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SELECTED ISSUES

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Approved By
The African Department

Prepared By Ara Stepanyan and Friska Parulian (both AFR).

CONTENTS

FISCAL POLICY IMPLICATIONS FOR LABOR MARKET OUTCOMES IN MIDDLE-INCOME COUNTRIES[1]

Many governments have initiated public employment programs or expanded the existing ones in response to high unemployment. However, in many middle-income countries, a relatively large government coexists with persistently high unemployment. This chapter explores the question of whether public employment gives rise to distortions in the labor market. Staff's analysis shows that large public employment does significantly affect labor market outcomes in middle-income countries, including in Botswana, and leads to job destruction in the private sector. This extent of the impact is largely influenced by the degree of substitutability between public and private production and the size of the wage premium of the public sector. Thus, reforms aimed at reducing the rents and the size of the public sector, will likely significantly improve labor market outcomes in middle-income countries, including Botswana.

A.   Introduction

1.   **Policymakers sometimes view the expansion of public employment as a useful tool to reduce high unemployment, and public employment programs motivated by such considerations are common**. This is probably one of the reasons public employment accounts for an important share of total employment in many upper-middle-income countries (UMICs). However, in many UMICs, a relatively large size of government coexists with persistently high unemployment.

2.   **The academic literature has largely concentrated on explaining the differences in unemployment rates across countries by the heterogeneity of labor market institutions.** Given significant heterogeneity of public employment across countries, it is worth exploring whether this heterogeneity could also explain cross-country differences in unemployment.

3.   **In theory, creation of public jobs has an ambiguous impact on unemployment.** If private employment and the labor force are given, an additional public job would reduce unemployment. However, public employment can also affect unemployment indirectly, through private employment and labor-force participation. In this chapter, we analyze and evaluate the impact of public employment on labor market performance for 24 UMICs.

4.   **The results of our study confirm that public employment does negatively affect the performance of the labor market.** This suggests that reforms aimed at reducing the rents and the size of the public sector may significantly improve labor market performance. The impact of public-

[1] Prepared by Ara Stepanyan.

[2] The works done by Algan, Cahuc, and Zylberberg (2002) and Behar and Mok (2013) are the most relevant to this paper.
[3] We followed a similar simple theoretical framework, as outlined in Algan, Cahuc, and Zylberberg (2002).
[4] For more details see Holmlund and Linden, 1993; and Holmlund, 1997.

sector employment depends on the degree of substitutability between public and private production and on the size of job compensation in the public sector. Our results suggest that creation of 100 public-sector jobs on average destroyed 70 private-sector jobs and increased the number of unemployed people by 20 in the countries considered in 1995–2011. The comparison of the impact of public employment on unemployment and private employment suggests that creation of public jobs increased labor-force participation. The intuition behind the main transmission channel of the impact of public employment on labor market outcomes is similar to the one identified by Leigh and Flores (2011): large numbers of well-paying public jobs attract many people to the public sector, influencing their schooling decisions and eventually giving rise to a skill mismatch in the labor market.

5.   **The rest of the paper is organized as follows:** Section B provides the literature review; Section C covers the methodology; Section D presents the empirical results and data issues; and Section E discusses the conclusions and policy implications for Botswana and other UMICs.

B.   Literature Review

6.   **To the best of our knowledge, very little has been written on the macroeconomic impact of public employment on the labor market, particularly for developing countries**. Two comprehensive surveys of public-sector labor markets, Ehrenberg and Schwarz (1986) and Gregory and Borland (1999) show that studies of public employment in industrialized countries have mainly focused on the internal organization of the public sector, especially the influence of trade unions, and on wage differentials between the private and the public sectors. Holmlund and Linden (1993) and Calmfors and Lang (1995) study the macroeconomic effect of temporary employment programs, arguing that temporary public jobs increase wage pressure in the private sector. These papers both conclude that wage pressure from public jobs reduces private employment. Holmlund (1997) offers more insight on the relationship between the public sector and unemployment in a trade-union model. He shows that public-sector expansion increases equilibrium unemployment if unions are relatively more powerful in the public sector than in the private sector. Finn (1998) analyzes the impact of goods purchases and employee compensation components of government spending on unemployment in a real business cycle model applied to the U.S. economy. The results suggest that positive shocks to government goods purchases increase private output and private employment, while positive shocks to government employment have the opposite effects.

