NBER WORKING PAPER SERIES

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

Brian McCaig
Margaret S. McMillan
Iñigo Verduzco-Gallo
Keith Jefferis

Working Paper 21029
http://www.nber.org/papers/w21029

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
March 2015

The authors thank the World Bank for financial support. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

NBER working papers are circulated for discussion and comment purposes. They have not been peer-reviewed or been subject to the review by the NBER Board of Directors that accompanies official NBER publications.

© 2015 by Brian McCaig, Margaret S. McMillan, Iñigo Verduzco-Gallo, and Keith Jefferis. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Stuck in the Middle? Structural Change and Productivity Growth in Botswana
Brian McCaig, Margaret S. McMillan, Iñigo Verduzco-Gallo, and Keith Jefferis
NBER Working Paper No. 21029
March 2015
JEL No. O5,O55

ABSTRACT

This paper decomposes Botswana's growth from the late 1960s through 2010 into a within-sector and a between-sector (structural change) component. We find that during the 70s and 80s Botswana's rapid economic growth was characterized by significant structural change with the share of the labor force employed in agriculture dropping from more than 80 percent to around 40 percent. Between 1990 and 2010 growth was also rapid, but structural change detracted from growth. We hypothesize that this is one of the reasons for persistent poverty and very high income inequality in Botswana today. This leaves us with the following puzzle: why is it that a country with such an impressive track record marked by good governance and prudent macroeconomic and fiscal policy is having so much trouble diversifying its economy?

Brian McCaig
Department of Economics,
Wilfrid Laurier University
75 University Avenue West
Waterloo, ON, N2L 3C5 Canada
bmccaig@wlu.ca

Margaret S. McMillan
Tufts University
Department of Economics
114a Braker Hall
Medford, MA 02155
and International Food Policy Research Institute
and also NBER
margaret.mcmillan@tufts.edu

Iñigo Verduzco-Gallo
IFPRI
I.VerduzcoGallo@cgiar.org

Keith Jefferis
Econsult Botswana
P O Box 45016
Riverwalk Gaborone Botswana
econsult.botswana@gmail.com

Introduction

In 1966 when Botswana gained independence, it was one of the poorest countries in the world. But by 1986, it had achieved middle-income status and in 2005, it was classified as an upper-middle-income country by the World Bank. The only other country to enjoy such rapid growth in real GDP per capita – an average of 7.3 percent between 1966 and 2010[1] – over such a long period is China. 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 et al. 2002).

Botswana's rapid economic growth has nonetheless left many individuals behind. Unemployment is a major issue, particularly among the youth. 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 might 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 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.[2]
- Construction peaked at 24.5 percent in 1972 and then gradually declined to around 7 percent by 2010.

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 the occupational structure of the Batswana (figure 1b), this 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.

[1] Authors' calculation based on estimates of real GDP at chained PPPs and population from Penn World Tables 8.0 (Feenstra, Inklaar, and Timmer 2013).
[2] Part of the sharp decline in the share of value added in mining in 2009 and 2010 is the global recession.

- 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.

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 was growth enhancing in Asian economies, while it decreased growth in Latin American 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)[3].

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 paper, 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 productivity growth between 1970 and 1989, averaging 8.6 percent per annum. 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 annum, with "within" sector productivity growth much higher at 3.6 percent per annum and structural change a drag on overall productivity growth. Indeed, there was almost no change in the agricultural share of employment and a significant expansion in the share of employment in wholesale and retail trade.

[3] Neither McMillan and Rodrik (2011) nor McMillan, Rodrik and Verduzo-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 paper.

What contributed to the early period of growth enhancing structural change and the more recent experience in which structural change has been growth reducing? This is an important question because structural change has played a significant role in Botswana's growth performance both positive and negative. 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 a lot of attention in the literature is Botswana's exposure to South Africa's massive trade liberalization in 1994. As a member of the Southern African Customs Union, its tariffs are set by the government of South Africa making them effectively exogenous. Thus, Botswana presents an unusual case in which to study 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 policymakers 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 with 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 Batswana moved into the area from South Africa, bringing with them the custom of holding "village meetings" for consultation and consensus on public issues. Prior to European contact, the Batswana lived mainly as herders focusing on cattle ranching because 84 percent of land is arid semi-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 and 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 (History of Botswana, 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 $450 (PPP in 2005 US$) (Feenstra, Inklaar, and Timmer 2013). 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 real GDP per capita growth rate was around 9.4 percent[4], 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 (e.g., Government Implementation Coordination Office 2009), given that export revenues continue to be dominated by diamonds, a resource that may run out sometime in the not so distant future.[5] Attempts at industrialization have so far not worked, leaving employment dominated by agriculture and services, with the public sector accounting for more than half of service sector employment. 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.[6] 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 2a). In 1970, 82.5 percent of 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 (labor productivity over 3 times higher than overall labor productivity) and only 1.7 percent of workers were in construction (labor productivity more than 12 times overall labor productivity). Thus, the

[4] Authors' calculation based on estimates of real GDP at chained PPPs and population from Penn World Tables 8.0 (Feenstra, Inklaar, and Timmer 2013).
[5] NDP 10 is available at: http://www.finance.gov.bw/index.php?
[6] Additionally these jobs do not require any particular set of skills and they are typically reserved for men.

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 2b shows, the structure of employment changed greatly as the share of workers in agriculture fell dramatically. By 2010, fewer 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: (i) "within," which captures growth within sectors and (ii) "structural change," which captures growth owing to labor reallocation across sectors that differ in their labor productivity, as follows:

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

where P_t and p_t are aggregate and sectoral labor productivity levels at year t, and $\theta_{i,t}$ refers to sector i's share of total employment. The first term is the "within" component and the second term in the decomposition is the "structural change" term. We use value added and employment data from the Groningen Growth and Development Center's Africa Sector Database (ASD). Value added is expressed in 2005 Pula. Labor productivity is measured as real output per worker in a sector.

Our results show that aggregate labor productivity grew on average 5.0 percent per annum between 1970 and 2010, but with significantly higher growth between 1970 and 1990 than between 1990 and 2010 (figure 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 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 1). Notably, agriculture contributed very little to within sector productivity growth over a period of more than 40 years owing to 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 rain fed, 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 owing to 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 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 1970-1990 (figure 4a and 4b). In each decade, the share of workers 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 the public service and by programs targeted at increasing investments in education, health and infrastructure. Programs were also created to facilitate investment by the private sector in all kinds of activities.

A second possible explanation for the observed patterns in the earlier decades has to do with 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 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 partially explain the large increase in the employment shares in services and construction, which accounts for much of the negative contribution of structural change to aggregate productivity growth.

Another possible explanation might be demographic changes, which could have accelerated the decline in the relative share of agricultural employment by increasing the employment share of younger cohorts that 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 around 40 percent, given that relative labor productivity in agriculture is 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 (figure 5a). In addition, its labor markets seem to be quite flexible when compared to other countries at similar levels of income (figure 5b).

One explanation for why they have not moved has to do with the myriad of social assistance programs offered by the Botswana government – that is, productivity differences may not reflect effective differentials in income and consumption. Another might 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 has pursued various industrial incentive schemes aimed at promoting the growth of other sectors, particularly manufacturing and tourism.

For example, a number of programs have been targeted at encouraging local production, particularly through preferential pricing and eligibility for government procurement. These included the Local Preference Scheme (1976), the Local Procurement Program (1997), the Economic Diversification Drive (EDD) (2010), and the Citizen Economic Empowerment (CEE) Policy (2012). These generally aim to give a pricing preference margin to local companies, regardless of ownership (domestic or foreign), although these policies also impose restrictions on the ability of foreign owned firms to participate in government tenders (even if locally incorporated). The government has also introduced complementary programs designed to provide technical assistance to small scale entrepreneurs wishing to compete for government projects. A comprehensive description of these incentive schemes is presented in Table 2.

