ Hong Y. Park, "Foreign Direct Investment and Global Sourcing Choices of Firms in the Us," *Managerial and Decision Economics* 21, no. 6 (2000):. p.218.

¹³⁷ George Fitting, "Export Processing Zones in Taiwan and the People's Republic of China," *Asian Survey* 22, no. 8 (1982):. p.736.

¹³⁸ Andrew Schrank, "Export Processing Zones: Free Market Islands or Bridges to Structural Transformation?," *Development Policy Review* 19, no. 2 (2001).

effect” was compared to the paucity of linkages established in the Dominican Republic.¹³⁹

While the literature suggests that the important linkages were usually not established, it is also useful to consider replicative activities arising in the domestic economy by local entrepreneurs. Hamilton (1997), referring to the importance of small family-run Taiwanese export enterprises, found that the “rapid shifts in sectoral structure that create new investments, high levels of education, and the importance of small enterprises” also encouraged productivity growth.¹⁴⁰ Johansson and Nilsson (1997) find that a “dynamic catalyst effect” may be operating where exports increase in an economy beyond the level which is produced within the EPZ.¹⁴¹ This effect encourages domestic entrepreneurs to produce for export and thus will have a positive affect on development. However, it is acknowledged that EPZ production does not always lead to knowledge spillovers to the domestic economy. Krueger (1978) finds that the skill content of the exported sector is generally lower than in the import-competing sector.¹⁴² Warr (1989) offers that technology transfers between EPZ companies and domestic firms may not have occurred for competitive reasons.¹⁴³ Therefore, it is also important to consider the type of policies which been successful in encouraging spillovers.

¹³⁹ Ibid.: pp.227-29.

¹⁴⁰ Gary G. Hamilton, "Organization and Market Processes in Taiwan's Capitalist Economy," in *The Economic Organization of East Asian Capitalism*, ed. Marco Orrú, Nicole Woolsey Biggart, and Gary G. Hamilton (Thousand Oaks, Calif.: Sage Publications, 1997)., p.256.

Helena Johansson and Lars Nilsson, "Export Processing Zones as Catalysts," *World Development* 25, no. 12 (1997).

¹⁴² Anne O. Krueger, "Alternative Trade Strategies and Employment in L.D.C.'S," *The American Economic Review* 68, no. 2 (1978).: p.274.

¹⁴³ Warr, "Export Processing Zones: The Economics of Enclave Manufacturing," p.75.

EPZs were also associated with unstable, low wage employment¹⁴⁴. Wong and Chu (1984) offer that employment in EPZs may be unstable due to the volatile nature of EPZ “production patterns” which varied according to “world demands.”¹⁴⁵ Krueger (1978) points out that increases in exports which lead to higher rates of economic growth may not necessarily be accompanied by increases in employment.¹⁴⁶ For example, the demand for labor derived from expanding exports may be relatively weak where the export sector is relatively capital intensive and where the expansion of exports affects factor prices.¹⁴⁷ However, the World Bank (1992) finds that EPZ employment tended to be comparable to or better than non-zone employment opportunities in terms of wages and working conditions.¹⁴⁸ Furthermore, production and employment volatility appear to be related to normal business cycles which would affect any profit-oriented business operating.

The incentives used to create the EPZ may have reduced the overall welfare benefits to the host economy. Alarcon and Mckinley (1993) find that the benefits to the Mexican economy amounted to nothing more than “the payment of salaries and the expenditures related to the installation and operation of the plants.”¹⁴⁹ Madani (1999) points out that in many cases the EPZ incentive packages included subsidized utilities¹⁵⁰, thus further reducing the benefits to the domestic economy. Warr (1989) offers that

¹⁴⁴ Rondinelli, "Export Processing Zones and Economic Development in Asia: A Review and Reassessment of a Means of Promoting Growth and Jobs," pp.94-96.

¹⁴⁵ Wong and Chu, "Export Processing Zones and Special Economic Zones as Generators of Economic Development: The Asian Experience," p.8.

¹⁴⁶ Krueger, "Alternative Trade Strategies and Employment in L.D.C.'S," p.270.

¹⁴⁷ Ibid.: pp.271-72.

¹⁴⁸ The World Bank, "Export Processing Zones," p.17.

¹⁴⁹ Alarcon and McKinley, "Beyond Import Substitution: The Reconstruction Projects of Brazil and Mexico," p.84.

¹⁵⁰ Madani, "A Review of the Role and Impact of Export Processing Zones," p.15.

foreign exchange earnings were often repatriated and thus had little or no welfare impacts on the domestic economy.¹⁵¹

2.4 Entrepreneurship and Development

The third strand of literature is entrepreneurship and development. The promotion of entrepreneurship has become the latest prescription for economic growth and development in less developed countries (LDCs) – joining a list which includes reforms to countries’ macro-economic, exchange rate, trade and industrial policies and improvements in governance. Both national governments and the major international organizations, as part of their poverty reduction, growth and economic development programs, are beginning to focus on improving the environment for entrepreneurship. The World Bank and United Nations Industrial Development Organization (UNIDO), for example, have each established units to promote private sector development in developing countries and to provide technical assistance in the formulation of SME and entrepreneurship policy. Additionally, a number of developing countries have recently promulgated SME legislation and launched other programs to assist small businesses and local entrepreneurs.

The research on entrepreneurship has, for the most part, focused on entrepreneurship in developed countries. Audretsch and Thurik (2001), for example, coined the phrase “entrepreneurial economy” to distinguish developed economies, such as the United States, which are characterized by innovation, production flexibility,

¹⁵¹ Warr, "Export Processing Zones: The Economics of Enclave Manufacturing," p.77.

decentralization and increasing uncertainty, from other “managed economies”¹⁵². In these entrepreneurial economies, it is argued that public policy increasingly needs to be more facilitative rather than regulatory¹⁵³. Other studies have examined policies to: increase the likelihood of individuals becoming entrepreneurs, to improve the performance of entrepreneurial firms and to remove barriers which obstruct the supply of entrepreneurship¹⁵⁴.

It is also important to clarify what is meant by entrepreneurship. A number of terms are used interchangeably to describe entrepreneurial activities. For example, entrepreneurship and small and medium enterprises (SMEs) have been used synonymously. Discussions of entrepreneurial activities in developing countries have also included the informal sector and petty capitalism¹⁵⁵. Fafchamps (2001), writing on Africa, finds that most manufacturing firms had fewer than 150 employees¹⁵⁶ and therefore would fall into the SME sector. He writes that “market intermediation in Africa is characterized by a plethora of small traders, seldom exceeding a handful of employees and family helpers.”¹⁵⁷ The World Bank, in its efforts to target entrepreneurship, has focused on both the small business and the informal sectors. In 2003, the World Bank released a new database on the SME sector and the accompanying study found that when both the SME and the informal sectors are considered, “the joint contribution...to GDP

¹⁵² David Audretsch and A. Roy Thurik, "What's New About the New Economy? Sources of Growth in the Managed and Entrepreneurial Economies," *Industrial and Corporate Change* 10, no. 1 (2001).

¹⁵³ Ibid.

¹⁵⁴ William J. Baumol, "Entrepreneurship in Economic Theory," *The American Economic Review* 58, no. 2 (1968). p.69.

¹⁵⁵ A Smart and J Smart, *Petty Capitalists and Globalization: Flexibility, Entrepreneurship, and Economic Development* (State University of New York Press, 2005).

¹⁵⁶ Marcel Fafchamps, "Networks, Communities and Markets in Sub-Saharan Africa: Implications for Firm Growth and Investment," *Journal of African Economies* 10, no. 2 (2001).: p.114.

¹⁵⁷ Ibid.

remains approximately constant across income groups at around 65-70 percent. As income increases however, there is a marked shift from the informal to the SME sector.”¹⁵⁸ This finding indicated that the informal sector in developing countries is an important source of economic activity. Smart and Smart (2005) show that petty capitalists, or small businesses which employ relatively few employees and rely heavily on their owner’s and the owner’s family’s labor, include a wide spectrum of entrepreneurs – from the numerous export enterprises of Hong Kong¹⁵⁹, the maquila workshops in Mexico which produce garments for export, the furniture manufacturers in Italy, to Taiwan’s integrated circuit producers.¹⁶⁰

In developed economies, however, scholars have argued for a distinct concept of entrepreneurship. Carland et al (1984), for example, writing on the American economy, make a strong distinction between the SME sector and entrepreneurship¹⁶¹. They find that,

Although there is considerable overlap between small business and entrepreneurship, the concepts are not the same. Entrepreneurial firms may begin at any size level, but key on growth every time.....The entrepreneur is characterized by preference for creating activity, manifested by some innovative combinations of resources for profit.¹⁶²

¹⁵⁸ M. Ayyagari, T. Beck, and A. Demirgüç-Kunt, "Small and Medium Enterprises across the Globe," *World Bank Policy Research Working Paper* 3127 (2003): p.11.

¹⁵⁹ See also T.F.L. Yu, "Adaptive Entrepreneurship and the Economic Development of Hong Kong," *World Development* 26, no. 5 (1998).

¹⁶⁰ Smart and Smart, *Petty Capitalists and Globalization: Flexibility, Entrepreneurship, and Economic Development*.

¹⁶¹ James W. Carland et al., "Differentiating Entrepreneurs from Small Business Owners: A Conceptualization," *The Academy of Management Review* 9, no. 2 (1984).

¹⁶² *Ibid.*: p.357.

However, Thurik and Wennekers (2004), offer that while SMEs and entrepreneurship have different meanings, both are important in an economy.¹⁶³ Indeed, the small business sector may serve as a “vehicle both for Schumpeterian entrepreneurs introducing new products....and for people who simply run and own a business for a living.”¹⁶⁴ Similar distinctions have been made between survival or necessity entrepreneurs and opportunity entrepreneurs.

Do these distinctions matter for developing countries? As the major share of firms in developing countries are small, in terms of the number of employees and assets; and many operating in the informal economy using family labor, this paper’s distinction of entrepreneurship cannot, therefore, be based on size. Any distinctions drawn in this study between entrepreneurship, the small business sector, petty capitalism and the informal sector will be based on the Schumpeterian concept of innovation– new products, new markets and new processes. However, as Schumpeter (1947) pointed out, that “the “new thing” need not be spectacular or of historical importance....To see the phenomenon even in the humblest levels of the business world is quite essential though it may be difficult to find the humble entrepreneurs historically.”¹⁶⁵ Therefore, this study will adopt the widest possible definition of entrepreneurship.

¹⁶³ Roy Thurik and Sander Wennekers, "Entrepreneurship, Small Business and Economic Growth," *Journal of Small Business and Enterprise Development* 11, no. 1 (2004)..

¹⁶⁴ Ibid.: p.140.

¹⁶⁵ Joseph A. Schumpeter, "The Creative Response in Economic History," *The Journal of Economic History* 7, no. 2 (1947). p.151.

2.4.1 Entrepreneurship, Institutions and Development

Economists have, for a while, acknowledged the importance of institutions for economic growth.¹⁶⁶ However, an economy's institutions also affect the supply and actions of entrepreneurs and potential entrepreneurs. Leibenstein (1968) finds that the supply of "gap-filling" entrepreneurs is determined by the availability of individuals with the required skill-sets and risk tolerance levels together with a country's socio-political institutions which affect an individual's freedom of action.¹⁶⁷ For Leibenstein (1968) then, entrepreneurial activity emerges from human capital investments in the presence of *entrepreneur-friendly institutional arrangements*. Baumol (1968), referring to the entrepreneur, offers that it is important to examine "what can be done to encourage his activity" and "the determinants of the payoff to his activity"¹⁶⁸. Again, this suggests that it is important to examine the institutional factors which affect the likelihood of the emergence of the entrepreneur. Cole (1946) emphasized the "favoring environment" for entrepreneurship which consisted of incentives and opportunities for profit.¹⁶⁹ For Cole, an appropriate environment provided adequate training for entrepreneurs to ensure the "growth in skill of making wise decisions relative to innovation, management, and the adjustment to external forces".¹⁷⁰

¹⁶⁶ Douglass Cecil North, *Institutions, Institutional Change, and Economic Performance, The Political Economy of Institutions and Decisions* (Cambridge ; New York: Cambridge University Press, 1990)..

¹⁶⁷ Harvey Leibenstein, "Entrepreneurship and Development," *The American Economic Review* 58, no. 2 (1968): pp.78-79.

¹⁶⁸ Baumol, "Entrepreneurship in Economic Theory.": p.70.

¹⁶⁹ Arthur H. Cole, "An Approach to the Study of Entrepreneurship: A Tribute to Edwin F. Gay," *The Journal of Economic History* 6, Supplemental (1946).pp.10-11.

¹⁷⁰ Ibid.

Some studies have made an explicit link between entrepreneurial activities and institutions. Like Baumol (1990), for example, Sautet (2005) and Coyne and Leeson (2004) find that institutions can encourage either “productive” or “unproductive” entrepreneurial activities¹⁷¹. Additionally, Sautet (2005) concludes that institutions which direct economic actors to “socially productive activities” and encourage the discovery of profit opportunities will have a positive effect on a country’s economic performance.¹⁷² Boettke and Coyne (2003) go further and link entrepreneurial promoting institutions with economic growth. They find that it is “the adoption of certain institutions, which in turn channel and encourage the entrepreneurial aspect of human action in a direction that in turn spurs economic growth.”¹⁷³ Institutions, therefore, play a role in guiding entrepreneurial activities.

Factors which affect the quality of entrepreneurs in developing countries are also important. Wennekers et al (2005) in their study of the effects of business startups and the stages of economic development find that investments in management skills, institutional development and policies which assist “the growth of young businesses” should be emphasized as a part of an overall entrepreneurship policy for developing countries.¹⁷⁴ Schultz (1980), writing on entrepreneurship in the agricultural sector, finds

¹⁷¹ W.J. Baumol, "Entrepreneurship: Productive, Unproductive, and Destructive," *Journal of Political Economy* 98, no. 5 (1990), Christopher J. Coyne and Peter T. Leeson, "The Plight of Underdeveloped Countries," *Cato Journal* 24, no. 3 (2004), Frederic Sautet, "The Role of Institutions in Entrepreneurship: Implications for Development Policy," *Mercatus Policy Series Policy Primer 1* (2005): p.8.

¹⁷² Sautet, "The Role of Institutions in Entrepreneurship: Implications for Development Policy," p.9.

¹⁷³ Peter J. Boettke and Christopher J. Coyne, "Entrepreneurship and Development: Cause of Consequence?," *Mercatus Center Global Prosperity Initiative* (2003): p.3.

¹⁷⁴ Sander Wennekers et al., "Nascent Entrepreneurship and the Level of Economic Development," *Small Business Economics* 24 (2005). p.306. See also R Sternberg and S Wennekers, "Determinants and Effects of New Business Creation Using Global Entrepreneurship Monitor Data," *Small Business Economics* 24, no. 3 (2005): p.199.

that there is substantial value to devoting resources to improving “entrepreneurial ability” through both formal education and other informal learning experiences.¹⁷⁵ Kilby (1961, 1962 and 2003) offers that there is a scarcity of entrepreneurial and managerial skill in many developing countries led to low levels of business start-ups and poor business performance.¹⁷⁶ Stel et al (2005) explain that ‘low human capital’ and a lack of training opportunities may explain their surprising finding that entrepreneurial activity is negatively related to economic performance in developing and poor countries.¹⁷⁷ Therefore, in addition to creating the right institutional context, potential entrepreneurs must also be supported by the right skills and training.

2.4.2 Why is Entrepreneurship Important for Development?

Economic development involves change and the entrepreneur becomes the best agent for this change. For Leibenstein (1968),

Per capita income growth requires shifts from less productive to more productive techniques per worker, the creation or adoption of new commodities, new materials, new markets, new organizational forms, the creation of new skill, and the accumulation of new knowledge...the entrepreneur as gap filler and input-completer is probably the prime mover of the capacity creation part of these elements in the growth process.¹⁷⁸

¹⁷⁵ Theodore W. Schultz, "Investment in Entrepreneurial Ability," *The Scandinavian Journal of Economics* 82, no. 4 (1980): pp.444-48.

¹⁷⁶ P Kilby, "African Labour Productivity Reconsidered," *The Economic Journal* 71, no. 282 (1961), P Kilby, "Organization and Productivity in Backward Economies," *The Quarterly Journal of Economics* 76, no. 2 (1962), Peter Kilby, "The Heffalump Revisited," *Journal of International Entrepreneurship* 1 (2003).

¹⁷⁷ A. Stel, M. Carree, and R. Thurik, "The Effect of Entrepreneurial Activity on National Economic Growth," *Small Business Economics* 24, no. 3 (2005): p.319.

¹⁷⁸ Leibenstein, "Entrepreneurship and Development," p.77.

Entrepreneurship matters for developing countries because markets matter. Indeed, the market, through its frequent *adjustments* in response to the “separate actions of different people” and “the conditions of supply of various factors of production”, communicated new information through prices which enabled the efficient allocation of resources¹⁷⁹. With the collapse of centrally planned economies it has been seen that governments cannot allocate resources efficiently and that markets are, indeed, necessary. As Leff (1979) concludes, entrepreneurship is essential for development because in developing countries entrepreneurs fill in important gaps¹⁸⁰ left by incomplete and underdeveloped markets.¹⁸¹ Leff (1979) writes,

Indeed a key function of entrepreneurship in developing economies is precisely to mobilize factors such as capital and specialized labor which, being imperfectly marketed, might otherwise not be supplied or allocated to the activities where their productivity is greatest.¹⁸²

However, even when market imperfections are severe, entrepreneurs still exist. Butkevich and Storr (2001) found that entrepreneurs exist even in “hostile climates”¹⁸³. Indeed, entrepreneurs respond to these market imperfections by using various *gap-filling* and, perhaps, second best solutions. In extreme cases, where market and non-market failures are pervasive, entrepreneurs are pushed out of the formal sector into the informal sector. In less severe cases, Leff (1978) proposes that large diversified indigenous

¹⁷⁹ F. A. Hayek, "The Use of Knowledge in Society," *The American Economic Review* 35, no. 4 (1945): pp.526-30.

¹⁸⁰ For a discussion of the “gap-filling” role of entrepreneurs see Leibenstein, "Entrepreneurship and Development."

¹⁸¹ Nathaniel H. Leff, "Entrepreneurship and Economic Development: The Problem Revisited," *Journal of Economic Literature* 17, no. 1 (1979): pp.46-47.

¹⁸² *Ibid.*: p.48.

¹⁸³ Bridget Butkevich and Virgil Storr, *How Entrepreneurs Respond in Hostile Climates* (2001 [cited September 15 2006]); available from <http://www.ihika.org/ki/docs/characters.doc>.

business groups have formed in many developing countries in response to market failures.¹⁸⁴ The “group”, he writes, “is thus an intrafirm mechanism for dealing with deficiencies in the markets for primary factors, risk and intermediate products in the developing countries.”¹⁸⁵ Many of these groups were found to combine both banking and industrial operations¹⁸⁶ and account for large portions of business activities in many developing countries.¹⁸⁷ Ghemawat and Khanna (1998) find that large groups in India were formed to correct the information and capital market deficiencies.¹⁸⁸ Most importantly for Leff (1978), is that these groups engage in entrepreneurial behavior¹⁸⁹ while also “provid[ing] the capital and the technical and managerial resources”¹⁹⁰. In this way, the “group” economizes the entrepreneurial efforts necessary in developing countries¹⁹¹. Nevertheless, these groups are not the optimal structure for entrepreneurship in developing countries as they result in “a special form of monopoly capitalism” which can be disruptive to overall long-term economic development.¹⁹² It is therefore, still necessary to continue to perfect markets in developing countries rather than only relying on second-best options.

¹⁸⁴ Nathaniel H. Leff, "Industrial Organization and Entrepreneurship in the Developing Countries: The Economic Groups," *Economic Development and Cultural Change* 26, no. 4 (1978).

¹⁸⁵ Ibid.: p.667.

¹⁸⁶ Ibid.: p.664.

¹⁸⁷ Ibid.: p.665.

¹⁸⁸ Pankaj Ghemawat and Tarun Khanna, "The Nature of Diversified Business Groups: A Research Design and Two Case Studies

Doi:10.1111/1467-6451.00060," *Journal of Industrial Economics* 46, no. 1 (1998): p.39.

¹⁸⁹ Nathaniel H. Leff, "Industrial Organization and Entrepreneurship in the Developing Countries: The Economic Groups," *Economic Development and Cultural Change* 26, no. 4 (1978): p.669.

¹⁹⁰ Ibid.: p.670.

¹⁹¹ Ibid.: pp.669-72.

¹⁹² Ibid.: p.673.

2.4.3 An Externalities Framework for Entrepreneurship in Developing Countries

The literature on entrepreneurship in developing countries is wide and covers a range of issues from culture and values; institutional barriers such as financial sector development, governance and property rights; to the adequacy of education and technical skills. A broad literature has also developed on foreign direct investment and its positive and negative effects on technology transfer and entrepreneurship. After the collapse of the Soviet Union, a number of studies examined the development of small and medium sized enterprises in transition economies. As these economies moved from centralized economies to market economies, enterprise and entrepreneurship became important. There are similar studies on China.¹⁹³ Yet, other studies examine the effects infrastructural development and the macroeconomy on entrepreneurship. With such a wide scope of issues, a framework for synthesizing the literature is needed. This study offers that the identification of the externalities which affect entrepreneurship provides a useful framework to examine the literature on entrepreneurship in developing countries. These externalities have resulted from and have become embedded in countries' institutions and help to explain the level of entrepreneurship in an economy.

What are the relevant externalities in the case of entrepreneurship? Audretsch, Keilbach and Liemann (2006), writing on the Knowledge Spillover Theory of Entrepreneurship in developed countries identify *network, knowledge, failure and demonstration* externalities as reasons for government intervention into

¹⁹³ Daniel Berkowitz and David N. DeJong, "Entrepreneurship and Post-Socialist Growth," *Oxford Bulletin of Economics and Statistics* 67, no. 1 (2005): p.26.

entrepreneurship.¹⁹⁴ First, they find that dense networks of entrepreneurial firms are beneficial to entrepreneurial activity.¹⁹⁵ Second, Audretsch, Keilbach and Liemann (2006) find that there is an inherent tendency to under-produce knowledge¹⁹⁶ because it is a “non-rival, partially excludable good”.¹⁹⁷ Knowledge expansion results in productivity improvements within the firm which created it and other proximate firms and thus promotes economic growth¹⁹⁸. Indeed, the under-production of knowledge and education can be particularly problematic in developing countries as “a low level of human capital accumulation will slow down technological change.”¹⁹⁹ Additionally, for developing economies, knowledge is important in the product and production discovery process.²⁰⁰ Finally, Audretsch, Keilbach and Liemann (2006) point to failure and demonstration externalities²⁰¹. New firm creation, firms’ life cycles and even firm failures are found to be beneficial for other entrepreneurs²⁰². Entrepreneurs learn from examples around them. An important element, therefore, is market entry. In fact, for Kirzner (1997), market entry was essential. Kirzner (1997) states,

To induce dynamic entrepreneurial competition we require the fulfillment of only one condition: guaranteeing free entrepreneurial entry into any market where profit opportunities may be perceived to exist.²⁰³

¹⁹⁴ D. Audretsch, Max Keilbach, and Eric Leimann, *Entrepreneurship and Economic Growth* (Oxford University Press, 2006): p.173.

¹⁹⁵ Ibid.

¹⁹⁶ Audretsch, Keilbach, and Leimann, *Entrepreneurship and Economic Growth* p.174.

¹⁹⁷ Zoltan J. Acs, *Innovation and the Growth of Cities* (Cheltenham, UK: E. Elgar, 2002): p.9.

¹⁹⁸ Ibid. p.10.

¹⁹⁹ Peter Nijkamp and Jacques Poot, "Spatial Perspectives on New Theories of Economic Growth," *The Annals of Regional Science* 32 (1998): p.21.

²⁰⁰ Ricardo Hausmann and Dani Rodrik, "Economic Development as Self-Discovery," *Journal of Development Economics* 14th Inter-American Seminar on Economics 72, no. 2 (2003).

²⁰¹ Audretsch, Keilbach, and Leimann, *Entrepreneurship and Economic Growth* p.174.

²⁰² Ibid.

²⁰³ Israel M. Kirzner, "Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach," *Journal of Economic Literature* 35, no. 1 (1997): p.74.

While the Knowledge Spillover Theory of Entrepreneurship was intended for developed economies, the externalities identified by Audretsch, Keilbach and Liemann (2006) are valid for developing countries. The major themes which appear in the literature on entrepreneurship in developing countries relate to one or more of these failures. A detailed breakdown of these subcategories is provided in Appendix A.

The idea that examining market imperfections provides insights into understanding entrepreneurship is by no means a new one. However, it may have been overlooked until recently. Leibenstein (1968), after all, pointed out that,

For policy purposes...development economists [should] focus their attention when concerned with specific countries on studying the gaps, obstructions, and impediments in the market network of the economy in question and on the gap-filling and input-completing capacity and responsiveness to different motivational states of the potential entrepreneurs in the population.²⁰⁴

For Leibenstein then, it is important to study how markets function and how they fail in order to discover how to expand entrepreneurial activities in an economy.

2.4.4 Demonstration and Failure Externalities

This study offers that the relatively small number of examples of successful entrepreneurship renders demonstration and failure externalities extremely important in developing countries. King and Robson (1993) described a similar effect as “learning by watching” where “new investment projects in one sector of the economy have a

²⁰⁴ Leibenstein, "Entrepreneurship and Development," p.83.

demonstration effect on the efficiency of other sectors.”²⁰⁵ An important aspect of their model is that the spillovers are generated by the act of investment itself and does not depend on the actual outcome of the project.²⁰⁶ Therefore, each new investment yields productivity spillovers. However, the model assumes that the positive externalities to observing new projects (i.e. the increases in productivity) gradually decline over time²⁰⁷ and that the productivity growth rate (defined as the technological progress frontier) eventually levels off.²⁰⁸ In a similar way, there are important spillover effects from having examples of business formation and from entrepreneurs observing successful going concerns. Potential entrepreneurs observe the strategies and business operations of existing entrepreneurs and gather information about potential markets, input suppliers and production techniques. As such, market entry becomes increasingly important for generating these externalities. Additionally, potential and existing entrepreneurs also learn from failing and failed businesses. They learn what not to do or what to do differently. Markets must, therefore, be free from excessive interventions which do not allow firms to fail for these failure externalities to be effective.

2.4.5 Knowledge Externalities

Knowledge and information externalities affect entrepreneurship in developing countries in two important ways: these externalities affect the ability of entrepreneurs to discover what to produce and they impact the technology and processes used in

²⁰⁵ Mervyn A. King and Mark H. Robson, "A Dynamic Model of Investment and Endogenous Growth," *The Scandinavian Journal of Economics* 95, no. 4 (1993): p.449.

²⁰⁶ Ibid.

²⁰⁷ Ibid.

²⁰⁸ Ibid.: p.451.

production. Knowledge and information externalities are impacted by information asymmetries, transaction costs, education levels, research and development opportunities and foreign direct investment.

First, information failures regarding what to produce characterize markets in developing countries²⁰⁹. Mambula (2002) points out that because high discovery costs, entrepreneurs enter “well established sectors rather than seeking new production and new market niches.”²¹⁰ Hausmann and Rodrik (2003) find that there are high costs to discovering *what to produce* and that these costs cannot be fully appropriated by an entrepreneur.²¹¹ They conclude that in a market situation without government intervention there is unlikely to be the socially optimal amount of entrepreneurship and investment in business activities. Additionally, if entrepreneurs who enter the market are allowed to exist as monopolies, then again the market fails as there will be over-production of goods which do not embody the country’s comparative advantage. Information and search costs, therefore, may lead to lower levels of entrepreneurship²¹².

In addition to information failures, the paucity of available educational resources is a major limiting factor for knowledge spillovers in developing countries. Writing on Africa, Elkan (1988) finds that an entrepreneur’s ability to move into the formal industrial sector increased with education.²¹³ Additionally, persons with experience in

²⁰⁹ Hausmann and Rodrik, "Economic Development as Self-Discovery."

²¹⁰ Mambula, "Perceptions of Sme Growth Constraints in Nigeria," p.63.

²¹¹ Hausmann and Rodrik, "Economic Development as Self-Discovery."

²¹² Ibid.

²¹³ W Elkan, "Entrepreneurs and Entrepreneurship in Africa," *The World Bank Research Observer* 3, no. 2 (1988).p.175.

“large expatriate or Asian-run businesses”²¹⁴ and members of the educated political elite were more likely to become entrepreneurs.²¹⁵ Berkowitz and DeJong (2005), in their study of the effects on entrepreneurship and economic growth find that education has a strong and positive effect on entrepreneurship.²¹⁶ Mambula (2002) points out that “most Nigerian SME owner/managers are not adequately organized, qualified or trained. This seriously hampers their performance and their international competitiveness.”²¹⁷ However, in a study of Zambian entrepreneurs, von der Fehr (1995) finds that entrepreneurs generally had more years of formal education than employees (i.e. 16% of entrepreneurs held university degrees compared to 2% of employees).²¹⁸ The mix of educational attainment also revealed some important differences between ethnic groups. Indigenous African entrepreneurs were more likely to have a secondary or university education; Asian entrepreneurs generally attained secondary, university and professional education; and entrepreneurs of European origin in Zambia generally had secondary school, university and technical training.²¹⁹ These differences may affect the types of entrepreneurial activities that are attempted by the different groups. Bell and Pavitt (1992) offer that,

It is widely recognized that education policy has a strong influence on the effectiveness with which technologies are assimilated and improved. Thus, literacy is advantageous in supplier-dominated technologies, and

²¹⁴ Ibid.: p.174.