7.   **The empirical literature suggests some evidence of crowding-out effect of public employment on private employment**. Some time series analyses done by Demekas and Kontolemis (2000) for Greece and by Malley and Moutos (2001) for Germany, Japan, and the United States suggest that public employment has a strong crowding-out effect on private employment. Edin and Holmlund (1997), using pooled cross-section and annual time series data for 22 Organization for Economic Co-operation and Development (OECD) countries in 1968–90, show that public-sector employment decreases unemployment in the short run, whereas there is no significant long-run effect. Boeri, Nicoletti, and Scarpetta (2000) include public employment, along with labor market institutions, as an explanatory variable for the nonagricultural employment rate for 19 industrialized OECD countries in 1982–95. Their estimate implies that one public job crowds out 0.3

private jobs. Algan, Cahuc, and Zylberberg (2002) in their study show that public employment is a significant factor influencing the performance of labor markets. They find that creation of one public job crowds out 1.5 private jobs and increases the number of unemployed by 0.3. Behar and Mok (2013) analyze a large cross-section of developing and advanced countries and find full crowding-out effects of public employment on private employment.[2] Feldmann (2009) uses data from 58 countries in 1980–2003 to analyze how the size of government affects unemployment in developing countries. According to the results, a large share of government consumption in total consumption and a large share of transfers and subsidies in GDP increase unemployment.

C.   Methodology

8.   **In this paper, we analyzed the direction and the magnitude of public jobs' impact on the unemployment rate and private employment.[3]** This framework focuses on the role of rents in the public sector and the degree of substitutability of public and private employment. It does not incorporate the distortionary impact of taxes in financing for public jobs, thus providing a partial view. Our aim is to analyze medium-term effects of public job creation on labor market performance. This work does not capture the effects of nominal rigidities and demand movements that may play an important role in the impact of public-sector job creation on labor market outcomes in the short run.

9.   **In theory, the impact of public employment on unemployment is ambiguous.** Given the level of private employment and the labor force, an additional public job would reduce unemployment. However, public employment can affect private employment and labor-force participation and thus indirectly influence unemployment. In general, public jobs could affect private employment by (i) producing goods substitutable to those produced by the private sector; (ii) improving the expected gains of the unemployed workers, which increases wage pressure and decreases private employment;[4] and (iii) increasing distortionary taxes or giving rise to public expenditure switching to finance public job creation.

10.   **The impact of public jobs on labor-force participation could also go either way.** To the extent that public job creation improves the job-finding and wage outlook for the unemployed workers, it encourages labor-force participation and, other things equal, increases unemployment. However, if the public sector produces goods that increase incentives for their citizens to stay out of the labor force, it would negatively affect the participation rate.

11.   **We propose a theoretical framework where a representative private-sector firm produces goods with decreasing returns to labor, while the public sector produces a public**

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[2] The works done by Algan, Cahuc, and Zylberberg (2002) and Behar and Mok (2013) are the most relevant to this paper.
[3] We followed a similar simple theoretical framework, as outlined in Algan, Cahuc, and Zylberberg (2002).
[4] For more details see Holmlund and Linden, 1993; and Holmlund, 1997.

good consumed by all individuals.[5] In the private sector, wages are determined by collective bargaining. All workers in the private sector are represented by a trade union that bargains wages with the representative firm. In this framework, some positive level of unemployment is needed to stabilize wages. It is assumed that unemployed workers can look either for a public or for a private job, but not for both types of jobs at the same time.[6] We assume that firms have the right to manage their employment. Thus, the wage is equal to the marginal product of labor. Accordingly, the private wage and the unemployment rate in the private sector are determined by the intercept of a vertical wage curve and an increasing labor demand curve. In this situation, the private unemployment rate depends on the bargaining power of workers and on the features of the production function in the private sector.[7]

12.   **A benevolent government sets public employment and negotiates the wage in the public sector with a trade union that represents public-sector workers**. The benevolent government aims at maximizing the difference between the social value of the public good and its cost. In equilibrium, the public–private wage ratio depends on the bargaining power of trade unions in both sectors, and on the elasticity of private and public labor demands (equation A14 in Appendix A). Public employment is determined in a way that ensures public wages are equal to the marginal benefits of public employment (equation A15 in Appendix A).

