Chapter 3

STUCK IN THE MIDDLE? STRUCTURAL CHANGE AND PRODUCTIVITY GROWTH IN BOTSWANA

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In 1966 when Botswana gained independence, it was one of the poorest countries in the world. But by 1986, Botswana had achieved middle-income status, and in 2005, the World Bank classified it as an upper-middle-income country. The only other country to enjoy such rapid economic growth over such a long period is China—an average of 9 percent between 1968 and 2010. Botswana has also maintained democracy throughout its recent history, and this combination of economic and political success has earned it the reputation of an "African success story" (Acemoglu, Johnson, and Robinson 2002).

Botswana's rapid economic growth has nonetheless left many individuals behind. Unemployment is a major issue, particularly among the young. Income inequality is extremely high, as is poverty. As such, it is important to understand the sources of Botswana's economic growth to better appreciate where it may come from in the future and what prospects it has for being more inclusive.

Historically, diamonds played a significant role in fueling this economic growth, although this has changed in recent years. Between 1968 and 2010, the landscape of Botswana's economy changed dramatically (Figure 3.1a), as economic activity shifted out of agriculture first to mining and later to services. Between 1968 and 2010:

- Agriculture's share of value-added fell from 27.4 percent to 2.7 percent.
- Services' share of value-added increased from 40.4 percent to 64.4 percent.
- Manufacturing's share of value-added climbed from 3.6 percent to 7.7 percent.
- Mining and quarrying rose rapidly from 11.7 percent to 57.7 percent in 1984, before gradually declining to 17.7 percent in 2010.[1]
- Construction peaked at 24.5 percent in 1972, and then gradually declined to around 7.5 percent by 2010.

1 Part of the sharp decline in the share of value-added in mining in 2009 and 2010 is attributed to the global recession.

Although diamonds contributed significantly to value-added, they never directly accounted for more than 3.2 percent of total employment, given the highly capital-intensive nature of diamond extraction. Thus, although there were dramatic shifts in Botswana's occupational structure (Figure 3.1b), this

FIGURE 3.1a Services now dominates in value-added . . .

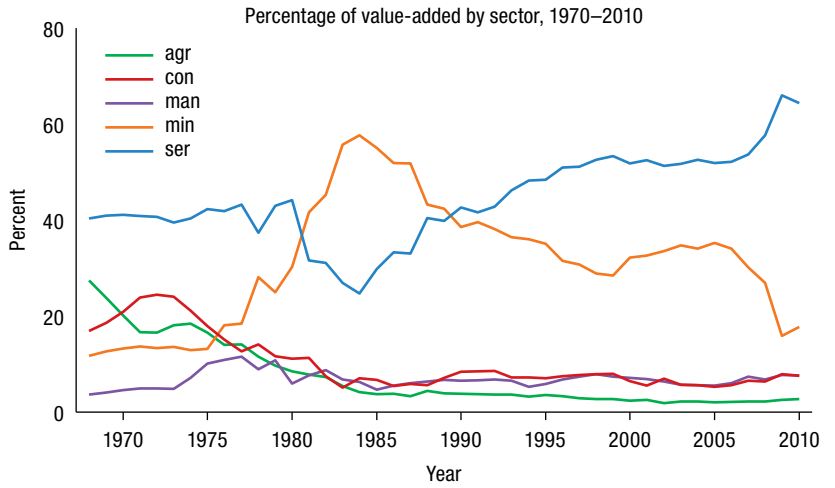
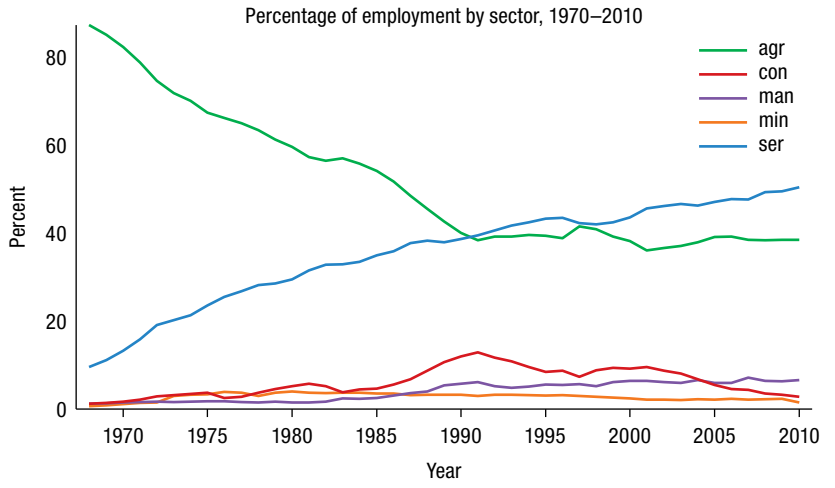


FIGURE 3.1b . . . and in terms of employment



Source: Authors' calculations with data from the Groningen Growth and Development Centre Africa Sector Database.
Note: agr = agriculture; con = construction; man = manufacturing; min = mining; ser = services.

did not involve movements in and out of mining. Instead, between 1964 and 2010:

- Agriculture's share of employment fell from 87.5 percent to 38.6 percent.
- Services' share of employment increased from 8.5 percent to 50.6 percent.
- Manufacturing's share of employment rose from 1.4 percent to 6.6 percent.
- Mining and quarrying's share of employment inched up from 1.1 percent to 1.5 percent.
- Construction's share of employment rose from 1.2 to 12.9 percent in 1991, but then slowly fell back to 2.8 percent in 2010.

Like many less developed countries today, Botswana's economy was characterized by large productivity gaps between different parts of the economy when it first gained independence. Sir Arthur Lewis (1954) was one of the first to recognize that these large productivity gaps in less developed countries could be an important engine of growth. The idea is that when labor and other resources move from less productive to more productive activities, the economy grows even if there is no productivity growth within sectors. More recently, McMillan and Rodrik (2011) document significant gaps in labor productivity between sectors for a large set of developing countries, and substantial differences in the contribution of structural change—that is, the movement of workers among sectors, as opposed to changes in productivity "within" sectors—to the overall economic performance of these economies between 1990 and 2005. Structural change enhanced growth in Asian economies, while it decreased growth in Latin America and Africa. However, the story for Africa switches to a positive role for structural change when a large sample of African countries is examined for a more recent time period—between 2000 and 2010 (McMillan, Rodrik, and Verduzco Gallo 2014).[2]

How does Botswana fit into this African story? Here we should note that it was not included in either of these studies because of data issues. This chapter, using newly obtained data, traces the extent to which structural change played a role in Botswana's rise to middle-income status, as well as its role in Botswana's more recent economic performance. Overall, we find that structural change accounted for more than half of Botswana's spectacular labor

2 Neither McMillan and Rodrik (2011) nor McMillan, Rodrik, and Verduzco-Gallo (2014) include Botswana. This is because a significant amount of work was required to make sense of the Botswana data. We discuss these issues later on in this chapter.

productivity growth between 1970 and 1989, averaging 8.6 percent per year. The reallocation of employment away from agriculture toward service industries played the most important role. However, between 1990 and 2010, overall labor productivity growth slowed to 1.9 percent per year, with within-sector productivity growth much higher at 3.6 percent per year, and structural change a drag on overall productivity growth. Indeed, there was almost no change in the agricultural share of employment, and the share of employment in wholesale and retail trade expanded significantly.

What contributed to the early period of growth-enhancing structural change and the more recent experience in which structural change has been reducing growth? This is an important question, because structural change has played significant positive and negative roles in Botswana's growth performance. To answer this question, we review Botswana's most salient trade and industrial policies over these two periods. One event that stands out that has not received much attention in the literature is Botswana's exposure to South Africa's massive trade liberalization in 1994. Because Botswana is a member of the Southern African Customs Union (SACU), its tariffs are set by the government of South Africa, making them effectively exogenous. Thus, Botswana presents an unusual case for studying the impact of trade liberalization on structural change.

As for growth-enhancing structural change, we believe it was fueled by the discovery of diamonds and subsequent policies to expand the public service; attract the private sector; and invest in education, health, and infrastructure. However, the triggers for growth-reducing structural change remain a mystery, leaving a big question for researchers and policy makers as Botswana continues to try to promote economic diversification and inclusion. One possible trigger that we can rule out is trade liberalization. We found that despite the large size of the tariff cuts, there was no strong link between them and changes in the workforce.

The Birth of a Nation

The term "Batswana" originated from the country's major ethnic group—the "Tswana" in South Africa—and refers to the people of Botswana. Botswana was originally inhabited by the San from around 17,000 BC, but in the early 1880s during the Zulu war, the Tswana moved into the area from South Africa, bringing with them the custom of holding "town meetings" for consultation and consensus on public issues. Prior to European contact, the Batswana lived as herders focusing on cattle ranching, because 84 percent of land is desert and only 4 percent is arable (Fibaek 2010).

The present-day boundaries of Botswana reflect direct appeals by the Batswana to the British to first establish political boundaries for protection and subsequently to remain separate from what would become South Africa. In the late 19th century, antipathy between the Batswana and Boer from the Transvaal emerged. In response to requests for assistance, the British government put "Bechuanaland" under its protection in 1885. Then in 1895, the southern portion was incorporated into the Cape Colony, while the northern portion remained under direct administration as the Bechuanaland Protectorate. Residents of the Bechuanaland Protectorate (current Botswana), Basutoland (current Lesotho), and Swaziland requested that they not be included in the proposed Union of South Africa. The British agreed, thereby keeping the Bechuanaland Protectorate outside of the Union of South Africa formation in 1910. In 1964, Britain agreed to democratic self-government, and independence was granted in 1966 (ERB, n.d.).