Beside these incentive schemes, the government has over the years tried to maintain an investor-friendly policy environment, although the effectiveness of this is much debated. An International Financial Services Centre, which aims to attract externally-focused financial and business service investment, was established in the early 2000s. Also high on the policy agenda

are efforts to reduce unemployment (with little positive impact to date) and to mitigate the effects of the HIV/AIDS epidemic on productivity (much more successful).

Another partial explanation has to do with measurement error. The GGDC ASD data tell us that the share of workers in agriculture stopped falling. But when we verify this trend with individual level data from the 1995/96 and 2005/06 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 (see Appendix B). This slowdown might 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 others sectors. Major policy changes took place in the 1990s and 2000s, including significant trade reforms, and this may have influenced the relative demand for workers in various sectors, an issue that we turn to next.

A growing workforce and informality

What was happening to the composition of the labor force as these changes in labor productivity took place? Using labor force survey data covering the period of 1995/96 to 2005/06 we examine other margins of adjustment not covered in the GGDC's ASD employment estimates: labor force participation, unemployment, and informality. The following patterns stand out.

More individuals 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). We find that the number of working age individuals increased by 24 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 that 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 HIV prevalence is extremely high in Botswana at an estimated 17 percent (Levinsohn and McCrary, 2010). That said, the share of the population reporting that they were not in the labor force because of illness increased only marginally, from 3 percent in 1995/96 to 3.4 percent in 2005/06 – 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 1995/96 and 2005/06 respectively (22.2 and 18.7 percent, respectively, if individuals in agriculture are included). Unemployment is a major concern for youths. Youths, age 15 to 19 and 20 to 24, are significantly more likely to be unemployed than older workers (table 4a). Individuals in the latter age group participate in the labor force at the same rate as older workers, but the unemployment rate is almost double the national average, at 38.7 percent in 2005/06. Although labor force participation is much lower for individuals age 15 to 19, reflecting school attendance, among these individuals 39.7 percent are unemployed.[7]

Males the best off. We find that males are less likely to be unemployed and more likely to be in the labor force than females in either year, although both genders achieved significantly higher labor force participation rates between 1995/96 and 2005/06 (table 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 2005/06 as the gap in labor force participation in 1995/96 between individuals with primary and secondary education closed. However, having some education, as compared to 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 4b).[8] Importantly, the incidence of informality in manufacturing increased by 4.3 percentage points, which is slightly below the overall increase, but may be partially related to the SACU tariff cuts. Many sectors experienced an increase in the share of informal

[7] Unfortunately, it is difficult to consistently estimate unemployment for all working age individuals using the labor force survey data due to seasonal employment in agriculture. The labor force surveys 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 4a). This means excluding individuals currently working in agriculture as well as individuals currently unemployed but who most recently worked in agriculture.

[8] The Labor Force Surveys define informality according to a series of questions related to the ownership sector (such as government, parastatal, 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 only asked 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 that were not asked the detailed questions related to formality, we classify them as formally employed if they either worked in large private firms or in sectors more likely to be formal (such as government, parastatal, or NGOs).

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 non-agricultural workers across sectors (table 5).[9] The share of workers in manufacturing fell, but only by 0.6 percentage points, 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 (i) wholesale and retail trade, hotels, restaurants, etc.; and (ii) finance, insurance, real estate, and business services. The remaining sectors experienced only marginal changes in their shares of the non-agricultural workforce.[10]

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 the Southern Africa Customs Union (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 done by South Africa.

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 of Botswana 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), landing it with 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 GATT Uruguay Round. Export subsidies, which were incompatible with the WTO, were phased out and finally terminated in 1997. Additionally, between 1994 and

[9] We restrict the analysis to non-agricultural workers due to difficulties in accurately measuring agriculture employment across the two labour force surveys.
[10] These changes are broadly consistent with those in the GGDC ASD.

2004, 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 20 percentage points (Edwards 2005). In addition to multilateral liberalization, the government has also engaged in a number of bilateral and regional trade agreements culminating in South Africa's implementation of the Southern African Development Community Free Trade Protocol and the implementation of the South Africa-European Union 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 might face in its efforts to diversify the economy. To do this, we examine the changes in trade flows and employment between 1995/96 and 2005/06 – 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 as 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.

- Either expand or shrink the exportables and non-traded goods sectors. The impact depends on the extent to which the sectors share resources in common with the importables sector and the extent to which those sectors rely on imported intermediate inputs.
- Possibly erode Botswana's market share in South Africa, which might reduce the number or value of products that Botswana exports to South Africa. This might arise because South Africa has been, and still is, the primary destination for some of Botswana's non-mineral 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

Let us start 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 to ultimately harmonize tariffs, the percentage point decline in tariffs varied widely across products, with some falling by over 20 percent (Edwards 2005). In addition to multilateral liberalization, the government also engaged in a number of bilateral and regional trade agreements culminating in South Africa's implementation of the Southern African Development Community Free Trade Protocol and the South Africa-European Union Trade, Development and Cooperation Agreement (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 6a). However, the large reductions in tariffs are not associated with an obvious response in imports and exports (figure 6b). Imports as a percentage of GDP fluctuated around 45 percent while exports as a percentage of GDP fluctuated around 50 percent. However, 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 A1).

Compared to exports, Botswana's import profile is much less concentrated. Oil and motor vehicles, including their parts, are a significant share of imports in both 1991 and 2005 (table A2). The one notable change is that medicine became the fourth most important import

in 2005 but was not among the top ten in 1991.[11] 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, but mining based exports still account for over 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 A3 shows, the share of imports from South Africa has even risen 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), which finds the relative size of manufacturing industries did not change significantly in relation to industry tariff cuts. The effects in agriculture are also likely to be small as Botswana continues to import a large fraction of its food (Ministry of Finance and Development Planning, 2002, 2009) primarily from South Africa and other SACU members from 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 is relatively unchanged from 2004 when 95.4 percent came from South Africa and 96.4 percent from all SACU members respectively (Central Statistics Office, 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) 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 and so the main impact of the tariff reductions was an increase in the volume of trade.

[11] This reflects the impact of HIV/AIDS and the importation of antiretroviral medicines for the national treatment program

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 agricultural 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 and high rates of unemployment and discouraged workers. And time is of the essence. Botswana's diamond revenues are currently predicted to decline sharply from the mid-2020s onwards. 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 and the Government of Botswana 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 both 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 Botswana for 50 years. Although unemployment and inequality would also threaten the BDP, so far, the government has been able to manage these threats through a myriad of social assistance programs.

An alternative hypothesis has to do with 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 (Klinger and Haussman, 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 goods for export. Diversification policies have failed to address the high costs of production and to sufficiently raise productivity. High levels of public spending on education and training have not succeeded in alleviating skills shortages or in producing school leavers 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 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, there has been extensive spending on rural roads and infrastructure that yield 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 and 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 impact on 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 non-citizens better access to land. And relaxing immigration restrictions to improve the supply of skilled labor and bringing down 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 one.

Finally, one obvious reason for persistent poverty is the large share of the population working in an extremely unproductive agricultural sector. An important constraint on agricultural productivity in Botswana is the limited availability of water. Many problems surrounding 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 (Klinger and Haussman 2010). It is curious that the 10th National Development Plan devotes less than two pages to the agricultural sector.

This lack of emphasis on agriculture might have something to do with just how challenging the sector is in Botswana. As Arthur Lewis (1979) 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 varieties. He also noted that this is where the real poverty is and that to unlock this prison is the greatest challenge to development. For Botswana, it probably means devoting many 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 still has significant potential for diversification based on services. It has recently built a new university of science and technology where students from across Africa could come to train. Plus, Botswana has better governance, more effective public services, relatively high educational attainment, and relatively little crime compared to 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 A: Data

For our analysis, we rely on different sources of data: individual level employment data from the 1995/96 and 2005/06 labor force surveys (LFS), value-added data from Statistics Botswana, and trade and tariff data at the 4-digit 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 1995/96 and 2005/06 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 was collected throughout the 12 months of the duration of the survey.[12] Both the 1995/96 and 2005/06 LFS asked virtually the same questions, with the 2005/06 LFS adding some questions on child employment, so data from both surveys is comparable.[13]

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 who the individual was working for (e.g., self-employed, government, private sector, etc.).[14] The LFSs classify workers as "usually employed" if the person was economically active (if number of months working and available to work were 6 or higher) in the past 12 months and the person worked for most of the time for which she was economically active. Additionally, the LFSs ask about work during the past 7 days. If the respondent did work during this period, they were asked about whom they were working for, their employment status, occupation, and industry.