13.   **The expected returns on looking for a job in the public sector are obviously increasing with the number of public jobs and with the public wage level.** Therefore, the share of the labor force that belongs to the public sector (including public employment and those looking for a job in the public sector) increases with the number of public jobs and the level of the public wages relative to private wages (equation A8 in Appendix A). Thus, public job creation attracts workers into the public sector at the cost of the private sector if the relative wage between public and private sectors is constant. Given the participation rate, this will crowd out private jobs, and the crowding-out effect would be stronger when wages in the public sector are higher than private sector wages, attracting more workers to the public sector (equation A9 in Appendix A).

14.   **The consequence of increased public jobs on the unemployment rate depends on the size of the crowding-out effect on the private sector.** The crowding-out effect of public job creation implies a reduction in private employment, which increases the marginal productivity of labor and therefore wages in the private sector. When the size of the labor force is taken as given, the creation of one public job decreases unemployment only if the crowding-out effect is less than one. Because the crowding-out effect increases with the relative level of the public wage, our theoretical framework suggests that public job creation decreases the economy-wide

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[5] A detailed description of the theoretical model is presented in Appendix A.
[6] This assumption, while not essential for the qualitative results of our analysis, conveniently simplifies our reasoning and may well be realistic, because in many countries the public-sector hiring process is very different from that in the private sector.
[7] Because the (steady state) equilibrium private unemployment rate does not depend on the size of the labor force, it is independent of the number of workers who belong to the private sector.

unemployment rate only if wages in the public sector are below private-sector wages (equation A10 in Appendix A).

15. **The role of the substitutability between private and public production can be demonstrated through public jobs' impact on labor-force participation.** By improving employment opportunities, public job creation is likely to increase the size of the labor force (equation A11 in Appendix A). However, public jobs can influence private-sector productivity as well. If by creating public jobs the government produces goods not substitutable to private goods, such as justice and police, it increases productivity and pushes up wages in the private sector, positively influencing the participation rate. If public jobs produce goods that are substitutable to those produced by the private sector, the relative price of goods produced by the private sector will decrease, negatively influencing the wages and participation rate in the private sector.

16. **The theoretical framework allows us to describe the determinants of public employment and private employment through two behavioral relationships:** (i) private employment (or unemployment rate) depends on productivity in the private sector, labor market institutions, and public employment; (ii) public employment depends on the valuation of public goods, on productivity in both sectors, and on labor market institutions.

D. Empirical Results

Data

17. **Our empirical analysis is based on the data for 24 upper-middle-income countries in 1995–2011.[8]** The main sources for standard labor market data are the Key Indicators of the Labor Market (KILM) and LABORSTA databases from the International Labor Organization (ILO), and different publications of countries' statistical offices and other agencies. We used a narrow definition of public employment, which does not include employment by state-owned enterprises. To remove the effect of cyclical fluctuations, we averaged the time-dependent macroeconomic variables over three-year periods.[9] Because of joint determination of public employment's and aggregate unemployment's evolution over time, we instrument public employment using variables meant to capture fairly general features of economic and sociological cross-country variation. We use the urbanization rate and productivity as measures of economic development, which are related to public infrastructures, spending, and employment growth on the basis of "Wagner's law."[10] The population density is used to capture the fixed cost of providing government services. We use exposure to international trade, which is predicted by many theories to have important effects on public employment. Higher foreign exposure should reduce the size of the public sector if

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[8] The sample size was subject to the availability of data across of our cross-country sample.
[9] Data limitations prevent us from averaging time-varying series over a five-year period. Given that three year averages may not fully assume away the impact of transitory shocks, in the forthcoming Working Paper version we plan to run additional regressions controlling for episodes of protracted recessions as a robustness check.
[10] See Musgrave (1985).

international tax competition is an important constraint on public policy, but a larger public sector may be observed in a risk-reducing role when economies are more significantly exposed to external shocks (Rodrik, 1997). Also five features of the wage-setting and labor-employer framework from the World Economic Forum are included: an index of cooperation in labor-employer relations; flexibility of wage determination; rigidity of employment; hiring and firing practices; and redundancy costs.