When Botswana achieved independence from Britain in 1966, it was one of the poorest countries in Africa, with a GDP per capita of about US$70. In the following years, and partly owing to the discovery of diamonds in three sites—Jwaneng, Orapa, and Letlhakane—Botswana's economy was radically transformed. Between 1960 and 1990, the average GDP growth rate was around 12 percent—the highest sustained real GDP growth rate in the world for that time. In 2005, Botswana joined the ranks of the upper-middle-income countries.

Today, economic diversification is a high priority (BEAC 2008), given that export revenues continue to be dominated by diamonds, a resource that may be depleted sometime in the not so distant future (MFDP 2009). Attempts at industrialization have so far not worked, leaving employment dominated by agriculture and services (of which the public sector accounts for more than half). The heavy reliance on mining—employing a tiny fraction of the labor force (3.5 percent) owing to its highly capital-intensive nature—may partly contribute to Botswana's inequality, poverty, and unemployment problems.[3] Income inequality is the third highest in the world (UNDP 2010), and the poverty head count ratio was about 19 percent in 2009 (World Bank 2014).

A Strong Role for Structural Change ... Initially

Shortly after independence, Botswana was characterized by large differences in labor productivity across sectors (Figure 3.2a). In 1970, 82.5 percent of

3 Additionally these jobs do not require any particular set of skills, and they are typically reserved for men.

the workforce was involved in agriculture—a very low productivity sector (24.4 percent of overall labor productivity)—but only 1.5 percent of workers were in higher-productivity manufacturing (with labor productivity more than three times higher than overall labor productivity), and only 1.7 percent of workers were in construction (with labor productivity more than 12 times higher than overall labor productivity). Thus, the reallocation of workers out of agriculture into higher-productivity sectors could be a key factor in boosting overall growth in labor productivity (Lewis 1954; McMillan and Rodrik 2011). Indeed, in the following decades, as Figure 3.2b shows, the structure of employment changed greatly as the share of workers in agriculture fell dramatically. By 2010, less than 40 percent of workers were still in agriculture, with the workforce shifting to higher-productivity sectors.

How much did the reallocation of workers across sectors contribute to growth in overall labor productivity? Our methodology for measuring structural change follows McMillan and Rodrik (2011), and decomposes aggregate changes in labor productivity into two components: (1) "within," which captures growth within sectors, and (2) "structural change," which captures growth resulting from labor reallocation across sectors that differ in their labor productivity (see the Overview in this book for details on the methodology).[4] We use value-added and employment data from the Groningen Growth and Development Centre (GGDC) Africa Sector Database (ASD). Value-added is expressed in 2005 pula, and labor productivity is measured as real output per worker in a sector.

Our results show that aggregate labor productivity grew on average by 5.0 percent per year between 1970 and 2010, but with significantly higher growth between 1970 and 1990 than between 1990 and 2010 (Figure 3.3). Labor productivity grew at 10.8 percent annually between 1970 and 1980, and then declined significantly in the subsequent three decades. Structural change accounted for almost three-quarters of the labor productivity growth in the 1970s, but by the 1990s, it started to become a drag on growth. In effect, our analysis paints a clear picture of two distinct periods in Botswana's

4 Algebraically, the decomposition is:

$$\Delta P_t = \sum_{i=1}^{N} \theta_{i,t-k} \Delta p_{i,t} + \sum_{i=1}^{N} p_{i,t} \Delta \theta_{i,t}$$

where ΔP_t is the change in aggregate labor productivity between period $t-k$ and t. The first term is the "within" component, which is a weighted average of the change in labor productivity in each of the N sectors, with the weight for sector i being the labor share of that sector in period $t-k$, measured by $\theta_{i,t-k}$. The second term is the "structural change" component, which is a weighted average of the change in labor shares in the N sectors, with the weights captured by the labor productivity of the sector in period t.

FIGURE 3.2a After independence, most workers were in low-productivity agriculture . . .

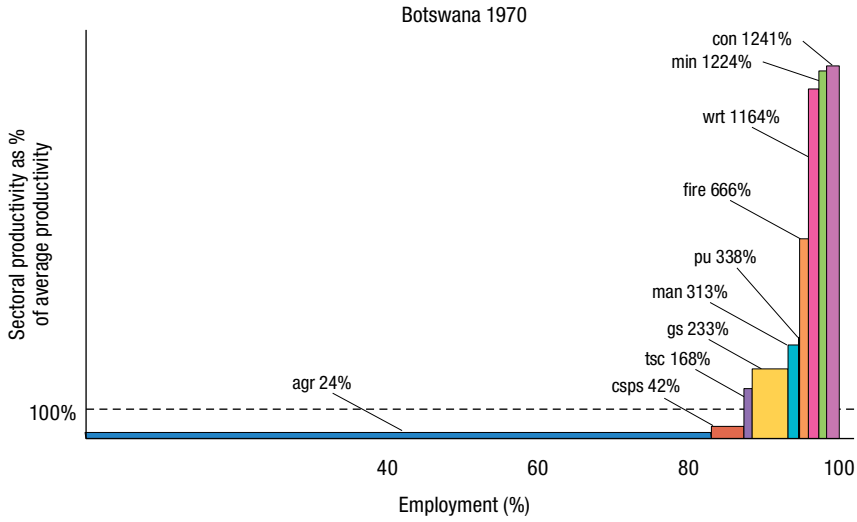
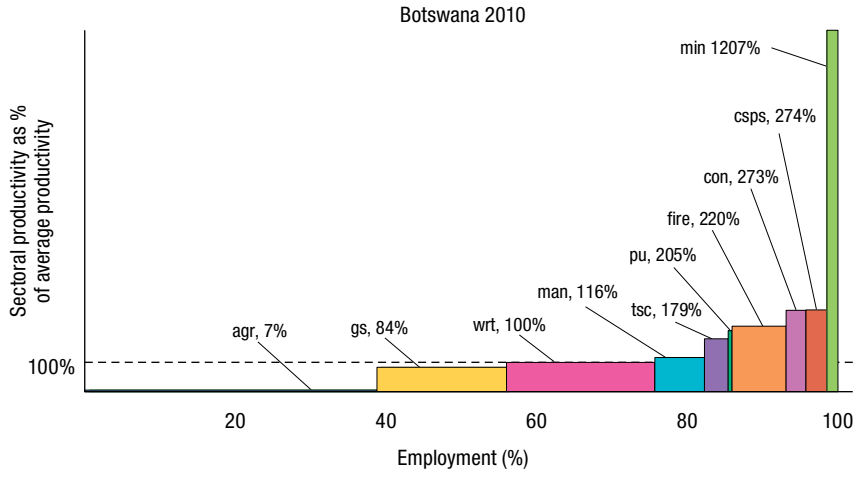


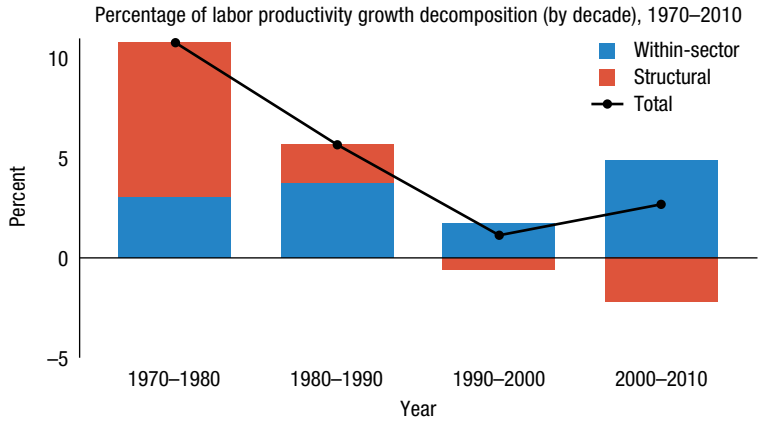
FIGURE 3.2b . . . but today, most workers are in higher-productivity sectors



Source: Authors' calculations with data from the Groningen Growth and Development Centre Africa Sector Database.

Note: agr = agriculture; con = construction; csps = community, social, personal services; fire = finance, insurance, real estate, and business services; gs = government services; man = manufacturing; min = mining; pu = public utilities; tsc = transport, storage, and communications; wrt = wholesale and retail trade.

FIGURE 3.3 From a big role for structural change to a drag on growth



Source: Authors' calculations with data from the Groningen Growth and Development Centre Africa Sector Database.
Note: Graph shows decomposition of average annual labor productivity growth (value-added in 2005 pula per worker) during each decade.

growth since independence: 1970–1990 and 1990–2010. During the first period, a significant portion of Botswana's growth was driven by structural change. During the latter period, structural change was growth reducing, and all of the productivity growth was driven by within-sector productivity growth.

At the sectoral level, productivity growth was quite uneven (Table 3.1). Notably, agriculture contributed very little to within-sector productivity growth over a period of more than 40 years as a result of very modest productivity gains. The low contribution of agriculture to value-added reflects, at least in part, the fact that most of Botswana's land is not conducive to agricultural production. In addition, most of the agricultural activities outside of cattle ranching are of a subsistence nature—and because crops are rainfed, these activities are subject to frequent disruption as a result of drought. Another notable trend is the changing driver of within-sector change. In the first decade, mining accounted for the majority of labor productivity growth stemming from within-sector productivity improvements and growth in the share of the workforce in mining, but in the following decades other sectors also contributed significantly to overall labor productivity growth: construction and community, social, personal, and government services.