[12] Note that unless it was necessary to ensure data accuracy, each household was only visited once during the duration of the survey.
[13] The 2005/06 LFS sample included persons 7 years old and above while the 1995/96 only included persons 12 years old and above. Nevertheless, both surveys can be easily compared by controlling for age.
[14] The 2005/06 LFS also asked questions related to occupation and industry for the usual employment, but these questions were not included in the 1995/96 LFS.

[15,16] 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 1995/96 to 2005/06. The data come from Statistics Botswana and are reported by 10 broad sectors at the major division level of the Botswana Standard Industrial Classification (BSIC). The data is reported for the fiscal year, which begins on July 1st of each year, and generally coincides with the timing of the labor force surveys.

Trade data

Bilateral trade data for 1990 to 2008 was provided by the Botswana Institute for Development Policy Analysis (BIDPA). This dataset consists of yearly bilateral imports and exports disaggregated at the 6-digit Harmonized System (HS) level and uses the 1988/92 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 4-digit HS level, we aggregated exports and imports, respectively, to the 4-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 (both in current US dollars and pula) at the HS 4-digit level starting in 1990 and ending in 2008.

We also gathered data on value, volume, and unit value indices on total exports and total imports for the 1990-2008 period to help us understand whether Botswana's changes in exports and imports values were mostly driven by changes in volumes or prices. The data on trade flow volumes comes from UNCTAD's online database (UNCTADstat).

[15] Both LFSs report industry of work using Botswana Standard Industrial Classification (BSIC) Revision 3 codes.

[16] Note that if a person reported not having worked in the past 7 days due to a temporary absence from work (e.g., leave, sickness, etc.) 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.

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, spans the period 1990 to 2008 and is described in great detail in Edwards (2005). This dataset comprises tariff rates (including *ad valorem* equivalents) and surcharges at the 8-digit HS level. We aggregated these to the 4-digit HS level to match our trade flow data. To construct the 4-digit HS tariffs we used a weighted average, where the weight for each 8-digit HS tariff is that product's share of imports within the 4-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.

Appendix B: Is it possible that the share of agricultural workers has continued to fall?

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

To check this, we begin by comparing employment estimates from the 2005/06 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 B1). 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.[17] 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.

So if we use usual (rather than current) employment, we estimate that for 2005/06, agricultural employment is 34.3 percent, not 39.3 as estimated in the GGDC ASD. However, owing to a lack of data, we cannot estimate the usual industry of employment from data sources other than the 2005/06 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.

[17] The GGDC ASD agricultural employment estimates are in part based on previous work by some of the authors (McCaig and McMillan, 2014).

References

Acemoglu, Daron, Simon H. Johnson and James A. Robinson. 2002. "An African Success Story: Botswana," CEPR Discussion Paper No. 3219.

Botswana Institute for Development Policy Analysis (BIDPA) and World Bank. 2006. "Prospects for export diversification in Botswana," Impression House: Gaborone, Botswana.

Central Statistics Office. 2008. "2005/06 Labour Force Report," Department of Printing and Publishing Services, Gaborone.

Central Statistics Office. 2009. "External trade statistics 2004," Department of Printing and Publishing Services, Gabarone.

de Vries, G.J., M.P. Timmer, and K. de Vries. 2013. "Structural Transformation in Africa: Static gains, dynamic losses." GGDC research memorandum 136.

Edwards, Lawrence. 2005. "Has South Africa Liberalised its Trade?" *South African Journal of Economics*, Vol. 73, No. 4, pp. 754-775.

Feenstra, Robert C., Robert Inklaar, and Marcel P. Timmer. 2013. "The next generation of the Penn World Table."

Fibaek, M. 2010. Botswana's Modern Economic History since 1966: Has Botswana reached the last stage of Modern Growth Regime? Department of Economics, University of Copenhagen, 4.

Government Implementation Coordination Office. 2009. "Botswana Excellence – The Strategy for economic diversification and sustainable growth."

Heston, Alan, Robert Summers and Bettina Aten. 2011. Penn World Table Version 7.0, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania.

History of Botswana. (n.d.). Retrieved from Embassy of Republic of Botswana: http://www.botswanaembassy.org/history-of-botswana/

Klinger, Baily and Ricardo Hausmann. May 2010. “Achieving Export Diversification in Botswana,” Center For International Development, Harvard University Working Paper.

Levinsohn, James and Justin McCrary, 2010. “The Prevalence of HIV in Botswana,” Yale University Working Paper, January 6, 2010.

Lewis, W. A. 1954. “Economic Development with Unlimited Supplies of Labour.” The Manchester School, 22: 139–191.

Lewis, W. A. 1979. “The Dual Economy Revisited.” The Manchester School, 47, no. 3: 211–29.

McCaig, Brian and Margaret McMillan. 2014. “Trade liberalization, employment, productivity and diversification: Evidence from an unusual experiment,” mimeo.

McMillan, Margaret and Dani Rodrik. 2011. “Globalization, Structural Change and Productivity Growth,” NBER Working Paper 17143.

McMillan, Margaret, Dani Rodrik and Inigo Verduzco-Gallo. 2014. “Globalization, Structural Change and Productivity Growth, with an Update on Africa,” World Development No. 63 (Special Issue on Economic Transformation in Africa), pp. 11-32.

Ministry of Finance and Development Planning. 2002. “The National Development Plan 9.”

Ministry of Finance and Development Planning. 2009. “The National Development Plan 10.”

Rodrik, Dani. 2008. “The Real exchange rate and economic growth,” Brookings Papers on Economic Activity, Vol. 2, 365-412.

Robinson, James A. 2013. “Natural Resources and Industrialization: Implications for Africa,” Mimeo.

Statistics Botswana. 2014. “Botswana International Merchandise Trade Statistics 2011,” Gabarone.

United Nations Development Programme, 2010. “Human Development Report 2010. The Real Wealth of Nations: Pathways to Human Development.”

World Bank (n.d.). Botswana Overview. Retrieved from The World Bank http://www.worldbank.org/en/country/botswana/overview#1

World Bank. 2014. World Development Indicators.

Zizhou, Farai. 2009. “Linkages between trade and industrial policies in Botswana,” Industrial Policy Thematic Working Group Paper. Trade & Industrial Policy Strategies (TIPS). http://www.tips.org.za/files/botswana_paper.pdf