²¹⁵ Ibid.: p.175.

²¹⁶ Berkowitz and DeJong, "Entrepreneurship and Post-Socialist Growth," p.27.

²¹⁷ Mambula, "Perceptions of Sme Growth Constraints in Nigeria," p.61.

²¹⁸ Nils-Henrik Morch von der Fehr, "The African Entrepreneur: Evidence on Entrepreneurial Activity and Firm Formation in Zambia," *World Bank Discussion Papers 1509* (1995):. p.7 See table 2.4.

²¹⁹ Ibid.: p.7.

higher technical and graduate engineering skills are necessary in scale-intensive and specialized-supplier technologies.²²⁰

Finally, there is a large and well developed literature on the effects of foreign direct investment on development through its role as a transferor of technology. Buckley and Ruane (2006) point out that,

FDI may assist developing countries through: the provision of capital, the inflow of technology, the inflow of managerial know-how, and their impact on the creation of efficient markets.²²¹

Ireland's miracle growth over the last 70 years can be an important example for developing countries. Indeed, Ireland's transformation is attributed to the country's ability to attract FDI inflows through its newly formed export processing zones beginning in the 1950's.²²² However, the FDI was strategically attracted – leading to clusters of high skill activities in the electronics, chemicals and pharmaceuticals sectors.²²³ Buckley and Ruane (2006) also point out that the “Irish education and training policy was also coordinated to ensure that a supply of skilled labour suited to the sector, so that costs remained competitive.”²²⁴ In this respect, comparisons have been made between Ireland's development and India's high-tech clusters²²⁵. Finally, Buckley and Ruane (2006) find that Ireland has been successful in forming those important backward linkages which

²²⁰ Martin Bell and Keith Pavitt, "Accumulating Technological Capability in Developing Countries," *Proceedings of the World Bank Annual Conference on Development Economics* (1992).

²²¹ Peter J. Buckley and Frances Ruane, "Foreign Direct Investment in Ireland: Policy Implications for Emerging Economies," *The World Economy* 29, no. 11 (2006): p.1612.

²²² Ibid.: p.1613.

²²³ Ibid.: pp.1620-21.

²²⁴ Ibid.: p.1621.

²²⁵ See A. Arora, A. Gambardella, and S. Torrissi, "In the Footsteps of Silicon Valley? Indian and Irish Software in the International Division of Labour," *STANFORD INSTITUTE FOR ECONOMIC POLICY RESEARCH* SIEPR Discussion Paper No. 00-41 (2001).

transmit knowledge spillovers from FDI.²²⁶ However, they recognize that “it takes time for MNEs to acquire local suppliers, and active policy that can reduce the ‘learning phase’ about local supply may increase the speed at which linkages can occur”.²²⁷

2.4.6 Network Externalities

Network externalities have emerged as a major theme in the literature on entrepreneurship in developing countries. There are a number of dimensions. First, there are networks between entrepreneurs within the country (i.e. domestic associations) and then there are networks which extend internationally. Much of the literature also focuses on the lack of indigenous business networks in some countries and the importance of ethnic minority networks in others. A second, but related, strand of the literature examines the development of industrial clusters between firms in developing countries and their links to international clusters. Indeed, network externalities, of all types, are important because the small size of many enterprises in developing countries often negatively affects transactions costs, scales of economies, and the consistency of production quality.²²⁸ Business networks and industrial clusters can assist in overcoming some of the disadvantages of smallness through their creation of positive externalities.²²⁹ These networks may also help to overcome some of the information failures associated with markets in developing countries.

²²⁶ Buckley and Ruane, "Foreign Direct Investment in Ireland: Policy Implications for Emerging Economies," p.1623.

²²⁷ Ibid. See also Andrew Schrank, "Export Processing Zones: Free Market Islands or Bridges to Structural Transformation?," *Development Policy Review* 19, no. 2 (2001).

²²⁸ Fafchamps, "Networks, Communities and Markets in Sub-Saharan Africa: Implications for Firm Growth and Investment," pp.114-18.

²²⁹ Mambula, "Perceptions of Sme Growth Constraints in Nigeria," p.61.

2.5 Conclusion

This discussion of the colonial and immediate post-colonial period show that in many developing countries' markets became severely distorted by industrial policies. Economies were characterized by overvalued exchange rates, import and foreign exchange controls, and large inefficient monopolies. Business regulations associated with the import substitution programs were often complex and supported the growth of corruption. As economies performed worse, more distortions were created, leading to "virtuous and vicious" cycle²³⁰. Given these market and non market failures it is easy to see why import substitution failed to achieve meaningful growth for the countries which used this strategy.

An outward oriented export promotion strategy offered many potential advantages to developing countries. Countries could alleviate foreign exchange pressures and thus liberalize strict foreign exchange controls. Their industries would be exposed to foreign competition and benefit from technology and skills transfers in order to improve productivity. Structural reform, however, requires product diversification. However, the approach taken by many developing economies to use EPZs rather than greater structural reform often meant that the complex business environment often remained in the majority of their economy. A development strategy then, which focuses on entrepreneurship therefore requires that countries address these distortions and to focus on using markets as a means of development.

²³⁰ Krueger, "Virtuous and Vicious Circles in Economic Development," p.352.

CHAPTER 3

A Model of EPZ Emergence

3.1 Introduction

This chapter explores the theoretical underpinnings of why EPZs emerge in some economies. The development of export processing zones raises not only issue of industrialization through government intervention and planning, but also the issue of the use of an enclave-type development strategy. I identify two possible reasons for EPZ development. First, EPZs may arise because of market failures related to co-ordination failures, information asymmetries, free rider problems due to the public good nature of knowledge discovery and also imperfect competition. Second, EPZs may arise because of government attempts to correct existing distortionary policies in the least disruptive and cost efficient manner. In analyzing a model of EPZ emergence, it also becomes necessary to model two scenarios. Are EPZs used as an alternative to economy-wide reform or is reform a required prerequisite for EPZ success? These questions will be tested in Chapter 4.

3.2 Market Reasons for the Emergence of the EPZ Model

Rosenstein-Rodan (1943) offers an important model for this study. In describing a proposal for an industrial development agency in Eastern Europe, he outlined what was perhaps one of the first models of an export processing zone. First, Rosenstein-Rodan (1943) recognized that industrialization was a key component of development as “industrialization...[was] the way of achieving a more equal distribution of income between different areas of the world by raising incomes in depressed areas at a higher rate than in the rich areas.”²³¹ Second, his model acknowledged that the process of industrialization was also subject to scale and network externalities which resulted in a suboptimal level of industrialization taking place under purely laissez-faire market conditions²³². Indeed, for industrialization to be efficient, clusters of industries were needed²³³ so that the various firms in many industries would be able to trade with each other and supply a range of goods to consumers – providing the important dynamic linkages. Shalizi and Venables (2001) find that clusters develop when industries exhibit increasing returns to scale in their production processes.²³⁴ Finally, Rosenstein-Rodan (1943) also offered that the existing system of raising and transferring capital was insufficient for development because it was conducted on too small a scale.²³⁵

²³¹ P. N. Rosenstein-Rodan, "Problems of Industrialisation of Eastern and South-Eastern Europe," *The Economic Journal* 53, no. 210/211 (1943): p.202.

²³² Ibid.: p.206.

²³³ Ibid. See also J.V. Henderson, Z. Shalizi, and A.J. Venables, "Geography and Development," *Journal of Economic Geography* 1 (2001): p.84.

²³⁴ Henderson, Shalizi, and Venables, "Geography and Development," p.84.

²³⁵ Rosenstein-Rodan, "Problems of Industrialisation of Eastern and South-Eastern Europe," p.204.

Rosenstein-Roden (1943) also suggested that the industrial development program should be oriented to export production to take advantage of scale economies²³⁶.

Given the presence of these network and scale externalities there is an inherent coordination failure associated with industrialization. For industrialization to be effective, a country needed to have a range of industries emerging at the same time. The industrialization process, therefore, required coordination by the government to plan an industrial program, to provide the necessary guarantees to attract the large amounts of foreign capital and to provide necessary public goods like training and basic education.²³⁷ It was also suggested that “national and international investment should concentrate at the start on building of “basic industries” and public utilities which give rise to new investment opportunities.”²³⁸ While Rosenstein-Roden (1943) suggest that these market failures can only be overcome through government interventions, Stiglitz (1989) points out that “governments face information and incentive problems no less than does the private market.”²³⁹ Therefore, the government interventions can still result in market distortions.

A second important model for this study was developed in Hausmann and Rodrik (2003). They offer a model of two sources of market failures which explains why industrialization may not come about without intervention.²⁴⁰ First, they show that there are high costs to discovering a country’s comparative advantage (i.e. what to produce).

²³⁶ Ibid.: p.209.

²³⁷ Ibid.: pp.204-05.

²³⁸ Ibid.: p.208.

²³⁹ Joseph E. Stiglitz, "Markets, Market Failures, and Development," *International Agricultural Development* 79, no. 2 (1989): p.202.

²⁴⁰ Hausmann and Rodrik, "Economic Development as Self-Discovery."

These high costs may explain the underproduction of business investment in new ideas (i.e. entrepreneurship) in developing countries.²⁴¹ Stiglitz (1989) correctly points out that,

...to a large extent, the problem of development, and particularly of industrialization, is that of the acquisition of information about technology, of ascertaining what products can and should be produced, how they should be produced, and how the technology should be acquired.²⁴²

Discovering what to produce requires acquiring and investing in technology.²⁴³

However, because of a country's institutions, when an entrepreneur makes the investment to "discover" a new product and is successful, the windfall profits will eventually be competed away by imitators.²⁴⁴ Pack and Saggi (2006) find that, "in the presence of informational externalities, a free-rider problem arises between initial and subsequent investors."²⁴⁵ Klinger and Lederman (2006), in their test of Hausmann and Rodrik's model, reveal that "there are indeed spillovers from demonstrating the viability of a new product for export."²⁴⁶ Stiglitz (1989) offers that developing countries face an additional challenge in overcoming informational and discovery costs because their ventures tend to be smaller in scale.²⁴⁷ These smaller scale operations exacerbate the free-rider problems and make it more likely that an investment will not be undertaken.²⁴⁸

²⁴¹ Ibid.: p.605.

²⁴² Stiglitz, "Markets, Market Failures, and Development," p.200.

²⁴³ Hausmann and Rodrik, "Economic Development as Self-Discovery," p.624.

²⁴⁴ Ibid.: pp.605.06.

²⁴⁵ Howard Pack and Kamal Saggi, "Is There a Case for Industrial Policy? A Critical Survey," *World Bank Research Observer* 21, no. 2 (2006): p.277.

²⁴⁶ Bailey Klinger and Daniel Lederman, "Diversification, Innovation, and Imitation inside the Global Technological Frontier," *Policy Research Working Paper, The World Bank* 3872 (2006): p.11.

²⁴⁷ Stiglitz, "Markets, Market Failures, and Development," p.200.

²⁴⁸ Ibid.

Second, Hausmann and Rodrik (2003) find that in some countries there are institutions which allow the entrepreneur (for long or short periods depending on a country's institutions) to operate without competition and thus without regard for productivity. This market failure can result in "too much product diversification".²⁴⁹

They find that,

As long as monopoly prevails, modern-sector production is diversified and does not specialize in the good with the highest (known) productivity. Once imitation kicks in with free entry, production in the modern sector is rationalized and only the highest-productivity activity survives.²⁵⁰

Hausmann and Rodrik (2003) conclude that in a market situation without government intervention, there is unlikely to be the socially optimal amount of entrepreneurship and investment in business activities²⁵¹ Additionally, if entrepreneurs who first enter the market are allowed to exist as monopolies, then again, the market fails as there will be over-production of goods which may not embody the country's comparative advantage and the best use of its resources.²⁵² These market failures, therefore, provide a justification for government intervention. Hausmann and Rodrik (2003) state that,

In attempting to promote innovation, governments have used a variety of instruments such as trade protection, public sector credit, tax holidays, and investments and export subsidies. Clearly, all appropriate policy interventions need to increase the expected payoff to innovation. However, interventions typically create other distortions...by making less productive activities privately profitable, inefficiently increasing the heterogeneity of the modern sector.²⁵³

²⁴⁹ Hausmann and Rodrik, "Economic Development as Self-Discovery." p.607.

²⁵⁰ Ibid.p.613.

²⁵¹ Ibid.:p.607.

²⁵² Ibid.: pp.607-13.

²⁵³ Ibid.: p.629.

Hausmann and Rodrik (2003) also compare the policies pursued by the East Asian miracle and the Latin American countries. They find that the East Asian governments were able to promote policies which reduced the barriers to innovation and entrepreneurship while also avoiding subsidizing inefficient producers.²⁵⁴ Amsden (1991) had previously offered that instead of viewing subsidies as a “giveaway”, in successful East Asian economies, subsidies were linked to “concrete performance standards with respect to output, exports, and eventually, R&D.”²⁵⁵ Glick and Moreno (1997) also find that trade policy in Asia was able to create a competitive environment for exporters and entrepreneurs, despite government intervention. They state that, “government support was by and large given to firms according to their success in the market place, particularly world markets”.²⁵⁶

3.3 Non-Market Reasons for the Emergence of EPZs

There are also non-market drivers which explain the emergence of EPZs. Wolf (1993) found that the demand for non-market services is a function of perceived externalities, the perceived monopoly power, perceived market imperfections, the perceived public good nature of the good, the perceived degree of inequities, the cost of the non-market service, and the level of national income.²⁵⁷ In the case of export processing zones, there may be initially high levels of demand due to the perceptions about foreign direct investment. At an early stage, it may be perceived that there will be

²⁵⁴ Ibid.: p.631.

²⁵⁵ Amsden, "Diffusion of Development: The Late-Industrializing Model and Greater East Asia." p.284.

²⁵⁶ Glick and Moreno, "The East Asian Miracle: Growth Because of Government Intervention and Protectionism of in Spite of It?." p.23.

²⁵⁷ C Wolf, *Markets or Governments: Choosing between Imperfect Alternatives* (MIT Press, 1993).

high levels of positive externalities and spillover effects generated by the creation of an EPZ. EPZs may also be seen to be likely to provide certain public goods which are too costly for the local government such as research and development, new technology and training for workers.

EPZ creation may also be driven by political reasons. In countries with privileged corporate groups which monopolize industry²⁵⁸ a separate economic zone rather than complete liberalization may have been more politically acceptable to the elite, while also promising economic mobility to the local masses. Krueger (1993) has previously identified that import substitution policies “were designed to thwart markets in ways that created groups of beneficiaries.”²⁵⁹ In a study of Asian export processing zones, Amirahmadi and Wu (1995) found that,

The EPZ became attractive because it offer[ed] a variety of advantages including a compromise between liberal and protective regime, a gate way to the international community, lower operational costs, and smaller political risks.²⁶⁰

Thus, the EPZ approach may have been seen as the least disruptive way to gain the benefits of globalization, while maintaining the status quo for the political and economic elite who could continue to control the domestic economy.

Finally, markets in many developing countries are highly distorted as a result of past government policies. EPZs may have been set up to circumvent these distortions and

²⁵⁸ Leff, "Industrial Organization and Entrepreneurship in the Developing Countries: The Economic Groups."

²⁵⁹ Anne O. Krueger, "Virtuous and Vicious Circles in Economic Development," *The American Economic Review* 83, no. 2 (1993).

²⁶⁰ Amirahmadi and Wu, "Export Processing Zones in Asia." p.828.

to create a space for productive entrepreneurship. Indeed, an analysis of the experiences of countries which pursued import substitution strategies reveals the absence of a space for the entrepreneur. The questions of *what to produce and for whom* were answered by government. In market economies, these decisions are left largely to enterprises and entrepreneurs who are guided by prices and profits. However, for countries pursuing import substitution, there was strong government intervention and direction.

The *guiding forces* for production were quite different. While distortions are a by-product of errors in market economies and provide opportunities for correction by entrepreneurs, import substitution required long-lasting distortions such as over valued currencies, exchange and capital controls and other mechanisms to distort prices in favor of domestically produced import substitutes. Prebisch (1959), for example, argued that tariffs and other types of government interventions were needed to redirect production into import competing industries and to protect domestic manufacturing.²⁶¹ Given these severe market distortions, it would have been difficult for the entrepreneur to discover or act on socially optimal opportunities.

Additionally, the enormous bureaucracy which had to be constructed to support import substitution lent itself to the perpetuation of *permanent inefficiencies* in industry and corruption in government – both important barriers to productive entrepreneurship. Baer (1972) found that government policies which actively encouraged new entry often led to markets with many small and inefficient firms²⁶² On the other hand, many firms

²⁶¹ Prebisch, "Commercial Policy in the Underdeveloped Countries." p.256.

²⁶² Werner Baer, "Import Substitution and Industrialization in Latin America: Experiences and Interpretations," *Latin American Research Review* 7, no. 1 (1972). p.103.

were operating with excess capacity, high labor costs relative to productivity and foreign exchange shortages which impacted their ability to obtain necessary inputs - resulting in further slack.²⁶³ Bruton (1998) finds that the import licensing processes also created crippling mismatches between the time that capital investments were actually required and the times that import licences were obtained – again resulting in underutilization.²⁶⁴ Krueger (1998) points out that import substitution,

result[ed] in a dilemma: either the number of firms producing a given good must be very small, or the size of individual plants may well be below minimum efficient size. If the number of firms is very small, the absence of competition results in low-quality high-cost production....²⁶⁵

The complex bureaucracy also supported corruption. For example, the import licensing process facilitated dishonest business dealings as “licence allocation decisions came to be dominated more by corruption and personal favour than by evaluation of economic viability.”²⁶⁶ Krueger (1993) offers that complex bureaucratic systems which were created encouraged, “”expeditors” whose incomes were derived from facilitating the process of approvals and paperwork.”²⁶⁷ This paper, therefore, offers that given the inefficiency of the import substitution strategy and the complexity of the bureaucracy created by import substitution, entrepreneurs would be more likely to engage in rent-

²⁶³ Bruton, "A Reconsideration of Import Substitution."

²⁶⁴ Ibid.: p.914.

²⁶⁵ Krueger, "Why Trade Liberalization Is Good for Growth." p.1515.

²⁶⁶ Steel, "Import Substitution and Excess Capacity in Ghana." p.222.

²⁶⁷ Krueger, "Virtuous and Vicious Circles in Economic Development.": p.353.

seeking, evasive and “unproductive” entrepreneurial activities rather than in socially “productive” entrepreneurship.²⁶⁸

3.4 This Study’s Modifications of the EPZ Emergence Model

This study’s model of the emergence of export processing zones draws heavily on a model of co-ordinated industrialization developed in Rosenstein-Rodan (1943) and the model of industrial development incorporating search and discovery costs in Hausman and Rodrik (2003) and the other market and government distortions explanations discussed in this chapter. Like Rosenstein-Rodan (1943), it is acknowledged that the use of FDI is the preferred method of industrialization by EPZs because of the potential for the transfer of technology and managerial expertise and also because of its ability to augment domestic capital in a large scale industrialization undertaking. Additionally, it is recognized that markets in many developing countries are subject to distortions as a result of public policy and that other market failures are important.

However, a few important changes have been incorporated. While Hausmann and Rodrik (2003), for example, find that there are high costs to discovering *what to produce* generally and that these costs cannot be fully appropriated by an entrepreneur,²⁶⁹ this study recognizes that there is some knowledge in the developing country about its general area of comparative advantage. Many of the countries have been producing labor

²⁶⁸ William J. Baumol, "Entrepreneurship: Productive, Unproductive, and Destructive," *The Journal of Political Economy* 98, no. 5 (1980)..

²⁶⁹ Hausmann and Rodrik, "Economic Development as Self-Discovery."

intensive products for decades. Developing countries have also had experience in manufacturing through their import substitution experiences. However, previous industrial ventures have largely been unsuccessful because of production inefficiencies, complex business regulations and government corruption.²⁷⁰ The largest uncertainty, however, arises because of the shift from import substitution to export promotion which involves a change in the production mix from a domestic market focus (i.e. an inward orientation) to products desired by foreign markets (i.e. an outward orientation). This shift, however, requires an additional element of discovery and expands the realm of production possibilities, which also increases the uncertainty of production. Therefore, entrepreneurs' production decisions will be based on "discovering" the products that they can produce efficiently for international markets.

Like Hausmann and Rodrik (2003), this study acknowledges that there are discovery costs associated with entering export markets for entrepreneurs. However, these discovery costs may be less for some foreign entrepreneurs which establish businesses in the host country as part of their global operations (i.e. those entering through foreign direct investment). These foreign entrepreneurs may also have greater access to capital and technology and other "ownership advantages"²⁷¹. However, there are unique costs that foreign entrepreneurs bear when establishing businesses in the host country. For instance, foreign entrepreneurs may not have much knowledge about or confidence in the host country's institutions, laws and business environment. This is

²⁷⁰ See Bruton, "A Reconsideration of Import Substitution."

²⁷¹ John H. Dunning, "The Theory of International Production," *The International Trade Journal* 3, no. 1 (1988).

evidenced by the studies which show that FDI is attracted to economies where their institutions reduce uncertainty.²⁷² All entrepreneurs, however, are negatively affected by the complexity of the business regulation in the country.

3.4.1 The Model

In this section, I offer a macro and micro level model which explains EPZ emergence. At the macro-economy level, like Feder (1983)²⁷³, this study sets out a two sector model with production in the domestic sector both for domestic consumption and for exports (Equation 1) and export-only production in the EPZ sector (Equation 2). There are positive spillover effects (δX) associated with exports. Romer's (1986) model of exogenous growth with increasing returns and knowledge spillovers embodies the core assumptions of the benefits of EPZs related to the positive effects of clustering and specialization. Romer (1986) also finds that "all technical change is endogenous, the outcome of deliberate actions taken by economic agents."²⁷⁴ Therefore, public policy can be useful.

Based on Feder (1983), this study's two sector model is set out as follows. First, production in the domestic economy (N_d) and production in the EPZ (X_{EPZ}) are the core

²⁷² Studies have pointed to the positive effects of "good governance" on FDI location. In particular, some governance institutions reduce uncertainty which creates a more favorable environment for foreign investment. See for example, Agnes Bénassy-Quéré, Maylis Coupet, and Thierry Mayer, "Institutional Determinants of Foreign Direct Investment," *The World Economy* 30, no. 5 (2007), Christian Daude and Ernesto Stein, "The Quality of Institutions and Foreign Direct Investment," *Economics & Politics* (2007), Franklin R. Root and Ahmed A. Ahmed, "Empirical Determinants of Manufacturing Direct Foreign Investment in Developing Countries," *Economic Development and Cultural Change* 27, no. 4 (1979), Franklin R. Root and Ahmed A. Ahmed, "The Influence of Policy Instruments on Manufacturing Direct Foreign Investment in Developing Countries," *Journal of International Business Studies* 9, no. 3 (1978).

²⁷³ Gershon Feder, "On Exports and Economics Growth," *Journal of Development Economics* 12 (1983)..

²⁷⁴ Paul M. Romer, "Increasing Returns and Long-Run Growth," *The Journal of Political Economy* 94, no. 5 (1986):. p.1013.

components of GDP (Y). Production in the domestic economy is affected by the supply of capital and labor provided to that sector, the dynamic effects of spillovers from exports and market failures and government distortions in the economy which affect the actions of entrepreneurs (equation 1). Production of exports in the EPZ sector depends on the inflow of foreign capital (i.e.FDI), labor allocated to the EPZ sector, spillover effects from exports and market failures and government distortions in the domestic sector which can negatively or positively affect the flow of entrepreneurs into the EPZ sector (equation 2).²⁷⁵ Total GDP is a combination of both sectors (equation 3).

$$N_d = f(K_d, L_d, MFI, NMFI, \delta X_d) \quad (1)$$

$$X_{EPZ} = f(FDI_{EPZ}, L_{EPZ}, MFI, NMFI, \delta X_{EPZ}) \quad (2)$$

$$Y = N_d + X_{EPZ} \quad (3)$$

Where: N_d = production in the domestic economy
 X_d = exports from non-EPZ producers
 X_{EPZ} = exports from EPZ producers
 FDI_{EPZ} = FDI in the EPZ sector
 L_{EPZ} = Labor in the EPZ sector
 K_d = capital in the domestic sector
 L_d = labor in the domestic sector
MFI = a measure of market failures in the economy
NMFI = a measure of non-market (government) failures
 δ = technology spillover from exports
Y = GDP

²⁷⁵ This will be tested in Chapter 4.

Modifying Bende-Nabende and Slater's (2003)²⁷⁶ model of FDI determinants, this study explains the inflow of FDI into the EPZ sector as follows,

$$FDI_{EPZ} = f(PBI_{EPZ}, POL, WAGE, LIB, MktAcss, v) \quad (4)$$

Where: PBI_{EPZ} = government investment in the EPZ sector
POL = political stability index
WAGE = labor rigidity and wage index
LIB = index of liberal policies in the EPZ
MktAcss = the host economy's access to target markets
v = vector of variables normally associated with FDI such as GDP, GDP growth, population, real exchange rate.

Next, the micro-level decision to set up an EPZ by the host government and the foreign firms' decisions to enter the EPZ are explained. As Hausmann and Rodrik (2003) point out, the first entrepreneur which enters a market or an economy and is successful will absorb much of the "discovery" costs. However, if the entrepreneur is successful, a number of imitators will follow²⁷⁷. Since entrepreneurs, both domestic and foreign understand this, only a small number will enter the market and therefore industrialization will not take place. Thus market failure spurs government action. Governments seeking to promote industrialization using FDI, therefore, have three choices: (1) liberalize the entire economy through structural reform, (2) set up EPZs and leave the domestic economy untouched or (3) some combination of reform with EPZ establishment. Governments seek to minimize the cost of reform (Equation 5). The first option, domestic reform, involves correcting market and non-market (government) distortions in

²⁷⁶ Anthony Bende-Nabende and Jim Slater, "Private Capital Formation: Short-and Long-Run Crowding-in (out) Effects in Asean, 1971-99," *Economics Bulletin* 3, no. 27 (2003): p.5.

²⁷⁷ Ibid.: p.605-06.

the entire economy. In the short run, this option is often costlier, but has the potential to yield higher benefits in the long term (Equation 6). Economy-wide structural reforms also have high financial costs and political economy considerations for groups which benefited from the distortions²⁷⁸. The second option, establishing an EPZ, is less costly as reforms are of an enclave nature and do not necessarily extend to the entire economy and the financial costs are limited to the attractive incentive packages offered by many governments to attract foreign entrepreneurs (Equation.7). Indeed, these incentives offset some of the costs of discovery and transacting for the first foreign entrepreneur, but also for all other subsequent foreign entrepreneurs. If it is assumed that the earlier entrants invest more in discovery, then the benefits of the offsets, (i.e. the reforms) accrue in greater proportion to later entrants²⁷⁹. An equity problem also arises between those entrepreneurs which operate in the domestic economy and those which operate in the EPZ and receive the benefits of the generous incentive packages. However, option 3, the use EPZs with some type of domestic economy reforms may be necessary as a credibility signal to foreign investors. Without such credibility signaling the EPZ may not be successfully established (Equation 8).

The government decision, to either set up an EPZ, to undertake economy wide reform or to use some combination of the two options is specified as follows:

²⁷⁸ See Dani Rodrik, "The Limits of Trade Policy Reform in Developing Countries," *The Journal of Economic Perspectives* 6, no. 1 (1992). pp.91-92.

²⁷⁹ For a discussion of "unpaid factors" see J.E. Meade, "External Economies and Diseconomies in a Competitive Situation," *The Economic Journal* 62, no. 245 (1952)..

$$\min (C_d, C_{EPZ}) \quad (5)$$

$$C_d = f(\text{MFI}, \text{NMFI}) \quad (6)$$

$$C_{EPZ} = f(\text{PBI}_{EPZ}) \quad (7)$$

if $(C_d / \Delta X_d) > (C_{EPZ} / \Delta X_{EPZ})$ in the short-run, then use EPZ

However,

if $\Delta X_{EPZ} = f(\text{MFI}, \text{NMFI})$, then use of the EPZ with some level of reform may be necessary (i.e. option 3). (8)

Where:

- C_d = Cost of economy-wide reform
- C_{EPZ} = Cost of establishing an EPZ
- PBI_{EPZ} = Public investment in the EPZ
- $\Delta X_{d, EPZ}$ = Increase in exports associated with the economy-wide reform or establishment of EPZ
- MFI = an index of market failures
- NMFI = an index of non-market failures

Firms decide to enter the EPZ or not based on their ability to maximize profits (Equation 9). While revenue is expected to be the same for both sectors (Equation 10), production costs for the domestic and the EPZ sectors are likely to be very different depending on search costs, infrastructure costs and other costs affected by the degree of liberal policies inside the EPZ compared to those outside the EPZ (Equation 11). If cost conditions are more favorable inside the EPZ which allow higher profits to be earned, then firms enter the EPZ rather than the domestic economy. Firms' decisions are specified as follows:

$$\max (\text{Profit}_{EPZ}, \text{Profit}_d) \quad (9)$$

$$\text{Rev}_{EPZ,d} = f(\text{Pr}X_{EPZ,d}, \text{LAB}) \quad (10)$$

$$\text{Cost}_{\text{EPZ},d} = f(\text{SDCost}_{\text{EPZ},d}, \text{WAGE}_{\text{EPZ},d}, \text{INFRA}_{\text{EPZ},d}, \text{LIB}_{\text{EPZ},d})^{280} \quad (11)$$

$$\text{Profit}_{\text{EPZ},d} = \text{Rev}_{\text{EPZ},d} - \text{Cost}_{\text{EPZ},d} \quad (12)$$

if $\text{Profit}_{\text{EPZ}} > \text{Profit}_d$, then enter EPZ

Where:

$\text{Profit}_{\text{EPZ},d}$ = Profits from establishing a firm in the EPZ or the domestic economy

Rev = Revenue from operating in the EPZ or in the domestic economy

Cost = Costs associated with operating in the EPZ or the domestic economy.