Why do these two periods look so different? It is relatively easier to understand the patterns in the first period. Botswana's economy in 1966 was largely agrarian in nature, and workers in agriculture were the least productive. The

TABLE 3.1 Mining initially drove sectoral productivity growth

	Labor productivity compound annual growth rate (percentage)				
Sector	1970 to 2010	1970 to 1980	1980 to 1990	1990 to 2000	2000 to 2010
Agriculture, hunting, forestry, and fishing	1.8	4.9	1.6	–3.1	3.8
Mining and quarrying	5.0	5.6	10.4	2.3	1.8
Manufacturing	2.4	13.6	–6.9	0.9	3.1
Public utilities (electricity, gas, and water)	3.7	1.3	2.3	10.1	1.4
Construction	1.1	–7.1	–5.5	1.3	17.5
Wholesale and retail trade, hotels, and restaurants	–1.3	5.4	–10.0	–0.5	0.6
Transport, storage, and communications	5.2	7.7	4.4	6.1	2.6
Finance, insurance, real estate, and business services	2.1	10.4	-2.2	0.3	0.5
Community, social, and personal services	10.0	–3.6	22.3	8.1	15.1
Government services	2.3	–0.4	6.7	–0.5	3.7
Economywide	**5.0**	**10.8**	**5.7**	**1.1**	**2.7**
	Change in employment share (percentage points)				
	1970 to 2010	1970 to 1980	1980 to 1990	1990 to 2000	2000 to 2010
Agriculture, hunting, forestry, and fishing	–43.9	–22.8	–19.6	–1.9	0.3
Mining and quarrying	0.4	2.9	–0.7	–0.8	–1.0
Manufacturing	5.2	0.0	4.3	0.6	0.2
Public utilities (electricity, gas, and water)	0.4	0.6	0.4	–0.5	–0.1
Construction	1.1	3.5	6.8	–2.9	–6.4
Wholesale and retail trade, hotels, and restaurants	18.2	1.4	4.7	3.2	8.9
Transport, storage, and communications	2.0	–0.1	1.2	0.2	0.8
Finance, insurance, real estate, and business services	5.8	0.4	2.0	1.1	2.3
Community, social, and personal services	–1.5	6.7	–1.4	–4.5	–2.3
Government services	12.3	7.4	2.2	5.4	–2.6

Source: Authors' calculations using the Groningen Growth and Development Centre Africa Sector Database.

gaps in productivity between agriculture and the rest of the activities in the economy provided huge incentives for people to move out of agriculture. This is exactly what happened from 1968 to 1974 and from 1975 to 1989 (Figures 3.4a and 3.4b). In each period, the share of the labor force in agriculture contracted by about 20 percentage points, while it expanded in all other activities. This process was facilitated by heavy state involvement via direct hires into public service and by programs targeted at increasing investments in

FIGURE 3.4a Starting with a highly agrarian society . . .

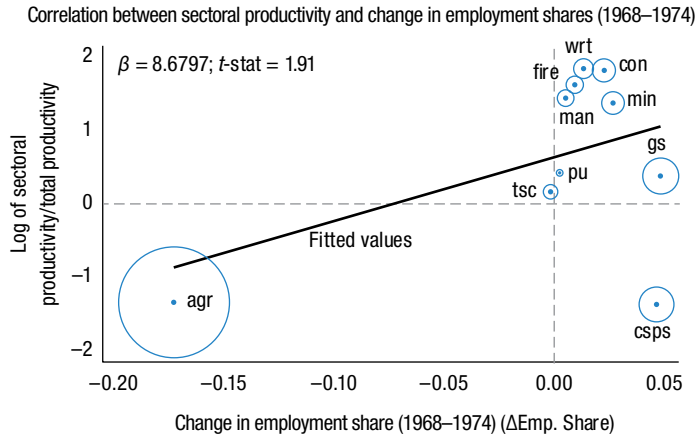
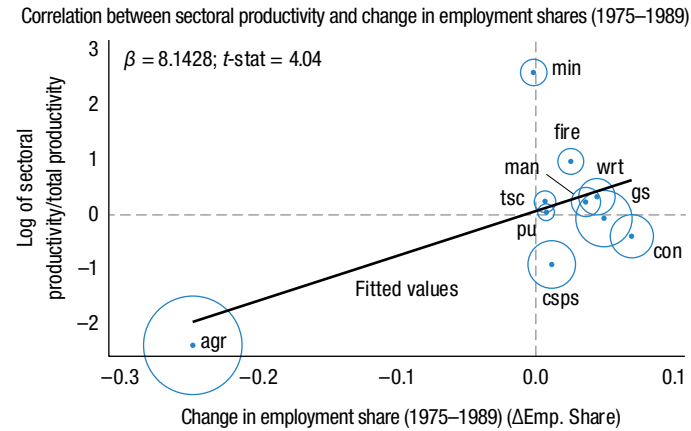


FIGURE 3.4b . . . Botswana becomes less so, then stabilizes at 40 percent for its agrarian share . . .



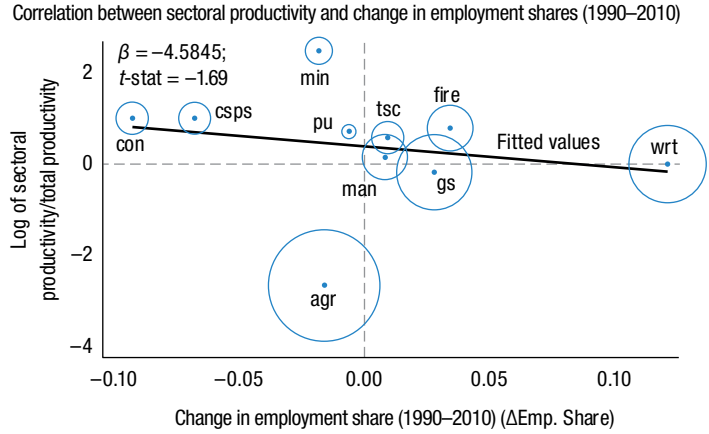
Source: Author's calculations with data from Timmer and de Vries (2009); McMillan and Rodrik (2011).

Note: β denotes coefficient of independent variable in regression equation: $\ln(p/P) = \alpha + \beta\Delta$Emp. Share; agr = agriculture; con = construction; csps = community, social, personal services; fire = finance, insurance, real estate, and business services; gs = government services; man = manufacturing; min = mining and quarrying; pu = public utilities (electricity, gas, and water); tsc = transport, storage, and communications; wrt = wholesale and retail trade.

education, health, and infrastructure. Programs were also put into place to facilitate investment by the private sector in all kinds of activities.

A second possible explanation for the observed patterns in the earlier decades concerns the repatriation of men who had migrated to South Africa to find wage labor. It has been well documented that the hut tax imposed by

FIGURE 3.4c . . . even though productivity is still relatively low



Source: Author's calculations with data from Timmer and de Vries (2009); McMillan and Rodrik (2011).

Note: β denotes coefficient of independent variable in regression equation: $\ln(p/P) = \alpha + \beta\Delta\text{Emp. Share}$; agr = agriculture; con = construction; csps = community, social, personal services; fire = finance, insurance, real estate, and business services; gs = government services; man = manufacturing; min = mining and quarrying; pu = public utilities (electricity, gas, and water); tsc = transport, storage, and communications; wrt = wholesale and retail trade.

the colonial regime on the largely rural Batswana encouraged young men to migrate to South Africa where they could usually find work in the mines. Two things happened to precipitate the return of these men. The economy started to pick up in Botswana with the discovery of diamonds and the subsequent public investment. Also, starting in the 1980s, the mines in South Africa started to retrench, leaving some men with few choices but to return to Botswana. Having already been employed as wage laborers, it is likely that a disproportionate share of these men went to Gaborone to seek work rather than returning to the rural areas. This type of migration would partly explain the large increase in the employment shares in services and construction, which accounts for much of the positive contribution of structural change to aggregate productivity growth.

Another possible explanation may be demographic changes, which could have accelerated the decline in the relative share of agricultural employment by increasing the employment share of younger cohorts who entered the workforce directly into high-productivity sectors (such as manufacturing), and by ushering older cohorts out of the labor force directly from agriculture. Shifts in the sectoral composition of the workforce owing to demographics are arguably subject to smaller mobility costs than shifts across sectors among cohorts in the workforce. This is likely to be part of the story in Botswana, because it is so difficult to make a decent living in most of agriculture, although

we lack sufficient data for this period to test the relative importance of this explanation.

It is more difficult to understand why the share of employment in agriculture stopped contracting around 1990 and subsequently stabilized at around 40 percent (Figure 3.4c), given that relative labor productivity in agriculture was significantly lower in 2010 than in 1970. Although McMillan and Rodrik (2011) have identified overvalued exchange rates and labor market rigidity as two possible determinants of structural change, we can dismiss these in Botswana's case. To begin with, Botswana has maintained a competitive exchange rate since independence, as the degree of undervaluation (a positive value) or overvaluation (a negative value) has been small (Figure 3.5a). In addition, its labor markets seem to be quite flexible when compared with other countries at similar levels of income, as estimates of labor market rigidity in Botswana are consistently below the trendline (Figure 3.5b).

One explanation for why agricultural workers have not moved points to the myriad social assistance programs offered by the Botswana government—that is, productivity differences may not reflect effective differentials in income and consumption. Another may be the lack of opportunities for low-skilled workers in urban areas. Each of Botswana's national development plans has stressed economic diversification as an important goal. In its efforts to diversify the economy, the government is pursuing various industrial incentive schemes aimed at promoting the growth of other sectors, particularly manufacturing, tourism, and other service sectors (Table 3.2).

- In 1976, the Local Procurement Program was initiated. Then in 1997, it was subsequently replaced as the Local Preference Scheme, which reserves 35 percent of government purchases for local producers. The government has also introduced complementary programs designed to provide technical assistance to small-scale entrepreneurs wishing to compete for government projects.