Figure 1a: Services now dominates in value added …

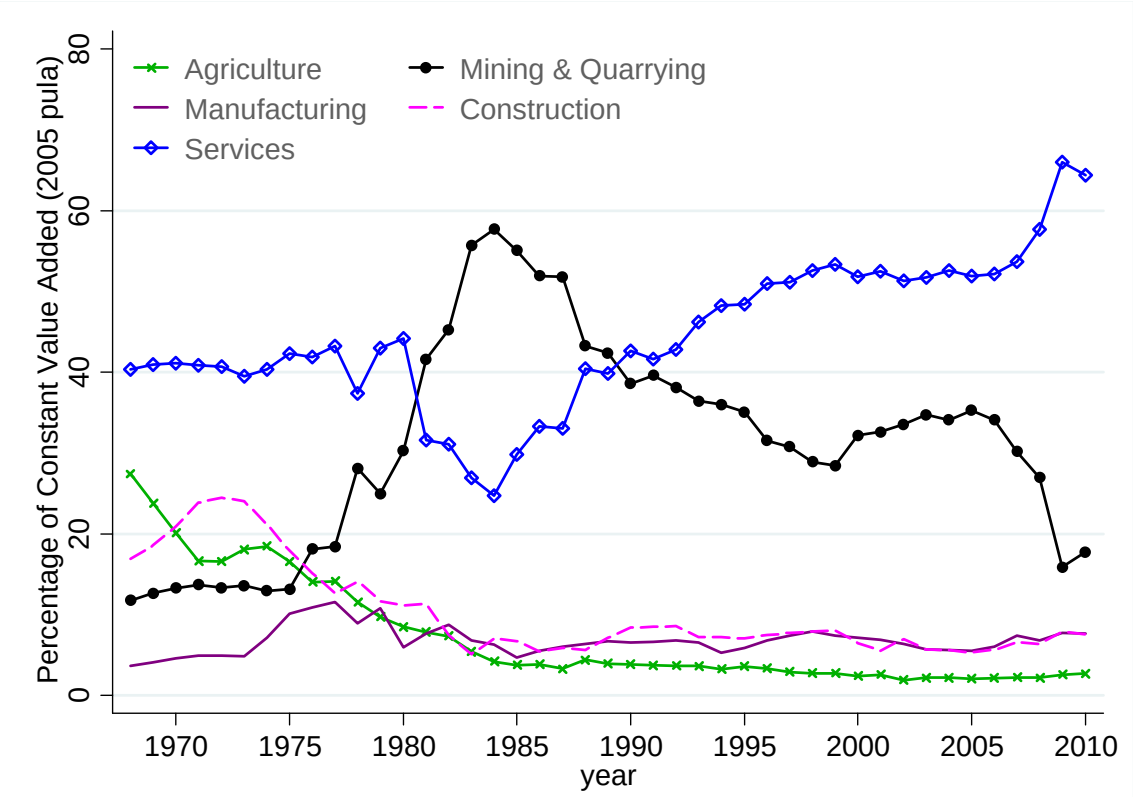


Figure 1b: … and in terms of percentage of employment

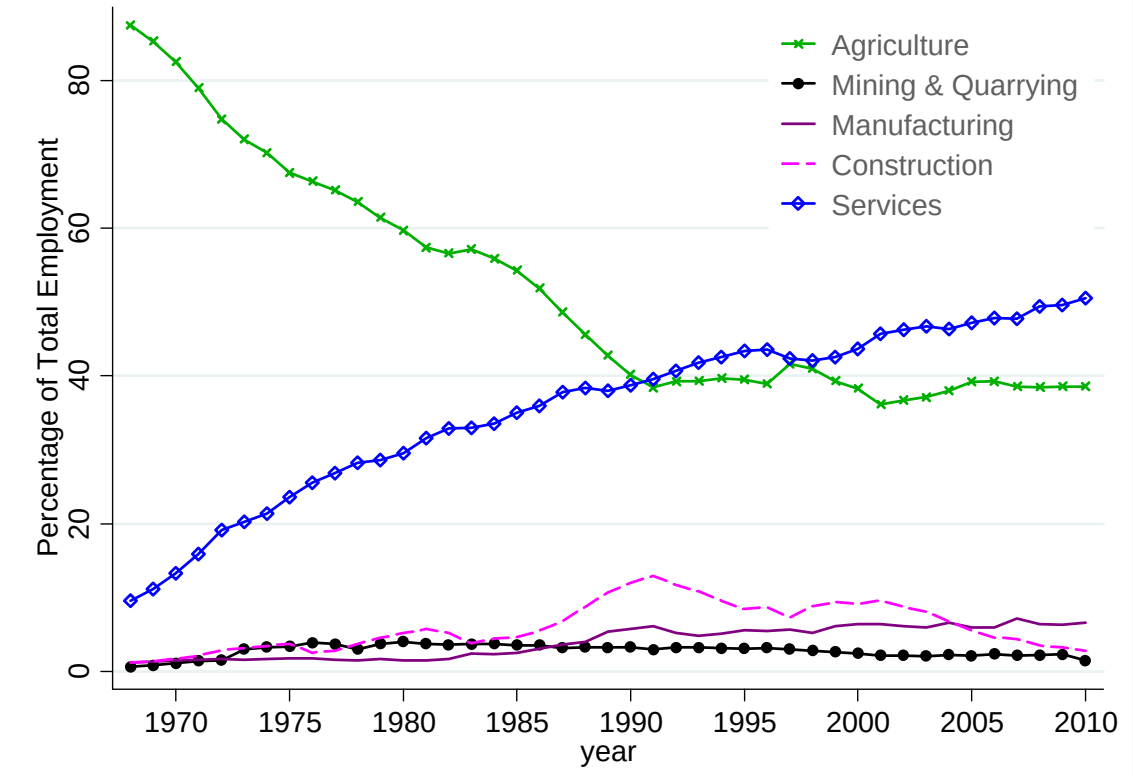


Figure 2a: After independence, most workers were in low-productivity agriculture …