$\text{Pr}X_{\text{EPZ},d}$ = Price of the exported good

$\text{WAGE}_{\text{EPZ},d}$ = An index of wage and labor rigidity in the EPZ and the domestic economy

LIB = An index of liberal policies in the EPZ and the domestic economy

SDCost = Search and discovery costs

INFRA = Infrastructure costs

LAB = a measure of labor productivity of the country's labor force

3.5 Conclusions

This chapter set out a framework for the macro considerations and the micro decisions which explain the establishment of export processing zones. The chapter highlights important market failures and government distortions which need to be considered by policy makers. My focus on the institutional and market structure issues,

²⁸⁰ Transportation costs are excluded as they would not affect the decision of whether to locate in the EPZ or not but rather would affect whether to locate in the country. See Jafar Alavi and Henry Thompson, "Toward a Theory of Foreign Trade Zones," *The International Trade Journal* 3, no. 2 (1988): p.214.

rather on the incentives used to establish EPZs is under-explored in the literature on EPZS. These issues will be developed into testable hypotheses in Chapter 4.

CHAPTER 4

Why Are EPZs Established?

Market failures are particularly pervasive in LDCs. Good policy requires identifying them, asking which can be directly attacked by making markets work more effectively (and in particular, reducing government imposed barriers to the effective working of markets), and which cannot....We need to recognize both the limits and strengths of market, as well as the strengths, and limits, of government interventions aimed at correcting market failures.²⁸¹

4.1 Introduction

In January 2008 the Tanzanian government announced a plan to establish 13 new export processing zones (EPZs) in an effort to jumpstart the country's export sector.²⁸² Tanzania had first launched its EPZ program in 2003.²⁸³ In 2006, Tanzania introduced even broader Special Economic Zone legislation which included provisions for the development of EPZs, in addition to free trade zones and ports; and industrial, science, technology and tourist parks.²⁸⁴ Tanzania's recent announcement to expand its EPZ

²⁸¹ Stiglitz, "Markets, Market Failures, and Development," p. 202.

²⁸² Mohamed Issa Mohamed, *Tanzania: Country to Build 13 Epzs to Export Goods to Neighbouring Countries* (2008 [cited 21 March 2008]); available from <http://allafrica.com/stories/200801281518.html>.

²⁸³ EPZ legislation was first enacted in 2002. The Export Processing Zone Act was substantially amended in 2006 to establish the Export Processing Zone Authority and a governing council lessening the role of the Minister.

²⁸⁴ *Special Economic Zones Act*, (Government of Tanzania, 2006 [cited 21 March 2008]); available from <http://www.parliament.go.tz/Polis/PAMS/Docs/2-2006.pdf>.

program highlights the continuing popularity of EPZs as a development strategy for many developing countries

Kenya was another country seemingly caught in the wave of EPZ development in the 1990s. In 1993, the Kenyan Export Processing Zones Act launched Kenya's EPZ program. Like other EPZ programs, firms operating within Kenya's zones were exempted from most taxes and import duties and benefited from other incentives provided to the zones. Wagacha (2000) explains that Kenya, like many other newly independent countries, operated under extremely closed trade policies. Additionally, its domestic manufacturing industries were strongly protected as part of the country's import substitution program.²⁸⁵ Wagacha (2000) finds that Kenya's manufacturing program was sustained largely by the creation of the short-lived East African Community which resulted in significant trade diversion away from the manufactured exports of other regions in favor of Kenyan manufactures²⁸⁶.

By the early 1980's, as part of a structural adjustment program, Kenya began the process of liberalizing its economy and by 1986 export orientation became the new industrial strategy.²⁸⁷ Export processing zones became a key element of the new export promotion policy. However, Rolfe, Woodward and Kagira (2004) point out that Kenyan

²⁸⁵ Mbui Wagacha, "Analysis of Liberalization of the Trade and Exchange Regime in Kenya since 1980," (Nairobi: Institute of Policy Analysis and Research, 2000).

²⁸⁶ Ibid., pp.10-11.

²⁸⁷ Ibid., p.9.

EPZs remained highly vulnerable to “footloose” type firms²⁸⁸ in search of market access to lucrative US markets through the African Growth and Opportunity Act (AGOA).²⁸⁹

In 2005, the 72 firms operating in Kenya’s EPZs included 28 garment manufacturing and 14 food and horticulture processing firms. Other types of businesses located in Kenyan EPZs ranged from film production and stevedoring services to currency printing firms²⁹⁰. Employment in these zones, however, represented less than 1% of the Kenyan labor force and the sector contributed approximately 2% of GDP.²⁹¹ Nevertheless, at 2004 these zones’ exports accounted for 58% of total manufactured exports.²⁹²

Ghana’s trade policy history is quite similar to Kenya’s. Shortly after independence, Ghana also embarked on an import substitution program.²⁹³ Steel (1972) points out that in keeping with Ghana’s socialist model of development, the government was a major source of economic activity and ownership in the economy.²⁹⁴ The other pillar of the economy was cocoa production which had experienced tremendous volatility in world prices, making export earnings extremely unstable.²⁹⁵ Like other countries which based their industrial development on import substitution, eventually, the distortionary effects of overvalued exchange rates, import controls and the protection

²⁸⁸ Robert J. Rolfe, Douglas P. Woodward, and Bernard Kagira, "Footloose and Tax Free: Incentive Preferences in Kenyan Export Processing Zones," *South African Journal of Economics* 72, no. 4 (2004): p.792.

²⁸⁹ Ibid.: pp.792-93.

²⁹⁰ Export Processing Zones Authority, (2007 [cited 27 March 2007]); available from <http://www.epzakenya.com/epzsinkenya.php?cat=3&sub=9>.

²⁹¹ Ibid.([cited]).

²⁹² Ibid.([cited]).

²⁹³ Steel, "Import Substitution and Excess Capacity in Ghana," p.213.

²⁹⁴ Ibid.: p.214.

²⁹⁵ Francis Teal, "Export Growth and Trade Policy in Ghana in the Twentieth Century," *The World Economy* 25, no. 9 (2002): p.1321.

provided to inefficient firms began to lead to economic deterioration²⁹⁶. Aryeetey and McKay (2007) argue that,

Low growth rates between 1965 and 1984 can be attributed to poor and inconsistent policies, political instability, and institution weaknesses. The state sought to play a key role in the economy over most of this period (especially around the 1970s) by pursuing an import substitution industrialization strategy (while seeking to increase manufacturing exports). But a strong antiexport bias in policy...plus a highly overvalued exchange rate, decreased exports, especially cocoa exports, and led to major disinvestment...²⁹⁷

Teal (2002) points out that Ghana began its structural reforms in the early 1990²⁹⁸. As a part of trade reform goals, Ghana introduced the Free Zone Act in 1995 to establish EPZs or free zones with generous tax benefits and incentives²⁹⁹. The ILO (2007) reports that there are 4 zones in Ghana, employing over 9,000 workers and that EPZ exports represent 80% of the country's total manufactured exports.³⁰⁰

Export processing zones are usually established as part of economic reform programs, whether formally required as part of a structural adjustment program or unilaterally. Yet, many countries which had embarked on reforms are showing some signs of reform reversals or slow downs. Dean, Desai and Riedel (1994) points out that while South Asian and Latin American trade reforms proceeded strongly over the period

²⁹⁶ Bruton, "A Reconsideration of Import Substitution."

²⁹⁷ Ernest Aryeetey and Andrew McKay, "Ghana: The Challenge of Translating Sustained Growth into Poverty Reduction," in *Delivering on the Promise of Pro-Poor Growth : Insights and Lessons from Country Experiences*, ed. Timothy Besley and Louise Cord (Washington DC: Palgrave Macmillan ;World Bank, 2007), p.154.

²⁹⁸ Teal, "Export Growth and Trade Policy in Ghana in the Twentieth Century," p.1331.

²⁹⁹ School of Oriental and African Studies, "The Establishment of Free Zones in Ghana," *Journal of African Law* 40, no. 1 (1996).

³⁰⁰ International Labour Organization, *Export Processing Zones: Epz Employment Statistics* ([cited). See also ILO database on export processing zones available at <http://www.ilo.org/public/english/dialogue/sector/themes/epz/epz-db.pdf>.

from 1985 to 1990³⁰¹, reforms in many African and East Asian economies experienced reversals.³⁰² An analysis of the Economic Freedom Index reveals that many countries have experienced a decline in their scores between 1995 and 2007 (See Table 1).

Dornbusch (1992) explains that,

One problem for trade reform is political. Too long a phase-in period with too many safeguards for those who might be adversely affected is an invitation to disruption and reversal.³⁰³

In a discussion on privatization reforms in developing countries, Ramamurti (1999) also finds that, "...gradualism carries the risk of degenerating into inaction. Governments can postpone all manner of reforms in the name of gradualism."³⁰⁴ Therefore, reform reversals and slow downs are an important reality in developing countries.

Table 1: Countries with Declining Economic Freedom Categories

Number of Categories on the decline between 1995 and 2007	Countries ³⁰⁵
7	Argentina, Bahrain, Thailand, Turkey, Venezuela and Zimbabwe
6	China, PRC, Ivory Coast, Malaysia, Mexico, Oman, Paraguay, Uganda, Zambia
5	Algeria, Bahamas, Bolivia, Colombia, Cost Rica, Dominican Republic, Ecuador, Gabon, Guinea, Jamaica, Japan, South Korea, Morocco, Panama, Peru, Tunisia

³⁰¹ Judith M. Dean, Seema Desai, and James Riedel, "Trade Policy Reform in Developing Countries since 1985: A Review of the Evidence," *World Bank Discussion Papers* 267 (1994): p.25 and pp. 68-69.

³⁰² Ibid.: p.50 and p.86.

³⁰³ Rudiger Dornbusch, "The Case for Trade Liberalization in Developing Countries," *The Journal of Economic Perspectives* 6, no. 1 (1992): p.81.

³⁰⁴ Ravi Ramamurti, "Why Haven't Developing Countries Privatized Deeper and Faster?," *World Development* 27, no. 1 (1999): p.144.

³⁰⁵ Countries with more than 2 missing scores have been excluded. Countries with EPZs have been bolded.

Number of Categories on the decline between 1995 and 2007	Countries ³⁰⁵
4	Belarus, Belize, Brazil, Bulgaria , Canada, Czech Republic , Ethiopia, Greece, Guatemala, Hong Kong, Jordan, Kenya, Mali, Nigeria, Pakistan, Philippines , Russia, Sierra Leone, Singapore, Taiwan, Tanzania
3	Angola , Austria, Bangladesh, Fiji , France, Germany, Ghana, Honduras, India, Indonesia , Israel, Italy, Madagascar, Malawi, Malta , Mongolia, Slovak Republic, Sri Lanka , Swaziland, United States, Uruguay, Yemen
2	Albania, Cameroon, Chile, Egypt, Guyana , North Korea, Mozambique, Poland, Romania, South Africa , Spain, Ukraine , United Kingdom, Vietnam
1	Austria, Botswana , Cuba, El Salvador , Estonia, Haiti , Ireland, Nicaragua, Portugal, Sweden
0	Hungary, Moldova

There have been examples of successful EPZs, particularly in some of the early Asian adopters and Mauritius³⁰⁶, however, their performance has been generally poor. Indeed, EPZs are considered to be a second best alternative to full structural reform.³⁰⁷ Given the high rate of EPZ adoption as a development strategy, and the mixed results with regards to the continued adoption of fuller reforms, this chapter asks the questions: *Why do EPZs exist and persist? Which institutions affect where EPZs are created? And importantly, are EPZs substitutes or complements to further reform?*

³⁰⁶ EPZs in Asian economies, the Chinese SEZs and the Mauritian EPZs have often been cited as examples of successful EPZ models. See Lettice Kinunda-Rutashobya, "Exploring the Potentialities of Export Processing Free Zones (Epzs) for Economic Development in Africa: Lessons from Mauritius," *Management Decision* 41, no. 3 (2003).

³⁰⁷ Madani, "A Review of the Role and Impact of Export Processing Zones."

To explore these questions, this chapter examines the role of information asymmetries, high transactions costs and non-market failures in countries which host EPZs. This chapter, therefore, investigates whether these market failures and government induced distortions to markets and institutions explain the existence and persistence of EPZs as a development tool. Additionally, I examine whether different failures and distortions affect EPZ establishment in different ways.

This chapter proceeds as follows: Section 4.2, presents this chapter's hypotheses, methodology and data. Six hypotheses are presented and are tested using global sensitivity analysis and data from the World Bank's Doing Business Indicators study, Governance Matters VI, the Index of Economic Freedom and the Global Competitiveness Index. The results are presented in section 4.3 and conclusions, policy recommendations and areas of future research are presented in section 4.4.

4.2 Hypotheses, Methodology and Data

4.2.1 Hypotheses

Chapter 3 of this dissertation developed a model of EPZ emergence where market failures (information asymmetries and transaction costs) and non-market failures (i.e. government created distortions emanating from import substitution policies) were central in explaining the existence of EPZs. The greater these failures and distortions, the more likely enclave-type EPZs would be used rather than full reform. However, if the persistence of market failures and other distortions negatively affect the success of EPZ establishment, then EPZ development with some level of reform may be the preferred

option. Given this study's model of EPZ emergence, this chapter tests the hypothesis that export processing zones are established as substitutes for fuller reform. The alternative hypothesis, then, is that EPZs are complements to further economic reform. If EPZs are established as substitutes for reform then we would expect that higher levels of market failures and distortions increase the likelihood of EPZ establishment. However, if the alternative hypothesis is correct then we would expect that institutional arrangements which reflect reforms should increase the likelihood of EPZ establishment. The basic model is formally stated below:

$$\Pr(EPZ = 1 | x) = \Phi(\beta_0 + \beta_1 (Control) + \beta_2 (Fail / Dis) + \mu) \quad (1)$$

Where:

EPZ	= dummy variable of whether a country has established an EPZ or not
Control	= control variables
Fail/Dis	= proxy variables for Market Failures and Government Distortions
μ	= error term

Based on the core model to be tested in (1) above, we make the following sub-hypotheses:

- Hyp 1a: An increase in the time it takes to do business in an economy increases the likelihood of EPZ emergence.
- Hyp 1b: An increase in the cost of doing business in an economy increases the likelihood of EPZ emergence.

- Hyp 1c: An increase in economic freedom decreases the likelihood of EPZ emergence.
- Hyp 1d: Better governance decreases the likelihood of EPZ emergence.
- Hyp 1e: A reduction in information asymmetry (i.e. an improvement in information availability) decreases the likelihood of EPZ emergence.
- Hyp 1f: Improvements in a country's corporate governance environment decreases the likelihood of EPZ emergence.

4.2.2 Methodology

A logistic model is estimated to test these hypotheses using 2006 cross-sectional data for 210 countries and territories. Given the core hypothesis – that EPZs are substitutes for fuller reform – I would expect that the odds ratio coefficients on the market failure or government distortion variables to be greater than 1 which would indicate that the presence of greater market failures and government distortions increase the odds of the establishment of an EPZ. Logistic regression is appropriate because the dependent variable is bivariate – a country has an EPZ or not. A continuous dependent variable, such as total EPZ exports or percentage of EPZ exports to total exports for a country, would have been preferred; however, such data is not readily available and would have severely limited our sample.

I estimated 29 specifications of the core model using various combinations of the control variables and variables of interest.³⁰⁸ I tested for specification error to ensure that there were no omitted or irrelevant variables. Since, the pseudo R-squares in logistic models do not provide information on the explanatory power of the model, each model was also evaluated based on their predictive powers. The Hosmer and Lemeshow's goodness-of-fit test was also used.

Finally, for this analysis, I used Leamer's (1985) Global Sensitivity Analysis (GSA) approach to test the robustness (i.e. stability of fragility) of each variable of interest.³⁰⁹ However, in this analysis, I was not very concerned about the upper and lower bounds of the odds ratio coefficients – only that their signs were significant and consistent across the various regressions. As pointed out in Leamer (1985), Levine and Renelt (1992) and Moosa and Cardak (2005), global sensitivity analysis or its variant extreme bounds analysis (EBA) may be useful where there is limited or diverse theoretical underpinnings to a model to be evaluated.³¹⁰ Because there is no well established theory, there are many possible and plausible variables and specifications of the model which can be estimated. However, as Levine and Renelt point out, “the estimated coefficients on the variables of interest in these regressions may dependent

³⁰⁸ Following Leamer (1985), I limit the number of regressions to 29 rather than the entire number of total possible combinations given the set of variables. See Edward E. Leamer, "Sensitivity Analyses Would Help," *The American Economic Review* 75, no. 3 (1985).

³⁰⁹ Ibid.

³¹⁰ Ibid, Ross Levine and David Renelt, "A Sensitivity Analysis of Cross-Country Growth Regressions," *The American Economic Review* 82, no. 4 (1992), Imad A Moosa and Buly A. Cardak, "The Determinants of Foreign Direct Investment: An Extreme Bounds Analysis Star, Open," *Journal of Multinational Financial Management* 16, no. 2 (2006).

importantly on the conditioning set of information.”³¹¹ Leamer (1982) distinguishes this exercise from the criticized “data mining” exercises³¹² because the researcher has some prior opinion about which variables are important.

As explained in Levine and Renelt (1992), the sensitivity analysis involves distinguishing three groups of variables³¹³:

- (1) a set of variables (I) which are included in all of the regressions. For example, these may be known important control variables;
- (2) the variables of interest (M); and
- (3) other important control variables which are varied in the model (Z).³¹⁴

A range of regressions are then estimated in order to test the robustness of the variables of interest. Each regression contains at least one M variable, all of the I variables and some combination of Z variables.³¹⁵ A variable is considered robust or stable when the significance and the sign on the coefficient of the variable of interest remains constant across all of the different regression specifications. Otherwise, the variable is considered fragile and its usefulness must be determined by the researcher.

The analysis in this chapter is well suited to the approach developed in Leamer (1985). First, the questions being asked in this chapter are relatively novel. Given my review of the literature, there does not appear to be other studies which examine the institutional determinants of EPZ presence. Madani (1999), The World Bank (1992) and

³¹¹ Levine and Renelt, "A Sensitivity Analysis of Cross-Country Growth Regressions," p.942.

³¹² Edward E. Leamer, "Let's Take the Con out of Econometrics," *The American Economic Review* 73, no. 1 (1983): p.37.

³¹³ Levine and Renelt, "A Sensitivity Analysis of Cross-Country Growth Regressions," p.944.

³¹⁴ The authors choose up to 3 of these variables at a time for each regression.

³¹⁵ Some versions of global sensitive analysis use on 3 Z variables in any regression.

the UNCTC and ILO (1988) are some of the seminal works in the study of EPZs and provide comprehensive definitions of EPZs, explain their workings and other studies engage in cost benefit analyses of whether EPZs have produced positive results generally or in a specific country or region³¹⁶. Rolfe (1993) and Rolf (2004) examined how incentives may affect FDI location and EPZ presence.³¹⁷ None of these studies empirically test the institutional determinants of EPZ presence. Second, the theory of EPZ emergence developed in Chapter 3 is drawn from a many studies which lend themselves to a wide range of plausible variables. For these two reasons, global sensitivity analysis, rather than estimating a single model can provide the most useful information for this study. The econometric model to be tested is thus restated below:

$$\Pr(EPZ = 1 | x) = \Phi(\beta_0 + \beta_1 (I) + \beta_2 (M) + \beta_3 (Z) + \mu) \quad (2)$$

Where the I, M, and Z variables of this analysis are specified in Table 1 as follows:

Table 2: Summary of I, M and Z Variables

Type	Source	Variables
I (control variables)	IMF World Economic Outlook Report	GDP, GDP per capita, regional dummy variables

³¹⁶ See for example, Amirahmadi and Wu, "Export Processing Zones in Asia.", Rondinelli, "Export Processing Zones and Economic Development in Asia: A Review and Reassessment of a Means of Promoting Growth and Jobs.", Schrank, "Export Processing Zones: Free Market Islands or Bridges to Structural Transformation?.", Sit, "China's Export-Oriented Open Areas: The Export Processing Concept.", The World Bank, "Export Processing Zones.", Yuan and Eden, "Export Processing Zones in Asia: A Comparative Study."

³¹⁷ Rolfe et al., "Determinants of Fdi Incentive Preferences of M.N.E.'S.", Rolfe, Woodward, and Kagira, "Footloose and Tax Free: Incentive Preferences in Kenyan Export Processing Zones."

Type	Source	Variables
used in all regressions)		
M (variables of interest)	Doing Business Index	Average days to do business, average cost to do business, credit information index, and the number of hours required to complete tax requirements.
	Governance Matters	government efficiency, control of corruption, political stability
	Economic Freedom Index	Labor freedom, overall economic freedom
	Global Competitive Index	Global Competitive score
Z (other control variables used in various specifications)	UNCTAD Online Handbook of Statistics	Per capita FDI stocks, per capita exports.
	IMF World Economic Outlook Report	population
	World Bank	per capita GDP growth rates, GDP growth rate,
	United Nations	Female Labor force participation rate, primary education enrollment rate, literacy rate
	CIA World Factbook	Unemployment rate
	US Trade Office	US trade preference

4.2.3 Description of the Data

Dependent Variable: EPZ Presence

The International Labor Organization (ILO) maintains a database of countries with export processing zones and similar arrangements such as free trade zones, special economic zones, industrial parks and free ports.³¹⁸ Chen (1995) shows that the EPZ concept has emerged over hundreds of years and has taken many forms. The earliest form developed in the 1500's when large trading cities established free ports; however, by the mid-twentieth century free trading or "export" zones had emerged.³¹⁹ The ILO's database identifies 107 countries with EPZ and EPZ-type arrangements. For this study, only those countries with zones which met the definition of an export processing zone outlined in Chapter 2 were included. Chen (1995) offers that these types of export processing zones are characteristic of the second stage of free economic zone arrangements.³²⁰ Additionally, all zones in developed OECD countries and countries where EPZs were considered to be underdeveloped or a very small portion of economic activity were excluded. Therefore, of the 210 countries and territories included in this study, 89 were identified as EPZ countries. A list of EPZ countries is provided in Table 4.

³¹⁸ International Labour Organization, *Export Processing Zones: Epz Employment Statistics* ([cited]).

³¹⁹ Xianming Chen, "The Evolution of Free Economic Zones and the Recent Development of Cross-National Growth Zones," *International Journal of Urban and Regional Research* 19, no. 4 (1995): p. 599.

³²⁰ Ibid. Chen (1995) offers that a third stage has emerged as EPZs become more diversified in terms of their production base and larger. A fourth stage has also emerged as production is occurring between zones in trade triangles.

Control Variables

Several variables are used as controls. Gross Domestic Product in current US dollars (gdpus2006), a measure of the size and level of activity of an economy was obtained from the International Monetary Fund's World Economic Outlook Report (WEO) database.³²¹ Larger, more active economies usually have higher levels of exports and foreign direct investment generally. Pearson correlations between GDP, exports and FDI flows and stocks are very strong - higher than 0.7. However, larger, more export oriented economies may be less likely to use EPZs because their economies and export platforms are already well developed. We can also draw from the trade literature for a rationale for the inclusion of GDP as a control variable. Indeed, GDP is an essential component in gravity type models which explain why trade flows between countries.³²²

The GDP growth rate (gdpgr) is also chosen as a potential control variable. Dollar (1992), for example, found that outward oriented policies were associated with higher growth rates.³²³ Many of these high growth economies were in Asia and were among the first to introduce export processing zones. The inclusion of the GDP growth rate variable helps us to answer the question of whether EPZs are more likely to emerge in high growth or low growth economies. Therefore, we might expect that economies with higher growth rates may more likely be associated with greater export activities and EPZs. Alternatively, GDP growth rate may reduce the likelihood of EPZ emergence as

³²¹ International Monetary Fund, "World Economic Outlook Database," (2006).

³²² See J. H. Bergstrand, "The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence," *Review of Economics and Statistics* 67, no. 3 (1985).

³²³ David Dollar, "Outward-Oriented Developing Economies Really Do Grow More Rapidly: Evidence from 95 L.D.C.'S, 1976-1985," *Economic Development and Cultural Change* 40, no. 3 (1992).

high growth economies have already moved beyond the use of EPZs as an export platform.

GDP per capita in current US dollars (gdppcus2006) and GDP per capita growth (gdppcgr) were also included.³²⁴ In this study, GDP per capita serves as a proxy for wages. This approach is controversial. However, Warner (2006) found that wages and per capita GDP are highly correlated (with Pearson correlations between 0.6 and 1.0), though they are not perfect proxies for each other.³²⁵ Their correlations, however, can deviate when there are changes to: (1) the share of the labor force to the total population; (2) the structural proportion of workers in the various industries and (3) wages or profits.³²⁶ While cross-country data on sector wages have been compiled by the International Labor Organization (ILO), the coverage is limited to less than 70% of this study's sample of countries. Given the limited data availability, GDP per capita was thought to be a sufficiently strong proxy to measure worker productivity and remuneration. Of course, it is recognized that GDP per capita would be substantially higher than wages in the sectors most affected by export processing zones (such as wages in manufacturing or industry). Nevertheless, it is expected that countries with higher GDP per capita would have correspondingly higher wage levels in the affected sector. Therefore, the direction of the GDP per capita variable, given its high positive correlation with wages, should provide useful information for this study. I expect that higher levels of GDP per capita and GDP per capita growth rates to be associated with a lower

³²⁴ International Monetary Fund, "World Economic Outlook Database."

³²⁵ Andrew M. Warner, "Wage Dynamics and Economic Development," *Brookings Trade Forum* (2006): p.106.

³²⁶ Ibid.

likelihood of the emergence of EPZs as this would increase operating costs for EPZ firms by affecting wage levels.

Per capita stocks of foreign direct investment (Fdist2pop) and exports (exp2pop) are also included as controls using data from the United Nation's Commission on Trade and Development's (UNCTAD) Online Handbook of Statistics database.³²⁷ Countries with high levels of per capita FDI and exports may already have attractive economic environments which make EPZs unnecessary and therefore high levels of exports or FDI per capita may be associated with a lower likelihood of the emergence of EPZs. On the other hand, EPZs are created to attract FDI and to increase exports and therefore, high levels of either variable may increase the likelihood of the presence of an EPZ in the country. While exports and FDI flows and stocks are highly correlated with GDP (Pearson correlations greater than 0.7), their per capita values are not (Pearson correlations less than 0.1). Therefore, the inclusion of the per capita values of these variables address issue of multicollinearity with other important control variables.

Population (pop2006), the female labor force participation rate (FEMLAB), the percentage of the population with a primary school education (PRIMED) and the literacy rate (Litrts100) were also included in the model to control for important demographic factors in an economy. Countries with larger populations and those with high female labor force participation rates may be more attractive to EPZ firms. Indeed, EPZs have been both commended and criticized for their heavy reliance on female labor.³²⁸ A

³²⁷ UNCTAD, "Unctad Handbook of Statistics Online," (2007).

³²⁸ See Susan Joekes, "A Gender-Analytical Perspective on Trade and Sustainable Development" (paper presented at the United Nations Conference on Trade and Development: Pre-UNCTAD X Expert Workshop on Trade, sustainable development and gender, Geneva, 12-13 July 1999).

dummy variable to control for whether the country had a preferential trading agreement with the United States was also included.

Finally, regional dummy variables are included. The OECD category was used as the reference category against Eastern Europe, Pacific Islands, Asia, Middle East and North Africa, Latin America and the Caribbean and Africa. It was important to control for regional effects as it could be the case that EPZ emergence is affected by regional trends or imitation effects throughout regions. For example, as one country experiences success with EPZs its neighbors may also decide to set up EPZs. Therefore, some regions may have significantly higher EPZ presence compared to others.

Variables of Interest

This study's variables of interest measure different aspects of market failures and government distortions which were developed in our model of EPZ emergence in Chapter 3. My proxy for market failure relates to information asymmetry and is a measure of the extent of credit information available in an economy. The other variables included in the model measure various aspects of government distortions.

Data for our variables of interest is drawn from four main sources. First, this study uses the World Bank's Doing Business Indicators³²⁹ as a measure of overall market efficiency and as a proxy for the level of government distortions in an economy. The doing business indicators are grouped across 10 major categories: (1) ease of starting a business, (2) ease of dealing with the licensing process, (3) labor market arrangements,

³²⁹ World Bank, *Doing Business: Benchmarking Business Regulations* (2005 [cited 12 October 2006]); available from <http://www.doingbusiness.org/>.

(4) ease of registering property, (5) credit market development, (6) adequacy of protection provided to investors, (7) the tax system complexity, (8) trading system complexity, (9) contract enforcement mechanisms and (10) process to close a business. These major categories are then divided into various subcategories related to the costs associated carrying out the various processes, the number of days and the steps associated with carrying out business in the country. Indices have also been constructed for credit information and labor market rigidity.