- In 1982, the government initiated the Reserved Sectors Policy, which economically empowers citizens and reduces competition in the market. This policy has been flexible in that it allows for joint ventures between citizens and foreign investors in the manufacturing sector.

- The Financial Assistance Policy, established in 1982, was Botswana's largest incentive system aimed at promoting local production capacity by subsidizing the use of labor and capital. The policy was terminated in 2000 because of high failure rates and widespread abuse, but in 2001, it was

FIGURE 3.5a Botswana's currency has remained competitive . . .

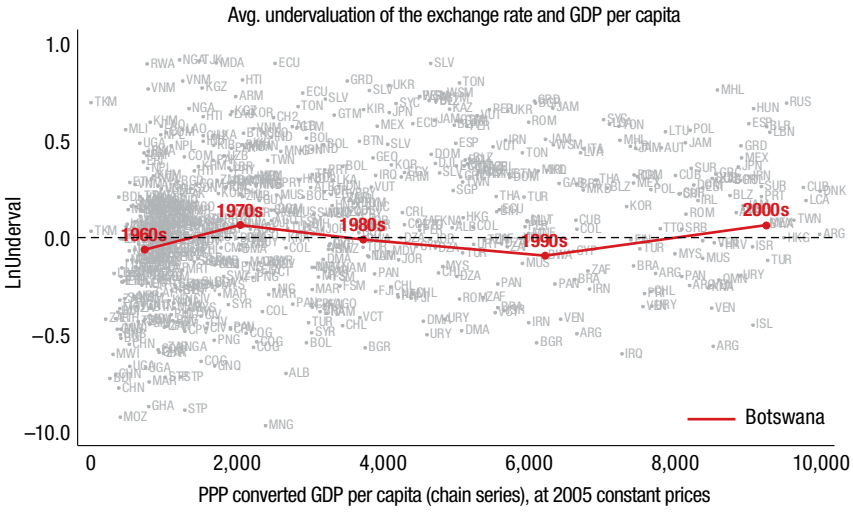
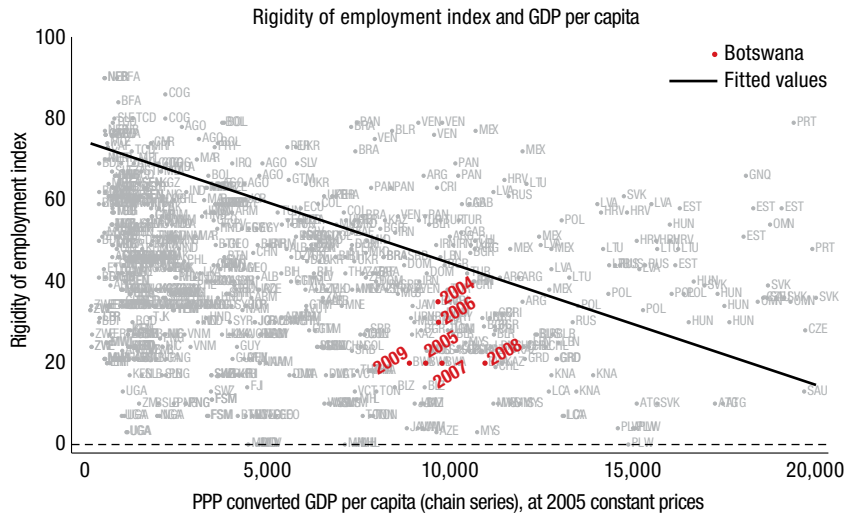


FIGURE 3.5b . . . and its labor markets have remained flexible



Source: Authors' calculations using data from World Bank's Doing Business reports (various years) and Penn World Tables version 7 (Heston, Summers, and Aten 2012).

Note: *Figure 3.5a:* A negative value for ln (underval) represents an overvalued exchange rate. *Figure 3.5b:* A higher index number of labor market rigidity corresponds to higher rigidity. Fitted values correspond to fixed-effects regression of rigidity of employment index against real gross domestic product (GDP) per capita in purchasing power parity (PPP).

TABLE 3.2 Summary of major incentive schemes

Incentive scheme	Objective	Status
Local Procurement Program (1976); Local Preference Scheme (1997)	To give local producers preference in the supply of goods for government contracts.	Revised and superseded by the Local Preference Scheme in 1997.
Reserved Sectors Policy (1982)	To promote the participation of Botswana and Botswana-owned firms in economic activity by limiting certain activities to them only.	Policy continues with some flexibility having been introduced, especially now that joint ventures are allowed.
Financial Assistance Policy (1982)	To provide capital and labor grants based on labor employed as well as location.	Terminated in 2000 following a review report by BIDPA in 1999, which found a high failure rate as well as large-scale abuse, waste, and high costs per job created.
Selebi-Phikwe Regional Development Project (1988)	To stimulate economic development in the area around the copper mining town.	Phased out in 1996.
Citizen Entrepreneurial Development Agency (2001)	To support the development of citizen-owned business through funding, training, and mentoring.	Replaced the Financial Assistance Policy in 2001.
Local Enterprise Authority (2004)	To be an implementing agency for the SMME Policy intended to improve service delivery programs.	This ongoing reform process involves the separation of policy formulation and implementation functions of the SMME Ministry.

Source: Modified from BIDPA and World Bank (2006).

Note: BIDPA = Botswana Institute for Development Policy Analysis; SMME = small, micro, and medium-sized enterprises.

replaced with the Citizen Entrepreneurial Development Agency, which supports developing locally owned businesses through funding, training, and mentoring.

- The Local Enterprise Authority was founded in 2004 as a one-stop shop for small and medium-sized enterprises. It runs business skills training and management support services for these enterprises (Zizhou 2009).

Besides these incentive schemes, the government is currently pursuing a range of investor-friendly policies, including the establishment of an International Financial Services Centre. Also high on the policy agenda are efforts to reduce unemployment and to mitigate the effects of the HIV/AIDS epidemic on productivity.

Another partial explanation has to do with measurement error. The GGDC ASD tells us that the share of workers in agriculture stopped falling. But when we verify this trend with individual-level data from the 1995/1996 and 2005/2006 Central Statistics Office Labour Force Surveys (LFSs), we find that the share of employment in agriculture is likely overestimated in the

GGDC—in fact, it has more likely continued to fall during the 1990s and 2000s, although much more slowly than in the 1970s and 1980s (Box 3.1). This slowdown may in part reflect the fact that less educated and older workers are more likely to work in agriculture, and they may find it more difficult to move into other sectors. Major policy changes took place in the 1990s and 2000s, including significant trade reforms, which have influenced the relative demand for workers in various sectors—an issue that we turn to next.

BOX 3.1 Is it possible that the share of agricultural workers has continued to fall?

One difficult-to-explain development in Botswana's structural change story is that after two decades of the share of agriculture contracting dramatically, it stabilized around 1990 at 40 percent and has remained there ever since. Many explanations are often offered, but what about the possibility that the widely used measure is simply wrong?

To check this, we begin by comparing employment estimates from the 2005/2006 LFS with those in the GGDC ASD. Seasonality in agriculture is a big concern when trying to properly measure employment in Botswana. Usual employment (main activity during the past 12 months) in agriculture is much higher than current employment (last 7 days) (Table B3.1). The estimate of agricultural employment in the GGDC ASD is based on the worker's usual activity, whereas employment estimates for all other sectors are based on the worker's current activity. The difference between current and usual employment is greatest in agriculture, but using current employment also leads to an underestimation of employment in other sectors, and consequently leads to an overestimation of the employment share of agriculture.

Therefore, if we use usual (rather than current) employment, we estimate that for 2005/2006, agricultural employment is 34.3 percent, not 39.3 as estimated in the GGDC ASD. However, because of a lack of data, we cannot estimate the usual industry of employment from data sources other than the 2005/2006 LFS. Thus, we are unable to check the sensitivity of the estimates of the share of workers in agriculture to differing definitions of work (like usual versus current) for other years. Thus, the approach taken in the GGDC ASD likely leads to an overestimation of the share of agricultural employment.

In sum, it is possible that the share of employment in agriculture has actually continued to decrease slightly from the 1990s to the 2000s.

(continued)

Table B3.1 Possible case of measurement error

	Comparison of employment estimates		
Sector	Africa Sector Database	LFS (current activity)	LFS (main activity)
Agriculture	236,107	161,712	236,270
Mining	14,173	14,289	14,854
Manufacturing	35,973	35,973	43,415
Utilities	4,163	4,163	5,055
Construction	27,587	27,587	38,312
Trade services	92,068	92,177	118,243
Transport services	16,050	16,094	19,109
Business services	33,679	33,724	38,184
Government services	117,404	117,498	127,847
Personal services	24,291	36,684	47,829
Total	**601,495**	**539,901**	**689,118**

Source: The Africa Sector Database (ASD) employment estimates are for 2006 from the Groningen Growth and Development Centre (GGDC) ASD (de Vries, Timmer, and de Vries 2013). The Labour Force Survey (LFS) estimates are the authors' own calculations using the Botswana Central Statistics Office 2005/2006 LFS. The Groningen Growth and Development Centre Africa Sector Database agricultural employment estimates are in part based on previous work by some of the authors (McCaig and McMillan 2014).

Note: Current activity refers to employment during the past 7 days, and main activity refers to employment during the past 12 months.

A Growing Workforce and Informality

What was happening to the composition of the labor force as these changes in labor productivity took place? Using LFS data covering the period 1995/1996–2005/2006, we examine other margins of adjustment not covered in the GGDC ASD employment estimates: labor force participation, unemployment, and informality. The following patterns stand out.