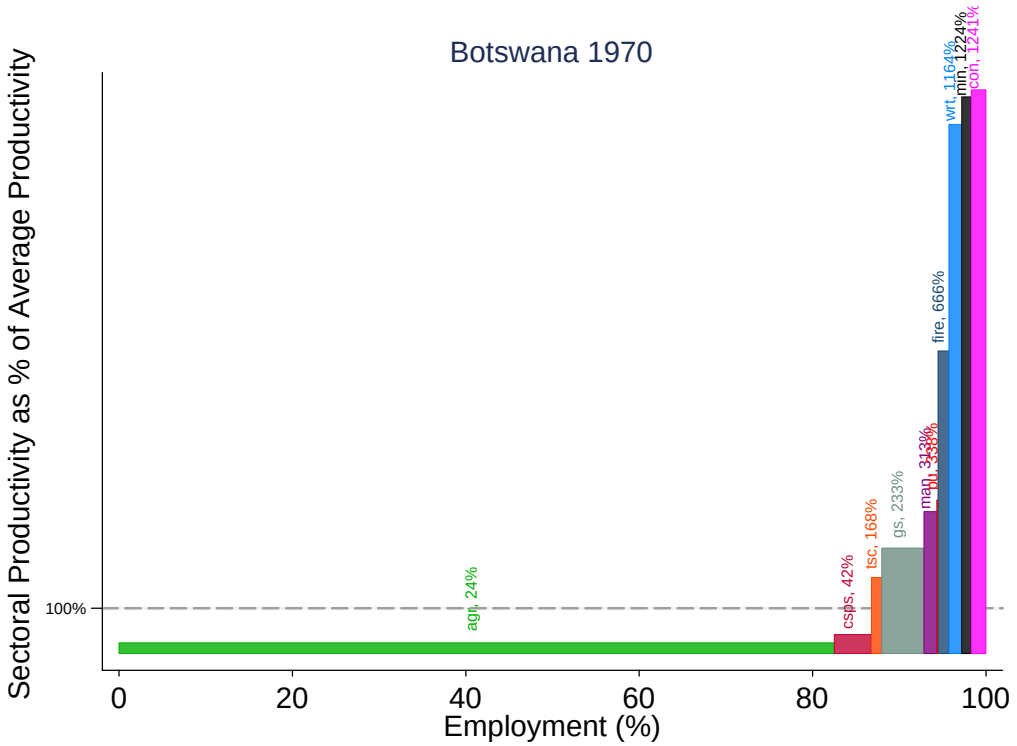


Figure 2b: … but today, most workers are in higher-productivity sectors

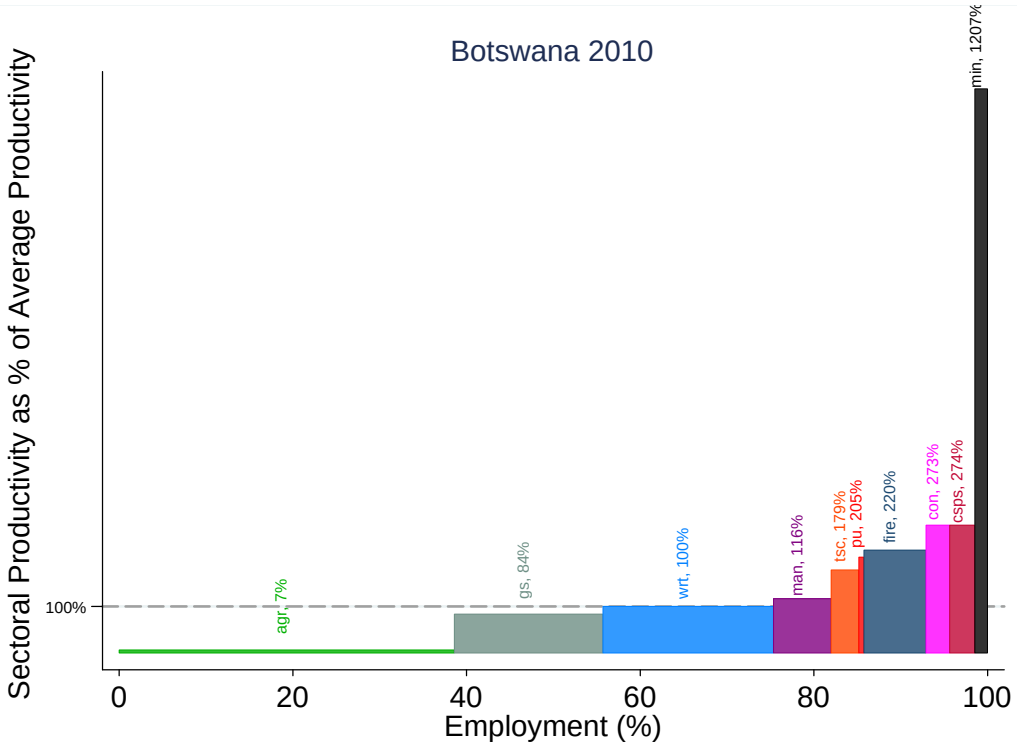
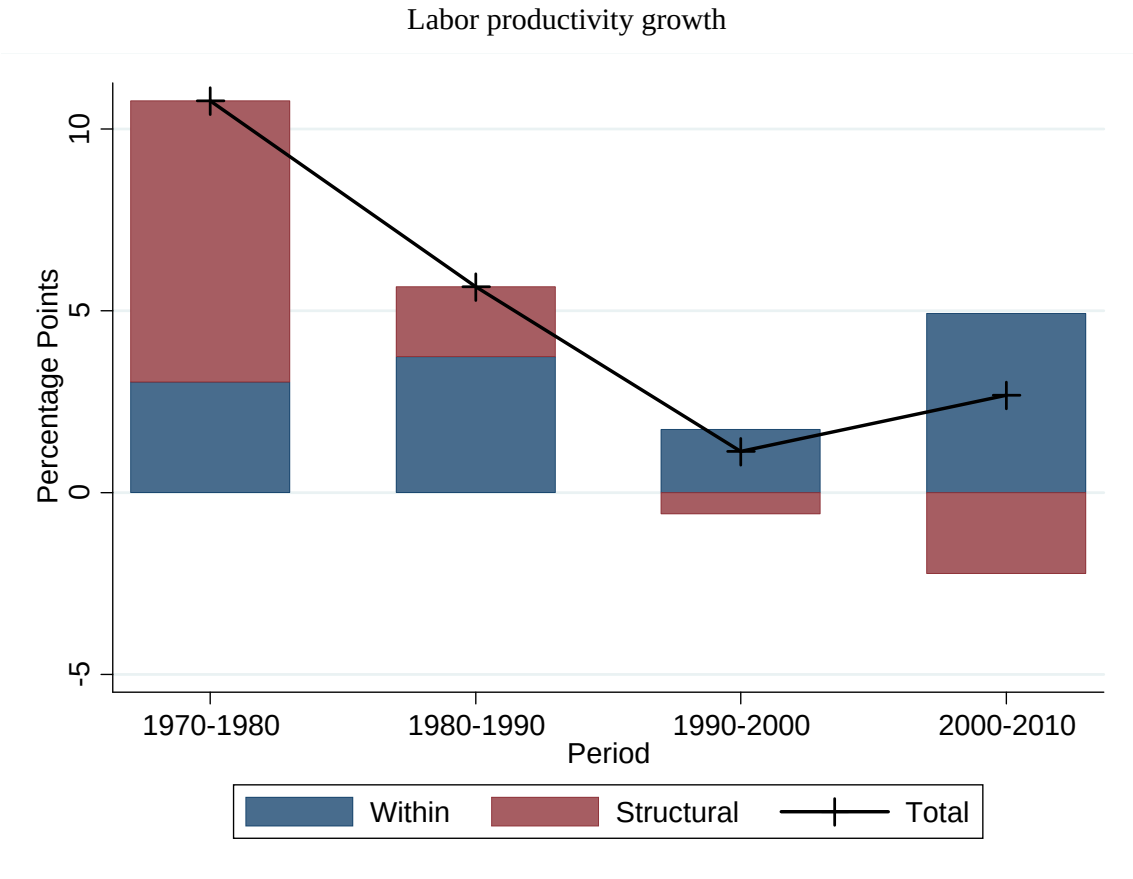


Figure 3: From a big role for structural change to a drag on growth



Source: Own calculations with data from GGDC's ASD.
Notes: The graph shows the decomposition of labor productivity growth (value added in 2005 pula per worker) where the calculations are based on changes over each decade. A similar calculation using annual labor productivity growth and then summed over each decade shows the same overall pattern, but with a somewhat smaller role for structural change.