The Doing Business dataset is particularly useful for this study. As mentioned in Section 2, colonial administrators and governments in newly independent nations often formulated complex business environments. These administrative barriers increased not only the time to conduct business transactions but also the cost. These measures therefore serve as good proxies for government distortions – as onerous business practices are signs of government distortions in an economy. In particular, lengthy or numerous procedures for conducting export and import activities were hallmarks of import substitution program and in many cases these distortions lingered after the program was disbanded.

Other measures in the database also help to determine the extent of missing or underdeveloped markets and institutions. For example, the dataset contains information on the degree of credit information available in each country. The absence of good information can lead to important failures in the credit markets.³³⁰ Other variables measure the strength of institutions involved in enforcing contracts and registering

³³⁰ See J. E. Stiglitz and A. Weiss, "Credit Rationing in Markets with Imperfect Information," *The American Economic Review* 71, no. 3 (1981).

property and also rules in place for protecting investors and ensuring director accountability.

Of the many variables in the Doing Business dataset, five were chosen for the final analyses. These included: the credit information index variable (*creditindx*), the director liability index variable (*invdirliab*), the variable which measures the number of hours it takes to complete tax forms (*taxhrs*). Composite variables were also created to take into consideration the average number of days it takes to do all types of administrative business transactions by calculating the average number of days it takes to start a business, obtain a licence, register a property, enforce a contract and to engage in export and import activities (*dobusdaysavg*); and the average costs involved with doing business by averaging the total cost involved with starting a business and obtaining a license (*dobuscostavg*).

This study also uses the Governance Matters VI dataset.³³¹ The governance indicators measured in Kauffman, Kraay and Mastruzzi (2007) examine six aspects of governance: the ability of the country's population to participate and express their views (voice and accountability); a measure of political stability; the effectiveness of the operation of all aspects of the administration of government; regulatory quality; rule of law; and the government's control over corruption in its ranks. Each of these indicators is measured on a scale which runs between -2.5 (indicating poor governance) and 2.5 (indicating stronger governance). For this study, three of the six variables were used: government effectiveness (*ge06*), political stability (*ps06*) and control of corruption

³³¹ D Kaufmann, A Kraay, and M Mastruzzi, *Governance Matters Vi: Governance Indicators for 1996-2006* (The World Bank, 2007).

(cc06). Odds ratio coefficients on these variables greater than 1 would suggest that EPZs emerge where governance is better. Therefore, improvements in governments are necessary prerequisites for EPZ emergence. Odds ratio coefficients less than 1 suggest that EPZ arrangements may compensate investors where governance is poor.

In 1996, the Heritage Foundation together with the Wall Street Journal created the Index of Economic Freedom to monitor various measures of economic freedom across the world on an annual basis. The freedom measures are broad and cover a range of issues including: measures of the business environment (business freedom), measures of barriers to trade (trade freedom), measures of the government tax burden on its citizens and firms (fiscal freedom), a measure of the government's share of a country's GDP (government size), a measure of the extent of the government's interventions in monetary policy (monetary policy), a measure of the country's investment regime (investment freedom), a measure of the government's interventions in the financial markets (financial freedom), a measure of the security of property rights (property rights), a measure of perceived corruption (freedom from corruption) and a measure of government distortions in the labor market (labor freedom). The index is scored on a scale from 0 to a maximum freedom score of 100. Variables with odds ratio coefficients greater than 1 would indicate that greater economic freedom is associated with an increased likelihood of the presence of EPZs. Therefore, greater economic freedom can be viewed as a complement to EPZ development.

Finally, we use the 2006 scores from the Global Competitiveness Report calculated by the World Economic Forum. In particular we use the Global Competitive

Index (GCI) which measures “competitiveness as the set of institutions, policies, and factors that determine the level of productivity of a country.”³³² The GCI is a composite of 12 measures: institutions, infrastructure, macroeconomic stability, health and primary education, higher education, goods and labor market efficiency, financial market and technological development, market size, business sophistication and innovation.³³³ A higher score indicates a higher level of competitiveness for the respective countries. Therefore, an odds ratio coefficient greater than 1 on the GCI variable indicates that EPZs are more likely to emerge in competitive countries.

The four databases used in the analysis, provides this study with a range of high quality data with which to explore the institutions which affect the emergence of EPZs. However, it is recognized that there could be considerable correlation between some of the various measures. Therefore, multi-collinearity of the independent variables will be tested and minimized. However, the availability of different datasets measuring similar aspects of government distortions and market failures allows for greater comparability and robustness checks.

A summary of the variables used in this analysis is provided below:

Table 3: Summary Statistics for Variables

<i>Variable</i>	<i>Description</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
epz	Presence of an Export Processing	210.00	0.42	0.50	0.00	1.00

³³² World Economic Forum, "The Global Competitiveness Report 2007-2008," (Geneva: World Economic Forum, 2008), p.3.

³³³ Ibid.

<i>Variable</i>	<i>Description</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
	Zone					
dobusdaysavg	Average number of days to conduct business in a country.	169.00	194.06	78.91	47.80	495.00
dobuscostavg	Average cost to conduct business in a country	145.00	437.46	230.66	136.27	1,550.45
creditinfoindex	Credit information index	174.00	2.59	2.22	0.00	6.00
GCI06	Global Competitiveness Index score	124.00	4.17	0.81	2.50	5.81
taxhrs	Hours to complete tax paperwork	173.00	331.21	325.64	0.00	2,600.00
ge06	Government efficiency	202.00	-0.01	1.00	-2.19	2.29
ps06	Political stability	202.00	-0.03	1.00	-2.91	1.60
cc06	Control of corruption	199.00	-0.02	1.01	-1.77	2.57
gov						
invdirliab	Individual director liability	174.00	4.21	2.55	0.00	9.00
Litrts100	Literacy rate	192.00	82.95	19.51	21.80	100.00
gdppcusd2006	GDP per capita	179.00	10,036.63	15,531.41	119.22	89,818.67
gdpus2006	Gross Domestic Product	179.00	267.85	1,113.58	0.07	13,194.70
gdpg	GDP growth rate	172.00	5.56	3.94	-4.91	34.50
gdppcgr	Per capita GDP growth rate	171.00	4.30	4.12	-7.01	33.13
FEMLAB	Female labor force participation rate	168.00	40.43	7.26	14.00	52.00
PRIMED	Primary school education percentage	160.00	86.47	14.76	34.00	100.00
freescore06	Economic freedom score	155.00	60.99	11.43	4.00	90.90
labor06	Labor freedom score	155.00	62.40	15.62	0.00	99.30
exp2pop	Per capita export	154.00	4,524.81	9,374.12	7.04	61,214.94
fdist2pop	Per capital FDI stocks	179.00	5,849.42	16,363.34	1.00	158,761.30
USTrdePref2	US trade preferences	210.00	0.22	0.41	0.00	1.00
unemrte	Unemployment rate	175.00	13.40	14.66	0.00	85.00

4.3 Analysis of Results

Twenty-nine specifications of the model were estimated. The results reveal that different government distortions and market failures have different effects on the likelihood of EPZ emergence. Some increase the likelihood of the presence of EPZs; while other reduce the odds of EPZ establishment.

Institutions which Increased the Likelihood of EPZ Emergence

In all of the regressions using the variable measuring the average days of doing business in an economy, the results revealed that holding all other variables constant, a more complex business environment which increases the number of days it takes to carry out business transactions, increase the likelihood of the establishment of an export processing zones. This result was statistically significant and the odds ratio coefficient on the variable was greater than 1 across all 29 regressions. This finding is consistent with our hypothesis 1a and our overall hypothesis that complex business environments increase the likeliness of the creation of EPZs. Indeed, one of the important selling points of these zones is that they have often streamlined business processes and are promoted by referencing their “one stop shop” administration and their reduction in red tape.

Access to better credit information in an economy increases the likelihood of the existence of an EPZ. This result was statistically significant in 100 percent of the 29 regressions. It therefore appears that EPZs are established where credit information systems are better developed. Indeed, as a country moves up the credit information

index, the odds of the establishment of an EPZ increases by a factor of between 1.4 and 2.0. This finding is contrary to our hypothesis 1e that a reduction in information asymmetry (i.e. an improvement in information availability) decreases the likelihood of EPZ emergence.

The results also reveal that more competitive countries are more likely to have EPZs. Indeed, each unit increase in the GCI increases the odds of a country having an EPZ by a factor of between 32 and 174. However, competitiveness is highly correlated with GDP per capita (Pearson's correlation greater than 0.7). When this multi-collinearity is corrected by omitting the GDP per capita variable from models with the competitiveness, GCI loses its significance.

More complicated tax processes in a country increases the odds of EPZ establishment. Again this is consistent hypotheses 1a and 1b that complex business environments increase the likelihood of EPZ establishment. Indeed, complicated tax procedures increases both the time it takes for an entrepreneur to conduct business, and also the cost of conducting business as time is spent on administrative activities rather than other productive activities. Governments often offer tax holidays and other tax breaks in order to attract FDI to their EPZs. These incentives provide important advantages over operating in the domestic sector.

Economies with more efficient governments were also more likely to establish EPZs. This result was robust across all 11 regressions which included the variable. Additionally, the composite governance variable was also found to have a statistically significant odds ratio coefficient greater than 1 in 14 of 18 regressions. It therefore

appears that EPZs are established in those economies where there is a better administrative procedures and overall governance institutions are stronger.

The final variable which was found to increase the odds of the establishment of EPZs was stronger director liability and accountability institutions. EPZs are established in environments where there are strong corporate governance rules.

Institutions which Decreased the Likelihood of EPZ Emergence

Economies with greater economic freedoms were less likely to have EPZs. In economically free countries, trade and other administrative barriers and fiscal and government burdens are lower and therefore firms, including foreign firms may be free to establish throughout an economy rather than only in the EPZ. Therefore, EPZs may not be necessary.

Countries which had a higher cost of doing business were found to be less likely to have EPZs established. It appears that an economy where there is overall high cost to doing business may be unattractive to EPZs despite the incentives which can be provided to reduce these costs in the EPZ.

Effects of the Control Variables on EPZ Emergence

The odds ratio coefficients on the control variables behaved as expected. For example, higher per capita GDP, our proxy for wages; higher GDP and GDP per capita growth rates all reduced the odds of EPZ establishment. Additionally, higher literacy rates increased the likelihood of EPZ establishment. Other variables such as higher per

capita FDI stocks, greater labor freedom, a country having a preferential trade agreement with the United States and greater political stability had inconclusive odds ratios and were not statistically significant. Higher GDP, female labor participation rates and higher per capita exports all had odds ratio coefficients greater than 1, but were statistically insignificant. Higher unemployment rates and better control of corruption had odds ratios less than 1; however both variables were statistically insignificant.

A summary of the results is presented in Table 4 and 5.

Table 4: Summary of Hypothesis and Results

	Hypothesis	Result
Hyp 1a:	An increase in the time it takes to do business in an economy increases the likelihood of EPZ emergence.	Do not Reject
Hyp 1b:	An increase in the cost of doing business in an economy increases the likelihood of EPZ emergence.	Reject
Hyp 1c:	An increase in economic freedom decreases the likelihood of EPZ emergence.	Reject
Hyp 1d:	Better governance decreases the likelihood of EPZ emergence.	Reject
Hyp 1e:	A reduction in information asymmetry (i.e. an improvement in information availability) decreases the likelihood of EPZ emergence.	Reject
Hyp 1f:	Improvements in a country's corporate governance environment decreases the likelihood of EPZ emergence.	Reject

Table 5: Summary of Results

Variable	Effects on the Odds of EPZ Establishment	Number of Models where the variable is significant	Percentage
Higher Average Days to Do Business	Increases	29 of 29	100
Better Credit Information	Increases	29 of 29	100
Better Global Competitive Index Score	Increases	3 of 3	100
Higher Tax Hours	Increases	9 of 9	100
Better Government Efficiency	Increases	11 of 11	100
Stronger Director Liability	Increases	23 of 29	79
Higher Literacy Rate	Increases	13 of 17	76
Better Governance	Increases	14 of 18	78
Higher GDP	Increases	1 of 29	0
Higher Female Labor Participation Rate	Increases	0 of 3	0
Higher Per capital Exports	Increases	0 of 3	0
Higher GDP per capita	Reduces	29 of 29	100
Higher GDP growth rate	Reduces	19 of 22	86
Higher GDP per capita growth rate	Reduces	9 of 13	69
Higher Average Cost to Do Business	Reduces	18 of 22	81
Better Economic Freedom Score	Reduces	1 of 3	33
Higher Unemployment Rate	Reduces	0 of 3	0
Better Control of Corruption	Reduces	0 of 4	0
Higher Per capita FDI Stocks	Inconclusive	0 of 3	0
Greater Labor Freedom	Inconclusive	0 of 11	0
US Trade Preference	Inconclusive	0 of 4	0
Greater Political Stability	Inconclusive	0 of 4	0

4.4 Conclusions and Policy Recommendations

The results of this chapter have revealed that different market failures and government created distortions in an economy affect the creation and emergence of export processing zones in different ways. Additionally, there are both complementary and substitutive factors at work which explain the existence of EPZs and their relationship with reform efforts. EPZs, for example, are emerging in countries with better developed financial systems which provide more comprehensive credit information and in countries where there are better systems of corporate governance, more efficient governments and overall better governance. These areas have been long addressed as part of structural adjustment and economic reforms undertaken by countries in the last twenty-five years.

On the other hand, EPZs are also emerging in countries where there is still some work left to be done in terms of the overall time it takes to conduct business and where there are laborious tax processes. Firms are often compensated for these deficiencies through the incentives provided within EPZs such as streamlined business and tax procedures. Hence, firms operating in the EPZ are immune from these distortions in the general economy. These findings point to the substitutive nature of EPZ establishment and economic reforms. Case studies would be useful to determine if these distortions are being addressed, or whether countries feel less pressure to address them because of the presence of export processing zones.

As noted in this chapter, the data on export processing zones is scant. The International Labor Organization is the only organization which currently and

systematically collects data on export processing zones. Additionally, because there are different ways allowed under international trade and national statistics rules for accounting for EPZ exports, no consistent measure exists for EPZ exports. This analysis could be improved however through case study methodology. Indeed, the development of qualitative and quantitative measures of the success of EPZs in terms of their export volumes, occupancy rates and linkages with the domestic economy is an important extension of this study.

The analysis suggests that countries need to undertake some important reforms in order to attract EPZs. In this sense, EPZs are indeed complements to reform measures. Indeed, EPZs are not emerging in the most distorted economies. The important reforms are related to improvements in governance, competitiveness and financial sector development. Countries must also reduce the overall costs of doing business in the economies if they are going to attract EPZs.

On the other hand EPZs also appear to provide an interim way for countries to enter global markets through exporting while there are severe distortions. Hence, there is a reform substitution effect also at work. Which effect (substitution or complement) becomes more powerful is unclear and needs to be explored more fully through case study analysis.

Table 6: List of EPZ Countries

	Country	Global Competitive Index Score 2006	Per Capita GDP 2006	GDP 2006 (US\$ Billions)	Population 2006 (Millions)
1	Albania	3.46	2,902.65	9.15	3.15
2	Algeria	3.9	3,400.24	113.89	33.49
3	Antigua and Barbuda		12,204.82	1.00	0.08
4	Argentina	4.01	5,455.27	212.60	38.97
5	Australia*	5.29	36,594.25	755.66	20.65
6	Bahamas, The		18,961.24	6.24	0.33
7	Bahrain	4.28	20,496.91	15.35	0.75
8	Bangladesh	3.46	415.42	64.85	156.12
9	Barbados	4.7	12,522.99	3.43	0.27
10	Belarus**		3,808.31	36.94	9.70
11	Belize**		4,059.08	1.22	0.30
12	Bolivia	3.46	1,165.58	11.22	9.63
13	Bosnia and Herzegovina	3.67	2,884.68	11.40	3.95
14	Botswana	3.79	6,756.44	10.63	1.57
15	Brazil	4.03	5,716.67	1067.71	186.77
16	Bulgaria	3.96	4,096.99	31.52	7.69
17	Cambodia	3.39	513.45	7.27	14.16
18	Cameroon	3.3	999.21	18.33	18.34
19	Cape Verde		2,333.45	1.13	0.49
20	Cayman Islands**				
21	Chile	4.85	8,903.35	145.85	16.38
22	China	4.24	2,012.52	2644.64	1314.10
23	Colombia	4.04	2,905.21	135.88	46.77
24	Costa Rica	4.25	4,876.52	21.47	4.40
25	Cote d'Ivoire**		951.00	17.57	18.47
26	Croatia	4.26	9,664.10	42.92	4.44
27	Cuba**				
28	Cyprus	4.36	23,676.09	18.24	0.77
29	Czech Republic	4.74	13,883.80	142.52	10.27
30	Dominican Republic	3.75	3,652.70	31.60	8.65
31	Egypt, Arab Rep.	4.07	1,488.61	107.38	72.13
32	El Salvador	4.09	2,663.95	18.65	7.00
33	Fiji		3,715.19	3.20	0.86
34	Gabon		6,835.58	9.56	1.40
35	Ghana		601.87	12.89	21.42
36	Greece*	4.33	27,751.35	308.72	11.12
37	Guatemala	3.91	2,333.68	30.30	12.98

	Country	Global Competitive Index Score 2006	Per Capita GDP 2006	GDP 2006 (US\$ Billions)	Population 2006 (Millions)
38	Haiti		527.59	4.47	8.48
39	Honduras	3.58	1,225.05	9.07	7.41
40	Hong Kong, China	5.46	27,504.26	189.80	6.90
41	Hungary	4.52	11,204.05	112.90	10.08
42	India	4.44	784.96	873.66	1113.00
43	Indonesia	4.26	1,640.34	364.24	222.05
44	Iran, Islamic Rep.		3,187.60	222.39	69.77
45	Ireland*	5.21	51,800.07	219.37	4.24
46	Italy*	4.46	31,790.63	1852.58	58.28
47	Jamaica	4.1	3,877.15	10.37	2.67
48	Japan*	5.6	34,180.72	4366.46	127.75
49	Jordan	4.25	2,518.55	14.10	5.60
50	Kenya	3.57	670.24	22.82	34.05
51	Korea, Rep.	5.13	18,391.68	888.27	48.30
52	Lebanon		6,136.74	22.72	3.70
53	Lesotho	3.22	620.83	1.49	2.41
54	Lithuania	4.53	8,777.28	29.79	3.39
55	Macao, China				
56	Macedonia, FYR	3.86	3,075.58	6.28	2.04
57	Madagascar	3.27	287.03	5.50	19.16
58	Malawi	3.07	241.13	3.16	13.12
59	Malaysia	5.11	5,643.47	148.95	26.39
60	Maldives		2,628.73	0.91	0.35
61	Mali	3.02	486.95	6.22	12.77
62	Malta	4.54	15,998.30	6.40	0.40
63	Mauritius	4.2	5,026.45	6.29	1.25
64	Mexico	4.18	8,066.25	840.01	104.14
65	Monaco**				
66	Morocco	4.01	2,148.91	65.40	30.44
67	Mozambique	2.94	386.13	7.74	20.04
68	Namibia	3.74	3,085.07	6.32	2.05
69	Nepal**	3.26	375.79	8.87	23.59
70	New Zealand*	5.15	25,238.61	104.61	4.15
71	Nicaragua	3.52	896.78	5.30	5.91
72	Nigeria	3.45	777.22	116.49	149.88
73	Pakistan	3.66	817.26	127.00	155.40
74	Panama	4.18	5,207.76	17.10	3.28

	Country	Global Competitive Index Score 2006	Per Capita GDP 2006	GDP 2006 (US\$ Billions)	Population 2006 (Millions)
75	Peru	3.94	3,366.31	93.04	27.64
76	Philippines	4	1,351.72	117.56	86.97
77	Poland	4.3	8,939.62	340.97	38.14
78	Portugal*	4.6	18,400.90	194.79	10.59
79	Puerto Rico				
80	Romania	4.02	5,633.37	121.90	21.64
81	Russian Federation**	4.08	6,897.23	984.92	142.80
82	Saudi Arabia		14,733.46	349.14	23.70
83	Senegal		770.11	9.19	11.94
84	Seychelles		9,368.49	0.78	0.08
85	Singapore	5.63	29,917.20	132.15	4.42
86	Slovenia	4.64	19,021.38	38.24	2.01
87	South Africa	4.36	5,376.19	255.27	47.48
88	Spain*	4.77	27,902.73	1231.73	44.14
89	Sri Lanka	3.87	1,363.41	26.96	19.77
90	St. Kitts and Nevis		11,953.63	0.50	0.04
91	St. Lucia		5,602.48	0.93	0.17
92	Sudan		1,033.80	37.44	36.22
93	Syrian Arab Republic		1,843.58	34.92	18.94
94	Tanzania***	3.39	335.37	12.81	38.20
95	Thailand	4.58	3,137.67	206.34	65.76
96	Togo		350.72	2.21	6.30
97	Trinidad and Tobago	4.03	13,996.31	18.17	1.30
98	Tunisia	4.71	3,031.59	30.84	10.17
99	Turkey	4.14	5,533.68	401.76	72.60
100	Ukraine	3.89	2,282.48	106.47	46.65
101	United Arab Emirates	4.66	38,613.42	163.30	4.23
102	United States*	5.61	44,024.17	13194.70	299.72
103	Uruguay	3.96	5,977.24	19.13	3.20
104	Venezuela, RB	3.69	6,736.21	181.61	26.96
105	Vietnam	3.89	722.68	60.99	84.40
106	Yemen, Rep.		926.82	20.04	21.62
107	Zimbabwe	3.01	472.23	5.54	11.73

Source: ILO 2007.

* Excluded. High income OECD country.

** Excluded. Limited EPZ activity

*** Not on the ILO listing but added due to recent EPZ activity.

Table 7: Regression Results (Model 1-6)

	1	2	3	4	5	6
	epz					
gdppcusd2006	0.9996 [0.013]*	0.9998 [0.003]**	0.9998 [0.003]**	0.9998 [0.003]* *	0.9996 [0.004]**	0.9998 [0.002]* *
gdpus2006	1.0007 [0.185]	1.0002 [0.517]	1.0002 [0.496]	1.0002 [0.594]	1 [0.999]	1.0002 [0.557]
gdppcgr	0.1175 [0.012]*	1.2541 [0.550]				
gdpg	6.5888 [0.023]*	0.6607 [0.263]	0.8172 [0.037]*	0.8313 [0.053]+	0.8469 [0.104]	0.8425 [0.068]+
Litrts100	1.131 [0.017]*					1.0443 [0.039]*
FEMLAB	1.2072 [0.110]					
unemrte	0.9994 [0.987]					
exp2pop	1.0002 [0.309]					
fdist2pop	1 [0.991]					
dobusdaysavg	1.0347 [0.005]**	1.0071 [0.061]+	1.0073 [0.054]+	1.007 [0.062]+	1.0125 [0.023]*	1.0075 [0.062]+
dobuscostavg	0.992 [0.014]*	0.9965 [0.029]*	0.9963 [0.018]*	0.996 [0.011]*	0.9977 [0.282]	0.9959 [0.016]*
gov	7.5336 [0.121]	4.6495 [0.035]*	4.9723 [0.025]*	4.8385 [0.016]*	0.5029 [0.525]	4.368 [0.033]*
creditinfindx	1.7147 [0.050]*	1.586 [0.006]**	1.582 [0.005]**	1.5546 [0.004]* *	1.5515 [0.026]*	1.4791 [0.014]*
invdirliab	1.097	1.338	1.3143	1.3199	1.3206	1.2877

	1	2	3	4	5	6
	[0.742]	[0.045]*	[0.053]+	[0.036]*	[0.099]+	[0.063]+
labor06	1.0295 [0.520]	0.9756 [0.282]	0.9771 [0.304]			
Eastern_Europe_and _Central_Asia	4.8936 [0.363]	5.3221 [0.186]	6.9748 [0.104]	5.8767 [0.126]	2.9336 [0.374]	3.248 [0.327]
Asia	2.2849 [0.737]	47.3891 [0.006]**	40.751 [0.007]**	28.7395 [0.011]*	15.6646 [0.079]+	43.9715 [0.007]* *
MENA	57.4498 [0.138]	85.5669 [0.010]**	64.2725 [0.010]*	59.4477 [0.011]*		126.416 8 [0.005]* *
LAC	2.902 [0.561]	9.5506 [0.080]+	8.5494 [0.092]+	9.3624 [0.058]+	5.8004 [0.192]	9.1424 [0.064]+
Africa	20.118 [0.146]	18.2674 [0.031]*	14.0182 [0.036]*	13.3641 [0.035]*	71.2458 [0.008]**	32.4572 [0.010]* *
				0.3029 [0.483]		0.2535 [0.435]
GCI06					173.7607 [0.005]**	
Observations	102	127	127	136	101	132
Pseudo R-sq	0.672	0.4718	0.4697	0.4727	0.543	0.4873
p values in brackets						
+ significant at 10%; * significant at 5%; ** significant at 1%						
<u>Diagnostic</u>						
<u>Statistics</u>						
Vif	25.46	17.68	6.07	3.91	8.56	5.75
Predictive Power	91.18	83.46	82.68	82.35	85.15	87.12
goodness of Fit	0.000	0.2996	0.2508	0.6671	0.9257	0.4585

	1	2	3	4	5	6
Relevant Variables included ($\hat{}$)	0.000	0.000	0.000	0.000	0.000	0.000
No Omitted Variables ($\hat{}^2$)	0.300	0.734	0.742	0.828	0.667	0.282

Table 8: Regression Results (Models 7-10)

	7	8	9	10
gdppcusd2006	0.9997 [0.001]**	0.9997 [0.001]**	0.9997 [0.001]**	0.9997 [0.000]**
gdpus2006	1.0001 [0.775]	1.0003 [0.549]	1.0002 [0.647]	1.0001 [0.751]
gdppcgr	0.7332 [0.006]**	0.6904 [0.002]**	0.68 [0.002]**	0.7723 [0.008]**
Litrts100	1.0402 [0.078]+	1.05 [0.040]*	1.0385 [0.110]	1.0418 [0.058]+
taxhrs	1.0039 [0.022]*	1.0043 [0.024]*	1.0045 [0.026]*	1.0034 [0.018]*
dobusdaysavg	1.0109 [0.015]*	1.013 [0.008]**	1.0102 [0.042]*	1.0117 [0.010]**
dobuscostavg	0.9967 [0.080]+	0.9971 [0.158]	0.9969 [0.146]	
ge06	13.5835 [0.001]**	21.9962 [0.001]**	60.9461 [0.001]**	29.8664 [0.000]**
creditinfndx	1.6608 [0.005]**	1.8142 [0.003]**	2.0472 [0.001]**	1.6414 [0.006]**
invdirliab	1.4032 [0.041]*	1.4374 [0.049]*	1.4415 [0.046]*	1.4373 [0.017]*
Eastern_Europe_and_Central_Asia	9.972 [0.084]+	15.5412 [0.051]+	22.2749 [0.037]*	9.9313 [0.076]+
Pacific_Islands	1.4351 [0.854]			
Asia	48.571 [0.007]**	122.3333 [0.002]**	127.6377 [0.002]**	100.324 [0.002]**
MENA	347.7244 [0.002]**	758.6695 [0.002]**	584.4465 [0.002]**	248.0974 [0.003]**

	7	8	9	10
LAC	24.4938 [0.018]*	27.0025 [0.024]*	37.4115 [0.016]*	21.4845 [0.018]*
Africa	109.2469 [0.002]**	204.077 [0.002]**	255.156 [0.001]**	45.0285 [0.006]**
labor06		0.9643 [0.170]		
freescor06			0.8849 [0.087]+	0.9349 [0.248]
Observations	131	124	124	134
Pseudo R-squared	0.5502	0.5771	0.5846	0.5198
p values in brackets + significant at 10%; * significant at 5%; ** significant at 1%				
<u>Diagnostic Statistics</u>				
Vif	5.73	8.23	11.54	11.08
Predictive Power (%)	85.5	86.29	86.29	85.82
goodness of Fit	0.826	0.0373	0.6723	0.9188
Relevant Variables included (_hat)	0.000	0.000	0.000	0.000
No Omitted Variables (_hatsq)	0.475	0.169	0.5	0.871

Table 9: Regression Results (Models 11-13)

	11	12	13
gdppcusd2006	0.9997 [0.001]**	0.9998 [0.004]**	0.9997 [0.003]**
gdpus2006	1.0002 [0.523]	1.0002 [0.557]	1.0001 [0.757]
gdpggr	0.832 [0.052]+	0.8347 [0.058]+	0.7508 [0.009]**
dobusdaysavg	1.0076 [0.060]+	1.0076 [0.059]+	1.0101 [0.021]*
dobuscostavg	0.9962 [0.028]*	0.996 [0.028]*	0.997 [0.129]
Litrts100	1.0407 [0.060]+	1.0416 [0.058]+	1.0315 [0.166]
ge06	5.858 [0.011]*	5.305 [0.030]*	13.1329 [0.005]**
creditinfindx	1.4588 [0.020]*	1.4719 [0.020]*	1.642 [0.006]**
invdirliab	1.2719 [0.085]+	1.2566 [0.115]	1.4464 [0.040]*
Eastern_Europe_and_Central_Asia	3.7299 [0.271]	3.7562 [0.269]	6.6245 [0.135]
Pacific_Islands	0.3787 [0.593]	0.3992 [0.615]	1.2164 [0.920]
Asia	34.1449 [0.012]*	34.3164 [0.011]*	50.9408 [0.006]**
MENA	113.6011 [0.006]**	117.1741 [0.006]**	389.9631 [0.002]**
LAC	11.617 [0.044]*	10.0156 [0.079]+	29.9546 [0.024]*

