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An Assessment of the Investment Climate in Botswana

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Volume II: Detailed Results and Econometric Analysis



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CHAPTER 1: INTRODUCTION

Improving living standards and cutting poverty depends on broad-based economic growth, which will only take place when firms improve worker productivity by investing in human and physical capital and technological capacity (defined broadly to include investment in knowledge, equipment and organizational structure). But firms will only invest when the investment climate is favorable.

The investment climate is the aspects of the environment that affect the decisions of firms, entrepreneurs and investors on hiring and firing workers, investing in physical and human capital and developing new technologies (Stern, 2002a; Stern, 2002b; Stern, 2002c). In its broadest definition, this includes fixed factors such as a country's climate, endowment of natural resources, and location. For operational purposes, however, the Investment Climate Assessment (ICA) focuses on factors that are directly affected by government policies. These include things such as macroeconomic stability, regulation, the state of a country's infrastructure, and incentives embodied in institutional arrangements, such as the security of property rights, the rule of law and governance. These policy-related factors affect the expected return to investment and the uncertainty and risk of this investment. Defined in this way, the investment climate affects the returns to and risks associated with different economic activities.

The goal of the Investment Climate Assessment (ICA) for Botswana is to evaluate the investment climate in Botswana in all its operational dimensions and to promote policies to strengthen the private sector. The ICA is largely based on results from a large firm-level survey that collects information on firm performance, the cost of doing business, the regulatory environment, the labor market, the financial sector, the trade regime and investment.

I. MACROECONOMIC BACKGROUND

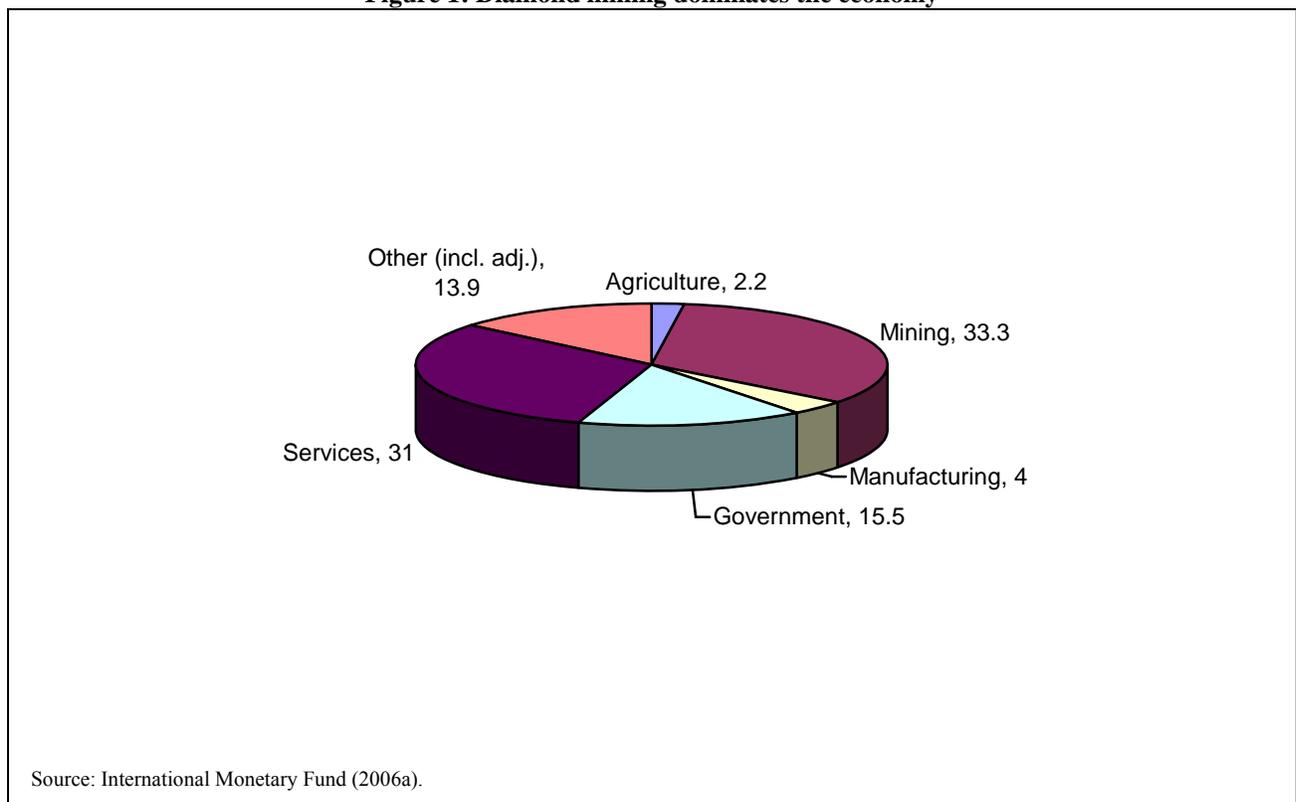
Since independence in 1966, Botswana has gone from being one of the poorest countries in the world to an upper middle income country with per capita GDP of \$US9,652 in PPP-adjusted terms (World Bank, 2006b). Botswana's GDP has grown at an average rate of 8.6 percent per year since 1975—making Botswana one of the fastest growing countries in the world.

Although Botswana's spectacular growth partly reflects its abundant natural resources—by value of production, Botswana is the largest producer of diamonds in the world—natural resources have often proved to be a curse rather than a blessing with respect to economic development (Eifert and others, 2002; Gelb, 1988; Sachs and Warner, 2001). In addition to standard concerns about “Dutch Disease” (Corden and Neary, 1982), political—or actual—conflict over revenues can undermine economic management and hurt long-term economic growth, especially in weak institutional environments. Botswana's success in avoiding the ‘natural resource’ curse has been attributed to its good policies and strong institutions (Acemoglu and others, 2003; Leith, 2005)

I.1 Structure of the Economy

Botswana's economy is dominated by diamonds. Mining, mostly of diamonds, accounts for about one-third of GDP in 2004/05 (see Table 1). Moreover, diamonds account for 80 percent of exports and mineral revenues account for about half of government revenue. Because diamond mining is highly capital intensive, it accounts for only about 5 percent of employment.

Figure 1: Diamond mining dominates the economy



At independence, agriculture accounted for about 40 percent of Botswana's GDP (Maipose and Matsheka, 2004; World Bank, 2007). After the large-scale exploitation of diamonds began in the 1970s, the importance of agriculture declined, reaching about 10 percent of GDP at the beginning of the 1980s and falling to less than 5 percent of GDP in the early 1990s.

Manufacturing accounted for about 8 percent of GDP at Independence. Its share of GDP has declined modestly over time, reaching about 4 percent of GDP by 2005. Since the economy has been grown rapidly over time, its relative decline reflects that it has grown more slowly over time than the rest of the economy. For example, between 1998/99 value-added in manufacturing grew at an average rate of 2.2 percent per year, compared to average GDP growth of about 6.6 percent per year.

The decline in manufacturing has occurred despite the Government's concerted efforts to promote economic diversification. For example, economic diversification was one of the country's primary goals under the *Ninth National Development Plan* (April 2003-March 2009)

(Economist Intelligence Unit, 2006). Similarly, *Vision 2006* sees Botswana as having a diversified economy with mining, agriculture, industry, manufacturing, services and tourism all making substantial contributions (Presidential Task Group of a Long-Term Vision for Botswana, 1997). It notes that one of the main challenges in this is to ‘build up manufacturing to play a more central role in the economy’ (p. 18).

Given the importance of mining, one natural concern is whether Botswana suffers from ‘Dutch Disease’. In the literature on Dutch disease, the discovery of a natural resource leads to a process of de-industrialization and de-agriculturalization. This occurs both because of the shift in labor towards the natural resource sector and the effect that the discovery has on income. As income increases, demand for both other tradable goods (e.g., manufacturing and agricultural goods) and non-tradable goods (e.g., many services) increases. This results in appreciation of the exchange rate and a general rise in wages. This, in turn, results in a drop in employment in the tradable sectors (other than the natural resource sector).¹

Several studies have looked at whether the boom in diamond exports resulted in Dutch disease in Botswana. Harvey (1992), in particular, argues that the rapid expansion of formal sector employment allowed Botswana to avoid Dutch disease. He notes that the real exchange rate did not appreciate between 1965 and 1989, that the economy grew quickly, and that exports other than diamonds also grew.² In contrast, Mogotsi (2002) concludes that Botswana did suffer from a mild form of Dutch disease between 1982 and 1990, as evidenced by a real exchange rate appreciation over this period and higher growth in the non-traded sector. Mogotsi (2002) notes, however, that manufacturing did not decline, perhaps due to the movement of unemployed labor into the sector.

I.2 Inflation

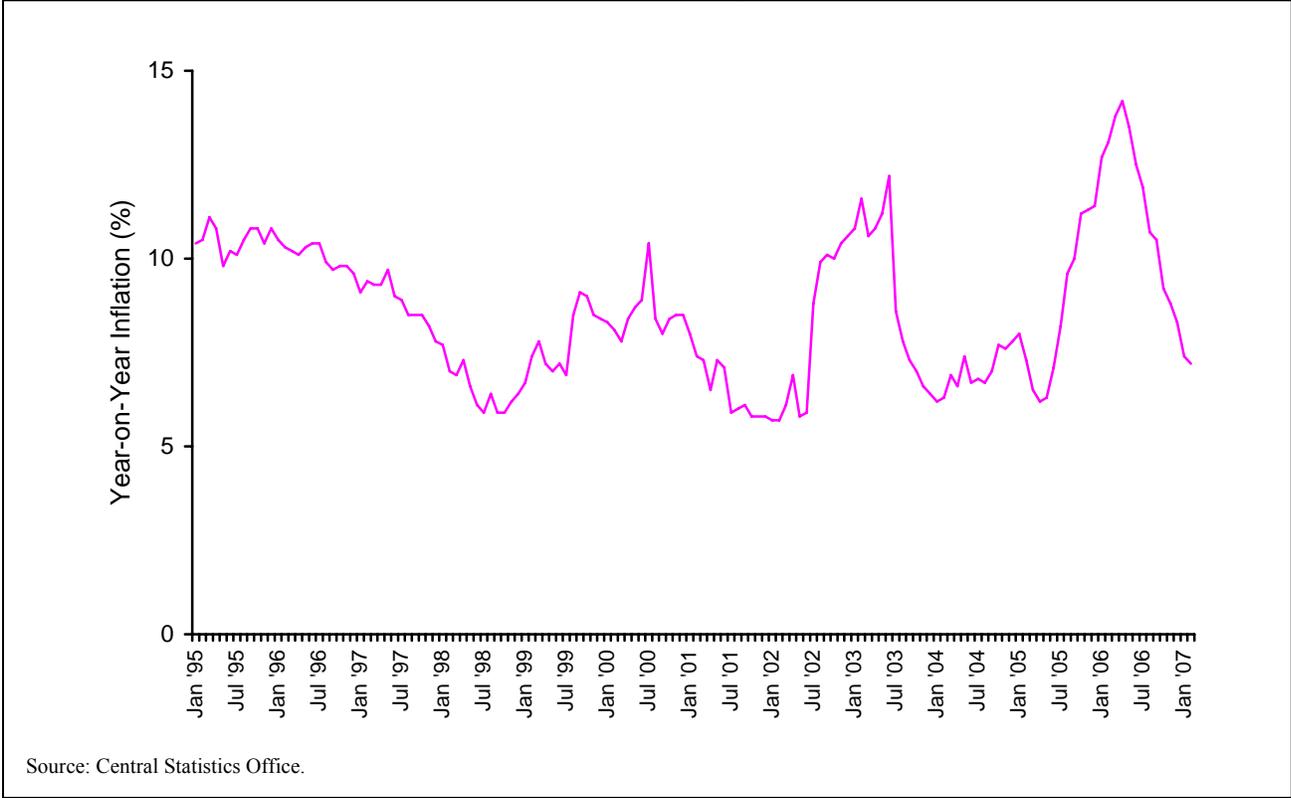
During 2000 and 2003 there were strong inflationary pressures from high levels of government spending and a large increase in private sector credit. There was also an increase in banking system liquidity associated with the privatization of the public service pension system (International Monetary Fund, 2004). Inflation can also result from the fact that the local currency, the pula, is pegged to a currency basket comprising the rand and other currencies. The pula was devalued by 7.5 percent against the basket in February 2004 to reverse a steady real effective currency appreciation in previous years. This devaluation also increased inflation, along with the effect of higher oil prices and increased public utility prices (International Monetary Fund, 2006a).

¹ See, for example, Corden (1984), Salehi-Esfahani (1988), and Corden and Neary (1982) for discussions of the general mechanics of Dutch Disease.

² Nkusu (2004) discusses the case of Botswana in the context of a theoretical model that allows for movement of unemployed workers into the formal sector.

Another devaluation of the pula was enacted in May 2005 and along with continually rising oil prices revived inflationary pressures (Economist Intelligence Unit, 2006). The inflation rate peaked at over 14 percent in April 2006, just before the World Bank Enterprise Survey was implemented. Since this time it has decreased, reaching about 7 percent by early 2007 (see Figure 2).

Figure 2: Inflation, which has been modest—although not low—in Botswana peaked just before the Enterprise Survey was implemented

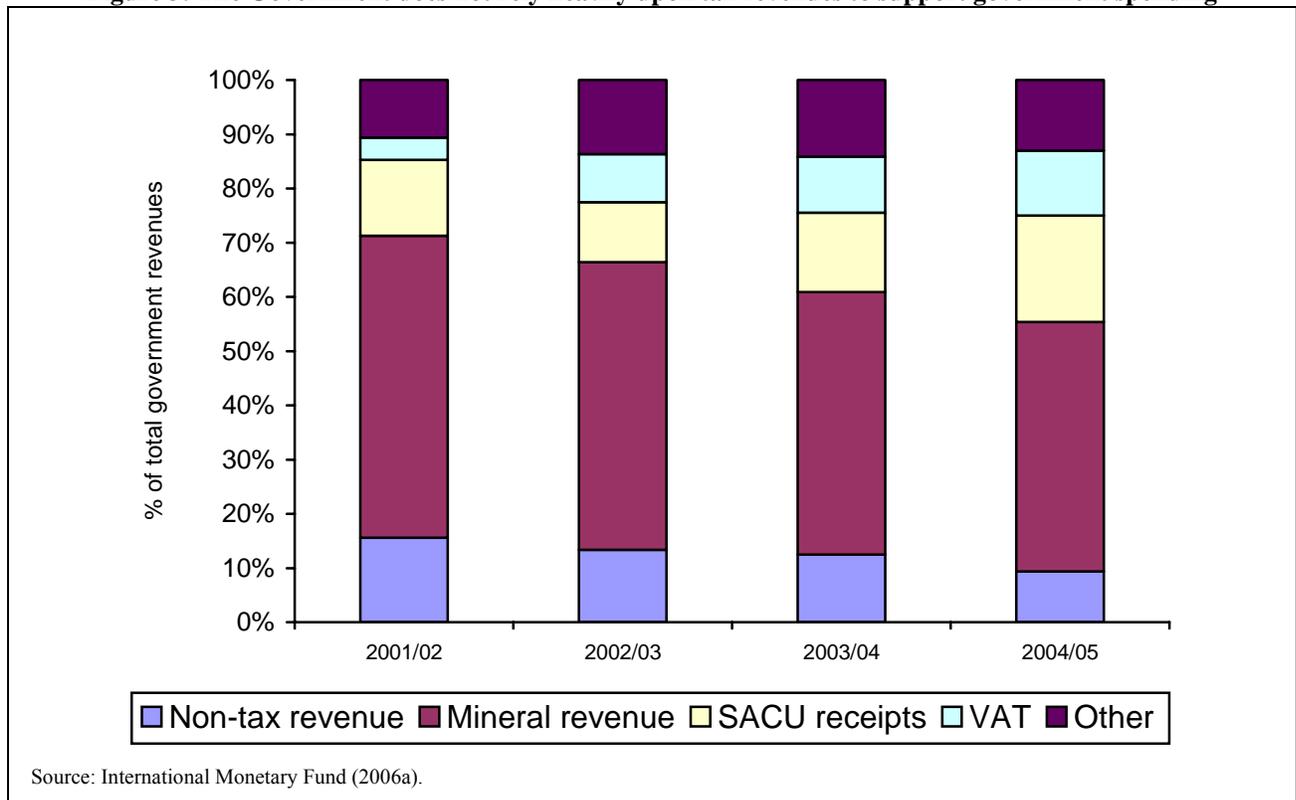


Botswana is well-known for its prudent macroeconomic management, especially with respect to managing the large inward flows of foreign exchange and handling serious terms-of-trade shocks and shocks to agricultural production (Leith, 2005). However, it is important to note that inflation has not been particularly low—at least when compared to other well-performing middle-income countries.

I.3 Taxation

The main sources of government income in Botswana are diamond mining and payments from the common customs pool of the Southern Africa Customs Union (SACU).³ Because of these revenue sources, the Government does not have to rely heavily upon tax revenues (see Figure 3). These revenue streams have allowed the country to successively lower the corporate tax rate from 40 percent in 1990 to the current level of 25 percent (Foreign Investment Advisory Service, 2004).

Figure 3: The Government does not rely heavily upon tax revenues to support government spending



The government is trying to encourage the diversification of the economy through tax incentives for certain sectors. Companies registered with the International Financial Services Center, a government agency established in 2003 to promote development as a regional financial services hub, are eligible for a 15 percent tax rate, (5 percent basic tax and 10 percent additional tax). Manufacturers have also been eligible for this 15 percent corporate tax rate since 1996, (Foreign Investment Advisory Service, 2004).

³ The Southern African Customs Union (SACU) is a group of countries with a common external tariff. The members are Botswana, Namibia, South Africa, Swaziland and Lesotho. Goods are freely traded among member states. SACU operates a Common Revenue Pool into which all customs, excise and additional duties are paid and each member receives a share.

I.4 Other Challenges

Despite the country's outstanding growth, some problems remain. Although many important social indicators have improved over time, some do not compare favorably with other countries at similar levels of income. One particular problem is that unemployment is high—over 20 percent of the population is unemployed. Poverty is also high. Nearly 25 percent of the population lives on less than \$US1 per day. In comparison, under 10 percent of the population of Argentina, another upper middle income countries, is in extreme poverty (International Monetary Fund, 2005; World Bank, 2006b). In part, this reflects the economy's heavy dependence upon mining for both production and exports. Because mining is capital-intensive, despite its large contribution to GDP (over 30 percent of GDP), it accounts for only 5 percent of formal employment (Economist Intelligence Unit, 2006).

The HIV/AIDS epidemic has also hit Botswana hard. According to UNAIDS' latest estimate, the HIV infection rate among adults in Botswana aged 15 to 49 is 24.1 percent. Epidemiological studies track the HIV prevalence among antenatal care clinic (ANC) attendees which have increased rapidly from 18.1% in 1992 to 32.4% in 1995, 38.5% in 2000 and 36.3% in 2001 (United Nations Program on HIV AIDS, 2006). The Government has begun to integrate a strategy for HIV/AIDS into the budgetary process. HIV/AIDS Programs were given an increase in the 2005/06 budget allocation and now equal 1.5 percent of GDP - an amount expected to increase in the coming years.

II. THE ENTERPRISE SURVEY

The main source of information for Investment Climate Assessment is an enterprise survey, which was conducted in June 2006. Information from the survey will be supplemented with information from other sources including the *Doing Business Report*; analytical reports by the World Bank, the International Monetary Fund, other international organizations and the Government of Botswana; and academic papers and reports).

The survey was conducted in two locations in Botswana, Gaborone and Francistown. The sampling methodology varied by strata. Lists of establishments for the small, medium-sized and large enterprise (SMLE) sample were obtained from the *Central Statistics Office* and the *Ministry of Trade and Industry*. Because these lists were largely out-of-date, the information from them had to be supplemented with additional information. EEC Canada, the firm implementing the survey, therefore compiled a new list of establishments by surveying both cities. After eliminating residential areas, the EEC team walked each street in the remaining zones visiting each enterprise to determine sector and size. Only firms with at least 5 employees were included in this sample. The names of the manufacturing firms were compiled into a single list, while retail and service enterprises were counted. The methodology is described in detail in an appendix.

Because of the large number of microenterprises (with fewer than 5 employees), an exhaustive count of all areas was not conducted for the microenterprise sample. Rather, based upon discussions with Government officials, Chambers of Commerce, districts and zones with large numbers of informal firms were identified. The survey team then went into the field to verify these sources and to count microenterprises. Within each zone, all microenterprises were

counted following a predetermined route. Based upon this count, a skip pattern was established for each area and enumerators were sent to each zone with instructions on how to apply the skip rule for that zone. Because a complete count was not done for the entire area—only for the zones included in the microenterprise survey—this data cannot be combined with the data from the manufacturing, retail and service surveys. That is, since the total number of microenterprises in Gaborone and Francistown is not known, weights that would allow us to merge the SMLE and microenterprise surveys cannot be constructed.

Table 1 presents unweighted sample sizes by sector. The SMLE sample is evenly divided between manufacturing, retail trade, and other services. Because the manufacturing sample covers most establishments in the sector, while the retail trade and other services samples are only sub-samples, weights are used throughout the report to appropriately weight these sectors for all summary statistics. The microenterprise sample is dominated by retail establishments, which make up close to three-quarters of the sample. There are only a small number of light manufacturing firms and other service firms in the microenterprise sample.

Table 1: Unweighted Sample Size, by Sector

	SMLEs	Microenterprises
Total	342	102
Manufacturing	114	10
Retail	112	77
Other Services	116	15

Source: Enterprise Survey.

Because a near census was completed for manufacturing firms, whereas only sub-samples were interviewed in the retail trade and other services sectors, manufacturing firms make up a smaller share of the weighted sample (15 percent) than of the unweighted sample. Retail trade enterprises make up about 50 percent of the weighted sample, while other services make up the remaining 35 percent. About four-fifths of the sample is from Gaborone, with the remaining fifth from Francistown. About one-quarter of the manufacturers exported at least some of their output.

The sample is heavily weighted towards very small and small enterprises—although about 10 percent of the weighted sample had over 100 employees. Most firms were at least partially black-owned (76 percent), although a substantial minority was partially white- or Asian-owned. Less than half of the firms had any female owners. About 38 percent of the sample was majority foreign-owned.

Table 2: Sample characteristics of formal firms, weighted

	Percent of Sample (Weighted)		Percent of Sample (Weighted)
Manufacturing	15%	Micro (less than 5 employees)	0%
Retail	50%	Very Small (5-9 employees)	41%
Other Services	35%	Small (10-49 employees)	42%
		Medium (50-99 employees)	7%
Francistown	19%	Large (100 and up)	10%
Gaborone	81%		
Foreign-owned	38%	Any female owner	41%
Domestically owned	62%	Any black owner	76%
		Any white owner	15%
Exporters (manufacturing)	23%	Any Asian owner	23%
Non-Exporters (manufacturing)	77%	Any Lebanese owner	1%

Source: Enterprise Survey.

Table 3 presents similar data for microenterprises. In comparison to the formal firm sample, the microenterprises were more likely to be partially black-owned (93 percent of microenterprises compared to 76 percent of formal enterprises), were more likely to have female owners (58 percent compared to 41 percent), and were very unlikely to be even partially white- or Asian-owned. The microenterprise was heavily dominated by retail establishments (76 percent), with very few firms involved in either light manufacturing (9 percent) or other services (16 percent). As in most counties where microenterprise surveys have been completed, microenterprises are most domestically owned and were primarily involved in domestic markets—none of the microenterprises in light manufacturing sector exported any part of their output.

Table 3: Sample characteristics of microenterprises.

	Percent of Sample		Percent of Sample
Manufacturing	9%	Micro (less than 5 employees)	100%
Retail	75%	Very Small (5-9 employees)	0%
Other Services	16%	Small (10-49 employees)	0%
		Medium (50-99 employees)	0%
Francistown	13%	Large (100 and up)	0%
Gaborone	87%		
Foreign-owned	13%	Any female owner	58%
Domestically owned	87%	Any black owner	93%
		Any white owner	1%
Exporters (manufacturing)	0%	Any Asian owner	7%
Non-Exporters (manufacturing)	100%	Any Lebanese owner	0%

Source: Enterprise Survey.

III. COMPARATOR COUNTRIES

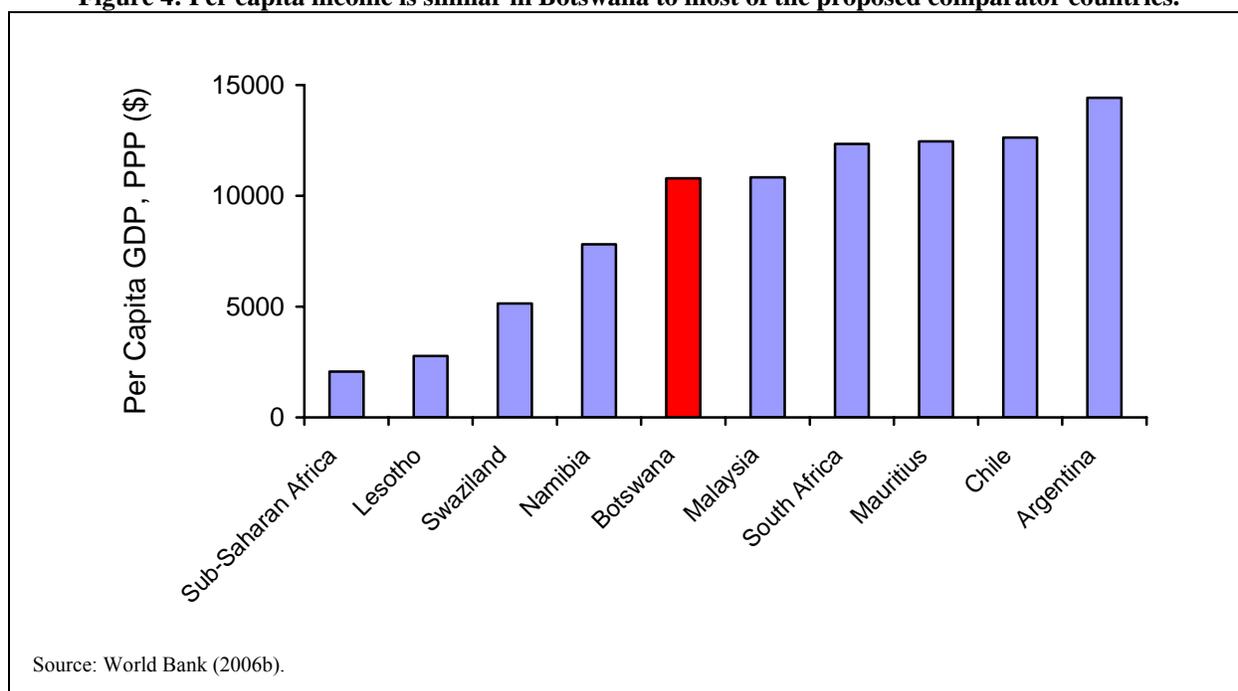
One of the advantages that the World Bank's Enterprise Surveys have over other firm-level surveys is that because similar surveys have been conducted in a wide range of other

countries. It is therefore possible to benchmark Botswana against other countries with respect to both firm productivity and measures of the investment climate.

The other countries in Southern African Customs Union (Lesotho, Namibia, South Africa and Swaziland) provide a natural set of comparator countries, because of their geographical proximity and because all are also middle-income. Surveys were completed in Lesotho and South Africa in 2004 and in Namibia and Swaziland in 2006.

Outside of SACU, it is more difficult to find relevant comparators for Botswana. Within Sub-Saharan Africa, most countries where Enterprise Surveys have been completed are considerably poorer than Botswana (see Figure 4). Not surprisingly, as discussed below, firms are also considerably less productive in these countries than they are in Botswana (see Figure 6).

Figure 4: Per capita income is similar in Botswana to most of the proposed comparator countries.



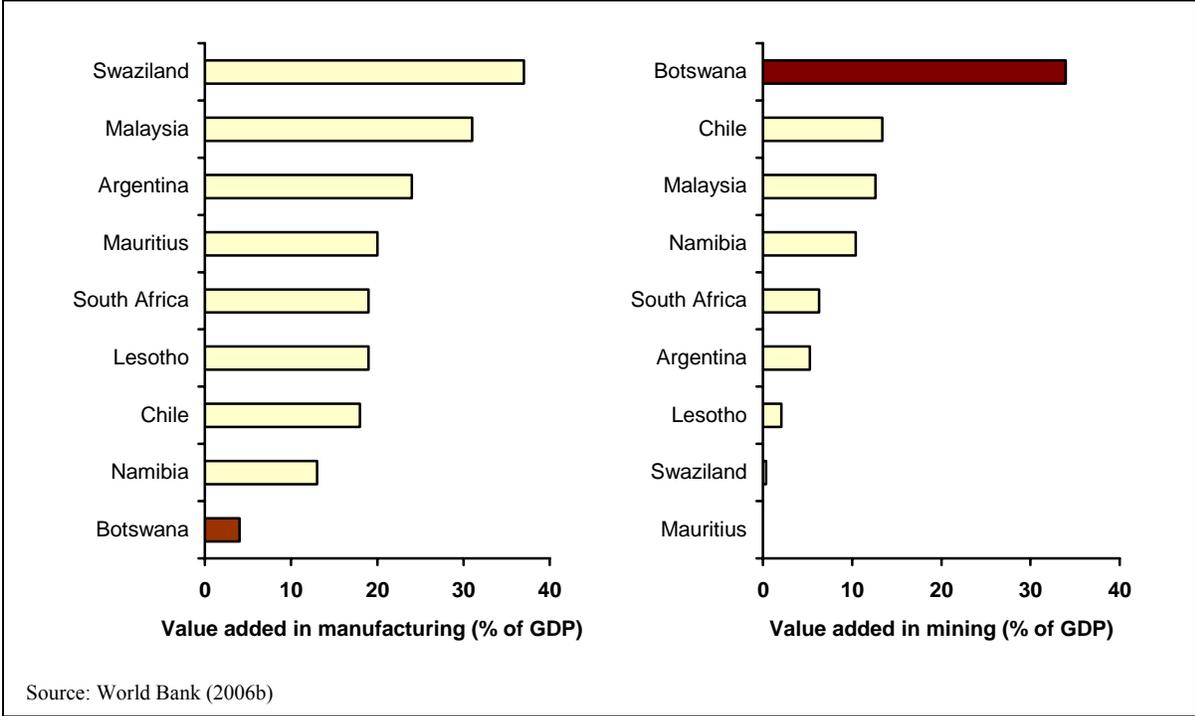
In addition to comparing Botswana to other economies in SACU, Botswana is also compared to some additional middle-income countries where firms are relatively productive and that have relatively good investment climates—Argentina, Chile, Malaysia and Mauritius. These countries are chosen for several reasons. First, if Botswana is to diversify into competing in international markets in manufactured goods, firms will need to be able to compete with similar firms from other middle-income economies. Given Botswana’s wage structure relative to low-income countries such as India, China or even other countries in Sub-Saharan Africa, firms will find it difficult to compete in low-skilled and highly labor intensive sectors. Focusing on better performing middle-income economies is therefore useful. Second, several of these countries have already successfully moved from producing primary goods (including in mining for three of the four economies) to producing manufactured goods. For example, in 1966, close to 80 percent of Malaysia’s output was primary products (mostly Tin and Rubber).

Mining is more important—and manufacturing is less important—in Botswana than in any of these proposed comparators (see Figure 5). Although mining is fairly important in South Africa, Namibia, Malaysia, and Chile, it is far less important than it is in Botswana.

The following potential comparator countries are therefore proposed:

1. **Southern African Customs Union** : Lesotho, Namibia, South Africa and Swaziland
2. **Middle Income Countries**: Argentina, Chile, Mauritius and Malaysia

Figure 5: Mining is far more important in Botswana than in the comparator countries, including those where mining is relatively important such as Malaysia, Chile and Namibia.



CHAPTER 2: AN ANALYSIS OF FIRM PERFORMANCE

This chapter looks at how small, medium and large enterprises (SMLEs) in Botswana perform when compared with SMLEs in the other SACU economies and in other middle economies. The different measures of firm performance indicate how competitive SMLEs are in both international and domestic markets. While this chapter provides an overview of how well firms in Botswana perform, later chapters assess how the investment climates affect their competitiveness.

I. FIRM PERFORMANCE

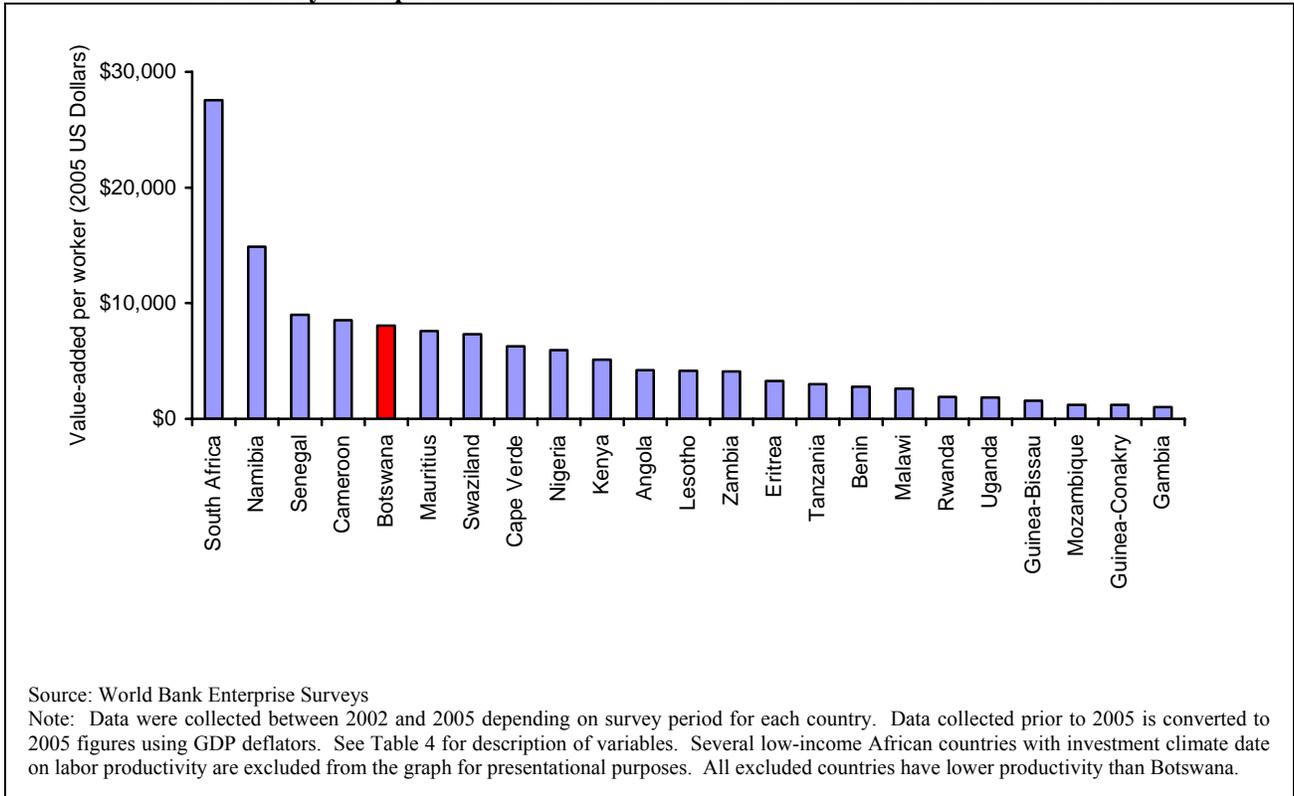
As a preliminary analysis of SMLEs' competitiveness, this section examines several traditional measures of firm productivity. The chapter first examines labor productivity—the amount of output per worker that firms produce. It then looks at capital stock and capital productivity in the manufacturing sector and compares labor productivity with labor costs, to obtain the unit labor costs. These measures are compared across different SMLEs within Botswana, and also to others internationally. This is followed by an analysis of total factor productivity, a measure of firm performance that takes into account use of both capital and labor. To ensure that the results are comparable across countries, and because the standard methodology is only appropriate for the manufacturing sector, results in this section only cover SMLEs in that sector.

I.1 Labor Productivity

Labor productivity, the per worker output that the firm produces less the cost of raw materials (such as iron or wood) and intermediate inputs (such as engine parts or textiles) used to produce the output, is a basic measure of firm productivity. Labor productivity is higher in firms that produce more output with fewer raw materials and fewer workers. Differences in labor productivity can be the result of differences in technology, differences in organizational structure, differences in worker skills, differences in management ability, or differences in the amount of capital that the firm uses. Because labor productivity does not take the use of capital (i.e., machinery and equipment) into account, it will generally be higher in firms that use capital in place of labor (i.e., firms that are capital intensive).

Manufacturing enterprises are relatively productive in Botswana. Between 2001 and 2006, the World Bank collected Investment Climate data in 31 countries in Sub-Saharan Africa. Of these 31 countries, the median firm in Botswana is more productive than the median firm in all but four countries—South Africa, Namibia, Senegal and Cameroon (see Figure 6). The difference between Botswana and Namibia and South Africa is relatively large. In contrast, although the median SMLE in Botswana is slightly less productive than the median SMLE in Cameroon and Senegal and slightly more productive than the median SMLEs in Mauritius, Swaziland, and Cape Verde, three middle income countries, the differences are small and statistically insignificant (i.e., they could be due to random or sampling variation) in all of these cases.

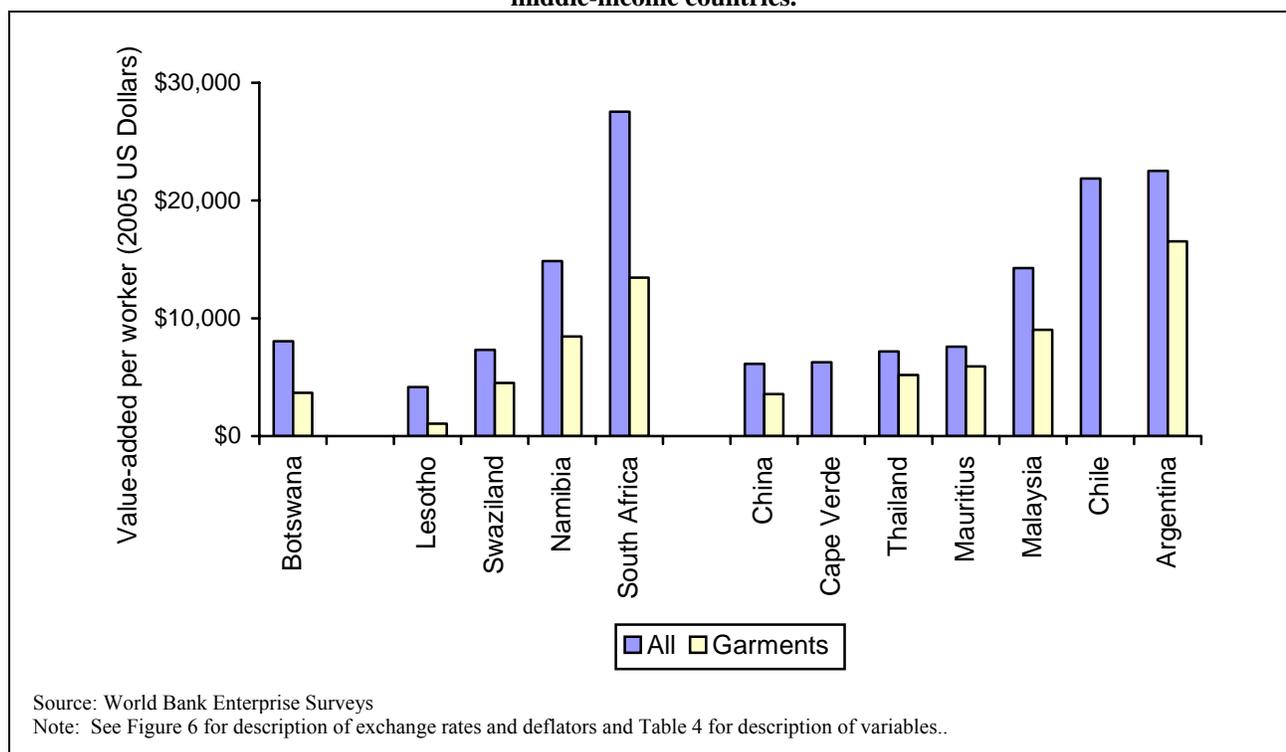
Figure 6: Manufacturing SMLEs in Botswana—and the other middle income countries in SACU—are considerably more productive than SMLEs in most low-income countries in Africa.



SMLEs in Botswana are also more productive than in most low income countries (with the exception of Cameroon and Senegal). Moreover, the difference in labor productivity between Botswana and most low income countries is large. Whereas the median SMLE in Botswana produces about \$8,000 of output per worker, the median SMLEs in most low income countries produce between \$1,000 and \$4000 of output per worker.

Although labor productivity is higher in Botswana than in most low income countries in Sub-Saharan Africa, Botswana compares less favorably with the middle income comparator countries in Asia and Latin America (see Figure 28). Labor productivity is considerably lower than in Chile or Argentina—where median labor productivity is over \$20,000 per worker—and Malaysia, where it is \$14,000 per worker. Productivity is slightly higher than in Thailand (about \$7000 per worker) and China (\$6000 per worker). Productivity is also lower than in the best performing provinces in China such as Hangzhou and Shenzhen, where productivity is close to the levels observed in Malaysia and Latin America.

Figure 7: Manufacturing SMLEs are less productive in Botswana than they are in the best performing middle-income countries.



As noted, one problem is that labor productivity is generally lower in firms that are labor intensive (i.e., firms that use little capital per worker). Since firms in some sectors (e.g., garments) tend to be more labor intensive than others, if industry in a country is concentrated in these sectors, then productivity might appear to be artificially low. One way of dealing with this is to calculate total factor productivity—a measure of productivity that takes the firms’ use of capital into account. Another approach is to focus on a single sub-sector of manufacturing. In general, since labor intensity will vary less within a single sub-sector than in manufacturing overall, this will partially reduce these concerns.

The comparisons in this sector focus on the garments sector—an internationally traded good with a relatively well established production technology. Botswana generally compares less favorably when focusing on this sector. Labor productivity in the garment sector remains lower than in Namibia, South Africa, Malaysia, and Argentina. However, although labor productivity is slightly higher overall sectors in Botswana than in Swaziland, Mauritius, or Thailand, productivity in the garment sector is lower. Labor productivity in the garment sector in Botswana is also relatively close to labor productivity in this sector in China. Consistent with the idea that firms are not very competitive, relatively few garment firms from Botswana sell on international markets—only 22 percent of the SMLEs exported any part of their output compared to 70 percent in South Africa and 85 percent in Mauritius.

There are significant differences within Botswana with respect to labor productivity (see Table 4). As noted earlier, there are often significant differences in labor productivity between sectors. As in most countries, SMLEs in the garment sector tend to be less productive in

Botswana than SMLEs in other sectors. This probably reflects the low level of capital in the sector—garment SMLEs use less capital worker than in the other sectors.

Table 4: Median Productivity by industry, size, and ownership.

	Value-added per worker	Labor costs per worker	Unit labor costs	Capital per worker (book)	Capital Productivity (book)
All Sector	\$8,047	\$2,357	0.29	\$3,913	1.80
Garments	\$3,674	\$1,419	0.39	\$1,030	1.33
Food and Beverage	\$5,511	\$2,556	0.26	\$3,970	1.10
Paper and Publishing	\$9,576	\$2,686	0.47	\$3,647	2.23
Furniture	\$11,228	\$3,261	0.34	\$2,957	1.79
Chemicals	\$15,118	\$1,794	0.28	\$5,523	1.41
Other Manufacturing	\$9,197	\$2,446	0.23	\$5,591	3.22
Size					
Very Small (5-9 workers)	\$7,898	\$1,957	0.29	\$3,131	2.15
Small (10-49 workers)	\$8,816	\$2,201	0.26	\$3,497	2.27
Medium (50-99 workers)	\$11,738	\$3,355	0.27	\$4,175	2.58
Large (100 or more workers)	\$6,071	\$2,197	0.39	\$4,823	1.18
Manager Education					
Secondary or less	\$3,674	\$1,761	0.41	\$2,024	2.15
Vocational	\$6,435	\$1,677	0.18	\$6,523	1.49
University	\$11,104	\$2,799	0.27	\$3,970	1.86
Exports					
Exporters	\$10,427	\$2,446	0.27	\$3,914	1.86
Non-exporters	\$7,892	\$2,258	0.29	\$3,736	1.79
Ownership					
Foreign Owned	\$10,738	\$3,355	0.24	\$5,180	2.01
Domestic	\$5,511	\$1,957	0.39	\$3,024	1.79

Source: World Bank Enterprise Survey

Notes: See Figure 6 for description of exchange rates used. All values are medians for enterprises with available data. Value added is calculated by subtracting intermediate inputs and energy costs from sales from manufacturing. Workers include both permanent and temporary workers. Capital is the book value of machinery and equipment. Labor cost is the total cost of wages, salaries, allowances, bonuses and other benefits for both production and non-production workers. Unit labor costs are labor costs divided value-added and capital productivity is value added divided by the book value of machinery and equipment.

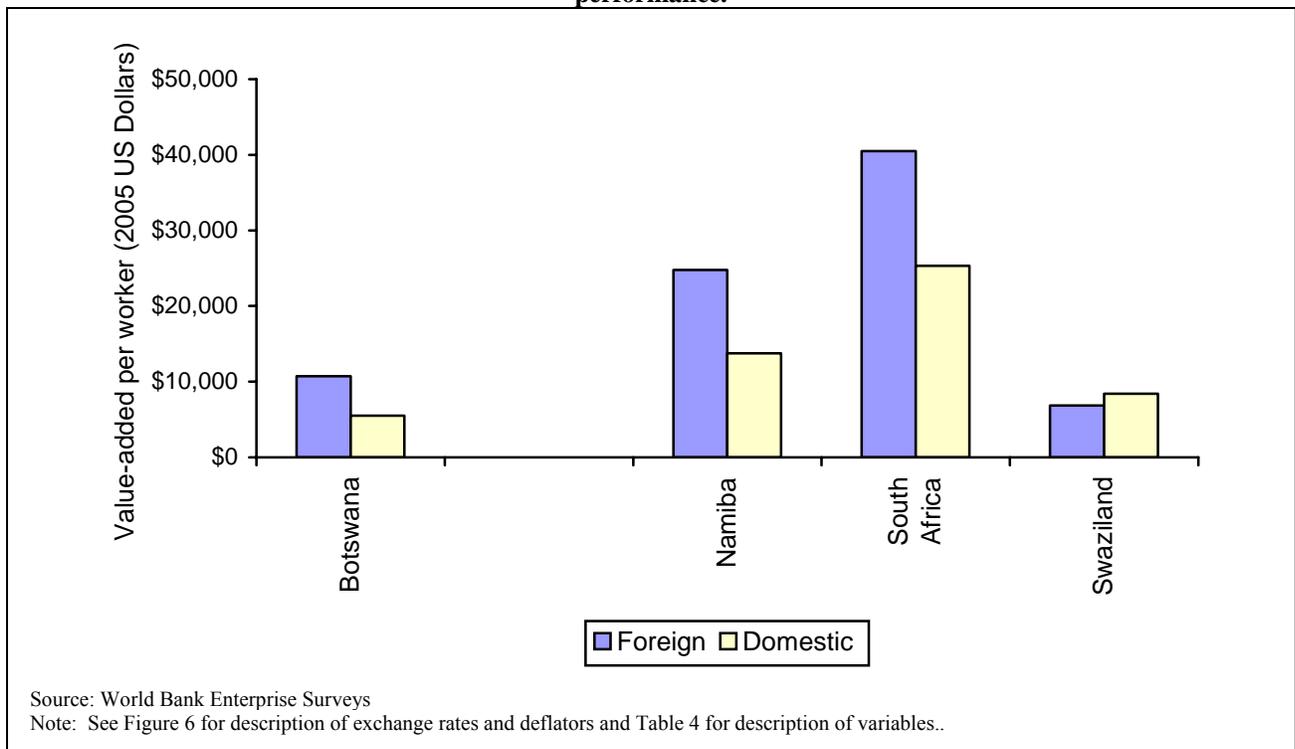
In most countries, labor productivity tends to be lower in smaller firms (see Table 4). There is a modest upward trend in labor productivity with firm size—very small firms with less than 10 employees are slightly less productive than small firms and small firms are less productive than medium-sized firms. The median large firm, however, is not any more productive than the median small firms. It is important to note that the differences are relatively small in real terms. In particular, although medium-sized firms appear more productive than very small firms, the other differences are not statistically significant. In particular, the difference between large firms and other firms in terms of productivity is never statistically significant.

Exporters are more productive than non-exporters—as in most countries—although once again the difference is not statistically significant. Although the statistically insignificant results might suggest that there is little difference between firms of different sizes or exporters and non-exporters, it is important to note that the sub-samples tend to become relatively small (especially for medium and large firms) making it difficult to find statistically significant results.

There are differences, however, that are both relatively large and statistically significant. One is that SMLEs with university educated managers tend to be significantly more productive than SMLEs with managers with only secondary or vocational training. This provides some indication of the importance of manager training. SMLEs with managers with a graduate business degree (e.g., an MBA) appear to be slightly more productive than SMLEs with managers with university degrees but no MBA (\$12,000 compared to \$10,000).⁴

Another difference is that foreign-owned firms are more productive than domestic firms (see Figure 28). The difference is large, about \$11,000 per worker for foreign owned enterprises but only half that for domestically owned enterprises, and is statistically significant. Although this is not usual for example foreign-owned firms in Namibia and South Africa are also more productive, the gap is particularly large in Botswana. Foreign-owned firms about 95 percent more productive on average in Botswana compared to 80 percent more productive in Namibia and 60 percent more productive in South Africa. Moreover, labor productivity is relatively low for domestic firms—domestic firms are only a little more productive than firms in Kenya and are less productive than firms in Nigeria.

Figure 8: There is a large gap between foreign and domestic SMLEs in Botswana in terms of SMLE performance.