Stylized Facts

18. **Our data analysis over time and across countries reveals significant heterogeneities.** The share of public employment in total employment averages 13 percent across countries in the sample for 1995–2011, and in 60 percent of countries it increased over time (Table I.1). In 2011, the share of public employment in total employment ranged from 4.7 percent in Kazakhstan to 33.4 percent in Namibia, highlighting the heterogeneity in public employment among UMICs.

Table 1. Selected UMICs: Public Employment and Unemployment Rate, 1995–2011					
	Public Employment in Total		Standard deviation		Correlation (u, Lg)
	1995–2011	The Latest Available	Unemployment (u)	Public employment (Lg)	
Albania	14.5	17.7	5.8	0.8	-0.35
Belarus	24.0	23.9	1.0	0.4	-0.54
Botswana	16.0	20.9	2.7	0.3	0.26
Brazil	10.6	10.9	2.5	0.9	0.74 *
Chile	9.4	10.3	3.7	0.4	0.39
Colombia	5.3	5.0	3.1	0.9	0.62 *
Costa Rica	12.3	11.8	1.4	0.6	-0.32
Dominican Republic	4.6	4.8	2.0	0.2	-0.53
Jordan	18.0	15.8	3.4	1.5	0.07
Kazakhstan	5.2	4.7	2.8	0.9	0.38
Malaysia	10.8	12.5	1.8	1.3	0.74 *
Mauritius	14.0	13.8	4.6	0.2	0.63 *
Mexico	4.9	5.0	1.3	0.1	-0.27
Namibia	33.2	33.4	4.2	0.3	-0.46
Panama	9.6	8.8	4.0	0.1	0.54 *
Peru	9.0	9.7	1.5	0.4	-0.84
Romania	3.5	4.8	2.3	0.3	0.06
Russian Federation	7.6	7.8	2.1	0.3	0.15
Seychelles	29.2	19.7	1.7	1.0	-0.53
South Africa	11.4	12.5	5.3	2.3	-0.07
Thailand	8.2	10.0	1.1	0.6	-0.28
Turkey	14.6	13.3	1.7	0.7	-0.84
Ukraine	32.4	19.6	2.2	6.5	0.82 *
Uruguay	14.2	14.8	3.0	0.9	-0.57

Source: International Labor Organization, country authorities, and IMF staff calculations.
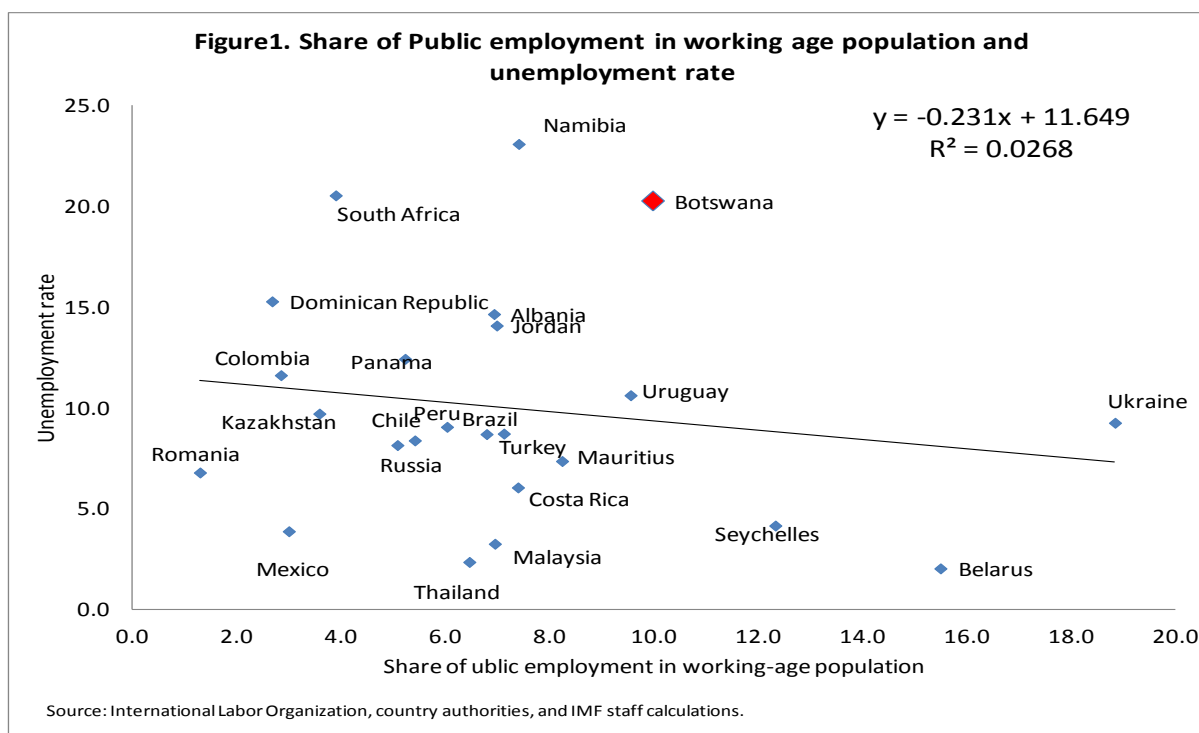* $p<0.05$.