	11	12	13
Africa	38.581 [0.008]**	33.6144 [0.015]*	136.6894 [0.004]**
USTrdePref2		1.2971 [0.771]	0.7782 [0.798]
taxhrs			1.0037 [0.025]*
Observations	132	132	131
Pseudo R-squared	0.5008	0.5013	0.5455
p values in brackets			
<u>Diagnostic Statistics</u>			
Vif	5.84	5.8	5.76
Predictive Power (%)	87.12	86.36	84.73
goodness of Fit	0.694	0.6909	0.8859
Relevant Variables included (_hat)	0	0	0
No Omitted Variables (_hatsq)	0.338	0.327	0.513

Table 10: Regression Results (Models14-17)

	14	15	16	17
gdppcusd2006	0.9998 [0.012]*	0.9998 [0.011]*	0.9998 [0.008]**	0.9998 [0.002]**
gdpus2006	1 [0.940]	1 [0.918]	1 [0.933]	1 [0.992]
gdpgr	0.7425 [0.008]**			
Litrts100	1.0309 [0.176]	1.0396 [0.086]+	1.0403 [0.078]+	1.0405 [0.063]+
USTrdePref2	0.73 [0.749]	0.8275 [0.847]		
taxhrs	1.0037 [0.029]*	1.0038 [0.025]*	1.0038 [0.025]*	1.0035 [0.019]*
dobusdaysavg	1.0096 [0.030]*	1.0104 [0.020]*	1.0104 [0.020]*	1.0112 [0.013]*
dobuscostavg	0.9968 [0.115]	0.9966 [0.091]+	0.9965 [0.070]+	
ge06	26.3222 [0.016]*	25.9489 [0.016]*	23.4847 [0.011]*	147.0305 [0.001]**
ps06	0.9687 [0.955]	1.032 [0.957]	1.0402 [0.946]	1.0914 [0.872]
cc06	0.3748 [0.466]	0.4114 [0.509]	0.4184 [0.514]	0.129 [0.120]
creditinfindx	1.6459 [0.006]**	1.6672 [0.005]**	1.6695 [0.005]**	1.7685 [0.003]**
invdirliab	1.4795 [0.032]*	1.4389 [0.040]*	1.424 [0.035]*	1.5051 [0.010]*
Eastern_Europe_and_Central_Asia	6.5782 [0.138]	9.7169 [0.088]+	9.5983 [0.090]+	9.8358 [0.085]+

	14	15	16	17
Pacific_Islands	1.2112 [0.926]	1.3344 [0.890]	1.3452 [0.886]	
Asia	52.1054 [0.007]**	50.6598 [0.007]**	50.5122 [0.007]**	120.68 [0.001]**
MENA	510.8624 [0.002]**	445.5816 [0.002]**	441.959 [0.002]**	555.12 [0.001]**
LAC	33.5494 [0.022]*	28.4435 [0.027]*	25.1267 [0.017]*	23.4736 [0.019]*
Africa	162.6824 [0.003]**	133.7914 [0.004]**	118.5871 [0.003]**	61.0952 [0.005]**
gdppcgr		0.7244 [0.006]**	0.727 [0.006]**	0.7496 [0.005]**
freescor06				0.9342 [0.251]
Observations	131	131	131	134
Pseudo R-squared	0.5486	0.5528	0.5526	0.5334
p values in brackets + significant at 10%; * significant at 5%; ** significant at 1%				
<u>Diagnostic Statistics</u>				
Vif	7.12	7.07	7.09	12.23
Predictive Power (%)	87.02	86.26	87.02	85.07
goodness of Fit	0.5701	0.3454	0.4532	0.4831
Relevant Variables included (_hat)	0.000	0.000	0.000	0.000
No Omitted Variables (_hatsq)	0.612	0.599	0.569	0.783

Table 11: Regression Results (Models 18-23)

	18	19	20	21	22	23
	epz					
gdppcusd2006	0.9996 [0.007]* *	0.9998 [0.003]* *	0.9998 [0.003]* *	0.9998 [0.003]* *	0.9997 [0.006]* *	0.9998 [0.002]* *
gdpus2006	1.0006 [0.167]	1.0002 [0.627]	1.0002 [0.593]	1.0001 [0.717]	1 [0.944]	1.0002 [0.620]
gdppcgr	0.4401 [0.160]	1.3234 [0.444]				
gdpggr	1.6673 [0.367]	0.6181 [0.180]	0.8037 [0.024]*	0.8156 [0.032]*	0.8196 [0.060]+	0.8337 [0.052]+
Litrts100	1.0532 [0.142]					1.036 [0.069]+
FEMLAB	1.0465 [0.575]					
unemrte	0.9761 [0.415]					
exp2pop	1.0002 [0.446]					
fdist2pop	1 [0.909]					
dobuscstavg	0.9952 [0.065]+	0.9966 [0.027]*	0.9964 [0.014]*	0.9961 [0.009]* *	0.9971 [0.129]	0.9961 [0.013]*
gov	5.5855 [0.092]+	3.8717 [0.054]+	4.2248 [0.035]*	3.9802 [0.028]*	0.8996 [0.915]	3.5305 [0.054]+
creditinfindx	1.4642 [0.065]+	1.5281 [0.010]*	1.5246 [0.009]* *	1.523 [0.006]* *	1.3846 [0.083]+	1.471 [0.013]*
invdirliab	1.0889 [0.677]	1.2829 [0.071]+	1.2517 [0.091]+	1.2504 [0.071]+	1.1817 [0.244]	1.2152 [0.123]

	18	19	20	21	22	23
labor06	0.9834 [0.649]	0.9699 [0.166]	0.9717 [0.182]			
Eastern_Europe_and_Central_Asia	1.7735 [0.696]	4.8613 [0.197]	6.7808 [0.100]	5.6424 [0.128]	3.3161 [0.302]	2.3504 [0.469]
Asia	6.686 [0.335]	45.1902 [0.005]* *	37.7508 [0.006]* *	26.2795 [0.013]*	15.8652 [0.067]+	35.0228 [0.009]* *
MENA	19.1483 [0.166]	87.344 [0.008]* *	63.2583 [0.009]* *	58.3722 [0.010]*		79.7589 [0.007]* *
LAC	2.9615 [0.482]	17.2153 [0.026]*	15.1138 [0.032]*	13.9028 [0.027]*	8.6335 [0.095]+	11.2497 [0.041]*
Africa	19.5542 [0.082]+	21.0967 [0.021]*	15.4983 [0.028]*	14.6189 [0.029]*	44.7199 [0.011]*	23.7476 [0.015]*
Pacific_Islands				0.2511 [0.419]		0.1837 [0.330]
GCI06					32.0953 [0.026]*	
Observations	102	127	127	136	101	132
Pseudo R-squared	0.556	0.4494	0.4459	0.4514	0.4947	0.4662
p values in brackets						
+ significant at 10%; * significant at 5%; ** significant at 1%						
<u>Diagnostic Statistics</u>						
Vif	25.8	18.02	5.8	3.4	8.13	5.33
Predictive Power	90.2	81.89	80.31	82.35	83.17	82.58
goodness of Fit	0.000	0.0294	0.0125	0.4299	0.8654	0.1747
Relevant Variables included (_hat)	0.000	0.000	0.000	0.000	0.000	0.000
No Omitted Variables (_hatsq)	0.412	0.167	0.17	0.367	0.538	0.193

Table 12: Regression Results (Models 24-29)

	24	25	26	27	28	29
	epz					
gdppcusd2006	0.9995 [0.006]* *	0.9998 [0.001]* *	0.9998 [0.001]* *	0.9998 [0.004]* *	0.9996 [0.001]* *	0.9998 [0.002]* *
gdpus2006	1.001 [0.081]+	1.0002 [0.467]	1.0002 [0.429]	1 [0.877]	1 [0.961]	1.0001 [0.788]
gdppcgr	0.2099 [0.027]*	1.6152 [0.174]				
gdpg	3.6572 [0.057]+	0.5349 [0.078]+	0.8504 [0.065]+	0.905 [0.184]	0.8511 [0.085]+	0.9183 [0.246]
Litrts100	1.117 [0.012]*					1.0443 [0.013]*
FEMLAB	1.0931 [0.296]					
unemrte	0.9679 [0.327]					
exp2pop	1.0002 [0.251]					
fdist2pop	1 [0.973]					
dobusdaysavg	1.0292 [0.003]* *	1.0075 [0.043]*	1.0082 [0.026]*	1.0072 [0.022]*	1.0133 [0.009]* *	1.0082 [0.016]*
gov	16.6446 [0.013]*	7.6914 [0.002]* *	8.8739 [0.001]* *	3.3819 [0.010]* *	0.8257 [0.842]	3.4476 [0.015]*
creditinfindx	1.6559 [0.018]*	1.4865 [0.012]*	1.4852 [0.010]*	1.6798 [0.000]* *	1.3973 [0.076]+	1.5977 [0.001]* *
invdirliab	1.3904 [0.138]	1.3796 [0.015]*	1.3378 [0.023]*	1.3592 [0.004]*	1.4107 [0.021]*	1.3078 [0.016]*

	24	25	26	27	28	29
				*		
labor06	0.964 [0.282]	0.9745 [0.229]	0.9789 [0.294]			
Eastern_Europe_and_Central_Asia	4.5358 [0.337]	3.7849 [0.264]	6.2242 [0.109]	6.425 [0.093]+	2.8135 [0.377]	2.9623 [0.337]
Asia	7.2298 [0.331]	76.8798 [0.001]* *	56.7293 [0.002]* *	30.2582 [0.005]* *	21.6508 [0.041]*	41.4293 [0.003]* *
MENA	76.0587 [0.078]+	135.8235 [0.004]* *	73.4032 [0.006]* *	43.3496 [0.006]* *		97.1641 [0.002]* *
LAC	2.15 [0.632]	12.8665 [0.039]*	9.7915 [0.058]+	6.6084 [0.084]+	7.2803 [0.127]	5.447 [0.123]
Africa	16.3004 [0.122]	12.7605 [0.048]*	6.636 [0.104]	10.7229 [0.038]*	29.7155 [0.022]*	19.9432 [0.012]*
Pacific_Islands				0.5937 [0.744]		0.6598 [0.802]
GCI06					128.3487 [0.003]* *	
Observations	106	137	137	157	107	150
Pseudo R-squared	0.6213	0.4344	0.424	0.4257	0.5177	0.3891
p values in brackets						
+ significant at 10%; * significant at 5%; ** significant at 1%						
<u>Diagnostics Statistics</u>						
Vif	23.87	17.00	5.61	3.42	7.96	5.38
Predictive Power	91.51	80.29	79.56	77.07	82.24	79.33
goodness of Fit	0.000	0.5402	0.4936	0.4696	0.963	0.5672
Relevant Variables included (_hat)	0.000	0.000	0.000	0.000	0.000	0.000
No Omitted Variables (_hatsq)	0.207	0.614	0.535	0.765	0.842	0.598

CHAPTER 5

Entrepreneurship and EPZs

...those nations that wish to learn from the Chinese experience should view this experience holistically, and not to draw unwarrantedly optimistic conclusions from the SEZs themselves. Export processing zones such as the SEZs might indeed achieve catalytic effects in nations other than China, but this will happen only if other necessary elements are put into place.³³⁴

5.1 Introduction

An important indicator of the success of an export processing zone program is the extent to which firms and industries operating in the EPZs generate linkages with the domestic economy. Indeed, EPZs and foreign direct investment, more generally, are said to have the potential for catalytic effects on the economy through their interactions with local entrepreneurs.³³⁵ Johansson (1994) finds that,

One such important effect may be the catalytic role of EPZs for the host country. In distorted, low-income economies lacking industrial capability, EPZs may initiate export-led industrialization by bringing a critical mass of knowledge to the country.³³⁶

³³⁴ Edward M. Graham, "Do Export Processing Zones Attract Fdi and Its Benefits: The Experience from China," *International Economics and Economic Policy* V1, no. 1 (2004): p.102.

³³⁵ See Johansson and Nilsson, "Export Processing Zones as Catalysts.", James R. Markusen and Anthony J. Venables, "Foreign Direct Investment as a Catalyst for Industrial Development," *European Economic Review* 43, no. 2 (1999).

³³⁶ H. Johansson, "The Economics of Export Processing Zones Revisited," *Development Policy Review* 12, no. 4 (1994): p.387.

Indeed, under optimal conditions, as FDI enters a market, it creates backward linkages when it purchases production inputs from local suppliers – hence stimulating local entrepreneurship. Industrialization through FDI, however, is often more effective when it occurs through clusters of inter-related firms so as to produce dynamic forward and backward linkages.³³⁷

In Chapter 2 of this dissertation, I presented several of the seminal definitions of export processing zones which highlighted their closed and enclave structure and the importance of regulatory and financial concessions offered to firms which operate within them. Another important aspect of EPZs, however, is their role as a conduit for foreign direct investment. Indeed, export processing zones in many developing economies exclusively target export-oriented foreign firms with the hopes of gaining the traditional benefits of foreign direct investment, while limiting the potential negative “crowding out” impacts of foreign competition on domestic firms. EPZs, then, which can be considered as specially designated locations for the FDI, can have a significant impact on the local economy through linkage effects on domestic entrepreneurs. This chapter, therefore, examines the questions, “How is domestic entrepreneurship affected by the presence of an EPZ program in a country?” Furthermore, are the effects different from the effects of FDI on entrepreneurship?

This chapter proceeds as follows. In section 5.2 we construct a model of the effects of EPZs on entrepreneurship drawing on the FDI and growth literature and

³³⁷ Tilman Altenburg and Jorg Meyer-Stamer, "How to Promote Clusters: Policy Experiences from Latin America," *World Development* 27, no. 9 (1999), K Nadvi, "Industrial Clusters and Networks: Case Studies of Sme Growth and Innovation," (United Nations Industrial Development Organization, 1995), Hector O. Rocha, "Entrepreneurship and Development: The Role of Clusters," *Small Business Economics* 23, no. 5 (2004), Rosenstein-Rodan, "Problems of Industrialisation of Eastern and South-Eastern Europe."

Audretsch, Keilbach and Liemann's (2006) demonstration, knowledge and network externalities approach to entrepreneurship. While Audretsch, Keilbach and Liemann (2006) offered demonstration and failure, knowledge and network externalities as separate phenomenon, this paper emphasizes their interconnectedness. Indeed, demonstration and network externalities are both mechanisms of transmitting knowledge which can be useful for firms both (foreign and domestic) in an economy.

In Section 5.3, I outline my hypotheses: (1) that export processing zones negatively impact entrepreneurship; (2) that FDI positively impact entrepreneurship; (3) that complex business environments negatively impact entrepreneurship; and (4) financial development positively affect entrepreneurship. Additionally, the methodology and data for testing these hypotheses are presented. This chapter uses a new index for entrepreneurship developed in Acs and Szerb (forthcoming). This index measures a complex, Schumpeterian-type entrepreneurship in both developed and developing countries. Comparisons are also made with several other measures of entrepreneurship including the Global Entrepreneurship Monitor (GEM) and the World Bank's business registration database. Section 5.4 presents the results of the cross section regression analysis and Section 5.5 outlines the conclusions and policy recommendations.

5.2 Towards a Model of the Relationship between EPZs, Entrepreneurship and Growth

In this section I present a model of the effects of EPZs on entrepreneurship building on the literature on FDI and growth and the literature on the externalities and institutions which either promote or hinder linkages with the rest of the economy and ultimately affect entrepreneurship.

5.2.1 Why is FDI Preferred?

Why is FDI preferred over other forms of foreign financing sources for development? Countries attempting to build an exporting platform, for example, could open their financial markets to other types of financial flows. However, FDI is generally considered to be a more stable foreign funding source and has a greater potential for positive development impacts. The United Nations' Monterrey Consensus states that, "[f]oreign direct investment contributes toward financing sustained economic growth over the long term."³³⁸ FDI has the potential to generate technology spillovers and to stimulate backward and forward linkages with domestic firms. Venables (1999) finds that "FDI creates technological externalities – knowledge spillovers or demonstration effects – for the local economy."³³⁹ Penrose (1956) points out that FDI involves the inflow of capital and is often associated with the transfer of expertise and technology that

³³⁸ United Nations, *Monterrey Consensus of the International Conference on Financing for Development* (2003 [cited 9th November 2007]); available from <http://www.un.org/esa/ffd/Monterrey/Monterrey%20Consensus.pdf>.

³³⁹ James R. Markusen and Anthony J. Venables, "Foreign Direct Investment as a Catalyst for Industrial Development," *European Economic Review* 43, no. 2 (1999): p.336.

would not otherwise be available in the host economy.³⁴⁰ FDI, then, can potentially positively affect economic growth by increasing productivity within an economy and increasing and improving the quality of both physical and human capital.

The literature on the benefits of FDI is extensive and the theoretical framework is well developed and largely complete. Early scholars in the field set about explaining why FDI emerged and what made a firm operate abroad? For Penrose (1956), firms expanded in response to profit opportunities which arose from both external and internal forces.³⁴¹ For Penrose (1956), foreign direct investment, through the multinational corporation, was a natural extension of the growth of the firm. Hymer (1970), however, was extremely suspicious of foreign direct investment.³⁴² Indeed, Hymer's FDI theory focused extensively on the negative aspects of the emergence of FDI and multinational corporations; particularly, their potential for monopoly and market power and hence their ability to reduce competition and to extract rents.³⁴³ Kindleberger (1967) also pointed out the importance of monopoly power as an impetus for FDI and the emergence of the MNC. However, Kindleberger (1967) emphasized a Schumpeterian aspect of MNCs –

³⁴⁰ Edith Tilton Penrose, "Foreign Investment and the Growth of the Firm," *The Economic Journal* 66, no. 262 (1956): pp.232-33.

³⁴¹ By expansion Penrose means both "new products" and "new markets". Penrose, "Foreign Investment and the Growth of the Firm," p.225.

³⁴² Stephen Hymer, "The Efficiency (Contradictions) of Multinational Corporations," *The American Economic Review* 60, no. 2 (1970). For an synthesis of Hymer's writings on FDI, see Donald J. Lecraw, "Hymer and Public Policy in Ldcs," *The American Economic Review* 75, no. 2 (1985).

³⁴³ John H. Dunning and Alan M. Rugman, "The Influence of Hymer's Dissertation on the Theory of Foreign Direct Investment," *The American Economic Review* 75, no. 2 (1985): pp.228-29. For an in depth analysis of the pros and cons of internalization through the overseas extension of the firm, see also Peter J. Buckley, "Problems and Developments in the Core Theory of International Business.," *Journal of International Business Studies* 21, no. 4 (1990).

their tendency to use their unique assets to disturb the status quo in the host economy.³⁴⁴ Dunning and Rugman (1985), in their critique of Hymer, offered that the ability of MNCs to internalize markets and to reduce transaction costs need not necessarily be a negative experience for the host country.³⁴⁵ Indeed, the emergence of multinational corporations due to their specific “ownership advantages” could “improve efficiency” within an economy leading to an overall increase in welfare.³⁴⁶ Blomstrom and Kokko (1998) point out that when a market is already severely distorted, “[t]he entry of MNCs ... is likely to increase the level of competition and force existing firms to become more efficient.”³⁴⁷

While earlier studies focused on monopoly power and control; it was Dunning’s OLI theory which, perhaps, best describes why FDI emerges and is most relevant to the study of EPZs. For Dunning (1988), firms evaluated the market conditions in overseas locations and decided whether it would be more efficient to transact on an arms length basis through international trade (i.e. exporting) or to conduct its business by “internalize[ing the] foreign markets” and produce through a multinational corporation.³⁴⁸ Dunning (1988) points out that it was the existence of certain “ownership advantages”, in the presence of market failures, which drives firms to expand beyond their national

³⁴⁴ Charles P. Kindleberger, "The International Firm and the International Capital Market," *Southern Economic Journal* 34, no. 2 (1967): p.224.

³⁴⁵ Dunning and Rugman, "The Influence of Hymer's Dissertation on the Theory of Foreign Direct Investment," p.229.

³⁴⁶ Ibid.

³⁴⁷ Magnus Blomstrom and Ari Kokko, "Multinational Corporations and Spillovers," *Journal of Economic Surveys* 12, no. 3 (1998): p.5.

³⁴⁸ Dunning, "The Theory of International Production," p.38.

borders.³⁴⁹ The final element of Dunning's (1988) theory relates to where FDI is located. Dunning (1988) pointed out that firms will chose to locate where there are specific "locational advantages" such as access to cheaper labor and raw materials.³⁵⁰ Indeed, through the use of investment incentives, governments in countries which have established EPZs have attempted to increase their countries' "locational advantages", thus making it more profitable for firms to "internalize" these markets and to exploit their "ownership advantages".

5.2.2 FDI and Growth

The discussion of the why FDI emerges and the review of the anticipated benefits from FDI in Section 5.1 reveal important potential disparities between the host country's and foreign firm's motivations. Firms make the decision to "internalize markets" and to engage in FDI based on their desire to maximize profits given their firm-specific comparative and competitive advantages. Their location choice and their methods of production are also based on their strategic objectives. These objectives include locating closer to larger or important markets (i.e. market-seeking FDI) or factor inputs such as natural resources or supplies of low cost labor or labor possessing particular skills (i.e. resource or efficiency seeking FDI). On the other hand, host countries seek out FDI as part of their development strategies. Developing economies are seeking additional capital, employment opportunities for their citizens and technology and skills transfers. Therefore, the role of FDI from the host economy's perspective and the purpose of the

³⁴⁹ Ibid.: p.40.

³⁵⁰ Ibid.: p.46.

foreign investment from the MNC's point of view may not coincide and in some cases may conflict³⁵¹. Indeed, assisting with the growth, the development of linkages and the promotion of entrepreneurship in the host economy is not usually part of the objectives of the MNC.³⁵² Governments are seeking to establish EPZs as a core component of their development strategies, yet firms which enter EPZs are often seeking resource or efficiency advantages. Indeed, these firms entering EPZs are often motivated by the existence of preferential trade agreements which may, through their rules of origin requirements, limit the creation of domestic linkages.

However, despite the anticipated benefits of FDI by countries which establish EPZs, the empirical studies on the effects of FDI on growth are mixed - with some studies showing strong positive and causal effects and others finding no association or even reverse causation (See Table 1). Given the wide range of findings, it appears that the relationship between FDI and growth is conditional upon a number of factors. For example, even for the studies which reported positive growth effects, FDI was more effective when there was a corresponding impact on domestic investment, or where certain underlying institutional and human capital factors were in place.

³⁵¹ For a review of the major theories regarding the relationship between host governments and MNCs see Thomas L. Brewer, "An Issue-Area Approach to the Analysis of Mne-Government Relations," *Journal of International Business Studies* 23, no. 2 (1992).

³⁵² For a discussion of the conflicting motives of FDI and local partners see J. Chen, "The Environment for Foreign Direct Investment and the Characteristics of Joint Ventures in China," *Development Policy Review* 11, no. 2 (1993): pp. 177-78.

Table 13: Summary of Studies on FDI and Growth

Study	Key Findings
Nunnenkamp, Schweickert and Weibelt (2007)	Using a computable general equilibrium model, this study simulates the effects of FDI on the Bolivian economy and finds that an increase in FDI inflows can have positive effects on GDP and investment. ³⁵³
Chowdhury and Mavrotas (2006)	Using the Toda-Yamamoto test for causality the paper finds that there is unidirectional causality from GDP to FDI in the case of Chile and bidirectional causality in the cases of Malaysia and Thailand. ³⁵⁴
Busse and Groizard (2006)	This study finds that excessive regulations affect can growth through their impact on FDI. ³⁵⁵
Hansen and Rand (2006)	Using a sample of Asian, Latin American and African countries, this study “finds a strong causal link from FDI to GDP – also in the long run.” ³⁵⁶
Choe (2003)	This study finds that while growth can be said to “cause” domestic investment, the direction of causality between foreign direct investment and growth is more likely from “growth to FDI rather than from FDI to growth”. ³⁵⁷
Zhang (2001)	This study examined the effects of FDI on growth for a selection of East Asian and Latin American countries and finds that the growth effects of FDI are conditional upon “host-country characteristics, such as trade strategy,

³⁵³ Peter Nunnenkamp, Rainer Schweickert, and Manfred Wiebelt, "Distributional Effects of Fdi: How the Interaction of Fdi and Economic Policy Affects Poor Households in Bolivia," *Development Policy Review* 25, no. 4 (2007): pp. 441-42.

³⁵⁴ A Chowdhury and G Mavrotas, "Fdi and Growth: A Causal Relationship," *UNU-WIDER Research Paper* (2006).

³⁵⁵ Matthias Busse and Jose Luis Groizard, "Foreign Direct Investment, Regulations and Growth," *World Bank Policy Research Working Paper* 3882 (2006).

³⁵⁶ Henrik Hansen and John Rand, "On the Causal Links between Fdi and Growth in Developing Countries," *The World Economy* 29, no. 1 (2006): p.37.

³⁵⁷ Jong Il Choe, "Do Foreign Direct Investment and Gross Domestic Investment Promote Economic Growth?," *Review of Development Economics* 7, no. 1 (2003): p.54.

Study	Key Findings
	human capital and export propensities of FDI. ³⁵⁸
Milberg (1999)	This study is less optimistic about FDI and suggests that given the lack of empirical evidence linking FDI to growth and development that countries should place less emphasis on it as a development tool. ³⁵⁹ Milberg (1999) offers that “[FDI] has rarely been the driving force for growth; instead it has lagged, following in the path of stable growth.” ³⁶⁰
Bosworth and Collins (1999)	This study offers that “FDI appears to have highly beneficial effects on domestic investment.” ³⁶¹
Sun (1998)	In this study of the effects of FDI on economic growth in China, Sun (1998) finds that FDI is positively related to exports, economic growth and domestic investment in China. ³⁶²
Borensztein et al (1998)	“The main regression results indicate that FDI has a positive overall effect on economic growth, although the magnitude of this effect depends on the stock of human capital available in the host economy” ³⁶³
Sagagi-nejad (1995)	This study found that “FDI...is usually much larger as a share of capital formation in industries that play a key role in development

³⁵⁸ Kevin Honglin Zhang, "Does Foreign Direct Investment Promote Economic Growth? Evidence from East Asia and Latin America," *Contemporary Economic Policy* 19, no. 2 (2001): p.184.

³⁵⁹ William Milberg, "Foreign Direct Investment and Development: Balancing Costs and Benefits," *International Monetary and Financial Issues for the 1990s* 11 (1999): p.100.

³⁶⁰ Ibid.: p.111.

³⁶¹ Barry P. Bosworth, Susan M. Collins, and Carmen M. Reinhart, "Capital Flows to Developing Economies: Implications for Saving and Investment," *Brookings Papers on Economic Activity* 1999, no. 1 (1999): p.164.

³⁶² H Sun, "Macroeconomic Impact of Direct Foreign Investment in China: 1979-96," *The World Economy* 21, no. 5 (1998): p.691.

³⁶³ E Borensztein, J De Gregorio, and J-W Lee, "How Does Foreign Direct Investment Affect Economic Growth?," *Journal of International Economics* 45, no. 1 (1998): pp.121-23.

Study	Key Findings
	such as durable consumer goods or high-technology manufacturing industries. ³⁶⁴

5.2.3 FDI, EPZs and Growth: An Externalities Approach

The link between FDI and growth, development and entrepreneurship is complex. Given this complexity and the lack of consensus in the empirical studies, this study builds a new framework for understanding the factors which enable FDI and EPZs to serve as a source of development. The FDI and EPZ literature cover a range of issues such as: FDI incentives; technology spillovers and skills transfers; FDI's effects on growth and development; and the effects of FDI on local entrepreneurship in the host economy. Yet, other studies examine the effects of investments in infrastructure, governance and the macro-economy on FDI flows. Finally, FDI has been studied from the perspective of the purpose of the FDI: resource seeking, market seeking, efficiency-seeking and more recently strategic-asset seeking.

Given the wide scope of issues and the mixed results from the empirical studies, the study, again, draws on Audretsch, Keilbach and Liemann's (2006) demonstration, knowledge and network externalities framework for understanding the factors which affect the success of FDI. While Audretsch, Keilbach and Liemann (2006) offered demonstration and failure, knowledge and network externalities as separate phenomenon, in the case of FDI, I emphasize their interconnectedness. Indeed, demonstration and network externalities are both mechanisms of transmitting knowledge which can be

³⁶⁴ Sagafi-nejad, "Transnational Corporations–Host Country Relations and the Changing Foreign Direct Investment Climate: Toward 2000," p.96.

useful for firms both (foreign and domestic) in an economy. Figure 1 presents a hypothesized model of the relationship between FDI and EPZs, entrepreneurship and economic growth. In this model, FDI can impact GDP growth in three ways.