More individuals are in the labor force. We begin by examining the reported activity of working-age individuals—those between the ages of 15 and 60 (Table 3.3). We find that the number of working-age individuals increased by 24.2 percent, in line with population growth. But surprisingly, the number of people in the labor force increased much faster, by 43.4 percent. As a result, the labor force participation rate increased from 55.9 percent to 64.5 percent—that is, by 8.6 percentage points (or 15 percent). If we extend the conventional definition of the labor force to include workers who are currently available to work, but not actively searching for a job, then the labor force participation rate increased from 66.8 percent to 78.4 percent. This figure does not include those who are sick, which is of interest, given that

TABLE 3.3 Higher labor force participation

Activity	Number of individuals		Percentage change	Percentage of working-age individuals	
	1995/1996	2005/2006		1995/1996	2005/2006
Total working-age individuals	**743,403**	**923,055**	**24.2**	100.0	100.0
In labor force:	**415,251**	**595,402**	**43.4**	**55.9**	**64.5**
Working	323,034	483,818	49.8	43.5	52.4
Actively seeking work	92,217	111,584	21.0	12.4	12.1
Not in labor force:	**328,152**	**327,653**	**–0.2**	**44.1**	**35.5**
Not available to work	247,073	199,610	–19.2	33.2	21.6
Attending school	109,821	109,904	0.1	14.8	11.9
Engaged in household duties	101,658	38,915	–61.7	13.7	4.2
Too old	876	1,798	105.3	0.1	0.2
Sick	22,570	31,523	39.7	3.0	3.4
Disabled	5,826	4,101	–29.6	0.8	0.4
Other	6,322	13,368	111.4	0.9	1.4
Available to work, but did not look for work during past 30 days	81,079	128,043	57.9	10.9	13.9
Thought no work available	41,409	61,101	47.6	5.6	6.6
Awaiting reply for earlier inquiries	6,089	9,037	48.4	0.8	1.0
Waiting to start arranged job in business or agriculture	2,598	3,142	21.0	0.3	0.3
Occupied with household duties	25,989	37,331	43.6	3.5	4.0
Other	4,994	17,432	249.1	0.7	1.9

Source: Authors' calculations using 1995/1996 and 2005/2006 Labour Force Survey data.

Note: The sample is restricted to individuals age 15 to 60. The numbers reported are population estimates using sample weights. The estimates are based on the individual's activity during the past 7 days.

HIV prevalence is extremely high in Botswana, at an estimated 17 percent (Levinsohn and McCrary 2010). That said, the share of the population reporting as not being in the labor force because of illness increased only marginally, from 3 percent in 1995/1996 to 3.4 percent in 2005/2006. This is possibly a testament to the government's aggressive campaign to treat individuals who are HIV positive.

Unemployment remains high, especially for youths. Outside of agriculture, unemployment remained high and relatively unchanged—20.2 and 21.2 percent in 1995/1996 and 2005/2006, respectively (22.2 and 18.7 percent, respectively, if individuals in agriculture are included). Unemployment is a major concern for young workers (ages 15–19 and 20–24), who are significantly more likely to be unemployed than older workers (Table 3.4a). Individuals in the 20–24 age group participate in the labor force at the same rate as older workers, but the

TABLE 3.4a High unemployment, particularly for youth …

	Unemployment rate (%)		Labor force participation rate (%)	
Excluding agriculture	1995/1996	2005/2006	1995/1996	2005/2006
All	20.2	21.2	54.3	60.2
Males	18.1	19.3	60.9	66.8
Females	22.2	22.9	48.9	55.4
15–19 years old	37.1	39.7	12.7	14.6
20–24 years old	35.9	38.7	55.6	61.4
Urban	20.7	20.1	64.3	64.9
Rural	19.3	24.0	42.3	50.7
No formal education	21.4	20.0	51.2	51.9
Primary education	20.6	21.9	60.3	61.8
Secondary education	19.4	21.2	51.0	61.0

Source: Authors' calculations using 1995/1996 and 2005/2006 Labour Force Survey (LFSs).

Note: The sample is restricted to individuals age 15 to 60 and excludes individuals currently working or unemployed and previously working in agriculture. The numbers reported are population estimates using sample weights. The estimates are based on the individual's activity during the past 7 days. Unemployed includes people who were available to work (but did not work) in the past 7 days, which includes workers who did not actively seek work. The labor force is defined as individuals who worked during the past 7 days, sought work, or were temporarily absent. The labor force participation rate differs from Table 3.3 because of the exclusion of agriculture.

TABLE 3.4b … and rising informality

	Percentage of informal workers		Percentage
Industry description (excluding agriculture)	1995/1996	2005/2006	point change
Public administration	0.1	0.7	0.5
Foreign missions and international organizations	0.0	0.0	0.0
Mining and quarrying	0.0	0.0	0.0
Manufacturing	27.0	31.3	4.3
Electricity, gas, and water supply	0.0	0.0	0.0
Construction	17.5	26.5	9.1
Wholesale and retail trade, hotels, restaurants, etc.	32.4	41.6	9.3
Transport, storage, and communications	27.0	36.0	9.0
Finance, insurance, real estate, and business services	3.7	6.9	3.2
Community, social, household, and personal services	12.7	9.2	–3.6
Total	**13.2**	**17.9**	**4.8**

Source: Authors' calculations using 1995/1996 and 2005/2006 Labour Force Survey (LFSs).

Note: The sample is restricted to workers age 15 to 60 outside of agriculture, forestry, hunting, and fishing. Informal workers are all those workers in the private sector employed at firms with fewer than 10 employees and defined as informal in the survey by question 30 in the 1995/1996 LFS and question 39 in the 2005/2006 LFS. The numbers reported are population estimates based on using sampling weights. The estimates are based on the individual's activity during the past 7 days.

unemployment rate is almost double the national average, at 38.7 percent in 2005/2006. Although labor force participation is much lower for individuals age 15–19, reflecting school attendance, 39.7 percent of them are unemployed.[5]

Males are the best off. We find that males are less likely to be unemployed and are more likely to be in the labor force than females in either year, although both genders achieved significantly higher labor force participation rates between 1995/1996 and 2005/2006 (Table 3.4a). As for schooling, there is not much difference in either unemployment or labor force participation rates across individuals with primary or secondary education by 2005/2006, as the gap in labor force participation in 1995/1996 between individuals with primary and secondary education closed. However, having some education, compared with no formal education, is an important determinant of labor force participation.

Informality rose. As the workforce expanded and unemployment fell, the prevalence of informal employment outside of agriculture rose by a significant 4.8 percentage points (or 36 percent) (Table 3.4b).[6] Notably, the incidence of informality in manufacturing increased by 4.3 percentage points, which is slightly below the overall increase, but may be partly related to the SACU tariff cuts. Many sectors experienced an increase in the share of informal workers. In fact, the only sector to experience a decrease was community, social, household, and personal services.

Major sectoral shifts. We also see some important changes in the distribution of nonagricultural workers across sectors (Table 3.5).[7] The share of

5 Unfortunately, because of seasonal employment in agriculture, it is difficult to consistently estimate unemployment for all working-age individuals using the LFS data. The LFSs were not conducted during similar months in rural areas, leading to concerns about whether agricultural workers were more likely to be surveyed during working periods in one survey relative to the other. Thus, to obtain consistent estimates of unemployment, we focus on individuals outside of agriculture (Table 3.5). This means excluding individuals currently working in agriculture, as well as individuals currently unemployed but who most recently worked in agriculture.

6 The Labour Force Surveys define informality according to a series of questions related to the ownership sector (such as government, parastatal, nongovernmental organization (NGO), or private); the number of workers in the business; the location of the business; whether the business is registered; and whether the business keeps a complete set of accounts. The enumerator evaluated whether the worker was formal or informal based on these questions. The questions about location, business registration, and accounts were asked only for workers in businesses with 10 or fewer workers in the private sector. Thus, we do not have a direct indicator of formality for workers in larger workplaces in the private sector or workers in other sectors. Consequently, for all workers who were not asked the detailed questions related to formality, we classify them as formally employed if they worked either in large private firms or in sectors more likely to be formal (such as government, parastatal, or NGOs).

7 We restrict the analysis to nonagricultural workers because of difficulties in accurately measuring agricultural employment across the two LFSs.

TABLE 3.5 A major move out of construction and public administration

	Number of workers		Percentage of workers	
Industry sector	1995/1996	2005/2006	1995/1996	2005/2006
Public administration	99,526	114,850	35.6	31.6
Foreign missions and international organizations	224	895	0.1	0.2
Mining and quarrying	15,028	14,289	5.4	3.9
Manufacturing	27,899	34,077	10.0	9.4
Electricity, gas, and water supply	2,794	4,132	1.0	1.1
Construction	38,759	26,474	13.9	7.3
Wholesale and retail trade, hotels, restaurants, etc.	51,973	85,416	18.6	23.5
Transport, storage, and communications	7,644	15,904	2.7	4.4
Finance, insurance, real estate, and business services	11,379	32,606	4.1	9.0
Community, social, household, and personal services	24,572	34,486	8.8	9.5
Total	**279,798**	**363,128**	**100.0**	**100.0**

Source: Authors' calculations using 1995/1996 and 2005/2006 Labour Force Survey data.

Note: The sample is restricted to workers age 15 to 60 outside of agriculture, forestry, hunting, and fishing. The numbers reported are population estimates using sample weights.

workers in manufacturing fell, but only by a 0.6 percentage point, and the share of workers in mining fell by 1.5 percentage points (or 27 percent). Elsewhere, the share of workers in public administration and construction fell appreciably, while the number of workers rose in both (1) wholesale and retail trade, hotels, restaurants, etc.; and (2) finance, insurance, real estate, and business services. The remaining sectors experienced only marginal changes in their shares of the nonagricultural workforce.[8]

How Trade Reform Influenced Structural Change

Why has it been so difficult to expand the production of traded goods in Botswana? Many studies note that the country is landlocked with a small domestic market, reflecting a population of less than 2 million. But Botswana also has distinct trade advantages. Since 1910, it has enjoyed duty-free access to markets in South Africa as a member of SACU, which also enables it to share the revenues generated by tariffs on imported goods coming from outside of SACU. The problem is that member countries have typically not been involved in setting tariffs—a task undertaken by South Africa.