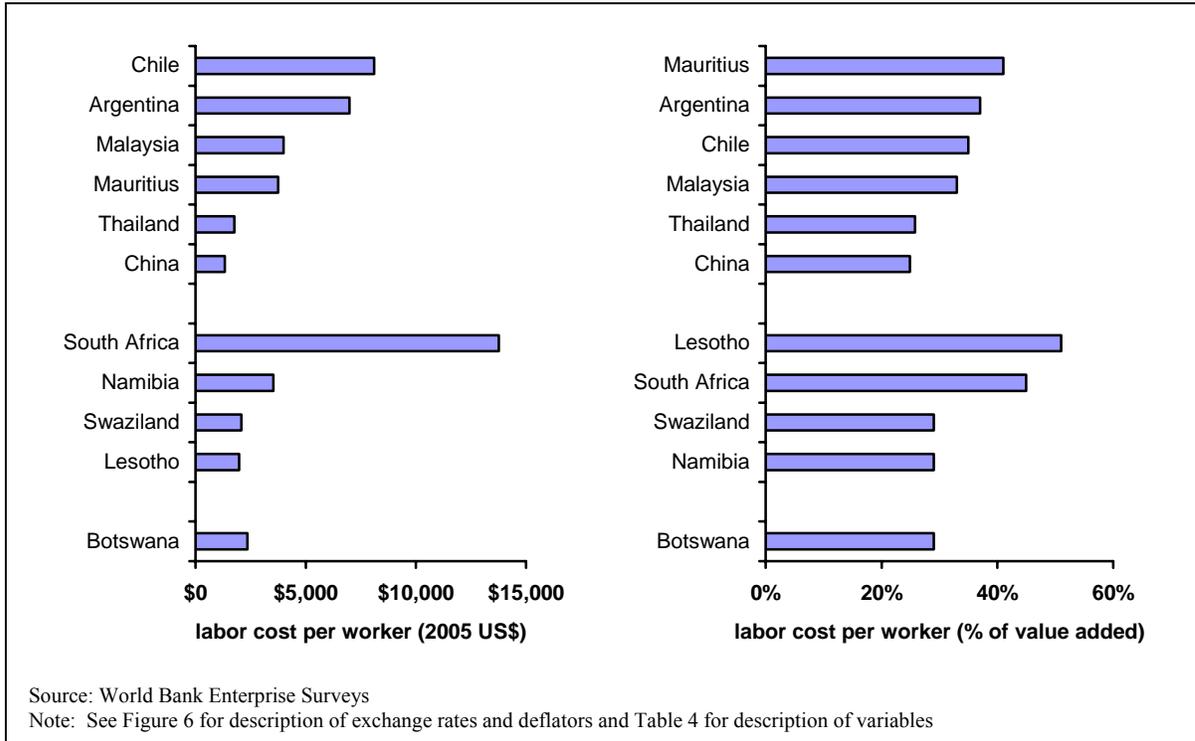
⁴ The difference is not statistically significant. However, since only 19 managers have MBAs, it would be difficult to find statistically significant.

I.2 Labor Costs

Compared to other countries in Sub-Saharan Africa, wage costs are relatively high in Botswana. For the median manufacturing enterprise in the sample, wage costs were equal to about \$2,400 per worker. This is lower than in South Africa, Namibia, Senegal, and Cameroon, the four countries where labor productivity is higher, and also lower than in Mauritius or Cape Verde. Wage costs in the low income countries are generally significantly lower—mostly around \$500-\$1500 per worker. It is also higher than in China, where wages are about \$1300 per worker. This suggests that Botswana will find it difficult to compete in international markets in highly labor intensive sectors.

Wage costs however are lower than in most of the middle income comparator countries—although they are broadly similar to wages in Swaziland. For the median SMLE, wages are nearly six times higher in South Africa, three times higher in Chile and Argentina, and about fifty percent higher in Malaysia, Namibia, and Mauritius.

Figure 9: Average labor costs are relatively low in Botswana relative to other middle-income countries in both dollar terms and as percent of value-added.



Although labor cost per worker gives some indication of labor costs, differences in labor costs can reflect differences in things such as worker education and worker skills. That is, labor costs might be high because the cost of labor is high or might be high because workers are well educated or highly skilled and, hence, are more productive. Because wages and productivity are both relatively low in Botswana, firms could potentially remain competitive despite low labor productivity.

Unit labor costs (labor costs as a percent of value-added) are a measure of labor costs that make it easier to assess the net impact of labor costs on competitiveness by taking differences in productivity into account when assessing labor costs. Unit labor costs are higher when higher labor costs are not fully reflected in higher productivity. When unit labor costs are higher (i.e., when labor costs are higher compared to productivity), firms will find it more difficult to compete on international markets than when they are lower all else equal. Although unit labor costs are not the only factor that affect competitiveness—for example, they do not take the cost of capital or capital intensity into account—they are a better measure of competitiveness than labor costs alone.

Unit labor costs are relatively low in Botswana. Although labor productivity is lower than in the best performing middle income countries, labor costs are even lower. Unit labor costs are about 30 percent of value added—similar to unit labor costs in Namibia, Swaziland and Malaysia. They are considerably lower than South Africa, Mauritius or Lesotho and are slightly lower than in Chile or Argentina. This suggests that labor costs are probably not a huge drag on competitiveness in Botswana.

This is consistent with previous macroeconomic studies that suggest that Dutch disease has been relatively mild in Botswana (see Chapter 1). In particular, wages in the manufacturing sector do not appear to be completely out-of-line with productivity, potentially allowing firms from Botswana to compete on international markets

Although it is not possible to calculate many of the measures of productivity for non-manufacturing industries, it is possible to calculate per worker wages costs in retail trade and services. In practice, wage costs are very similar in the three industries—median wages costs for SMLEs in retail trade and other services were also close to \$2,400.

Foreign owned enterprises have considerably higher labor costs than domestically owned firms (see Table 4). Whereas per worker labor costs are close to \$3,400 per worker for the median foreign-owned, they are only about \$2,000 per worker for the median domestic firm. The difference is statistically significant. As with labor productivity, medium sized firms have higher per worker labor costs than small and very small firms and firms with university educated managers also have higher wage costs.

I.3 Capital Productivity

Differences in labor productivity often reflect differences in capital use. Firms that have more capital generally produce more output per worker than firms with less capital. For this reason, this chapter also looks at capital intensity, how much capital the firm has per worker, and capital productivity, how much the firm produces relative to the capital it has.

Although these measures provide some context for the previous results, it is important to note that it is more difficult to measure capital than it is to measure labor (e.g., it is relatively easy to measure wages and number of workers). Because most machinery is long-lived, providing services over a long period of time, it is difficult to measure its contribution to output in a single year. As capital ages, it becomes less productive (i.e., it depreciates in value) and will eventually stop providing any services. Although accounting rules for depreciating machinery

and equipment exist, these often bear little resemblance to true rates of economic depreciation—and can vary across countries. The book value of capital (i.e., the value of capital included in company accounts) is therefore not an especially accurate measure of the value of capital—especially for small firms that often do not keep detailed audited accounts.

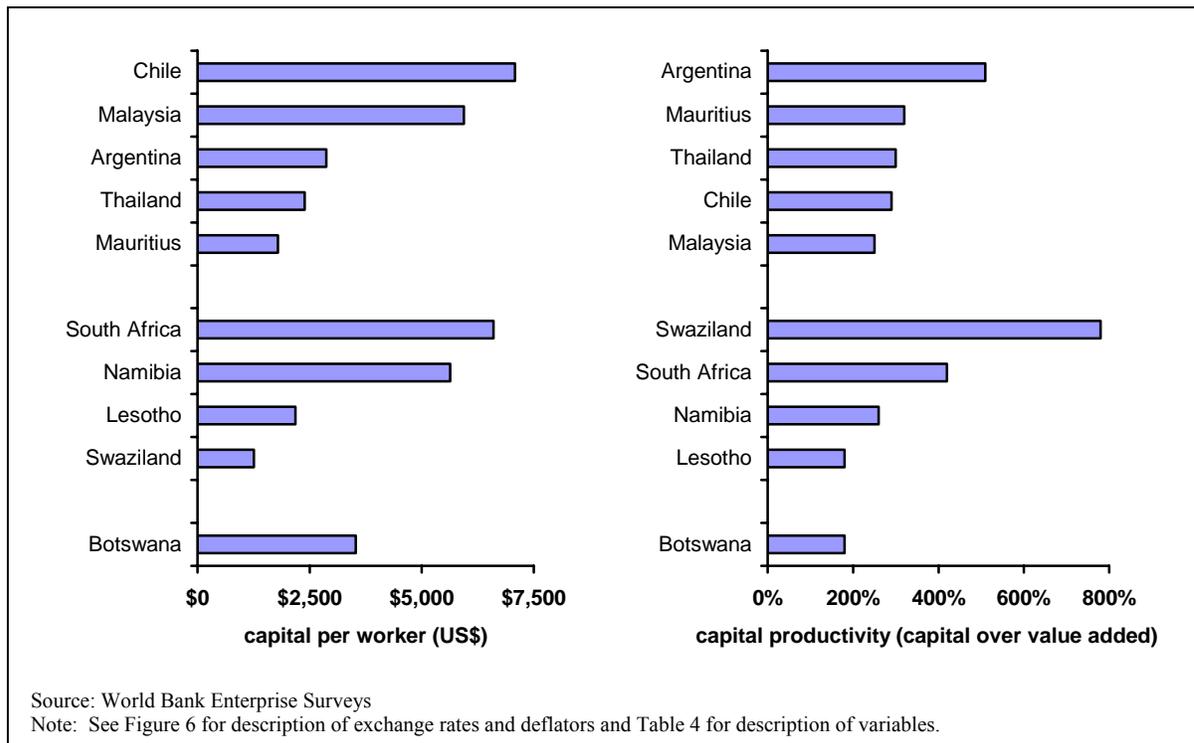
As an alternate measure of the value of capital, recent World Bank Enterprise Surveys have also asked firm managers how much it would cost to replace their equipment in its current condition. Although this is a useful measure of capital—and provides an additional check on results—in practice, markets for used capital are thin. Because of this, firm managers might not know the true value of their capital—especially if the equipment is old or if they have not purchased similar equipment for several years. Because these questions were not asked in older surveys, this section focuses on the book value of capital—although results in this section and the section on total factor productivity are qualitatively similar for those countries where both measures are available.

With these provisos in mind, SMLEs in Botswana do not appear to be particularly capital intensive when compared to the middle-income comparator countries. The median firm in Botswana is less capital intensive than the median firms in Malaysia, Namibia, Chile, or South Africa. They are, however, considerably more capital intensive than firms in Swaziland, Thailand, or Mauritius. Importantly, they are more capital intensive than firms in the less productive middle income countries such as Mauritius, Swaziland and Thailand. Given that labor productivity in Botswana (about \$8000 per worker) is far closer to labor productivity in these three countries (between \$7000 and \$8000 per worker) than to Malaysia, Namibia, Chile or South Africa (between \$14000 and \$28000) per worker, it suggests some reason for concern.

Firms in Botswana are also more capital intensive than firms in most of the low income countries in Sub-Saharan Africa where World Bank Enterprise Surveys have been completed. The book value of capital for the median SMLE in Botswana is about \$3,500 per worker, compared to between about \$500 and \$2,000 of capital per worker in most low-income countries in the region.

This is not particularly high compared to the middle income comparator countries—although SMLEs in Swaziland report using far less capital than in Botswana and SMLEs in Mauritius and Argentina also report using less capital, median SMLEs in Namibia, Malaysia, South Africa, and Chile all report using more capital.

Figure 10: Although SMLEs in Botswana are not highly capital intensive, capital productivity remains quite low.



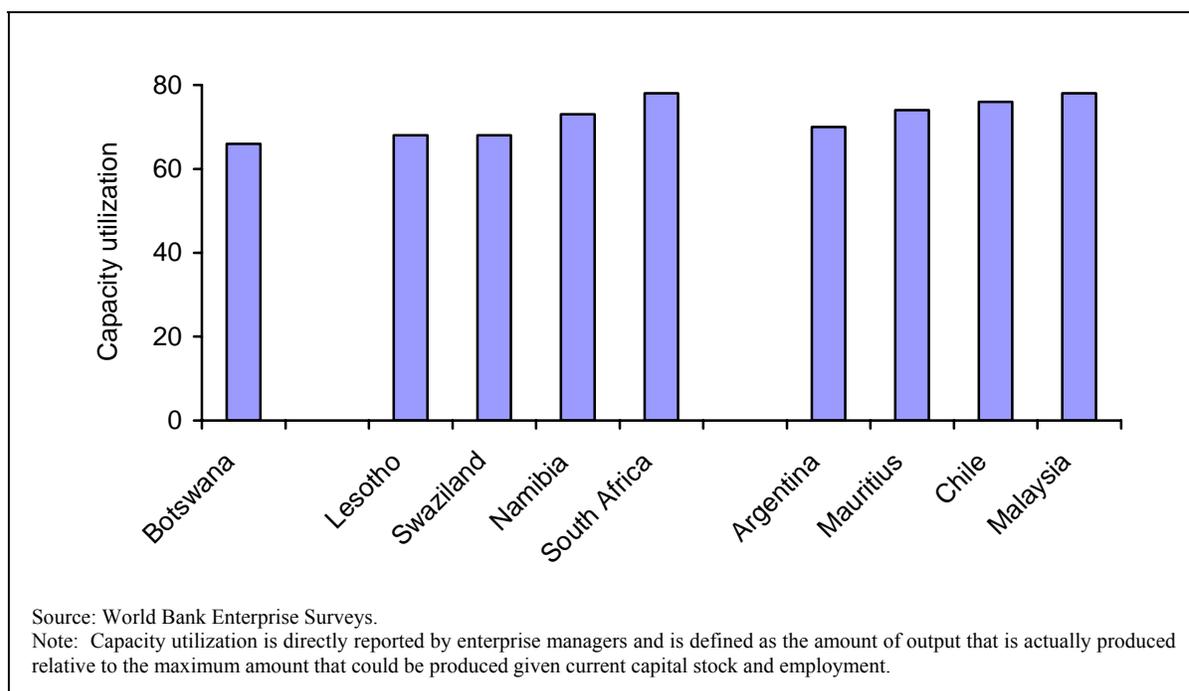
Although capital per worker gives an idea about how capital intensive firms are, it does not provide much information on how productively that capital is being used. Capital productivity, the ratio of value added to the net book value of machinery and equipment, measures how productively firms use capital. It is analogous for capital to (the inverse of) unit labor costs for workers. Capital productivity is higher in firms that produce a lot of output with only a small amount of machinery and equipment. Hence, capital productivity is generally higher for labor intensive firms (i.e., firms that rely relatively heavily on labor to produce their output) since they produce a lot of output, due to their heavy use of labor, with relatively little capital.

Capital productivity is lower in Botswana than in most of the middle income comparator countries. For example, it is about 50 percent higher in Malaysia, Malaysia, and Chile and is about twice as high in Mauritius and over twice as high in Argentina and South Africa. Capital productivity is considerably higher in Swaziland—the least capital intensive of the middle income comparator countries. Because SMLEs in Botswana are not particularly capital intensive, they are not using capital very efficiently.

The World Bank Enterprise Survey also asks firms about capacity utilization, the ratio of their actual output to what they could feasibly produce given the size of their workforce and the machinery and equipment that they use. Firms with lower capacity utilization are not using workers and capital efficiently because they could produce more than they do. Low capacity utilization could reflect that demand is lower than the demand that they forecast (i.e., so that workers and machinery are idle) or could reflect problems in the investment climate. For

example, unreliable infrastructure might prevent the firm from using its equipment and workers efficiently.

Figure 11. Capacity utilization is low in Botswana



Capacity utilization is relatively low in Botswana. It is similar to capacity utilization in Lesotho and Swaziland, but is generally lower than in the other comparator countries (see Figure 11). Once again, SMLEs in Botswana compare more favorably with SMLEs in low income countries elsewhere in Sub-Saharan Africa. Compared to the economies, Botswana ranks about 16th (of 31 countries) in Sub-Saharan Africa.

I.4 Total Factor Productivity

Although the results presented in the previous subsection provide useful measures of firm performance and competitiveness, they have some drawbacks. The main problem is that when considered in isolation, labor and capital productivity can present incomplete, and sometimes contradictory, evidence on firm performance. Total factor productivity (TFP) avoids these problems by taking into account both capital and labor use. Differences in total factor productivity between groups of firms (e.g., between firms in different countries or between exporters and non-exporters) are due to differences in things other than capital or labor. For example, differences in TFP might be due to differences in firm organization, differences in management efficiency, or differences in worker skills or education. To the extent that differences in technology are not embedded in the machinery and equipment that the firm uses, differences in total factor productivity can also reflect this.

In addition to taking into account both capital and labor use, TFP has several additional advantages over the other measures of firm performance presented in the previous section:

1. Because TFP is calculated in a regression framework (see Annex 2.1), it is possible to control for multiple things when calculating it. For example, when comparing average TFP across countries it is possible to control for differences in sector composition.
2. The regression framework also makes it possible through the estimating of an augmented production function to estimate differences between different types of firms while controlling for other factor. For example, both foreign-owned firms tend to be more productive than other firms. However, if foreign-owned firms are more likely to work in some sectors than others—and there are sectoral differences in productivity—then it is difficult to know whether it is the sectoral differences or other differences between foreign and domestic firms that are causing the differences in productivity. Within a regression framework it is possible to control for multiple factors (e.g., sector, ownership, or export status) simultaneously.

Some problems, however, remain.

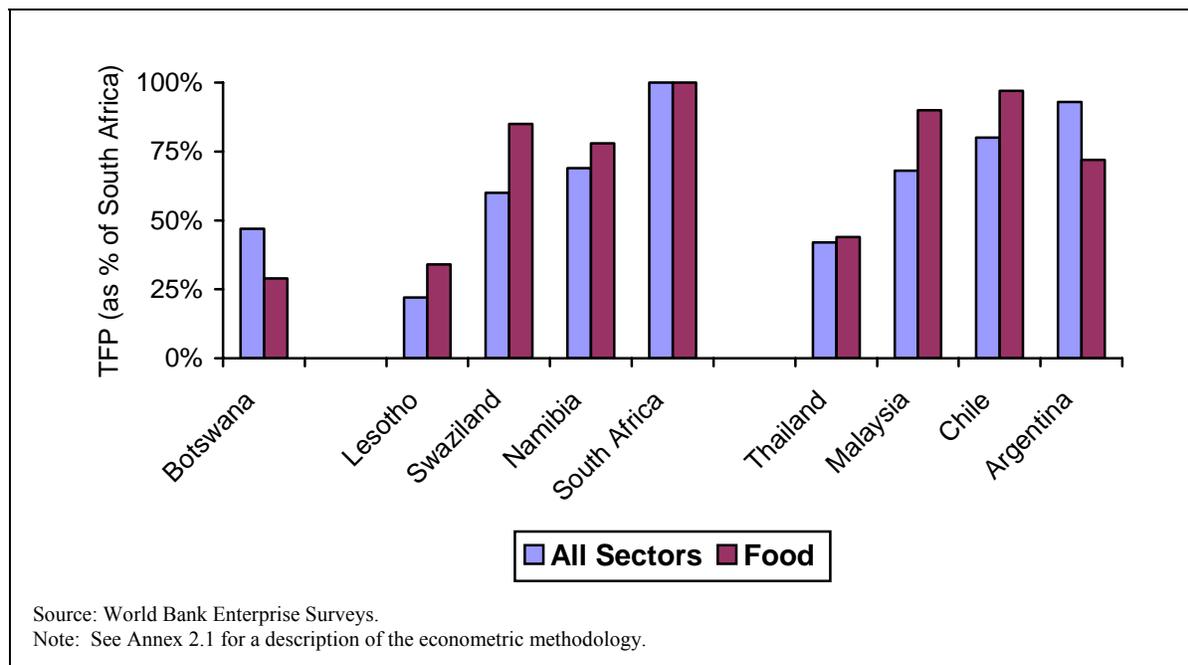
1. As with labor productivity, labor costs per worker, capital per worker and other measures of firm performance denominated in US dollars, cross-country comparisons of TFP are vulnerable to exchange rate fluctuations. If the exchange rate is overvalued relative to its long-run equilibrium then TFP might look artificially low. Measures such as capital productivity or unit labor costs that are ratios avoid this problem.
2. As discussed earlier, capital is more difficult to measure than labor for both theoretical and practical reasons. Since TFP depends upon measurement of capital, it will generally be mismeasured when capital is mismeasured.
3. Because estimates are calculated in a regression framework, it is less straightforward than the measures in the previous sections. One issue is that estimates of TFP for groups of firms do not have natural units. For cross country comparisons, TFP is shown as % of TFP in South Africa—one of the most productive countries in Africa. For other group (e.g., exporters) differences are presented in terms of a base category (e.g., non-exporters). A second issue is that estimates can depend upon estimation method (e.g., ordinary least squares, frontier estimation, or least absolute deviations (LAD) estimation). In practice, however, the results in this section do not appear to be highly sensitive to different estimation techniques.

The econometric methodology is detailed in far greater detail in an annex, which explains how TFP numbers are constructed and provide more detail on the econometric results.

I.5 Cross-Country Comparisons

Total factor productivity (TFP) is about 50 percent lower in Botswana than in South Africa. TFP in Botswana is higher than in Lesotho (about 25 percent of TFP in South Africa) and is close to TFP in Swaziland (60% of TFP in South Africa), although the differences are statistically significant. On average, TFP in Botswana is lower than in any of the other comparator countries, most of which are slightly less productive than firms.

Figure 12: Total factor productivity is lower than in the best performing middle-income economies



Botswana compares even less favorably when looking at a single sector—food and beverages. This sector is chosen because it is one of the largest sectors and there are food and beverage firms in all the countries in the sample. TFP in this sector is only about 25 percent of TFP in South Africa and is lower than in any of the comparator countries, including Lesotho.

It is important to note that although total factor productivity is lower in Botswana than in the middle-income comparator countries, it is higher than in most other countries in Sub-Saharan Africa (see Figure 21). Four of the five SACU economies rank above any of the other countries in Sub-Saharan Africa for which data are available. Although Botswana compares less favorably when looking only at the food sector, it remains towards the middle of the sample of countries even in this sector.

I.6 Differences by Firm Type.

For the entire sample of SMLEs from Africa, several patterns emerge. Exporters, foreign-owned firms, firms that use the internet, firms that have bank credit, firms that have technology licensed from a foreign company and firms with university educated managers are more productive than other firms.

Intuitively, most of the correlations make sense (see Econometric Appendix for full discussion). For example, firms that receive bank credit might be more productive because they find it easier to invest in modern equipment or in the human capital of their management or workforce. Or because banks only give credit to firms that are already relatively productive. Similarly, firms that export might be more productive because exposure to foreign buyers might give them access to advice or new technologies. Or only firms that are already efficient might be able to enter export markets.

Table 5: Comparison of Point Estimates for Whole Sample and for Botswana

	Point estimate for whole sample	Point estimate for Botswana	Is point estimate for Botswana different
Age of Establishment	1%	-5%	No
Firm has bank credit	27%	-31%	Yes
Firm exports	16%	36%	No
Firm is foreign-owned	20%	31%	No
Firm has technology licensed from foreign company	32%	3%	No
Firm uses internet	24%	9%	No
Firm has training program	-2%	35%	No
Firm's workers are unionized	9%	89%	Yes
Firm's manager has university education	17%	17%	No
Firm's manager has an MBA	6%	9%	No

For the most part, results for SMLEs in Botswana are similar to results for the entire sample—the null hypothesis that differences in TFP for different types of SMLEs are the same in Botswana as they are in other countries can only be rejected in a couple of cases (e.g., the difference in productivity between exporters and non-exporters appears to be about the same in Botswana as in other countries in Sub-Saharan Africa). There were, however, two differences between Botswana and other countries in Sub-Saharan Africa. First, SMLEs with bank credit do not appear to any more productive in Botswana than SMLEs without credit—this is very different from the overall pattern in Sub-Saharan Africa, where the SMLEs with credit appear to be more productive than SMLEs without credit. This suggests that bank credit is either less beneficial or that banks are less good at screening applicants in Botswana. Unionized firms also appear to be far more productive in Botswana than they are in other countries in Sub-Saharan Africa.

There are a couple of other interesting differences between Botswana and other countries that are not statistically significant (i.e., they could be due to sampling variation). Most interestingly, although training programs do not appear to be more beneficial overall in Africa, firms in Botswana with formal training programs are about 35 percent more productive than firms without similar programs. This might suggest that training is more effective in Botswana than in other countries in Sub-Saharan Africa.

II. INTERNATIONALIZATION

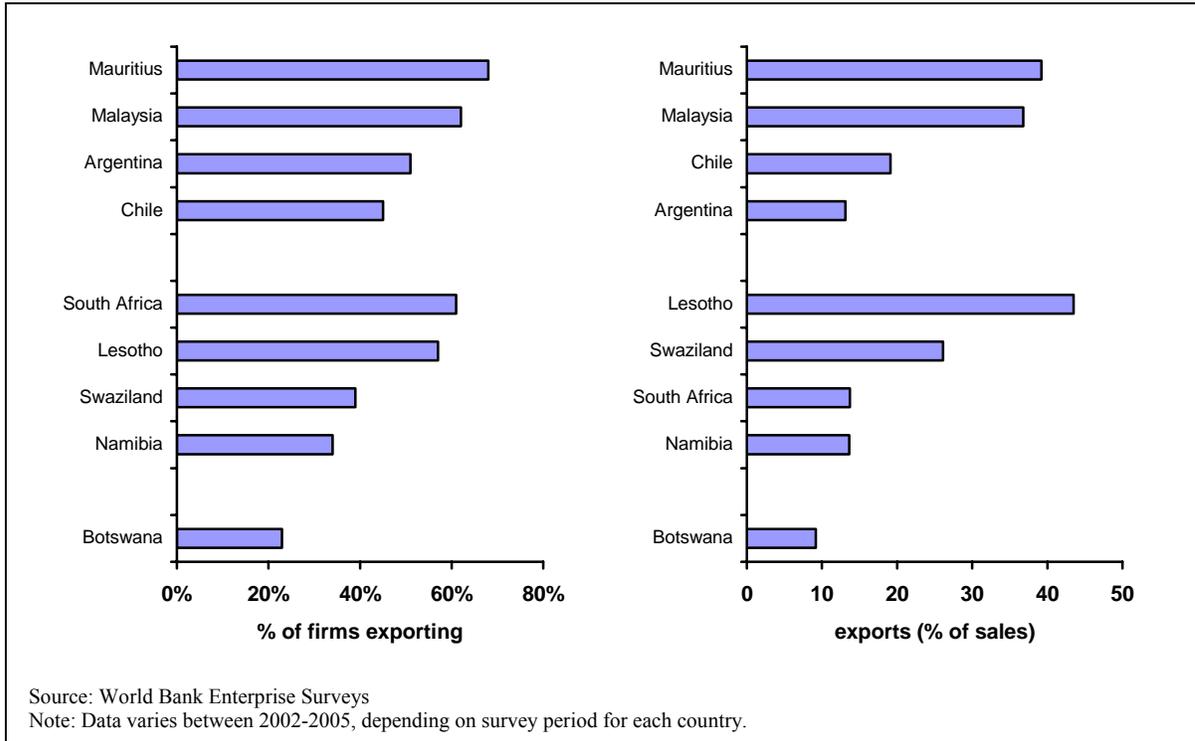
This section of the chapter looks at how well integrated firms from Botswana are into international markets—how much they export and how much they use imported inputs. As well as providing information on integration in international markets, this also gives an idea about how well firms can compete in international markets. In general, it is harder for firms to compete internationally than in domestic markets where they are better protected from competitors by location and policy.

II.1 Exporting

When compared to the other middle income comparator countries, SMLEs from Botswana appear to be especially oriented towards domestic markets. Less than a quarter of manufacturing SMLEs in Botswana export and, on average, exports account for only about 10

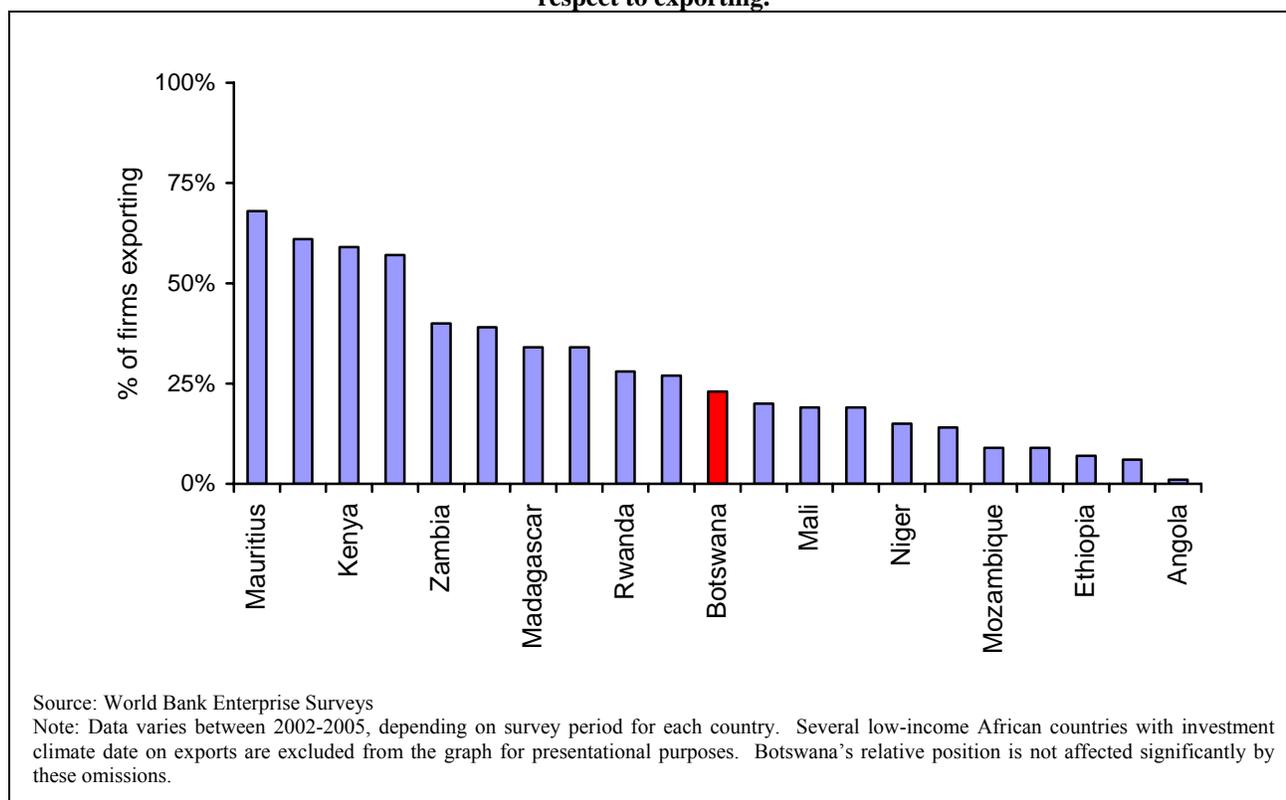
percent of output. This is lower than in any of the comparator countries. For example, close to 40 percent of SMLEs in Namibia and Swaziland are involved in exporting and, on average, they export about 14 percent of their output in Namibia and 26 percent in Swaziland. Firms from Botswana are also far less likely to export than firms in the middle income comparator countries from outside of Africa.

Figure 13: Compared to manufacturing firms from other middle-income economies, relatively few firms from Botswana export—and those that do, do not export very much.



Botswana performs better when compared to other countries in Sub-Saharan Africa (see Figure 14). Of the 31 countries with comparable data in Sub-Saharan Africa, SMLEs in Botswana were more likely to export than SMLEs in 15 of them. Results ranking countries based upon exports as share of output are similar—Botswana comes in close to the average for Sub-Saharan Africa.

Figure 14: But Botswana does compares more favorably with other countries in Sub-Saharan Africa with respect to exporting.



Why do fewer SMLEs from Botswana export than from the other middle-income comparator countries? The small size of the domestic market—and the consequent small size of firms in Botswana—might play a role. The large fixed costs associated with setting up an international distribution or service network will generally make exporting easier for large enterprises, especially since, as noted in Chapter 4, they have better access to finance than small enterprises, making it easier for them to finance these costs.⁵ Many previous studies have found that large firms are considerably more likely to export in developing countries than small firms are—something that remains true even after controlling for the potential for reverse causation (i.e., the fact that entering export markets allows firms to grow).⁶

This, however, is unlikely to be the whole story. Both Namibia and Swaziland are also small, but firms from these countries are more likely to export. Further, even when we restrict the sample to small enterprises with less than 50 workers, firms from Botswana of this size are also less likely to export than similar sized firms in other countries. Whereas only 12 percent of small enterprises in Botswana export, 26 percent of small enterprises in Namibia and 20 percent

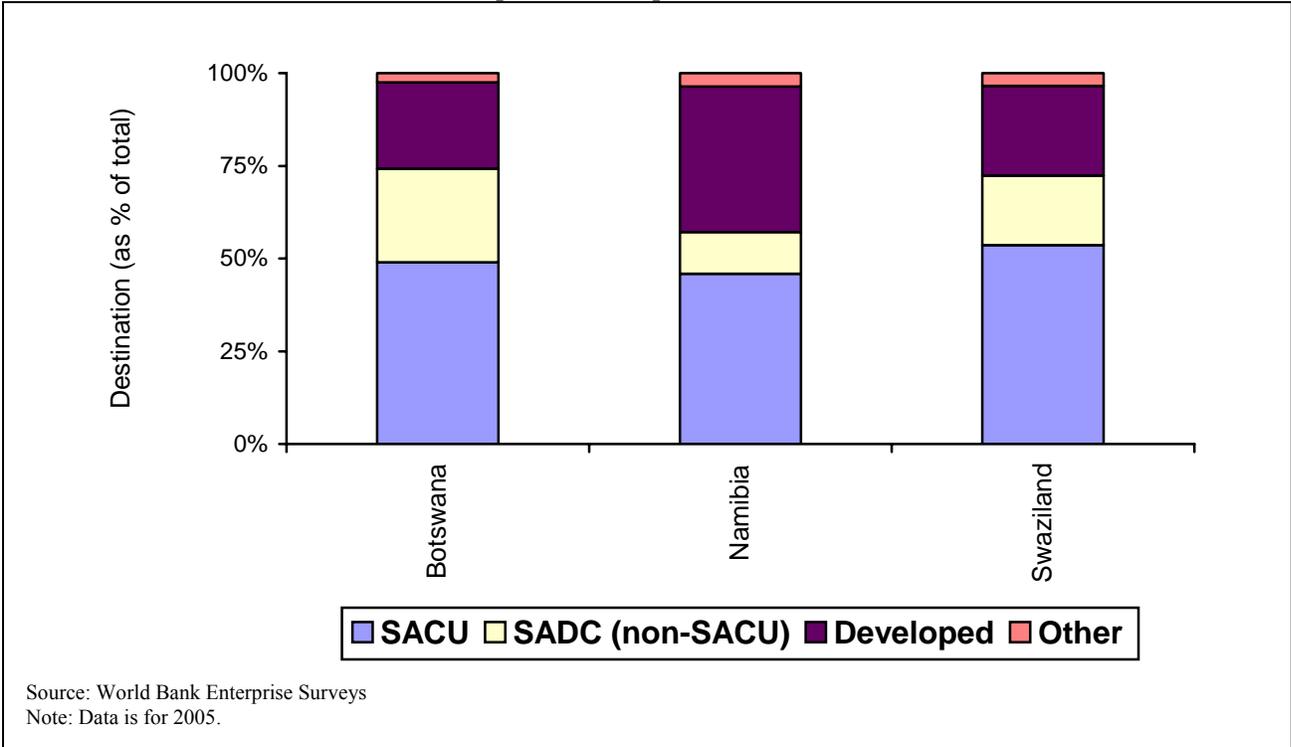
⁵ See Schiantarelli (1996) for a review of the literature on firm size and financial constraints.

⁶ See Biggs (2003) for a summary of the literature on this topic. Clerides and others (1998) find evidence consistent with this for Colombia, Mexico and Morocco. Similarly, Grenier and others (1999) found that large Tanzanian enterprises export more than smaller enterprises. Finally, using data from several countries in sub-Saharan Africa from the mid-1990s and 2000s, Bigsten and others (2004), Söderbom and Teal (2003) and Clarke (2005) found similar results.

in Swaziland export. This is, however, consistent with the other evidence in this chapter that suggests that firms are less productive than firms in many middle-income comparator countries. In this respect, the low propensity to export might reflect low productivity and that many firms are not competitive on international markets.

Exports in Botswana are also heavily weighted towards Sub-Saharan Africa. As in Namibia and Swaziland, the average SMLE sells about a half of its exports in SACU, with South Africa being the most common destination. Inter-SADC exports outside of SACU were far more important in Botswana than in Namibia or Swaziland, accounting for 25 percent of exports from Botswana, but only 11 percent from Namibia and 18 percent from Swaziland. Zimbabwe is particularly important in this respect. When asked about their top export destination, over one-third of exporters said that Zimbabwe was the biggest destination—higher even than South Africa (30 percent). As a result, firms in Botswana are less likely to report exports to developed economies than firms in Namibia. The average manufacturing exporter sent only 24 percent of its exports to developed economies compared to 38 percent in Namibia.

Figure 15: Manufacturing exports are heavily oriented towards SACU and SADC – relatively few companies export to developed economies.



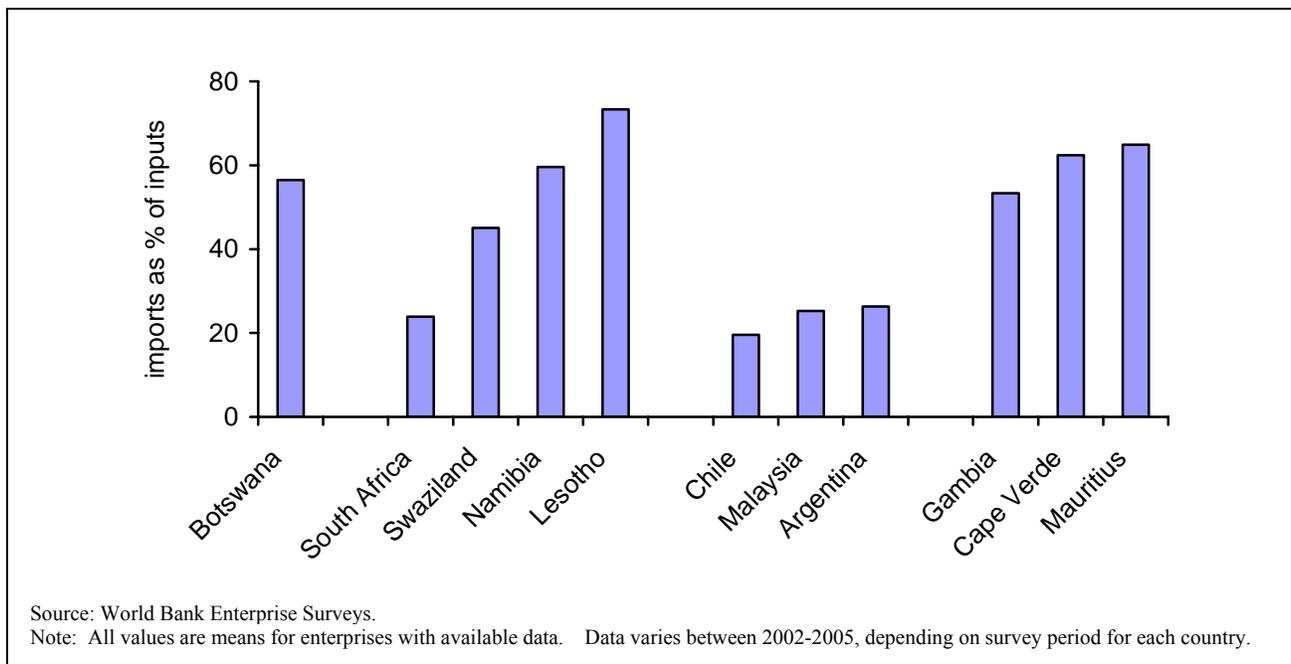
Foreign-owned firms are more likely to export than domestic firms in Botswana. Whereas 34 percent of foreign-owned firms are involved in exporting, less than 17 percent of domestic firms export. Similar patterns hold in Namibia and Swaziland. Foreign-owned firms were also more likely to export to developed economies—34 percent of exports of foreign-owned firms were to developed economies compared to only 10 percent of exports of domestically owned firms.

Overall, the results in this section are consistent with the previous results on productivity. Although firms in Botswana are no less likely to export than firms in most low income countries in Africa, they are less likely to export than firms in middle-income economies. Further, a large share of these exports is to other countries in regional markets rather than developed countries. This is especially true for domestic firms, who export less than their foreign-owned counterparts and are less likely to export to developed economies. This is consistent with the previous results that suggest that firms from Botswana, especially domestic firms, are not as competitive in international markets as firms from other middle-income economies—including firms in South Africa and Namibia.

II.2 Importing

Although relatively few firms in Botswana are involved in exporting, firms are tied in international supply chains in that they depend heavily on imported inputs. On average, firms import about 60 percent of their inputs in Botswana. Although this is considerably higher than in the large middle income comparator countries such as South Africa, Chile, Malaysia, and Argentina, it is lower than in Lesotho and relatively close to Namibia. The high dependence upon imported inputs is not unusual in small economies—firms in Mauritius, Gambia and Cape Verde also rely heavily upon imported inputs.

Figure 16: Like firms in most small economies, firms in Botswana depend heavily on imported inputs.



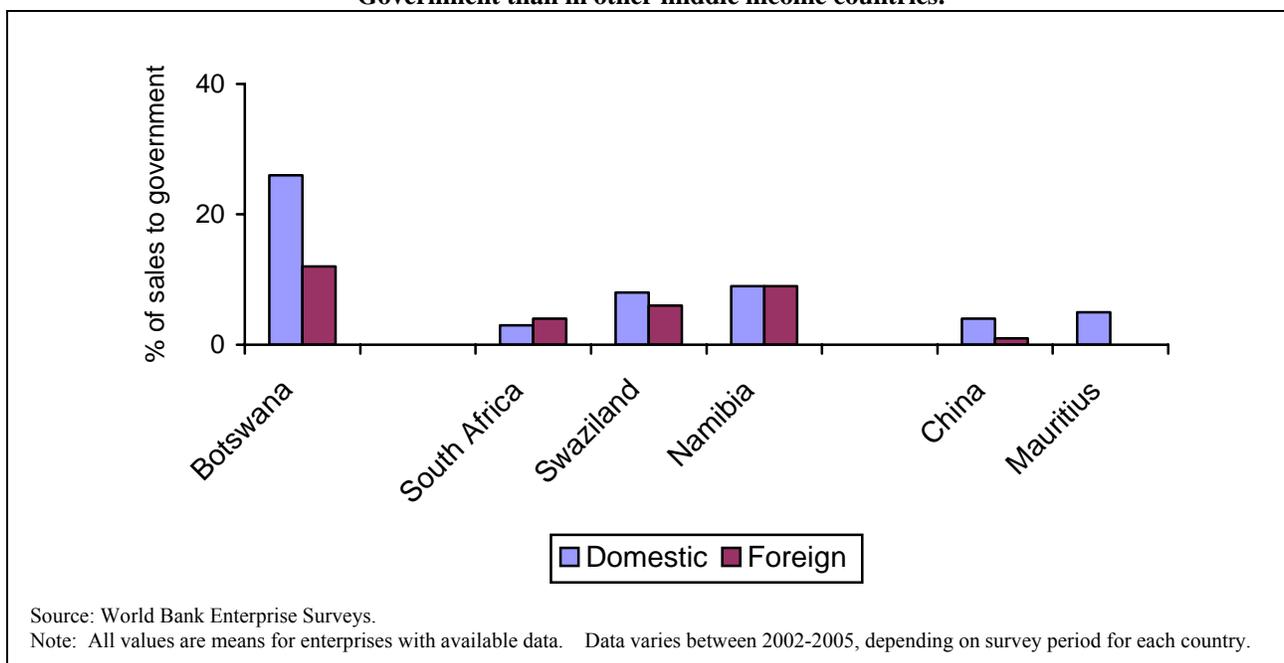
III. SALES TO GOVERNMENT

Sales to the government, government agencies and state-owned enterprises are important to many firms in Botswana. Over 50 percent of manufacturing SMLEs sold some of their output to the government, compared to 40 percent in Namibia and 30 percent in Swaziland. But sales to the government are also important as a share of sales. On average, sales to the government account for about 20 percent of manufacturing firm sales, compared with about 10 percent of sales in Namibia and Swaziland.

Sales to the government are particularly important for domestic firms—for the average domestic manufacturing SMLE in Botswana, sales to the government account for over one quarter of sales. In fact, on average, sales to the government are more important to domestic firms than exports. Sales to the government do not account for more than 10 percent of sales of domestic firms in any of the other middle income comparator countries for which data are available.

Although sales to the government are also important to foreign owned firms—about 12 percent of sales—they are far less important than they are to domestic firms. Given that foreign owned firms appear to be more competitive than domestic firms (based either on export performance or standard measures of productivity), this suggests that policies related to government purchases favor domestic firms.

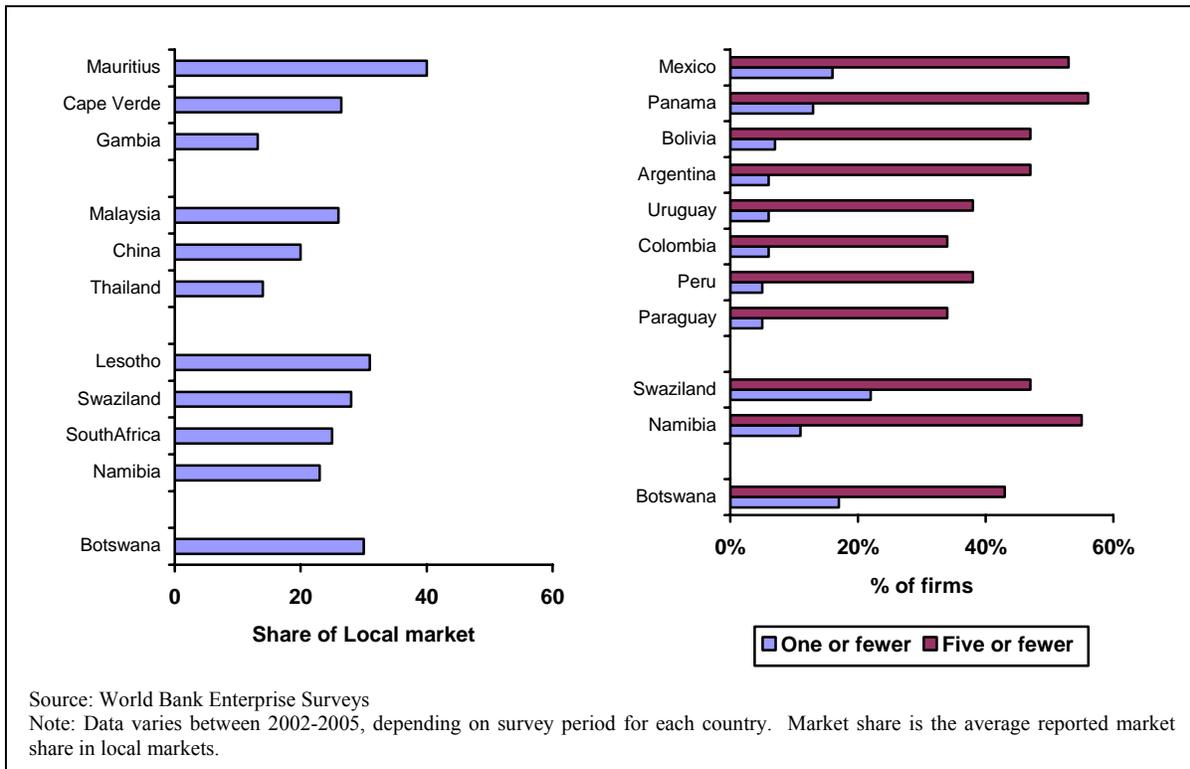
Figure 17: Firms in Botswana—especially domestic firms—sell significantly more of their output to Government than in other middle income countries.



IV. COMPETITION

Although it is difficult to measure how much competition firms face, the World Bank Enterprise Survey asks several questions that approach the issue in different ways. First, the survey asks about market share in national markets. Market share is defined as the establishment’s sales for its main product line divided by total sales of all firms in these product lines in local markets. In general, competition is lower when average market share is higher. A second question, which was added in the more recent round of investment climate assessments, asks about the number of competitors in the firms’ main market for its main product line.

Figure 18: As in other small countries and other countries in the region, firms in Botswana face little competition in local markets



Neither question is perfect. First, it is generally difficult to define the firm’s market (i.e., does it include just a very local area around the firms, the entire metropolitan area where the firms is located, one or two large metropolitan areas or the entire country), it is also difficult to define the product line. For example, does a firm selling beer compete only against other beer makers, against firms that sell all types of alcoholic beverages, against all firms that make beverages of any type, or even against all leisure goods? Second, neither measure is a perfect measure of competition. If three or four firms divide a market between them (e.g., based upon geography), they might face relatively low levels of competition while only having modest market share. Similarly, if a large domestic firm competes with several import brands that all have tiny market shares and face high barriers to entry, it may face a large number of competitors but only a modest level of competition.

With these provisos in mind, competition does not appear particularly intense in Botswana. The average firm in the investment climate reported that they had about one-third of the national market in their main product line. This is higher than any of the comparator countries except Lesotho and Mauritius. Further, close to one in five said that they had either no competitors or a single competitor and close to half said that they had fewer than five competitors. Although similar data is not available for most of the comparator countries, firms in the three SACU economies appear to face less competition than most of the middle income countries in Latin America where similar data are available

In some ways, it might not be surprising that firms face relatively modest levels of competition. Botswana, like Swaziland and Namibia, is a small country and, hence, it seems reasonable that firms might face relatively modest levels of competition. Firms in Cape Verde and Mauritius, two other small middle income countries, report even less competition than firms in Botswana. However, it might not be an appropriate comparison given that Cape Verde and Mauritius are not just small—they are also remote. In contrast, Botswana is next door to South Africa. In this respect, the low level of competition might reflect a relatively low level of competition in the entire SACU area—many studies have suggested that competition is relatively modest even in South Africa (Fedderke and others, 2003; Fedderke and Szalontai, 2005). Consistent with this, competition does not appear to be particularly high even in South Africa, where it appears broadly similar to competition in Namibia or Swaziland.

V. PROFITABILITY

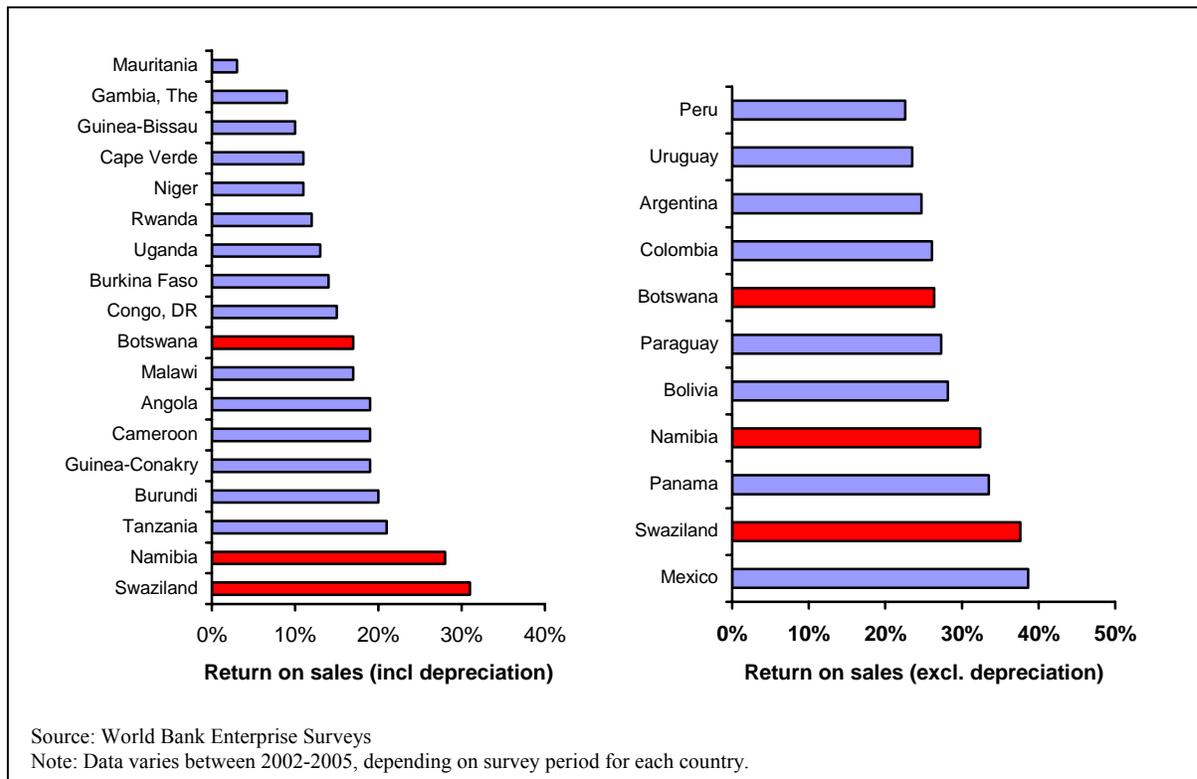
At the enterprise-level, profitability is associated with better firm performance. Firms that are more productive and that have lower overhead costs will be more profitable than other firms because they manage to produce more output at lower cost. But at an industry or country level, high profitability could also reflect a lack of competition—especially in countries like Botswana where firms sell mostly in domestic markets. When markets are less competitive, firms will be able to earn higher profits than in more competitive markets where profits will typically be competed away.