19. **There is a high degree of heterogeneity in the dynamics of public employment as well.** In two countries (Mexico, Costa Rica) of our sample, public employment as a share of working-age

population was stable over time; for five countries (Belarus, Chile, Malaysia, Peru, Thailand) the share of public employment increased steadily in 1995–2008; in three countries (Jordan, Kazakhstan, Turkey) the share of public employment in the working-age population has steadily decreased over time; and in the remaining countries there were large swings in the share of public employment.

20.   **In many countries, policymakers respond to a high level of unemployment by creating new public jobs or expanding existing public employment programs.** While Table I.1 suggests that in more than half of the countries in our sample the correlation between public employment and unemployment rate is positive, the positive correlation is statistically significant only in 25 percent of countries. This could reflect governments' response to increasing unemployment in these countries. The cross-country dimension of the data suggests a negative, though statistically insignificant, correlation between the public employment and unemployment rates (Figure I.1).[11] However, over time, causation could run in the opposite direction: public employment may add to unemployment if public job creation causes destruction of private jobs.

Figure 1. Share of Public Employment in Working Age Population and Unemployment Rate, Average 1995—2011

Figure1. Share of Public employment in working age population and unemployment rate

$y = -0.231x + 11.649$
$R^2 = 0.0268$

Source: International Labor Organization, country authorities, and IMF staff calculations.

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[11] Ukraine and Belarus play a significant role in generating the negative correlation. This reflects the fact that in both countries the share of public employment in working age population was broadly stable at relatively high level, while unemployment has decreased and stabilized at low level.

Econometric analysis

21.   **The literature traditionally explains unemployment dispersion across countries by the underlying heterogeneity in national labor market features.** However, as illustrated in Table I.1, heterogeneity is significant among countries regarding their level of public employment. We test whether this cross-country variation in public employment also matters in explaining the variation in unemployment. First, we link unemployment to traditional labor market institutional variables. Then we add public employment and estimate the marginal impact of this variable on unemployment. We also control for global shocks by introducing a full set of period dummies. For each model specification, we report pooled ordinary least squares (OLS), generalized least squares (GLS), fixed effect[12] estimates, and estimates with errors robust to the country clustering. To further explore the channel through which public employment affects unemployment, we estimate its impact on private employment as well.