8 These changes are broadly consistent with those in the GGDC ASD.

In Botswana, SACU matters are handled by the Ministry of Finance and Development Planning (MFDP), rather than the Ministry of Trade and Industry. The logic of this arrangement is that for Botswana, the key responsibility associated with the tariffs has been managing resources received through the revenue-sharing agreement. Historically, the government has paid limited attention to trade negotiations, both because of the SACU arrangement and because of the country's historical concentration of trade in two commodities: diamonds and beef. Diamonds were covered by agreements with De Beers (and were not subject to tariffs in end markets), while beef exports enjoyed preferential access to Europe.

Prior to the end of apartheid in 1994, South Africa pursued a vigorous policy of import substitution (Edwards 2005), resulting in a wide range of prohibitive tariffs on imports. But in 1994, the process of trade liberalization gained momentum as a result of South Africa's commitment to the General Agreement on Tariffs and Trade Uruguay Round. Export subsidies, which were incompatible with the WTO, were phased out and finally terminated in 1997. Additionally, between 1994 and 2006, import tariffs on all traded goods fell significantly. Because levels of initial tariffs varied widely across products and because the goal was to ultimately harmonize tariffs, the percentage point decline in tariffs varied widely across products, with some falling by more than 300 percent. In addition to multilateral liberalization, the government has engaged in a number of bilateral and regional trade agreements, culminating in South Africa's implementation of the Southern African Development Community (SADC) Free Trade Protocol and the implementation of the European Union–South Africa Trade, Development and Cooperation Agreement (TDCA) in 2000. More recently, Botswana was granted preferential access to markets in the European Union.

For Botswana, the period of import substitution would have meant that prices of imported intermediates were artificially high, making it more difficult for firms in Botswana to be profitable. At the same time, the protection afforded to Botswana may have allowed some firms to flourish that would have been unprofitable otherwise. Thus, South Africa's trade liberalization in the 1990s may have influenced the allocation of workers across sectors and consequently played a role in structural change, reducing labor productivity growth in the 1990s and 2000s—a possibility that we explore to get a sense of not only past developments but also the hurdles Botswana may face in its efforts to diversify its economy. To do this, we examine the changes in trade flows and employment between 1995/1996 and 2005/2006—years for which detailed labor force surveys exist and the period that coincides with South

Africa's trade liberalization and Botswana's experience of growth-reducing structural change.

From a theoretical standpoint, the tariff reductions are expected to have the following effects:

- Lower the cost of imports directly. This arises because imports from parties outside of SACU are now taxed at a lower rate.
- Lower the cost of imports indirectly. This arises because most of Botswana's imports come from or through South Africa. The imports from third parties will be cheaper so long as some of the tariff reduction is passed on to consumers, while the imports of products made in South Africa that rely on imported intermediate inputs may also be cheaper if some of the lower production costs are passed on to consumers.
- Shrink the size of Botswana's importables sector. This arises because of the increase in imports.
- Expand the size of the nontrading and exporting sectors. General equilibrium effects predict the reallocation of resources away from import-competing sectors and firms to other uses. Additionally, lower costs for imported intermediated goods may lead to further expansion of these sectors.
- Possibly erode Botswana's market share in South Africa, which may reduce the number or value of products that Botswana exports to South Africa. This may arise because South Africa has been, and still is, the primary destination for some of Botswana's nonmineral exports.

The net effect of these competing forces will determine the impact of trade liberalization on sectoral shifts in employment and labor productivity in Botswana.

Changes in Trade Flows and Tariffs

Beginning with trade flows, between 1994 and 2009, import tariffs on all traded goods fell significantly. Because levels of initial tariffs varied widely across products and because the goal was ultimately to harmonize tariffs, the percentage point decline in tariffs varied widely across products, with some falling by more than 60 percent. In addition to multilateral liberalization, the government engaged in a number of bilateral and regional trade agreements, culminating in South Africa's implementation of the SADC Free Trade Protocol and the European Union–South Africa TDCA in 2000.

How much did tariffs fall, and what was the impact on Botswana's trade? If we take the period between 1988 and 2009, we see that tariffs fell by 16.3 percentage points in manufacturing, 10.3 percentage points in mining, and 4.6 percentage points in agriculture (Figure 3.6a). However, the large reductions in tariffs are not associated with an obvious response in imports and exports (Figure 3.6b). Imports as a percentage of GDP fluctuated around 45 percent, while exports as a percentage of GDP fluctuated around 50 percent. At the product level, there was strong growth in some import sectors that are likely to include inputs for businesses in manufacturing (such as machinery and electrical equipment) (Table 3A.1).

FIGURE 3.6a Tariffs fell sharply, especially in manufacturing . . .

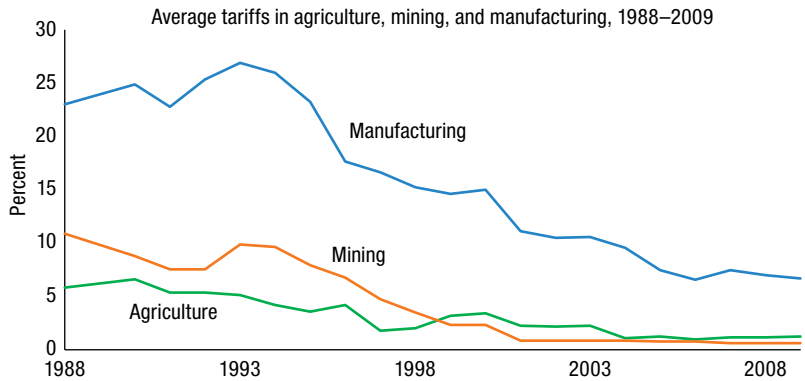
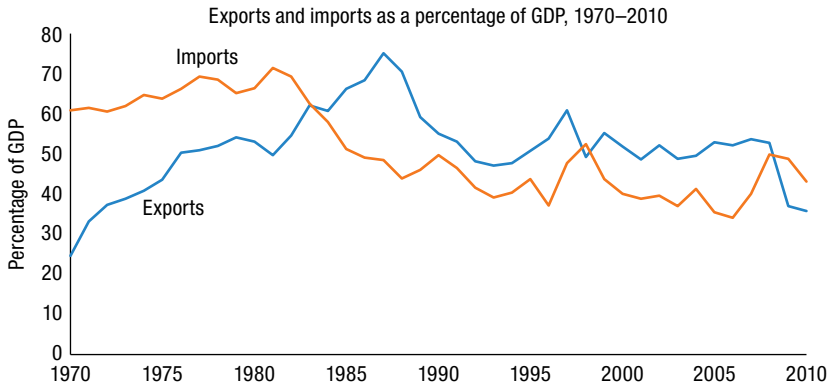


FIGURE 3.6b . . . but import and export volumes held steady



Source: Edwards (2005); World Bank (various years).

Note: The average tariff within each sector is a simple average of industry-level tariffs, where the industry-level tariffs are a weighted average of four-digit Harmonized System tariffs using 2000 imports as weights. GDP = gross domestic product.

Compared with exports, Botswana's import profile is much less concentrated. Oil and motor vehicles, including their parts, were a significant share of imports in both 1991 and 2005 (Table 3A.2). The one notable change is that medicine became the fourth most important import in 2005, but was not among the top 10 in 1991.[9] On the export side, there has been some limited diversification, with diamonds falling from 79.5 percent to 76.6 percent of total exports from 1991 to 2005; however, mining-based exports still account for more than 85 percent of total exports. Products that gained in significance include copper and apparel, while meat and meat products' share of exports declined.

Furthermore, despite the tariff cuts on products originating outside of SACU, imports from South Africa still constitute more than 80 percent of total imports, suggesting that, at an aggregate level, the SACU tariff cuts did not lead to a significant change in Botswana's trading partners. Indeed, as Table 3A.3 shows, the share of imports from South Africa even rose slightly between 1991 and 2005. Export destinations have not changed significantly, except for the shift from Switzerland to the United Kingdom, which is driven by changes in the diamond trade.

Thus, the SACU tariff liberalization seems to have had limited impacts on Botswana's economy. This is consistent with McCaig and McMillan (2014), who find the relative size of manufacturing industries did not change significantly in relation to industry tariff cuts. The effects on agriculture are also likely to be small, as Botswana continues to import a large fraction of its food (MFDP 2002, 2009), primarily from South Africa and other SACU members to which it already had duty-free access. In 2011, 93.6 percent of food, beverage, and tobacco imports came from South Africa and 96.2 came from all SACU members, respectively (Statistics Botswana 2014). This pattern is relatively unchanged from 2004, when 95.4 percent came from South Africa and 96.4 percent came from all SACU members (CSO 2009).

Looking to the Future

South Africa's trade liberalization had a modest impact on employment in Botswana and very little impact on diversification. Employment shares in industries that were exposed to tariff reductions—agriculture, manufacturing, and mining—fell slightly. In addition, both unemployment (broadly defined)

9 This reflects the impact of HIV/AIDS and the import of antiretroviral medicines for the national treatment program.

and informality increased, although the magnitude of these effects is not large. Somewhat ironically, Botswana's lack of diversification appears to have shielded its workforce from larger adjustment costs.