Figure 4a: Starting with a highly agrarian society …

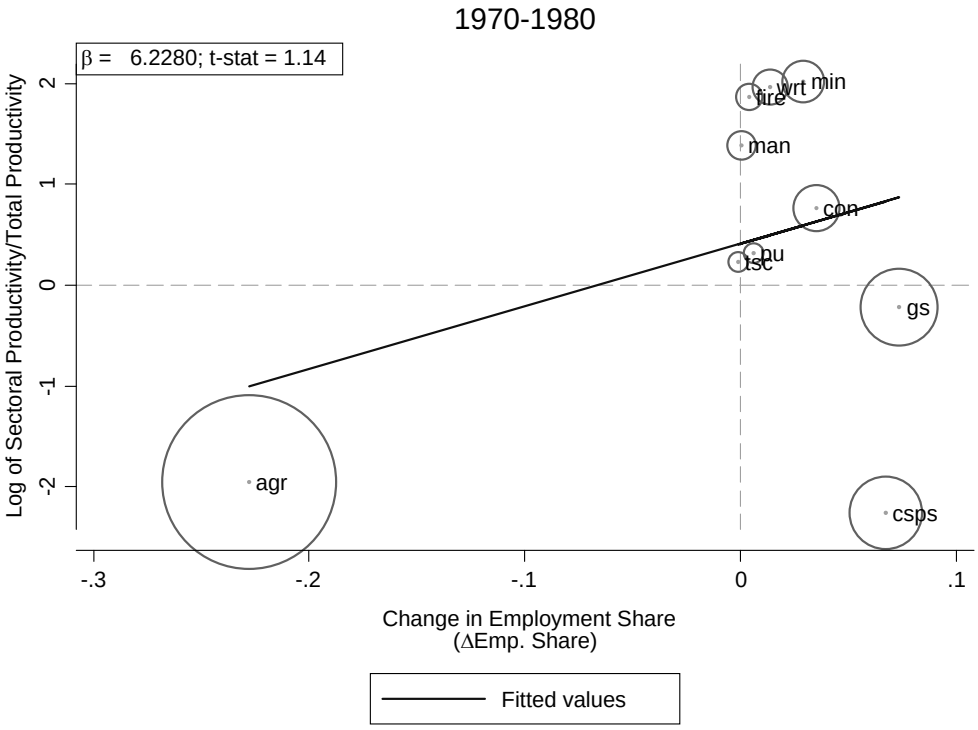


Figure 4b: … Botswana became less so …

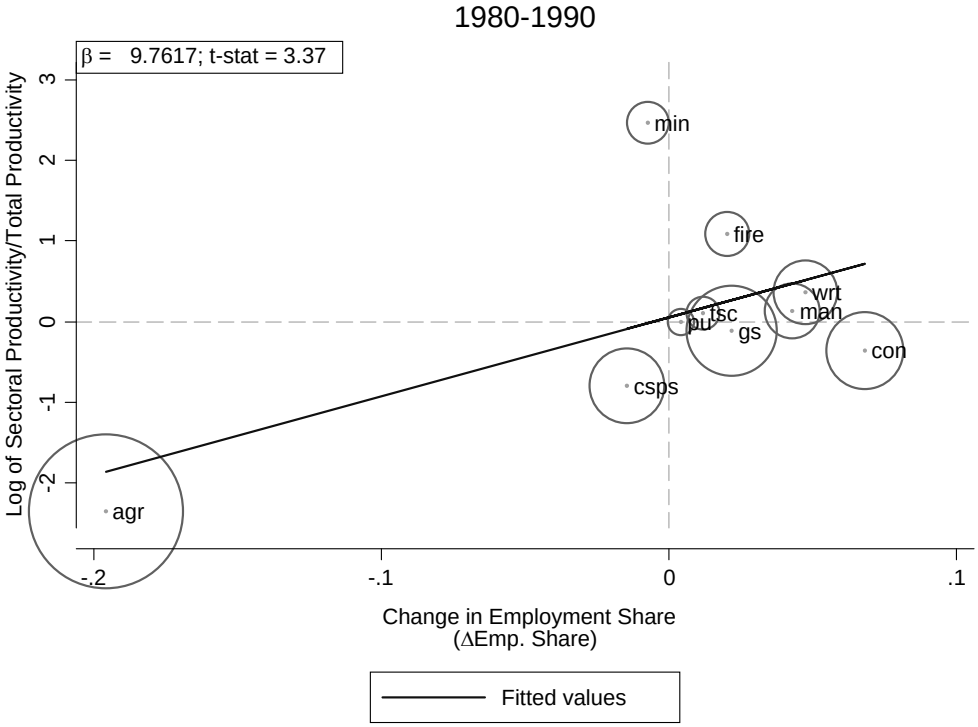


Figure 4c: … then stabilizes at 40 percent of its agrarian share …

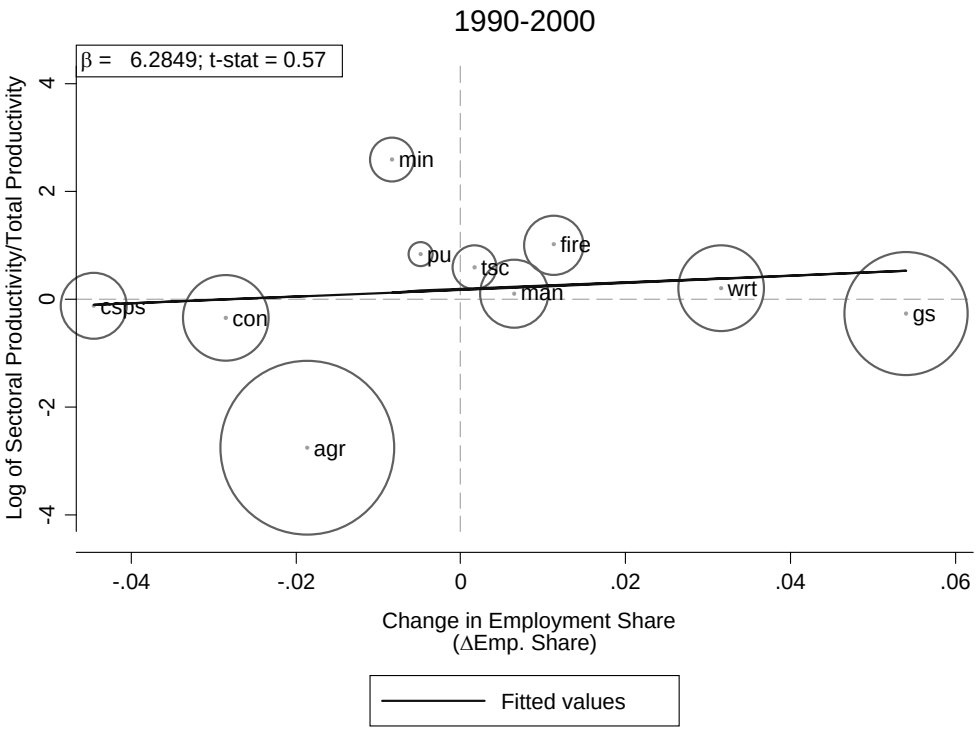


Figure 4d: … even though productivity is still relatively low

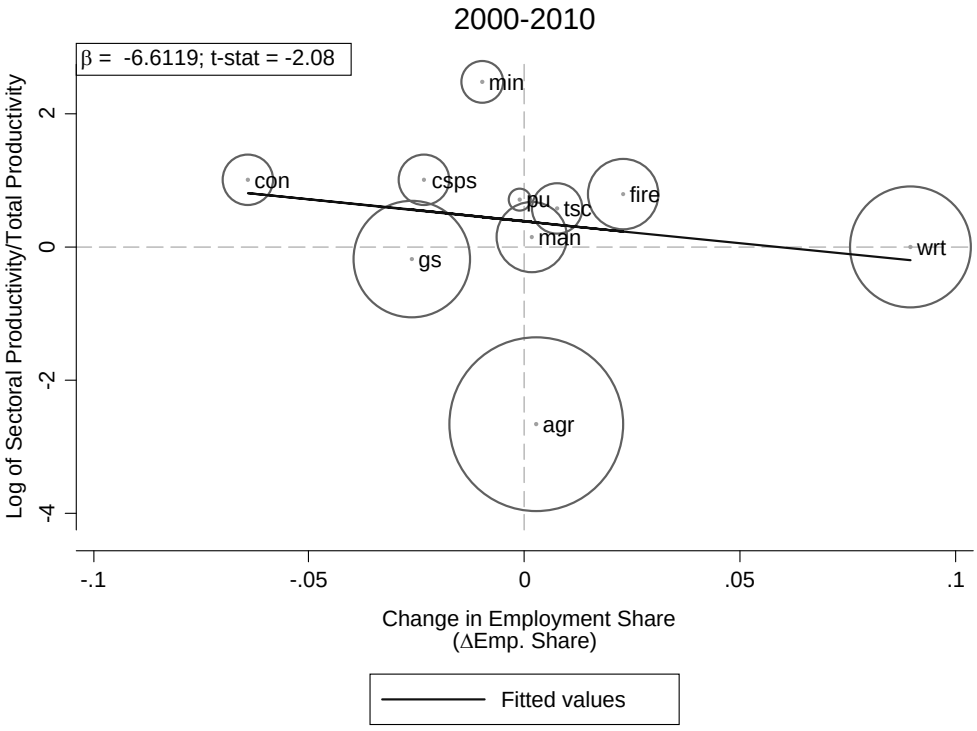