Table 2. Estimates of Unemployment Based on Labor Market Institutions and Public Employment					
	OLS: Institutions	OLS: Institutions and Public Employment	Fixed Effect: Institutions and Public Employment	GLS: Institutions	GLS: Institutions and Public Employment
	1	2	3	4	5
Public employment		-0.0448	0.232*		0.19
		(0.13)	(0.137) [0.105]**		(0.127) [0.114]*
Cooperation in labor-employer relations	-2.367***	-1.989**		-2.465	-2.105
	(0.87)	(0.94)		(2.201) [1.591]	(2.271) [1.654]
Flexibility of wage determination	0.626	0.46		0.621	0.938
	(0.72)	(0.83)		(1.83) [1.666]	(1.893) [1.682]
Rigidity of employment	-0.138***	-0.126***		-0.14	-0.136
	(0.03)	(0.04)		(0.088) [0.072]*	(0.0905) [0.076]*
Hiring and firing practices	-4.304***	-3.742***		-4.224*	-5.177**
	(1.01)	(1.19)		(2.525) [2.606]	(2.633) [2.636]**
Redundancy costs	0.0310*	0.0315*		0.0332	0.0406
	(0.02)	(0.02)		(0.0404) [0.028]	(0.0418) [0.029]
Time effect	Yes	Yes	Yes	Yes	Yes
Number of observations	148	128	128	148	
R-squared	0.268	0.235	0.183		

(Standard errors)--[Standard errors robust to country clustering].
*** p<0.01, ** p<0.05, * p<0.1

22.   **Tables.2 and 3 present the unemployment and private employment regression results.** In the equations without public employment (columns 1 and 4) labor market institutions provide some explanation for the cross-country differences in the unemployment rate. However, most of them become insignificant when using GLS estimators. The only significant factor in all specifications is hiring and firing practices, which suggest a more flexible labor market practice is associated with lower unemployment. The cooperation in labor-employer relations and rigidity of employment has

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[12] The variables describing labor market institutions have displayed small variations over the last few decades. Therefore, traditionally they are considered as time invariant in this literature and capture fixed country effects.

significant negative impact on unemployment only in the OLS specification. Public employment appears to have a statistically significant effect on unemployment at least at the 10 percent level for fixed effect and GLS methods, suggesting public employment is a key factor in explaining unemployment in addition to institutional variables. Public employment is statistically significant at the 5 percent level and has a negative impact on private employment only in the OLS regression (Table I.3). However, all estimates presented in Tables I.2 and I.3 are distorted by the endogeneity bias, because public employment, private employment, and unemployment are jointly determined.

	OLS: Institutions	OLS: Institutions and Public Employment	Fixed Effect: Institutions and Public Employment	GLS: Institutions	GLS: Institutions and Public Employment
	1	2	3	4	5
Public employment		-0.696**	0.15		-0.0467
		(0.32)	(0.394) [0.366]		(0.355) [0.43]
Cooperation in labor-employer relations	3.562	2.648		3.223	3.164
	(2.26)	(2.26)		(5.434) [4.72]	(5.438) [4.78]
Flexibility of wage determination	-5.023**	-5.972***		-4.654	-4.715
	(1.97)	(1.99)		(4.525) [4.066]	(4.536) [4.08]
Rigidity of employment	0.165*	0.157*		0.254	0.253
	(0.09)	(0.09)		(0.217) [0.191]	(0.217) [0.19]
Hiring and firing practices	7.975***	10.21***		8.716	8.868
	(2.69)	(2.83)		(6.238) [6.383]	(6.327) [6.40]
Redundancy costs	0.0866**	0.0715*		0.113	0.112
	(0.04)	(0.04)		(0.01) [0.01]	(0.1) [0.1]
Time effect	Yes	Yes	Yes	Yes	Yes
Number of observations	124	124	124	124	124
R-squared	0.166	0.201	0.057		

Table 3. Estimates of Private Employment Based on Labor Market Institutions and Public Employment

(Standard errors)--[Standard errors robust to country clustering].
*** p<0.01, ** p<0.05, * p<0.1

23.   **To address the inherent endogeneity bias, we use a two-stage least squares estimation method (TSLS).** We instrument public employment by the urbanization rate, population density, and trade openness. These are excluded instruments because they are not included as exogenous regressors in our original model specification. Table I.4 presents TSLS regressions for unemployment and private employment in two specifications: (i) with country-specific effects and (ii) with variables for labor market institutions instead of country-specific effects.[13] Based on the regression with country-specific effects, public employment has a positive and statistically significant impact on unemployment, which is much stronger than the estimates based on GLS and fixed-effect regressions (Table I.2). Although the impact of public employment on private employment is negative in this regression, it is statistically insignificant. In the regression with labor market