Perhaps this outcome is not surprising. Botswana started with a tiny manufacturing sector, so the main impact of the tariff reductions was an increase in the volume of trade. The composition of tradables was largely unchanged by the tariff reductions. Imports remained highly diversified and consumer oriented, while exports continued to be dominated by natural resources. The increase in the volume of imports likely provided petty traders with greater opportunities for informal trade. Even though these informal jobs are not secure, they still provide a much better living than most jobs in the agriculture sector.

But for a country that has been hailed as an African success story, the results are dissappointing and demand further explanation, with a large share of workers still in low-productivity agriculture, high rates of unemployment, and discouraged workers. Time is of the essence. Botswana's diamond revenues are currently predicted to decline sharply from the mid-2020s onward. Even if this were not the case, the current structure of the diamond industry is such that it does not and cannot provide enough jobs to make a dent in Botswana's levels of poverty and income inequality. This is not a secret. The government has launched campaign after campaign targeted at diversification. The puzzle is: why have these campaigns not been more successful? After all, Botswana has an impressive track record marked by good governance and prudent macroeconomic and fiscal policy.

We do not pretend to have the answer to this puzzle, but only note that understanding why things have stayed the same for so long is key to unlocking Botswana's future potential. One hypothesis is that a strong industrial sector stands to threaten the political and economic power of the longstanding ruling party, the Botswana Democratic Party (BDP) (Robinson 2013). The lack of diversification has allowed the elites in Botswana to maintain their grip on the country for 50 years. Although unemployment and inequality would also threaten the BDP, so far, the government has been able to manage these threats through myriad social assistance programs.

An alternative hypothesis points to Botswana's current structure of production, which is highly specialized in a handful of peripheral activities based on natural resource exports, thereby making (export) diversification a major challenge (Hausmann and Klinger 2010). Moreover, although Botswana had been developing its garment sector, these activities are disappearing with the erosion of trade preferences.

A complementary explanation is Botswana's structural problem of a high-cost base—such as high transport costs—which poses challenges in achieving competitiveness in the production of exportables. Diversification policies have failed to address the high costs of production to sufficiently raise productivity. High levels of public spending on education and training have not succeeded in alleviating shortages of skills or in producing secondary school graduates and tertiary education graduates with the attributes needed by the private sector. Combined with a very large public sector and a restrictive immigration policy, this combination has led to high costs for the available skilled labor. Furthermore, public-sector investments in infrastructure have not been well targeted at addressing economic constraints. For instance, extensive spending on rural roads and infrastructure has yielded limited economic benefits, while businesses remain constrained by electricity shortages and inadequate Internet connectivity and bandwidth. This prioritization in infrastructure spending may have political roots. The BDP gains its strongest support in rural areas; hence, rural infrastructure directly benefits its electoral base, rather than the economy as a whole.

Several much-needed reforms that would help to address competitiveness concerns are politically sensitive and could affect the BDP's support base. For instance, the cattle/beef sector has stagnated in recent years, but improving productivity and competitiveness requires addressing cattle husbandry practices of small-scale farmers on communal land. Addressing the shortage of land for business requires introducing elements of land markets in place of traditional, administrative land allocation processes, and allowing noncitizens better access to land. And relaxing immigration restrictions to improve the supply of skilled labor and decrease production costs will reduce the rents earned by those with skills. Hence, addressing the constraints to diversification is as much a political economy consideration as a technical consideration.

Finally, one obvious reason for persistent poverty is the large share of the population working in an extremely unproductive agriculture sector. An important constraint on agricultural productivity in Botswana is the limited availability of water. Many problems affecting water availability are in the hands of the government, such as international agreements on the diversion and use of water sources that cross borders (such as the Zambezi River). Public investment in scientific research for agriculture, largely in the domain of the public sector, has also been limited (Hausmann and Klinger 2010). It is curious that the 10th National Development Plan devotes less than two pages to the agriculture sector (MFDP 2009).

This lack of emphasis on agriculture may reflect just how challenging the sector is in Botswana. As Lewis (1954) pointed out a long time ago, we know how to raise agricultural output in tropical areas with adequate rainfall or access to irrigation water, but arid lands have low yields, and in the absence of water do not respond to fertilizers or to the potential of high-yielding crop varieties. Lewis (1954) also noted that this area is where the real poverty exists, and that unlocking this prison is the greatest challenge to development. For Botswana, it probably means devoting significantly fewer resources to agriculture. Getting to this point will be a slow process, because so many of the poor and uneducated are still tied to agriculture.

Despite these challenges, Botswana has significant potential for diversification based on services. It has recently built a new university of science and technology where students from across Africa can train. Plus, Botswana has better governance, more effective public services, relatively high educational attainment, and relatively little crime compared with its neighbors. Thus, Botswana would be an ideal location as a business service center for Southern Africa. Firms based in Botswana would have duty-free access to all of the members of SACU, including South Africa. But for this to happen, the government needs to work harder to provide the necessary telecommunications and transportation infrastructure at a reasonable cost.

Appendix 3A: Data

For our analysis, we rely on different sources of data: individual-level employment data from the 1995/1996 and 2005/2006 LFSs, value-added data from Statistics Botswana, and trade and tariff data at the four-digit Harmonized System (HS) level. Below, we provide details on each of these data sources, including the time period covered and the level of aggregation.

Labor Force Survey Data

The 1995/1996 and 2005/2006 LFSs are designed to be a source of nationally representative information on the size, structure, and main characteristics of the labor force, and include information on both formal and informal employment, unemployment, and underemployment. Data for these surveys were collected throughout the 12 months of the duration of the survey.[10] Both the 1995/1996 and 2005/2006 LFSs asked virtually the same questions, with the

10 Note that unless it was necessary to ensure data accuracy, each household was visited only once during the survey.

2005/2006 LFS adding some questions on child employment, so data from both surveys are comparable.[11]

There are two main definitions of employment in the LFSs, each with its own timeframe. The surveys ask about the main type of work the person has been doing in the past 12 months ("usual employment") and the type of work the person did in the past 7 days ("current employment"). Respondents were asked, for each month of the year, whether they had worked part or all of the month, and whether they had been available or unavailable for work. If the participant had done any work in any month, an additional question asked was whom the individual was working for (for example, self-employed, government, private sector).[12] The LFSs classify workers as "usually employed" if they were economically active (if number of months working and available to work was 6 or higher) in the past 12 months and they worked for most of the time for which they were economically active. Additionally, the LFSs ask about work during the past 7 days. If the respondents did work during this period, they were asked about whom they were working for, along with employment status, occupation, and industry.[13,14] With the exception of agriculture, we rely on questions related to the current job (the past 7 days), as the surveys asked a broader set of questions for this job than for the usual job during the past 12 months.

Because of the seasonality of agriculture and because the surveys were not conducted in rural areas during the same months across years, we classify agricultural workers by their usual job.

Value-Added Data

We use data on value-added by sector in constant values that cover the period 1995/1996–2005/2006. The data come from Statistics Botswana (2014) and are reported by 10 broad sectors at the major division level of the Botswana

11 The 2005/2006 LFS sample included people 7 years old and older, while the 1995/1996 LFS included only people 12 years old and older. Nevertheless, both surveys can be easily compared by controlling for age.

12 The 2005/2006 LFS also asked questions related to occupation and industry for usual employment, but these questions were not included in the 1995/1996 LFS.

13 Both LFSs report industry of work using Botswana Standard Industrial Classification Revision 3 codes.

14 Note that if a person reported not having worked in the past 7 days because of a temporary absence from work (such as annual leave or sickness) but would resume work in the near future, that person was classified as currently employed. People who reported not having worked in the past 7 days and not planning on resuming work in the near future were counted as either unemployed or out of the labor force.

Standard Industrial Classification. The data are reported for the fiscal year, which begins on July 1 of each year, and generally coincides with the timing of the LFSs.

Trade Data

Bilateral trade data for 1990–2008 were provided by the Botswana Institute for Development Policy Analysis (BIDPA). This dataset consists of yearly bilateral imports and exports disaggregated at the six-digit HS level and uses the 1988/1992 HS nomenclature. These data are consistent with the trade flows for Botswana reported in the UN Comtrade database. Since the maximum level of disaggregation in our tariff data was at the four-digit HS level, we aggregated exports and imports to the four-digit HS level in order to have a correspondence between our tariff data and our trade flow data. The resulting bilateral trade dataset has annual exports and imports (in both current US dollars and Botswanan pula) at the HS four-digit level starting in 1990 and ending in 2008.

We also gathered data on value, volume, and unit value indexes on total exports and total imports for the 1990–2008 period to help us understand whether Botswana's changes in export and import values were mostly driven by changes in volumes or prices. The data on trade flow volumes come from United Nations Conference on Trade and Development's (UNCTAD's) online database (UNCTADstat).

Tariff Data

As noted above, tariffs on trade with non-SACU members have been typically set by South Africa, with little or no input from Botswana. Thus, we use South Africa's tariff structure—representing the SACU tariff structure—to determine the level of trade protection for Botswana. We measure trade protection using tariffs (including ad valorem equivalents), plus surcharges for South Africa. Our data on trade protection, provided by Lawrence Edwards, span the period 1990–2008 and are described in great detail in Edwards (2005). This dataset comprises tariff rates (including ad valorem equivalents) and surcharges at the eight-digit HS level. We aggregated these rates and surcharges to the four-digit HS level to match our trade-flow data. To construct the four-digit HS tariffs, we used a weighted average, where the weight for each eight-digit HS tariff is that product's share of imports within the four-digit HS product imported by Botswana between 1990 and 1992. We used a similar procedure to construct industry-level tariffs according to the industry classification used in the LFSs.