Although the World Bank Enterprise Survey does not collect any data on taxation, meaning that profits can only be calculated before taxation, it is possible to calculate several before-tax measures of profitability in a consistent way for the most recent set of World Bank Enterprise Surveys in Africa and Latin America. Since information on depreciation is not collected in the Latin American surveys, the comparisons with Latin America exclude depreciation while the comparisons with other countries in Sub-Saharan Africa include them. This tends to make firms in Latin America appear to be more profitable than firms in Africa. Excluding depreciation from the calculations for Africa would raise measured return on assets, although the median return in the country in Latin America with the lowest return (Peru) would still be higher than the median return in 10 of 18 countries in Sub-Saharan Africa. Because, as discussed earlier, capital is difficult to measure accurately, this section focuses on return on sales (profits over sales) rather than return on assets (profits over capital).

The median manufacturing firm in Botswana reports that return on sales is about 17 percent before taxes. This is far lower than in Namibia and Swaziland where the median firms report return on sales equal to about 30 percent of sales. It is, however, comparable to most of the other countries in Sub-Saharan Africa. Botswana falls about in the middle of the pack in this respect—the median firms report higher profitability in six low income countries and lower profitability in eight.

Results are similar when compared to other middle income countries in Latin America. While firms in Swaziland and Namibia also appear relatively profitable, the median firm in Botswana is more profitable than median firms in four countries and less profitable than the median firms in the other eight.

Figure 19: Profitability (return on sales) is relatively modest in Botswana, compared to either other countries in Sub-Saharan Africa or middle income countries in Latin America.



Because firms in Botswana are relatively capital intensive, it is not surprising that when ranked by median return on assets, firms look even less profitable compared to countries in Sub-Saharan Africa (lower than all but two countries) or Latin America (lower than all but one country). However, as noted earlier, measuring capital is relatively difficult, so these results should probably be treated cautiously.

As with productivity, foreign-owned firms and exporters reported higher returns on sales (22 percent and 20 percent) than domestic firms and non-exporters (17 percent and 16 percent). Although these firms tend to be more capital intensive—and therefore have higher costs associated with depreciation—and to have higher labor costs than domestic firms and non-exporters, these additional costs are not as large as the differences in productivity. The differences, however, are not statistically significant—perhaps due to small samples.

Since these measures of profitability are pre-tax measures of profitability, it is important to take taxation into account. As noted corporate taxes on profits are relatively low in Botswana compared to most of the comparator countries, meaning that post-tax profitability is likely to be higher relative to the other countries than pre-tax profitability is. Although, as noted in the section on taxation, the total burden of taxation is not particularly low in Botswana, this appears to mainly be due to excise taxes on fuel. Since these will be included in the price of fuel (i.e., in the price of intermediate inputs), the fuel tax should be already taken into account in the calculations in this section.

ANNEX 2.1: TOTAL FACTOR PRODUCTIVITY

Although the measures of firm productivity such as labor and capital productivity provide useful information on firm performance, they can be misleading when considered in isolation. To get an overall assessment of productivity, it is necessary to take both capital and labor use into account. This can be done by calculating total factor productivity (TFP). Differences in TFP are differences in output that cannot be explained by differences in the use of labor, capital and other intermediate inputs. Differences in TFP can be due to many different factors including the quality of workers, the quality of management, the technology used (as long as it isn't embodied in capital), or firm organization. Firms for which TFP is higher are more efficient than other firms because they produce more with less capital and workers.

Methodology

Mechanically, TFP is calculated by estimating a Cobb-Douglas production function, using data for enterprises from twelve different manufacturing sub-sectors, and looking at the residuals and coefficients on various variables in an augmented production function. To allow us to compare TFP between Botswana and the low- and middle-income comparator countries, we pool the observations for many countries into a single regression including all countries in Sub-Saharan Africa where data are available and the middle-income comparator countries used in this study. As a robustness check, the analysis includes regressions only including countries in Africa and tests to check that results for Botswana are similar to results for the larger sample.

In addition to making it possible to compare TFP in Botswana with TFP in the comparator countries, this also gives us a sufficiently large sample of enterprises to compare total factor productivity across firms of different types, making it possible to assess the impact of various firm characteristics on TFP. The production function is estimated using a stochastic frontier approach.⁷ As a robustness check, we also estimate the production function using a Least Absolute Deviations (LAD) estimator. This is used rather than Ordinary Least Squares (OLS), because it is more robust to outliers.⁸

The dependent variable is the natural log of value added and all regressions control for the enterprises' use of capital and workers.⁹ All models include country dummies to pick up differences in TFP between the different countries and also to reduce problems associated with exchange rates. The regressions also include a full set of sector dummies. These dummies are

⁷ See Kumbhakar and Lovell (2000) for a description of stochastic frontier models. The model estimated assumes that technical inefficiency component is distributed with an exponential distribution, while the white noise component is distributed with a normal distribution. Firms that are outliers for value added per worker and capita per workers (i.e., enterprises in the top and bottom 5 percent of firms) are dropped in this part of the analysis so that results will not be driven by outliers and to ensure convergence.

⁸ Due to concerns about outliers, LAD estimators are often used when estimating production functions. See, for example, Greene (2000, pp. 449-450).

⁹ Following Caves (1990), value-added rather than sales is used as the dependent variable.

interacted with the measures of labor and capital to allow different technologies in different sectors—that is labor and capital intensities are not assumed to be the same across sectors.

The augmented production function is:

$$\log(\text{VA}_{ijk}) = \sum_k \mu_k + \sum_j (\alpha_j + \beta_j \log(\text{Capital}_{ijk}) + \gamma_j \log(\text{workers}_{ijk})) + \partial \text{ Firm Characteristics}_{ijk} + \varepsilon_{ijk} + \nu_{ijk}$$

where VA is value-added in firm i in sector j in country k. Labor and capital are the number of workers and the book value of machinery and equipment. The coefficients on labor and capital, β and γ , are assumed to vary between sectors. Sector and country dummies, α and μ , are included to allow for systematic differences in productivity across countries and sectors. Finally, in some specifications, a series of enterprise level controls (such as dummies indicating whether the firm exports and the log of the firm's age) are included. Finally, two error terms, a one sided term assumed to have a half normal distribution, ν , representing technical efficiency and a two-sided, ε , a two-sided normally-distributed error term representing temporary shocks to productivity and measurement error, is also included. The model is estimated using maximum likelihood estimation. In the LAD regressions, a single error term is assumed (ε). This model does not require strong distributional assumptions about the error terms.

Results

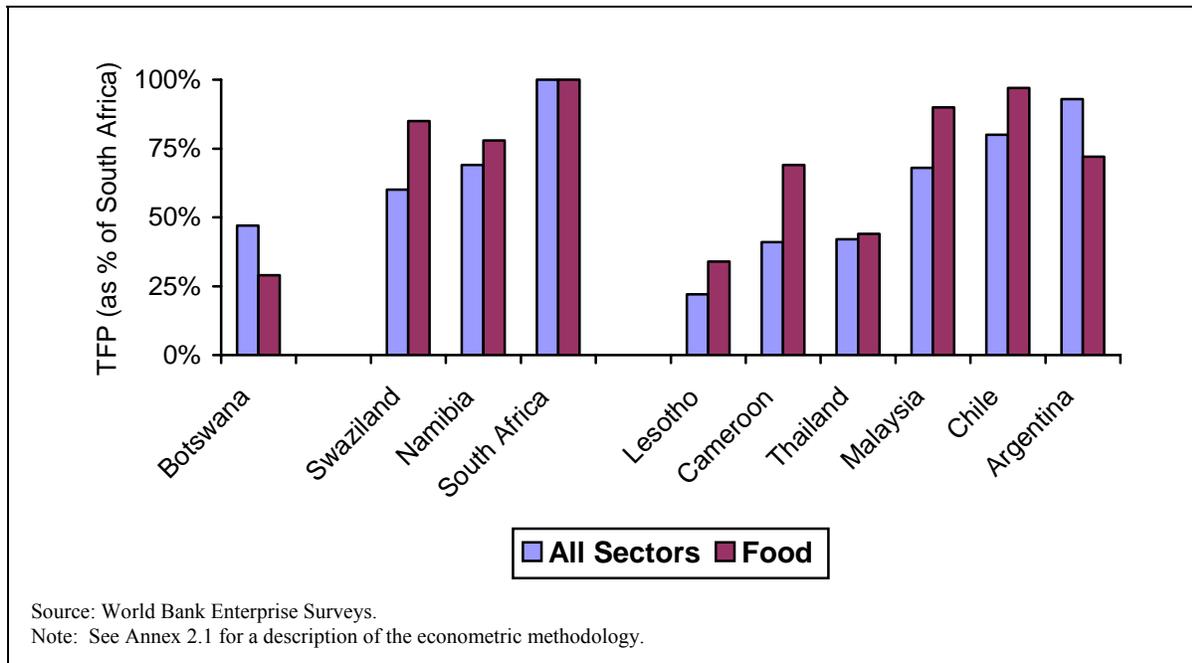
Sector specific production technologies. A joint test of the significance of the interaction terms rejects the null hypothesis that the coefficients on labor and capital are identical across sectors at a one-percent level or higher in both the frontier regressions and the LAD regressions. This strongly suggests that these terms need to be included in the estimation. This implies that capital and labor intensities are significantly different across sectors and that it is inappropriate to pool enterprises into a single model without controlling for this in the estimation.

Differences between countries. After controlling for differences in productivity due to differences in capital use, firm size, the use of different factors of production, and sector of operations (i.e., using results from column 1 of Table 8), enterprises in Botswana remain less productive than firms in most of the comparator countries (see Figure 20). On average, firms in South Africa are about twice as productive as firms in Botswana, firms in Namibia about 40 percent more productive and firms in Swaziland about 20 percent more productive. Firms in Argentina, Chile and Malaysia are also more productive than firms in Botswana.

Botswana compares more favorably with countries in Sub-Saharan Africa (see Figure 21). Although the median firm in Botswana is less productive than median firms in South Africa, Namibia, and Swaziland, it is more productive than median firms in any of the low income countries in Sub-Saharan Africa where Investment climates Surveys have been completed.

Botswana compares even less favorably when looking at a single sector—food and beverages. This sector is chosen because it is one of the largest sectors and there are food and beverage firms in all the countries in the sample. TFP in this sector is only about 25 percent of TFP in South Africa and is lower than in any of the comparator countries, including Lesotho.

Figure 20: Total factor productivity is lower than in the best performing middle-income economies



It is important to keep an important caveat in mind when comparing total factor productivity across countries. Although including country dummies is useful because doing so means that the coefficients on other variables will not be affected by assumptions about exchange rates (i.e., the dummies will control for exchange rates in cross-country regressions where monetary variables are in logs), exchange rates can make the coefficients on the country dummies difficult to interpret. That is, the coefficients on the country dummies will depend upon the exchange rate as well as on productivity differences. If a country's exchange rate is overvalued relative to its long-run equilibrium value, the coefficient on that country's dummy will appear artificially large (as will value added per worker).

Economies of Scale. If large enterprises were consistently more productive than small enterprises, the sum of the coefficients on labor and capital would be greater than one. If this were the case, total production would more than double if the number of workers and amount of capital were doubled. In practice, the sum of the two coefficients is generally close to one for most of the sectors. For the base sector, food and beverage, the sum of the coefficients is 1.13 suggesting modest economic of scale. That is, large firms appear to be more productive than smaller firms.

Table 6 presents sums of the coefficients for each sector and the test of the null hypothesis that they sum to one (model from column 1 of Table 8). These results suggest in most sectors—with the possible exception of 'other manufacturing'—modest economies of scale. Larger enterprises appear to be consistently more productive than smaller firms.

Table 6: Test for Constant Returns to Scale

	Sum	P-value
Textiles	1.029	0.0322
Garments	1.086	0
Food and Beverage	1.133	0
Chemicals	1.089	0
Construction	1.085	0.2656
Furniture	1.162	0
Metal	1.132	0
Paper, Printing and Publishing	1.163	0.0001
Plastics	1.053	0.3719
Machinery and Metals	1.175	0
Electronics	1.041	0.6753
Autos and Auto Parts	1.021	0.0867
Other Manufacturing	1.163	0.1148

In the context of this study, this suggests that small firms are disadvantaged relative to larger firms. Given the small size of the domestic market in Botswana, this suggests that firms will find it harder to compete on international markets unless they can expand their operations sufficiently to start benefiting from these economies of scales

It is important to note, however, that this does not explain the low productivity of firms in Botswana. That is, the estimates in take into account the relatively modest size of firms in Botswana when comparing productivity with the comparator countries.

Other enterprise characteristics. In addition to capital, labor, the sector dummies, the interaction terms, and the country dummies, the regressions also include a series of variable to control for other enterprise characteristics. These variables include variables indicating the age of the firm, whether the firm exports, whether the firm is foreign-owned, whether the firm has bank credit (a loan, line of credit or overdraft) whether the firm licenses technology from abroad, whether the firm’s workers belong to a union, and the education of the manager. Results are similar for the frontier and LAD regressions, so only results from the LAD regressions are presented. When the results from the LAD regressions differ significantly from the results from the frontier analysis, this is noted in the text.

Some of these variables—whether the firm exports, is foreign-owned, or uses the internet—are available for most of the countries in the sample. Others such as whether the firm has bank credit, licenses technology from abroad, and manager education are available only for a sub-sample of countries. These variables are included in groups to allow for the larger samples for the variables with greater coverage.

Four variables, firm age, a dummy variable indicating that the firm exports, a dummy variable indicating that the firm is foreign-owned, and a dummy variable indicating that the firm uses the Internet are available for most of the countries in the sample. These variables are included first. Several other variables are only available a sub-sample of countries. These include a dummy variable indicating the firm has bank credit, a dummy variable indicating that the firm licenses technology from abroad, and a dummy variable indicating that the firm’s

workers are unionized. These variables are included next. Finally, variables indicating whether the firm's manager has an MBA and whether the manager has a university education are available only for a smaller subset of African countries. These variables are included last.

Exporters are about 16 to 27 percent more productive than similar enterprises that do not export. The coefficients are statistically significant in both the frontier analysis and the LAD model, and remain statistically significant as additional variables are added. This is consistent with other studies that have found similar results for different sets of countries.¹⁰ Economists have suggested two possible explanations for the correlation. One is that exporting might result in productivity improvements for the firms that are doing it (the '*learning-by-exporting*' hypothesis). The discipline of competing in international markets might encourage enterprises to improve their productivity or might expose them to foreign technologies or modes of production. The other explanation is that since firms have to be efficient to compete on international market, only firms that are already efficient are able to export (the '*self-selectivity*' hypothesis). Although inefficient firms might be protected from international competition in domestic markets by natural barriers (e.g., high transportation costs) and policy barriers (e.g., government tariffs and quotas or inefficient ports or customs administration), they are unable to enter international markets. It is important to note that the two hypotheses are not mutually exclusive. Even if efficient firms are more likely to start exporting, this does not rule out the possibility that exporting will help them increase their productivity further.¹¹ Due to the cross-sectional nature of the data included in this study, we are unable to distinguish between the two competing hypotheses in this analysis.

Foreign-owned enterprises are also more productive, on average, than similar domestic enterprises. The point estimates for the parameters in columns 2 through 5 of Table 8 indicate that majority foreign-owned enterprises are about 17 to 27 percent more productive than similar domestic enterprises. The coefficients are statistically significant in all model specifications. This is also consistent with previous results that have often found that foreign-owned enterprises are more productive than domestic enterprises in developing countries. (Saggi, 2002).

Previous studies have found that firms that use the internet to communicate with clients and suppliers are more productive than firms that do not.¹² Firms that use the internet to communicate with other enterprises appear more productive than other firms. In reality, it seems unlikely that internet use alone results in higher productivity. That is, even in the United States, a country where internet use is far more common than in the low- and middle-income countries

¹⁰ The large literature on this topic is summarized in Tybout (2003) and Keller (2003).

¹¹ The evidence appears to support both hypotheses. For example, several econometric studies that have looked at whether enterprises improve their productivity before or after they start exporting have found that productivity improvements precede exporting, providing support for the self-selectivity hypothesis. See for example, Clerides *et al.* (1998), Bernard and Jensen (1999), Liu *et al.* (1999) and Aw *et al.* (2000). However, case studies often support the 'learning by exporting' hypothesis. Studies of exporters in Korea and Taiwan found that export buyers were an important source for new technologies, which they provided in various forms including complete blueprints, information about manufacturing processes and quality control methods, technical advice and on-site plant inspections, and training for technical and production staff (Westphal, 2002)

¹² Quiang, Clarke, and Halewood (2006) find similar results for a larger sample of developing countries using World Bank Enterprise Surveys

in this study, most studies have found only modest gains related to internet use.¹³ Rather than reflecting actual internet use, it seems likely that this reflects difference in the intensity of technology use rather than internet use. Enterprises that use technology more intensively are between 23 and 30 percent more productive than similar firms that do not. Since the econometric estimates controls for capital use in the main regression, this does not simply reflect that firms that are more technologically advanced are also more capital intensive.

Another variable to proxy for technology use is also correlated with total factor productivity. Firms that license technology from foreign companies are more productive than firms that do not. The point estimates of the coefficient suggest that they are between 20 and 29 percent more efficient than other firms—even after controlling for technology use by including the internet dummy. Together these results suggest that technology use is strongly correlated with productivity.

Enterprises with bank credit are more productive than enterprises without credit—based upon the point estimates of the coefficients in Table 8 they are between 14 and 20 percent more productive than firms with credit. Although this might imply that firms with access to credit are able to use that credit to improve firm performance, it is possible that causation runs in the opposite direction. That is, banks might only be willing to lend to enterprises that are already productive. As with exporting, the two hypotheses are not mutually exclusive. Even if banks are only willing to lend to the most productive enterprises, these enterprises might still benefit from bank credit.

Enterprises with better educated managers are more productive than other enterprises. An enterprise with a manager with a university education is about 21 percent more productive than a similar enterprise where the manager has only a primary or secondary education. Firms with managers with MBAs, in contrast, do not appear to be significantly more productive than firms with university educated managers without

Previous studies of firm performance in Africa have stressed the importance of formal training on firm performance.¹⁴ The analysis based upon the samples in this study, however, does not show that training has a large impact on total factor productivity. The coefficient on a dummy variable indicating that the firm has a training program is positive in all specifications, but is never statistically significant in the frontier analysis and is only statistically significant in one regression in the LAD estimation. Replacing the dummy with a variable indicating the number of workers trained gives similar results—the coefficient is positive but is not statistically significant in most specifications.

Are results the same in Africa? The regressions included countries from Sub-Saharan Africa, as well as countries from other regions (e.g., the middle income comparator countries). A natural question, therefore, is whether results hold in Africa specifically or whether they hold only in other regions. As noted earlier, to test this, the main regression is repeated including only

¹³ For example, Oliner and Sichel (2000) estimate that e-commerce has increased multifactor productivity growth in the US by considerably less than 0.1 percent per year.

¹⁴ See, for example, Regional Program on Enterprise Development (2005b; 2005c)

countries from Africa (see columns 4 and 5 in Table 8). The results for the African countries are mostly similar to the pooled results—exporters, foreign-owned firms, firms that use technology more intensively, and firms with access to credit are more productive.

The main differences are that older firms do not appear to be any more productive than younger firms in Africa and firms with unionized workers appear more productive in Africa than other firms. Once again, the direction of causation is not clear—this could be that unionization improves firm performance or this could be because firms that are more productive, and hence more profitable, are more likely to unionize

Are results the same in Botswana? Finally, an additional question is whether firms from Botswana specifically appear like firms from the other countries in the sample. To test whether this is the case, a set of interaction terms are added to the regression in column 5. If the coefficients on these interaction terms were statistically significant, this would suggest that these variables affect firms in Botswana differently than in other countries. This does not appear to be the case—the coefficients are mostly statistically insignificant, suggesting that the effect is similar in Botswana to the other countries in Sub-Saharan Africa.

There were, however, two differences between Botswana and other countries in Sub-Saharan Africa. First, SMLEs with bank credit do not appear to any more productive in Botswana than SMLEs without credit—this is very different from the overall pattern in Sub-Saharan Africa, where the SMLEs with credit appear to be more productive than SMLEs without credit. This suggests that bank credit is either less beneficial or that banks are less good at screening applicants in Botswana. Unionized firms also appear to be far more productive in Botswana than they are in other countries in Sub-Saharan Africa.

Table 7: Comparison of Point Estimates for Whole Sample and for Botswana

	Point estimate for whole sample	Point estimate for Botswana	Is point estimate for Botswana different
Age of Establishment	1%	-5%	No
Firm has bank credit	27%	-31%	Yes
Firm exports	16%	36%	No
Firm is foreign-owned	20%	31%	No
Firm has technology licensed from foreign company	32%	3%	No
Firm uses internet	24%	9%	No
Firm has training program	-2%	35%	No
Firm's workers are unionized	9%	89%	Yes
Firm's manager has university education	17%	17%	No
Firm's manager has an MBA	6%	9%	No

There are a couple of other interesting differences between Botswana and other countries that are not statistically significant (i.e., they could be due to sampling variation). Most interestingly, although training programs do not appear to be more beneficial overall in Africa, firms in Botswana with formal training programs are about 35 percent more productive than firms without similar programs. This might suggest that training is more effective in Botswana than in other countries in Sub-Saharan Africa.

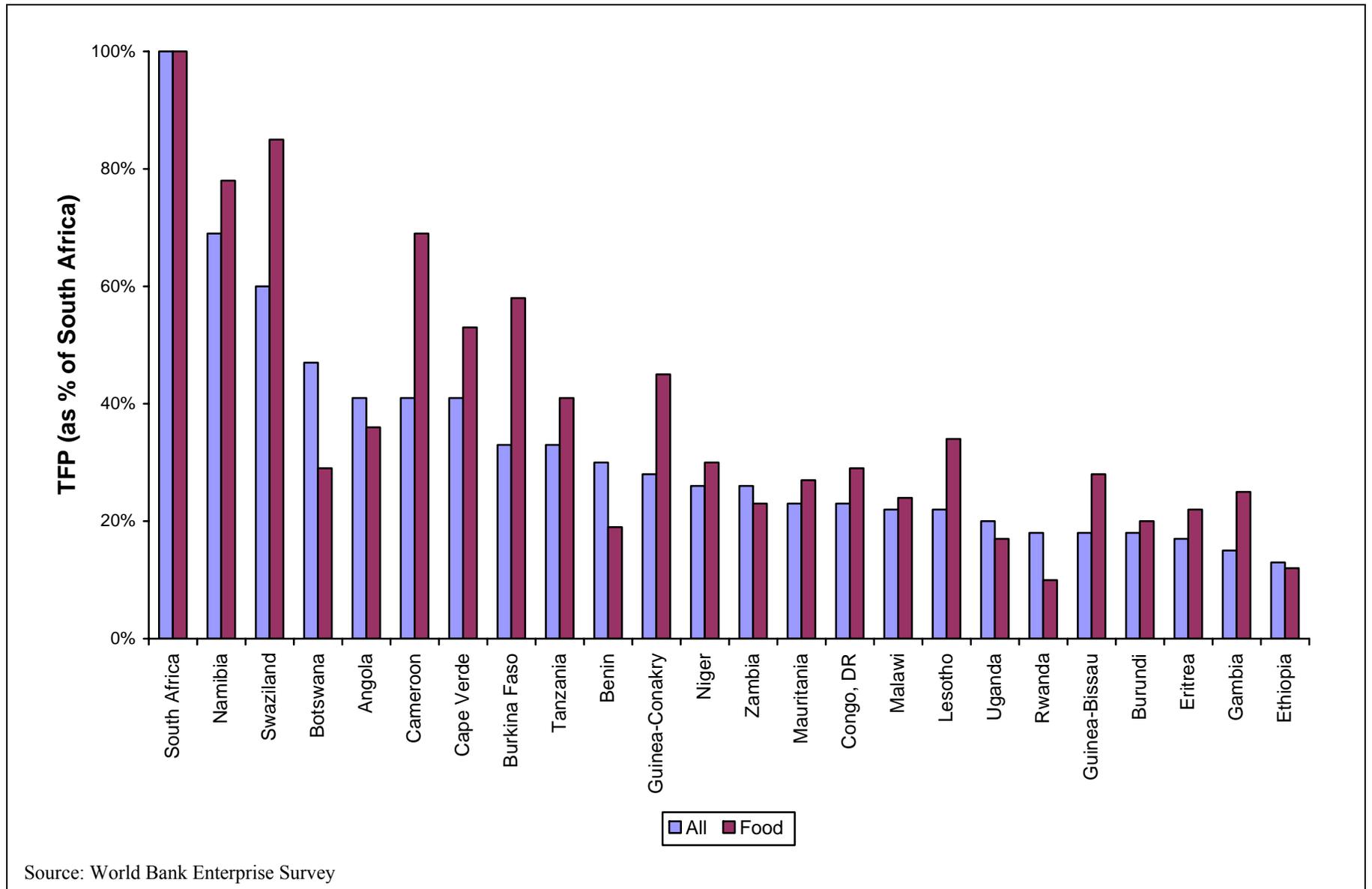
Table 8: Determinants of Firm-Level Productivity for Manufacturing Enterprises

Observations	Frontier Regression				
	Value Added (natural log)				
	10497	8910	3991	1851	1453
Sample	All	All	All	Africa-only	Africa-only
Production Function					
Capital (book value) (natural log)	0.275*** (21.57)	0.250*** (19.69)	0.212*** (11.78)	0.245*** (9.83)	0.230*** (8.39)
Workers (natural log)	0.858*** (44.41)	0.801*** (41.11)	0.846*** (28.49)	0.776*** (17.96)	0.775*** (15.35)
Firm Characteristics					
Age of Establishment (natural log of years)		0.079*** (7.30)	0.054*** (3.67)	0.010 (0.45)	0.005 (0.19)
Firm exports (dummy)		0.240*** (10.89)	0.151*** (4.44)	0.165*** (3.11)	0.171** (2.46)
Firm is foreign-owned (dummy)		0.240*** (7.76)	0.154*** (3.44)	0.191*** (3.42)	0.197*** (2.96)
Firm uses internet (dummy)		0.236*** (10.03)	0.262*** (7.20)	0.228*** (4.47)	0.205*** (3.62)
Firm has bank credit (dummy)			0.148*** (4.48)	0.127*** (2.68)	0.185*** (3.16)
Firm has technology licensed from foreign company (dummy)			0.179*** (4.11)	0.201*** (3.25)	0.251*** (3.08)
Firm has training program (dummy)			0.026 (0.91)	0.025 (0.58)	-0.001 (0.02)
Firm's workers are unionized (dummy)			0.051 (1.33)	0.123** (2.34)	0.117* (1.88)
Firm's manager has university education (dummy)					0.159*** (2.91)
Firm's manager has an MBA (dummy)					0.057 (0.67)

*** Significant at 1 percent level ** Significant at 5 percent level * Significant at 10 percent level. t-statistics in parentheses. Dependent variable is log of value-added.

^a Coefficients are reported for firms in the food sector. In addition, sector dummies and sector specific production functions are included for 12 additional sectors (Textiles; Construction materials; Garments and Leather; Food and Beverages; Metals and Machinery; Electronics; Chemicals and Pharmaceuticals; Wood and Furniture; Plastics; Paper, Printing and Publishing; other Manufacturing; and autos and auto parts). The dummies are interacted with capital and labor to allow sector-specific production technologies. Coefficients on sector dummies and interaction terms are omitted for presentational reasons.

Figure 21: Although lower than in South Africa, TFP is high in Botswana relative to other countries in Sub-Saharan Africa



CHAPTER 3: PERCEPTIONS ABOUT THE INVESTMENT CLIMATE IN BOTSWANA

In addition to collecting information on firm productivity, the Enterprise Survey also collects information on the investment climate—including on topics such as competition from the informal sector, crime, taxation, worker education and skills, corruption, regulation, and infrastructure. Two types of information are collected: (i) perception-based measures that ask managers what they see as the major obstacles that their firm faces; and (ii) objective indicators such as production lost due to power outages, whether the firm has a loan or overdraft facility, and amount of time managers spend dealing with government regulations. The report uses both types of data—and supplementary information from other sources—to assess constraints to enterprise operations and growth in Botswana and to compare constraints in Botswana with constraints in the comparator countries.

I. Perceptions about Constraints to Enterprise Operations and Growth

As a starting point for the analysis, this chapter looks at the perceptions of managers about the constraints that they face. Enterprise managers probably know more about the immediate problems facing their businesses than government officials, academic researchers, or other outside experts. It therefore makes sense to take their concerns about the investment climate seriously.

Although manager perceptions are a useful starting point, they suffer from several problems. First, it is difficult to aggregate perceptions across firms. Although constraints affect different firms to different degrees, perception-based data cannot be aggregated as easily as objective data (for example, costs measured in local currency). This makes it difficult to order obstacles. For example it is not clear whether an issue that one firm considers a very serious problem and another firm considers a minor problem, is more or less of a problem on aggregate than one that both consider a moderately serious problem. Because of these concerns, in addition to using objective data in later chapters of the Investment Climate Assessment, this chapter looks at two measures of perceptions; the share of firms that say whether an issue is a serious problem and the share of enterprises that say it is the biggest obstacle that they face. This makes it possible to check that the results based upon the perception-based indices are robust to these different questions.

Second, although managers may be aware of a problem, they might not be aware of the underlying causes. For example, managers might know that it is difficult to get bank loans to finance new investment, but might not know the underlying reasons for this (e.g., lack of competition in the banking sector, government debt issues crowding out private investment, or problems with land registration that prevent firms from using land as collateral). As a result, additional information is needed to assess how to release any given constraint.

Third, enterprise managers' interests might not always be consistent with society's interests. Most managers would like subsidized credit or to be charged less for power or water if they believed that the cost of providing these services would be borne by someone else. Similarly, most managers would be happy to face less competition even if the cost to society

outweighed the benefits to their firm. It is important, therefore, to keep the costs of interventions in mind when adopting programs to reduce constraints.

Fourth, the perceptions of managers of existing enterprises might not reflect all obstacles to private sector investment and growth. Managers of existing enterprises that have already completed registration procedures might not be concerned about entry costs even if they remain high. Similarly, they might rate some issues as lesser problems because they have structured their businesses in ways to minimize those costs. For example, if transportation costs are especially high in some areas, existing firms might only be located close to transportation facilities. Finally, if investment climate constraints are particularly binding, then there might be very few firms that rely heavily upon that area of the investment climate.¹⁵ For example, if the ports and custom facilities are particularly poor, very few firms might operate in export-oriented industries. Any of these factors could affect the ranking of constraints.

Finally, although recent work suggests that perception-based measures line up reasonably well with objective macroeconomic indicators, it is difficult to compare perceptions across countries.¹⁶ That is, cultural differences or persistent differences in expectations about how the investment climate should look might affect perceptions. In addition, expectations about freedom of speech might affect whether managers are willing to complain to outside interviewers about the investment climate more than it affects their willingness to answer objective questions.¹⁷

Because of these concerns, although this assessment uses the perception-based data as a starting point for the analysis, this information is supplemented with objective measures of the investment climate taken from the Enterprise Survey and other sources when appropriate. In addition, although cross-country comparisons of perception-based data (e.g., comparing the number of firms that complain about an issue between countries) can provide some context to results using objective data, the later chapters supplement this with objective data when other information is available. This chapter discusses the perception-based measures, while later chapters discuss specific issues in greater detail, supplementing this information with objective data. The additional objective data allow us to benchmark the investment climate in Botswana against the investment climates in other countries.

I. MAIN PERCEIVED CONSTRAINTS

The Enterprise Survey asks firm managers to say how great an obstacle each of 17 areas of the investment climate are to the current operations of their business. They respond by rating

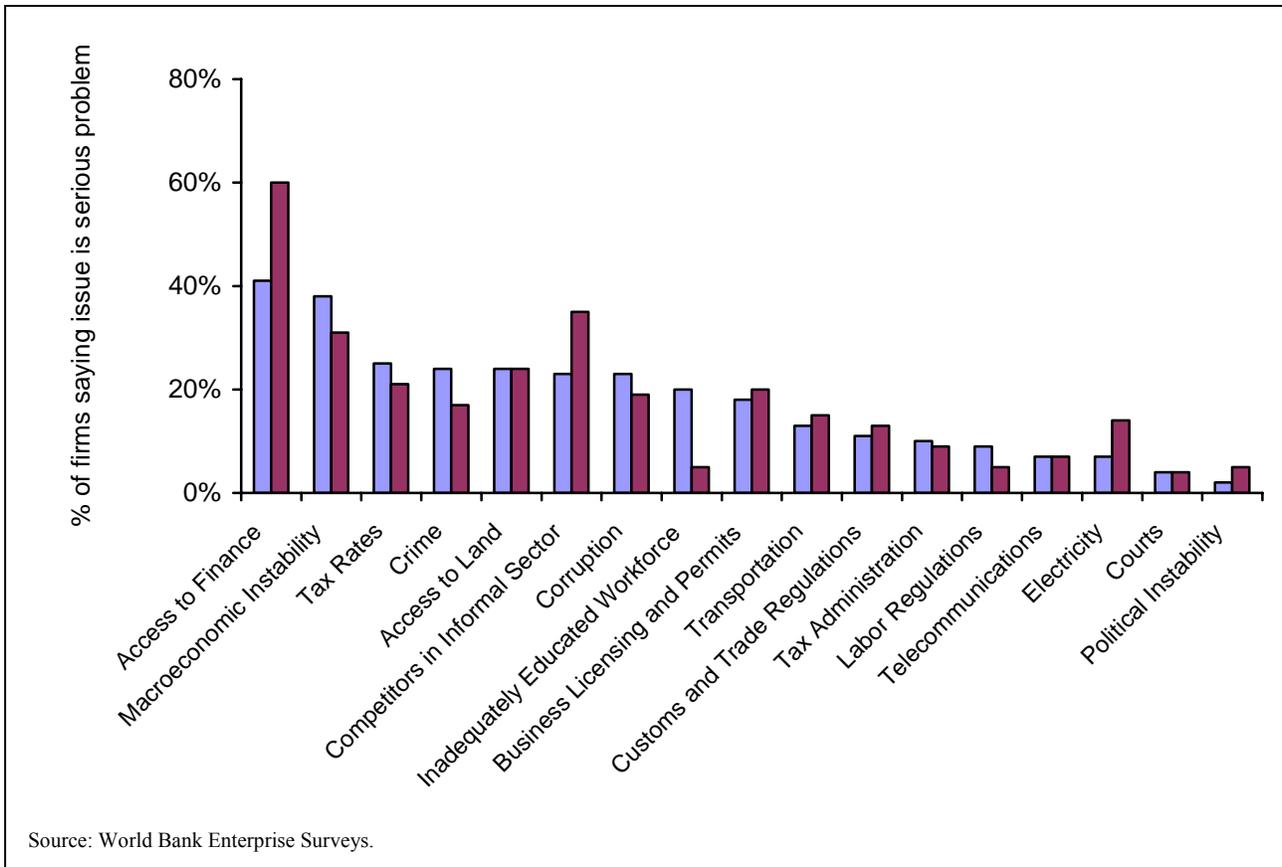
¹⁵ Hausmann and Velasco (2005) illustrate this point with an analogy to camel and hippos. They note that the few animals that you find in the Sahara will be camels, which have adapted to life in the desert, rather than hippos, which depend heavily upon water. Asking the camels about problems associated with life in the desert might not adequately represent the views of the missing hippos.

¹⁶ See, for example, Gelb et al (2006) for work using data from Africa or Hellman and others (1999) for work using data from Eastern Europe and Central Asia

¹⁷ Clarke et al (2006) show that firms appear to complain more about access to finance in countries that are more free politically than in other countries after controlling for other country and firm characteristics.

each on a five-point scale between ‘no obstacle’ and a ‘very severe obstacle’. Figure 22 shows the percent of each type of firm that rated each area as a ‘major’ or ‘very severe obstacle’.

Figure 22: SMLEs and microenterprises have similar views on the investment climate in Botswana



Among the small, medium-sized and large enterprises (SMLEs)—that is, firms with more than five employees—firms were most likely to say that access to finance and macroeconomic instability were serious problems. Significant numbers of firms (about 18 percent and above) also cited tax rates, crime, and access to land, competition from informal firms, corruption, inadequately educated workers and business licensing as serious obstacles. Very few firms—only about 1 in 10 firms or fewer—rated other areas of the investment climate as serious obstacles. As in Namibia and Swaziland, very few firms rated any aspect of infrastructure or regulation, except for business licensing, as serious concerns.¹⁸

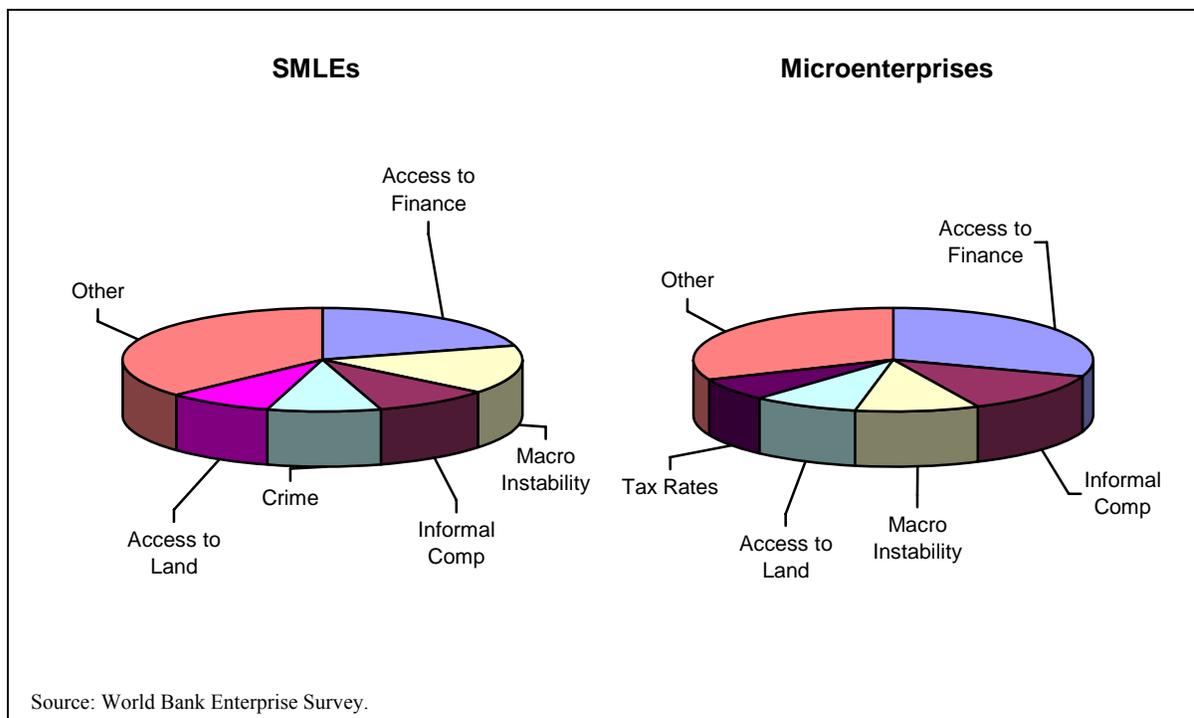
For the most part, microenterprise managers had very similar concerns to managers of SMLEs. This was similar to Swaziland, where perceived obstacles were also similar for

¹⁸ See Regional Program on Enterprise Development (2007b; 2007c).

microenterprise and SMLE managers, but quite different from Namibia or South Africa, where there was considerably less overlap with respect to perceptions about obstacles.¹⁹

The most noticeable differences were that very few microenterprise managers said that worker education was a serious concern and many more reported that competition from firms in the informal sector was a serious problem. Indeed, microenterprises were more likely to say that competition from informal firms was a serious problem than any other area of the investment climate except for access to finance. Further, although access to finance was the main concern of both SMLE managers and microenterprise managers, microenterprise managers were far more likely to say that it was a serious problem—about 60 percent of microenterprises compared to about 40 percent of SMLEs.

Figure 23: Responses were similar for SMLEs and microenterprises when managers were asked about the biggest constraint that they faced.



For the most part, results are similar looking at the percent of managers that said which area of the investment climate was the biggest problem that they faced. Both microenterprise managers and SMLE managers were most likely to say that access to finance, macroeconomic instability and competition from the informal sector was the biggest problem that they faced. As before microenterprise manager appeared more concerned about access to finance and competition from the informal sector than managers of SMLEs did. Close to 30 percent of microenterprise managers said that access to finance was the biggest obstacle they faced and 13 percent said the biggest problem was competition from the informal sector.

¹⁹ See Regional Program on Enterprise Development (2006; 2007b; 2007c)

II. DIFFERENCES IN PERCEPTIONS FOR DIFFERENT TYPES OF FIRM.

As discussed above, although on average managers of SMLEs and microenterprises have similar views about the investment climate, their views are not identical. Not surprisingly, even within these two broad groups of managers, there are often differences in views about the investment climate and the major constraints that they face. These differences can be due to differences in expectations (e.g., foreign-owned firms might have expectations based upon their experience in their home countries) or differences in experiences (e.g., large firms might find it easier to get loans due to having better connections or better access to collateral). This section looks at differences in perceptions across different types of firm in more detail. Later chapters address whether the differences in objective indicators are consistent with the differences in perceptions.

One way of assessing whether there were differences in perceptions across different types of firms would be simply to compare average responses across firms of different types. For example, it would be possible to look at how many firms of different types rated a particular investment climate issue as their biggest constraint or how many firms rated it as a major or very severe constraint.

Although this approach is quite intuitive, there are at least two problems associated with it. First, the sub-samples of different types of firms are often relatively small. For example, there are fewer than 50 white-owned firms, only 37 exporters, and only 30 medium-sized and 43 large firms in the sample. This makes it difficult to assess whether differences are due to random variation in responses or due to actual systematic differences in perceptions.

Second, there are also systematic differences in other firm characteristics across types of firms. For example, foreign-owned firms tend to be both slightly larger than domestic firms (an average of 52 workers compared to an average of 45 workers) and more likely to export (17 percent compared to 7 percent). Differences in perceptions between foreign and domestic firms might therefore reflect differences in size or export behavior rather than being foreign-owned.

To deal with this, this section presents econometric results that deal with both these issues. First, by using a multivariate regression approach, it is possible to look at differences in perceptions after controlling for other systematic differences between firms. Second, it is possible to look at the statistical significance of the results (i.e., to see whether the probability that differences are unlikely to be due to random variation in responses is high).

II.1 Methodology.

The methodology is similar to the methodology used in a recent paper by Gelb, Ramachandran, Shah and Turner (Gelb and others, 2006). Because of concerns about pooling the data from the SMLE and microenterprise surveys, the results focus on differences among the SMLEs in the sample. The microenterprise sample, with only about 120 firms, is too small to do a similar analysis.

The question of how different factors, including ownership, affect access to credit for microenterprises is examined by estimating different versions of the equation below:

$$\text{Perception about IC}_i = \beta_1 + \beta_2 \text{Ownership}_i + \beta_3 \text{Size} + \beta_4 \text{Exporter}_i + \beta_5 \text{Sector} + \varepsilon_i$$

The dependent variables are dummy variables indicating whether the manager of firm *i* rates that area of the investment climate as a major or very severe obstacle. The independent variables are a set of five dummy variables indicating firm ownership (whether the firm has a white, Asian or black owner, whether the firm has a female owner, and whether the firm is foreign owned), firm size (number of workers), a dummy variable indicating whether the firm exports, and a series of dummies indicating sector of operations. The error term is assumed to be normally distributed. Because the dependent variable is a dummy variable, the model is estimated using standard maximum likelihood estimation. Results from the regression for each of the obstacles are shown in Table 9.

II.2 Results

Firm Size

Previous work looking mostly at low-income countries in Africa suggests that large firms are more likely to complain about most aspects of the investment climate, with the exception of access to finance and access to land, than smaller firms.²⁰ A similar pattern was also observed in Swaziland, where larger firms were also more likely to say that most aspects of the investment climate were serious constraints (Regional Program on Enterprise Development, 2007c).

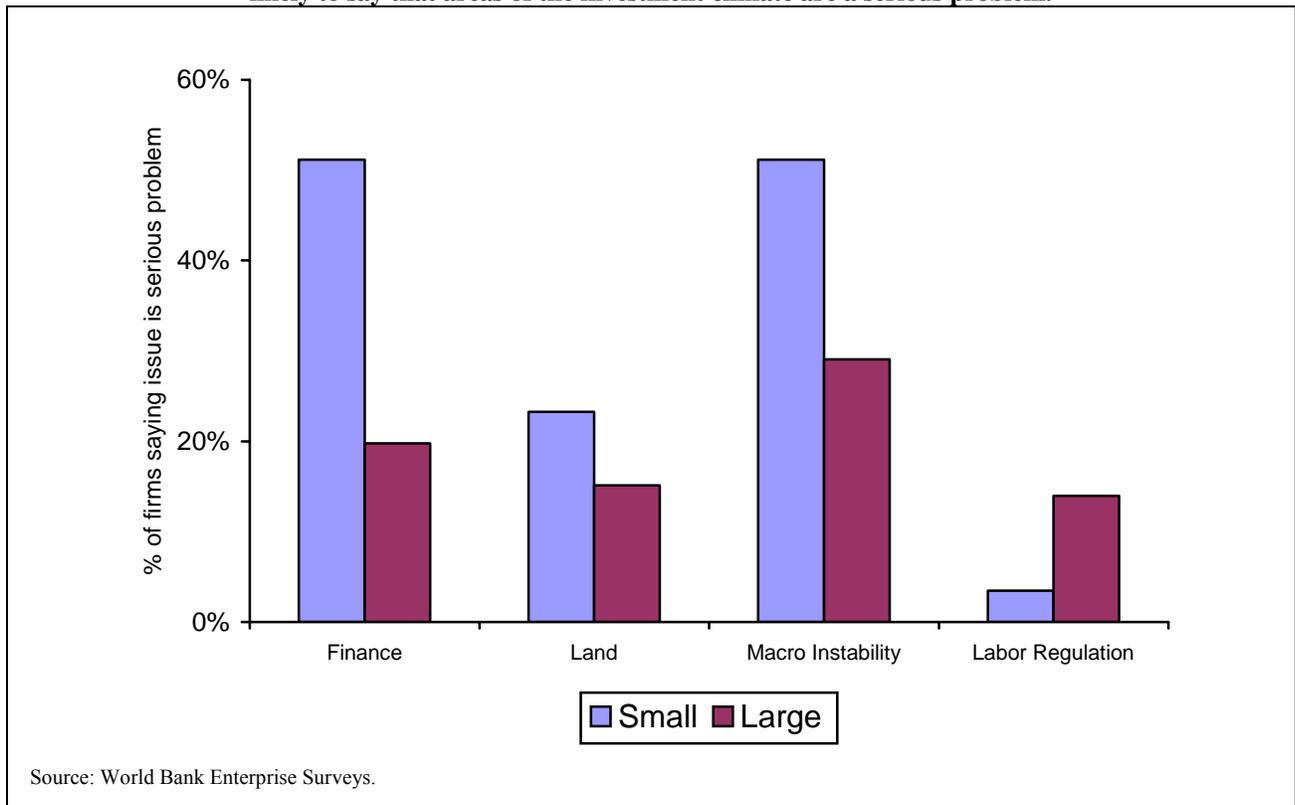
This pattern does not appear to be hold in Botswana—differences between large, medium-sized and small enterprises were small and statistically insignificant in most cases. Moreover, in most cases where there was a statistically significant difference between large and small firms after controlling for other differences, small firms were more, not less, likely to say that they saw the area as a serious constraint on their operations (see Figure 24). In particular, smaller firms were more likely to say that access to land, access to finance and macroeconomic instability were serious obstacles. They were however significantly less likely however to say that labor regulation was a serious obstacle.

For two of these measures, access to finance and access to land, results are similar looking at the biggest constraint that firms reported. About one-quarter of small firms rated access to finance as the biggest obstacle that they faced and about 12 percent rated access to land as the same.²¹ In comparison, only 11 percent and 0 percent of large firms said the same. Although large firms were slightly more likely to say labor regulation was the biggest problem that they faced (2 percent compared to 1 percent), neither small nor large firms were very likely to say that it was their biggest problem. Large firms were slightly more likely to say that macroeconomic instability was the biggest problem that they faced than small firms were (19 percent compared to 16 percent). This probably reflects that so many small firms reported that access to finance was the biggest problem they faced, meaning that fewer could say the same about macroeconomic instability.

²⁰ See Gelb and other (2006)

²¹ To ensure that there were enough larger firm obstacles, ‘large’ is defined as firms in the 75th percentile or above (40 workers or above). Small firms are defined as firm below the 25th percentile (7 workers or below).

Figure 24: In contrast to most low-income countries in Africa, small firms in Botswana are more, not less, likely to say that areas of the investment climate are a serious problem.