Figure 5a: Botswana's currency has remained competitive …

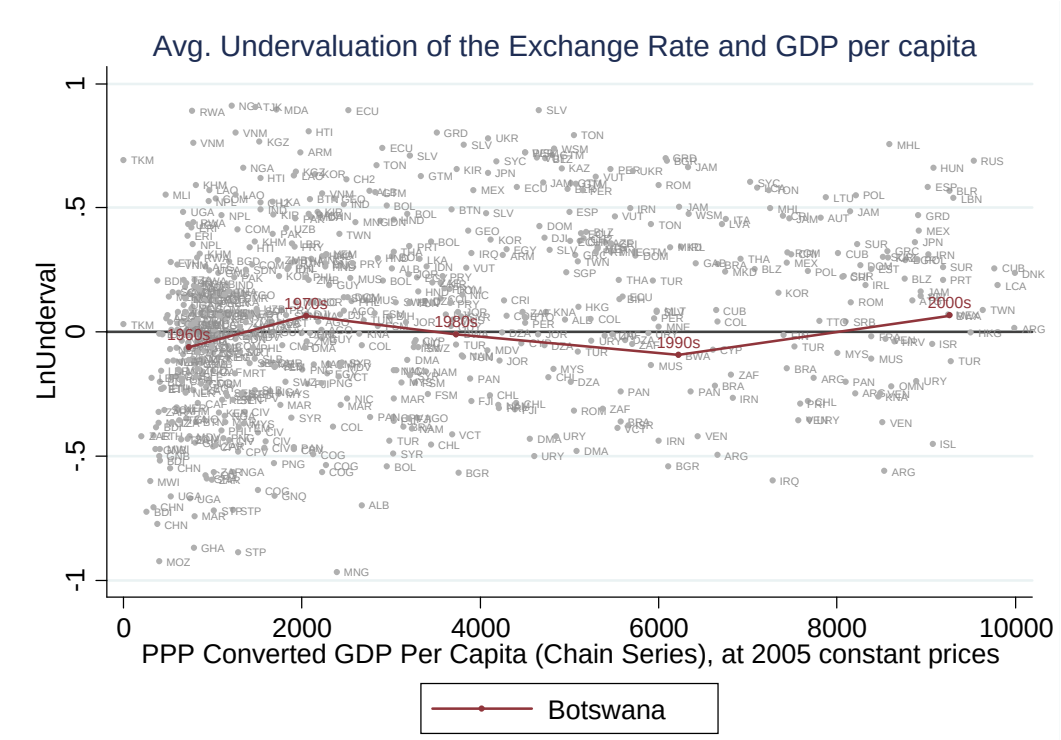


Figure 5b: … and its labor markets have remained flexible

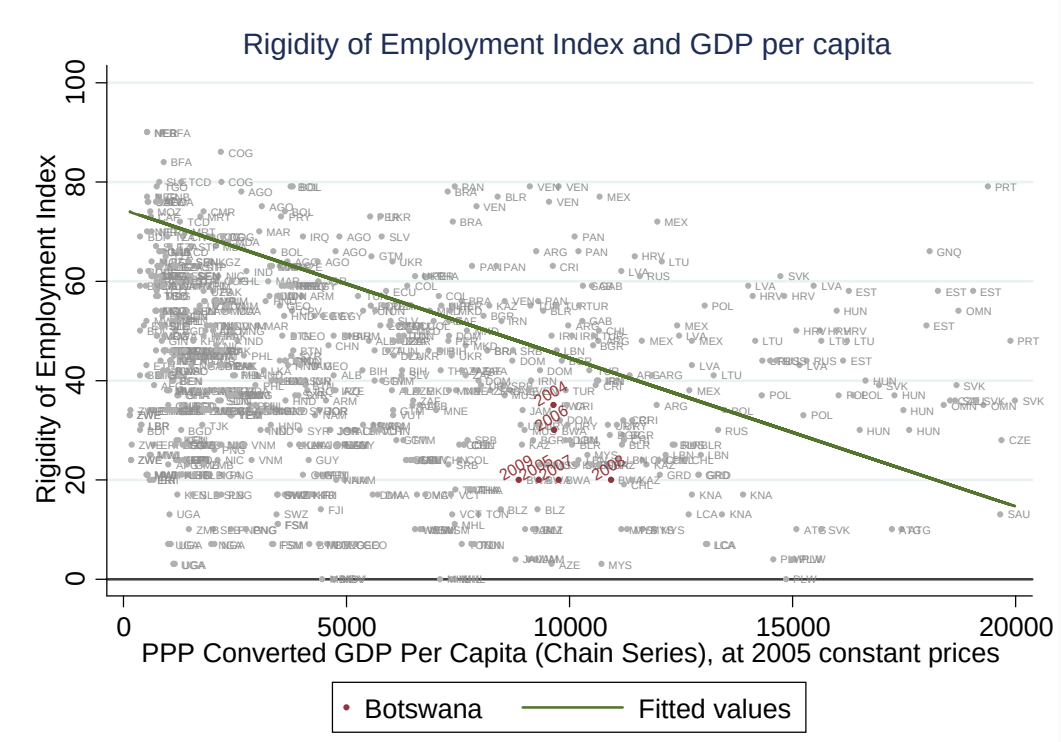
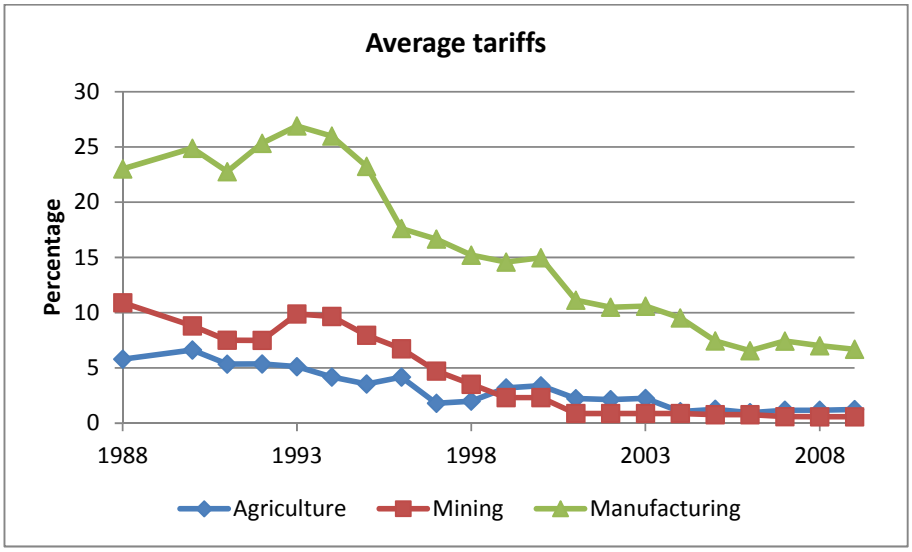
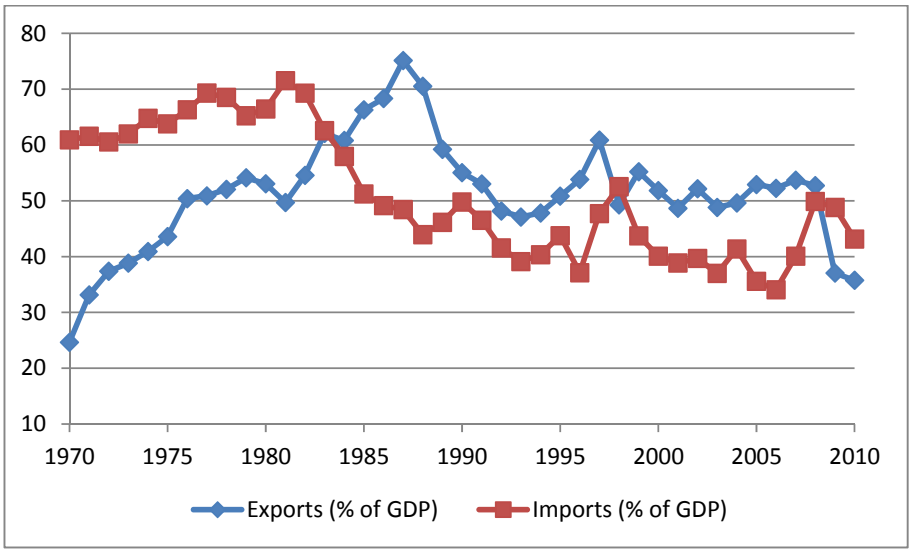


Figure 6a: Tariffs fell sharply, especially in manufacturing . . .