Table 3A.1 Trade flows by commodity group, 1991–2005/2006

		Total imports			Imports not from South Africa			Total Exports			Exports not to South Africa		
Commodity group	Year	Value (million pula)	Share (%)	Growth (%)	Value (million pula)	Share (%)	Growth (%)	Value (million pula)	Share (%)	Growth (%)	Value (million pula)	Share (%)	Growth (%)
Animals and animal products	1991	91	2.33		4	0.65		129	3.36		99	2.71	
	2005/06	375	2.14	312.1	25	1.03	5,25.0	465	1.81	260.5	269	1.13	171.7
Vegetable products	1991	184	4.71		62	10.03		12	0.31		10	0.27	
	2005/06	928	5.30	404.3	37	1.52	–40.3	42	0.16	250.0	12	0.05	20.0
Foodstuffs	1991	274	7.01		51	8.25		35	0.91		16	0.44	
	2005/06	1188	6.78	333.6	99	4.07	94.1	172	0.67	391.4	38	0.16	137.5
Mineral products	1991	349	8.93		28	4.53		1	0.03		0	0.00	
	2005/06	3,398	19.40	873.6	121	4.97	332.1	287	1.12	28600.0	257	1.08	
Chemicals and allied industries	1991	196	5.02		15	2.43		34	0.88		11	0.30	
	2005/06	1,539	8.79	685.2	165	6.78	1,000.0	177	0.69	420.6	95	0.40	763.6
Plastics/rubber	1991	165	4.22		13	2.10		5	0.13		2	0.05	
	2005/06	688	3.93	317.0	66	2.71	407.7	76	0.30	1420.0	11	0.05	450.0
Raw hides, skins, leather	1991	13	0.33		4	0.65		24	0.62		17	0.47	
	2005/06	34	0.19	161.5	4	0.16	0.0	32	0.12	33.3	6	0.03	–64.7
Wood and wood products	1991	213	5.45		32	5.18		6	0.16		4	0.11	
	2005/06	723	4.13	239.4	102	4.19	218.8	55	0.21	816.7	17	0.07	325.0
Textiles	1991	254	6.50		65	10.52		127	3.31		104	2.85	
	2005/06	688	3.93	170.9	133	5.46	104.6	1072	4.17	744.1	730	3.06	601.9

		Total imports			Imports not from South Africa			Total Exports			Exports not to South Africa		
Commodity group	Year	Value (million pula)	Share (%)	Growth (%)	Value (million pula)	Share (%)	Growth (%)	Value (million pula)	Share (%)	Growth (%)	Value (million pula)	Share (%)	Growth (%)
Footwear	1991	72	1.84		8	1.29		9	0.23		1	0.03	
	2005/06	200	1.14	177.8	22	0.90	175.0	11	0.04	22.2	2	0.01	100.0
Stones and glass (includes diamonds)	1991	119	3.05		15	2.43		3,031	78.89		3,027	82.86	
	2005/06	567	3.24	376.5	258	10.60	1620.0	19,349	75.24	538.4	19,143	80.36	532.4
Metals	1991	449	11.49		36	5.83		332	8.64		323	8.84	
	2005/06	1,420	8.11	216.3	143	5.87	297.2	3,272	12.72	885.5	3,060	12.85	847.4
Machinery/ Electrical	1991	690	17.66		139	22.49		47	1.22		17	0.47	
	2005/06	3,011	17.19	336.4	749	30.76	438.8	253	0.98	438.3	111	0.47	552.9
Transportation	1991	646	16.53		123	19.90		43	1.12		20	0.55	
	2005/06	2,021	11.54	212.8	346	14.21	181.3	426	1.66	890.7	60	0.25	200.0
Miscellaneous	1991	192	4.91		23	3.72		7	0.18		2	0.05	
	2005/06	732	4.18	281.3	165	6.78	617.4	28	0.11	300.0	11	0.05	450.0
Total	**1991**	**3,907**	**100.00**		**618**	**100.00**		**3,842**	**100.00**		**3,653**	**100.00**	
	2005/06	**17,512**	**100.00**	**348.2**	**2435**	**100.00**	**294.0**	**25,717**	**100.00**	**569.4**	**23,822**	**100.00**	**552.1**

Source: Authors' calculations using UNCTAD & BIDPA data

Note: Data for 2005/06 were calculated using average levels between years.

Table 3A.2 Botswana's top-10 imports and exports, 1991 and 2005

	1991			2005		
Rank	Commodity	Value (million USD)	%	Commodity	Value (million USD)	%
Panel A: Top-10 imported commodities (HS 4-digit level)						
1	Motor vehicles for the transport of goods	125	8.0	Petroleum oils, etc, (excl. crude)	372	13.7
2	Petroleum oils, etc, (excl. crude)	96	6.1	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading 87.02), including station wagons and racing cars	113	4.2
3	Motor cars and other motor vehicles	51	3.3	Motor vehicles for the transport of goods	112	4.1
4	Portland cement, aluminous cement, slag cement, super-sulphate cement and similar hydraulic cements, whether or not coloured or in the form of clinkers.	35	2.2	Medicaments consisting of mixed or unmixed products for therapeutic or prophylactic uses, put up in measured doses (including those in the form of transdermal administration systems) or in forms or packing	74	2.7
5	Parts and accessories of motor vehicles	31	2.0	Parts of railway or tramway locomotives or rollingstock	65	2.4
6	Other aircraft (for example, helicopters, aeroplanes); space-craft (including satellites) and suborbital and spacecraft launch vehicles	29	1.8	Nickel ores and concentrates	59	2.2
7	Structures (excluding prefab-ricated buildings of heading 94.06) and parts of structures (for example, bridges and bridge-sections, lock-gates, towers, lattice masts, roofs, roofing frame-works, doors and windows and their frames and thresholds for doors	28	1.8	Transmission apparatus for radio-telephony, radiotelegraphy, radio-broadcasting or television, whether or not incorporating reception apparatus or sound recording or reproducing appara-tus; television cameras; still image video cameras and other video cam	54	2.0
8	Other furniture and parts thereof	27	1.7	Parts and accessories of motor vehicles	46	1.7
9	Insulated wire, cable, other insulated electric cables	26	1.7	Portland cement, aluminous ce-ment, slag cement, supersulphate cement and similar hydraulic cements, whether or not coloured or in the form of clinkers	43	1.6
10	New pneumatic tires, of rubber	22	1.4	Self-propelled bulldozers, angledozers, graders, levellers, scrapers, mechanical shovels, ex-cavators, shovel loaders, tamping machines and road rollers	36	1.3

	1991			2005		
Rank	Commodity	Value (million USD)	%	Commodity	Value (million USD)	%
Panel B: Top-10 exported commodities (HS 4-digit level)						
1	Diamonds, whether or not worked, but not mounted or set	1459	79.5	Diamonds, whether or not worked, but not mounted or set	3322	76.6
2	Nickel mattes, nickle oxide sinters, and other intermediate products	154	6.9	Copper mattes; cement copper (precipitated copper)	456	10.5
3	Meat of bovine animals, fresh or chilled	32	5.1	Tractors (other than tractors of heading 87.09)	78	1.8
4	Woven fabrics of cotton, with ≥ 85% cotton	21	4.9	Jerseys, pullovers, cardigans, waist-coats and similar articles, knitted or crocheted	76	1.8
5	Meat of bovine animals, frozen	20	1.4	Meat of bovine animals, fresh or chilled	41	0.9
6	Pile fabrics, including long pile fabrics and terry fabrics, knitted or crocheted	16	0.6	Meat of bovine animals, frozen	32	0.7
7	Carbonates; peroxocarbonates (percarbonates); commercial ammonium carbonate containing ammonium carbamate	11	0.3	Women's or girls' blouses, shirts and shirt-blouses	30	0.7
8	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading 87.02), including station wagons and racing cars	7	0.3	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear), knitted or crocheted	26	0.6
9	Motor vehicles for the transport of goods	7	0.3	Gold (including gold plated with platinum) unwrought or in semi-manufactured forms, or in powder form	25	0.6
10	Yarn (other than sewing thread) of artificial staple fibres, not put up for retail sale	6	0.2	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear), knitted or crocheted	23	0.5

Source: Authors' calculations using data from UNCTAD and BIDPA (various years).

Table 3A.3 Botswana's top-10 source countries for imports and destination countries for exports, 1991 and 2005

	1991			2005		
Rank	Country	Value (million US$)	%	Country	Value (million US$)	%
Panel A: Top-10 source countries (imports)						
1	South Africa	1,586	84.7	South Africa	2,632	86.8
2	Zimbabwe	101	5.4	Zimbabwe	47	1.5
3	United States	69	3.7	United Kingdom	38	1.3
4	Turks and Caicos Islands	20	1.1	United States	37	1.2
5	Germany	15	0.8	China	34	1.1
6	Switzerland	12	0.6	Sweden	28	0.9
7	Sweden	11	0.6	Germany	28	0.9
8	Italy	9	0.5	India	22	0.7
9	Japan	6	0.3	Japan	20	0.7
10	France	5	0.3	Namibia	15	0.5
Panel B: Top-10 destination countries (exports)						
1	Switzerland	1,458	79.5	United Kingdom	3,350	76.1
2	Zimbabwe	127	6.9	South Africa	382	8.7
3	Norway	94	5.1	Norway	262	6.0
4	South Africa	90	4.9	Zimbabwe	183	4.2
5	United States	26	1.4	United States	97	2.2
6	Germany	11	0.6	Germany	28	0.6
7	Zambia	6	0.3	Faeroe Islands	20	0.5
8	Malawi	5	0.3	Zambia	12	0.3
9	Netherlands	5	0.3	Namibia	11	0.2
10	Italy	4	0.2	Israel	10	0.2

Source: Authors' calculations using United Nations Conference on Trade and Development UNCTADstat and Botswana Institute for Development Policy Analysis data (various years).

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