Ownership

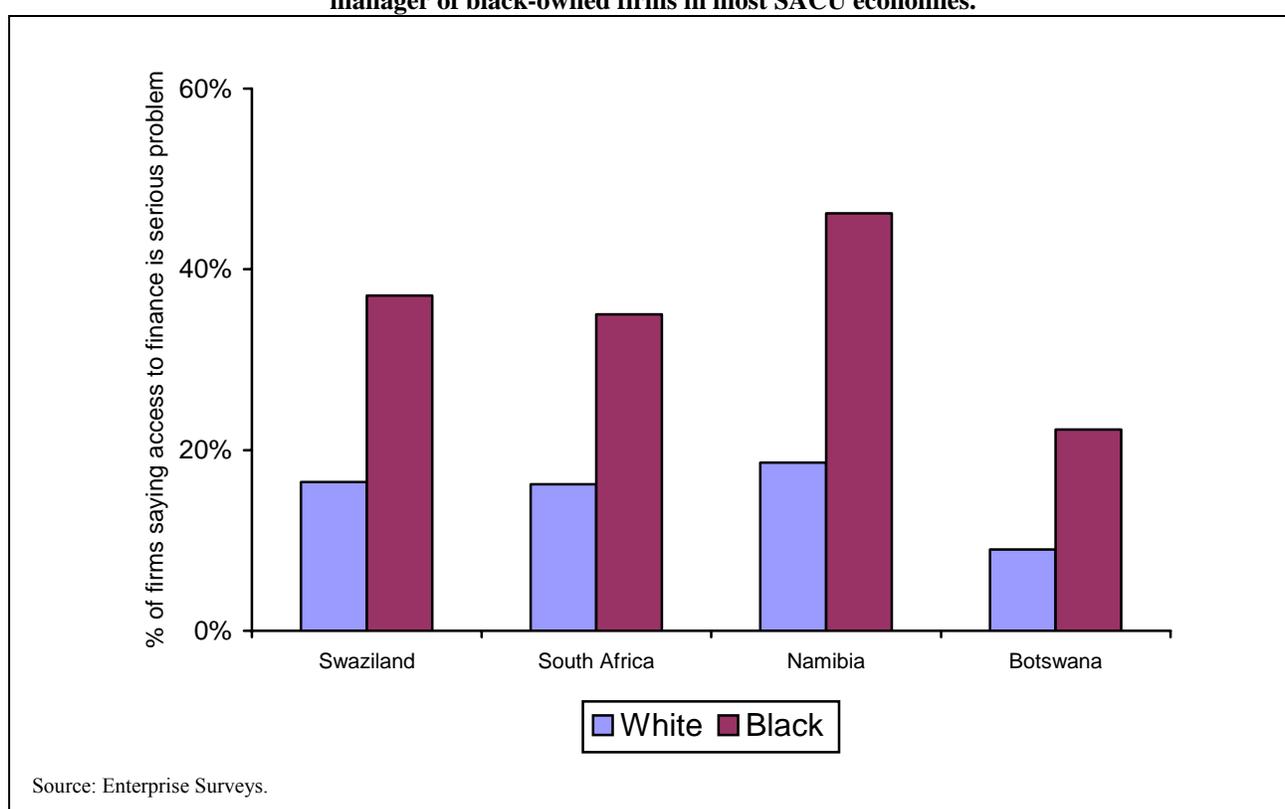
After controlling for other factors, foreign-owned firms were neither more nor less likely to complain about any area of the investment climate than similar domestically owned firms. The coefficients on foreign ownership were mostly small and statistically insignificant at conventional significance levels. The coefficient on foreign ownership is close to statistically significant in the regression for access to finance—the negative coefficient suggesting that foreign-owned firms are less concerned about access to finance than other firms. This might be because either foreign-owned firms have better access or because they are able to get financing from their parent companies.

Similarly, there do not seem to be any consistent differences by male and female-owned firms after controlling for other factors. The coefficient on the dummy variable indicating that the firm is partly female-owned is statistically insignificant in most model specifications.

In contrast, white-owned firms appear to have quite different concerns than indigenously owned firms. Even after controlling for other differences between them, managers of white-owned firms were seventeen percentage points more likely to say that telecommunications was a serious problem and twenty-five percentage points more likely to say that business registration was a serious problem. In contrast, they were nineteen percentage points less likely to say that competition from informal firms was a serious problem and twenty percentage points less likely to say that access to finance was a serious problem.

These differences are clearly visible looking at rankings based upon the percentage of firms that said each area was a serious problem. Managers of white-owned firms were more likely to say that business registration was a serious problem than any other area of the investment climate (38 percent of white-owned firms), compared to ninth of seventeen areas for indigenously owned firms (16 percent of firms). In contrast, managers of indigenously owned firms were more likely to say that access to finance was a serious problem than any other area of the investment climate (46 percent of indigenously-owned firms) compared to seventh of seventeen areas for white-owned firms (19 percent of firms). Similarly, telecommunications ranked fifth for white-owned firms and fifteenth for indigenously owned firms, while competition with informal firms ranked fifth for white-owned firms and fifteenth for indigenously owned firms.

Figure 25: Managers of white-owned firms are less likely to say access to finance is a serious problem than manager of black-owned firms in most SACU economies.



The difference in perceptions about access to finance between white and black-owned firms is also visible in the enterprise surveys for Namibia, South Africa and Swaziland (see Figure 25).²² In all four countries, managers of black-owned firm were more likely to say that access to finance was a more serious problem than managers of white-owned firms. An important issue is the extent to which the objective data on access to finance is consistent with the perception-based data. This issue is discussed in greater detail in Chapter 5.

²² See Regional Program on Enterprise Development (2005a; 2006; 2007a; 2007b). The econometric evidence for microenterprises in South Africa is discussed in greater detail in Clarke and Cull (2007).

The differences are also visible using the percent of firms that said whether each area was the biggest constraint that they faced. Nearly one-quarter of indigenously owned firms said that access to finance was the biggest obstacle they faced, compared to only 7 percent of white-owned firms. In contrast, nearly one-quarter of white-owned firms said that business licensing was a serious problem, compared to only 6 percent of indigenously owned firms. For telecommunications, 7 percent of white-owned firms and 1 percent of indigenously owned firms said it was their biggest problem. For competition from informal firms, 10 percent of indigenously owned firms and 2 percent of white owned firms said it was their biggest problem.

Exporters

In many countries, exporters were more likely to be concerned about trade and customs regulations, telecommunications or macroeconomic instability (exchange rate instability) due to the impact that these have on trade. This does not appear to be the case in Botswana—for most areas of the investment climate exporters were neither more nor less likely to be concerned about these, or most other, areas of the investment climate than non-exporters. The only exceptions are that exporters were less concerned about crime and competition from the informal sector.

Sectors

Differences in perceptions between sectors were also generally small. Most differences are statistically insignificant after controlling for other things. There were some differences, however, between retailers and manufacturing firms in a couple of areas. In particular, retailers were more likely to say that tax rates were an issue—potentially reflecting more favorable treatment of manufacturing—and less likely to say that access to land and worker education were serious problems.

Table 9: Effect of enterprise characteristics on perceptions about different aspects of the investment climate

	Telecom	Electricity	Transportation	Access to Land	Tax Rates	Tax Administration	Trade Regulations	Courts
Observations	303	303	303	303	303	303	303	303
Workers (natural log)	0.00 (0.13)	0.01 (1.16)	-0.01 (0.30)	-0.06** (2.45)	0.00 (0.01)	0.01 (0.31)	-0.00 (0.30)	0.01 (0.91)
Sector - retail (dummy)	0.05 (1.48)	-0.01 (0.35)	0.02 (0.33)	-0.12** (2.02)	0.18*** (2.75)	0.04 (0.88)	0.05 (1.06)	-0.01 (0.57)
Sector - other services (dummy)	0.04 (1.12)	-0.02 (0.64)	0.00 (0.04)	-0.08 (1.31)	0.10* (1.71)	0.02 (0.39)	-0.01 (0.18)	-0.01 (0.68)
Foreign-owned (dummy)	-0.03 (1.09)	-0.01 (0.24)	0.03 (0.71)	-0.05 (0.91)	-0.01 (0.16)	0.01 (0.15)	0.02 (0.49)	0.01 (0.52)
Exporter (dummy)	0.02 (0.46)	0.01 (0.21)	-0.00 (0.01)	-0.09 (1.15)	-0.09 (1.18)		0.05 (0.83)	
Ownership - White (dummy)	0.17*** (3.32)	0.03 (0.76)	0.03 (0.56)	-0.01 (0.17)	-0.04 (0.64)	-0.03 (0.54)	0.02 (0.49)	-0.02 (0.75)
Ownership - Asian (dummy)	-0.02 (0.80)	-0.00 (0.07)	-0.04 (0.83)	0.01 (0.12)	-0.04 (0.63)	-0.00 (0.05)	-0.06 (1.39)	-0.01 (0.70)
Ownership - Female (dummy)	-0.01 (0.34)	0.01 (0.46)	-0.04 (1.05)	0.08* (1.67)	-0.03 (0.68)	-0.02 (0.55)	-0.02 (0.52)	-0.06** (2.44)

	Labor Regulation	Worker education	Business Registration	Finance	Political Instability	Macroeconomic Instability	Corruption	Crime	Informal Sector
Observations	303	303	303	303	303	303	303	303	303
Workers (natural log)	0.03** (2.01)	0.03 (1.35)	-0.01 (0.40)	-0.11*** (3.86)	-0.02 (1.21)	-0.06** (2.17)	-0.03 (1.42)	-0.01 (0.65)	-0.03 (1.28)
Sector - retail (dummy)	-0.05 (1.37)	-0.14** (2.40)	-0.08 (1.43)	-0.03 (0.37)	-0.02 (0.60)	0.03 (0.43)	-0.06 (0.95)	0.03 (0.55)	0.01 (0.09)
Sector - other services (dummy)	0.01 (0.22)	-0.04 (0.84)	-0.03 (0.67)	-0.06 (0.88)	-0.04 (1.24)	-0.07 (0.97)	-0.05 (0.84)	-0.08 (1.37)	-0.06 (1.01)
Foreign-owned (dummy)	0.00 (0.09)	0.02 (0.45)	0.04 (0.86)	-0.10 (1.63)		-0.07 (1.13)	-0.00 (0.08)	-0.02 (0.43)	0.02 (0.30)
Exporter (dummy)	-0.03 (0.80)	0.09 (1.14)	-0.07 (1.10)	-0.11 (1.06)	0.04 (0.68)	0.03 (0.29)	-0.08 (1.07)	-0.16** (2.19)	-0.14* (1.71)
Ownership - White (dummy)	0.08 (1.56)	0.10 (1.32)	0.25*** (3.39)	-0.20** (2.29)	0.04 (0.65)	-0.06 (0.67)	0.05 (0.65)	-0.04 (0.54)	-0.19*** (2.72)
Ownership - Asian (dummy)	0.04 (1.05)	0.00 (0.05)	0.09 (1.60)	-0.15** (2.20)		-0.08 (1.10)	-0.10 (1.61)	0.18*** (3.00)	-0.05 (0.89)
Ownership - Female (dummy)	-0.04 (1.41)	0.04 (0.77)	0.00 (0.11)	0.02 (0.35)	0.04 (1.21)	0.07 (1.20)	0.03 (0.64)	-0.04 (0.86)	-0.02 (0.33)

Source: Authors calculations based on Enterprise Survey data.
 ***, **, * Significant at 1, 5 and 10 percent significance levels

CHAPTER 4: LABOR MARKETS AND HUMAN CAPITAL

Labor markets play an important role in poverty alleviation and competitiveness. This chapter investigates the determinants of two important aspects of the labor market in Botswana's manufacturing sector: on-the-job training and worker remuneration.

Worker productivity is determined by the quantity and quality of human capital embodied in workers, capital intensity and the level of remuneration. Human capital formation takes three forms: (i) workers invest in formal education before employment; (ii) they learn on the job and; (iii) firms or workers invest in general-skills or firm-specific skills training (Becker, 1964; Mincer, 1962; Mincer, 1974). For workers that have completed formal schooling, the scope for skills growth in short and medium-term depends on firm-based and financed training. This chapter investigates the determinants of firm-provided training with a view of identifying the characteristics of firms in Botswana that provide training. This exercise provides information on opportunities for policy intervention to encourage more widespread firm-based skill development in Botswana.

The level of worker remuneration (holding constant worker productivity) determines a country's competitiveness. However, where monitoring is imperfect and contracts costly or incomplete, worker compensation can be used to support higher levels of worker effort and productivity or to screen for particular types of workers (Lazear, 1979; Shapiro and Stiglitz, 1984). Regulatory regimes can also affect worker remuneration either directly by setting wage levels or indirectly by making it harder for firms to hire, fire, and change working hours. This chapter investigates the determinants of remuneration using both firm-level and matched employer-employee worker-level data to identify the underlying wage-setting mechanisms in the manufacturing sector.

I. EMPIRICAL STRATEGY

This section outlines the empirical strategy for answering the two questions set out above. Both topics can be addressed using either firm-level or worker-level data. Because these two approaches provide complementary information—and are a useful cross-check—both approaches are used in this section.

Training-Firm Level

At the firm level, firms decide whether they should invest in their workers. They also decide who they will train and the content of the training. The firm decision to provide training can be investigated by looking at the characteristics of firms that train. To do this the probability that the firm provides training is estimated using a probit model of the likelihood of providing firm-based training as a function of firm characteristics. The model is specified as:

$$T_{ij} = \eta + \alpha X_{ij} + \mu_j + \varepsilon_{ij} \quad (1)$$

where T_{ij} takes the value of 1 if firm i in sector j provides training and 0 otherwise. X_{ij} represents observable firm characteristics thought to affect the provision of training and μ_j represents fixed

sector characteristics that determine the desirability to provide training such as average levels of capital intensity and skill complementarities in production. ε_{ij} represents unobserved firm characteristics that potentially affect training.²³

The set of firm characteristics X_{ij} include indicators for firm size to capture the impact of scale on the likelihood of training provision. Firm size can affect the likelihood of training provision in a number of ways. Firstly, large firms might be so as a result of training or a common factor such as ‘high quality management’ or access to liquidity which affects both employment growth and the propensity to train. Secondly, to the extent that training is associated with fixed costs (including the space to provide training), then larger firms face lower per-worker costs of training provision. The regression includes size in a flexible way using a set of indicator for four size classes.

The regression also controls for export status, foreign ownership and firm vintage. Both of these measures are proxies for firm quality (Roberts and Tybout, 1996). Firms facing international competition are more likely to invest in the quality of their workers. Similarly, firms with foreign ownership are more likely to provide training as a result of greater liquidity or peer effects. Firm age is a measure of quality and or competitive pressure (Hopenhayn, 1992). Given that the effect of age is ambiguous, the regression includes a quadratic to capture non-linear effects of age on the propensity to provide training.

The returns to training are likely related to the level of formal education of the worker. In this direction the regressions control for the average level of education in the firm. The regression therefore includes an indicator for whether the average worker in the firm has more than 6 years of schooling.

Bargaining power of workers is likely to affect firm-based training. On the one hand, workers with more bargaining power will induce firms to invest in worker skills. On the other hand, if workers value other non-skills related investments, then training is less likely. The proportion of workers that are seasonal captures the extent to which a firm relies on a stable workforce. A higher proportion of seasonal workers will likely be associated with a lower propensity to provide training. The regression also include a measure of the extent to which firm’s are engaged in HIV prevention/treatment activities. Firms that invest in prevention/treatment are firms that are sensitive to the skill-composition of their workforce and are more likely to provide training.²⁴

Finally the regressions include a series of controls that capture other measures of firm competitiveness and liquidity such as capacity utilization and whether the firm’s accounts are externally audited.

²³ In this analysis, we are unable to control for unobserved firm-fixed effects. As a result, it will be difficult to rule out the potential for omitted variable bias of our estimates.

²⁴ Ramachandran and others (2005) find that high-skill intensity firms are more likely to invest in a number of health-enhancing activities.

Training-Individual Level

At the individual level, the Enterprise Survey includes data on both contemporaneous and training received in the past. It also asks whether the training was external or in-firm and whether it was financed by the firm or by the worker. Because the data also includes information on the worker, it is possible to look at how training depends on the individual's characteristics. In particular, the analysis looks at how formal schooling, gender, union-status, tenure and experience affect whether the worker is trained.

The econometric model is a probit model with the following specification:

$$Y_{ijk} = \eta + \alpha W_{ijk} + \beta F_{jk} + \pi_k + \rho_j + \gamma_{ijk} \quad (2)$$

where Y_{ijk} is an indicator for whether a worker i in firm j and sector k received any training or firm-based training. W_{ijk} is a set of worker attributes including schooling, experience, tenure, gender and working hours. F_{jk} captures a set of firm-characteristics outlined in the firm-level estimation above. π and ρ capture sector and firm fixed effects that affect training. Note that this specification controls for unobserved firm fixed effects since there are multiple workers in the 58 firms from which the employee sample is drawn. γ_{ijk} captures unobserved individual/firm characteristics that affect training.

Remuneration-Firm level

Understanding wage-setting mechanisms in the labor market is important for policy makers with respect to the impact of particular policies or economic shocks on a number of outcomes of interest. A number of wage-setting mechanisms have been identified in a variety of settings (Blanchflower and others, 1996; Burdett and Mortensen, 1980; Katz and Summers, 1989; Moll, 1993). The main explanations include efficiency wages, the role of collective bargaining, search frictions and fairness norms. Obtaining the variables or sets of variables that can identify each of these mechanisms is a challenge. The analysis that follows attempts to outline a number of controls that are central to each of the mechanisms outlined above. The efficiency wage mechanism suggests that wages are directly proportional to monitoring costs (Shapiro and Stiglitz, 1984) and degree of punishment. Firms pay higher wages when the likelihood of catching a shirking worker is very low or if the punishment (defined as the duration of a spell of unemployment) is not effective. Workers in skill categories where unemployment is very low will be paid high wages. The share of skilled workers is used as a measure of skill intensity. Firm size is used as a proxy for monitoring costs. As outlined below, this is somewhat problematic. Controls for sectors are likely to capture important differences in monitoring costs.

The rent-sharing mechanism suggests that firms and workers share rents in such a way that an identical worker will earn more in a more profitable enterprise. In addition, where worker bargaining power is high, worker remuneration will be correspondingly high. To assess the salience of the rent-sharing mechanism the regressions include controls for rents as well as measures of collective bargaining arrangements. In particular, an indicator for export status and foreign ownership are used as proxies for rents. The share of workers that are unionized is included as a measure of worker bargaining power. To control for selective matching of high quality workers and better firms the share of workers with more than primary school education,

firm age, capacity utilization and access to external credit are included. As indicated above, firm size could be a measure of rents or quality, making its use as a proxy for efficiency wage motivations much less discriminating.

The following specification is estimated in which competing wage-setting mechanisms are represented by one or more control variables.

$$\text{Ln (wages)}_{ij} = \alpha + \gamma X_{ij} + \phi_j + \tau_{ij}$$

The dependent variable is the average level of wages for firm i in sector j paid to production or non-production workers, X_{ij} is a set of controls that include our proxies for each of the mechanisms outlined above. ϕ_j represents sector specific effects and τ_{ij} captures unobserved firm characteristics affecting wages.

Remuneration-Individual level

A similar analysis can be carried out at the worker level. It is easier to control for individual level attributes that an only control for very imprecisely in firm-level regressions. While this is the preferred level at which to conduct the analysis outlined above, the worker sample is drawn from only about half of the sample of manufacturing firms. An examination of firm characteristics by whether the firm's workers were interviewed suggests that the worker sample is drawn from a representative sub-sample (see Table 10).

The model has the following specification:

$$\text{Log (wages)}_{ijk} = \phi + \beta H_{ijk} + \chi F_{jk} + \psi_k + \omega_j + \zeta_{ijk} \quad (3)$$

where the dependent variable is the log of monthly earnings for worker i in firm j in sector k . Following Mincer (1974), H_{ijk} is a set of worker characteristics. The Mincerian framework is augmented with firm-level controls F_{jk} that capture some of the wage-setting mechanisms proxies and assortative matching. ψ_k captures sector level effects and ω_j captures firm fixed effects.

Table 10: Worker Sample Characteristics

	Non-worker sample	Worker Sample
% Exporters	22.81 (5.61)	15.79 (4.87)
% Foreign owned	54.39 (6.66)	42.11 (6.60)
Average employment*	73.14 (12.94)	74.74 (21.14)
Employment growth (start-up to 2005)	12.10 (3.87)	14.21 (4.78)
Percent unionized	14.72 (4.06)	8.68 (3.40)
Percent reporting labor regulations as major or severe constraint	14.04 (4.64)	8.77 (3.78)
Percent reporting skill shortages as major or severe constraint	33.33 (6.30)	29.82 (6.11)
Average monthly compensation \$, production workers	207.01 (18.69)	237.60 (30.52)
Average monthly compensation \$, non-production workers+	378.12 (46.32)	311.49 (39.85)
% Provide training	42.11 (6.60)	33.33 (6.30)
% Skilled workers trained	60.08 (7.90)	54.58 (9.98)
% Unskilled workers trained	37.55 (8.40)	44.35 (10.29)

Notes: All estimates are weighted by the sampling weight.

* Employment is defined as the sum of full-time workers and half of part-time/temporary workers.

+ Non-production workers include managers, professionals, sales, health workers and cleaning staff.

Standard errors in parentheses.

II. RESULTS

Training-firm level regressions

Nearly 40% of firms provide training to their workers. The results for the estimation of equation (1), the firm-level regression on the likelihood of training provision are shown in Table 11 in the appendix. The table reports marginal effects from the probit model, which can be interpreted as the change in the probability that the firm has a training provision associated with a unit change in the independent variable, at the mean of all the controls. Specifications (1) through (3) do not control for sector fixed effects, while specifications (4) through (6) do. The firm-level analysis reveal three main findings:

1. There is no discernible firm-size training gradient. While firms with 50-99 employees are weakly more likely to provide training than other firms, the coefficient is not significant. We fail to reject formal tests of no firm-size training gradient at conventional levels of statistical significance.
2. While the sign on the education composition of the workforce is correct, it is not significant. At the firm level, we cannot reject the hypothesis that training is concentrated in firms with a well educated workforce.
3. Firms that are engaged in HIV-prevention/treatment activities are more likely to provide training. The point estimate suggests that such firms are about 25 percentage points more

likely than otherwise similar firms, to provide training. The degree of unionization and level of capacity utilization have no effect on the likelihood of training provision.

The result that firms that are most actively involved with HIV/AIDS interventions are also more likely to provide training suggests that these are firms for which turnover costs are very high or who might have (or continue to) invested in the skills of their workers. Given the very coarse measure of worker skills at the firm level, results from the worker-level regressions that investigate the extent to which formal schooling and other worker characteristics are complementary to on-the-job training using the worker sample might be preferable.

Table 11: Training Provision-Firm Level

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Dummy variable indicating firm provide training					
Observations	111	111	111	105	105	105
Sector fixed effects	No	No	No	Yes	Yes	Yes
10-49 employees	-0.097 (0.125)	-0.100 (0.126)	-0.077 (0.131)	-0.014 (0.132)	-0.011 (0.134)	0.015 (0.139)
50-99 employees	0.249 (0.173)	0.295 (0.175)	0.306 (0.177)	0.298 (0.175)	0.338 (0.178)	0.346 (0.180)
100+ employees	0.034 (0.167)	0.013 (0.166)	0.036 (0.174)	0.131 (0.184)	0.121 (0.185)	0.151 (0.195)
Exporter	-0.005 (0.134)	-0.003 (0.132)	0.017 (0.136)	-0.150 (0.129)	-0.139 (0.131)	-0.124 (0.134)
Foreign-ownership	0.046 (0.099)	0.025 (0.102)	0.032 (0.102)	0.060 (0.114)	0.036 (0.115)	0.036 (0.114)
Firm age	-0.021 (0.019)	-0.025 (0.018)	-0.027 (0.019)	-0.022 (0.021)	-0.027 (0.020)	-0.029 (0.020)
Firm age squared	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Average schooling > 6 years	0.124 (0.111)	0.068 (0.119)	0.070 (0.118)	0.038 (0.131)	0.011 (0.135)	0.015 (0.136)
Percent union	-0.001 (0.002)	-0.001 (0.002)	-0.000 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
% part time/seasonal workers	-0.000 (0.002)	0.000 (0.002)	0.000 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Engaged in HIV Prevention		0.259 (0.097)**	0.271 (0.097)**		0.215 (0.103)*	0.233 (0.101)*
Capacity utilization			0.000 (0.002)			0.000 (0.002)
External audit			-0.098 (0.118)			-0.107 (0.124)
F-Test Firm Size Matters	5.19	6.25	5.78	4.14	4.87	4.59
prob>F	0.16	0.10	0.12	0.25	0.18	0.20

Notes: Robust standard errors in parentheses * significant at 5%; ** significant at 1%. Dependent variable is an indicator variable that is 1 if the firm provides training and 0 otherwise. Specifications (4)-(6) include controls for sector.

Training – Worker Level Regressions

The results from the worker level probit estimation of receiving training are presented in Table 12. As with the firm-level analysis, the table reports marginal effects. The first dependent variable, examined in specifications (1) through (4), is an indicator for whether the worker has received any on-the-job training. The second dependent variable, in specifications (5) through (8), restricts attention to firm-provided/financed on-the-job training.

About 18% of sampled workers had received any training compared to 15% of workers for firm-provided/financed training. In specifications (1), (2), (5) and (6) the regressions do not control for firm-level covariates. In specifications (3) and (7) they include a variety of firm level controls similar to the set used in the specifications in table 3. In specifications (4) and (8), they include firm fixed effects.²⁵

The results show a strong association between whether the worker receives training and schooling, experience, gender and union status.

1. An extra year of schooling, at the mean of all the controls, is associated with a 2 to 3 percentage point increase in the likelihood of receiving overall training. The results in specifications (5) and (6) suggest a similar finding for firm-financed/provided training. This result is not very robust: it no longer significant when controlling for firm fixed effects in specification (8).
2. There is no relationship between the likelihood of receiving any kind of training and how much working experience a worker has.
3. Female workers are less likely to receive any training. The point estimates in preferred specifications (1) through (3), suggest that a female worker is 6 to 8 percentage points less likely to receive training than an otherwise similar male worker.
4. Finally union workers are less likely to receive firm-based training than non-union workers. The result is not particularly robust across all our specifications.
5. The only firm characteristic that is significantly associated with training provision is size. Workers in firms with more than 100 employees are about 19 percentage points less likely to receive training than similar workers in other firms.

The results outlined above are consistent with the predictions of human capital theory. In particular, a worker for whom the cost of training is lower (or the returns higher), such as a worker with more schooling, is more likely to receive training. Similarly, workers with a high risk of exiting the labor market, such as females, are less likely to receive training.

²⁵ Note that identification in this case is provided by workers from firms where at least one sampled worker either received/did not receive training. Firms where all or no workers received training drop out of the estimation.

Table 12: Training Provision-Individual Level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	Indicator for any training in past				Indicator for firm-financed/provided training in past			
Firm controls	No	No	Yes	No	No	No	Yes	No
Firm FE	No	No	No	Yes	No	No	No	Yes
Observations	316	310	310	146	316	310	310	121
Schooling, years	0.028 (0.006)**	0.019 (0.007)**	0.007 (0.005)	0.020 (0.012)+	0.023 (0.006)**	0.014 (0.006)*	0.004 (0.004)	0.006 (0.013)
Experience	0.002 (0.009)	-0.004 (0.009)	-0.007 (0.007)	-0.007 (0.017)	0.000 (0.009)	-0.004 (0.008)	-0.007 (0.006)	0.003 (0.019)
Experience sq	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.001)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.001)
Female	-0.075 (0.042)+	-0.082 (0.040)*	-0.056 (0.032)+	-0.072 (0.081)	-0.051 (0.040)	-0.057 (0.038)	-0.031 (0.026)	0.002 (0.093)
Union member	-0.026 (0.104)	0.018 (0.113)	-0.056 (0.043)	-0.125 (0.109)	0.005 (0.107)	0.034 (0.112)	-0.041 (0.027)	-0.157 (0.081)+
Full time	-0.030 (0.094)	-0.107 (0.120)	-0.020 (0.077)	-0.911 (0.028)**	-0.056 (0.094)	-0.138 (0.120)	-0.021 (0.060)	-0.929 (0.033)**
Single		-0.033 (0.049)	-0.005 (0.037)	0.002 (0.088)		-0.017 (0.046)	0.003 (0.029)	0.086 (0.078)
Professional		0.104 (0.172)	0.112 (0.164)			0.081 (0.155)	0.086 (0.139)	
Skilled production worker		0.142 (0.102)	0.168 (0.089)+	-0.620 (0.111)**		0.083 (0.089)	0.106 (0.071)	-0.640 (0.117)**
Unskilled production worker		-0.101 (0.084)	-0.097 (0.060)	-0.950 (0.040)**		-0.126 (0.075)+	-0.079 (0.048)	-0.943 (0.043)**
Non-production worker		0.191 (0.142)	0.184 (0.133)	-0.448 (0.080)**		0.132 (0.125)	0.129 (0.113)	-0.523 (0.096)**
10-49 employees			-0.032 (0.045)				-0.043 (0.031)	
50-99 employees			-0.006 (0.054)				-0.036 (0.033)	
100+ employees			-0.202 (0.046)**				-0.179 (0.041)**	
Exporter			0.029 (0.058)				0.001 (0.033)	
Foreign-ownership			0.027 (0.034)				0.040 (0.029)	
Firm age			-0.007 (0.007)				-0.001 (0.005)	
Firm age squared			0.000 (0.000)+				0.000 (0.000)	
Average schooling > 6 years			0.029 (0.041)				0.018 (0.033)	
Percent union			0.000 (0.001)				0.001 (0.000)	

Notes: Robust standard errors in parentheses * significant at 5%; ** significant at 1%. Dependent variable is an indicator variable that is 1 if the worker received any kind of training (specifications (1)-(4)) and firm-based training n(specifications (5)-(8)) and 0 otherwise. Specifications (4) and (8) include firm fixed effects. Omitted occupational category is managers/proprietors.

Wages-firm level

The results of the wage-setting mechanisms estimation are shown in table 5. This table presents the results of a regression of log average earnings of production/non-production workers on firm characteristics. All specifications include sector fixed effects. In specifications (1) through (3), the dependent variable is the log average wage of production workers. In specifications (4) through (6) the dependent variable is log average wage of non-production workers. Specifications (1) and (4) control for a minimal set of controls meant to capture the two

mechanisms outlined above. In specification (2) and (3), and (5) and (6), the regressions include additional controls for capacity utilization and proxies for liquidity including gross profits.²⁶

Table 13: Wage Setting Mechanisms-Firm Level

	(1)	(2)	(3)	(4)	(5)	(6)
	Production			Non-Production		
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	103	103	93	84	84	75
10-49 employees	0.029 (0.124)	-0.114 (0.131)	-0.142 (0.156)	0.367 (0.207)+	0.285 (0.200)	0.288 (0.195)
50-99 employees	-0.055 (0.157)	-0.220 (0.170)	-0.207 (0.192)	0.273 (0.239)	0.205 (0.198)	0.202 (0.193)
100+ employees	-0.011 (0.191)	-0.198 (0.228)	-0.133 (0.258)	0.034 (0.230)	-0.026 (0.242)	-0.097 (0.220)
Exporter	0.065 (0.156)	0.031 (0.165)	0.113 (0.156)	0.107 (0.224)	0.021 (0.227)	-0.057 (0.237)
Foreign-ownership	0.063 (0.140)	0.026 (0.133)	0.046 (0.134)	0.287 (0.197)	0.208 (0.183)	0.194 (0.194)
Firm age	0.007 (0.023)	0.020 (0.022)	0.012 (0.023)	-0.037 (0.032)	-0.000 (0.031)	-0.000 (0.034)
Firm age squared	-0.000 (0.001)	-0.001 (0.001)	-0.000 (0.001)	0.001 (0.001)	-0.000 (0.001)	-0.000 (0.001)
Average schooling > 6 years	-0.050 (0.171)	-0.122 (0.160)	0.014 (0.141)	-0.016 (0.185)	-0.157 (0.194)	-0.160 (0.213)
Prod skill ratio	-0.115 (0.145)	-0.049 (0.149)	-0.010 (0.170)	-0.045 (0.232)	0.070 (0.209)	0.244 (0.206)
Percent union	0.002 (0.003)	0.001 (0.003)	0.002 (0.003)	0.007 (0.002)**	0.006 (0.003)*	0.006 (0.002)*
Training		0.003 (0.001)**	0.003 (0.001)**		0.005 (0.001)**	0.004 (0.001)**
Capacity utilization		-0.000 (0.002)	-0.002 (0.003)		-0.002 (0.004)	0.000 (0.004)
External credit		0.112 (0.110)	0.101 (0.113)		0.102 (0.158)	0.151 (0.146)
Trade credit		0.158 (0.109)	0.128 (0.115)		-0.031 (0.202)	0.052 (0.206)
External audit		0.278 (0.103)**	0.181 (0.105)+		0.573 (0.146)**	0.572 (0.164)**
Gross profit (millions of Pula)			0.000 (0.009)			0.015 (0.008)+
Constant	5.206 (0.300)**	4.911 (0.315)**	4.799 (0.355)**	5.156 (0.319)**	4.741 (0.416)**	4.387 (0.416)**
R-squared	0.14	0.27	0.32	0.35	0.53	0.59
F-Test Firm Size Matters	0.10	0.60	0.48	1.76	1.53	2.13
prob>F	0.96	0.62	0.70	0.16	0.22	0.11

Notes: Robust standard errors in parentheses * significant at 5%; ** significant at 1%. Dependent variable is the log of monthly compensation for each occupation. All specifications include controls for sector.

The evidence from these estimations leans towards rent-sharing as the predominant wage setting mechanism. Across all specifications, the measures of firm quality such as the use of external audits, have the expected positive signs and are significant. When the regressions include controls for gross profits, the sign on the coefficient is positive and significant at the 10% level for wages of non-production workers. A 1 million pula increase in gross profits is associated with a 1.5% increase in average non-production worker compensation. In addition, a 10 percentage point increase in the degree of unionization is associated with a 6 to 7% increase in average wages of non-production workers. Finally firms that provide training pay production

²⁶ Gross profits are measured as the net earnings of the firm (sales – costs) excluding labor costs. See Neumark and Hellerstein (2006) for a discussion of the effects of using net and gross profits.

and non-production workers 0.3% and 0.5% more than otherwise similar firms. There is no evidence of a wage-firm size gradient for both types of workers. Hypothesis tests fail to reject formal tests of a no gradient null at the 5% and 1% levels for all specifications.

Wages-Individual level

In addition to running wages regressions at the firm-level using average wages, it is also possible to run wage regressions using worker-level data. One advantage of using worker level data is that it is easier to control for worker characteristics in worker-level regressions—only ‘average’ characteristics can be included in firm-level regressions. The results for the worker analysis are shown in Table 14. This table presents the results of a regression of log monthly earnings on worker and firm characteristics. Specifications (2) and (10) include firm-fixed effects. In specifications (7) through (9), we include firm controls similar to the set used in table 5 above. We control for sector fixed effects in specifications (8) and (9).

The effects of worker characteristics on earnings are generally in direction consistent with human capital theory.

1. Returns to schooling in Botswana are high. A one year increase in schooling is associated with a 8 to 10% increase in earnings. In regressions not shown, returns to technical secondary education are about 35 percentage points higher than returns to primary and general secondary education. Returns to vocational and tertiary education are considerably higher than technical secondary schooling returns.
2. General on-the-job training, which is proxied by experience and firm-specific training captured by tenure, are not associated with higher earnings.
3. There is convincing evidence for gender discrimination. Holding worker characteristics constant, a female worker earns 20 to 30 percent less than an otherwise similar male worker. This might be partly because industries with large number of women employees (such as garments and textiles) pay less than other firms. In general, the differences are smaller—although still mostly statistically significant—after controlling for more firm characteristics.
4. Union members do not earn more/less than non-union members *ceteris paribus*. This result is robust to controls for sector and firm fixed effects.
5. Workers who have received formal training earn 20 to 30% more than similar workers with no prior episodes of self-financed/firm-based training. This result could reflect the sharing of rents from training between workers and firms or the selection of workers into training.
6. Contrary to the firm-level analysis above, we find some evidence for a firm-size wage gradient. A worker in a firm with more than 10 employees earns more than double the earnings of a similar worker in a firm with less than 10 employees. However, beyond the 10 employee threshold, the effect is not monotonic in size. Workers in firms with 50-99 workers earn more than workers in firms with more than 100 employees. This is likely driven by sectoral differences.

7. However, controlling for gross profits (specification (10)), provides further evidence for the rent-sharing mechanism. A 1 million pula increase in gross profits is associated with a 2.2% increase in worker earnings.

III. SUMMARY AND CONCLUSIONS

The results outlined in this chapter provide a useful basis for thinking about policy interventions to encourage skills development. In particular, the results show that training of workers is primarily concentrated amongst firms also engaged in HIV prevention/treatment. While we cannot identify the precise channel captured by this result, understanding in what ways these firms are different and how other firms can be motivated to do the same is crucial to successful firm-based skills development.

On the other hand, the firm and individual level analyses suggest that the incentives for firms/workers to extend/obtain training are greatly influenced by the level of formal training that workers have. This suggests that rather than being substitutes, firm-based skills development and formal schooling are complements. This compounds the impact of low levels of achievement in the formal schooling arena. Improving the general level of skills in the economy will require a reform of the formal schooling system that involves a balancing of school financing across regions and improvements in learning throughout the school system.

Finally, worker turnover is inimical to skills development. Our results on gender and training suggest that firms are reluctant to offer training to workers who are likely to leave the firm. While this result can also be an expression of gender discrimination, it does suggest that policies to keep worker turnover low without constraining a firm's to discipline poor workers, will promote skills development in the workplace.

The results of the wage-setting mechanisms analysis suggest that rent-sharing is the most plausible explanation for wage levels in manufacturing. The individual level analysis highlights high returns to schooling, the existence of a large gender wage-gap and an insignificant effect of union status on earnings. Consistent with human capital theory implications, formal training is associated with higher earnings.

Table 14: Wage Setting Mechanisms-Individual Level

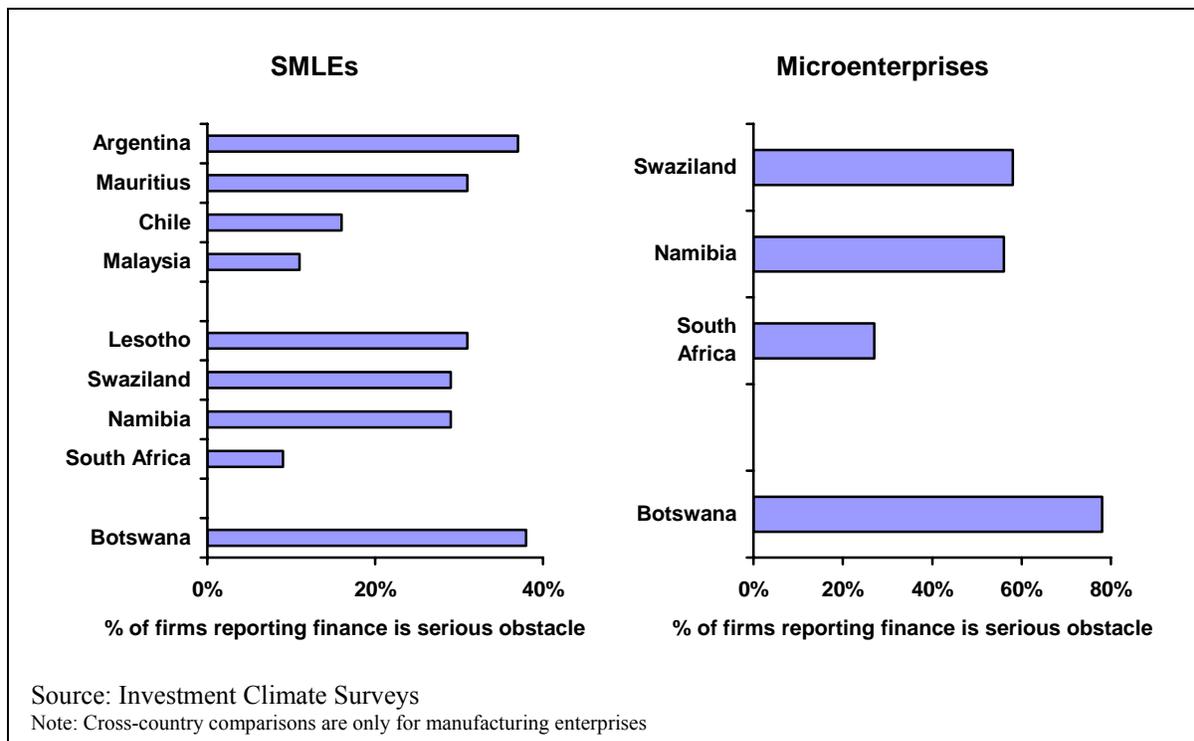
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Firm fixed effects	No	Yes	No	No	No	No	No	No	No	No	No	Yes
Sector FE	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	No
Observations	313	313	313	313	313	313	313	313	313	297	297	313
Schooling, years	0.096 (0.015)**	0.031 (0.013)*	0.087 (0.015)**	0.090 (0.015)**	0.091 (0.015)**	0.091 (0.015)**	0.086 (0.012)**	0.083 (0.013)**	0.082 (0.012)**	0.071 (0.010)**	0.080 (0.011)**	0.031 (0.011)**
Total experience, years	0.017 (0.020)	0.006 (0.022)	0.016 (0.020)	0.007 (0.023)	0.009 (0.024)	0.007 (0.025)	0.016 (0.024)	-0.002 (0.026)	-0.004 (0.024)	-0.017 (0.021)	-0.016 (0.023)	0.004 (0.024)
Total experience squared	-0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.001 (0.001)	0.000 (0.001)	0.000 (0.001)
Employee is female	-0.304 (0.088)**	-0.128 (0.073)+	-0.286 (0.088)**	-0.291 (0.089)**	-0.294 (0.091)**	-0.295 (0.091)**	-0.209 (0.080)**	-0.204 (0.082)*	-0.206 (0.077)**	-0.182 (0.077)*	-0.226 (0.080)**	-0.108 (0.071)
Marital Status (Single=1)	-0.307 (0.100)**	-0.084 (0.079)	-0.286 (0.101)**	-0.294 (0.103)**	-0.293 (0.103)**	-0.300 (0.104)**	-0.234 (0.095)*	-0.226 (0.093)*	-0.207 (0.088)*	-0.151 (0.086)+	-0.194 (0.090)*	-0.095 (0.078)
Employee is a union member	0.167 (0.306)	-0.458 (0.588)	0.145 (0.284)	0.108 (0.313)	0.114 (0.313)	0.105 (0.312)	-0.470 (0.325)	-0.692 (0.366)+	-0.496 (0.319)	-0.280 (0.320)	-0.467 (0.328)	-0.465 (0.572)
Full time	0.515 (0.132)**	0.139 (0.184)	0.524 (0.128)**	0.508 (0.128)**	0.501 (0.130)**	0.490 (0.134)**	0.582 (0.139)**	0.338 (0.098)**	0.184 (0.126)	0.019 (0.174)	0.161 (0.148)	0.099 (0.164)
Any training			0.287 (0.120)*	0.272 (0.122)*	0.271 (0.123)*	0.260 (0.121)*	0.320 (0.113)**	0.241 (0.120)*	0.219 (0.111)+	0.270 (0.113)*	0.274 (0.119)*	-0.097 (0.132)
Tenure				0.017 (0.014)	0.017 (0.014)	0.017 (0.014)	0.017 (0.014)	0.028 (0.016)+	0.024 (0.013)+	0.023 (0.012)+	0.023 (0.014)+	0.013 (0.013)
Log(weekly hours)							-0.091 (0.093)	-0.005 (0.087)	-0.006 (0.089)	-0.012 (0.085)	0.105 (0.087)	0.080 (0.088)
Job through network					0.179 (0.460)	0.253 (0.456)	0.660 (0.371)+	0.706 (0.425)+	0.519 (0.426)			1.484 (0.718)*
10-49 employees							0.467 (0.105)**	0.406 (0.120)**	0.358 (0.123)**	0.381 (0.127)**	0.397 (0.127)**	
50-99 employees							1.275 (0.154)**	1.327 (0.169)**	1.424 (0.184)**	1.364 (0.182)**	1.416 (0.186)**	
100+ employees							0.666 (0.111)**	0.536 (0.127)**	0.493 (0.144)**	0.557 (0.146)**	0.533 (0.149)**	
Exporter									-0.160 (0.105)	-0.522 (0.125)**	-0.172 (0.104)	
Foreign-ownership									-0.282 (0.085)**	-0.246 (0.081)**	-0.305 (0.089)**	
Firm age									-0.053 (0.018)**	0.020 (0.021)	-0.043 (0.019)*	
Firm age squared									0.002 (0.001)**	-0.001 (0.001)	0.002 (0.001)**	
Gross profit (millions of Pula)										0.022 (0.003)**		
Constant	5.980 (0.243)**	6.037 (0.254)**	5.996 (0.237)**	5.979 (0.233)**	5.281 (1.831)**	5.069 (1.809)**	2.601 (1.525)+	2.595 (1.745)	3.791 (1.708)*	5.667 (0.293)**	5.820 (0.294)**	0.276 (2.793)
R-squared	0.24	0.75	0.25	0.25	0.25	0.26	0.42	0.46	0.52	0.57	0.52	0.76
F-Test Firm Size Matters							26.56	20.74	21.30	20.09	20.38	

CHAPTER 5: ACCESS TO FINANCE

I. ACCESS TO FINANCE IN AN INTERNATIONAL PERSPECTIVE

Among manufacturing firms, about 38 percent of small, medium and large enterprises (SMLEs) and 78 percent of microenterprises in Botswana rated finance as a major or severe obstacle (see Figure 26). Although, as discussed earlier in Chapter 3, it is difficult to make cross-country comparisons using perception-based data, this is higher than in most of the comparator countries. For example, only about 10 percent of manufacturing SMLEs rated access to finance as a serious concern in South Africa and Malaysia. Although fewer countries have similar data on microenterprises, microenterprises in Botswana also appear to be more concerned about access to finance than microenterprises in the other middle-income countries in SACU.

Figure 26: Firms in Botswana were more likely to say that access to finance was a serious constraint on their operation than firms in other middle-income countries.



Because of concerns about subjective measures of the investment climate, these are supplemented with objective measures of access to finance. Although the objective criteria do not depend on perceptions, they can mask another important dimension of access—the demand for finance. A firm might not have a loan because it can not get one—suggesting supply problems—or it might not have one because it does not want one—for example, if it does not see any growth opportunities or can self-finance investment from retained earnings. In contrast, because the subjective measures, such as the severity of the obstacle, are perception based, they provide some implied information on why the firm does not have a loan.

About 61 percent of manufacturing SMLEs have an overdraft, a line of credit or a loan. This is slightly higher than in Swaziland (55 percent), but is lower than in South Africa (75 percent) and Namibia (68 percent). Botswana also fares worse when compared to the other middle-income comparator countries. For example, about 74 percent of SMLEs in Argentina had overdraft, lines of credit or loans. Although comparable information was not available for firms in the other countries, about 72 percent of firms in Malaysia, 84 percent of firms in Chile and 88 percent of firms in Mauritius had either an overdraft facility or a line of credit. That is, even excluding loans, access to bank financing appears better in the other three comparator countries than in Botswana. The lower level of bank financing in Argentina, at least compared to the other three non-SACU economies, might be because that country's banks have not yet fully recovered from the massive banking crisis that hit Argentina in late 2001 and early 2002.²⁷

Information on bank financing is available for only microenterprises in the SACU economies. In all countries, few used bank financing. Only about 10 percent of microenterprises had an overdraft or line of credit in Botswana—similar to Namibia, South Africa and Swaziland. This is slightly higher than in most other countries in Sub-Saharan Africa where similar surveys have been conducted. In the other 10 countries where similar surveys were completed in 2006, fewer than 5 percent of microenterprise had an overdraft facility and in several countries no microenterprises had overdraft facilities or lines of credit.²⁸

In addition to the basic data on whether firms have loans, firms are also asked about how they finance short-term working capital and long-term investment. For most firms, retained earnings--the income that the firm has left after paying for intermediate inputs, wages and other costs—are the most important source of funds. Retained earning can either be used to finance investment or can be distributed to owners as dividends. On average, SMLEs in Botswana use retained earnings to finance about 60 percent of working capital and about 70 percent of investment.

Firms in Botswana finance about the same amount of working capital through retained earnings as firms in the comparator countries in SACU (see Figure 27). On average, firms in Namibia finance about 50 percent of working capital with retained earning, firms in Swaziland about 60 percent and firms in South Africa about 65 percent. This is slightly higher than in most of the comparator countries except for Argentina.

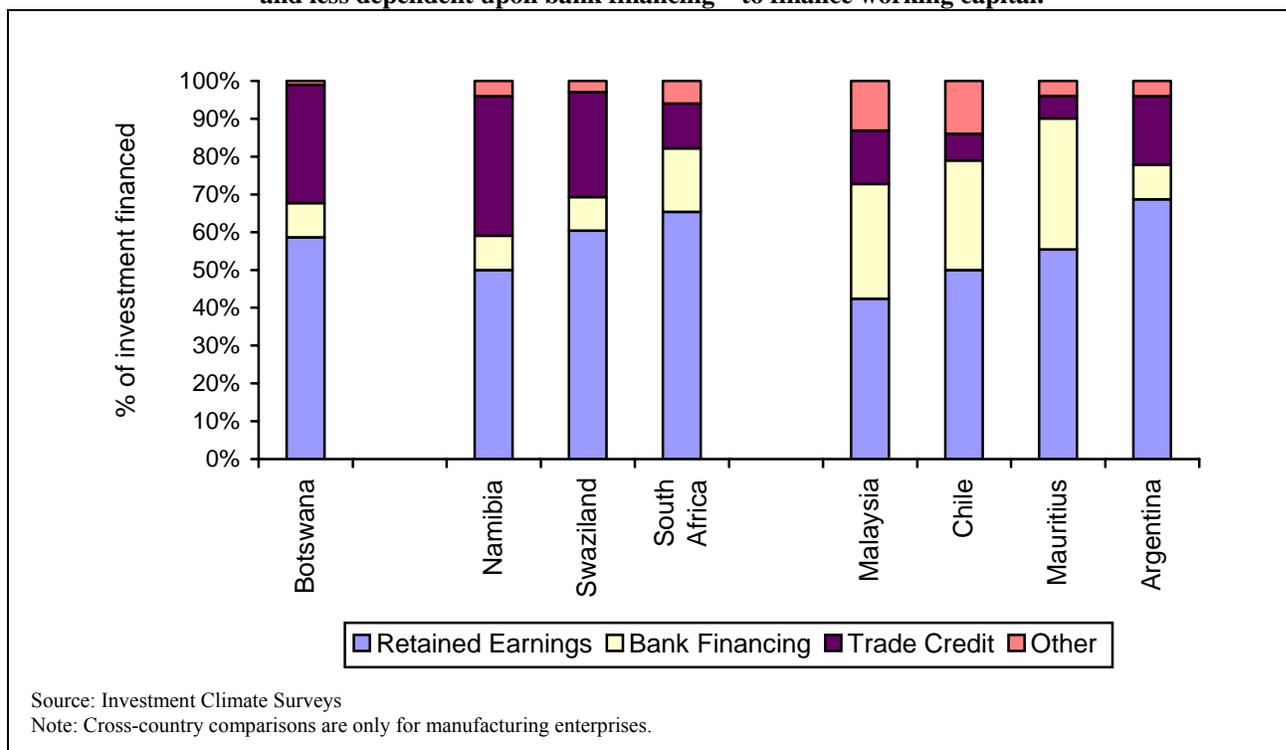
Consistent with the earlier evidence on overdraft facilities and lines of credit, firms in Botswana rely less on banks to finance working capital on average than firms in most of the non-SACU comparator countries except for Argentina. Whereas firms in Botswana, Namibia and Swaziland finance about 10 percent of working capital through bank financing, firms in Chile, Malaysia, and Mauritius finance between 30 and 35 percent in this way.