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[13] All instruments included in the first stage individually have statistically significant impact on public employment. F statistics of the fists stage of TSLS regressions for both equations is about 2. While this assumes that coefficients of all instruments jointly are different from 0 at 95 percent confidence level, it also suggests that our instruments are not very strong.

institutions the impact of public employment on private employment is negative and statistically significant, suggesting a crowding-out effect of public employment on private employment.

Table 4. Two-Stage Estimates of Unemployment and Private Employment				
	2SLS		2SLS	
	Unemployment	Private Employment	Unemployment	Private Employment
Public employment	1.073*	-0.337	0.292	-1.074*
	(0.55)	(1.30)	(0.28)	(0.65)
Cooperation in labor-employer relations			-2.036	3.331
			(2.28)	(5.60)
Flexibility of wage determination			1.095	-6.418
			(1.92)	(4.71)
Rigidity of employment			-0.150*	0.219
			(0.09)	(0.22)
Hiring and firing practices			-5.881**	10.88
			(2.71)	(6.63)
Redundancy costs			0.0445	0.0873
			(0.04)	(0.10)
Fixed effect	Yes	Yes	No	No
Time effect	Yes	Yes	Yes	Yes
Number of observations	127	123	103	100
R-squared	0.268	0.235	0.152	0.183
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1				

24. **As an alternative to TSLS estimation, we estimated simultaneous equation regressions.** Based on our theoretical model, the unemployment rate or private employment is defined as a function of public employment, productivity, and labor market institutions. Meanwhile, public employment is linked with productivity, labor market institutions, and valuation of public goods. The weight attached to public goods in policymaking is determined by the urbanization rate, population density, and trade openness. These factors do not affect the unemployment rate and therefore can be used as instruments. The level of productivity entering the equations is proxied by GDP per capita, which is specified in first differences consistent with "Okun's law." Similar to TSLS, we estimate simultaneous equations in two specifications: (i) with variables on labor market institutions and (ii) with country-specific effects instead of labor market institutions.

Table 5. Three-Stage Least Squares Estimates of Simultaneous Equations: Unemployment-Public Employment and Private Employment-Public Employment

	Unemployment	Public Employment	Private Employment	Public Employment
Country-specific effects:				
Public employment	0.299***		-0.15	
	(0.11)		(0.28)	
Change in productivity	-3.277***	0.999	4.107*	0.96
	(0.90)	(0.72)	(2.31)	(0.75)
Urbanization rate		0.141		0.12
		(0.09)		(0.09)
Population density		0.0894***		0.0960***
		(0.03)		(0.03)
Foreign trade openness		2.183*		3.106**
		(1.14)		(1.25)
Fixed effect	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes
Number of observations	109	109	105	105
R-squared	0.941	0.929	0.937	0.925
Institutional variables:				
Public employment	-0.192		-0.706**	
	(0.13)		(0.33)	
Change in productivity	-0.072	0.20	7.372	0.223
	(3.00)	(2.00)	(7.49)	(2.01)
Urbanization rate		0.0841***		0.0750***
		(0.03)		(0.03)
Population density		0.0013		0.000628
		(0.00)		(0.00)
Foreign trade openness		4.638***		4.334***
		(0.97)		(0.98)
Cooperation in labor-employer relations	-2.394**	-2.362***	4.929*	-2.358***
	(1.05)	(0.73)	(2.63)	(0.74)
Flexibility of wage determination	0.40	-1.530***	-7.193***	-1.448**
	(0.89)	(0.59)	(2.20)	(0.58)
Rigidity of employment	-0.144***	(0.03)	0.189*	-0.0311
	(0.04)	(0.03)	(0.10)	(0.03)
Hiring and firing practices	-3.344***	3.255***	9.970***	3.245***
	(1.25)	(0.81)	(3.10)	(0.80)
Redundancy costs	0.0314*	-0.0178	0.0852*	-0.0139
	(0.02)	(0.01)	(0.05)	(0.01)
Fixed effect	No	No	No	No
Time effect	Yes	Yes	Yes	Yes
Number of observations	109.00	109.00	105	105
R-squared	0.243	0.384	0.214	0.372