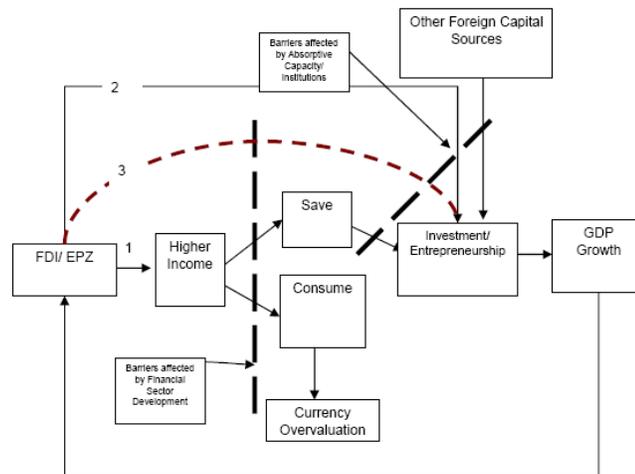


Figure 1: Hypothesized Relationship Between FDI, Entrepreneurship and Growth³⁶⁵

Route 1

First, FDI can have a positive impact on incomes in the host economy which can lead to greater savings to fund investments by domestic entrepreneurs (route 1).³⁶⁶ However, as Prasad et al (2007) point out, the link between higher income and savings

³⁶⁵ Partially based on Prasad et al (2007).

³⁶⁶ Eswar S. Prasad et al., "Foreign Capital and Economic Growth," *Brookings Papers on Economic Activity* 1 (2007).

will depend on the level of development of the financial sector.³⁶⁷ In countries with poorly developed financial sectors, the increased income may lead to higher consumption only and eventual overvaluation.³⁶⁸ Therefore, financial sector development becomes important in understanding the effects of FDI and EPZs on entrepreneurship. Graham's (2004) study of China, for example, points out that the disparity between the domestic financial system and the funding sources available to firms operating in China's SEZs helped to explain the poor performance of local entrepreneurs, vis-à-vis entrepreneurs in the SEZ.³⁶⁹

Route 2

Second, FDI may fund domestic investment directly through joint ventures (route 2). Indeed, in many of the successful EPZs countries such as China, Taiwan and Mauritius, joint ventures were prominent.³⁷⁰ In many developing countries joint ventures are preferred by foreign investors where they may be cultural, political or business environment barriers to overcome.³⁷¹

³⁶⁷ Ibid.

³⁶⁸ Ibid.

³⁶⁹ Graham, "Do Export Processing Zones Attract Fdi and Its Benefits: The Experience from China," p.93.

³⁷⁰ Ibid.: p.91.

³⁷¹ Chen, "The Environment for Foreign Direct Investment and the Characteristics of Joint Ventures in China," pp.175-76.

Route 3

FDI and EPZs may have an important impact on domestic investment and entrepreneurship through spillover effects – knowledge, demonstration and network externalities (route 3). First, the effects of EPZs and FDI on economic growth and development through knowledge externalities depend on a variety of conditions. FDI will be growth enhancing where a country possesses a sufficient level of education to use and adapt the technology which is being transferred. Indeed, Acs et al (2007a and 2007b) show that Ireland’s FDI policy was two-pronged – with one side aimed at attracting FDI while other ensured that its population were sufficiently educated to take advantage of the new opportunities.³⁷² Additionally, while a country’s education policy is important, so too is the type of FDI it attracts for generating knowledge spillovers. Indeed, FDI engaged in low technology production may not produce new knowledge. However, benefits may still occur through transfers of managerial and organizational skills. Market arrangements such as monopolies or other market tying arrangements may also prohibit technology transfers. Therefore, countries must assess the adequacy of their competition policy rules. Changes in international trading rules governing FDI such as local content or rules of origin requirements may affect the host economy’s ability to implement policies which facilitate knowledge transfers.

Second, FDI has the potential to generate important demonstration externalities which can either stimulate or “crowd in” domestic business activities in an economy.

³⁷² Zoltan J. Acs et al., "The Knowledge Spillover Theory of Entrepreneurship and Foreign Direct Investment," *JENA ECONOMICRESEARCH PAPERS* 59 (2007), Zoltan J. Acs et al., "Could the Irish Miracle Be Repeated in Hungary?," *Small Business Economics* 28, no. 2 (2007).

FDI involves an inflow of foreign capital which can facilitate industrialization in developing countries. In this way, foreign firms can undertake much of the search and discovery costs associated with entering and developing a new market. Promotion activities and policies which promote agglomeration can reduce some of the costs associated with discovery.³⁷³ MNCs, because of their “ownership advantages”, may also be more equipped to undertake the search costs compared to domestic firms. Demonstration externalities are also better generated where the domestic business environment facilitates market entry. A country’s business environment, therefore, matters. However, there are important potential negative effects associated with FDI. FDI may result in “crowding out” effects for local entrepreneurs by attracting the better workers and raising input costs.³⁷⁴

Finally, network externalities can have important effects on where FDI locates. Indeed, cultural, ethnic, familial and historical ties are important, in addition to the traditional determinants of FDI. Additionally, many foreign firms, including MNCs and foreign SMEs, enter the host economy already possessing access to dense international networks. Through clustering and other modes of knowledge transfers, domestic firms may also be able to benefit from these networks. Networks between exporting firms, foreign firms and local entrepreneurs should be encouraged in order to generate network externalities. Indeed, Altenburg and Meyer-Stamer (1999) conclude,

³⁷³ See Hausmann and Rodrik, "Economic Development as Self-Discovery."

³⁷⁴ See Bende-Nabende and Slater, "Private Capital Formation: Short-and Long-Run Crowding-in (out) Effects in Asean, 1971-99.", Graham, "Do Export Processing Zones Attract Fdi and Its Benefits: The Experience from China."

The main weakness of transnational clusters derives from the low degree of technological spillovers involved, especially the failure to develop dynamic local entrepreneurship in knowledge-intensive areas. Cluster policies should therefore focus on developing competitive local suppliers of direct and indirect materials as well as services.³⁷⁵

While FDI location is often influenced by existing networks based on social relationships, it is the networks which foreign firms can bring to an economy which can offer potential benefits to domestic enterprises and thus for growth and development.

Factors Influencing Linkages

The strength of line 3 or the ability of FDI and EPZs to generate linkages with domestic entrepreneurs depends on the formal and informal institutions in the economy which promote or prevent knowledge, network and demonstration spillovers. These institutions include business environment and financial market development factors. EPZs are enclave in nature; therefore, route 3 may be very weak compared to other types of FDI located in the domestic economy. In each case, the ability of FDI to affect investment and thus economic growth will be limited by a country's absorptive capacity.³⁷⁶ Equally as important, the beneficial effects of FDI and EPZs are limited by the complexity of the business environment.

³⁷⁵ Tilman Altenburg and Jorg Meyer-Stamer, "How to Promote Clusters: Policy Experiences from Latin America," *World Development* 27, no. 9 (1999): p.1706.

³⁷⁶ See E Borensztein, J De Gregorio, and J-W Lee, "How Does Foreign Direct Investment Affect Economic Growth?," *Journal of International Economics* 45, no. 1 (1998).

- Hyp. 2b: FDI stocks and flows are positively associated with entrepreneurship;
- Hyp. 2c: Complex business environments negatively affects entrepreneurship; and
- Hyp. 2d: Financial sector development positive affects entrepreneurship

The models to be tested are specified as follows:

$$ENTREP = B_0 + B_1 (EPZ) + B_2 (Complex) + B_3 (FinDev) + \varepsilon \quad (1)$$

$$ENTREP = B_0 + B_1 (EPZ) + B_2 (Complex) + B_3 (FinDev) + B_4 (GDP) + \varepsilon \quad (2)$$

$$ENTREP = B_0 + B_1 (EPZ) + B_2 (Complex) + B_3 (FinDev) + B_4 (GDPPC) + \varepsilon \quad (3)$$

$$ENTREP = B_0 + B_1 (FDI) + B_2 (Complex) + B_3 (FinDev) + \varepsilon \quad (4)$$

$$ENTREP = B_0 + B_1 (FDI) + B_2 (Complex) + B_3 (FinDev) + B_4 (GDP) + \varepsilon \quad (5)$$

$$ENTREP = B_0 + B_1 (FDI) + B_2 (Complex) + B_3 (FinDev) + B_4 (GDPPC) + \varepsilon \quad (6)$$

Where:

ENTREP = measures of entrepreneurship

EPZ = the presence of and EPZ in a country

Complex = Measures of business complexity

GDP = gross domestic product

GDPPC = per capita gross domestic product

FDI = Foreign Direct Investment stocks

FinDev = Measures of financial sector development

Equations 1 and 4 test our baseline model of the effects of EPZs or FDI stocks on our different measures of entrepreneurship. Business complexity and financial sector development variables are included in the baseline model. Equations 2 and 3 test the

effects of EPZ presence in a country on the level of entrepreneurship controlling for business complexity, financial sector development and GDP or GDP per capita.

Equations 5 and 6 test the effects of the level of accumulated FDI stocks on entrepreneurship in an economy controlling for business complexity, financial sector development and GDP and GDP per capita. As there are 6 dependent variables, 36 regressions are estimated in this analysis.

Dependent Variables

This chapter uses six measures of entrepreneurship. The first four come from a new dataset developed in Acs and Szerb (forthcoming).³⁷⁸ Building on the Global Entrepreneurship Monitor's (GEM) total entrepreneurship activity index, Acs and Szerb develop three sub-indices and one composite measure of entrepreneurship. These four indices of entrepreneurship attempt to measure various aspects of Schumpeterian and innovative entrepreneurship. The first measure is the Entrepreneurial Activity Index (ACTIVITY_INDEX) which takes into consideration entrepreneurial levels given factors related to the overall ease of doing business in an economy, the educational level of the entrepreneur, the level of opportunity-type entrepreneurship and the dynamism of the business entry process in the economy. Next, the entrepreneurial strategy index (STRATEGY_INDEX) takes into consideration factors such as the "newness" of the product being introduced by the entrepreneur, the level of innovative technology used in the production of the product, the level of high growth business in an economy, the

³⁷⁸ Zoltan J. Acs and Laszlo Szerb, "The Creation of a Complex Entrepreneurship Context Index," (Fairfax, Virginia: George Mason University, 2008).

degree of internationalization of these businesses and venture capital availability in the country. The third sub-index is the entrepreneurial attitude index (EATINDXN) which combines the following factors: the GDP weighted level of entrepreneurial opportunity perception, the ability and skill-level of persons in an economy to start of business, the level of “fear of failure” attitudes in an economy, the networking ability of entrepreneurs in an economy and the perception about entrepreneurial careers given the level of corruption in the economy. Finally, the three sub-indices are combined to create a measure of complex entrepreneurship (ComplexEntrp) which captures the core Schumpeterian concepts of innovation, new activities, risk taking and the Kirznerian concept of opportunity seeking. The Acs and Szerb dataset contains data for 53 countries, including developed and developing countries.

Additionally, this chapter uses the total entrepreneurial activity measure of entrepreneurship developed by the Global Entrepreneurship Monitor (GEM). The total entrepreneurial activity variable (AverageTEA) is the simple average across the years 2003 to 2006 which enables a total of 54 countries to be included in the analysis. Finally, the chapter also calculates the average startup rate between 2003 and 2005 based on data from the World Bank’s Entrepreneurship Database.³⁷⁹ The startup rate variable (Startuprte) was constructed as the total number of new corporations in a given year as a percentage of the total number of corporations in that year.

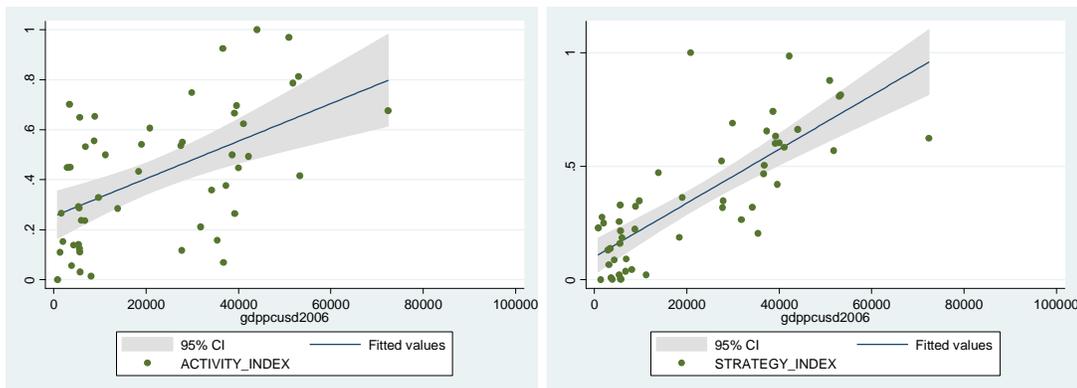
A summary of the dependent variables is provided below (See Table 2) along with scatter plots with fitted values against GDP per capita (See Figure 2). The scatter

³⁷⁹ <http://www.ifc.org/ifcext/sme.nsf/Content/Entrepreneurship+Database>

plots reveal a fairly linear relationship between entrepreneurship and GDP per capita for all variables except for the Average Total Entrepreneurial Activity variable. We would, therefore, not expect a good fit for models using AverageTEA.

Table 14: Summary of Dependent Variables Measuring Entrepreneurship

Variable	Obs	Mean	Std. Dev.	Min	Max
ACTIVITY_INDEX	53	0.4192878	0.2593581	0	1
STRATEGY_INDEX	53	0.3641895	0.2786446	0	1
EATINDEXN	53	0.4227801	0.2197813	0	1
ComplexEntrp	53	0.2944906	0.2570075	0	1
AverageTEA	54	0.1061328	0.0793511	0.022	0.402667
Startuprte	83	0.0819413	0.0339511	0.020629	0.172431



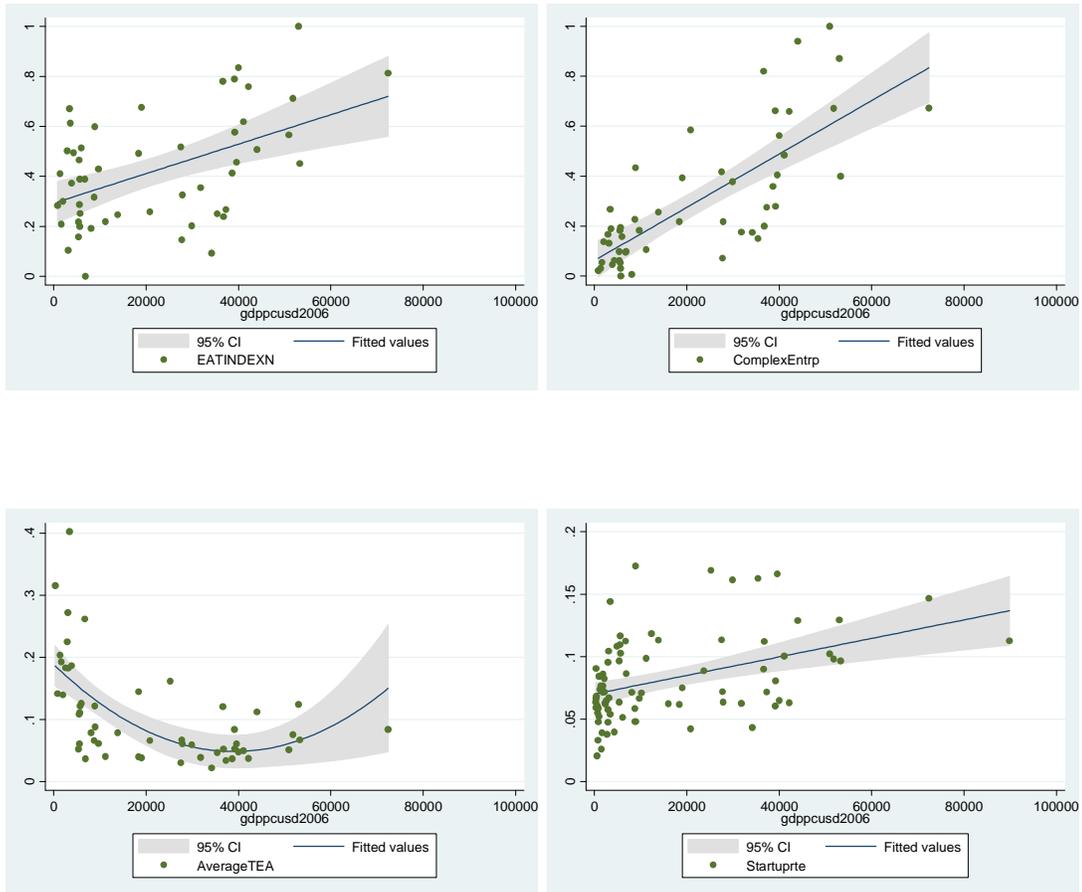


Figure 2: Scatter Plots of Dependent Variables Against GDP per Capita

Independent Variables

This chapter's main variables of interest are the presence of an EPZ in an economy (EPZ) and foreign direct investment stocks in 2006 (fdist06). It is expected that countries with export processing zones will be associated with lower levels of all types of entrepreneurship. Therefore, the sign of the EPZ coefficient is expected to be negative. On the other hand, as FDI stocks in an economy increases it is expected that the level of entrepreneurship will increase.

The other variables of interest examined the effects of business complexity and financial sector development – institutions which can hamper or support the flow of demonstration, knowledge and network externalities from FDI and EPZs. These data are drawn from the World Bank’s Doing Business Indicators dataset.

Three measures of financial sector development are included. The Credit Legal Rights Index variable (*credrgtindx*) measures the level of development of banking and lending laws in a country. A variable measuring of the coverage of both public and private credit registries in an economy is also included (*creditcover*). It would be expected that both financial sector development variables would be positively related to all of the entrepreneurship measures as better credit information reduces the risks associated with entrepreneurial activity. Additionally, an index of director liability to shareholders (*invdirliab*) variable was also included. Higher director liability may indicate a greater level of corporate governance in an economy which may encourage funding for entrepreneurial activities. Although, if the corporate governance arrangement in an economy is too punitive, then entrepreneurial activity may be discouraged.³⁸⁰

Measures of trade difficulty related to exporting and importing activities are also included. The variable “*tradecost*” measures the cost per container in US dollars to export and to import in an economy and “*tradedayexim*” measures the number of days it takes to complete the paperwork to import and export in an economy. Both variables are expected to be negatively related to entrepreneurship as they increase the costs and complexity of doing business which should hamper entrepreneurial activity.

³⁸⁰ See for example the discussions on the Sarbanes Oxley Act.

Four measures of labor market rigidity are included: “labemrigid” captures an overall measure of the inflexibility in the labor markets with regard to hiring and firing employees; “labnonwgecst” measures all ancillary costs associated with employing a worker not directly related to his wage; “labrigidhrs” captures the flexibility in an economy with regard to the hours that an employee may work; and “labhire” is an index which measures the difficulty of hiring employees. It would be expected that at higher levels of labor market difficulties, entrepreneurial activities would be more difficult and therefore negative coefficients are expected.

The cost of starting a business as a percentage of GNI per capita (strtbusinesspect) is also included and it is expected that higher business set up costs will be negatively associated with entrepreneurship. The number of procedures and days to licence a business in an economy (licproc and licday); the number of yearly tax payments required (txpmts), the number of days to register a property (propregday), the number of days to execute a contract (cntrectday) and the cost of closing a business as a percentage of the value of the business (clscost) are also included. It would be expected that all of these variables would be negatively associated with entrepreneurial activity because they increase the cost of doing business in an economy.

A summary of these independent variables is provided below.

Table 15: Summary of Independent Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
credrgtindx	174	4.53	1.98	-	10.00
creditcover	168	20.74	31.87	-	125.40
tradecost	174	2,663.11	1,532.88	783.00	10,387.00

tradedayexim	174	59.33	37.33	8.00	203.00
labemrigid	174	34.02	18.25	-	79.00
labnonwgecst	174	15.54	10.92	-	55.00
labrigidhrs	174	38.74	22.26	-	80.00
labhire	174	32.11	26.74	-	100.00
strtbusinc~t	174	68.43	122.40	-	1,194.50
licproc	172	18.41	7.17	6.00	56.00
licday	172	222.54	141.48	34.00	1,179.00
txpmts	174	34.34	21.95	1.00	130.00
propregday	170	87.51	103.21	1.00	683.00
invdirliab	174	4.21	2.55	-	9.00
cntretday	174	606.31	306.74	120.00	1,800.00
clscost	148	15.97	12.17	1.00	76.00
epz	210	0.42	0.50	-	1.00
fdist06	192	61,917.55	189,040.60	16.24	1,789,087.00

Finally, gross domestic product (gdpus2006) and per capita gross domestic product (gdppcus2006) were included as control variables.³⁸¹ The use of GDP enables the size of an economy to be controlled for and the use of per capita GDP allows the analysis to control for the general economic wellbeing of the economy. It is expected that both GDP and GDP per capita would be positively associated with the various measures of entrepreneurship as larger and wealthier economies may produce greater opportunities for entrepreneurs. A summary of the control variables is outlined below.

Table 16: Summary of Control Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
gdpus2006	179	267.85	1,113.58	0.07	13,194.70
gdppcusd2006	179	10,036.63	15,531.41	119.22	89,818.67

³⁸¹ Measured in current US dollars. Source: IMF WEO 2007

5.4 Results

The results reveal that export processing zones were generally negatively associated with entrepreneurship. However, the results depended on the measure of entrepreneurship. Hypothesis 2a, therefore, cannot be rejected. However, hypothesis 2b, that FDI is positively related to entrepreneurship cannot be supported. FDI was not statistically significant in any of the 18 regressions using that variable. Hypothesis 2c – that higher business complexity is negatively related to entrepreneurship is supported in this analysis. Variables related to increases in business complexity had negative coefficients and the majority were statistically significant at the 5% level. However, the results were different depending on the measure of entrepreneurship which was used. Hypothesis 2d related to financial sector development had mixed results; although, the signs on the coefficients measuring financial sector development were generally positive in those models where their coefficients were statistically significant.

Entrepreneurial Activity Index

Regressions 1 through 6 analyze the effects of export processing zones (1-3) or FDI stocks (4-6) on the entrepreneurial activity index. Regressions 1 and 4 are the baseline models, while regressions 2 and 5 add the per capita GDP variable and regressions 3 and 6 control for the effects of GDP.

In the case of regressions 1 to 3, the presence of an export processing zones is associated with a 0.13 to 0.14 point decline in the entrepreneurial activity index. This result is statistically significant at the 5% level in the baseline model and the model

which controls for GDP, but not for model 2 which controls for per capita GDP.

However, in regression 2, the sign on the EPZ variable remains negative. The variables measuring the number of tax payments, closing costs, non-wage labor costs and labor market rigidity are negative and statistically significant at the 10% level in all models. Higher trade costs were also statistically significant and negative in models 1 and 3, but not in model 2 which controlled for GDP per capita. The variable measuring the extent of credit registry coverage in an economy was not statistically significant and exhibited an unexpected (negative) sign. Both GDP and GDP per capita were positive, but were not statistically significant.

In the case of regressions 4 through 6, FDI stocks is not statistically significant in any regression. While the coefficient is positive, it is extremely small. As in the models with EPZ, the variables measuring business complexity (the number of tax payments, closing costs, non-wage labor costs, labor market rigidity and trade costs) are all negative. Again, the variable measuring the percentage of credit registry coverage exhibits an unexpected (negative) sign and is statistically insignificant. Both GDP and per capita GDP are positive, however, only GDP per capita is statistically significant at the 10% level.

The regression results are presented below:

Table 17: Regression Results for EPZ (Entrepreneurial Activity Index)

	1	2	3
ACTIVITY_INDEX			
txpmts	-0.003148 [0.033]*	-0.00297 [0.054]+	-0.003158 [0.037]*
clscost	-0.00767 [0.023]*	-0.007005 [0.053]+	-0.007752 [0.024]*
labnonwgecst	-0.006109 [0.017]*	-0.00601 [0.022]*	-0.006179 [0.018]*
labemrigid	-0.00342 [0.042]*	-0.003203 [0.069]+	-0.003073 [0.079]+
epz	-0.138713 [0.028]*	-0.112552 [0.187]	-0.134303 [0.042]*
tradecost	-0.000066 [0.028]*	-0.000058 [0.108]	-0.000067 [0.030]*
creditcover	-0.000539 [0.510]	-0.000587 [0.485]	-0.000671 [0.428]
gdppcusd2006		0.000001 [0.599]	
gdpus2006			0.000013 [0.396]
Constant	1.067901 [0.000]**	0.984845 [0.000]**	1.053889 [0.000]**
Observations	48	47	47
R-squared	0.597	0.600	0.605
p values in brackets			
+ significant at 10%; * significant at 5%; ** significant at 1%			

Table 18: Regression Results for FDI (Entrepreneurial Activity Index)

	4	5	6
ACTIVITY_INDEX			
txpmts	-0.003892 [0.012]*	-0.003069 [0.050]+	-0.004053 [0.011]*
clscost	-0.008697 [0.015]*	-0.006568 [0.072]+	-0.008933 [0.014]*
labnonwgecst	-0.005818 [0.032]*	-0.005871 [0.027]*	-0.005695 [0.038]*
labemrigid	-0.002659 [0.162]	-0.002308 [0.215]	-0.002833 [0.145]
fdist06	0.00000 [0.370]	0.00000 [0.473]	0.00000 [0.987]
tradecost	-0.000058 [0.068]+	-0.000039 [0.235]	-0.000058 [0.072]+
creditcover	-0.000313 [0.719]	-0.000589 [0.498]	-0.000314 [0.721]
gdppcusd2006		0.000004 [0.094]+	
gdpus2006			0.000016 [0.557]
Constant	0.952626 [0.000]**	0.792782 [0.000]**	0.969078 [0.000]**
Observations	47	47	47
R-squared	0.555	0.587	0.559
p values in brackets			
+ significant at 10%; * significant at 5%; ** significant at 1%			

Entrepreneurial Strategy Index

Regressions 7 through 12 analyze the effects of EPZ presence (regressions 7-9) and FDI stocks (regressions 10 -12) on the entrepreneurial strategy index. Again a baseline model which includes business complexity (the number of days required to engage in export and import activities, the hiring difficulty index, the costs to import and export a container, the number of days to register a property, and the number of days to obtain a business license) and financial sector development variables (the percentage of the credit market which is covered by either a public or private registry and an index of investor liability) is used. Additionally GDP and per capita GDP are added.

In regressions 7 through 9, all of the business complexity variables had the expected (negative) sign with the exception of the variable which measured the number of days to register a property which was positive and significant at the 5% level and the number of days to engage in export and import activities which was statistically insignificant and changed signs. The director liability index and credit registry coverage variables were both positive but were generally statistically insignificant. Our variable of interest, the presence of export processing zones, again has a negative coefficient (between -0.22 and -0.24) across regressions 7 to 9, and is statistically significant in the baseline model and the model which controls for GDP, but is not statistically significant in the model which controlled for per capita GDP.

On the other hand, the FDI stocks variable in regressions 10 to 12 are not statistically significant. Again, the business complexity variables generally performed as expected; although the days to register a property variable was positive, but statistically

insignificant and the days to license a business variable exhibited the expected (negative) sign, but was statistically insignificant across all (regressions 7-9) regressions.

Table 19: Regression Results for EPZ (Entrepreneurial Strategy Index)

	7	8	9
STRATEGY_INDEX			
tradedayexim	-0.000038 [0.980]	0.000972 [0.443]	0.000215 [0.882]
labhire	-0.004341 [0.001]**	-0.003477 [0.002]**	-0.004711 [0.000]**
epz	-0.216113 [0.001]**	-0.078051 [0.252]	-0.240905 [0.000]**
tradecost	-0.000143 [0.000]**	-0.000111 [0.002]**	-0.000151 [0.000]**
propregday	0.00096 [0.018]*	0.000737 [0.030]*	0.000786 [0.045]*
invdirliab	0.00988 [0.509]	0.009576 [0.438]	0.012669 [0.382]
creditcover	0.001391 [0.091]+	0.00055 [0.428]	0.001274 [0.112]
licday	-0.000352 [0.230]	-0.000129 [0.600]	-0.000334 [0.234]
gdppcusd2006		0.000008 [0.001]**	
gdpus2006			-0.000013 [0.352]
Constant	0.79901 [0.000]**	0.428515 [0.010]**	0.828769 [0.000]**
Observations	49	48	48
R-squared	0.653	0.773	0.695
p values in brackets			
+ significant at 10%; * significant at 5%; ** significant at 1%			

Table 20: Regression Results for FDI (Entrepreneurial Strategy Index)

	10	11	12
STRATEGY_INDEX			
tradedayexim	-0.001725 [0.292]	0.000603 [0.633]	-0.001608 [0.338]
labhire	-0.004985 [0.001]**	-0.003517 [0.002]**	-0.00491 [0.002]**
fdist06	0.0000 [0.710]	0.0000 [0.313]	0.0000 [0.900]
tradecost	-0.000105 [0.014]*	-0.000088 [0.006]**	-0.000106 [0.014]*
propregday	0.000518 [0.246]	0.000635 [0.058]+	0.000514 [0.255]
invdirliab	0.008127 [0.636]	0.011469 [0.366]	0.007747 [0.655]
creditcover	0.001818 [0.055]+	0.000693 [0.331]	0.001798 [0.061]+
licday	-0.000311 [0.344]	-0.00009 [0.714]	-0.000318 [0.340]
gdppcusd2006		0.00001 [0.000]**	
gdpus2006			-0.000012 [0.680]
Constant	0.703623 [0.000]**	0.320625 [0.018]*	0.700622 [0.000]**
Observations	48	48	48
R-squared	0.566	0.771	0.568
p values in brackets			
+ significant at 10%; * significant at 5%; ** significant at 1%			

Entrepreneurial Attitudes

Regressions 13 through 18 examine the effects of EPZs and FDI stocks on the entrepreneurial attitudes index. Interestingly, the variable measuring EPZs presence in a country was not statistically significant in any of the regressions; although EPZ presence exhibited the expected negative sign. Trade costs, the number of days to obtain a business licence and closing costs all had the expected negative signs and were statistically significant in the majority of regressions in which they were included. Credit registry coverage had positive coefficients and were statistically significant at the 10% level in two of the three regressions. The director liability index variable was not significant and had an unexpected negative sign in all of the regressions.