²⁷ See, for example, Mussa (2002) for a discussion of the Argentine bank crisis.

²⁸ Similar surveys have been conducted in Angola, Burundi, Democratic Republic of Congo, the Gambia, Guinea-Bissau, Guinea-Conakry, Mauritania, Rwanda, Tanzania, and Uganda.

Another difference between Botswana and the non-SACU economies is that firms in Botswana rely far more heavily on trade credit—credit from suppliers and customers—than firms in the non-SACU economies. On average, firms in the non-SACU comparator economies finance between about 5 and 15 percent of working capital in this way compared to 28 percent in Swaziland, 31 percent in Botswana and 37 percent in Namibia.

Figure 27: Manufacturing firms in Botswana are more dependent upon retained earnings and trade credit—and less dependent upon bank financing—to finance working capital.



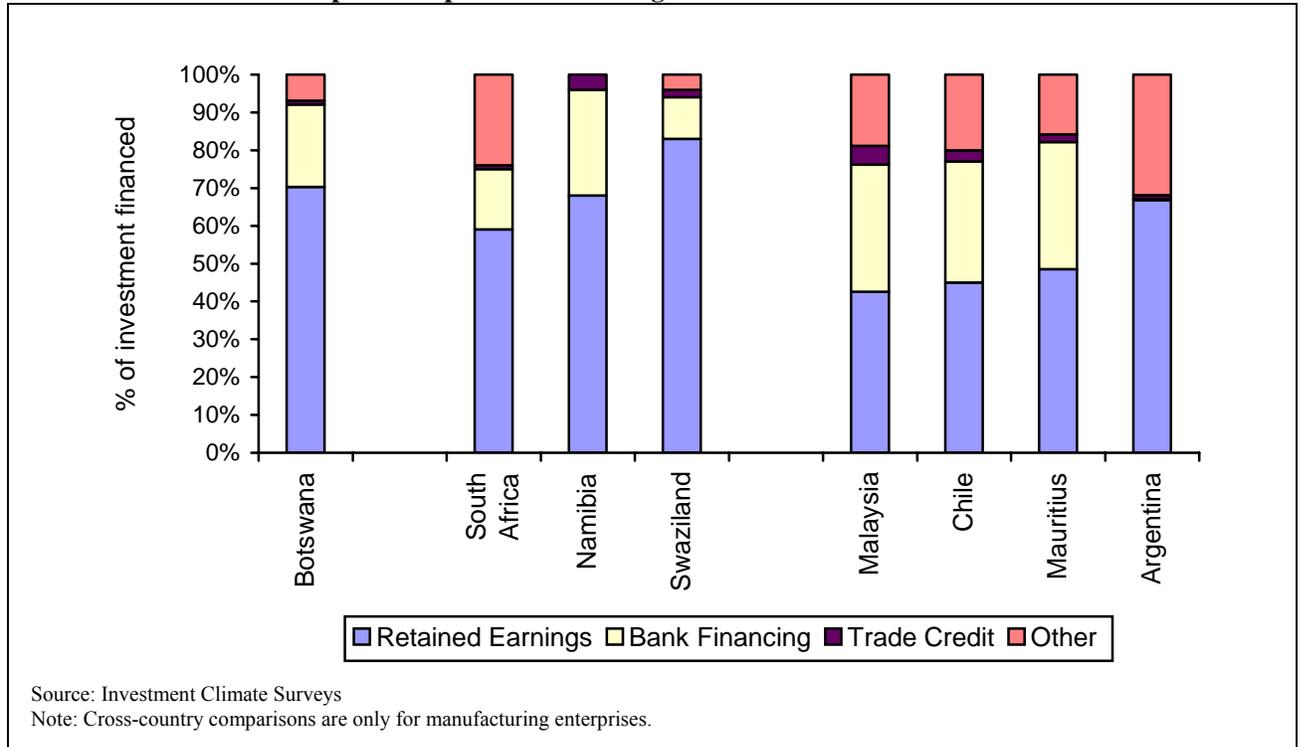
Firms in Botswana also finance a greater share of their new investment through retained earnings than firms in the non-SACU comparator countries (see Figure 28). On average, firms in Botswana finance about 70 percent of new investment in this way—similar to the average share in Namibia and slightly lower than the average share in Swaziland. But firms in Malaysia, Chile and Mauritius finance less than half their investment through retained earnings. Once again, with the notable exception of Argentina, the non-SACU economies also finance more new investment through the banking sector than firms in the SACU economies including Botswana.

The heavy use of retained earnings to finance working capital and new investment suggests that external funds are less easily available in Botswana than in most of the other middle-income comparator countries outside of SACU. This is consistent with the observation that firms were also more likely to say that access to finance is a serious problem in Botswana.

Another interesting feature is that in Botswana firms finance more new investment than working capital with bank loans. This suggests that the credit market for investment is better developed in Botswana than credit market for working capital finance. One possible reason for

this is the availability of trade credit to finance working capital. Another is that investment is easier to collateralize than working capital.

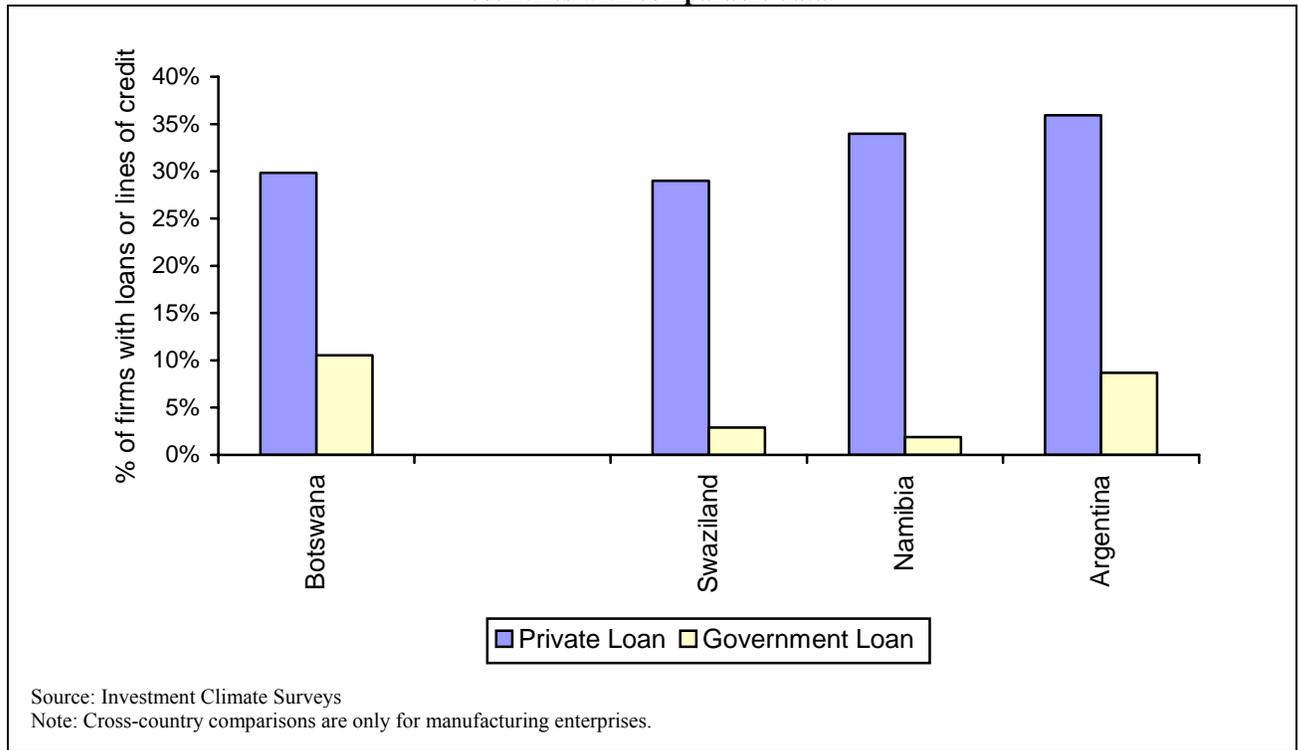
Figure 28: Manufacturing firms in Botswana are more dependent upon retained earnings—and less dependent upon bank financing—to finance new investment .



In all of the SACU economies, microenterprises use more retained earnings to finance more working capital and new investment than larger enterprises in the same country. In Botswana, the average microenterprise finances about 85 percent of working capital with retained earnings. This is higher than in Swaziland and South Africa (between 50 and 60 percent), but similar to Namibia (about 90 percent).

The survey also asks about the source of loans (although not overdraft facilities). In general, loans from government sources (e.g., National Development Bank and CEDA) are more important in Botswana than in the comparator countries (see Figure 29). In fact, although firms in Botswana are more likely to have loans than firms in Swaziland, the difference is very small once loans from government sources are excluded.

Figure 29: Loans from government sources are more important in Botswana than in the comparator countries with comparable data.



About 70 percent of SMLEs and 20 percent of microenterprise in Botswana have audited financial statements. This is slightly lower than in other SACU countries, and is in the middle for middle-income comparator group. About 90 percent of SMLEs in Namibia and Swaziland and close to 100 percent of SMLEs in South Africa had audited accounts. Fewer firms in the two countries in Latin America, Chile (60 percent) and Argentina (65 percent) had audited accounts, where slightly more firms in Mauritius and Malaysia (both about 90 percent) had audited accounts.

The cross-country comparison suggests that access to finance in Botswana is relatively similar to other SACU countries—although possibly a little better than in Swaziland and possibly a little worse than in Namibia. But access to finance is worse in the SACU economies than it is in the other middle-income comparator countries except Argentina, which is still recovering from a major banking crisis. Excluding credit from state-owned banks places Botswana even closer to the lower end of the comparator countries in terms of the ease of access to credit.

II. EFFECT OF SIZE ON ACCESS TO CREDIT.

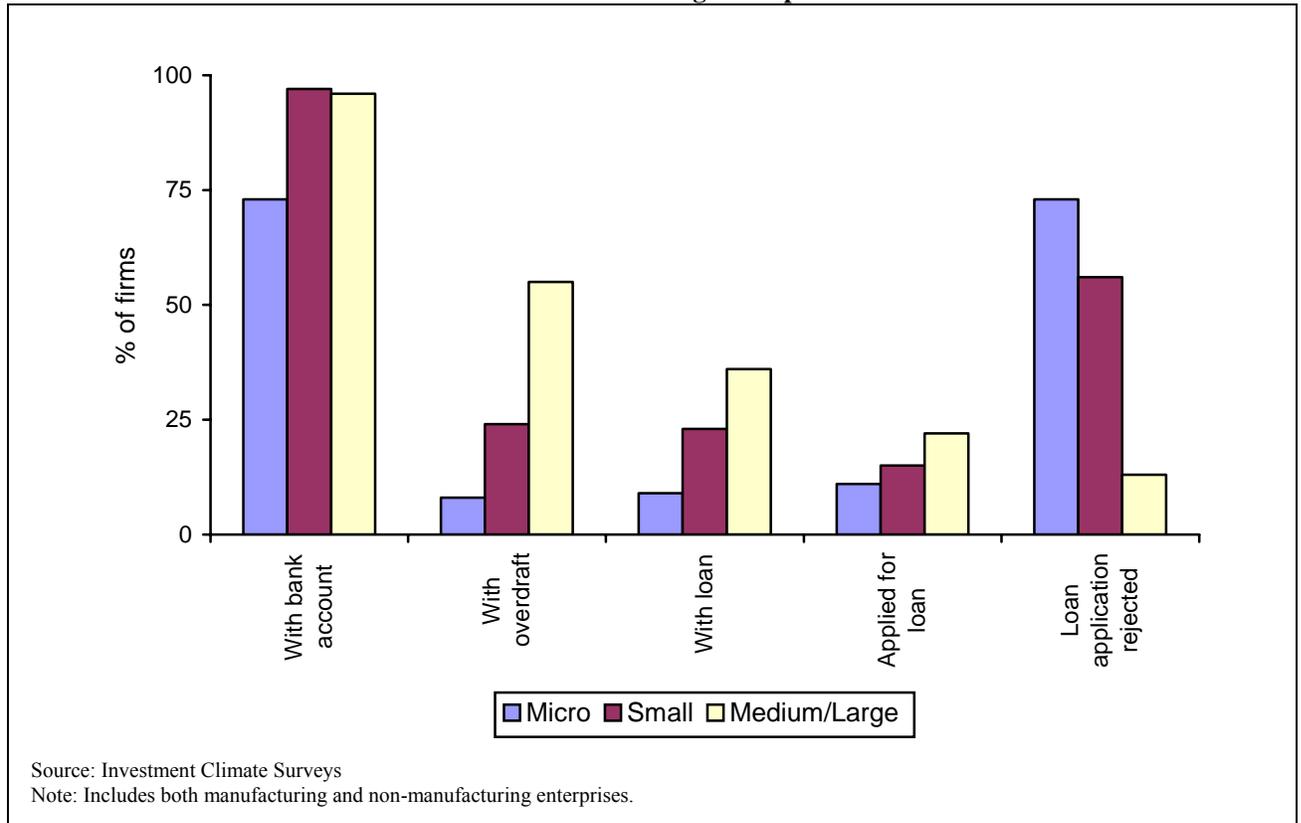
The previous subsection looks at access to credit in Botswana, comparing access in Botswana to access in other countries in SACU and to middle-income countries in other regions. The next sections focus on a slightly different issue—how access to credit varies within Botswana. Because comparable cross-country data are available only for the manufacturing sector, the cross-country comparisons only include manufacturing firms. In contrast, this section presents weighted data for the entire urban economy in Botswana, including manufacturing, retail trade and other services.

II.1 Objective Access Indicators

As noted in Chapter 2, smaller firms are more likely to say that access to finance is a serious obstacle than larger firms are. Managers of microenterprises were over twice as likely to say that access to finance was a serious constraint and three times as likely to say that it was the biggest problem that they faced. The econometric analysis in the Chapter 3 of Volume 2 confirms that these differences remain statistically significant even after controlling for other factors (e.g., age of firm, ownership, and sector of operations)

The objective indicators are also consistent with this (see Figure 30). Microenterprises

Figure 30: Access to credit is a more serious obstacle for microenterprises and small enterprises than for medium-sized and large enterprises.



are significantly less likely to use banking financing than SMLEs. In addition to being more likely to say that access to finance is a serious obstacle, they are less likely to have a bank account and over three times less likely to have access to any of the credit products (loans, overdrafts or line of credit).

Within the SMLE sample, small firms are also significantly less likely to use formal financing services than medium and large firms are. So, for example, only about 40 percent of small firms report having any credit products, compared with 65 percent of medium and large firms. These results (on lower access for microenterprises and for small enterprises) are confirmed in the regression analysis (see Appendix).

II.2 Characteristics of Loan products

Only 22 firms report having lines of credit and only 90 report having loans in the two surveys. Very few of the microenterprises have any type of loan or line of credit—only 7 firms have either loan or line of credit. More of the SMLEs have a loan or line of credit—105 firms (see Table 15).

Table 15: Loan providers, by firm size

	Microenterprise		SMLEs	
	No of Obs.	Percent	No of Obs.	Percent
Private commercial banks	3	43%	73	70%
State-owned banks and/or government agency	3	43%	28	27%
Other	1	14%	4	4%
Total	7	100%	105	100%

Source: Investment Climate Surveys

Note: Includes both manufacturing and non-manufacturing enterprises.

For the SMLEs, over 70 percent of loans are issued by private commercial banks. State-owned banks represent most of the remaining loans—about 27 percent—while non-bank financial institutions representing a negligible 4 percent. Although few microenterprises had any type of loan, loans from state-owned banks appear relatively more important for these enterprises. However, the econometric analysis in Appendix 5.1 indicates that microenterprises are not any more likely to have a loan from a state bank than small and medium-sized or large enterprises.

Because the sample is so small, loans and lines of credit and firms of all sizes are analyzed together (see Table 16). About half of the loans were obtained after 2004, with the earliest loan obtained in 1990. The size of loans varies from 20 thousand pula to 77 million pula, with a median loan size of 325 thousand pula. As a fraction of the estimated current value of the firm's fixed assets the average size of a loan is about 30 percent, which is relatively low. The average interest rate is 14.5 percent with a median of about 16 percent. The average and median loan maturity is about 5 years, which suggest that the long-term finance is available to those firms that have access to credit.

Table 16: Loan Characteristics

Variable	No.	Min	Median	Max	Mean
Year of Approval	113	1990	2004	2006	2003
Amount at approval (millions pula)	108	0.02	0.325	77.0	1.6
Amount (as % of assets)	46	0.025	0.201	1.638	0.305
Average annual interest rate (%)	108	3	16.4	28	14.5
Total duration in months	108	11	60	180	57.0
Collateral (as % of loan amount)	84	10	100	389	114.5

Source: Investment Climate Surveys

Note: Includes both manufacturing and non-manufacturing enterprises.

Collateral requirements are also reasonable—the median firm posts 100 percent of loan amount as collateral, with a mean of 115 percent reflecting a few firms that have to over-collateralize their loans. A variety of collateral is used, with land being the most popular one (60 percent of firms that post collateral use it), followed by personal assets of owners, such as house (40 percent), machinery and equipment, including movables (39 percent) and receivables and

inventory (37 percent). In many developing countries, movable assets and receivables cannot be used as collateral. In this respect Botswana appears more developed in a relatively wide availability of these types of collateral.

II.3 Loan Applications and Rejections

The indicators of firms applying for loans and whether or not those who apply are able to get them are important gauges of financial access. Only a small proportion of firms applied for a loan in 2005: about 11 percent of micro enterprises, 15 percent of small enterprises and 22 percent of medium and large enterprises (see Figure 30). The rejection rates are very high for micro and small enterprises, with close to three-quarter of application being rejected, compared to about one half for small enterprises and only one-tenth of applications from medium and large firms. High rejection rates may explain why micro and small firms have such low application rates.

Micro and small enterprises might not have loans because they are unable to get them (lack of supply) or because they do not want them (lack of demand). Firms that did not apply for a loan in 2005 are asked for reasons why they did not apply. Firms whose applications have been rejected are asked why the application was rejected.

About one half of microenterprises that have not applied for a loan in 2005 said that they do not need one. In contrast, about 75 percent of small enterprises and 85 percent of large enterprises that did not apply for a loan in 2005 (including some who already had a loan from before 2005) said that they did not need one. This suggests that unmet demand is greater for micro and small enterprises than for medium and large enterprises. Thus, lower access for micro and small enterprises is not fully explained by the lack of demand.

Table 17: Reasons for not having loans, by firm size.

	Microenterprises	SMLEs	
		Small	Medium/Large
Sample Size	88	181	95
No need for a loan	50%	74%	85%
Application procedures are complicated	14%	4%	4%
Interest rates are not favorable	9%	9%	4%
Collateral requirement are unattainable	7%	3%	1%
Size of loan and maturity are insufficient	5%	4%	1%
Did not think it would be approved	14%	2%	1%
Other	2%	4%	5%
Total	100%	100%	100%

Source: Investment Climate Surveys

Note: Includes both manufacturing and non-manufacturing enterprises.

For firms that did want a loan but did not apply for one, the most common reasons that microenterprises gave were that they did not think they would be approved (14 percent), that application procedures were too complicated (14 percent), or that loan terms (interest rates, size of loan, and maturity) were not sufficient for their needs (14 percent combined).

When microenterprises that had been rejected for a loan were asked why they had been rejected, the most common response was that they were not profitable (see Table 18). This was

also a common response for SMLEs, although they were less likely to say that this was the case (20 percent of SMLEs compared to 50 percent of microenterprises).

Table 18: Reasons for loan rejections

	Microenterprises	SMLE
Number of Observations	8	19
Collateral or cosigners unacceptable	13%	24%
Insufficient profitability	50%	19%
Problems with credit	0%	9%
Incompleteness of loan application	13%	14%
Other objections	25%	35%
Total	100%	100%

Source: Investment Climate Surveys

Note: Includes both manufacturing and non-manufacturing enterprises.

II.4 Sources of Finance for Working capital and Investment

On average, about 70 percent of working capital and 80 percent of investment finance for SMLEs (including those outside of manufacturing) comes from internal funds. Among different financial providers, commercial banks are more important than either state banks or non-bank financial institutions. In total, bank financing finances 6 percent of total working capital finance and 16 percent of total investment finance for SMLE. As above, microenterprises have significantly less access to bank finance than SMLEs (4 percent of working capital and 13 percent of investment). However, perhaps because the small share for firms of all types, the coefficients on size are not statistically significant after controlling for other factors (see econometric results in Appendix)

Trade credit could be an important source of finance for firms without access to formal sources of finance. In Botswana, microenterprises also appear to use less trade credit to finance working capital than SMLEs do. On average, microenterprises finance about 12 percent of their working capital in this way, compared to about 23 percent for SMLEs. Consistent with this, microenterprises also are less likely to pay for inputs after delivery (about 15 percent of inputs for microenterprises but only about 36 percent for SMLEs. Family and friends compensate for some of the lack of access to formal finance for micro enterprises, providing 9 percent of financing for working for microenterprises compared to only 2 percent for SMLEs.

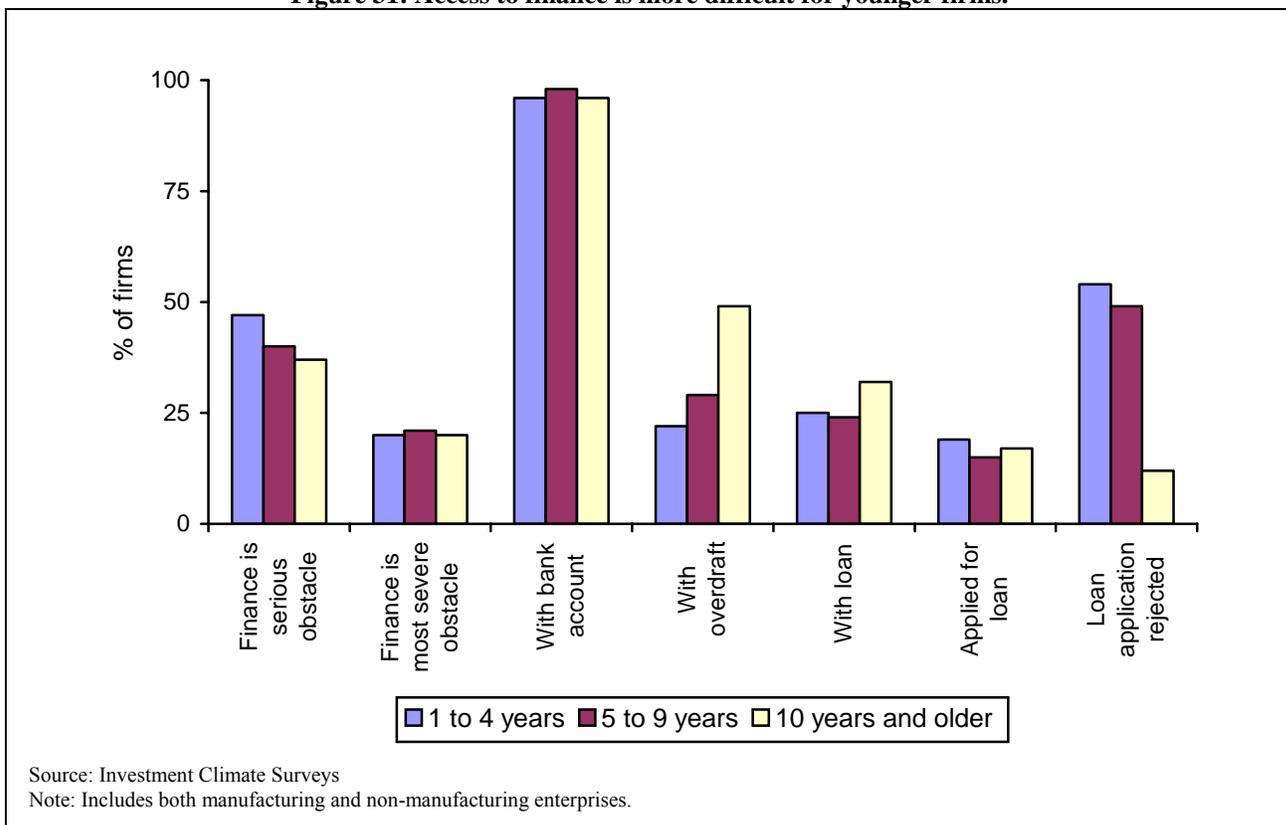
III. ACCESS TO FINANCE BY DIFFERENT CATEGORIES OF FIRMS

This section looks at access for firms of several types. It focuses on the following categories: firm age, legal status, industry, ownership (domestic vs. foreign), the gender and ethnicity of the firm owner. To ensure comparability, the analysis focuses on SMLEs.

III.1 Firm Age

Younger firms, which are more opaque, do not have a proven track record and are more risky, often face more serious financing constraints than established firms do. To see whether this is indeed the case in Botswana, firms are divided into three groups: firms that have been operating for less than 5 years, firms that have been operating for between 6 and 10 years, and firms that have been operating for more than 10 years.

Figure 31: Access to finance is more difficult for younger firms.



In most cases, access to credit is more difficult for younger firms than for older firms (see Figure 31). For example, only 22 percent of firms between 1 and 4 years old have an overdraft facility and only 25 percent have a loan. In comparison, 49 percent of firms older than 10 years old have an overdraft facility and 32 percent have a loan. After controlling for other factors, however, these differences are generally not statistically significant (see econometric results in Appendix).

The difference does not seem to be because young firms do not demand access to finance. Younger firms are slightly more likely to have applied for a loan in 2005, likely indicating their higher need for loans. Given that younger firms are often trying to expand their operations, this might not be surprising. Younger firms are also much more likely to have been rejected for a loan—54 percent of young firms have been rejected, compared to only 12 percent of the oldest firms do. This difference in rejection rates between the oldest firms and other firms is statistically significant even after controlling for other factors.

Another important difference between younger and older firms is that younger firms seem to be more likely to get financing from government sources. Firms younger than five years old get 6 percent of their investment financing from government sources, compared to 3 percent for firms between 5 and 10 years old and only get 1 percent of state bank funds for firms older than 10 years old. This difference remains statistically significant after controlling for other factors that might affect lending (see econometric results in Appendix).

Given that younger firms often have trouble getting access to finance due to their opaque nature, it is plausible that State Bank intervention is correcting a market failure. An important question is whether this is indeed the case—is this intervention efficient or is government financing crowding out private commercial banks. Answering this question would require more in-depth research.

III.2 Industry

In general, there do not appear to be consistent and significant differences in access to credit across industries. Manufacturing firms appear to have most access to credit products (64 percent of enterprises), while retail firms have the least (36 percent). This might be because that manufacturing firms are better able to secure bank finance for asset purchase because their assets present better collateral value. Retail firms also appear to have higher rejection rates (57 percent), than manufacturing (14 percent) and other service firms (31 percent). After controlling for other things (e.g., size and age of firms), however, these differences are not statistically significant (see econometric results in Appendix).

III.3 Legal Status

Limited liability companies (LLCs) are privately held companies where the company is a distinct separate legal entity from its owners, who only have limited liability. In contrast, owners generally have unlimited liability in other companies such as sole proprietorships and partnerships. Limited liability can be seen as another step towards greater formality, as it separates individual ownership and firm identity.

Limited liability companies generally have better to financial services than other firms. In Botswana, these firms are more likely to have loans than unlimited liability companies (29 percent compared to 23 percent), overdraft facilities (39 percent compared to 24 percent), finance more working capital and investment with bank financing (8 percent and 18 percent compared to 11 percent and 2 percent respectively). They are also more likely to have applied for a loan (20 percent compared to 12 percent) and are less likely to have been rejected (25 percent compared to 72 percent). Although limited liability companies tend to be larger, many of the differences between LLCs and other companies with respect to access to finance remain statistically significant after controlling for this and other differences.

III.4 Ownership characteristics

As a final exercise, this subsection compare access to finance for firms with different ownership characteristics, comparing foreign-owned firm with domestically owned firms; firms owned by males with firms owned by females, and firms owned by indigenous Africans with firms owned by non-African owners.

The difference between foreign owned firms and domestically owned firms is generally small with respect to having loans, lines of credit and overdraft facilities: about 45 percent of domestic firms and 47 percent of foreign firms have at least one credit product. But there are some differences. Foreign-owned firms report using slightly less bank financing for working capital than domestic firms (4 percent compared to 7 percent) and new investment (15 percent compared to 16 percent). The difference for working capital remains statistically significant after controlling for other things that might affect access to credit (see econometric results in Appendix).

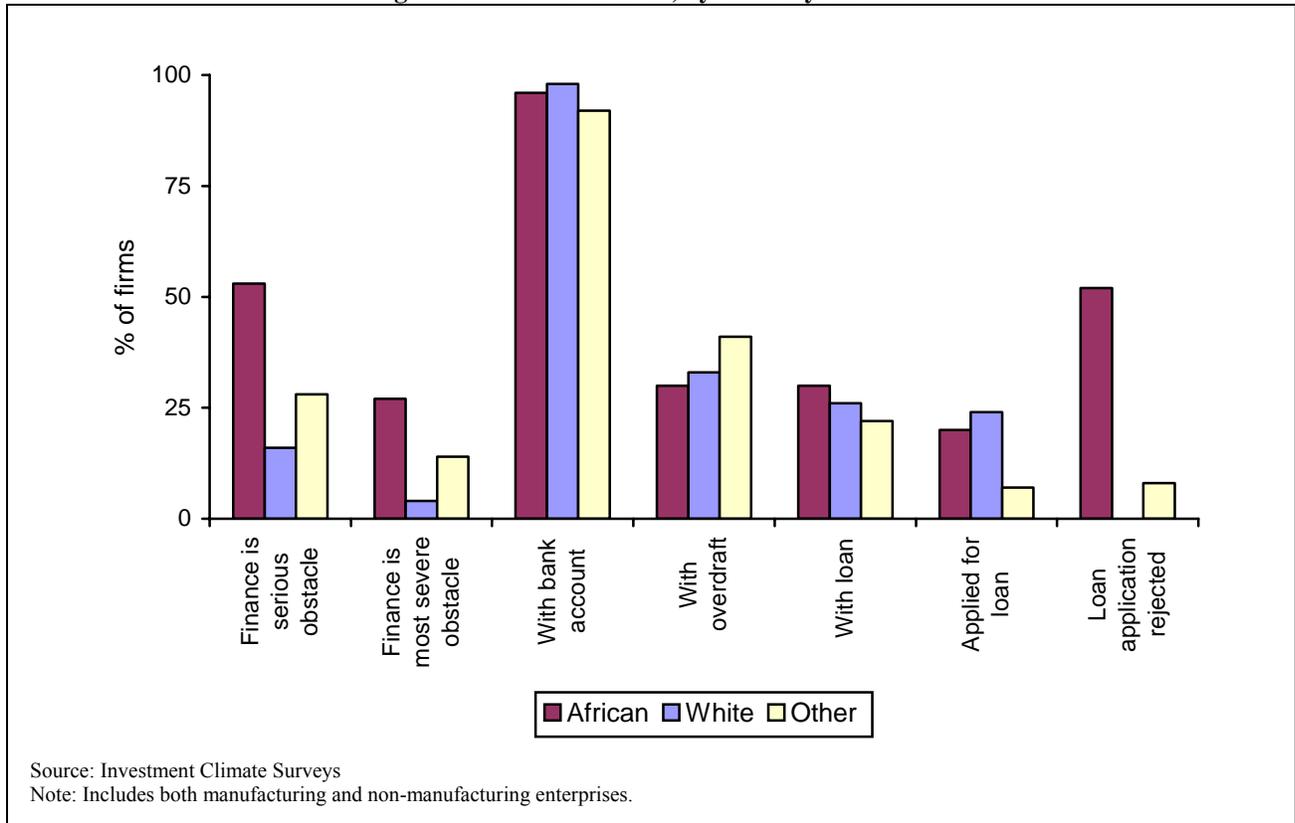
Second, the differences in usage seem to reflect differences in demand for financing rather than differences in ability to obtain financing. As noted in Chapter 3, foreign-owned firms are less likely to say that access to finance is a serious problem. In addition, foreign-owned firms are less likely to have applied for a loan, although those that do are less likely to be rejected—52 percent of domestic firms compared to only 8 percent of foreign-owned firms get rejected. Finally, foreign-owned firms that had not applied for a loan in 2005 were more likely to say that they did not want on (86 percent compared to 70 percent).

Finally, foreign-owned firms are less likely to use get financing from state-owned banks. Foreign-owned firms finance only about 2 percent of investment with loans from government sources, compared to about 5 percent for domestic firms. This difference also remains statistically significant after controlling for other things (see econometric results in Appendix).

Female-owned firms do not appear to be disadvantaged with respect to access to credit. In fact, female-owned firms are more likely to have a loan, line of credit or overdraft (52 percent) than male-owned firms (41 percent). They are more likely to apply for a loan (23 percent compared to 13 percent) and less likely to be rejected (51 percent compared to 26 percent). For the most part, however, the differences are not statistically significant after controlling for other factors. The one exception is that female owned firms appear to be less likely to have loan applications rejected than male-owned firms.

As noted in Chapter 3, African-owned firms tended to rate access to finance as a greater problem than white-owned and other firms (see Figure 32). The objective data provides less strong evidence in this respect. The proportion of firms with usage of at least one credit product is about the same across ethnic groups. The most notable difference is that African-owned firms report much higher rejection rates than other firms (52 percent vs. 0 percent for whites and 8 percent for other ethnic groups). Although, as noted in Chapter 3, the differences in perceptions remain statistically significant even after controlling for other factors, most of the differences in the objective indicators are not statistically significant after controlling for these other differences. Results were similar for South Africa, with differences in perceptions remains statistically significant and differences in objective indicators being statistically insignificant (Regional Program on Enterprise Development, 2006).

Figure 32: Access to credit, by ethnicity of owner.



IV. IMPACT OF ACCESS TO CREDIT ON INVESTMENT

In the econometric analysis presented in the Appendix, firms with access to credit are more likely to invest and they invest larger amounts (relative to existing assets) than firms without access to credit. Loan applications are also significantly related to investment, while being rejected for a loan reduces the amount of investment (but this is only significant using the investment to assets measure, which has a small sample). This evidence is consistent with the argument that access to credit increases investment. However, an alternative explanation is possible—that firms with good growth potential are more likely to invest and are more attractive to banks. Without additional data or experimental design it is impossible to infer the causality of investment and access relationship.

V. SUMMARY

This chapter uses the data from ICA surveys to evaluate the extent of the access to finance in Botswana. Overall, access to finance in Botswana is similar to access in other SACU countries. But it is lower than in the most of the other middle-income comparator countries. Excluding credit from state-owned banks places Botswana slightly further towards the lower end in terms of the access to credit products, relative to other SACU countries with available data. This suggests that state credit plays an important role in Botswana’s financial markets. More research is needed to determine whether state credit is crowding out private credit or supplementing it.

Financial markets in Botswana display the level of development expected of a middle-income country. Long-term finance is available, with an average loan maturity of 5 years. Interest rates, however, are somewhat high, averaging about 15 percent. Collateral requirements are relatively fair and a variety of collateral is used, including movable assets and receivables, further indicating financial sophistication.

Access to finance in Botswana varies depending on firm characteristics. These are the main differences across firms. Most notably, access to credit is a significantly greater problem for smaller firms—especially microenterprises. After controlling for other firm characteristics, the ethnicity of the owner, i.e. if the owner is of African origin, is not significantly related to objective access indicators (such as usage of credit products, application or rejection rates and percent of bank finance for working capital and investment). However, African owners report higher subjective measures of constraints.

The results suggest that access to finance continues to be an important focus to further development in Botswana. Further research into state-bank involvement and efficiency of state loan allocation is recommended. Further development of financial sector will rely on strengthening of legal and regulatory environment, financial sector supervision and enhancing competitiveness.

APPENDIX: REGRESSION ANALYSIS

In this section we perform multivariate regression analysis of access indicators and investment behavior of firms in Botswana. While descriptive univariate analysis provides useful information about the relationships between firm's characteristics and access, it does not take into account the correlations between different firm characteristics. Many firm characteristics are correlated, and thus one characteristic could proxy for the effect of another characteristic in univariate analysis. For example, LLC and foreign-owned firms are larger and older, while younger firms tend to be smaller. Manufacturing firms are larger than retail firms and female owners are more likely to be African.

For example, the fact that foreign firms have better access could be either due to the fact that foreign firms are in general larger and older or it could be because of some additional privileges granted by ownership status. This distinction could be achieved with regression analysis. In fact we find that foreign firms have not a significant difference in usage of credit products once age and size are taken into account.

The usefulness of regression analysis is that it takes these inter-relationships between all the control variables into account. In addition, regression analysis determines whether the differences between various firm categories are statistically significant or not. In a small sample like ours, the differences could be simply random, and may lead to erroneous policy implications.

Methodology

We employ simple multivariate regression methodology. To study access indicators the following regression model is used:

$$Y_i = \alpha + \beta X_i + \varepsilon_i$$

Where Y_i is one of the access indicators, x_i is a vector of firm-level characteristics and ε_i is an error term. We estimate this model with linear OLS for percent of bank finance for working capital and investment as dependent variables and with a probit model for the following categorical dependent variables: indicator of any credit products, whether or not the enterprise applied for loans, have been rejected and whether or not they have a state loan (as opposed to private sector loan). The coefficients are estimated with heteroskedasticity adjusted error terms.

In our regression analysis we assume that firm characteristics are exogenous. However, it is plausible that the access to credit may affect firm characteristics. For example, small size could be a determinant of access (i.e. small firms are more likely to be denied loans), but also access to credit could increase the chances that firms stay small and cannot grow. In this case access may be endogenous determinant of size. Without proper instruments which we do not have we cannot separate the causality effects.

To study investment behavior we use a similar model. In this case Y_i is one of the three investment measures – a) an indicator variable for whether or not the firm has made an

investment (into property, plant and equipment), b) an amount of investment relative to existing assets, and c) an amount of investment relative to sales. The measure of investment to assets is preferred, since it measures the quantity of new investment relative to an existing stock of assets and it shows the rate of expansion. However, this current value of existing assets is only available for manufacturing enterprises. As a second-best we created a measure of investment to sales. While sales can be used as a rough guide of the size of the firm, the ratio of investment to sales would be affected by differences in capital intensity. The regressions with Purchased Assets as dependent variable is estimated using Probit model and regressions with Investment amount as dependent variable is estimated by Tobit model with a lower bound of zero, to account for those firms which made no investments.

As control variables we use the same firm characteristics used in the access indicators regressions. In addition we include several access indicators to test whether access to finance is associated with higher incidence or larger amount of investment.

The simplicity of this investment model allows us to use the data limitations to do a rough analysis of the impact of access on investment. However, to properly study investment one needs to have a structural model of investment which will predict amount invested as function of the marginal product of capital (i.e. the investment opportunity) and the cost of capital. Since we do not have these data we proxy for investment opportunities with other firm characteristics. If there are some omitted variables that are correlated with access and with investment opportunities, our results will be biased and will overestimate the effect of access on investment.

Results for Access indicators

Table 19 reports regressions with several dependent variables used as indicators of access: whether the firm has any credit products, loan applications and rejections, percent of finance for working capital and investment and an indicator for state loans (among those with any loans). For comparison, micro enterprises are included in the same regression with SMLE.

The results are in many ways similar to those described above. We still find that micro and small firms use credit products less. However, age is only significant in predicting rejection rates, which are highest in the middle age group. Thus, univariate results for age discussed above were mainly driven by size effect. LLC and foreign firms have more access, while female-owned firms have lower rejection rates and higher proportion of bank finance for working capital. Surprisingly, African owned firms don't have significant differences in terms of objective indicators, although as noted in Chapter 3 of Volume 2, they are more likely to say that access to finance is a serious problem. Also, there are no significant differences across industries, once other firm characteristics are controlled for.

Two additional variables are included in regression analysis – whether the firm has an external auditor and whether or not the firm owns land. The external audit makes the firm's financial statements more reliable and thus reduces the information asymmetry between the firm and financial institutions, and thus should improve firm's access to finance. Own land could be used as collateral and should also be associated with increased access. We find that firms with the external auditor are more likely to use credit products and firms with own land are more

likely to apply for loans and have more bank finance for investment (because of easy access to collateral).

Similar to univariate results, state banks target young firms, i.e. those in the 1-5 years age and are not accessible to foreign firms. State bank loans are more likely to be given to firms with land and firms in Gaborone. However, there is no longer a significant relationship between African owners and state-banks, so the previous results were likely to be driven by other firm characteristics. Surprisingly, firm selling their products to a state-owned firm are not more likely to have state loans, while the years of experience of the manager with the government has if anything a negative effect on access to state loans. There is no significant correlation of access to state loans and indicators of corruption, days spent with the government officials and bribes (not reported).

Results for Investment

Investment in productive assets is one of the desirable outcomes of access to finance. Investment is important as a source of growth and efficient capital allocation. Table 20 reports regression analysis of three measures of investment: an indicator for whether or not the firm has purchased any assets in 2005 and two measures of Investment amount discussed above – investment to sales and investment to assets.

We do not find any consistent pattern with any of the control variables, possibly because of the differences in investment definition. Some controls appear to be significant for one investment measure but not for the others.

However, we consistently find that firms with access to credit products report a higher incidence of investment and higher amount of investment using both measures. On the other side, the subjective indicators of access are not related to the incidence of investment or investment amounts. Loan applications are also significantly related to investment, while being rejected for a loan reduces the amount of investment (but this is only significant using the investment to assets measure, which has a small sample).

This evidence is in line with the argument that access to credit helps increase investment. However, an alternative explanation could also be possible – that those firms with investment may have good growth potential and hence would be favored by banks. Without additional data or experimental design it is impossible to infer the causality of investment and access relationship.

Table 19: Effect of firm characteristics on objective indicators of access to credit

	Has any credit product	Applied for loans	Rejected	Bank finance for working capital	Bank finance for investment	State loan	State loan
Observations	442	442	73	438	195	112	77
Age: 1-5 yrs dummy	-0.19 [0.24]	0.18 [0.33]	0.53 [0.30]	-0.01 [0.49]	0.06 [0.33]	0.24 [0.02]**	0.22 [0.11]
Age: 6-10 yrs dummy	-0.21 [0.23]	0.13 [0.51]	0.92 [0.08]*	-0.01 [0.53]	0.03 [0.67]	-0.11 [0.19]	-0.06 [0.61]
Size: Micro dummy	-1.14 [0.00]***	-0.2 [0.49]	0.18 [0.78]	-0.04 [0.17]	-0.05 [0.64]	0.05 [0.84]	0.06 [0.83]
Size: Small dummy	-0.58 [0.00]***	-0.19 [0.31]	0.45 [0.37]	-0.02 [0.41]	-0.09 [0.18]	0.05 [0.60]	0.07 [0.56]
LLC dummy	0.18 [0.23]	0.53 [0.00]***	-1.34 [0.00]***	0.05 [0.00]***	0.11 [0.04]**	-0.04 [0.70]	-0.11 [0.41]
Foreign dummy	0.07 [0.65]	-0.55 [0.00]***	-0.88 [0.20]	-0.03 [0.05]*	0 [0.93]	-0.3 [0.00]***	-0.26 [0.01]***
Female owner dummy	0.15 [0.27]	0.14 [0.37]	-1.04 [0.02]**	0.03 [0.09]*	0.06 [0.20]	-0.11 [0.18]	-0.1 [0.32]
African owner dummy	0.14 [0.40]	0.02 [0.93]	0.11 [0.88]	0 [0.93]	0.08 [0.23]	-0.03 [0.69]	-0.04 [0.70]
Auditor dummy	0.41 [0.00]***	0.25 [0.18]	-0.59 [0.23]	0.02 [0.21]	0 [0.97]	-0.15 [0.15]	-0.17 [0.16]
Own land dummy	0.09 [0.56]	0.31 [0.06]*	0.14 [0.75]	0.01 [0.48]	0.11 [0.10]*	0.14 [0.10]*	0.14 [0.20]
Region A dummy	0.02 [0.91]	0.24 [0.27]	-0.22 [0.74]	0.03 [0.03]**	0.05 [0.55]	0.19 [0.06]*	0.26 [0.04]**
Manufacturing industry dummy	0.02 [0.90]	0.02 [0.92]	-0.37 [0.43]	0.02 [0.33]	0.06 [0.32]	0.07 [0.45]	0.09 [0.43]
Retail industry dummy	-0.23 [0.15]	-0.21 [0.28]	0.28 [0.54]	0.01 [0.73]	0.05 [0.32]	0 [0.99]	0 [.]
State Buyer Dummy						-0.02 [0.83]	0.15 [0.14]
Years of experience with government							-0.04 [0.03]**
Constant	-0.08 [0.82]	-1.52 [0.00]***	1.06 [0.44]	0 [0.96]	-0.07 [0.56]	0.29 [0.10]	0.23 [0.26]
R-squared	NA	NA	NA	0.09	0.1	0.32	0.34

Note: Robust p values in brackets * significant at 10%; ** significant at 5%; *** significant at 1%

Table 20: Effect of firm characteristics on investment

	Purchased assets	Investment to assets	Investment to sales	Purchased assets	Investment to assets	Investment to sales	Purchased assets	Investment to assets	Investment to sales	Purchased assets	Investment to assets	Investment to sales
Observations	441	196	427	441	196	427	441	196	427	73	33	70
Age: 1-5 yrs dummy	0.08 [0.61]	0.02 [0.82]	0.03 [0.29]	0.13 [0.43]	0.01 [0.89]	0.04 [0.20]	0.05 [0.76]	0.02 [0.81]	0.03 [0.31]	-0.03 [0.95]	0.01 [0.89]	0.12 [0.05]*
Age: 6-10 yrs dummy	0.04 [0.82]	-0.17 [0.03]**	-0.04 [0.20]	0.09 [0.60]	-0.18 [0.02]**	-0.04 [0.25]	0.01 [0.95]	-0.19 [0.02]**	-0.04 [0.15]	0.18 [0.73]	-0.25 [0.01]***	-0.04 [0.52]
Size: Micro dummy	-0.34 [0.15]	0.07 [0.69]	0.04 [0.32]	-0.12 [0.62]	0.14 [0.39]	0.08 [0.07]*	-0.32 [0.18]	0 [0.98]	0.05 [0.25]	0.23 [0.71]	0.61 [0.00]***	0.12 [0.13]
Size: Small dummy	-0.05 [0.78]	-0.09 [0.24]	0.02 [0.62]	0.07 [0.65]	-0.06 [0.47]	0.04 [0.22]	-0.02 [0.91]	-0.07 [0.36]	0.02 [0.44]	0.1 [0.83]	0.1 [0.15]	0.03 [0.66]
LLC dummy	0.03 [0.83]	-0.11 [0.11]	0.03 [0.26]	0 [0.99]	-0.13 [0.06]*	0.02 [0.37]	-0.08 [0.56]	-0.14 [0.04]**	0.01 [0.63]	0.33 [0.43]	0.02 [0.75]	0.1 [0.11]
Foreign dummy	0.08 [0.59]	0.12 [0.07]*	0.02 [0.43]	0.08 [0.58]	0.13 [0.05]*	0.02 [0.47]	0.23 [0.13]	0.16 [0.01]**	0.04 [0.13]	0.44 [0.35]	0.06 [0.46]	0.01 [0.92]
Female owner dummy	-0.19 [0.14]	-0.04 [0.48]	-0.01 [0.81]	-0.23 [0.07]*	-0.04 [0.43]	-0.01 [0.63]	-0.23 [0.08]*	-0.05 [0.37]	-0.01 [0.64]	0.11 [0.77]	-0.36 [0.00]***	-0.06 [0.24]
African owner dummy	0.08 [0.65]	-0.09 [0.21]	-0.01 [0.69]	0.04 [0.81]	-0.12 [0.11]	-0.02 [0.52]	0.08 [0.63]	-0.1 [0.16]	-0.01 [0.69]	1.11 [0.03]**	0 [0.96]	-0.01 [0.89]
Auditor dummy	0.17 [0.23]	0.1 [0.11]	0.04 [0.10]	0.08 [0.57]	0.07 [0.30]	0.03 [0.26]	0.12 [0.41]	0.1 [0.11]	0.04 [0.17]	-0.33 [0.43]	-0.33 [0.00]***	-0.04 [0.47]
Own land dummy	0.18 [0.23]	-0.15 [0.02]**	0.01 [0.77]	0.15 [0.29]	-0.16 [0.01]**	0.01 [0.86]	0.11 [0.46]	-0.15 [0.02]**	0 [0.99]	0.06 [0.88]	-0.37 [0.00]***	-0.01 [0.86]
Region A dummy	0.27 [0.13]	0.02 [0.80]	0.08 [0.03]**	0.28 [0.11]	0.03 [0.68]	0.08 [0.02]**	0.24 [0.19]	0.03 [0.73]	0.07 [0.04]**	0.26 [0.66]	-0.03 [0.61]	0.03 [0.69]
Manufacturing industry dummy	-0.14 [0.41]	-0.11 [0.53]	-0.04 [0.24]	-0.15 [0.36]	-0.13 [0.46]	-0.04 [0.17]	-0.16 [0.34]	-0.21 [0.24]	-0.04 [0.22]	-0.01 [0.97]	0.23 [0.07]*	-0.08 [0.16]
Retail industry dummy	-0.3 [0.06]*	-0.21 [0.07]*	-0.07 [0.01]**	-0.25 [0.11]	-0.21 [0.06]*	-0.07 [0.02]**	-0.26 [0.11]	-0.22 [0.06]*	-0.07 [0.02]**	-0.08 [0.85]	-0.37 [0.01]**	-0.04 [0.47]
Access obstacle	-0.02 [0.63]	-0.01 [0.74]	0 [0.86]									
Credit product dummy				0.63 [0.00]***	0.18 [0.01]***	0.1 [0.00]***						
Applied for a loan							1.06 [0.00]***	0.21 [0.00]***	0.13 [0.00]***			
Rejected										-0.07 [0.87]	-0.33 [0.00]***	-0.01 [0.80]
Constant	-0.26 [0.47]	0.23 [0.30]	-0.11 [0.11]	-0.64 [0.07]*	0.16 [0.47]	-0.16 [0.02]**	-0.41 [0.24]	0.27 [0.22]	-0.13 [0.04]**	-0.62 [0.62]	0.47 [0.02]**	0.04 [0.78]

Note: Robust p values in brackets * significant at 10%; ** significant at 5%; *** significant at 1%

CHAPTER 6: OTHER ASPECTS OF THE INVESTMENT CLIMATE

In addition to problems related to access to finance and worker skills, many firms were also concerned about other areas of the investment climate, including macroeconomic instability, tax rates, crime, access to land, and competition with the informal sector. This chapter provides additional information and looks at objective data from the survey on each of these issues. In addition, it discusses several areas of the investment climate that firms were either not particularly concerned about, such as power, transport, and telecommunications infrastructure.