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 4-digit HS tariffs using 2000 imports as weights.

Figure 6b: . . . but import and export volumes held steady



Source: World Development Indicators.

Table 1: Mining initially drove sectoral productivity growth

	Labor Productivity Compound Annual Growth Rate				
	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
Economy-wide	**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 GGDC's ASD.

Table 2: Summary of Major Incentive Schemes

Incentive scheme	Objective	Status
Local Preference Scheme (1976)	To give local producers preference in the supply of goods for government contracts	Revised and superseded by the Local Procurement Program 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 that joint-ventures are now allowed
Financial Assistance Policy (1982)	Provided 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, wastage 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 subsidised funding, training and	Replaced the Financial Assistance Policy in 2001
Local Enterprise Agency (2007)	Providing business support services for SMMEs	In operation
Economic Diversification Drive (EDD) (2010)	Replaced Local Procurement Policy. Provides preference margins for locally registered companies in government procurement	In operation
Citizen Economic Empowerment (CEE) Policy (2012)	Restricts participation in certain government procurement to citizen-owned companies only	In operation

Source: Modified from BIDPA and World Bank (2006), pp. 22-23.

Table 3: Higher labor force participation

	Number of individuals			Percentage of working age individuals	
Activity	**1995/96**	**2005/06**	**% change**	**1995/96**	**2005/06**
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 enquiries	6,089	9,037	48.4	0.8	1.0
Waiting to start arranged job, 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 1995/96 and 2005/06 LFS data.

Notes: The sample is restricted to individuals aged 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.

Table 4a: High unemployment, particular for youth…

Excluding agriculture	Unemployment rate (%)		Labor force participation rate (%)	
	1995/96	2005/06	1995/96	2005/06
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 1995/96 and 2005/06 LFS data.

Notes: The sample is restricted to individuals aged 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. The unemployed include people who were available to work (but did not work) in the past 7 days, which includes workers that did not actively seek work. The labor force is defined as individuals that worked during the past 7 days, sought work, or were temporarily absent. The labor force participation rate differs from Table 3 due to the exclusion of agriculture.

Table 4b:…. and rising informality

Industry Description (excluding agriculture)	Percentage of informal workers		
	1995/96	2005/06	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 communication	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 1995/96 and 2005/06 LFSs.

Notes: The sample is restricted to workers aged 15 to 60 outside of agriculture, forestry, hunting, and fishing. Informal workers are all those workers in the private sector, employed at firms with less than ten employees and defined as informal in the survey by question 30 in the 1995/96 LFS and question 39 in the 2005/06 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.

Table 5: A major move out of construction and public administration

	Number of workers		Percentage of workers	
Industry Description	**1995/96**	**2005/06**	**1995/96**	**2005/06**
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 communication	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 1995/96 and 2005/06 LFS data.

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

Table A1: Trade Flows by Commodity Group, 1991-2005/06

		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	1991	91	2.33		4	0.65		129	3.36		99	2.71	
Products	2005/06	375	2.14	312	25	1.03	525	465	1.81	260	269	1.13	172
Vegetable Products	1991	184	4.71		62	10.03		12	0.31		10	0.27	
	2005/06	928	5.30	404	37	1.52	-40	42	0.16	250	12	0.05	20
Foodstuffs	1991	274	7.01		51	8.25		35	0.91		16	0.44	
	2005/06	1188	6.78	334	99	4.07	94	172	0.67	391	38	0.16	138
Mineral Products	1991	349	8.93		28	4.53		1	0.03		0	0.00	
	2005/06	3398	19.40	874	121	4.97	332	287	1.12	28600	257	1.08	
Chemicals and Allied	1991	196	5.02		15	2.43		34	0.88		11	0.30	
Industries	2005/06	1539	8.79	685	165	6.78	1000	177	0.69	421	95	0.40	764
Plastics/Rubber	1991	165	4.22		13	2.10		5	0.13		2	0.05	
	2005/06	688	3.93	317	66	2.71	408	76	0.30	1420	11	0.05	450
Raw Hides, Skins,	1991	13	0.33		4	0.65		24	0.62		17	0.47	
Leather	2005/06	34	0.19	162	4	0.16	0	32	0.12	33	6	0.03	-65
Wood and Wood	1991	213	5.45		32	5.18		6	0.16		4	0.11	
Products	2005/06	723	4.13	239	102	4.19	219	55	0.21	817	17	0.07	325
Textiles	1991	254	6.50		65	10.52		127	3.31		104	2.85	
	2005/06	688	3.93	171	133	5.46	105	1072	4.17	744	730	3.06	602
Footwear	1991	72	1.84		8	1.29		9	0.23		1	0.03	
	2005/06	200	1.14	178	22	0.90	175	11	0.04	22	2	0.01	100
Stones and Glass	1991	119	3.05		15	2.43		3031	78.89		3027	82.86	
(includes diamonds)	2005/06	567	3.24	376	258	10.60	1620	19349	75.24	538	19143	80.36	532
Metals	1991	449	11.49		36	5.83		332	8.64		323	8.84	
	2005/06	1420	8.11	216	143	5.87	297	3272	12.72	886	3060	12.85	847
Machinery/Electrical	1991	690	17.66		139	22.49		47	1.22		17	0.47	
	2005/06	3011	17.19	336	749	30.76	439	253	0.98	438	111	0.47	553
Transportation	1991	646	16.53		123	19.90		43	1.12		20	0.55	
	2005/06	2021	11.54	213	346	14.21	181	426	1.66	891	60	0.25	200
Miscellaneous	1991	192	4.91		23	3.72		7	0.18		2	0.05	
	2005/06	732	4.18	281	165	6.78	617	28	0.11	300	11	0.05	450
Total	**1991**	**3907**	**100.00**		**618**	**100.00**		**3842**	**100.00**		**3653**	**100.00**	
	2005/06	**17512**	**100.00**	**348**	**2435**	**100.00**	**294**	**25717**	**100.00**	**569**	**23822**	**100.00**	**552**

Source: Authors' calculations using UNCTAD & BIDPA data

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

Table A2: Botswana's top ten imports and exports, 1991 and 2005

	1991			2005		
Rank	Commodity	Value (million USD)	%	Commodity	Value (million USD)	%
Panel A: Top Ten 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, supersulphate 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 packin	74	2.7
5	Parts and accessories of motor vehicles	31	2.0	Parts of railway or tramway locomotives or rolling-stock.	65	2.4
6	Other aircraft (for example, helicopters, aeroplanes); spacecraft (including satellites) and suborbital and spacecraft launch vehicles.	29	1.8	Nickel ores and concentrates	59	2.2
7	Structures (excluding prefabricated 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, radio-telegraphy, radio-broadcasting or television, whether or not incorporating reception apparatus or sound recording or reproducing apparatus; 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 cement, slag cement, supersulphate cement and similar hydraulic cements, whether or not coloured or in the form of clinkers.	43	1.6
10	New pneumatic tyres, of rubber	22	1.4	Self-propelled bulldozers, angledozers, graders, levellers, scrapers, mechanical shovels, excavators, shovel loaders, tamping machines and road rollers.	36	1.3
Panel B: Top Ten 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 UNCTAD & BIDPA data

Table A3: Top ten source countries for imports and destination countries for exports, 1991 and 2005

	1991			2005		
Rank	Country	Value (million USD)	%	Country	Value (million USD)	%
Panel A: Top Ten Source Countries (Imports)						
1	South Africa	1586	84.7	South Africa	2632	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 I	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 Ten Destination Countries (Exports)						
1	Switzerland	1458	79.5	United Kingdom	3350	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 UNCTAD & BIDPA data

Table B1: A possible case of measurement error

Comparison of employment estimates

	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**

Sources: The Africa Sector Database employment estimates are from the Groningen Growth and Development Centre (de Vries, Timmer, and de Vries 2013). The LFS estimates are the authors own calculations using the 2005/06 LFS.

Notes: Current activity refers to the past 7 days and main activity refers to the past 12 months.