In regressions 16 through 18, the FDI stocks variable was only significant at the 10% level when per capita GDP was controlled for and even then the coefficient was infinitesimally small. All of the other variables performed as expected.

Table 21: Regression Results for EPZ (Entrepreneurial Attitudes Index)

	13	14	15
		EATINDEXN	
tradecost	-0.000071 [0.025]*	-0.000048 [0.160]	-0.000069 [0.032]*
creditcover	0.001423 [0.082]+	0.001224 [0.134]	0.001547 [0.066]+
licday	-0.000464 [0.095]+	-0.00034 [0.231]	-0.000494 [0.080]+
clscost	-0.005977 [0.075]+	-0.004138 [0.233]	-0.005614 [0.098]+
invdirliab	-0.015355 [0.275]	-0.01894 [0.181]	-0.012707 [0.376]
epz	-0.057908 [0.333]	0.029396 [0.722]	-0.072242 [0.246]
gdppcusd2006		0.000004	

		[0.109]	
gdpus2006			-0.000017
			[0.255]
Constant	0.787093	0.579466	0.7836
	[0.000]**	[0.004]**	[0.000]**
Observations	48	47	47
R-squared	0.41	0.449	0.431
p values in brackets			
+ significant at 10%; * significant at 5%; ** significant at 1%			

Table 22: Regression Results for FDI (Entrepreneurial Attitudes Index)

	16	17	18
	EATINDEXN		
tradecost	-0.000062	-0.000042	-0.000062
	[0.051]+	[0.177]	[0.054]+
creditcover	0.001948	0.001486	0.001952
	[0.019]*	[0.065]+	[0.020]*
licday	-0.000525	-0.000384	-0.000525
	[0.062]+	[0.159]	[0.065]+
clscost	-0.006965	-0.004174	-0.007018
	[0.036]*	[0.212]	[0.039]*
invdirliab	-0.012267	-0.011784	-0.012114
	[0.397]	[0.393]	[0.411]
fdist06	0.0000	0.0000	0.0000
	[0.200]	[0.086]+	[0.415]
gdppcusd2006		0.000004	
		[0.029]*	
gdpus2006			0.000003
			[0.919]
Constant	0.749446	0.577038	0.749789
	[0.000]**	[0.001]**	[0.000]**
Observations	47	47	47
R-squared	0.42	0.488	0.42
p values in brackets			
+ significant at 10%; * significant at 5%; ** significant at 1%			

Complex Entrepreneurship

Regressions 19 through 24 analyze the effects of EPZ presence and FDI stocks in addition to measures of business environment complexity and on Acs and Szerb's (forthcoming) composite measure of complex, innovative entrepreneurship. Of the three sub-indices, this measure of entrepreneurship performed the best and had the highest explanatory power.

The export processing zone variable was statistically significant at the 1% level in the baseline regression (regression 19) and in the regression which controlled for GDP (regression 21); however, EPZ presence was not statistically significant when we controlled for per capita GDP (regression 20). The presence of an export processing zone in a country was associated with 0.2 point decrease in the Complex Entrepreneurship score. The business complexity variables all exhibited the correct signs. Higher trade costs, labor market rigidity, closing costs and non-wage labor costs were all associated with lower levels of complex entrepreneurship and were statistically significant across all regressions. The costs to start a business were also negatively associated with complex entrepreneurship in all cases; however, the negative coefficient was not statistically significant when we controlled for GDP per capita. The variables measuring financial sector development: banking and credit laws and the percentage of deposits covered by public and private credit registries were both statistically insignificant across all regressions.

In the case of regressions 22 to 24, the FDI stock variable was not statistically significant. The business complexity variables all had negative coefficients and were statistically significant at the 10% level or above.

Table 23: Regression Results for EPZ (Complex Entrepreneurship)

	19	20	21
ComplexEntrp			
credrgtindx	-0.011765 [0.466]	-0.008398 [0.583]	-0.010004 [0.543]
creditcover	0.000596 [0.370]	0.000423 [0.503]	0.000485 [0.478]
tradecost	-0.000116 [0.000]**	-0.000077 [0.011]*	-0.000115 [0.000]**
epz	-0.202131 [0.001]**	-0.090332 [0.194]	-0.192095 [0.002]**
labemrigid	-0.004123 [0.006]**	-0.003196 [0.027]*	-0.003727 [0.017]*
elscost	-0.007596 [0.010]**	-0.005031 [0.083]+	-0.007656 [0.010]*
labnonwgecst	-0.005724 [0.014]*	-0.005249 [0.017]*	-0.00574 [0.015]*
strtbusinpect	-0.002891 [0.049]*	-0.002292 [0.105]	-0.002947 [0.050]+
gdppcusd2006		0.000005 [0.014]*	
gdpus2006			0.000012 [0.326]
Constant	1.06266 [0.000]**	0.719325 [0.003]**	1.03063 [0.000]**
Observations	48	47	47
R-squared	0.74	0.78	0.747
p values in brackets			
+ significant at 10%; * significant at 5%; ** significant at 1%			

Table 24: Regression Results for FDI (Complex Entrepreneurship)

	22	23	24
ComplexEntrp			
credrgtindx	0.00755 [0.674]	-0.001767 [0.906]	0.023454 [0.215]
creditcover	0.001139 [0.147]	0.000531 [0.421]	0.001185 [0.116]
tradecost	-0.000097 [0.002]**	-0.000058 [0.030]*	-0.000089 [0.003]**
fdist06	0.00000 [0.723]	0.00000 [0.997]	0.00000 [0.113]
labemrigid	-0.003108 [0.081]+	-0.002675 [0.071]+	-0.003381 [0.049]*
clscost	-0.008274 [0.015]*	-0.004374 [0.134]	-0.008177 [0.013]*
labnonwgecst	-0.00425 [0.108]	-0.004648 [0.037]*	-0.002991 [0.247]
strtbusincept	-0.004098 [0.016]*	-0.002421 [0.094]+	-0.004134 [0.012]*
gdppcusd2006		0.000007 [0.000]**	
gdpus2006			0.000054 [0.040]*
Constant	0.747329 [0.001]**	0.52287 [0.005]**	0.650528 [0.002]**
Observations	47	47	47
R-squared	0.655	0.77	0.693
p values in brackets			
+ significant at 10%; * significant at 5%; ** significant at 1%			

Average Total Entrepreneurial Activity (TEA)

In regressions 25 to 30, which use the Global Entrepreneurship Monitor's Total Entrepreneurial Activity Index, neither of the variables of interest, EPZ presence and FDI stocks were statistically significant, but maintained their expected signs. Labor rigidity in terms of the hours of work, licensing procedures, and the days to conduct trade were all statistically significant across regressions including EPZ. However, the variable measuring an economy's credit information levels was not statistically significant. The signs and significance of the coefficients were similar for regressions 28 through 30 which included the FDI stocks variable.

Table 25: Regression Results for EPZ (Average TEA)

	25	26	27
	AverageTEA		
creditindx	0.007544 [0.169]	0.007033 [0.246]	0.006209 [0.263]
labrigidhrs	-0.000741 [0.036]*	-0.000716 [0.067]+	-0.000692 [0.049]*
licproc	-0.001957 [0.052]+	-0.001962 [0.063]+	-0.002327 [0.027]*
tradedayexim	0.003235 [0.000]**	0.003201 [0.000]**	0.002772 [0.000]**
tradecost	-0.000018 [0.111]	-0.000018 [0.122]	-0.00002 [0.080]+
epz	-0.001003 [0.957]	-0.000105 [0.996]	-0.018269 [0.435]
gdp		0.0000 [0.998]	
gdppcusd2006			-0.000001 [0.226]
Constant	0.057189 [0.173]	0.060715 [0.176]	0.119256 [0.074]+
Observations	53	51	53
R-squared	0.551	0.543	0.565

p values in brackets
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 26: Regression Results for FDI (Average TEA)

	28	29	30
	AverageTEA		
creditindx	0.007803 [0.160]	0.007081 [0.237]	0.006644 [0.244]
labrigidhrs	-0.000768 [0.033]*	-0.000735 [0.054]+	-0.000678 [0.070]+
licproc	-0.001941 [0.049]*	-0.001949 [0.056]+	-0.00231 [0.033]*
tradedayexim	0.003168 [0.000]**	0.003119 [0.000]**	0.002813 [0.000]**
tradecost	-0.000017 [0.132]	-0.000017 [0.142]	-0.000017 [0.134]
fdist06	0.0000 [0.751]	0.00000 [0.669]	0.00000 [0.949]
gdp		0.0000 [0.765]	
gdpcusd2006			-0.000001 [0.382]
Constant	0.058242 [0.163]	0.063769 [0.159]	0.091318 [0.108]
Observations	53	51	53
R-squared	0.552	0.545	0.56
p values in brackets + significant at 10%; * significant at 5%; ** significant at 1%			

Startup Rate

In regressions 31 to 36, a variable measuring the number of new corporations in 2006 compared to the total number of corporations served as a proxy for the business startup rate in an economy. We would expect that in very entrepreneurial economies, this rate would be high. However, as this data contains only those companies which have obtained official approval to establish as a business; it therefore, excludes informal entrepreneurial activities, but includes all types of businesses (both innovative and standard businesses).

Export processing zones were not found to have a statistically significant effect on the official startup rate in any of the regressions. Furthermore, the EPZ presence variable had an unexpected (positive) sign (regressions 31-33). Similarly, FDI stocks were not statistically significant in the baseline model nor when GDP or per capita GDP were controlled for (regressions 34-36).

The business complexity variables: closing costs and days to enforce a contract both performed as expected and were negatively associated with the startup rate in all regressions. In the models including EPZ presence (regression 31-33), financial sector development (measured by the percentage of credits covered in public and private registries) was positive across all regressions, but was not statistically significant when GDP per capita was controlled for and the director liability variable was positive but not statistically significant. In models including FDI stocks (regressions 34-36), variables measuring financial sector development (i.e. the percentage of credits covered by private and public registries and director liability index) were not statistically significant. The R-

squared values for these models were also extremely low, generally explaining below 35% of the variance in startup rates, indicating that the models were not a good fit.

Table 27: Regression Results for EPZ (Startup Rate)

	31	32	33
	Startuprte		
creditcover	0.000202 [0.050]+	0.00013 [0.266]	0.000185 [0.080]+
clscost	-0.001232 [0.006]**	-0.001069 [0.022]*	-0.001235 [0.006]**
cntretday	-0.000035 [0.004]**	-0.000033 [0.006]**	-0.000035 [0.004]**
invdirliab	0.002838 [0.105]	0.002326 [0.193]	0.002559 [0.153]
epz	0.005929 [0.458]	0.010739 [0.227]	0.006711 [0.406]
gdppcusd2006		0.0000 [0.218]	
gdpus2006			0.000002 [0.438]
Constant	0.094568 [0.000]**	0.087743 [0.000]**	0.095121 [0.000]**
Observations	75	75	75
R-squared	0.336	0.351	0.342
p values in brackets			
+ significant at 10%; * significant at 5%; ** significant at 1%			

Table 28: Regression Results for FDI (Startup Rate)

	34	35	36
	Startuprte		
creditcover	0.000144 [0.168]	0.000108 [0.368]	0.000143 [0.177]
clscost	-0.001133 [0.010]*	-0.001042 [0.026]*	-0.001125 [0.012]*
cntretday	-0.00003 [0.008]**	-0.000028 [0.017]*	-0.00003 [0.010]*
invdirliab	0.002507 [0.164]	0.002381 [0.191]	0.002491 [0.170]

fdist06	0.00000	0.00000	0.00000
	[0.348]	[0.427]	[0.507]
gdppcusd2006		0.0000	
		[0.547]	
gdpus2006			-0.000001
			[0.875]
Constant	0.095209	0.092433	0.094951
	[0.000]**	[0.000]**	[0.000]**
Observations	75	75	75
R-squared	0.34	0.343	0.34
p values in brackets			
+ significant at 10%; * significant at 5%; ** significant at 1%			

Alternative measures of GDP per capita

Given the surprising lack of significance of EPZ presence in any of the models where per capita GDP was controlled for, I examined the effects when other possible measures of economic well being were used. I chose the model with Complex Entrepreneurship as the dependent variable as this was the strongest model in the analysis. I selected several variables which had strong correlations with GDP per capita and also strong correlations with the error term of the baseline model. Strong correlations with the error term in the baseline model (i.e. the model without GDP per capita or GDP) should imply important associations with the latent variable “economic wellbeing”. The variables chosen were GDP per capita measured in terms of purchasing power parity (GDPPPP) which gives a good measure for the actual standard of living in an economy. Other variables which are explored included the Global Competitive Index Score (GCI06), a composite measure of governance based on the Governance Matters VI dataset (gov) and four of the Governance Matters VI subcategories: control of corruption

(cc06), rule of law (rl06), government effectiveness (ge06) and political stability (ps06). It would be expected that countries with better levels of governance would also have higher standards of living, greater economic and personal freedoms which should also increase economic wellbeing. All of these variables show a high positive correlation with GDP per capita and with the unobserved component in the error term of the baseline model termed “economic well being”. The correlation matrix is presented below (Table 15):

Table 29: Correlation Matrix between GDP per capita and Error term of Baseline Model

	gdppcusd2006	error term in the baseline model
gdppcusd2006	1	0.7838
GDPPP	0.944	0.8001
GCI06	0.8278	0.8598
gov	0.8519	0.8281
cc06	0.8662	0.8611
rl06	0.8623	0.8478
ge06	0.8446	0.8649
ps06	0.7065	0.6066

In all regressions using the alternative measures for economic wellbeing (regressions 37 to 46) the EPZ variable was negative and statistically significant and the explanatory power of the models were around 75%. EPZ presence was associated with a decline in the Complex Entrepreneurship score of approximately 0.11 to 0.2 points or 10-20% of the maximum Complex Entrepreneurship score even after controlling for various measures of economic wellbeing.

Table 30: Regression Results for EPZ (Complex Entrepreneurship with Alternative Measures of Economic Wellbeing)

	37	38	39	40	41	42	43	44
	<i>ComplexEntrp</i>							
credrgtindx	-0.008398 [0.583]	-0.018251 [0.229]	-0.015264 [0.388]	-0.015145 [0.364]	-0.013811 [0.397]	-0.014982 [0.369]	-0.016749 [0.305]	-0.01292 [0.434]
Creditcover	0.000423 [0.503]	0.000123 [0.846]	0.000612 [0.366]	0.00053 [0.429]	0.000538 [0.420]	0.000531 [0.429]	0.000544 [0.407]	0.0006 [0.372]
Tradecost	-0.000077 [0.011]*	-0.000076 [0.009]**	-0.000093 [0.009]**	-0.0001 [0.004]**	-0.000092 [0.013]*	-0.000097 [0.007]**	-0.000084 [0.017]*	-0.000112 [0.000]**
Epz	-0.090332 [0.194]	-0.112048 [0.068]+	-0.169965 [0.025]*	-0.180756 [0.005]**	-0.17096 [0.010]**	-0.17446 [0.009]**	-0.164351 [0.009]**	-0.199684 [0.001]**
Labemrigid	-0.003196 [0.027]*	-0.002822 [0.050]*	-0.003175 [0.065]+	-0.003789 [0.014]*	-0.003628 [0.021]*	-0.003613 [0.025]*	-0.003118 [0.053]+	-0.004089 [0.007]**
Clscost	-0.005031 [0.083]+	-0.00598 [0.029]*	-0.006002 [0.060]+	-0.006041 [0.077]+	-0.005666 [0.104]	-0.006275 [0.057]+	-0.005118 [0.122]	-0.006991 [0.032]*
labnonwgecst	-0.005249 [0.017]*	-0.00648 [0.003]**	-0.005857 [0.014]*	-0.005822 [0.013]*	-0.005547 [0.017]*	-0.005899 [0.012]*	-0.005746 [0.012]*	-0.005853 [0.014]*
strtbusinepect	-0.002292 [0.105]	-0.00203 [0.141]	-0.002514 [0.104]	-0.002457 [0.112]	-0.002412 [0.117]	-0.002583 [0.088]+	-0.00196 [0.211]	-0.002668 [0.088]+
gdppcusd2006	0.000005 [0.014]*							
GDPPPP		0.000008 [0.008]**						

	37	38	39	40	41	42	43	44
<i>ComplexEntrp</i>								
GCI06			0.07669 [0.373]					
Gov				0.046865 [0.392]				
cc06					0.044964 [0.328]			
rl06						0.040457 [0.402]		
ge06							0.079479 [0.154]	
ps06								0.016774 [0.663]
Constant	0.719325 [0.003]**	0.746524 [0.001]**	0.602135 [0.254]	0.973602 [0.000]**	0.927302 [0.000]**	0.970502 [0.000]**	0.862888 [0.001]**	1.044928 [0.000]**
Observations	47	48	46	48	48	48	48	48
R-squared	0.78	0.785	0.749	0.745	0.747	0.745	0.754	0.742
p values in brackets								
+ significant at 10%; * significant at 5%; ** significant at 1%								

5.5 Conclusions and Policy Recommendations

In this chapter, I set out to explore the effects of export processing zones on entrepreneurship and to analyze whether these effects were different compared to the effects that more traditional foreign direct investment may have on entrepreneurship. The results of this analysis reveal that the presence of EPZs is associated with lower levels of entrepreneurship, even after controlling for level of economic activity (i.e. GDP) and the level economic wellbeing and standard of living in a country (i.e. per capita GDP measured in purchasing power parity and various measures of governance). Further, it was also found that entrepreneurship is negatively associated with the presence of complex and costly business environments. We were unable to make more conclusive statements about the effects financial sector development. Levels of FDI stocks appear to have no effect on the levels of entrepreneurship. The inconclusive findings related to FDI appears to support the mixed results in the research on the links between FDI and growth and development. The relationship, indeed, appears to be very complex and perhaps the effects of FDI works through a number of intermediary factors such as human capital and institutions. Additionally, micro-level case studies are important next steps.

It is important, however, to recognize an important deficiency of this study related to the use of macro-level cross sectional data which does not account for temporal, country and industry specific differences due to factors not included in our model.³⁸² Additionally, this study cannot determine causation. It could be that countries with low

³⁸²See B. H. Baltagi, *Econometric Analysis of Panel Data* (John Wiley & Sons, 1995).

levels of entrepreneurship were more likely to establish EPZs to jumpstart their economies. Again, panel data would allow us to tease out these relationships. Therefore, this study should only be viewed as a first step in analyzing the effects of EPZs on entrepreneurship which is an important area for future research. Indeed, case study analysis may allow us to better determine causality.

However, countries are establishing EPZs with the hopes of creating linkages with the rest of the economy. This study, however, does show that there is no macro-level statistical evidence of this occurrence as measured by levels of entrepreneurship in an economy. Furthermore, we show that business environment negatively impacts entrepreneurship. Therefore, important policy implications can still be drawn. First, countries seeking to promote entrepreneurship should not assume that creating EPZs alone will achieve their goals. If business environments remain complex then any positive effects from EPZs may be overshadowed. Therefore, fuller reform is still important.

Table 31: Correlation Matrix for Variables of Interest

	ComplexEntrp	CECINDEXN	ACTIVITY INDEX	STRATEGY INDEX	EATINDEXN	Startuprte	AverageTEA
ComplexEntrp	1						
CECINDEXN	0.9684*	1					
ACTIVITY_I~X	0.8357*	0.8262*	1				
STRATEGY_I~X	0.7823*	0.8278*	0.5435*	1			
EATINDEXN	0.6993*	0.7596*	0.5344*	0.4282*	1		
Startuprte	0.2873	0.255	0.298	0.1598	0.1287	1	
AverageTEA	-0.1913	-0.1798	-0.0513	-0.4300*	0.1098	-0.0895	1
strtbusinc~t	-0.4209*	-0.3630*	-0.3419*	-0.3081*	-0.1941	-0.3431*	0.5235*
strtbusmin~p	-0.0442	0.0015	-0.0994	0.1247	-0.0242	-0.0446	0.0325
Licproc	-0.2846*	-0.2806*	-0.0914	-0.2775*	-0.2958*	-0.0494	-0.0732
Licday	-0.4226*	-0.4199*	-0.2141	-0.4384*	-0.3324*	-0.3159*	0.0009
Labhire	-0.3829*	-0.3490*	-0.3910*	-0.3480*	-0.1163	-0.1693	0.0953
Labrigidhrs	-0.2584	-0.2311	-0.3357*	-0.098	-0.1328	-0.1238	-0.1511
Labemrigid	-0.4263*	-0.3860*	-0.4739*	-0.3168*	-0.1387	-0.2251*	0.0465
Labnonwgecst	-0.2816*	-0.2761*	-0.3669*	-0.0772	-0.2452	-0.0809	-0.3041*
Propregproc	-0.4244*	-0.4634*	-0.4334*	-0.3782*	-0.3756*	-0.2676*	0.3351*
Propregday	-0.1621	-0.1447	-0.1418	-0.0568	-0.0777	-0.3250*	-0.0664
Credrgtindx	0.5716*	0.5515*	0.6055*	0.4647*	0.2957*	0.3181*	-0.3579*
creditinfi~x	0.217	0.206	0.176	0.2014	0.1182	0.2282*	-0.2197
Invdirliab	0.2784*	0.2961*	0.3167*	0.3020*	0.1561	0.2637*	-0.1612
Txpmts	-0.4444*	-0.4377*	-0.4695*	-0.4627*	-0.1678	-0.3815*	0.4202*

	ComplexEntrp	CECINDEXN	ACTIVITY INDEX	STRATEGY INDEX	EATINDEXN	Startuprte	AverageTEA
Taxhrs	-0.3509*	-0.3909*	-0.3703*	-0.3928*	-0.2651	-0.2126	0.2055
Cntrctday	-0.2541	-0.2271	-0.3045*	-0.1692	-0.0154	-0.3421*	0.124
Clscost	-0.4293*	-0.4416*	-0.3908*	-0.3781*	-0.3350*	-0.3502*	0.3263*
Tradedayexim	-0.4869*	-0.4863*	-0.3469*	-0.5363*	-0.3235*	-0.2976*	0.6326*
Dobusdaysavg	-0.4031*	-0.3768*	-0.3653*	-0.3197*	-0.1544	-0.4588*	0.1182
Dobuscostavg	-0.3492*	-0.3867*	-0.2783*	-0.4047*	-0.3123*	-0.1839	0.1025
Creditcover	0.4741*	0.4554*	0.3179*	0.3893*	0.3912*	0.3565*	-0.2099
Epz	-0.4704*	-0.4339*	-0.3382*	-0.4163*	-0.2628	-0.1873	0.2898*

CHAPTER 6

EPZs, Business Environment and Economic Development

6.1 Introduction

A core goal of this study is to evaluate the effects of export processing zones on economic development. Export processing zones, after all, have been widely used throughout the developing world as an important development tool. These zones have been mandated as part of structural adjustment programs and have also been unilaterally established by governments in developing countries with the hopes of improving their countries' export capacity and efficiency – ultimately leading to higher economic growth. The management of the zones focus on providing an efficient business environment for the companies which operate and produce within them. This often includes, in addition to providing higher quality infrastructure compared to the rest of the economy, offering a “one-stop” and streamlined business start-up and registration process and expedited approvals for foreign investment.

A basic premise of this study is that a country's business environment matters for its development. In chapter 2, I traced the early development policies which were common throughout the developing world and explained that these policies were the origins of many of the distortions to the business environment which still exist in many of these countries. Colonial and post independence development policies included complex

trading rules to support import substitution and infant industry programs which often provided preferences for state-run and often inefficient companies. Additionally, large centralized bureaucracies were often established and heavy taxes were assessed to fund these operations. Many of countries continued these institutions well after independence and have, only in the last 30 years, begun to dismantle them as part of structural reform programs. In Chapter 4 of this dissertation, I demonstrated that many of these distortions were important for explaining the existence or absence of EPZs in countries. In Chapter 5, I demonstrated that these distortions and poor business environments were generally harmful to entrepreneurship.

In this chapter, I study the association between EPZ presence and economic wellbeing while controlling for having an economy where the institutions support entrepreneurial activities. As economic growth and development are key goals for developing countries and EPZs have been used as development tools for these countries, we would expect that EPZ presence has a positive effect on a country's wellbeing (measured by GDP per capita). EPZs should provide greater employment and income opportunities for workers in developing economies; while also providing important technology and management spillovers to these economies in general.

This chapter proceeds as follows: I outline the hypotheses, methodology and data used in this chapter in Section 6.2. Section 6.3 presents the findings of this chapter's analysis and conclusions are outlined in Section 6.4.

6.2 Methodology

This chapter investigates two questions. First, are the business environment and institutions in countries which host export processing zones different (either better or worse) compared to countries which do not host export processing zones? Second, we ask whether, after controlling for business institutions, the presence of an export processing zone in an economy affects economic wellbeing measured by per capita GDP? For both research questions, we examine whether the results are different when the sample of countries includes only developing regions (i.e. excludes OECD countries) compared to our full sample of countries.

6.2.1 Hypotheses

Hypothesis 1

For the first hypothesis, we use two-sample student t-tests to test whether countries which host export processing zones, on average, have more complex business systems, less developed financial sectors, lower levels of governance and lower levels of development than non-EPZ countries. The sample of countries is further divided into two: one with the full sample of countries and the other which excludes OECD countries. The hypothesis is formally stated below.

$$\begin{aligned} H_0: X_{EPZ} &= X_{Non-EPZ} \\ H_a: X_{EPZ} &\neq X_{Non-EPZ} \end{aligned}$$

Where X is the variable of interest (i.e. Business complexity, governance and economic performance measures), the subscript “EPZ” denotes countries which host export processing zones and

subscript “Non-EPZ” represents the sample of countries which do not host export process zones.

Hypothesis 2

This chapter also examines the association between EPZ presence and economic wellbeing while controlling for factors related to having an entrepreneurial economy using pooled-OLS and random effects estimations of a panel dataset over the years 2003 to 2006. A key assumption is that entrepreneurship and economic prosperity flourishes in more business-friendly environments where rules for establishing a business are transparent, property rights are protected, labor market are flexible, and market information is available.

The model to be tested is specified as follows³⁸³:

$$GDPPC_{it} = \beta_0 + \beta_1(EPZ) + \beta_2(BUSComplex_{it}) + \beta_3 (TRADEComplex_{it}) + \beta_4(TAXComplex_{it}) + \beta_5(FinDev_{it}) + \beta_6(LABORComplex_{it}) + \beta_7(Controls_{it}) + \mu$$

Where:

GDPPC	= GDP per capita measured in constant 2000 US dollars
EPZ	= the presence of an EPZ in an economy
BUSComplex	= measures of business complexity related to the requirements for starting a business
TRADEComplex	= measures of the difficulty associated with importing and exporting activities
TAXComplex	= measures of the complexity of the tax system in a country
FinDev	= measures of financial sector development
LABORComplex	= a measure of the difficulty of employing labor.

³⁸³ The natural log of all of the variables in the model are used to correct for non-normality and to present the results as elasticities.

Controls = control variables related to labor and capital in an economy. In addition to the labor and capital controls in later models regional (Region) and time (Year) dummy variables are added to the baseline model

μ = an error term

Given the model to be tested, the following sub-hypotheses are made:

Table 32: Hypothesized Relationships

<i>Coefficient</i>	<i>Hypothesis</i>	
EPZ	H ₀ : B ₁ =0 H _a : B ₁ <0	It is expected that the presence of an export processing zone is associated with higher levels of GDP/GNI per capita.
BUSComplex	H ₀ : B ₂ =0 H _a : B ₂ <0	It is expected that a more complex business will be associated with lower GDP per capita
TRADEComplex	H ₀ : B ₃ =0 H _a : B ₃ <0	It is expected that more complex trading procedures will be associated with lower GDP/GNI per capita.
TAXComplex	H ₀ : B ₄ =0 H _a : B ₄ <0	It is expected that more complicated tax systems will be associated with lower GDP/GNI per capita.
FinDev	H ₀ : B ₅ =0 H _a : B ₅ >0	It is expected that higher levels of financial sector development will be associated with higher GDP/GNI per capita.
LABORComplex	H ₀ : B ₆ =0 H _a : B ₆ <0	It is expected that rigid labor markets will be associated with lower GDP/GNI per capita.

6.3.2 Data

The data for this chapter are drawn from the World Bank's Doing Business Indicators, Governance Matters dataset and World Development Indicators dataset, in addition to the International Monetary Fund's World Economic Report over the years 2003 to 2006.

Dependent Variables

This chapter's dependent variable is GDP per capita measured in constant 2000 US dollars (GDPpconUS) drawn from the International Monetary Fund's World Economic Report. The constant dollar measures of GDP per capita allows for greater comparability between time periods because the measurement technique takes inflation into consideration.

A summary of the dependent variable is presented below.