I. MACROECONOMIC INSTABILITY

A significant number of firms claimed that macroeconomic stability was a serious constraint on their current operations. This might seem peculiar given Botswana's reputation for excellent macroeconomic management, its relatively modest—although not low—inflation, and its extremely rapid growth. As such, it is a topic that will need more investigation. One possibility is that this reflects the timing of the survey—inflation had peaked at 14 percent in April 2006, which is historically high. This seems a plausible explanation for this finding.

Another possibility is that the exchange rate has been relatively unstable. If the second possibility is the main cause, firms involved in international trade (outside of the SACU since the Pula is pegged to a basket that is heavily weighted towards the Rand), should complain more about macroeconomic instability than other firms. As discussed in Chapter 3, this does not appear to be the case—exporters were no more likely to say that macroeconomic instability was a serious obstacle than other firms. Although information on imports is only available for manufacturing firms, results are similar when this variable is added to the regressions shown in Chapter 3 (see Chapter 3 for a discussion of the methodology). The coefficients on the dummy variables representing whether the firm imports and exports remain statistically insignificant—and the point estimates of the coefficients are both negative indicating that if anything these firms are less, not more, concerned about macroeconomic instability. This indicates that the main concern is probably the spike in inflation.²⁹

²⁹ Moreover, as noted in Chapter 2, few firms export outside of SACU, reducing concerns about exchange rate instability.

Table 21: Effect of enterprise characteristics on perceptions about macroeconomic instability

Observations	Macroeconomic Instability		
	114	114	113
Importer (dummy)	-0.10 (0.83)		-0.09 (0.69)
Exporter (dummy)		-0.13 (1.20)	-0.09 (0.72)
Workers (natural log)			-0.01 (0.26)
Foreign-owned (dummy)			0.15 (1.25)
Ownership - White (dummy)			-0.03 (0.22)
Ownership - Asian (dummy)			-0.25* (1.91)
Ownership - Female (dummy)			0.21** (2.14)

II. TAXES

Tax rates are among the first issues considered by potential investors, domestic and especially international. Excessive tax rates can hinder economic growth and deter informal companies from considering a change in their status. After access to finance and macroeconomic instability, SMLE managers were more likely to say that tax rates were a serious problem than any of the other areas of the climate that they were asked about. Although microenterprise managers were less likely to say tax rates were a serious problem than SMLE managers, it ranked third for microenterprise managers as well.

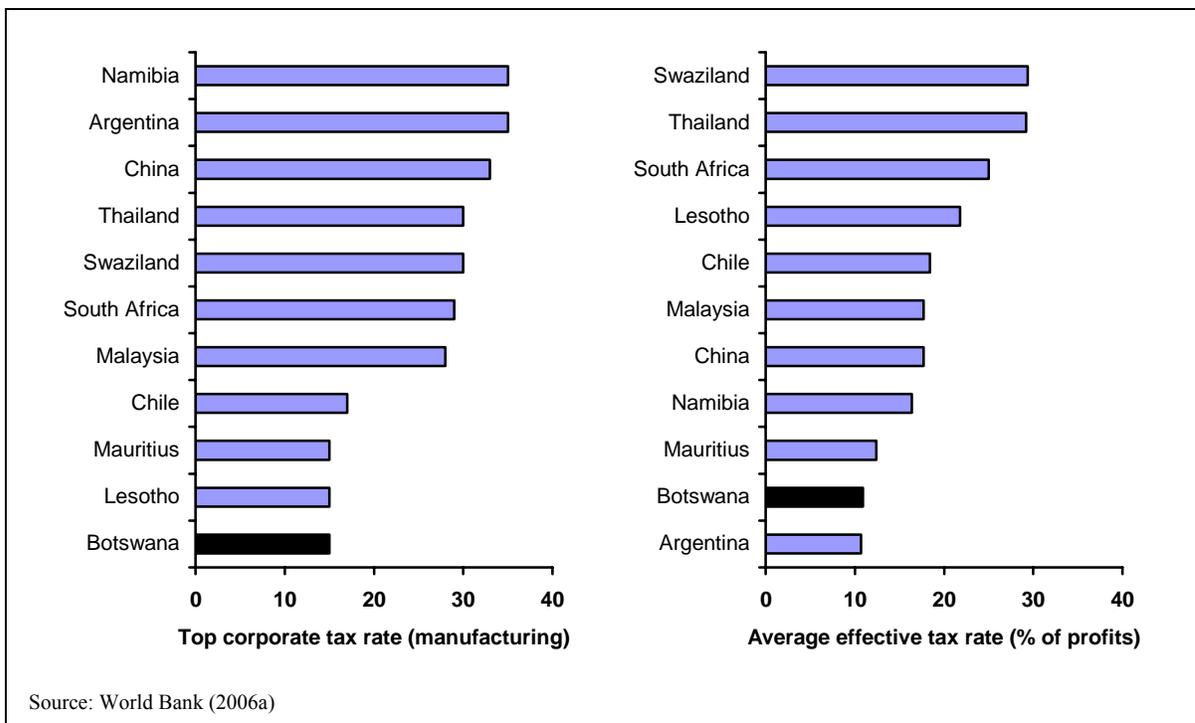
In itself, this is not surprising—tax rates typically rank among enterprises’ greatest concerns in investment climate assessments. According to the *2005 World Development Report*, enterprise managers ranked tax rates among the top five obstacles in all upper middle-income countries and in over 4 out of 5 countries in Sub-Saharan Africa where World Bank Enterprise Surveys had been completed at that time (World Bank, 2004).

For firms in sectors other than manufacturing and not in Botswana’s International Financial Services Centers, the basic company tax is 15 percent (International Monetary Fund, 2006b). For firms in the International Financial Service Centers and in the manufacturing sector, the basic company tax is 5 percent. In addition, companies are also generally liable for a 10 percent additional company tax (ACT). As a result, the total company tax rate is essentially 25 percent for non-manufacturing firms and 15 percent for manufacturing firms (Foreign Investment Advisory Service, 2004).

Given the favorable treatment of manufacturing firms, it is not surprising that retail and other service firms were more likely to say that tax rates were a serious obstacle for them (see Chapter 3). About 11 percent of manufacturing firms said that tax rates were a serious obstacle, compared to about 27 percent of non-manufacturing firms.

The basic corporate rate for manufacturing firms of 15 percent is as low as in any of the comparator countries (see Figure 33). In most countries, the corporate rate is between about 30 and 35 percent. The corporate tax rate remains relatively low after taking other aspects of corporate taxation into account. Due to differences in things such as depreciation allowances and rules regarding carryover of losses, average effective tax rates can differ significantly from marginal tax rates. The *Doing Business Report* (World Bank, 2006a) calculates how much a specified hypothetical enterprise would have to pay in corporate taxes if it fully complied with all tax laws. Although tax rates in Botswana are no longer the lowest among the comparator countries, they remain low compared to most of the comparator countries. The low level of taxation is broadly consistent with the macroeconomic evidence discussed in Chapter 1—the Government relies heavily upon non-tax revenue from the mineral sector and receipts from SACU for most of its revenue.

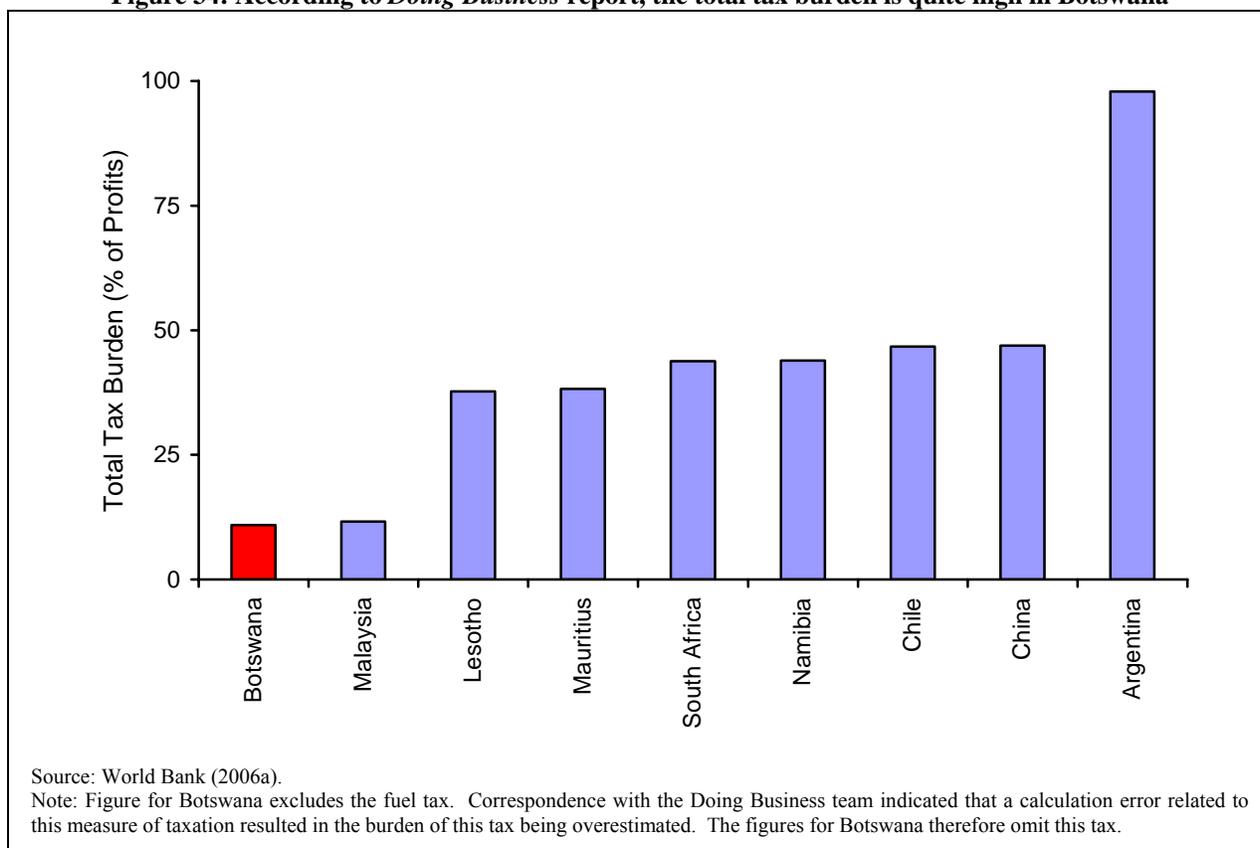
Figure 33: Corporate income taxes are low in Botswana.



A more comprehensive calculation of the total tax burden in the Doing Business report suggest that the total burden of taxation is quite low in Botswana. In particular, the total tax burden on a typical manufacturing firm is lower than in the comparator countries (see Figure 34).³⁰

³⁰ See note on table for a discussion of the Doing Business calculations.

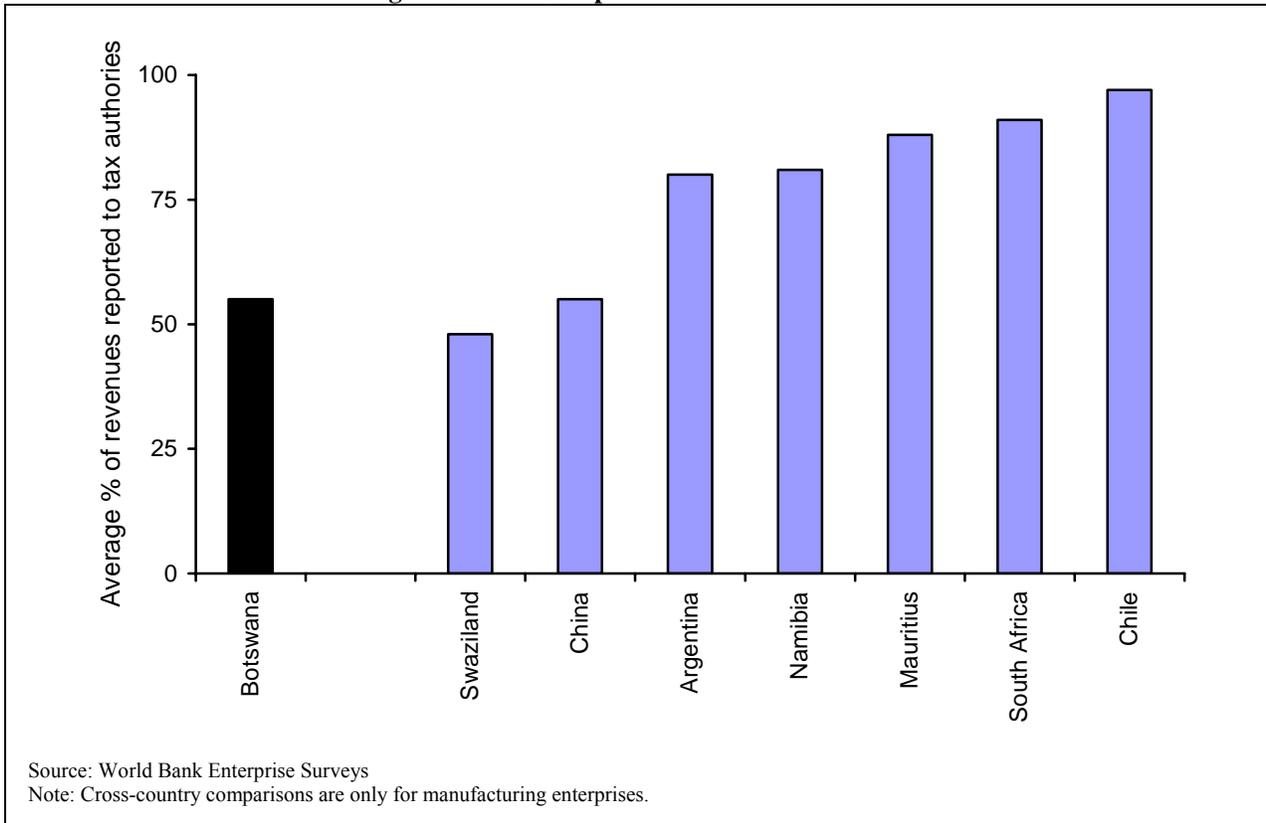
Figure 34: According to *Doing Business* report, the total tax burden is quite high in Botswana



Far fewer firms in Botswana saw tax administration as a serious obstacle. Tax administration ranked towards the lower end of firms concerns. Evidence from the Doing Business report is consistent with this. Although firms have to make 24 tax payments per year—more than in Mauritius (7 payments), Chile (10 payments), Lesotho (21 payments) and South Africa (23 payments)—the number of hours spent preparing taxes is relatively small (140 hours) and is lower than in any of the comparators except Swaziland and Thailand (104 hours).

One factor that might account for the high number of complaints about tax rates is non-compliance among some firms. Firm owners and managers can become frustrated if they feel that other potential taxpayers are avoiding paying their fair share of taxes and this could potentially affect their views about tax rates. The 2004 FIAS study noted that there was significant non-compliance among businesses, which restricted the growth of the tax base and increased the burden on the enterprises that actually pay taxes (Foreign Investment Advisory Service, 2004). The evidence from the World Bank Enterprise Survey is consistent with this earlier report, also suggesting that tax compliance is a problem. When firms were asked during the survey to estimate the percentage of total annual sales that a typical establishment in their line of business usually declares for tax purposes, the average answer was only about 55 percent. Although firms in low-income countries often report high levels of non-compliance, this is fairly high compared to other middle-income countries. In particular, firms reported higher levels of compliance in all of the comparator countries except Swaziland (see Figure 35).

Figure 35: Tax Compliance is Low in Botswana.



In 2004, the FIAS report suggested that compliance could be improved by increasing the number and training of staff in the Department of Taxes. Since this time, a new Botswana Unified Revenue Service has been established and measures are being taken to strengthen their capacity in audits and enforcement procedures, including stronger legal sanctions against tax evaders. These measures should eventually reverse the reality and the perception of unequal tax treatment in the private sector. However, in order to increase tax revenue and broaden the tax base in the short-term, the IMF has suggested additional measures, such as an increase in the VAT rate.

III. CRIME

Crime is another aspect of the investment climate that was a serious concern to many of the firms in the investment climate. Crime remains an important concern in Botswana, and is perceived by firms as one of the most important constraints to business growth in World Bank Enterprise Surveys. This section examines survey responses by firms on crime and security.

Even a decade ago, a 1996-97 UNICRI victim survey of six African countries showed that Botswana was grappling with crime problems, benchmarking Botswana against Uganda, South Africa, Zimbabwe, Tunisia, and Egypt (Schonteich, 2000). Among the six countries surveyed, Botswana had the third highest “assault with force” victim report (3.7 percent), after Zimbabwe (6.7 percent) and South Africa (5.6 percent). Botswana was the country where the fewest respondents (only 7.4 percent) felt “very safe,” compared to 14.3 percent reporting feeling “very safe” in South Africa. Botswana also had the highest portion of respondents

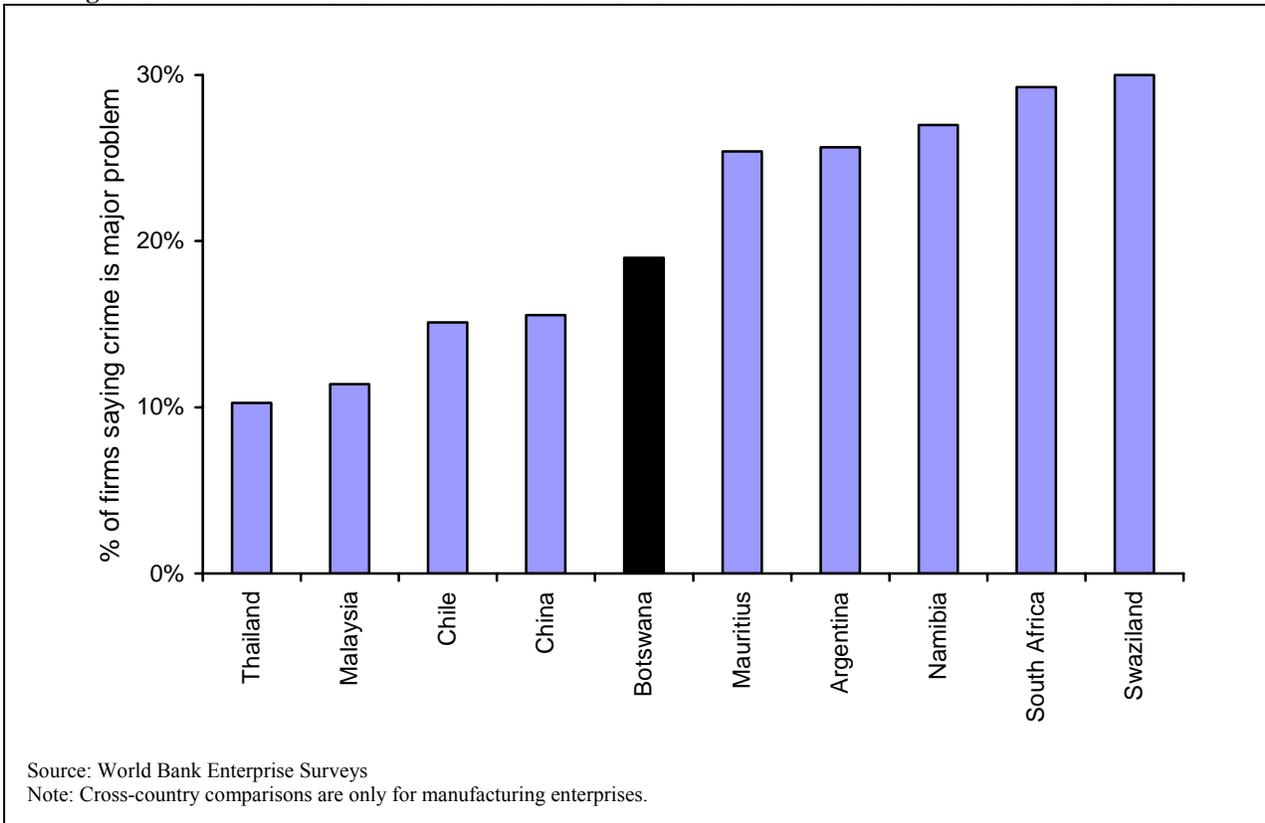
(26.6 percent) stating that a burglary was “very likely” in their household in the next 12 months, followed by South Africa (25.1 percent) and Tanzania (23.3 percent). On the other hand, Botswana in 1997 had the lowest victimization levels in sexual assault, with only 0.8 percent of respondents reporting rape, attempted rape, or indecent assault, and the lowest rate for robbery (2 percent) among the six African countries surveyed.

Some recent evidence suggests that crime, including violent crime, might be increasing (Economist Intelligence Unit, 2006). For example, in 2005, the *Vision 2016 Council* released a media statement noting that crime levels had been rising rapidly and suggesting that this would make it more difficult to achieve the goals of *Vision 2016* (Presidential Task Group of a Long-Term Vision for Botswana, 2007). Police crime statistics in 2002 showed a 40 percent increase in robbery, 19 percent increase in murder, and 29 percent increase in unlawful wounding (Botswana Police Service, 2002). The increase in crime is often attributed to Botswana’s proximity to neighboring countries with higher crime rates (Economist Intelligence Unit, 2006). For example, the police report pointed to the number of illegal immigrants, particularly from Zimbabwe, and also mentioned that the majority of weapons used in crime originated in South Africa (Molomo and others, 2007).

III.1 Cross-Country Comparisons

Firms in Botswana appear to be concerned about crime—SMLEs were more likely to say that crime was a serious obstacle than any other obstacle except access to finance, macroeconomic instability, and tax rates (see Figure 22). Although this suggests that crime is a problem, it is important to note that fewer firms said that crime was a serious problem than in most of the comparator countries. Among manufacturing firms, about 20 percent of firms in Botswana cite security issues as a major or severe obstacle to doing business. This is lower than many of the comparator countries and far lower than in South Africa (about 30 percent of firms). This suggests that, on average, firms in Botswana have a relatively favorable perception of their security environment, especially compared to the countries where firms are most concerned (e.g., Swaziland and South Africa).

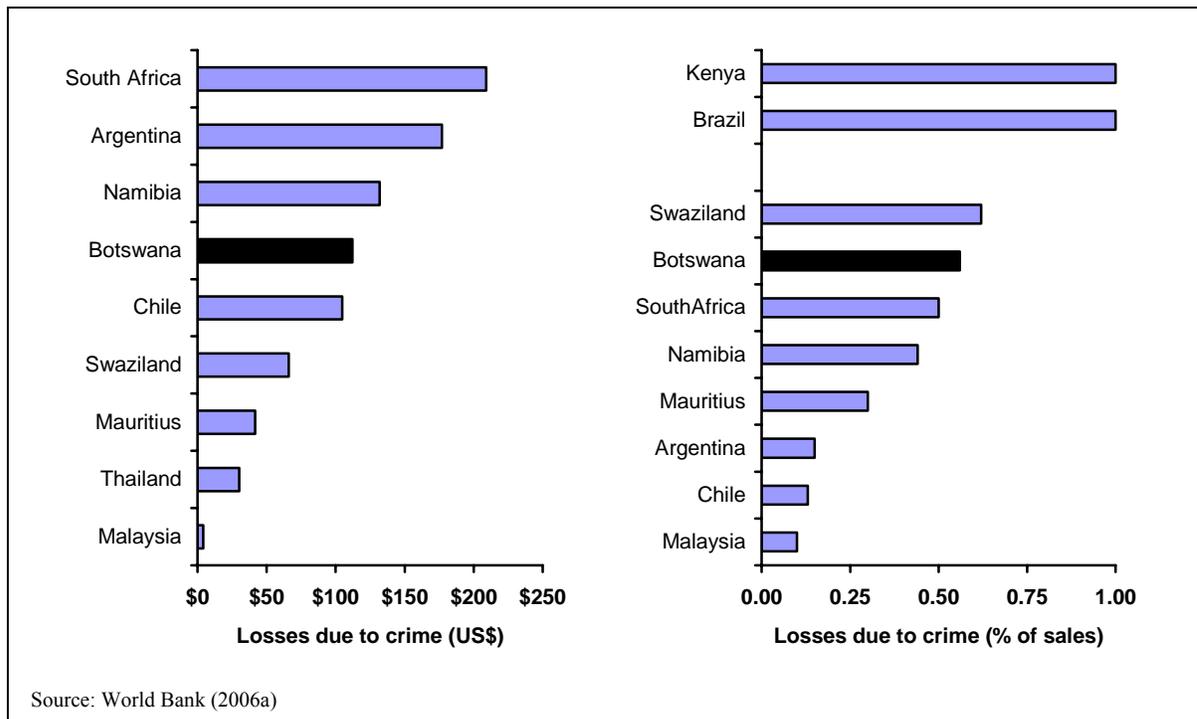
Figure 36: Firms in Botswana are more worried about crime than in most countries outside of SACU.



As noted earlier in the report, it is difficult to make cross-country comparisons using subjective data. The Enterprises Survey, however, also asks firms about losses due to crime and the cost of crime and security in the countries. The direct costs associated crime are relatively high in Botswana. The median firm reports that the combined cost of crime and security is about \$112 per worker per year or 0.6 percent of sales (see Figure 37). The cost in US dollars is lower than in Namibia or South Africa, but is quite high compared to most of the comparator countries

Because firms in Botswana are less productive than firms in Namibia and South Africa, the cost is even higher as percent of sales. In all three economies, the cost is about 0.5 percent of sales—the differences are generally small and are not statistically distinguishable from each other (i.e., any differences might be due to chance rather than that there is a difference). In addition to being higher in terms of US dollars, the cost is also higher as a percentage of sales than it is in most of the comparator countries. The cost is lower than in the countries with the highest costs due to crime such as Kenya and Brazil.

Figure 37: The cost of crime is high in most SACU economies.



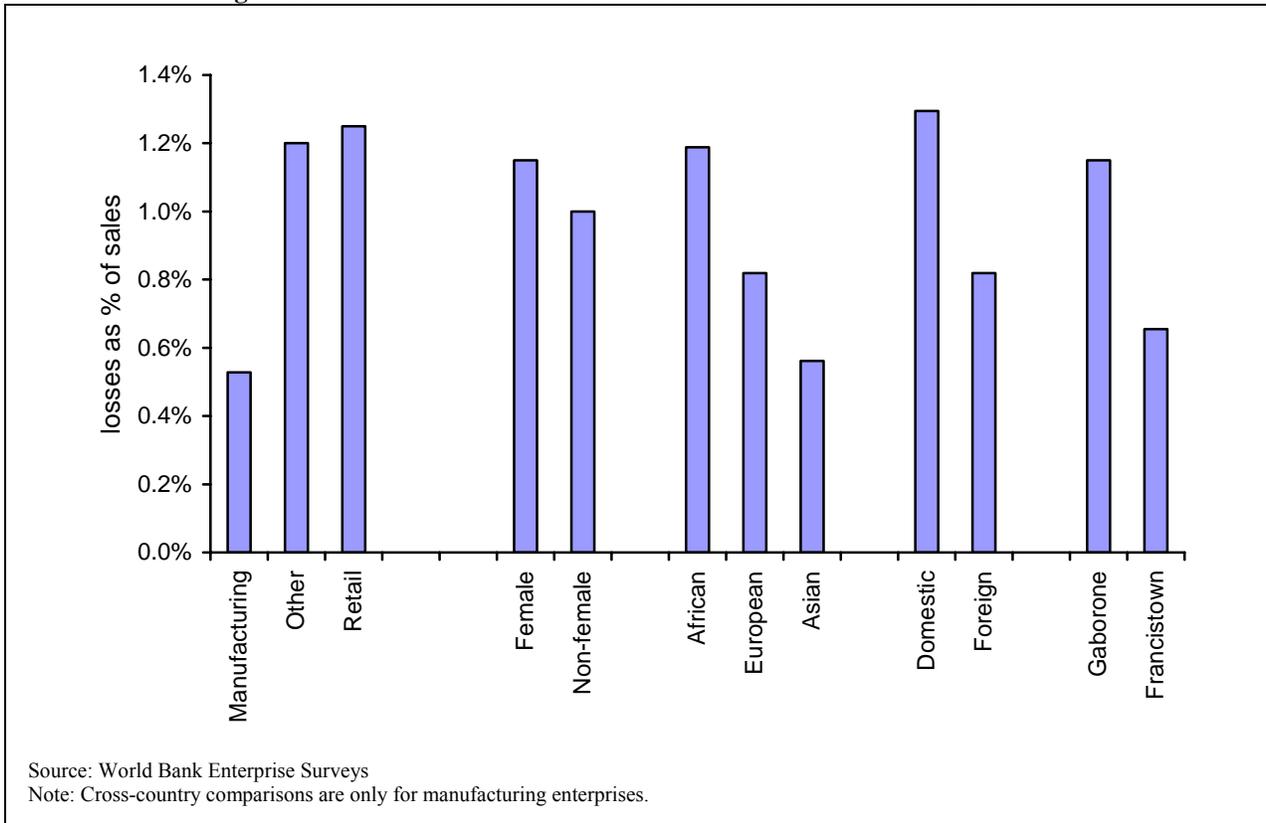
It is important to make two points about the questions on the cost of crime. First, the questions on losses due to crime will mostly be losses to theft, vandalism and other non-violent crimes. To the extent that many people are more concerned about violent crime than property crime, these questions do not reflect overall concern about crime. Second, the subjective question is more general, in that when managers say they see crime as an obstacle the question does not specifically refer to non-violent or property crime. In summary, however, the evidence from the World Bank Enterprise Survey suggests that Botswana is representative of countries where crime and security may be considered an important, though not all-consuming, problem

III.2 Cross-firm differences in the burden of crime

When considering the cost of crime and security, it is important to note that the cost of crime can differ significantly across regions and sectors. The investment climate data indicates that retail firms suffer heavy costs than service or manufacturing firms (see Figure 38). The differences between manufacturing firms and other firms are statistically significant.

Other differences are also observable. For example, firms in Gaborone report higher losses than firms in Francistown, domestic firms report higher losses than foreign-owned firms, and firms with female owners report higher losses than firms without female owners. In practice, however, the differences are not usually statistically significant.

Figure 38: The burden of crime is different for different firms in Botswana.



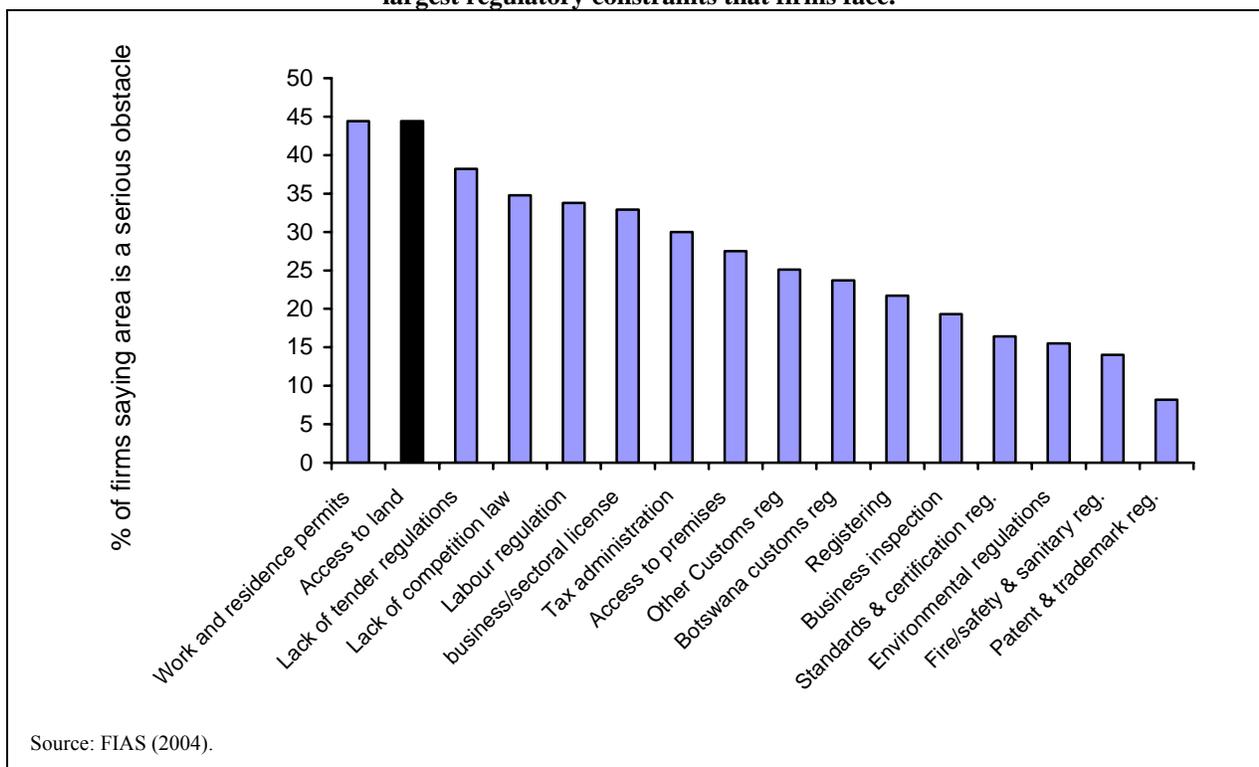
IV. ACCESS TO LAND

Almost one-quarter of SMLE managers and a similar number of microenterprise managers rated access to land as a serious obstacle to their firm’s operations. This section outlines the main issues surrounding land allocation in Botswana, the perspective of firms, and some policy measures currently being considered. Firms in Francistown were more likely to say that they were concerned about access to land than firms in Gaborone (32 percent compared to 22 percent).

The high level of concern about access to land is consistent with results from an earlier report, which found that few firms were satisfied with the land access situation in 2004 (Foreign Investment Advisory Service, 2004). The FIAS report notes that investors found it extremely difficult to access land, despite the abundance of idle property. Although the Government of Botswana supported land market development and efficient use of land since independence, access to land presented a major impediment to private investment, particularly in the land-intensive sectors such as manufacturing and tourism.

The FIAS report included some results from a survey that asked firms about the areas of regulation that they saw as the greatest problems. The managers of firms surveyed under the FIAS study were more likely to say that land was a serious problem than any other areas of regulation except work and residence permits, which was as serious a problem. The FIAS reports also notes that it can take as much as 84 days just to identify and contact the owner when purchasing land.

Figure 39: In 2004, firms in Botswana reported that regulations regarding access to land was one of the largest regulatory constraints that firms face.



IV.1 Background

Foreign Investment Advisory Services (2004) describes the basic laws and regulations regarding access to land for firms in Botswana. There are three broad categories of land in Botswana: tribal land (71 percent of the country); state land (23 percent); and freehold land (6 percent). Most of the land for building around the main cities, including Gaborone and Francistown, is State land. State land is therefore the primary focus for businesses and investors. State land is most often allocated to private parties through a form of long-term lease known as a Deed of Fixed Period State Grant (FPSG). The leases typically last for 99 years for residential land and 50 years for industrial land.

The main principles of state land allocation were set forth in 1990. These include the objectives of allocating land to Botswana citizens and promoting private sector involvement in land development. Although the policy officially restricts foreign ownership of state land by primary allocation, foreign investors can legally obtain land through secondary market transactions. Tribal land allocation is made solely by the decision on Land Boards, which sometimes choose to transfer land to non-citizens depending on local attitudes towards outside investment. Yet resistance to land use by non-citizens presents a challenge for attracting new investments, especially in strategic sectors for economic diversification and job creation such as manufacturing and tourism, which are often land intensive.

The development covenant policy allows for two years for land holders to develop land or forfeit that land back to the state. Despite this official regulation, however, only a very small proportion of allocated state land has ever been taken back by the state; instead, the government generally grants series of extensions.

In the areas of land and residence permits, the report noted that policy decisions were sometimes unclear, with overlapping responsibilities between different authorities and procedural requirements are bound to be cumbersome. It noted that this resulted in confusion for investors. Although land distribution was historically conducted on a first-come-first-served basis, the shortage of available plots prompted Land Department officials to interview applicants to select “genuine investors,” resulting in complaints about lack of transparency in land allocation.

The FIAS report also notes that one of the problems is bottlenecks in land administration. Problems include poor coordination among the seven distinct land administration agencies; understaffing combined with a land administration system that still relies heavily on manual labor rather than employing available technologies; deficient state land allocation process and lack of contract enforcement; and perceived increasing corruption in the system of land allocation. There is a widespread failure of plot development; for example, undeveloped plots cannot be offered at open market to investors, according to the “pre-sale development” requirement, and there is an increasing problem of “fronting,” which benefits speculators more than serious investors.

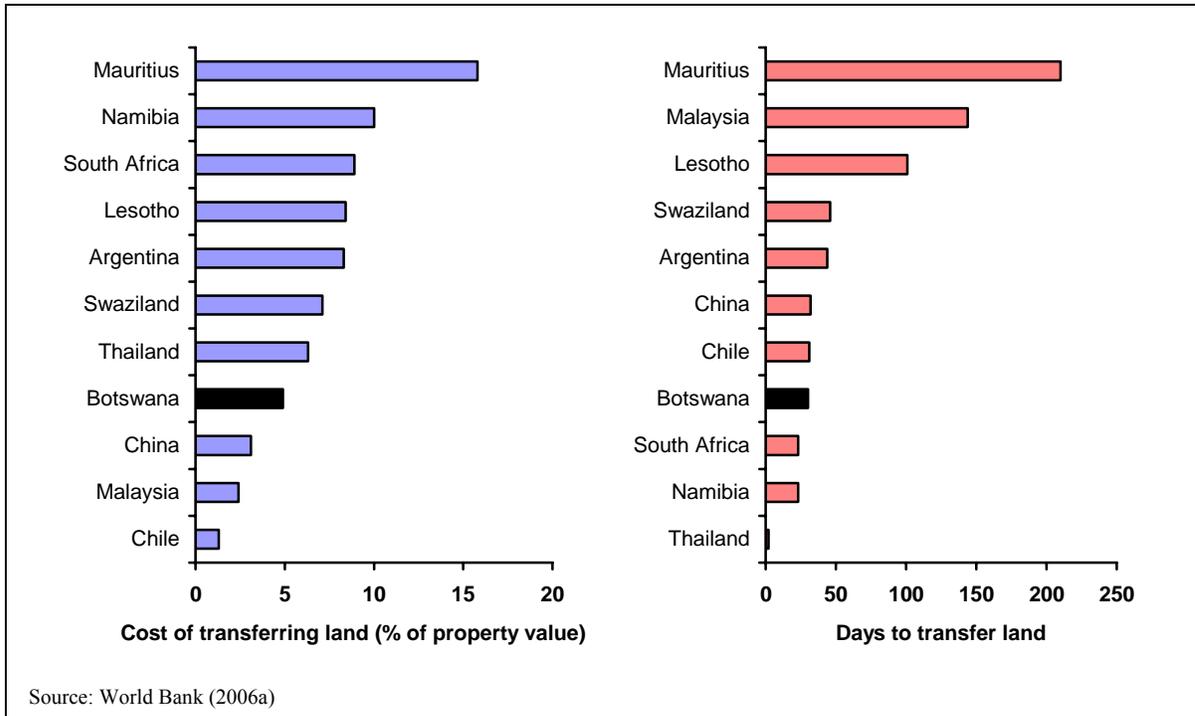
The first-come-first-served allocation method has served an important social objective by assuring all citizens, even the poor, available land for living. On the other hand, the lack of screening of applicants may result in inefficient allocations, particularly from the private sector’s perspective, as many applicants may be awarded land without having to present proof of readiness to develop the land. Indeed, accelerating land allocation into the 1980s slowed substantially in recent years, as most state land in the greater Gaborone area was already distributed by the beginning of this decade. Unless more land supply is delivered to the market, it will remain a serious bottleneck to private sector activity.

Land access problems may be some of the most difficult to address, however, as land-related issues are socially and politically sensitive, especially the ownership or use of land by foreign investors. Improving the situation will require concerted efforts and cooperation between multiple policy, regulatory, and institutional participants in the country. Possible measures to address the land access problem include greater enforcement of forfeiture of failed land developments; using public auctions for state land allocation, perhaps even involving foreign investors; and streamlining the permits procedures necessary for both property registration and construction.

Although the FIAS report notes that the regulatory framework can make it difficult to get access to land, the regulatory procedures required to transfer registration from a private seller to a private buyer do not appear to be particularly burdensome relative to procedures in the comparator countries. The Doing Business report records the time and cost of completing all procedures that are needed for a business to purchase land and to transfer the property title from the seller to the buyer (World Bank, 2006a). It takes about 30 days to complete all

procedures in Botswana and the total cost is about 5 percent of the property value (see Figure 40). Though considerably more burdensome than the global best practice benchmarks, Botswana compares favorably with most of the comparator countries.

Figure 40: The cost of transferring land is not particularly high in Botswana in terms of either monetary cost or the time taken to transfer land.

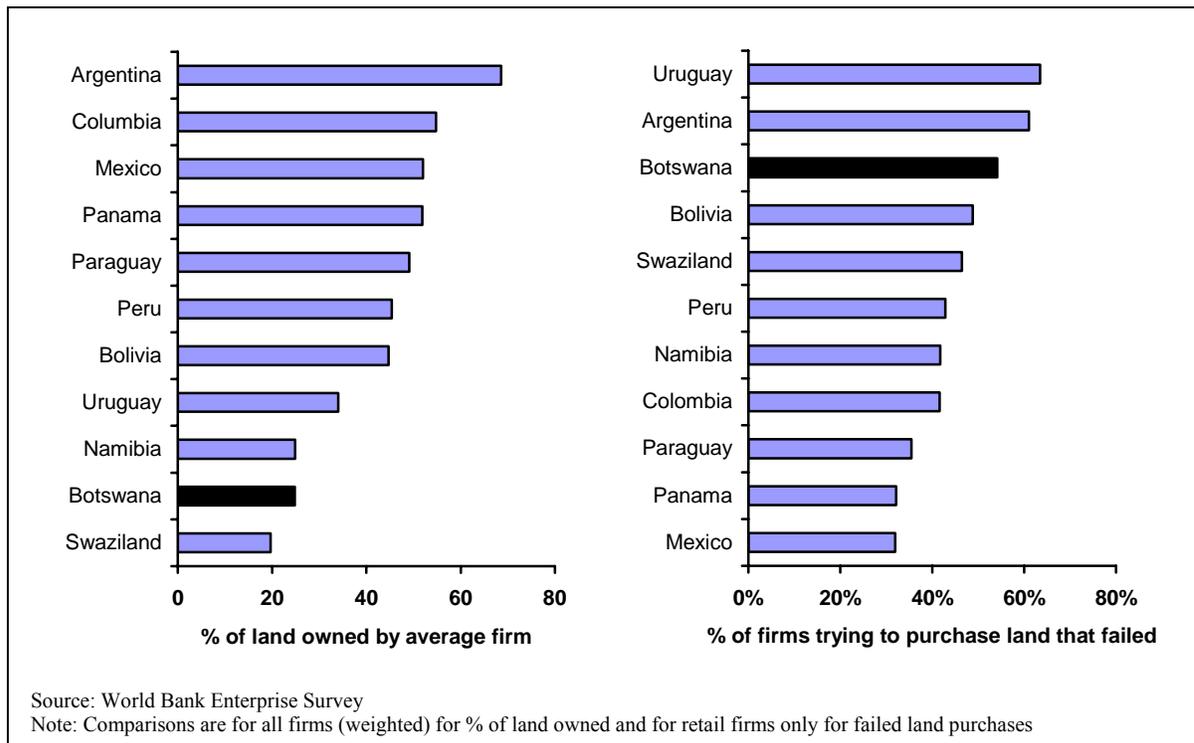


IV.2 Evidence from the World Bank Enterprise Survey

As noted earlier, access to land ranked among the top constraints that firms in the World Bank Enterprise Survey. Firms that have attempted to buy land in the past three years are far more concerned about access to land than firms that have not. Only about 14 percent of retail firms that had not tried to purchase land said that access to land was a serious problem. In comparison, over 40 percent of firms that had tried to purchase land and had failed said that access to land was a serious problem. Moreover, over 30 percent of firms that had tried to purchase land and had succeeded said that access to land was a serious problem.

The survey also included some objective questions on land ownership. For SMLEs and microenterprises, about three-quarters did not own any land. Although this is similar to Namibia and Swaziland, this is low compared to other middle income countries (see Figure 41). Although comparable data were not available for most of the comparator countries, on average firms in most Latin American countries own more than half their land, compared to only 20-25 percent in Botswana, Namibia and Swaziland. Firms in Botswana that had tried to purchase land were also more likely to report that they had been unable to do so than in most of the middle-income countries in Latin America for which comparable data were available.

Figure 41: Firms in Botswana are less likely to own the land they use and are more likely to have failed during attempted land purchases than in most middle income countries in Latin America.



Foreign owned firms do not appear to be disadvantaged with respect to land ownership in the World Bank Enterprise Survey. On average, they owned a smaller share of the land they used than domestic firms (19 percent compared to 29 percent) and were less likely to have tried to purchase land (21 percent compared to 38 percent). But for firms that had tried to purchase land, they were less likely to have failed (23 percent compared to 68 percent) and they were less likely to say that access to land was a serious problem (20 percent compared to 27 percent). The difference in perceptions, however, is not statistically significant after controlling for other factors (see Chapter 3). Differences in responses between firms in Gaborone and Francistown are also small.

V. COMPETITION FROM THE INFORMAL SECTOR

Competition from the informal sector worries a considerable number of firms in Botswana, with about 23 percent of SMLEs and 35 percent of microenterprises ranking it as a major or very severe constraint to doing business. Although larger SMLEs were less likely to say that competition was a serious obstacle, the difference was not statistically significant. This section gives an overview of the informal private sector in Botswana and describes the complaints from formal firms about informal sector competition from the Investment Climate surveys. Finally, it provides a description of the firms in the micro-enterprise survey, which largely overlaps with the informal sector, lending insight into the reasons for micro-enterprise complaints about their informal competitors. A separate appendix provides more detailed regression analysis of firm complaints.

V.1 Overview of the Informal Private Sector in Botswana

Because of differing definitions of ‘informality’ and the difficulty of measuring informal activity, it is very difficult to definitively determine the size of the informal. Nevertheless, several studies have tried to measure informal activity in Botswana and to look at characteristics of firms, workers, and activities that might be considered informal.

According to a 2002 study by the World Bank, the informal sector in Botswana contributed a considerable portion of the country’s GDP (33.4 percent), though it was one of the lowest portions in Africa when compared to countries such as Zimbabwe (59.4 percent), Tanzania (58.3 percent), and Nigeria (57.9 percent) (Schneider, 2002). This is considerably higher than in OECD economies—the average estimated size in European OECD countries was 18 percent.³¹

Despite this, some studies have found that the informal sector contributes significantly to employment. In 1997-98, it was estimated that there were about 60,000 micro-enterprises in Botswana, most of which operated in the informal sector employing one to two people (Alexander and others, 2006). Consequently, more than 80,000 people (or roughly 5 percent of the total population) are self-employed or work in the informal sector (Economist Intelligence Unit, 2006), with roughly 5,000 workers engaged in the informal sector as a secondary activity (Alexander and others, 2006). The 1995-96 *Labor Force Survey* found that the informal sector accounted for 17 percent of employment,³² and Standard Bank reported that from 2004 to 2005, although overall employment growth was below expectations, the growth was largely recorded in the informal sector (Duvenage, 2006).

The *Central Statistics Office* (CSO) defines an informal business as an enterprise not registered as a company, with 5 or less paid employees, informal or no accounts, and expenditure not easily distinguishable from household expenditure, with the enterprises often temporary, mobile, or located in the owner’s home (Central Statistics Office, 2000).

The typical informal sector business comprises an individual man or woman operating alone or with one additional employee, without an office space other than his or her own home. Indeed, Chen et al. (1999) confirmed that home-based work accounted for 77 percent of the informal sector in Botswana.

According to the 1998 CSO report, of the 57,240 informal sector employees enumerated, 48.7 percent were self-employed, 47.1 percent were paid employees, and only 4.2 were unpaid workers (Alexander and others, 2006). The CSO also reported that the gender division of managers in the informal sector was nearly equal, with 51.8 percent of business households headed by men and 48.2 percent headed by women, although the informal workforce was still dominated by women, with about 66.9 percent of total informal sector employment. However, some estimates put the proportion of female informal owners (mostly not registered and operating from home) at 75 percent (Alexander and others, 2006). Ninety-

³¹ According to the CSO, the informal sector contribution to the national net output is a little less than 2 percent.

³² <http://www.ilo.org/dyn/infoecon/docs/670/F1147202772/african%20osh.pdf>

nine percent of the individual owners surveyed were citizens in 1999, however, indicating that immigration from neighboring countries such as Zimbabwe had, at least at that time, not caused the influx in informal activity. Informal sector activity was, however, more prevalent in urban areas, with 36,378 workers in urban areas compared to 20,862 workers in rural areas (Alexander and others, 2006).

Business owners raised capital mostly through their own savings (63.8 percent) and government FAP grants (18.7 percent). One of the main difficulties therefore described by informal businesses in the CSO survey was lack of available credit facilities, as well as non-payments of debt and lack of access to space.

According to the 1999-2000 CSO survey, most informal sector enterprises were within the retail trade sector (Central Statistics Office, 2000). The largest share of self-employed was in wholesale and retail trade (37.8 percent), followed by construction (12.8 percent) and hotels and restaurants (7.8 percent) (Alexander and others, 2006). Another estimate put the proportion involved in trading activities as high as 65 percent (Alexander and others, 2006).

The Government of Botswana has for a long time underscored the need to broaden its economic base, and also to reduce the number of unemployed workers relying on the government for support. Accordingly, a number of policies were introduced to stimulate citizen entrepreneurship in manufacturing and other sectors. The introduction of such economic policies as the Small, Medium, and Micro-enterprises (SMME) Policy, the Financial Assistance Policy (FAP), and the Industrial Development Policy led to the mushrooming of small and informal business across the country.³³

The local government has, most recently, made moves to standardize and support informal sector activity. For example, the Francistown City Council (FCC) has recently increased support for micro-businesses, acknowledging their important role in a country with a high rate of unemployment. Mayor Buti Billy in September 2006 announced that all car washers would be allocated land on which to operate, and that the FCC would not harass petty traders while they were searching for suitable land. In an effort to bring them into the formal sector, he encouraged them to sign a lease with the state, and mentioned that they would eventually pay taxes in line with formal firms.³⁴

V.2 Evidence from the Investment Climate Survey

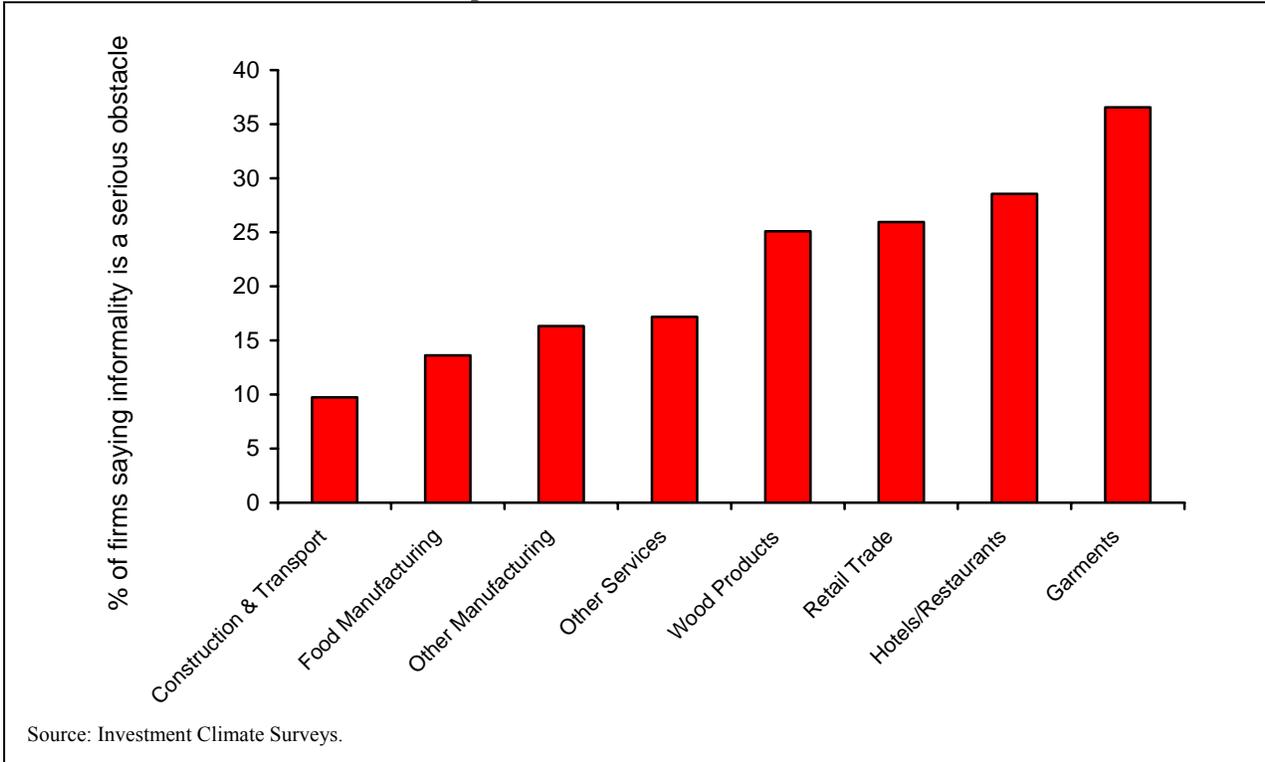
Given the high level of complaints about informal sector practices by SMLES and microenterprises in the Investment Climate Survey, a natural question is what kind of businesses are most likely to report being affected by competition with the informal section. Although, in contrast to many countries, small firms did not seem to be more likely to complain about competition from informal firms than medium-sized and large firms (see Chapter 3 in this volume), there were some empirical regularities.

³³ <http://www.ilo.org/dyn/infoecon/docs/670/F1147202772/african%20osh.pdf>

³⁴ http://www.queensu.ca/samp/migrationnews/article.php?Mig_News_ID=3754&Mig_News_Issue=21&Mig_News_Cat=3

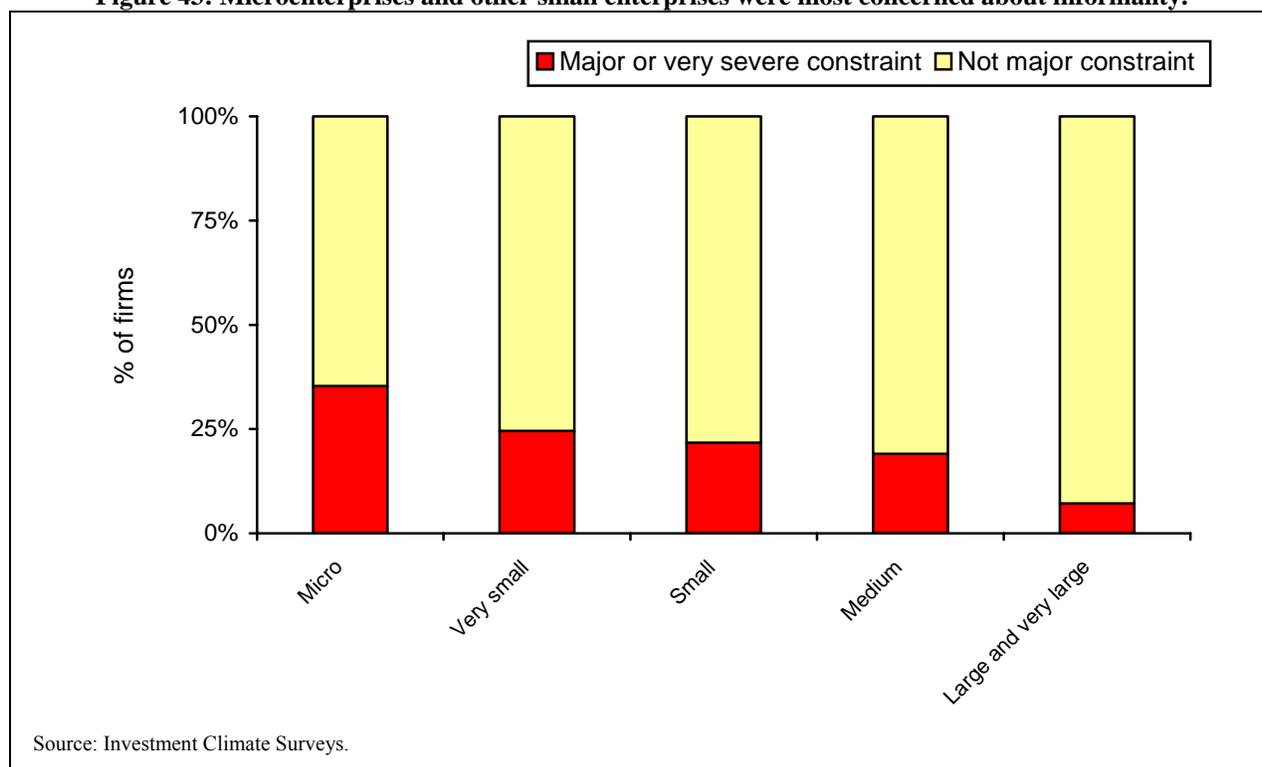
Not surprisingly, complaints about informal sector competition are concentrated in certain sectors. Most complaints come from firms in labor-intensive and low-capital industries such as textiles, garments, information technology, and retail (see Figure 42). Neither formal nor micro-enterprise firms in capital-intensive industries such as machinery, chemicals, and minerals complain about informal competitors, who likely would not have enough capital investment or economies of scale to enter such industries.

Figure 42: SMLEs in retail trade, hotels and restaurants, and garment firms complained most about competition from the informal sector.



Complaints about informal competition is concentrated among, but not restricted solely to, small and micro enterprises. As discussed in Chapter 3, microenterprises were more likely to say that competition from the informal sector (see Figure 43), the relationship between size and concern about competition from the informal sector is not particularly strong. After controlling for other factors, although there is some evidence that large firms are less concerned, the relationship is not statistically significant (i.e., it could be due to sampling variation).

Figure 43: Microenterprises and other small enterprises were most concerned about informality.



For manufacturing firms, the most significant determinant of complaints on informal sector is the number of new competitors (both formal and informal) into the market in the past year, as well as the total number of competitors. Of the firms reporting no new entrants into the market in the past year, 20 percent complained about informal competition, while of those reporting five or more new entrants into the market, almost 70 percent complained about informal competition. Similarly, of the firms reporting no competitors at all, only 7 percent complained about informal competitors, while of the firms with five or more total competitors, over 40 percent complained about informal competitors. Thus, it is important to control for the overall level and growth of competition in the market when considering firm complaints about the informal sector. Those firms experiencing a relatively high or heightened sense of competition, whether from informal sources or not, were far more likely to complain.

For retail firms, the survey asks explicitly about whether the firm directly competes with unregistered or informal firms. Not surprisingly, firms that say they do are far more likely to say that competition from the informal sector is a serious problem. Among the 51 percent of retail firms which report competing directly against unregistered or informal firms, almost half rated the practices of informal competitors a major or very severe problem, while about one-third rated them a minor obstacle. Of those that report no direct competition, only 5 percent rate informal competition as a major or severe problem.

Although this might suggest that informality is a serious problem in Botswana, it is important to note that managers of firms might not know whether their competitors are registered or not. In the survey, most microenterprises (97 percent) claim to be registered with

at least one government agency. In comparison, about 75 percent of microenterprises in Namibia and Swaziland claimed the same. Of the 13 countries in Sub-Saharan Africa where similar microenterprise surveys have been conducted, fewer microenterprises claimed to be registered in all but one country. Although these claims of registration should be treated cautiously, given that managers of unregistered firms are probably nervous about admitting to being unregistered during interviews, it is important to note that this is broadly consistent with the macroeconomic estimates that suggest informality is relatively low in Botswana compared to other countries in Africa. Moreover, it is not clear that managers of unregistered microenterprises have a greater incentive to lie about their registration status in Botswana than they do in other countries.

Another point is that concern about informality might reflect concern about informal or unfair competition from registered firms. As discussed in the previous section on taxation, firms are also worried about tax compliance by their competitors. Firms that complain about competition from the informal sector say that ‘firms like theirs’ report less of their income to the tax authorities (44 percent) than firms that are less concerned about competition with informal competitors (54 percent). This correlation remains significant even when controlling for other factors (e.g., size and sector) that might affect perceptions about informality. It is important to note that few firms believe ‘firms like theirs’ report none of their revenues to the tax authorities—only 3 percent said ‘firms like theirs’ reported no income to the tax authorities and only 7 percent said ‘firms like theirs’ reported less than 10 percent of their income.

V.3 Microenterprises and informality

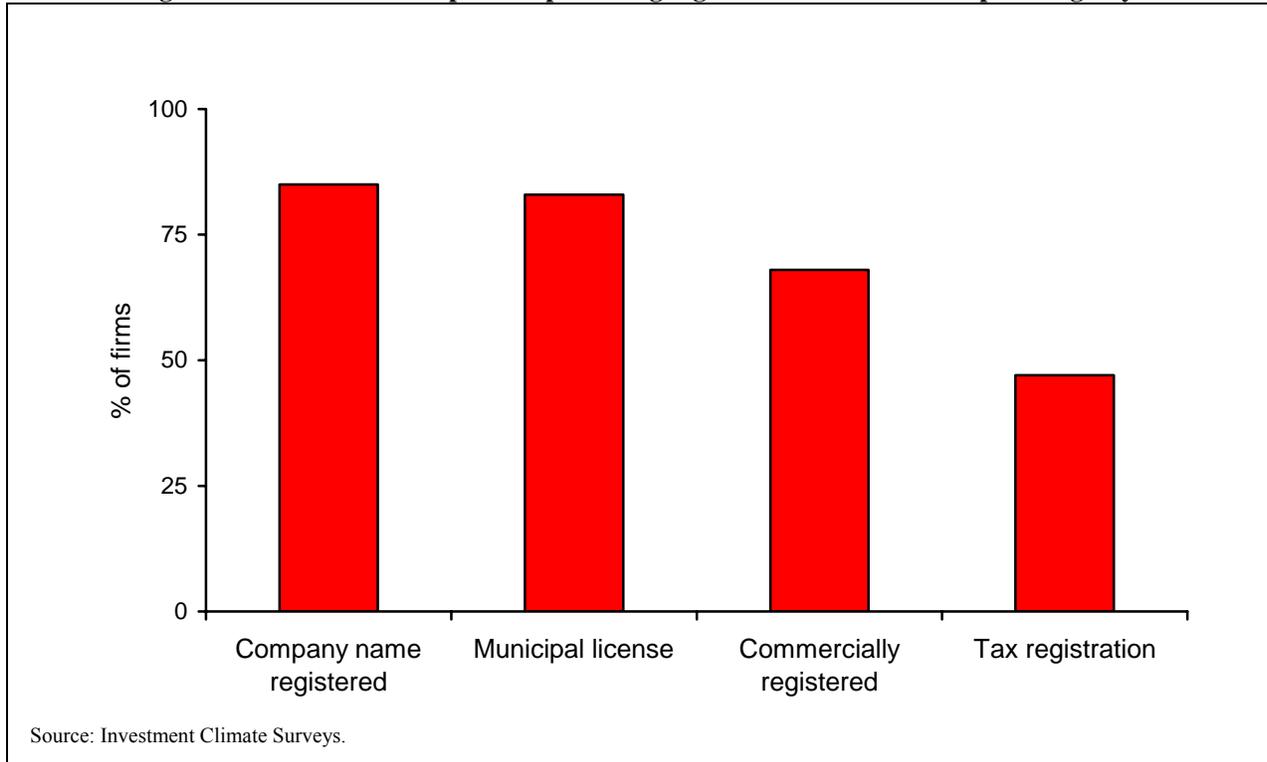
The microenterprise survey, which covers establishments with less than 5 employees, provides some useful information. For many reasons, including the size of establishments, their expected high rate of turnovers, microenterprises often exhibit a high level of “informality”. This section presents some basic information on these enterprises.

The microenterprises can be divided into those that report that they are formally registered and those that do not report that they are. The survey asks firms whether they are registered with any one of the following institutions:

- i) The Office of the Registrar or other government institution responsible for approving company names
- ii) The Office of the Registrar, the local courts, or other government institutions responsible for formally registering enterprises
- iii) Any municipal agency for an operating, trade or general business license
- iv) The tax administration or other agency responsible for tax registration (e.g., if they have obtained a tax identification number).

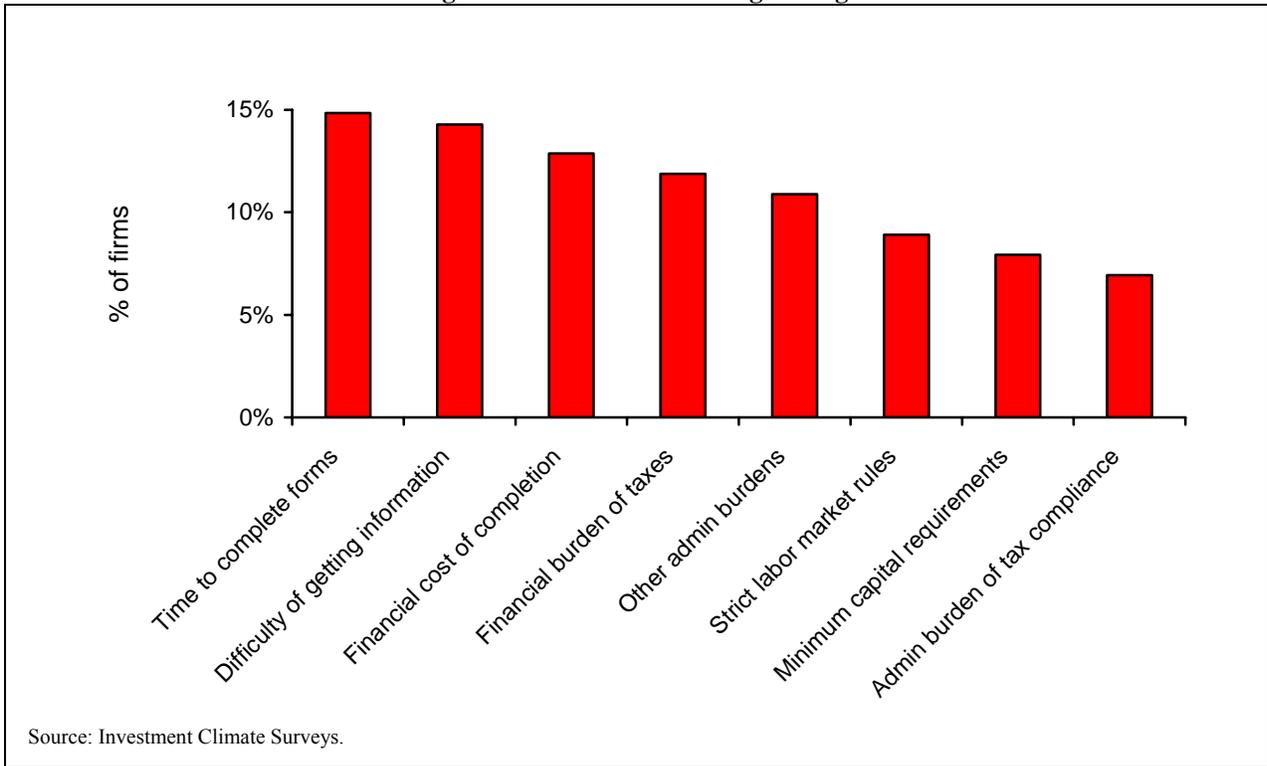
Almost all of the micro firms reported being registered with at least one agency, with only 3 firms (or about 3 percent) having no registration. Although these self-reported numbers should be treated with caution, this suggests that many microenterprises might be at least partly formal. The registration status of these enterprises is presented in Figure 44:

Figure 44: Most microenterprises report being registered with at least one public agency.



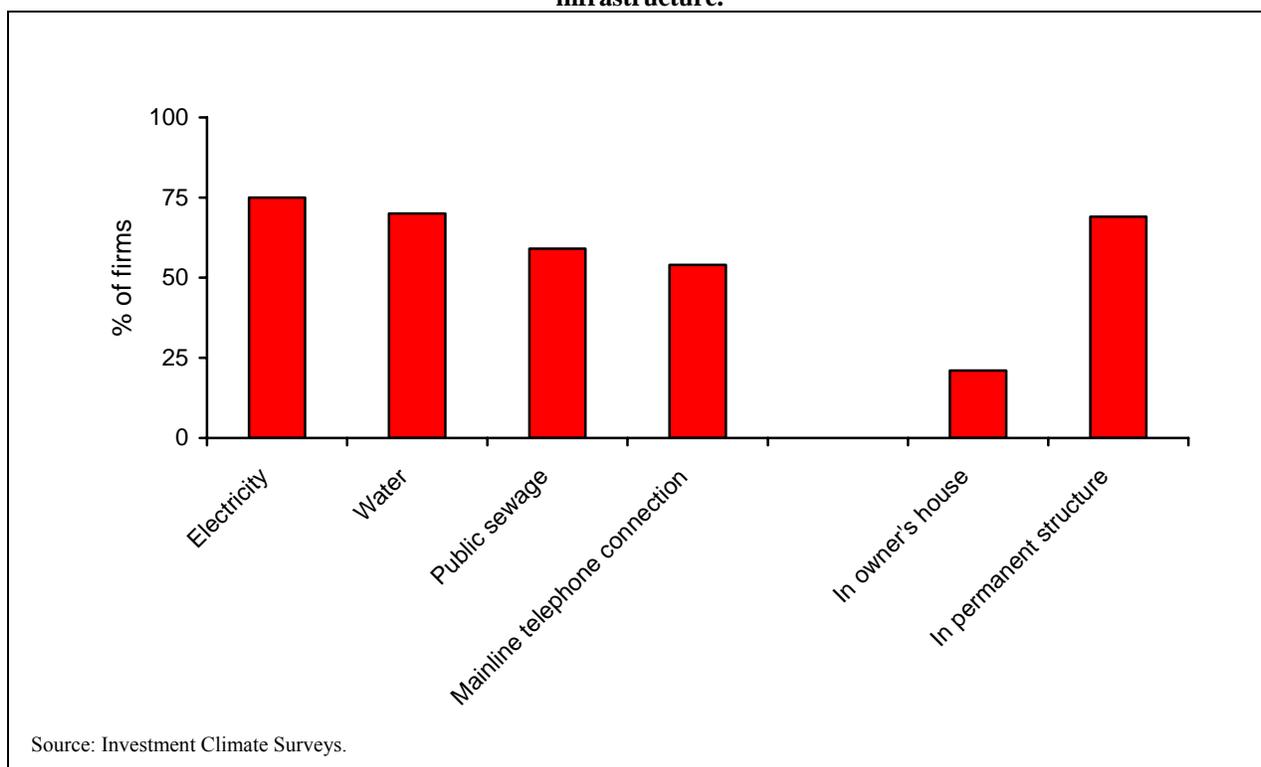
Microenterprises were also asked whether about the barriers to becoming formal (whether the firm reported being registered or not). Consistent with the fact that most reported that they were registered, few firms reported major or very severe obstacles related to registration. The biggest concerns were the time to complete forms, the difficulty of getting information on registration, the cost of registration, and, to a lesser extent, the burden of taxation on formal enterprises. This is consistent with the observation that the tax burden is low in Botswana (see section on taxation).

Figure 45: Reasons for not registering.



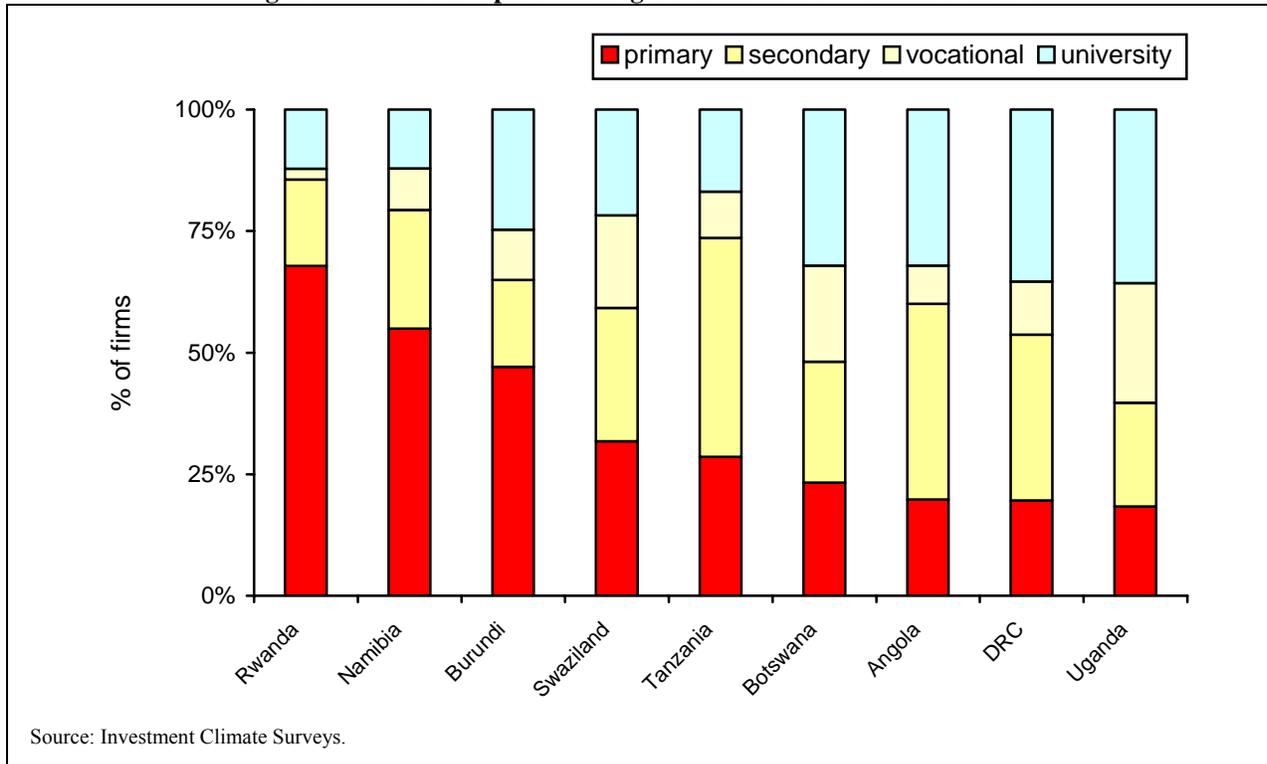
Most micro firms in Botswana reported access to basic infrastructure services, such as electricity, water, and public sewage connections. Indeed, only 25 percent reported power outages and 3 percent reported water problems interfering with production. In addition, more than two-thirds reported operating in a permanent, non-movable structure (though 21 percent said the space was the owner’s house). The chart below shows the infrastructure facilities reported by micro firms:

Figure 46: Most microenterprises are based in permanent structures and many have access to infrastructure.



Comparing across countries in Sub-Saharan Africa, owners of microenterprises are relatively well educated. They were more likely to have a university education than in most countries and were less likely to have only a primary education. In particular, they were better educated, on average, than managers of firms in Namibia and Swaziland. The large gap between Namibia and Botswana in this respect is also consistent with the large gap in productivity between microenterprises in Namibia and Botswana. Although manufacturing SMLEs were almost twice as productive in Namibia as in Botswana, manufacturing microenterprises were almost four times as productive in Botswana.

Figure 47: Microenterprises managers are well-educated in Botswana.



VI. HIV/AIDS IN BOTSWANA

Botswana has one of the most active government programs on HIV/AIDS. As a middle-income country, foreign donor support has declined, and, as a result, the government self-finances over 80 percent of its HIV budget (\$165 million). This has meant that it is experiencing financial strain, encouraging it to seek renewed support from donors (UNAIDS, 2007).

VI.1 Overview of the Current Situation

The country still faces challenges in scaling up so that it provides universal access to prevention and treatment. The main problems have been a lack of skilled human resources, a lack of treatment understanding and adherence in anti-retroviral rollouts, and monitoring and evaluation capacity, as well as cultural barriers to changing high-risk behavior. Among young people aged 15 to 24, only 33 percent of men and 40 percent of women could identify ways to prevent HIV; however, among the same age group, the percentage who reported using a condom the last time they had sex was 88 percent for men and 75 percent for women (UNAIDS, 2007).

The potential economic impact of HIV/AIDS is significant. According to IMF projections, in the absence of HIV/AIDS, Botswana could grow at an annual rate of between 4.9 and 5.5 percent between 2005 and 2015. In a scenario with HIV/AIDS and with no Government intervention, annual growth would be 2.9 percent by 2015. In a scenario with

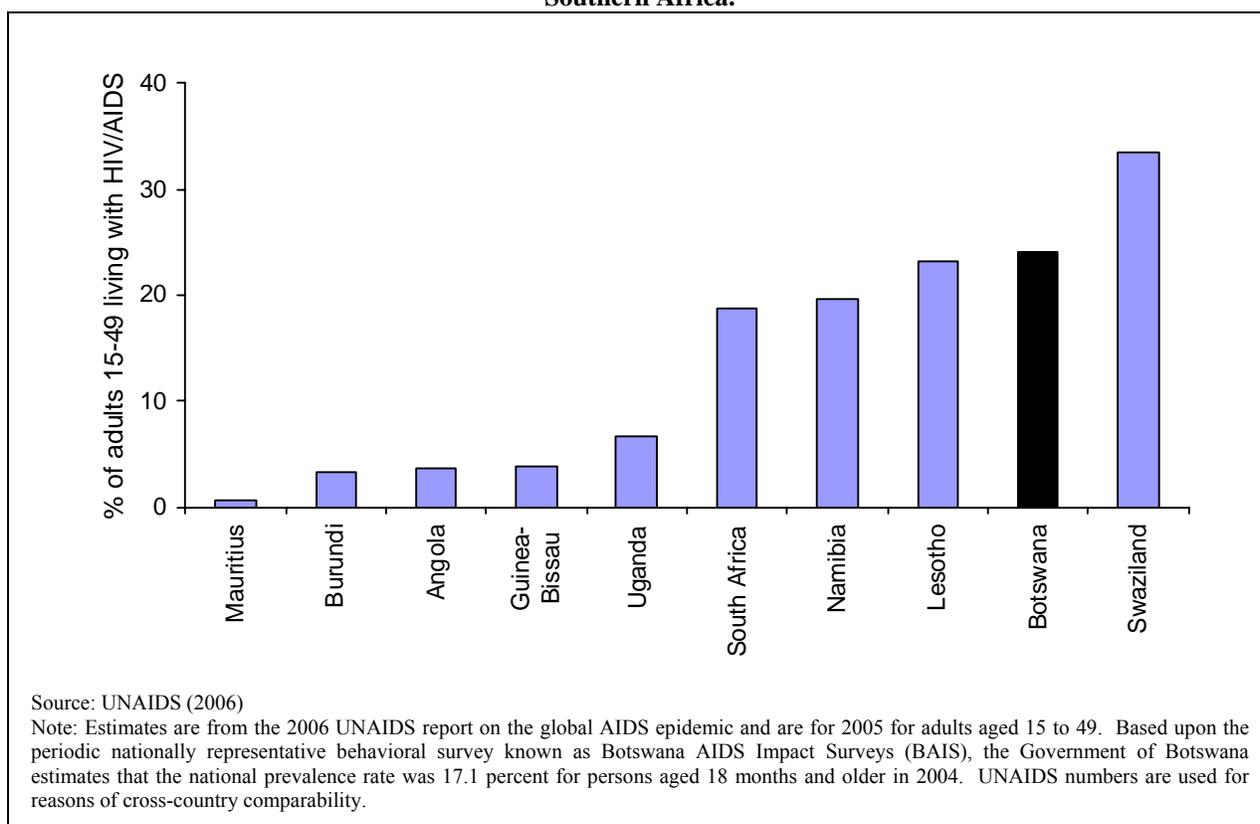
HIV/AIDS, but with an active intervention policy, growth could be 4.1 percent over the same period (Masha, 2004).

For the private sector in Botswana, the economic impact of HIV/AIDS comes through dual channels of both reduced labor force (through absenteeism or lack of availability of skilled workers) and possibly lower productivity (through sick workers). For those firms that decide to engage in prevention or provide treatment support for workers, there are also direct costs.

VI.2 HIV/AIDS in the Private Sector

The World Bank Enterprise Surveys ask managers a series of questions about how HIV/AIDS has impacted their businesses and how they have responded to the crisis, and asks workers, in the worker survey, about their knowledge of HIV/AIDS. This section provides comparisons of how managers in Botswana and other countries have responded to the crisis, analyses the most significant characteristics that determine how businesses respond to HIV in the workplace by undertaking prevention activities, and finishes with an analysis of worker responses.

Figure 48: According to UNAIDS estimates, HIV/AIDS prevalence rates were far higher in Botswana in 2006 than in the other countries with comparable data from the World Bank Enterprise Surveys outside of Southern Africa.



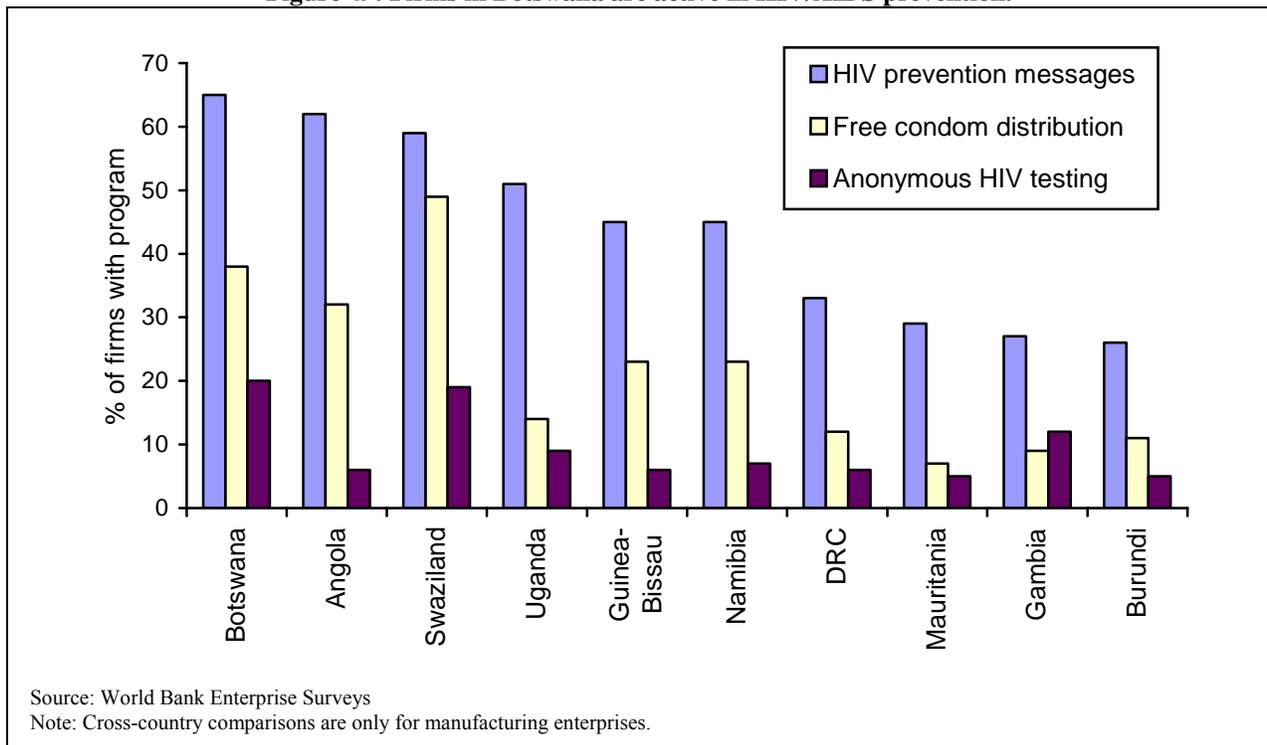
Questions on HIV/AIDS are only asked in the World Bank Enterprise Surveys in the Africa region and have only been asked in a comparable way in the latest round of surveys.

Because of this, Namibia and Swaziland are the only comparator countries with comparable data. Because of the small number of comparator with available data, this section also compares Botswana with additional countries in Sub-Saharan Africa where the same questions have been asked. According to UNAIDS estimates for 2005, these countries generally have lower prevalence rates for persons between 15 and 49 years old than in Botswana (see Figure 48).

Compared to other African countries, the percent of firms conducting prevention activities is high in Botswana, with nearly 65 percent of all firms conducting some form of prevention activity. Of the three categories of prevention activity, Botswana firms are the most active among all comparator countries in anonymous HIV testing (20 percent) and putting up prevention messages (65 percent), and second highest in free condom distribution (49 percent).

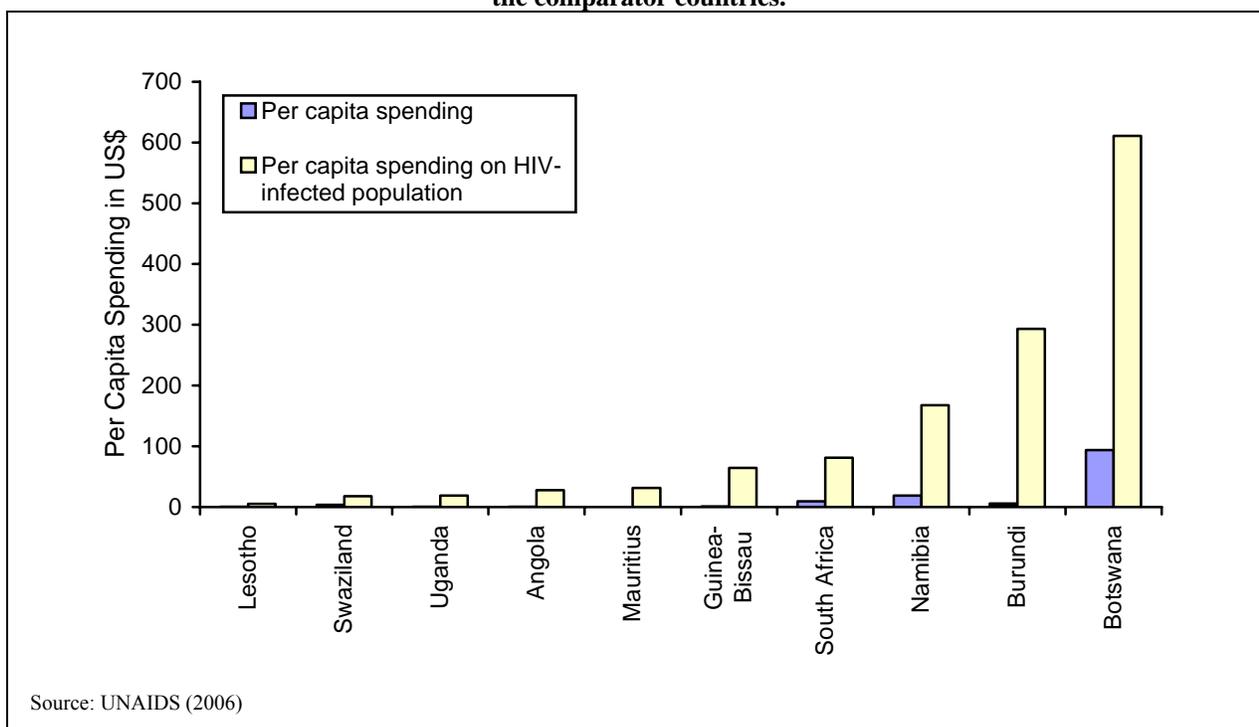
Previous studies on HIV in the workplace has suggested that there might be a tradeoff between public and private HIV prevention activities—for example, suggesting that firms have to fill the void in HIV care when governments are not very active. On the other hand, government provision of services (such as distribution of free condoms or prevention messages) can perhaps augment the resources available to companies and therefore increases workplace prevention activity. In this sample of countries, however, there does not appear to be a significant relationship between government spending and the percentage of firms reporting prevention activities.

Figure 49: Firms in Botswana are active in HIV/AIDS prevention.



Nevertheless, it is notable that of all ten African countries in our sample, the Botswana government spends more per worker than any of the other African countries surveyed, almost four times that in Namibia on HIV/AIDS and over thirty times as much as that in Swaziland (see Figure 50).

Figure 50: The Government of Botswana spends far more on HIV/AIDS on a per capita basis than in any of the comparator countries.



VI.3 Firm-Level Prevention Activity

Previous studies of HIV/AIDS response in the private sector have found firm size to be one of the most important characteristics in determining the likelihood of a firm's HIV providing prevention and treatment activities for workers (Ramachandran and others, 2005). Larger firms may participate more in HIV prevention for many reasons. For instance, firm size may be a proxy for higher worker productivity, which would make workers more difficult to replace and worker health investment more beneficial, or a proxy for corporate-dominated sectors such as mining, which may also use more labor-intensive production techniques, again making health investments cost-effective. Large firms may also experience economies of scale that allow more organized HIV prevention; for example, large firms may already have on-site clinics or medical services, or more extensive worker training programs, which could easily incorporate HIV messages and programs, while small firms may have very little in the way of worker health benefits or on-site training programs. Finally, large firms are more publicly visible, and many are motivated to create HIV programs to keep up good community and public relations.

For similar reasons, foreign owned firms might also be more likely to have programs. Multi-national firms are able to attract more productive workers and benefit from international networks, as well as benefit from international publicity for HIV programs in Africa.

In Botswana, however, there appears to be relatively little variation in HIV activity across firms, because the smaller firms in Botswana do not lag behind large firms as much as smaller firms in other countries. In all classes of firms in Botswana, the majority of firms provide some sort of HIV service. Among small firms (10 to 49 workers), 66 percent provide

do at least one of prevention messages, condoms, or HIV testing; among medium firms (50 to 99 workers), 77 percent do; and among large firms (100+ workers), 82 percent do. Similarly, there is only a small difference between foreign-owned firms (76 percent provide some HIV prevention activity) and domestic-owned firms (70 percent). Firms in Botswana are more likely to take action on HIV/AIDS across all types of firm characteristics, relative to other African countries.

Econometric analysis confirms this (see Econometric Annex). Firm characteristics, such as size, foreign ownership, skills ratio, or unionization, do not appear to significantly predict a firm's decision. One factor that does appear to make a significant difference is whether the firm trains its workers. Firms providing formal training to workers are significantly more likely to provide HIV prevention activities. Those that provide formal training for production workers are even more likely to do so.

VI.4 Worker Absenteeism by Country

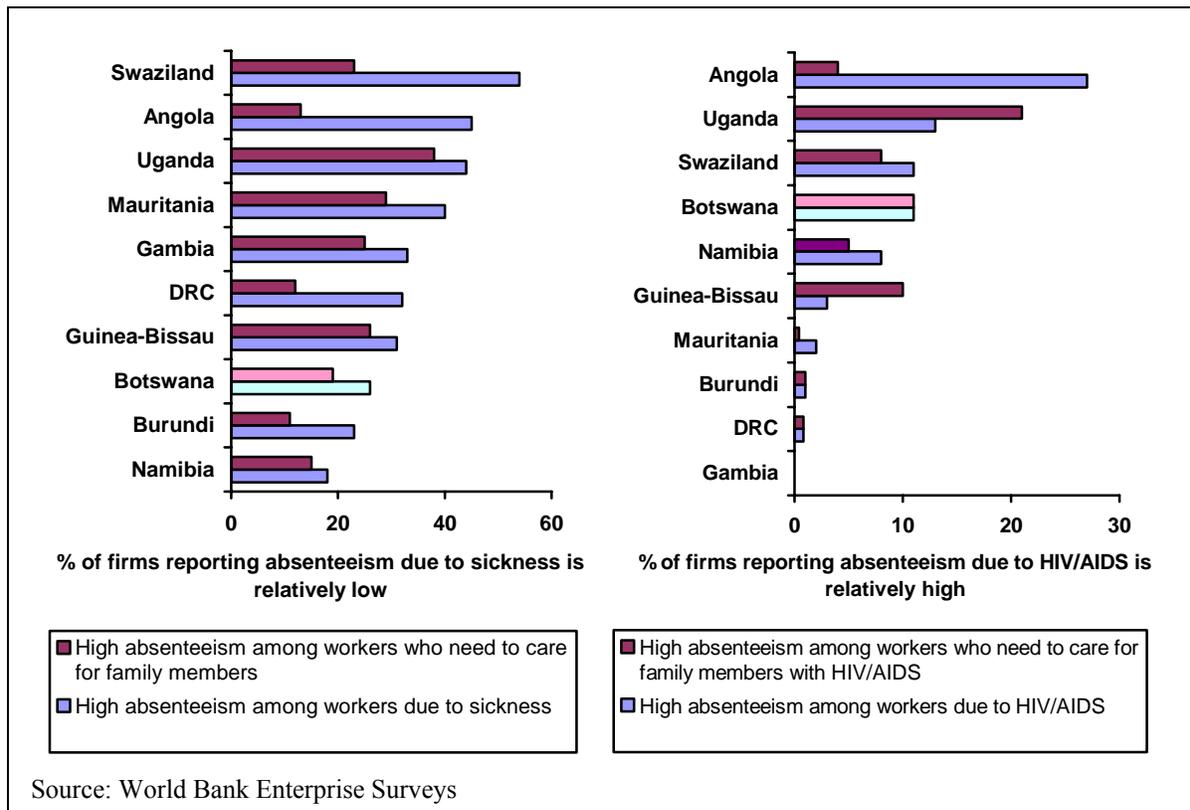
Worker absenteeism causes a loss to firm productivity, and absenteeism can be exacerbated by the presence of HIV infections in the workforce or community, when workers have to be absent either because of personal illness or because of caring for family members or friends. Therefore, absenteeism might be positively correlated with the rate of HIV prevalence in the community. However, other factors, such as available treatment programs, could potentially reduce absenteeism.³⁵

Since many managers have no way of knowing whether absenteeism is due to HIV/AIDS or not, it is important to look at both types of absenteeism. Perhaps surprisingly, Botswana and Namibia both report low rates of absenteeism, despite their relatively high HIV prevalence rates. Botswana has only the eighth highest absenteeism due to sickness (26 percent). The low rate of absenteeism might reflect the strength of the national health sector in Botswana in comparison to its neighbors.

When asking managers specifically about HIV-related absenteeism, however, the impact of HIV/AIDS becomes evident, as Botswana has the third highest absenteeism among workers due to HIV/AIDS (11 percent), and the second highest absenteeism among workers taking care of family members sick from HIV/AIDS (11 percent).

³⁵ For workers in Botswana's largest company Debswana, Habyarimana et al (2007) demonstrate a strong relationship between treatment enrollment and the reduction of absenteeism.

Figure 51: Worker absenteeism is relatively low in Botswana—although absenteeism due to HIV/AIDS is relatively high.



VI.5 Worker Responses

Not surprisingly, in survey questions about worker perceptions of HIV/AIDS, the majority of workers in Botswana (88 percent) rated HIV a “big” or “very big” concern. Indeed, the majority of workers in nine out of ten of the African countries answered that HIV was a big concern. Most unique in Botswana, however, were worker responses on financing health care.

When asked about HIV testing, the majority of workers in all ten countries (including 91 percent in Botswana) reported that they knew where to be tested, but only 18 percent in Botswana said they would be willing to pay for testing, a much lower figure than in the other African countries. Public sector progress on anti-retroviral drug distribution and treatment in Botswana, outpacing that of most other countries, has largely removed the need for workers to pay out-of-pocket for HIV expenses (World Health Organization/UNAIDS, 2006).

Worker responses about serious illness treatment confirmed that workers in Botswana rely more on the public health system than workers in any other country. When asked how they would deal with a serious illness, the majority of workers in eight of the ten countries agreed that they would use public health facilities, as opposed to private or company-based facilities, but workers in Botswana differed considerably from all other countries in how they expected to finance such health care, with the majority (66 percent) reporting they expected no

out-of-pocket expenses to be necessary because most care would be free. In contrast, workers in Namibia and Swaziland, for example, expected high out-of-pocket expenses to be borne by a mixture of private funds including their households and their companies.

Figure 52: Workers in Botswana rely heavily on government health care facilities.

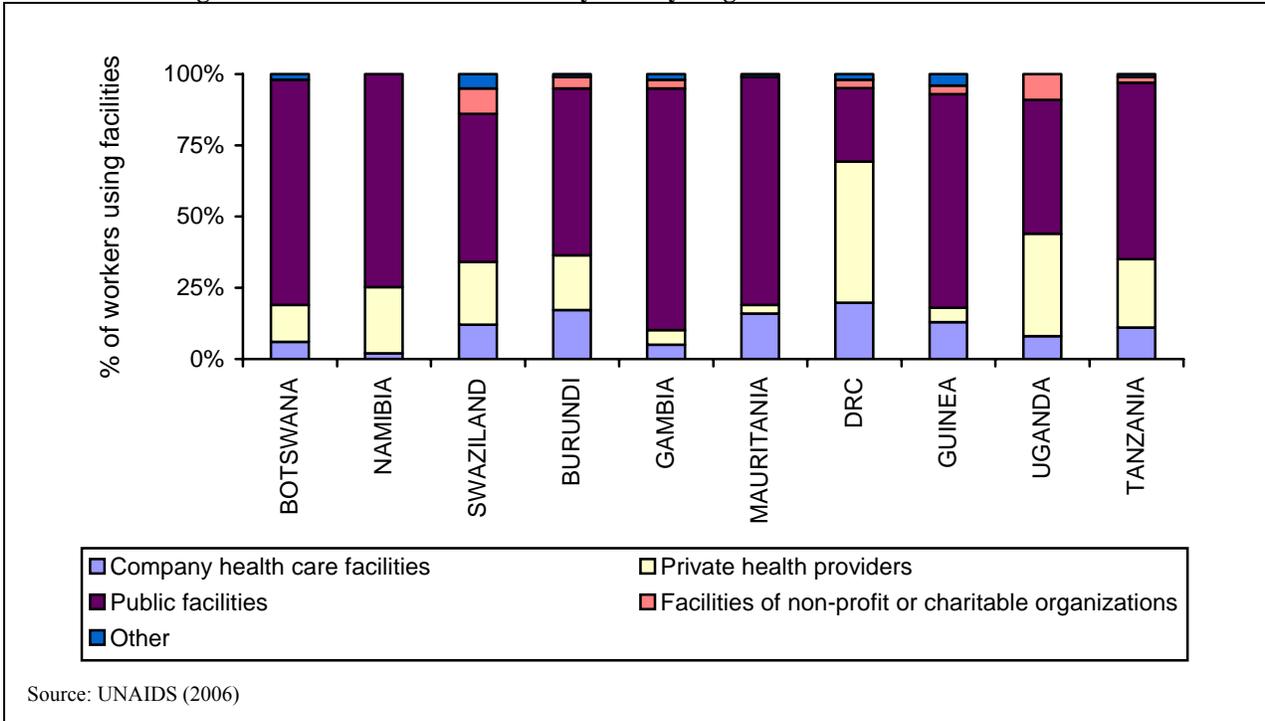
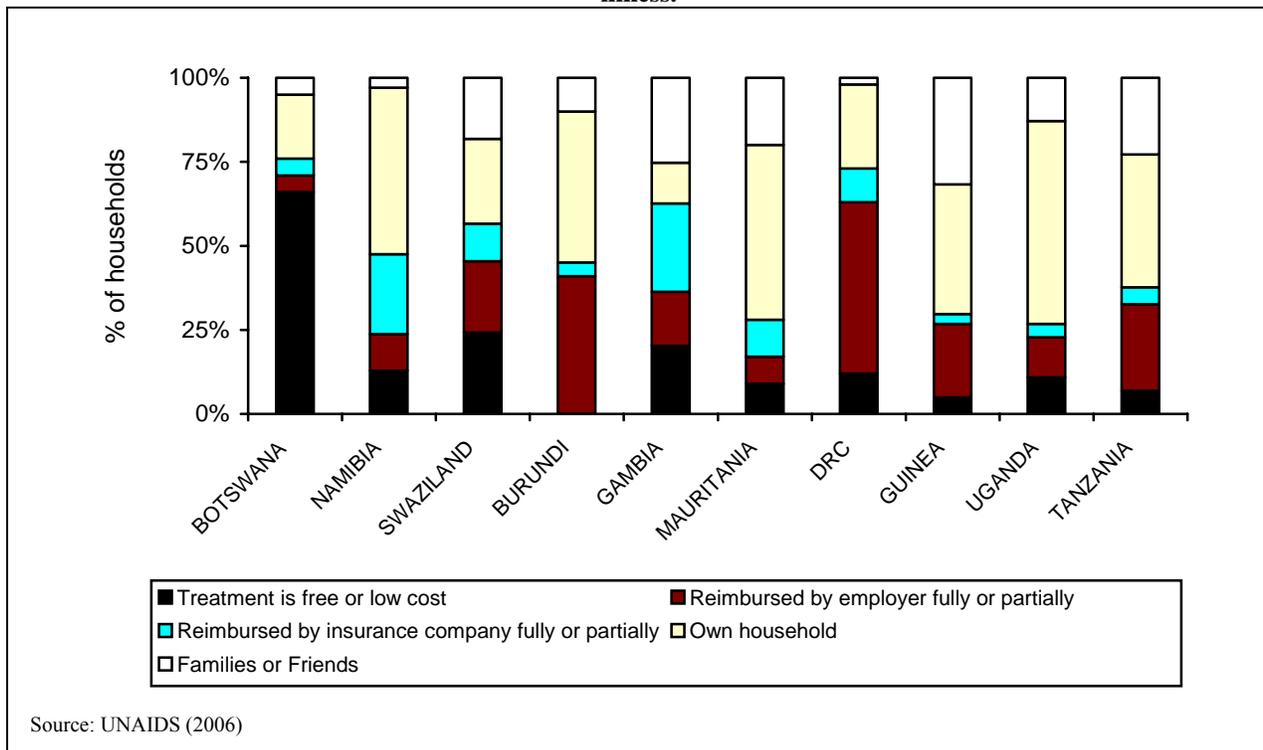


Figure 53: Workers in Botswana expect Government to bear much of the cost of treatment for serious illness.



Worker responses also confirm manager reports showing that Botswana has one of the lowest rates of absenteeism. Among workers surveyed, only 18 percent of those in Botswana reported being sick in the last 30 days, compared to 20 percent of workers in Namibia and 24 percent of workers in Swaziland. Of the ten countries, only workers in Mauritania and Burundi reported lower absenteeism rates. Also, those who were sick reported taking missing fewer days of work, only average 2.5 days in Botswana, as opposed to 4 in Namibia and 4.7 in Swaziland. With anti-retroviral therapy more common in Botswana than in most other countries, workers may experience some treatment benefits that allow them to remain in the workplace for longer.