Table 33: Summary of Dependent Variable

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
GDPpconUS	717	6,473.61	9,769.755	1	54,178.33

Independent Variables

The independent variables are drawn from the World Bank's Doing Business Indicators dataset. The "dobusday" variable is constructed as the average of the days it takes to start a business, register property and enforce a contract and therefore measures the complexity involved in conducting business in an economy. The "dobusproc" variable is the average of the number of procedures to start a business, register property and to enforce a contract. The "dobuscost" takes into consideration the cost (as a percentage of national income) to start a business and the cost (as a percentage of property value) to register a property. The "tradedayexim" and "tradeeximcost" variables measure the number of days it takes to engage in importing and exporting activities in an economy and the actual cost measured in dollar terms to import and export. The "creditcover" variable sums the percentage of an economy's credit exposures that are

included in either public or private credit registries. Additionally, indices measuring the development of laws regulating credit markets (“credrtindex”), the level credit information in an economy (“creditinfindex”), the degree of director liability (“invdirliab”), a measure of corporate governance rules in an economy, and the level of employment difficulty (“labemrigid”) are included. Finally, two measures of the complexity of the tax system are included. The first measures the number of tax payments which must be made annually (“taxpayments”) and the second measures the number of hours it takes to complete the administrative paperwork associated with paying taxes (“taxhrs”). The total number of persons in the labor force “Labforcetotalct” and a measure of gross fixed capital in the economy “Grossfixedcapform” are included as controls. A summary of the variables of interest are provided below.

Table 34: Summary of Variables of Interest

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
dobusday	612	289.399	161.609	1	1800
dobusproc	612	19.08007	4.428683	1	33.5
dobuscost	612	44.58472	76.55767	.15	720.4
tradedayexim	334	60.86527	38.35455	1	203
tradeeximdoc	334	15.8024	5.28496	1	34
tradeeximcst	334	2617.473	1598.898	1	10387
creditcover	566	19.85707	30.93003	0	125.4
credrtindex	479	4.453027	2.010794	0	10
CredInfIndex	608	2.625	2.161708	0	6
InvDirLiab	334	4.137725	2.487002	0	9
labemrigid	612	34.63399	17.85814	0	79
taxpmts	334	33.62575	22.31095	1	130
taxhrs	332	336.9699	330.8633	0	2600
Labforcetotalct	737	24,300,000	125,000,000	1	2,540,000,000
Grossfixcapform	651	58,100,000,000	220,000,000,000	1	2,590,000,000,

In addition to the variables used in the regression analysis, data was obtained from the World Bank's Governance Matters dataset and used in the t-test analysis. These include variables which measured voice and accountability (VA), political stability (PS), governmental effectiveness (GE), regulatory quality (RQ), rule of law (RL), and control of corruption (CC). Additionally, development indicators were obtained from the World Bank related to the per capita level of computers and telephones in the country (Telpc and Computpc) and also the female to male ratios in primary and tertiary education (FemtoMalePrim and FemtoMaleTiert). GDP and per capita GDP growth rates (GDPgr and GDPpcgr) were also included in the analysis. A summary of these variables is presented below.

Table 35: Summary of Independent Variables

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
VA	802	-.0234893	1.005059	-2.28225	1.826437
PS	803	-.0292154	1.001163	-3.068643	1.687957
GE	802	-.0070414	1.008257	-2.486635	2.30254
RQ	790	-.0214911	1.004787	-2.703364	1.964796
RL	804	-.0343249	.9959813	-2.529827	2.062354
CC	792	-.0145178	1.006696	-1.972817	2.573889
Telpc	691	.2143978	.2077325	.0001599	1
Computpc	543	.1436447	.2131777	.0001812	1.221041
GDPgr	736	5.11918	5.00819	-41.3	46.5
GDPpcgr	726	3.648918	4.518517	-32.22934	33.03299
FemtoMalePrim	597	94.7068	11.08444	1	127.0886
FemtoMaleTiert	437	112.0533	59.1887	0	545.9766

6.4 Analysis of Results

6.4.1 How do EPZs Countries Perform in Terms of Good Institutions and Economic Wellbeing Compared to Non-EPZ Countries?

Throughout this dissertation an emphasis has been placed on the institutions which affect entrepreneurship. Indeed, entrepreneurship is viewed as an important source of economic growth. This section examines these institutions by dividing our sample of countries. First, the sample of countries is divided into one sample which excludes OECD countries and another sample which includes this studies' complete sample of countries in order to better understand how EPZ presence affect business complexity, governance and economic wellbeing indicators in developing regions specifically. Then both samples of countries are divided into EPZ and non-EPZ hosting countries.

In the sample which excludes OECD countries (i.e. the developing country sample), the countries with EPZs perform better in 20 of the 23 indicators compared to countries without EPZs. Indeed, differences between Non-EPZ and EPZ countries in this sample of developing countries are statistically significant at the 0.05 level in 14 of the 23 indicators. In the full sample, which includes OECD countries, the differences in the scores between EPZ and non-EPZ countries are significant in 11 of the 23 indicators and EPZ countries perform better than non-EPZ countries in only 11 of these 23 indicators (See Table 1).

In the sample of countries without OECD economies (i.e. the developing economy sample), EPZ countries generally performed better in terms of our institutional, governance and development indicators than Non-EPZ countries. As a group, countries

which had developed EPZs had fewer procedures associated with starting and operating a business,³⁸⁴ more extensive credit ratings agency coverage of their credit portfolios and a correspondingly higher average credit information index score. Additionally, these countries had an overall lower cost of doing business, fewer days to conduct trading activities and fewer documents were needed to carry out export and importing activities. The EPZ country group generally had better governance scores compared to the non-EPZ country group. The EPZ group also had higher per capita telephones and computers and female to male ratios at both the primary and tertiary education levels. While the EPZ economies were generally smaller in terms of GDP, they had higher GDP growth rates, per capita GDP levels and per capita GDP growth rates.

In the full sample of countries, including OECD countries, the group of countries with EPZs' average performance on our institutional, governance and development indicators was slightly less favorable than the sample without OECD countries – indicating the relative institutional and governance strength of OECD countries. In terms of the doing business indicators, EPZ countries had a higher average number of business procedures associated with starting a business compared to non-EPZ countries. The EPZ group also had more days to conduct business and a more complicated tax system which required more hours to complete the required paperwork. The overall credit ratings agencies coverage by EPZ countries was lower compared to non-EPZ countries; however the credit information index was slightly higher (though not statistically significant) for EPZ countries. EPZ countries generally had a lower overall cost of doing business and

³⁸⁴ Although this difference was not statistically significant at the 0.05 level.

fewer days were needed to conduct exporting and importing activities. The differences in the governance indicators between the EPZ and non-EPZ groups were generally not statistically significant. However, EPZ countries had a statistically higher level of regulatory quality. The EPZ group had lower levels of computers and telephones on a per capita basis and had lower levels of per capita GDP. The EPZ group also had smaller economies in terms of overall GDP, but higher (though not statistically significant) GDP and per capita GDP growth rates.

Table 36: Analysis of Business Complexity and Governance Scores and Development Indicators by EPZ and Non-EPZ Countries

	Indicator	Sample Without OECD Countries			Sample With OECD Countries		
		Means for:		EPZ Country Performance Compared to Non-EPZ	Means for:		EPZ Country Performance Compared to Non-EPZ
	Non-EPZ Countries	EPZ Countries			Non-EPZ Countries	EPZ Countries	
1	Average Business Procedures	20.139	19.695	Better	18.704	19.424	Worse
2	Average Business Days	278.751	323.506	Worse	261.537	317.884	Worse
3	Credit Rating Coverage	3.870	15.627	Better	22.565	16.946	Worse
4	Director Liability Index	3.309	4.537	Better	3.889	4.404	Better
5	Average Tax Hours	309.146	415.272	Worse	277.292	401.113	Worse
6	Credit Information Index	1.228	2.746	Better	2.377	2.839	Better
7	Average Doing Business Cost	76.506	36.407	Better	55.069	34.658	Better
8	Average Trading Days	83.228	57.859	Better	66.281	55.559	Better
9	Average Trading Docs	17.650	16.611	Better	15.526	16.118	Worse
10	Voice and Accountability	-0.518	-0.105	Better	-0.029	-0.270	Worse
11	Political Stability	-0.280	-0.151	Better	0.235	-0.101	Worse
12	Government Effectiveness	-0.588	-0.053	Better	-0.039	0.019	Better
13	Regulatory Quality	-0.613	-0.020	Better	-0.094	0.053	Better
14	Rule of Law	-0.508	-0.147	Better	-0.003	-0.082	Worse
15	Control of Corruption	-0.508	-0.138	Better	0.035	-0.081	Worse
16	Telephones Per Capita	0.147	0.169	Better	0.233	0.194	Worse
17	Computers per Capita	0.083	0.099	Better	0.166	0.119	Worse
18	GDP per capita (constant in US\$)	2,153.03	3,853.65	Higher	8,665.70	4,146.27	Lower
19	GDP growth rate	5.540	5.542	Higher	4.888	5.386	Higher
20	GDP per capita growth rate*	3.746	4.094	Higher	3.369	3.993	Higher
21	Female to Male Ratio in Primary School	93.423	95.997	Higher	94.704	94.710	Higher
22	Female to Male Ratio in Tertiary Education	105.663	115.694	Higher	109.891	114.412	Higher
23	GDP (constant in US\$ bn)	54.700	8.110	Smaller	55.700	9.450	Smaller
	* Statistically significant differences are shown with bolded text.						

6.4.2 How do EPZs Affect Economic Wellbeing?

Finally, I examined the effects of EPZs on economic wellbeing using this chapter's two samples of countries. A number of model specifications are used to test the robustness of the EPZ variable. The GDP per capita variable measured in constant US dollars is chosen as the dependent variable as this controls for inflation and enables better comparability between the different countries and time periods.

In the regressions using the full sample of countries, including OECD countries (Table 1, regressions 1-8) the EPZ variable is found to be negatively associated with per capita GDP, but statistically insignificant across all regressions, including the pooled-OLS model. However, the business institutions control variables behaved as expected. Greater numbers of procedures, days and costs to establish a business and more complicated tax systems were negatively associated with GDP per capita. While more developed financial systems were associated with higher levels of GDP per capita. Again these associations held even as region and year effects were controlled for in our models. Variables with unexpected signs, such as the positive association between employment rigidity and GDP per capita in the random effects models, lacked statistical significance.

The results from the same models using the developing country sample, however, were dramatically different (Table 3, regressions 9-16). When OECD countries are excluded, the EPZ variable is consistently positively associated with per capita GDP in all of the regressions. The EPZ variable is statistically significant in all of the random effects models, but is not significant in the pooled OLS model. The other variables of interest exhibit the expected signs. The greater the number of business procedures, days

or cost to establish a business and conduct trading activity is negatively associated with per capita GDP. Complex tax systems and labor markets are also associated with lower per capita GDP; while more developed financial markets which provide better credit information and stronger legal framework are positively associated with per capita GDP. These associations generally held even when we controlled for region.

Table 37: Models Analyzing the Effects of EPZs on Per capita GDP (Complete Sample with OECD Countries)

	1 (Pooled OLS)	2 (Random Effects)	3 (Random Effects)	4 (Random Effects)	5 (Random Effects)	6 (Random Effects)	7 (Random Effects)	8 (Random Effects)
lnGDPpconUS								
epz	-0.18348 [0.232]	-0.394661 [0.131]	-0.35639 [0.165]	-0.03823 [0.885]	-0.429659 [0.116]	-0.410872 [0.130]	-0.030949 [0.910]	-0.02103 [0.936]
Indobusproc	2.369374 [0.000]**	0.972645 [0.006]**	0.992516 [0.004]**					
Indobusday					-0.070492 [0.000]**	-0.062523 [0.001]**	-0.064929 [0.000]**	0.171161 [0.014]*
Indobuscost				-0.063831				
Increditcover	0.289977 [0.000]**	0.028752 [0.004]**	0.025849 [0.008]**	0.013899 [0.111]	0.014474 [0.063]+	0.014251 [0.066]+	0.016647 [0.023]*	0.01163 [0.171]
Intradedayexim	-0.557 [0.000]**	-0.143249 [0.027]*	-0.136196 [0.030]*	-0.006634 [0.902]	-0.055238 [0.262]	-0.058309 [0.234]	-0.017348 [0.709]	-0.034267 [0.514]
Inlabemrigid	-0.25636 [0.048]*	0.040465 [0.633]	0.04292 [0.600]	0.069876 [0.308]	0.022973 [0.718]	0.026667 [0.674]	0.051378 [0.388]	0.060731 [0.360]
Intaxpmts	-0.18125 [0.060]+	-0.748979 [0.000]**	-0.754322 [0.000]**	-0.025228 [0.877]	-0.569295 [0.001]**	-0.570964 [0.001]**	-0.041487 [0.800]	-0.116852 [0.464]
InLabforcetotalct	-0.17143 [0.001]**	-0.010411 [0.021]*	-0.01009 [0.021]*	-0.004482 [0.213]	-0.005027 [0.123]	-0.005111 [0.115]	-0.00488 [0.111]	-0.004251 [0.222]
lnGrossfixcapform	0.296714 [0.000]**	0.009934 [0.022]*	0.009251 [0.028]*	0.004165 [0.235]	0.004553 [0.152]	0.004506 [0.155]	0.004418 [0.139]	0.004093 [0.227]
Incredrtindex			0.188173 [0.004]**	0.092354 [0.100]		0.098987 [0.053]+	0.083036 [0.086]+	0.100323 [0.065]+
EEurope	-0.50096 [0.043]*			-1.573188 [0.000]**			-1.545058 [0.000]**	-1.527187 [0.000]**
Pacls	-1.59365 [0.043]*			-1.479083 [0.215]			-1.568062 [0.206]	-1.508006 [0.200]

	1 (Pooled OLS)	2 (Random Effects)	3 (Random Effects)	4 (Random Effects)	5 (Random Effects)	6 (Random Effects)	7 (Random Effects)	8 (Random Effects)
lnGDPpconUS								
MENA	-0.4423 [0.179]			-1.1356 [0.017]*			-1.186399 [0.015]*	-1.272465 [0.006]**
LAC	-1.35849 [0.000]**			-1.702489 [0.000]**			-1.750129 [0.000]**	-1.807866 [0.000]**
Asia	-1.43286 [0.000]**			-2.472867 [0.000]**			-2.484004 [0.000]**	-2.584078 [0.000]**
Africa	-1.22208 [0.000]**			-2.64398 [0.000]**			-2.72008 [0.000]**	-2.797512 [0.000]**
Year==2004				0 [1.000]				0 [1.000]
Year==2005				-0.006343 [0.891]				-0.039765 [0.393]
Year==2006				0.016392 [0.724]				0.04874 [0.294]
Constant	0.934506 [0.016]*	7.949173 [0.000]**	7.613369 [0.000]**	9.153916 [0.000]**	10.308599 [0.000]**	10.126131 [0.000]**	9.541465 [0.000]**	8.527788 [0.000]**
Observations	174	174	174	174	174	174	174	174
Number of ID		106	106	106	106	106	106	106
R-squared	0.861	0.2061	0.2534	0.6534	0.6628	0.6506	0.6491	0.5894

p values in brackets

+ significant at 10%; * significant at 5%; ** significant at 1%

Table 38: Models Analyzing the Effects of EPZs on Per capita GDP (Developing Country Sample Without OECD Countries)

	9 <i>(Pooled OLS)</i>	10 <i>(Random Effects)</i>	11 <i>(Random Effects)</i>	12 <i>(Random Effects)</i>	13 <i>(Random Effects)</i>	14 <i>(Random Effects)</i>	15 <i>(Random Effects)</i>	16 <i>(Random Effects)</i>
lnGDPpconUS								
epz	0.147057 [0.298]	0.761983 [0.000]**	0.762521 [0.000]**	0.754141 [0.000]**	0.871604 [0.000]**	0.865868 [0.000]**	0.785359 [0.000]**	0.770541 [0.000]**
Indobusproc	-0.135844 [0.758]	-0.730179 [0.060]+	-0.650809 [0.088]+					
Indobusday					-0.093848 [0.000]**	-0.088592 [0.000]**	-0.088004 [0.000]**	-0.000886 [0.989]
Indobuscst				-0.031204 [0.436]				
Increditcover	0.194212 [0.000]**	0.018961 [0.022]*	0.017578 [0.028]*	0.004241 [0.501]	0.005854 [0.345]	0.005888 [0.338]	0.006812 [0.265]	0.004275 [0.486]
Incredrtindex			0.102961 [0.055]+	0.044302 [0.269]		0.050647 [0.207]	0.043981 [0.271]	0.043985 [0.256]
Intradedayexim	-0.64795 [0.000]**	-0.145952 [0.007]**	-0.139307 [0.007]**	-0.058652 [0.131]	-0.061343 [0.118]	-0.062738 [0.107]	-0.05657 [0.144]	-0.059208 [0.115]
Inlabemrigid	-0.417162 [0.004]**	-0.02054 [0.794]	-0.011953 [0.875]	-0.032062 [0.573]	-0.036415 [0.525]	-0.031441 [0.581]	-0.029499 [0.603]	-0.028761 [0.601]
Intaxpmts	-0.376026 [0.000]**	-0.813599 [0.000]**	-0.81702 [0.000]**	-0.694896 [0.000]**	-0.831044 [0.000]**	-0.832421 [0.000]**	-0.705774 [0.000]**	-0.714157 [0.000]**
InLabforcetotalet	-0.175815 [0.000]**	-0.00582 [0.163]	-0.005936 [0.140]	-0.005942 [0.034]*	-0.006716 [0.016]*	-0.006727 [0.015]*	-0.006693 [0.015]*	-0.006242 [0.019]*
InGrossfixcapform	0.184547 [0.000]**	0.005087 [0.234]	0.005021 [0.222]	0.005097 [0.085]+	0.006081 [0.037]*	0.005995 [0.038]*	0.006 [0.037]*	0.005528 [0.048]*
EEurope	0.665909 [0.004]**			1.05894 [0.003]**			1.048483 [0.003]**	1.095615 [0.002]**

	9 <i>(Pooled OLS)</i>	10 <i>(Random Effects)</i>	11 <i>(Random Effects)</i>	12 <i>(Random Effects)</i>	13 <i>(Random Effects)</i>	14 <i>(Random Effects)</i>	15 <i>(Random Effects)</i>	16 <i>(Random Effects)</i>
PacIs	-0.547844 [0.392]			0.697229 [0.402]			0.6216 [0.460]	0.690104 [0.414]
MENA	0.878948 [0.000]**			0.985337 [0.009]**			0.958243 [0.012]*	0.971965 [0.012]*
LAC	0.234677 [0.301]			0.664242 [0.047]*			0.631928 [0.061]+	0.652217 [0.054]+
Africa	0.220509 [0.283]			0.075734 [0.817]			0.045109 [0.891]	0.046157 [0.889]
Year==2005				-0.030504 [0.000]**				-0.033435 [0.147]
Constant	10.918281 [0.000]**	12.314355 [0.000]**	11.91194 [0.000]**	9.033863 [0.000]**	10.437641 [0.000]**	10.341904 [0.000]**	9.433826 [0.000]**	8.993695 [0.000]**
Observations	133	133	133	133	133	133	133	133
Number of ID		81	81	81	81	81	81	81
R-squared	0.764	0.3855	0.4844	0.7349	0.7131	0.7199	0.7232	0.7466

p values in brackets

+ significant at 10%; * significant at 5%; ** significant at 1%

6.5 Conclusions

This chapter set about to examine two questions. First, whether there were differences in the institutions between EPZ and non EPZ countries and second, whether EPZ presence had any effect on economic wellbeing measured in terms of GDP per capita. We also divided the sample of countries into two sets: one which includes the entire sample and one which excludes OECD countries in order to focus on the effects of EPZs in developing regions specially compared with the entire global sample of countries.

The analysis by EPZ versus non-EPZ countries (Table 1) is quite instructive. The results further support our findings in Chapter 4 – that EPZ presence is generally complementary to reform measures. Indeed, in the sample without OECD countries (i.e., our developing country sample), the group of countries which established EPZs generally performed better than those countries which did not have EPZs in terms of our institutional, governance and economic wellbeing measures. However, when the entire sample of countries was analyzed, Non-EPZ countries generally performed better in our performance indicators. This finding appears to indicate that among developing countries, EPZs can be useful; however, there is still substantial reform which must be done to catch up to the more developed economies.

This chapter also showed that when controlling for business institutions, labor and capital, among developing countries, EPZ presence was positively associated with economic wellbeing. However, the results were insignificant and negative for the entire sample. The analysis in this chapter also revealed that more complex business

environments are negatively associated with economic wellbeing. Previous chapters in this dissertation have shown that business environment factors are also negatively associated with entrepreneurship which is thought to be the “engine of economic growth”.³⁸⁵ Therefore, the findings in this chapter generally support our previous chapters. Financial sector development is also shown to be positively associated with economic wellbeing. These findings provide further impetus for a focus on business and financial sector reform as tools for development.

Nevertheless, this chapter also leaves some important unanswered questions. Further research, for example, should seek to determine the causal link between these EPZ presence, business institutions and economic growth through case study analysis. Is it that EPZs are not being established in the lowest income, slowest growing economies with poor institutions or did the presence of EPZs, spur economic growth and better institutions?

³⁸⁵ See Joseph A Schumpeter, "The Economy as a Whole: Seventh Chapter of the Theory of Economic Development," *Industry and Innovation* 9, no. 1/2 (2002), Joseph A Schumpeter, *The Theory of Economic Development* (Oxford: Oxford University Press, 1934), Schumpeter, "The Creative Response in Economic History."

CHAPTER 7

Policy Recommendations and Conclusions

This study set about to provide a critical analysis of the role of Export Processing Zones (EPZs) in economic development. EPZs have been a common development tool throughout the developing world utilized as part of structural adjustment programs or set up by governments hoping to invigorate their economies' exporting capabilities and capacity. Throughout the literature, as demonstrated in Chapter 2 of this study, EPZs have been viewed as "enclave" type reform measures and their effects on economic reform and the ability to achieve their development goals have been widely questioned. In some countries, EPZs have been very successful, while in others EPZ programs face important criticism for their poor performance.

The assessment of the impact of EPZs is made even more difficult for a number of reasons. First, there is a lack of empirical data on EPZ performance in the many countries in which they operate. This study has found that only the International Labour Organization (the ILO) maintains a systematic database of countries which operate EPZs and information on their exports and trading partners.³⁸⁶ Data is even more scant on the volume of EPZ exports as, in many countries, EPZ exports are outside of the customs

³⁸⁶ See Jean-Pierre Singa Boyenge, "Ilo Database on Export Processing Zones," (Geneva: International Labour Organization, 2007).

zones of a country and are therefore not included in the country's exports. Less than half of the countries included in the ILOs database on EPZs, for example, have good estimates of export volumes from these zones. Additionally, as the World Bank points out, increasingly these zones are privately run,³⁸⁷ therefore, accounting for these exports may be even more difficult and companies operating within these zones may also be components of larger international organizations and therefore production is accounted for as transfers within the larger firm. To account for this paucity in the data, this study has had to use a binary measure of EPZ presence in a country. It has been recognized that this is a crude measure, but nevertheless, is the considered the best available in order to include the largest possible number of countries in this study. Indeed, this issue – data availability – may provide an important opportunity for development organizations such as the World Bank to devise systematic accounting and recording standards for EPZs and the governments which host them.

A second issue which arose in this study is the definition of EPZs. Zones which specialize in the manufacture of exported goods or which benefit from access to preferential duty rates or customs clearing procedures are present in almost every country in the world – even in wealthy countries like the United States. As Chen (1995) points out the existence of these zones go back to 1500's and the rise of mercantilism.³⁸⁸ Zones vary in size, the activities which are allowed and their ownership structure. This study

³⁸⁷ See The World Bank, *Export Competitiveness: Economic Zones and Clusters* (2008 [cited 31 August 2008]); available from <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/TRADE/EXTEXPCOMNET/0,,contentMDK:21394505~menuPK:4228351~pagePK:64168445~piPK:64168309~theSitePK:2463594,00.html#EPZpapers>.

³⁸⁸ Chen, "The Evolution of Free Economic Zones and the Recent Development of Cross-National Growth Zones."

limited EPZs to those in developing economies and eighty-nine countries with zones were identified. However, it is recognized that within these countries, the scope of the zones could be very different. Indeed, those in China (known as special economic zones) are often quite large and include housing areas and in Mauritius, the zone extends to the entire island. In some countries the zones are private or government operated and established as fenced-in industrial export parks by special legislation.

Despite the data and definitional limitations, this study asks and explores a number of important questions involving the role of EPZs in development and the institutions which assist in their creation. After presenting the literature in Chapter 2 on development, export processing zones and entrepreneurship – the three themes of this study, I set out a model of EPZ emergence in Chapter 3 drawing on the institutional reasons for their existence. EPZs had previously been studied from the perspective of the incentives used to attract firms to them; however this institutional aspect, I contend, is underexplored in the research on EPZs.

Chapter 4 is the first of the empirical chapters of this dissertation. In Chapter 4, I ask the question – “Why are EPZs Established?” The overarching question of this chapter is whether EPZs are complements or substitutes for further economic reform. In particular, this chapter examines whether the presence of market and business environment distortions increase or decrease the likelihood of EPZs existence in an economy. This chapter was particularly important because many reform indicators suggest that some countries are slipping in fuller reform measures and that others are actually reversing. I wanted to discover whether EPZs were a potential cause for reform

delay or reversal. The results of Chapter 4 revealed that both complementary and substitutive factors affect the emergence of EPZs. EPZs were emerging in countries where institutions such as the financial system, governance and corporate governance were experiencing improvements suggesting that EPZs were complements to reform. On the other hand, a number of areas of business complexity increased the likelihood of EPZ emergence in an economy – including the time it took to conduct business and having a complex tax system. In those cases, EPZs may be a substitute for reform and allows firms to operate outside of the complicated national economy. Overall, however, EPZs did not appear to be emerging in the most distorted economies which suggests that EPZs can be an important complement to further and much needed economic reform in many developing countries. Yet they could provide a temporary measure to jumpstart export activities until reform had filtered throughout the entire economy.

Recommendation 1: Export processing zones can be used as a successful development strategy but should accompany additional reforms to the business environment.

In Chapter 5, I explore the effects of export processing zones on entrepreneurship using a new dataset which captures the concept of complex, Schumpeterian productive entrepreneurship along with several other measures of entrepreneurship. The analysis reveals that after controlling for the level of economic activity in an economy, economic wellbeing and business environment, EPZs were associated with lower levels of entrepreneurship. This result was disappointing because one of the core hopes of EPZs is

that it will stimulate domestic entrepreneurship through linkage effects. The use of cross-sectional, macro-level data is a limiting factor in this analysis and therefore it is recognized that this study is only a first step in determining this relationship. Indeed, case study analysis is an important next step in this study. Overall, the results show that EPZ presence alone will not induce entrepreneurial activity in an economy and that business environment factors play an important role in thwarting entrepreneurial activity, therefore, fuller reform is still necessary.

Given the lack of support for EPZ presence stimulating entrepreneurship, countries may wish to focus on the externalities which promote entrepreneurship as part of wider reforms. In Chapter 2, demonstration and failure externalities, network externalities and knowledge externalities were introduced as factors which promoted or hindered entrepreneurial activity. These externalities were concerned with ensuring that any person in any society with good ideas was able to access markets and to undertake entrepreneurial activity and to be allowed to succeed or fail based on the quality of his ideas and management. Business networks and clusters also made entrepreneurial activity more productive and facilitated knowledge transfers. Finally, knowledge was acknowledged as an important aspect in promoting entrepreneurship.

Recommendation 2: EPZs alone will not encourage entrepreneurial activity in an economy. Fuller reforms are necessary.

Recommendation 3: Countries should focus on demonstration and failure, network and knowledge externalities to promote entrepreneurial activities.

Recommendation 3a: Focus on demonstration and failure externalities by:

1. *Assessing which cultural traits within a country are barriers to entrepreneurship or to groups of potential entrepreneurs;*
2. *Assessing whether a country has institutions in place which support arm's length transactions and reduce information and transaction costs;*
3. *Assessing whether a country's business and regulatory environment acts as a barrier to entrepreneurial activities;*
4. *Assessing whether a country's macro-economy, infrastructure and financial markets support entrepreneurship.*

Recommendation 3b: Focus on knowledge externalities by:

1. *Addressing educational deficiencies at the basic and tertiary levels;*
2. *Assessing whether current knowledge and innovation activities provide spillover opportunities;*
3. *Assessing whether there are high costs to discovering what to produce;*
4. *Assessing whether the country's FDI strategy promotes entrepreneurship.*

Recommendation 3c: Focus on network externalities by:

1. *Encouraging the involvement of multi-industry, multi ethnic business associations in public policy making;*
2. *Assessing whether existing industry clusters are complete;*
3. *Assessing export markets to determine whether clustering strategies are appropriate.*
4. *Facilitating the access to information to entrepreneurs so that they better understand their export markets.*

Finally, in Chapter 6, the last of the empirical chapters of this study, I examined whether there were differences in the institutions between EPZ and non-EPZ countries and whether economic wellbeing (i.e. GDP per capita) was affected by EPZ presence in an economy. Amongst developing economies only, countries with EPZs did generally have better governance and institutional environments and performed better economically. It was also found that the presence of EPZs and better institutional environments were associated with higher GDP per capita. These findings were muted or disappeared altogether when developed countries were included in our sample.

Recommendation 4: EPZs can be useful for improving economic wellbeing in developing countries; however, business environment must also be reformed.

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