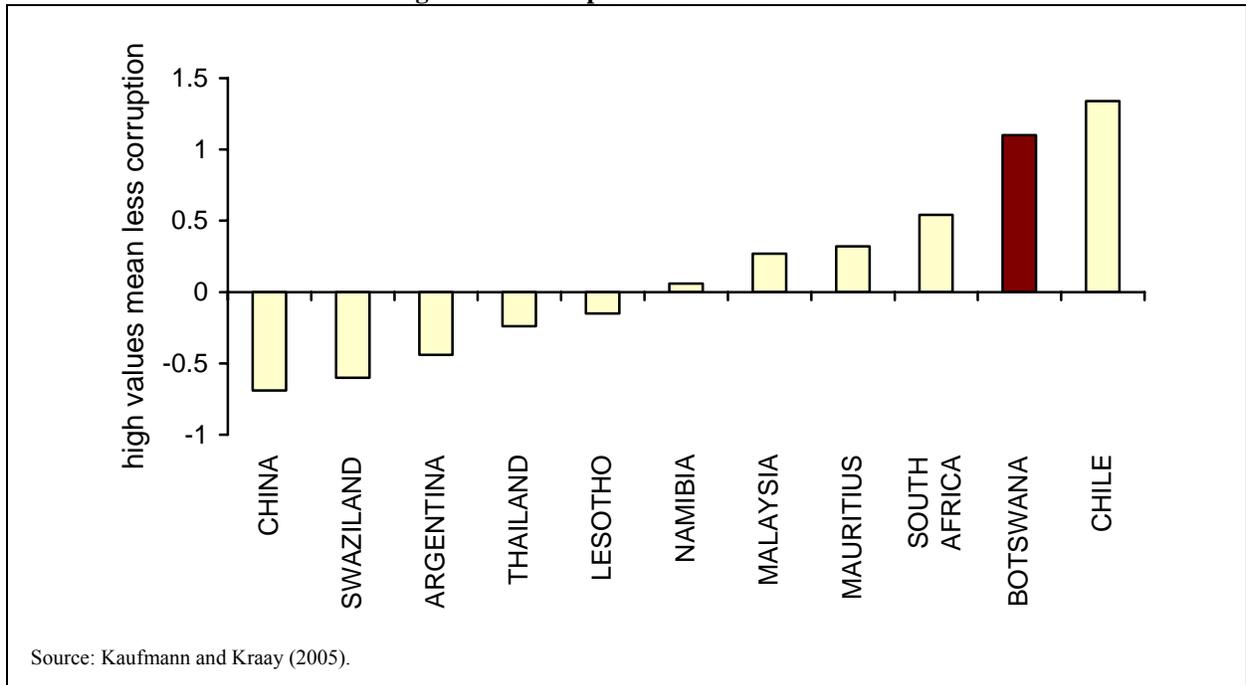
VII. CORRUPTION

Although both SMLEs and microenterprises were moderately concerned about corruption, most evidence suggests that corruption is relatively low in Botswana. About one-quarter of SMLEs and one-fifth of microenterprises said that corruption was a serious problem, making it the fourth and fifth greatest constraint for SMLEs and microenterprises respectively.

Most countries in SACU perform relatively well with respect to corruption. In 2006, Botswana ranked 37th out of 163 countries on Transparency International's Corruption Perceptions Index, South Africa ranked 51st and Namibia ranked 55th (Transparency International, 2006). Within Sub-Saharan Africa, Botswana ranked 1st.

Other cross-country rankings of corruption also suggest that corruption is not a problem—Botswana performs better than any of the comparator countries on the Kaufman-Kraay Index of corruption (see Figure 54).

Figure 54: Corruption is low in Botswana

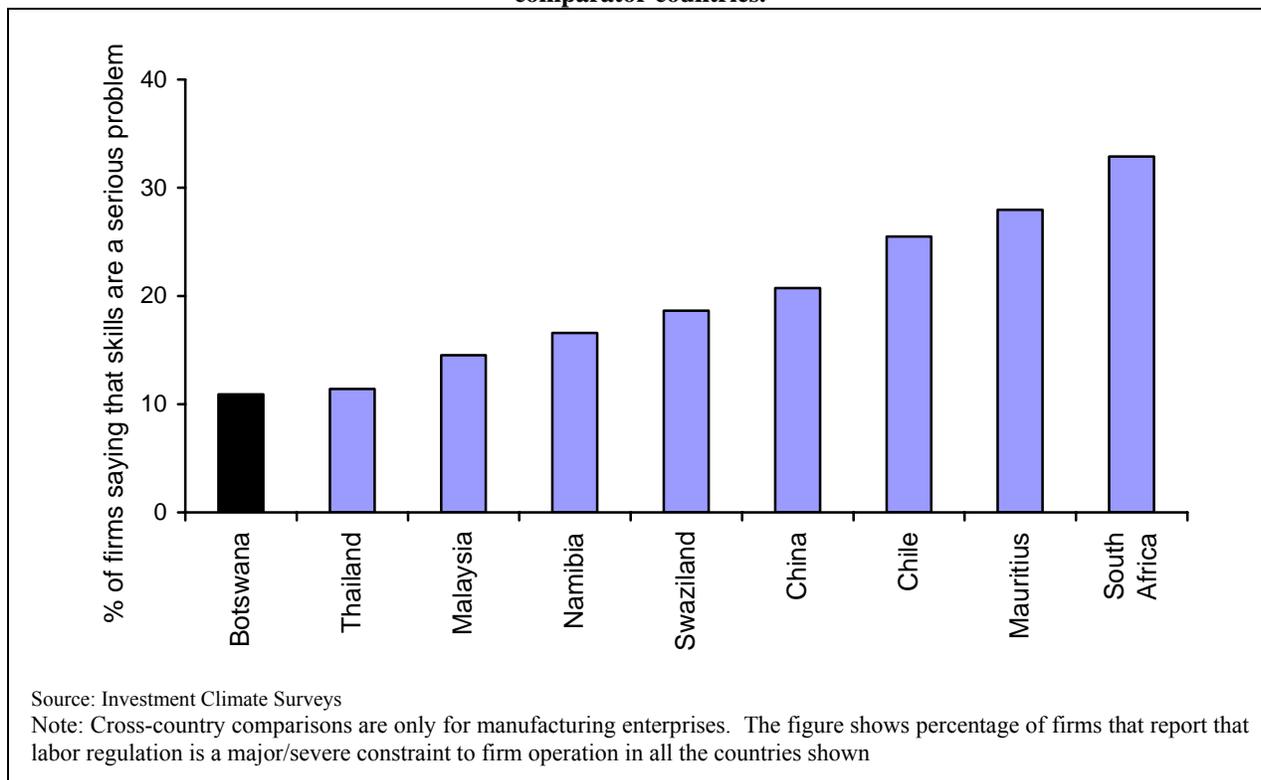


Although corruption does not appear to be a significant problem, it is interesting to note that firms that do business with the government are more likely to say that corruption is a serious problem and are more likely to say that bribes are needed to get things done than firms that do not. Whereas 29 percent of firms that do business with the government say that bribes are needed to get things done, only 26 percent of firms that do not say the same. Similarly, 25 percent of firms that do business with the government say that corruption is a serious obstacle compared to only 21 percent that do not.

VIII. LABOR REGULATION

Labor regulations govern the terms under which firms can hire or fire workers. These terms include minimum wage directives, leave policies and separation policies. Firms were asked to report whether labor regulations were a major or severe constraint to operations in Botswana. 11 percent of firms in manufacturing and services find labor regulations to be a severe or major constraint to growth and operation. The corresponding proportion in the retail sector is less than 5 percent.

Figure 55: Manufacturing firms in Botswana complain less about labor regulation than firms in the comparator countries.

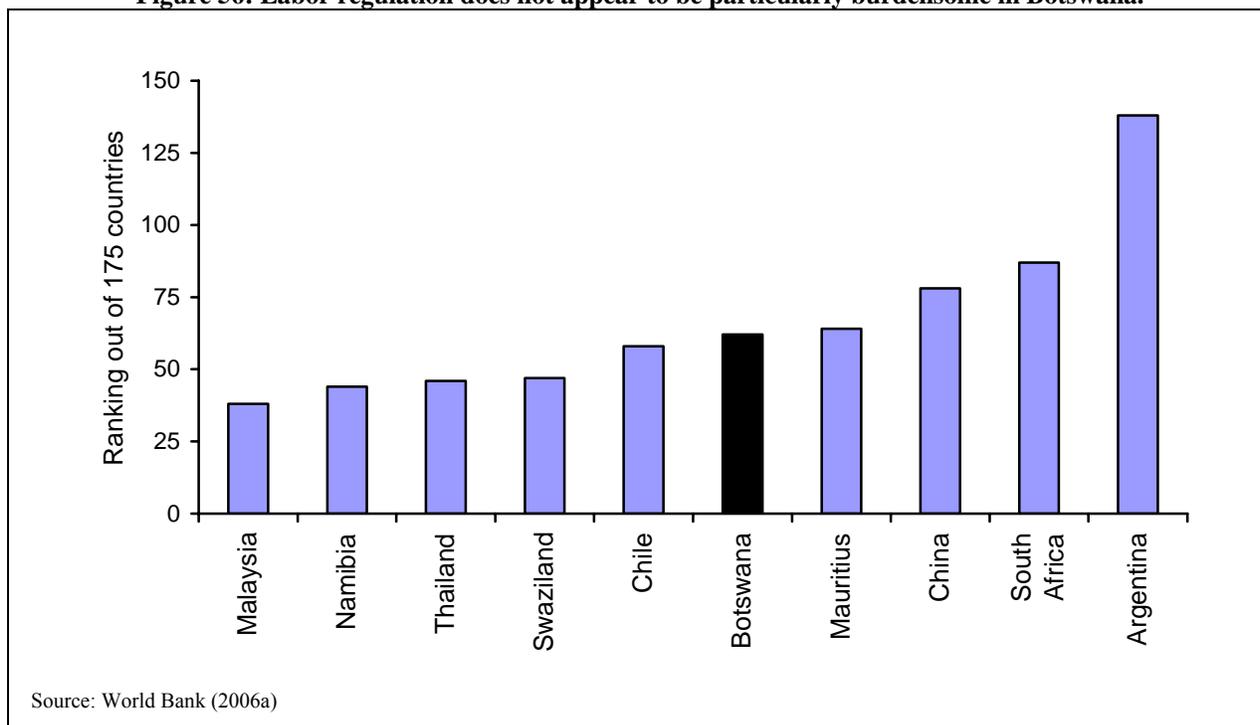


As figure 3 shows, labor regulations do not constitute a major obstacle to the operation of firms in Botswana. Firms in Botswana were less likely to say that labor regulations were a serious problem than firms in any of the comparator countries. For example, three times as many manufacturing firms in neighboring South Africa said that labor regulation were a serious problem for their firm.

Firms were asked to report an elasticity of employment with respect to two aspects of labor regulations: hiring and firing workers. Firms were asked if they would hire or fire more workers if the regulations governing both aspects were removed. Only 18 percent of firms in the manufacturing sector responded that they would change their employment. The corresponding shares in the retail and services sectors are 13 and 15 percent respectively. In general, the regulatory regime governing the hiring, remuneration and firing of workers in Botswana appears reasonable to firms in all three sectors.

This is consistent with other evidence. The Doing Business report collects detailed information on how labor regulations affect hiring, firing, and rigidity of employment. Based upon these regulations, the report calculates objective measures that assess how strict labor regulation is in the country. Although Botswana performs less well than the best performing comparator countries, labor regulation does not appear to be particularly burdensome in this respect either.

Figure 56: Labor regulation does not appear to be particularly burdensome in Botswana.



IX. INFRASTRUCTURE

As noted earlier, few firms in the World Bank Enterprise Survey complained about any aspect of infrastructure. This section discusses some objective data on infrastructure to see whether the objective data are consistent with the subjective data.

IX.1 Power Sector

Botswana's access to grid electricity is one of the lowest in the world, with only 10 percent of the population having access, as compared to 87 percent for other countries in Botswana's upper-middle-income group. Its performance is even poor compared to low-income countries (31 percent average) and Sub-Saharan Africa (15 percent average). Those who do have access, however, report quality to be of the highest in the region (Bogetic and Fedderke, 2007).

The Botswana Power Corporation's (BPC) generating capacity is centered at the 132-MW Morupule power station, but is unable to meet national demand. Nearly 70 percent of national demand is fulfilled by power imports, and regional coordination through the Southern African Power Pool (SAPP) is critical in reducing energy costs. Consequently, Namibia's and

Botswana's electricity utilities, NamPower and BPC, agreed to build a cross-border 150-mile transmission line at a cost of \$7.7 million (completed Sept 2003).

Botswana has relatively abundant sources of cheap coal and has embarked on a process of leveraging these resources for increased energy generation. In July 2004, the U.S. Overseas Private Investment Corporation (OPIC) announced an \$8.5 million investment guaranty to Kalahari Gas Corporation to finance the equipment purchase and drilling of coal bed methane (CBM) wells in eastern Botswana. This follows on a 2003 grant from the U.S. Trade & Development Agency to study the feasibility of CBM development in Botswana (Energy Information Administration, 2005).

Botswana has set the ambitious goal of providing electricity to 70 percent of the population by March 2009 and to the rest of its citizens by 2016. In order to reach this goal, BPC is engaged in a major program to extend the electricity grid into rural areas, the largest phase of which was completed in early 2004 (Energy Information Administration, 2005). Moreover, negotiations are under way between BPC and some SAPP utilities to seal a long-term power supply contract to Botswana.³⁶

Additionally, the Mmamabula Export Power Station—a multi-billion dollar project currently under going development—will substantially contribute to Botswana's power infrastructure. It is said to have sufficient resources to support 5,000 mega watts of power for 40 years. The construction of Phase One of the project is scheduled to begin in the fourth quarter of 2007 with commercial operations of the first unit expected in the first quarter of 2011 - around March or April.³⁷

The majority of SMLEs report favorable perceptions of electricity, as it affects their current operations. Of the 342 SMLEs surveyed, about 61 percent report that electricity does not present an obstacle to their operations. About 20 percent report that electricity presents a “minor obstacle” to current operations; 12 percent report electricity to be a “moderate obstacle”, 4 percent a “major obstacle”, and only about 3 percent report that electricity presents a “very severe obstacle” to current establishment operations. Few microenterprises rated power as a problem either, with only 3 percent saying it was a very severe obstacle and 63 percent saying it was no obstacle.

The power system seems to be fairly reliable (see Figure 3). Although about 40 percent of SMLEs experienced power outages in 2005, this is lower than in most of the comparator. Of those that do experience outages, the median output lost in Botswana (0.5 percent of total sales) is less than the percentage of total sales lost in all of the comparator countries, and is significantly lower than in Lesotho, and Mauritius.³⁸

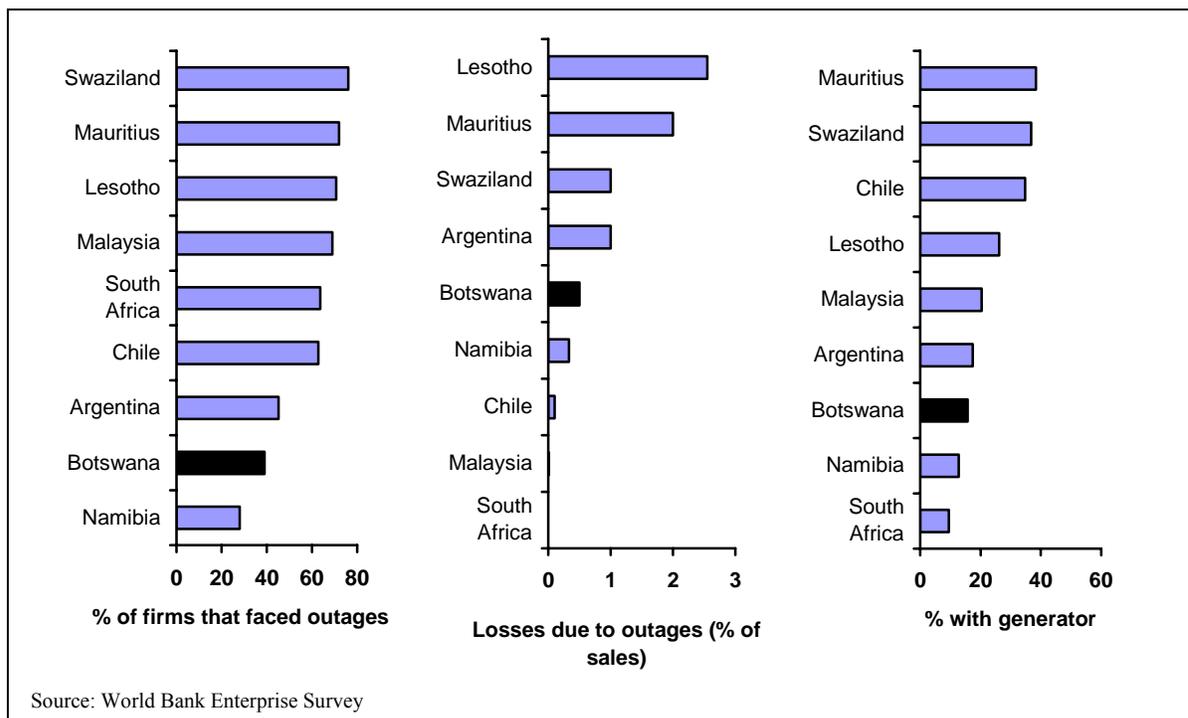
³⁶ *BPC Negotiates Power Supply* Africa News February 12, 2007

³⁷ *Morupule Agendas Clarified*, Africa News February 14, 2007

³⁸ In an unpaired t-test assuming unequal variance, Mauritius losses are significantly greater than those in Botswana (both total sample and manufacturing-only) at the 10 percent level, but Swaziland and Argentina are not.

As a result of relatively reliable electricity supply, fewer SMLEs own generators in Botswana than in most of the comparator countries. Only 16 percent of SMLEs own or share a generator in Botswana. In comparison, 26 percent of SMLEs in Lesotho, 35 percent in Chile, and 38 percent in Mauritius own a generator. Even fewer microenterprises own a generator—only 7 percent.

Figure 57: The power sector is reliable in Botswana.



IX.2 Transportation

The need to move goods means that the availability and quality of transportation infrastructure is important to the cost of doing business, especially for manufacturing firms. Quality transportation is critical in Botswana due to the country's landlocked position.

So it is a positive sign that few firms (12 percent of manufacturing firms) complained of major or very severe problems with transportation. This may be partly explained by the 80 percent of manufacturing firms which shipped on average 90 percent of their own goods, resulting in inconsequential amounts of breakage, spoilage or theft. There is also no correlation between exporters and the occurrence of theft or breakage. Both exporters and non-exporters essentially did not rate this type of problem as troublesome as other investment climate concerns. By these observations, there seems considerable room for growth of the transportation service industry.

Table 22: Roads and Railways.

	Roads, paved (% of roads)	Roads (km)	Rail lines (total route-km)	Railways, goods (million ton-km)	Railways, passengers (million passenger-km)
Argentina	29*	215,471*	35,754	..	..
Botswana	35	25,233	888	842	171
Chile	20	79,604	2,035	1,935	820
Ghana	18	47,787	977	242	85
Lesotho	18*	5,940*	..	..	..
Malaysia	78*	71,814*	1,667	1,224	1,931
Mauritius	100	2,015	..	..	..
Namibia	13	42,237	2,382*	1,082*	49*
Senegal	29	13,576	906	371	138
South Africa	20	362,099	20,047	106,549	10,001
Swaziland	..	3,594	301	..	..

Source: World Bank (2007)

Note: data are from 2000-2005 unless otherwise indicated. * Data are from 1995-1999

However, much work is to be done as there has been a backlog of road maintenance and rehabilitation. In addition, Botswana is aiming to complete additional road and rail links according to an inter-modal transport master plan. The ultimate goal is to become a second regional transport hub of southern Africa and/or a feeder hub for South Africa. In this way, the country will be taking advantage of its central position and opening opportunities for export diversification. A World Bank project (the first lending project after a 20 year hiatus) is in the concept preparation stage and includes capacity building and physical improvements to help improve the Southern African Development Community (SADC)³⁹ regional North-South Transport Corridor (also known as the A1 corridor). This route links the mineral rich regions of Lusaka, Zambia and Lubumbashi, Democratic Republic of Congo to Gaborone, Botswana and ultimately to Johannesburg, and the port of Durban in South Africa. These efforts follow the 1996 SADC Protocol on Transport and Communication calling for further regional integration.

IX.3 Telecommunications

Teledensity in Botswana is among the highest in the region (except for South Africa) both in terms of main line and cellular telephony but it is considerably lower than the last four middle income countries in Table 23. The same can be said of the density of internet users. Some quality indicators are relatively high, such as having the lowest number of telephone faults per line in the region. This may explain why just 7 percent of survey respondents had a largely negative perception of telecommunications. However, there is no comparison with the selected West African countries, or with the other middle income countries.

³⁹ SADC members are Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe and one of their aims is to achieve a Free trade area by 2008, making all trade duty free. However, progress has been limited.

Table 23: Telecommunications and Internet

	Main lines per 100 inhabitants	Cellular subscribers per 100 inhabitants	Telephone faults per 100 main lines	Internet users per 100 inhabitants
Botswana	7	47	37	3
Namibia	6	24	40	4
Lesotho	3	14	75	2
Swaziland	3	19	70	3
South Africa	10	72	48	11
Ghana	1	13	6	2
Senegal	2	15	17	5
Mauritius	29	57	..	15
Malaysia	17	75	7	42
Chile	22	68	25	18
Argentina	23	57	17*	18

Source: International Telecommunications Union (2005)

Liberalization of the telecommunications sector has been underway for more than a decade in Botswana. The Botswana Telecommunications Corporation is a state-owned company, regulated by the Botswana Telecommunications Authority, (BTA) which in 1998 licensed two GSM cellular operators, Mascom Wireless and Orange Botswana (previously Vista Cellular). These two were required to rely on BTC for backbone infrastructure until a new licensing structure was recently established to allow companies to simultaneously offer mobile and fixed telephony as well as internet services under one license. These advances are part of an overall strategy to attain a position as the telecommunications hub for the region.

ECONOMETRIC ANNEX: FIRM RESPONSES TO HIV/AIDS

This section uses multivariate regression analysis to look at how firm characteristics are correlated with managers' responses to HIV/AIDS in the workplace, or in other words, what characteristics separate firms that have responded to the crisis from those that have not. Since some firm characteristics (such as size and foreign ownership) are correlated, multivariate regression analysis makes it possible to take into account these inter-relationships to better identify the firm characteristics that are most robustly correlated with firm responses.

Methodology

The Enterprise Survey includes three questions, all with simple yes-no formats, on possible responses to the HIV/AIDS crisis: (i) whether the firm provides posters and announcements for HIV/AIDS awareness, (ii) whether the firm provides condoms, and (iii) whether the firm provides anonymous voluntary counseling and testing for HIV. Based upon these three questions, a dummy variable, Y_i , is created that takes the value of 1 if the firm responds in any of these ways and 0 if the firm does not.

The determinants of HIV response are estimated using the following probit model:

$$Y_i = F(\alpha + \beta X_i) + \varepsilon_i$$

where Y_i is firm i 's response to the crisis, X_i is a vector of firm-level characteristics and ε_i is an error term. The firm characteristics, X_i , include: (i) the size of the firm, as measured by the total number of employees at the end of 2005; (ii) whether or not the firm is foreign-owned; (iii) the ratio of skilled to total labor (the number of managers, professionals, and skilled production workers as a proportion of total workers); (iv) whether or not the firm trains its workers (or in the alternative specification, the percentage of production workers receiving formal training); (v) whether more than 50 percent of employees belong to a union; and a series of sector dummies.

Results

The regression results show that one factor is consistently correlated with HIV prevention activities: whether or not the firm has a formal training program (see Table 24). The coefficient on this variable is positive and statistically significant in all regressions. This is consistent with previous studies, which have found firms investing in formal training have higher worker replacement costs and therefore care about protecting workers from HIV. Moreover, training might provide firms with an available forum for sharing information and educating their workers.⁴⁰

Other factors, such as firm size, foreign ownership, skill ratio, and sector, are not significantly correlated with HIV-responsiveness. One plausible reason for this is that there is

⁴⁰ See Ramachandran et al

very little variation in the dependent variable—most firms respond in some way. The coefficients on these variables are also not statistically significant in separate regressions for the three individual responses.

Table 24: Firm response to HIV/AIDS

	(1)	(2)	(3)
	Any AIDS Prevention Activity		
Observations	99	99	99
Size (total number employees)	-0.51 (0.61)	-0.35 (0.73)	
Ln (size)			0.03 (0.98)
Foreign ownership dummy	0.62 (0.54)	0.68 (0.50)	0.62 (0.53)
Skill ratio	-0.71 (0.48)	-0.84 (0.40)	-0.62 (0.54)
Formal training for any workers dummy	2.23 (0.03)**		2.24 (0.03)**
Formal training for production workers (%)		2.16 (0.03)**	
Majority employees unionized	0.33 (0.74)	0.34 (0.73)	0.23 (0.82)
Wood sector	0.18 (0.85)	0.07 (0.94)	0.19 (0.85)
Metal sector	-0.37 (0.71)	-0.37 (0.71)	-0.35 (0.73)
Food sector			
Textiles sector			
Log likelihood	-56.8	-56.7	-56.9

**significant at 5 percent level

ECONOMETRIC ANNEX: INFORMALITY COMPLAINTS REGRESSION ANALYSIS

Multivariate regression analysis is useful when examining the factors that contribute to complaints about informality. Since some firm characteristics are correlated, it is possible to take the inter-relationships between characteristics into account using this approach, making it easier to identify the factors that have the greatest impact on manager perceptions about informal competitors.

Methodology

The methodology used in this section is an extension of the analysis in Chapter 3 of this volume, which is based upon the methodology in Gelb and others (2007). A dummy variable, Y_i , is created that take the value of 1 if the firm rates informal competition as a “major” or “very severe” constraint and 0 if the firm rates it as “moderate”, “minor”, or “no obstacle”.

The determinants of informality complaints using the following probit model:

$$Y_i = F(\alpha + \beta X_i) + \varepsilon_i$$

where X_i is a vector of firm-level characteristics and ε_i is an error term. In addition to the variables in Chapter 3, several additional variables are included. In particular, variables representing whether the firm sells only in local markets, rather than national or international markets; whether or not firms report competing against informal or unregistered firms; and the number of competitors and the total number of new competitors.

Questions about the number of competitors faced and whether the firm sells only in local markets are asked only to manufacturing firms, while the question on whether the firm reports unregistered competitors is asked only to retail firms, so we run the regression separately for each sub-sample.

Results

The regression results show that after controlling for other variables, size is not the main factor driving complaints. Although the coefficient on size is negative, indicating that large firms are less concerned about informality, it is not statistically significant. In the overall sample, sector dummies, as well as a foreign ownership variable, are also not statistically significant.

When looking at the manufacturing and retail samples alone, two variables emerge as significant determinants. Since the two questionnaires are slightly different, these regressions only included these sectors alone. In the retail sector, whether or not the firm reports unregistered competitors appears highly significant compared to other factors, with retail firms that believe they are competing with informal firms being 44 percentage points more likely to say that competition is a serious problem. In the manufacturing sector, the number of new competitors the firm reports entering the market is most significant.

Table 25: Effect of enterprise characteristics on perceptions about informality

	(1)	(2)	(3)	(4)
	Informal Competition is serious problem			
Sector	All	Manufacturing	Retail	All
Observations	336	113	105	330
Workers (natural log)	-0.03 (1.28)	-0.01 (0.43)	0.02 (0.37)	-0.03 (1.49)
Sector - retail (dummy)	0.01 (0.09)			-0.01 (0.13)
Sector - other services (dummy)	-0.06 (1.01)			-0.07 (1.26)
Foreign-owned (dummy)	0.02 (0.30)	0.06 (0.63)	0.10 (1.05)	0.02 (0.36)
Exporter (dummy)	-0.14* (1.71)	-0.19* (1.81)		-0.12 (1.52)
Ownership - White (dummy)	-0.19*** (2.72)	-0.15 (1.38)	-0.22** (2.06)	-0.19*** (2.70)
Ownership - Asian (dummy)	-0.05 (0.89)	-0.08 (0.90)	-0.20** (2.20)	-0.06 (0.98)
Ownership - Female (dummy)	-0.02 (0.33)	0.06 (0.69)	-0.05 (0.58)	-0.02 (0.46)
Competition - Local Markets (dummy)		-0.02 (0.24)		
Competitors (number)		0.02 (0.34)		
New Competitors (number)		0.07** (2.10)		
Competes with informal firms (dummy)			0.44*** (4.59)	
Tax Compliance (% reported to tax authorities)				-0.00* (1.89)

Another factor that might affect concerns about informality is informal or unfair competition from registered firms. As discussed in the previous section on taxation, firms are also worried about tax compliance by their competitors (see Figure 35). Firms that complain about competition from the informal sector say that ‘firms like theirs’ report less of their income to the tax authorities (44 percent) than firms that are less concerned about competition with informal competitors (54 percent). This correlation remains significant even when controlling for other factors (e.g., size and sector) that might affect perceptions about informality.

REFERENCES

- Acemoglu, Daron, Simon Johnson, and James A. Robinson. 2003. "An African Success Story: Botswana." In Dani Rodrik, eds., *In Search of Prosperity*. Princeton, NJ: Princeton University Press.
- Alexander, Elsie M., Gwen N. Lestedi, Lerator N. Pilane, Elizabeth P. Mukaamambo, and Rusinah Masilo-Rakgaasi. 2006. "Beyond Inequalities: Women in Botswana." Southern African Research and Documentation Center: Harare, Zimbabwe. Available on line at <http://databases.sardc.net/books/bots2005/>.
- Aw, Bee Yan, Sukkyun Chung, and Mark J. Roberts. 2000. "Productivity and Turnover in the Export Market: Micro-level Evidence from the Republic of Korea and Taiwan (China)." *World Bank Economic Review* 14(1):65–90.
- Becker, Gary S. 1964. *Human Capital*. Chicago, IL: University of Chicago Press.
- Bernard, Andrew B., and J. Bradford Jensen. 1999. "Exceptional Exporter Performance: Cause, Effect or Both?" *Journal of International Economics* 47(1):1–25.
- Biggs, Tyler. 2003. "Is Small Beautiful and Worthy of Subsidy? Literature Review." World Bank: Washington, D.C. Processed.
- Bigsten, Arne, Paul Collier, Stefan Dercon, Marcel Fafchamps, Bernard Gauthier, Jan Willem Gunning, Abena Oduro, Remco Oostedorp, Catherine Pattillo, Mans Soderbom, Francis Teal, and Albert Zeufack. 2004. "Do African Manufacturing Firms Learn from Exporting." *Journal of Development Studies* 40(3):115–141.
- Blanchflower, David G., Andrew J Oswald, and Peter Sanfey. 1996. "Wages, Profits and Rent Sharing." *Quarterly Journal of Economics* 111(1):227–256.
- Bogetic, Zeljko, and Johannes Fedderke. 2007. "International benchmarking of infrastructure performance in the Southern African Customs Union Countries." Policy Research Working Paper 3987. World Bank, Washington DC. Available on line at <http://go.worldbank.org/ST2ENTMN30>.
- Botswana Police Service. 2002. "Annual Report of the Commissioner of the Botswana Police Service for the Year 2002." Botswana Police Service: Gabarone, Botswana.
- Burdett, Kenneth, and Dale T. Mortensen. 1980. "Search, Layoffs, and Labor Market Equilibrium." *Journal of Political Economy* 88(4):652–672.
- Central Statistics Office. 2000. "Informal Sector Survey 1999/2000." Central Statistical Office: Gabarone, Botswana. Available on line at http://www.cso.gov.bw/html/info_sector99.html.

- Chen, Martha, Jennifer Sebstad, and Leslie O'Connell. 1999. "Counting the Invisible Workforce: The Case of Homebased Workers." *World Development* 27(3):603–610.
- Clarke, George R. G, Robert Cull, and Maria Soledad Martinez Peria. 2006. "Foreign Bank Participation and Access to Credit across Firms in Developing Countries." *Journal of Comparative Economics* 34(4):774–796.
- Clarke, George R. G. 2005. "Beyond Tariffs and Quotas: Why Don't African Manufacturers Export More?" Policy Research Working Paper 3617. World Bank, Washington DC.
- Clarke, George R. G., and Robert Cull. 2007. "Access to Credit and Firm Ownership in South Africa." World Bank: Washington DC. Processed.
- Clerides, Sofronis K., Saul Lach, and James R. Tybout. 1998. "Is Learning by Exporting Important? Micro-dynamic Evidence from Colombia, Mexico, and Morocco." *Quarterly Journal of Economics* 113(3):903–947.
- Corden, Max W., and Peter J. Neary. 1982. "Booming Sector and De-Industrialization in a Small Open Economy." *Economic Journal* 92(368):825–848.
- Corden, W. Max. 1984. "Booming Sector and Dutch Disease Economics: Survey and Consolidation." *Oxford Economic Papers* 36(3):359–380.
- Duvenage, Jan. 2006. "Standard Bank Africa Market briefing: Botswana, 10 February 2006." Standard Bank: Johannesburg, South Africa. Available on line at <http://www.sarpn.org.za/documents/d0001995/index.php>.
- Economist Intelligence Unit. 2006. "Botswana: Country Profile." Economist Intelligence Unit: London, UK.
- Eifert, Benn, Alan Gelb, and Nils Borje Tallroth. 2002. "The Political Economy of Fiscal Policy and Economic Management in Oil-Exporting Countries." Policy Research Working Paper 2899. World Bank, Washington DC.
- Energy Information Administration. 2005. "Country Analysis Brief: The Southern African Development Community." Department of Energy: Washington DC. Available on line at <http://www.eia.doe.gov/emeu/cabs/sadc.html>.
- Fedderke, Johannes, Chandana Kularatne, and Martine Mariotti. 2003. "Mark-up pricing in South African Industry." University of Cape Town: Cape Town, South Africa. Processed.
- Fedderke, Johannes, and Gabor Szalontai. 2005. "Industry Concentration in South African Manufacturing: Trends and Consequences, 1972-1996." World Bank Informal Discussion Paper Series on South Africa 2005/02. World Bank, Pretoria, South Africa.

- Foreign Investment Advisory Service. 2004. "Further Improving the Regulatory and Procedural Framework for Encouraging Private Investment." International Finance Corporation and the World Bank: Washington DC.
- Gelb, Alan. 1988. *Windfall Gains: Blessing or Curse*. Oxford, UK: Oxford University Press.
- Gelb, Alan, Vijaya Ramachandran, Manju Kedia Shah, and Ginger Turner. 2006. "What Matters to African Firms? The Relevance of Perceptions Data." World Bank: Washington DC. Processed.
- Greene, William. 2000. *Econometric Analysis. 4th Edition*. Upper Saddle River, NJ: Prentice-Hall.
- Grenier, Louise, Andrew McKay, and Oliver Morrissey. 1999. "Exporting, Ownership, and Confidence in Tanzanian Enterprises." *World Economy* 22(7):995–1011.
- Harvey, Charles. 1992. "Botswana: Is the Economic Miracle Over?" *Journal of African Economies* 1(3):375–398.
- Hausmann, Ricardo, and Andres Velasco. 2005. "Slow Growth in Latin America: Common Outcomes, Common Causes?" Kennedy School of Government: Boston MA. Processed.
- Hellerstein, Judith K., and David Neumark. 2006. "Using Matched Employer-Employee Data to Study Labor Market Discrimination." In William Rodgers, eds., *Handbook on the Economics of Discrimination*. Cheltenham, UK: Edward Elgar, pp. 29--60.
- Hellman, Joel, Geraint Jones, Daniel Kaufmann, and Mark Schankerman. 1999. "Measuring Governance and State Capture: The Role of Bureaucrats and Firms in Shaping the Business Environment." EBRD Working Paper 51. London, UK.
- Hopenhayn, Hugo. 1992. "Entry, Exit, and Firm Dynamics in Long Run Equilibrium." *Econometrica* 60(2):1127–1150.
- International Monetary Fund. 2004. "Public Information Notice, July 20, 2005: IMF Concludes 2003 Article IV Consultation with Botswana." International Monetary Fund: Washington DC.
- , 2005. "Staff Report for the 2005 Article IV Consultation." International Monetary Fund: Washington DC.
- , 2006a. "Botswana: 2005 Article IV Consultation - Staff Report." International Monetary Fund: Washington DC.
- , 2006b. "Botswana: Statistical Appendix." International Monetary Fund: Washington DC.

- International Telecommunication Union. 2005. *World Telecommunication Indicators, 2003/2004*. Geneva, Switzerland: International Telecommunication Union.
- Katz, Lawrence, and Lawrence H. Summers. 1989. "Can Inter-Industry Wage Differentials Justify Strategic Trade Policy." NBER Working Paper 2739. National Bureau of Economic Research, Cambridge MA.
- Keller, Wolfgang. 2003. "International Technology Diffusion." University of Texas Department of Economics: Austin, Tx. Processed.
- Kumbhakar, Subal C., and C. A. Knox Lovell. 2000. *Stochastic Frontier Analysis*. Cambridge, UK: Cambridge University Press.
- Lazear, Edward. 1979. "Why is there Mandatory Retirement." *Journal of Political Economy* 87(6):1261–1284.
- Leith, J. Clark. 2005. *Why Botswana Prospered*. Quebec City, Canada: McGill-Queens University Press.
- Liu, Jin-Tan, Meng-Wen Tsou, and James K. Hammitt. 1999. "Export Activity and Productivity: Evidence from the Taiwan Electronics Industry." *Weltwirtschaftliches Archiv* 135(4):675–91.
- Maipose, G. S., and T. C. Matsheka. 2004. "Explaining African Growth Performance: The Botswana Case Study." Global Development Network: New Delhi, India. Available on line at http://www.gdnet.org/pdf/draft_country_studies/Botswana-Maipose_RIR.pdf.
- Mincer, Jacob. 1962. "On the Job Training: Costs, Returns, and Some Implications." *Journal of Political Economy* 70(2):50–79.
- , 1974. *Schooling, Experience and Earnings*. New York, NY: Columbia University Press.
- Mogotsi, Imogen. 2002. "Botswana's Diamonds Boom: Was There a Dutch Disease?" *South African Journal of Economics* 70(1):128–156.
- Moll, Peter G. 1993. "Industry Wage Differentials and Efficiency Wages: A Dissenting View with South African Evidence." *Journal of Development Economics* 41(1):213–246.
- Molomo, Mpho G., Bertha Osei-Hwedie, David Sebudubudu, Ian Taylor, and Shelly Whitman. 2007. "Country Study: Botswana." In Chandre Gould and Guy Lamb, eds., *Hide and Seek: Taking Account of Small Arms in Southern Africa*. Pretoria, South Africa: Institute for Security Studies.
- Mussa, Michael. 2002. *Argentina and the Fund: From Triumph to Tragedy*. Washington DC: Institute for International Economics.

- Nkusu, Mwanza. 2004. "Aid and the Dutch Disease in low-Income Countries: Informed Diagnoses for Prudent Prognoses." IMF Working Paper 04/49. International Monetary Fund, Washington DC. Available on line at <http://www.imf.org/external/pubs/ft/wp/2004/wp0449.pdf>.
- Oliner, Stephen D., and Daniel E. Sichel. 2000. "The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?" *Journal of Economic Perspectives* 14(4):3–22.
- Presidential Task Group of a Long-Term Vision for Botswana. 1997. "A Long-Term Vision for Botswana." Presidential Task Group of a Long-Term Vision for Botswana: Gaborone, Botswana. Available on line at <http://www.vision2016.co.bw/PDF%27s/English%20Full%20version.pdf>.
- , 2007. "Media Release: Escalation of Crime in the Country, a Deterrent Towards Achieving the Goals of Vision 2016." Presidential Task Group of a Long-Term Vision for Botswana: Gaborone, Botswana. Available on line at <http://www.vision2016.co.bw/PDF%27s/News/Escalation%20of%20Crime%20Media%20Release.doc>.
- Qiang, Christine Zhe-Wei, George R. Clarke, and Naomi Halewood. 2006. "The Role of ICT in Doing Business." In World Bank, eds., *Information and Communications for Development 2006: Global Trends and Policies*. Washington DC: World Bank, pp. 57-86.
- Ramachandran, Vijaya, Manju Kedia Shah, and Ginger Turner. 2005. "HIV/AIDS and the Private Sector in Africa: Evidence from the Investment Climate Data." Center for Global Development Working Paper 76. Center for Global Development, Washington DC.
- Regional Program on Enterprise Development, Africa Private Sector Group. 2005a. "An Assessment of the Investment Climate in South Africa." World Bank: Washington DC.
- , 2005b. "Mali: Une évaluation du Climat des Investissements." World Bank: Washington DC.
- , 2005c. "Senegal: Une évaluation du climat des investissements." Regional Program on Enterprise Development, Africa Private Sector Group: Washington DC.
- , 2006. "The Investment Climate For Microenterprises in South Africa." World Bank: Washington DC.
- , 2007a. "An Assessment of the Investment Climate in Botswana." World Bank: Washington DC.
- , 2007b. "An Assessment of the Investment Climate in Namibia." World Bank: Washington DC.

- , 2007c. "An Assessment of the Investment Climate in Swaziland." World Bank: Washington DC.
- Roberts, Mark J., and James R. Tybout, eds. 1996. *Industrial Evolution in Developing Countries*. Washington, D.C.: Oxford University Press for the World Bank.
- Sachs, Jeffrey D., and Andrew M. Warner. 2001. "The Curse of Natural Resources." *European Economic Review* 45(4):827–838.
- Saggi, Kamal. 2002. "Trade, Foreign Direct Investment, and International Technology Transfer: A Survey." *World Bank Research Observer* 17(2):191–235.
- Salehi-Esfahani, Haideh. 1988. "Informationally Imperfect Labor Markets and the 'Dutch Disease' Problem." *Canadian Journal of Economics* 21(3):617–624.
- Schiantarelli, Fabio. 1996. "Financial Constraints and Investment: Methodological Issues and International Evidence." *Oxford Review of Economic Policy* 12(2):70–89.
- Schneider, Friedrich. 2002. "Size and Measurement of the Informal Economy in 110 Countries around the World." University of Linz: Linz-Auhof, Austria. Available on line at http://rru.worldbank.org/Documents/PapersLinks/informal_economy.pdf. Processed.
- Schonteich, Martin. 2000. "South Africa's Ranking in Africa's Crime Rankings." *African Security Review* 9(4):1–17.
- Shapiro, Carl, and Joseph E. Stiglitz. 1984. "Equilibrium Unemployment as a Worker Discipline Device." *American Economic Review* 74(3):433–444.
- Soderbom, Mans, and Francis Teal. 2003. "Are Manufacturing Exports the Key to Economic Success in Africa?" *Journal of African Economics* 12(1):1–29.
- Stern, Nicholas. 2002a. *A Strategy for Development*. Washington DC: World Bank.
- , 2002b. "Development as a Process of Change." World Bank: Washington DC. Processed.
- , 2002c. "The Investment Climate, Governance, and Inclusion in Bangladesh." World Bank: Washington DC. Processed.
- Tybout, James R. 2003. "Plant- and Firm-Level Evidence on "New" Trade Theories." In E. Kwan Choi and James Harrigan, eds., *Handbook of International Trade*. Malden, MA: Blackwell Publishers, pp. 389--415.
- United Nations Program on HIV AIDS. 2006. "Botswana: Country Progress Report." UNAIDS: Geneva, Switzerland.

Westphal, Larry E. 2002. "Technology Strategies for Economic Development in a Fast Changing Global Economy." *Economics of Innovation and New Technology* 11(4-5):275–320.

World Bank. 2004. *World Development Report 2005: A Better Investment Climate For Everyone*. Washington DC: World Bank.

----- . 2006a. *Doing Business 2007: How To Reform*. Washington DC: World Bank.

----- . 2006b. *World Development Indicators*. Washington, D.C.: World Bank.

----- . 2007. *World Development Indicators*. Washington, D.C.: World Bank.

SAMPLE SURVEY DESIGN

By EEC Canada

I. SURVEY COVERAGE

The World Bank Enterprise Survey in Botswana targeted establishments located in Gaborone and in Francistown in the following industries (according to ISIC, revision 3.1): all manufacturing sectors (group D), construction (group F), retail and wholesale services (sub-groups 52 and 51 of group G), hotels and restaurants (group H), transport, storage, and communications (group I), and computer and related activities (sub-group 72 of group K). For establishments with five or more full-time permanent employees, this universe was stratified according to the following categories of industry:

1. Manufacturing: Food and Beverages (Group D, sub-group 15);
2. Manufacturing: Garment (Group D, sub group 18);
3. Manufacturing: Other Manufacturing (Group D excluding sub-groups 15 and 18);
4. Retail Trade: (Group G, sub-group 52);
5. Rest of the universe, including:
 - Construction (Group F);
 - Wholesale trade (Group G, sub-group 51);
 - Hotels, bars and restaurants (Group H);
 - Transportation, storage and communications (Group I);
 - Computer related activities (Group K, sub-group 72).

The survey also sampled a selection of micro establishments (establishments with less than five full-time permanent paid employees) from the targeted universe, without stratification by industry.

II. SAMPLING METHODOLOGY

The sampling methodology implemented varied by strata and region, depending on the characteristics of the population and the goals set out by the World Bank. With respect to establishments with five or more employees, the following approaches were applied (according to survey region and industrial stratum):

II.1 Manufacturing Strata

For the three manufacturing strata, lists of establishments were obtained from a number of sources. One list obtained from the Central Statistics Office was provided with the warning that it was out of date, and indeed this list proved to be largely unusable as the vast majority of the contact information was invalid. A second list from the Ministry of Trade and Industry was also deemed to be largely out of date. In view of this, EEC Canada chose to compile a new list by undertaking a census of manufacturing establishments. After eliminating the residential zones of each city, the EEC team went into the field visiting each establishment in the

remaining zones to determine whether they were manufacturing or not. The names of those manufacturing establishments were compiled in a new list. That list contained a total of 143 establishments in Gaborone and 35 in Francistown. It was decided that an attempt would be made to survey all manufacturing establishments.

II.2 Retail and Rest of the Universe Strata

No suitable lists for establishments in the retail and rest of the universe strata were available. EEC therefore chose to undertake an area sampling approach for these two strata in both survey locations. The two cities were divided into zones, and purely residential zones were eliminated. In the remaining zones, the EEC team walked each individual street and carried out an exhaustive count of establishments in each of the two strata. The total count for each stratum and zone of each city was sent to EEC head office in Montreal.

At head office, for each stratum, the following procedure was followed. Based on the total count, the target sample size was determined. The count by zone was then converted into a list of sequential numbers, and a computer program performed a random selection of the determined number of establishments from the list. Then, based on the number that the computer selected in each zone, a skip rule was defined to select establishments to survey in that zone for that stratum. The skip rule for each zone was sent back to the EEC field team.

Back in Botswana, enumerators were sent to each zone with instructions as to how to apply the skip rule defined for that zone as well as how to select replacements in the event of a refusal or other cause of non-participation.

II.3 Micro

In this survey, the micro establishment stratum covers all establishments of the targeted categories of economic activity with less than 5 employees. For many reasons including the small size of establishments, their expected high rate of turnovers, the high level of “informality” of establishments in many activities and consequently the difficulty to obtain trustworthy information from official sources, EEC Canada selected an aerial sampling approach to estimate the population of establishments and select the sample in this stratum for both cities.

The main steps of this approach were to i) select *districts and specific zones* of each district where there was a high concentration of micro establishments; ii) *count all micro establishments* in these specific zones; and iii) based on this count and the target sample size for micros, determine a skip rule to apply.

The districts and the specific zones were selected at first according to our national sources. The EEC team then went in the field to verify these national sources and to count micro establishments. Once the count for each zone was completed, the numbers were sent back to Montreal where the same procedure as that outlined above for Retail and Rest of the Universe was followed to define a skip rule for selecting micros in each of the included zones.

Enumerators were sent into each of the zones with instructions as to how to apply the skip rule for that zone to select micro establishments.

III. POPULATION AND SAMPLE SIZE

Table 26: Population size by stratum and sampling region

	Gaborone	Francistown	Total
Manufacturing	142	35	177
<i>Food and beverages</i>	12	4	16
<i>Garments</i>	24	5	29
<i>Other manufacturing</i>	106	26	132
Retail	472	113	585
Rest of the universe	342	77	419
Micro	416	88	504
Total	1372	313	1685

Table 27: Final sample size by stratum and sampling region

	Gaborone	Francistown	Total
Manufacturing	92	22	114
<i>Food and beverages</i>	11	1	12
<i>Garments</i>	20	5	25
<i>Other manufacturing</i>	61	16	77
Retail	97	15	112
Rest of the universe	100	16	116
Micro	89	13	102
Total	378	66	444

IV. PARTICIPATION

Table 28: Approached, refused, unavailable, and surveyed by stratum and sampling region

	Gaborone				Francistown				Total			
	App.	Ref.	Unavail.	Surv.	App.	Ref.	Unavail.	Surv.	App.	Ref.	Unavail.	Surv.
Manufacturing	142	42	8	92	35	7	6	22	177	49	14	114
<i>Food and beverages</i>	12	1		11	4	2	1	1	16	3	1	12
<i>Garments</i>	24	4		20	5			5	29	4	0	25
<i>Other manufacturing</i>	106	37	8	61	26	5	5	16	132	42	13	77
Retail	157	53	7	97	28	3	10	15	185	56	17	112
Rest of the universe	158	47	11	100	24	2	6	16	182	49	17	116
Total	457	142	26	289	87	12	22	53	544	154	48	342

Table 29: Refused, unavailable, and surveyed as percentage of approached by stratum and sampling region

	Gaborone				Francistown				Total			
	App.	% Ref.	% Unavail.	% Surv.	App.	% Ref.	% Unavail.	% Surv.	App.	% Ref.	% Unavail.	% Surv.
Manufacturing	142	29.6%	5.6%	64.8%	35	20.0%	17.1%	62.9%	177	27.7%	7.9%	64.4%
<i>Food and beverages</i>	12	8.3%	0.0%	91.7%	4	50.0%	25.0%	25.0%	16	18.8%	6.2%	75.0%
<i>Garments</i>	24	16.7%	0.0%	83.3%	5	0.0%	0.0%	100.0%	29	13.8%	0.0%	86.2%
<i>Other manufacturing</i>	106	34.9%	7.6%	57.6%	26	19.2%	19.2%	61.5%	132	31.8%	9.9%	58.3%
Retail	157	33.8%	4.5%	61.8%	28	10.7%	35.7%	53.6%	185	30.3%	9.2%	60.5%
Rest of the universe	158	29.8%	7.0%	63.3%	24	8.3%	25.0%	66.7%	182	26.9%	9.3%	63.7%
Total	457	31.1%	5.7%	63.2%	87	13.8%	25.3%	60.9%	544	28.3%	8.8%	62.9%