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

25.   **Table 5 reports estimated coefficients for simultaneous equation regressions.** We estimated four simultaneous equation systems: unemployment–public employment and private employment–public employment with country-specific effects and with institutional variables instead of country-specific effects. The impact of public employment on the unemployment rate is still positive and statistically significant in the specification with country-specific effects. The coefficient is very close to the one obtained in the fixed effects and GLS regressions (0.299 against 0.232 and 0.190 respectively), highlighting the robustness of this relationship. However, the coefficient obtained in the two-stage least squares regression is much higher. To interpret this result, it is helpful to compute explicitly the impact of public employment on the number of unemployed workers. The coefficient of the impact of public employment on unemployment is 0.299 with a standard error of 0.11. This implies that creation of 100 public jobs adds about 20 unemployed workers with the 95 percent confidence interval of [10, 40].[14] In this specification the impact of public employment on private employment, while negative, is not statistically significant.

26.   **We find that public employment's impact on private employment is negative and statistically significant in the regression specification with labor market institutions.** The coefficient is very close to the one obtained in the OLS regression (-0.706 against -0.696) and slightly smaller compared with the one obtained in the two-stage least squares regression (-0.706 against -1.074). This negative relationship suggests that public employment crowds out private employment, implying that creation of 100 public jobs destroys 70 private jobs on average with the confidence interval of [-137, -5].[15] This is a larger effect than the one identified by Boeri, Nicoletti, and Scarpetta (2000), who estimate a distraction of 30 private jobs in response to the creation of 100 public jobs, but smaller than the estimates by Algan, Cahuc, and Zylberberg (2002) and Behar and Mok (2013), who estimated 150 and 100 crowding-out effects respectively. The comparison of the results of the crowding-out effect of public employment on private employment with those obtained on the impact of public employment on the unemployment rate suggests that public employment increases participation in the labor market. Because the creation of 100 public jobs destroys about 70 private jobs and increases the number of unemployed by 20, it brings about 50 individuals into the labor force.[16]

27.   **Trade openness appears to be the most significant variable determining public employment.** It is significant at least at the 10 percent level in all specifications of the three-stage least squares regressions. This is also consistent with Rodrik's (1997) findings. Although productivity growth increases public employment in line with Wagner's law, its effect is not statistically significant. Population density is significant in the regression with country-specific effects but loses its significance when labor market institutions are added to the regression. In contrast, the

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[14] If the unemployment rate in the regression is a fraction of labor force (*LF*), while the public employment (*PE*) is a fraction of working-age population (*WA*), we have $dU = 0.299* (LF/WA)*dPE$. As (LF/WA) on average is 0.696, we have the estimated 0.2 effect on the number of unemployed people.
[15] Because both public and private employment (*PRE*) are fractions of working-age population, we have that $dPRE = -0.7*d.PE$.
[16] The 95 percent confidence interval of this effect is [-40, 135].

urbanization rate is significant in the regression with labor market institutions and insignificant in the regression with country-specific effects. These estimates should be interpreted with caution.

28. **The analysis below looks at the countries where public employment destroys many jobs.** The theoretical model suggests that these interactions should differ across countries according to two main criteria: (i) the size of rents in the public sector and (ii) the degree of substitutability between public and private production. As a natural proxy for the public-sector rent, we use the relative wage of the public sector with respect to private sector.[17] However, wage differentials do not fully account for the relative attractiveness of public employment, which also depends on working conditions, power and hierarchy aspects, job security, and other hard-to-measure characteristics. Therefore, we also use the Corruption Perception Index as an indirect measure of public-sector rent. Based on the relative wage indicator, in about 80 percent of the countries considered, public wages are above private wages. Given that the data on the shares of employment across different public activities is not available for a large set of countries, we use public expenditure based measures to cluster our countries by the substitutability criteria. We use two indicators: (i) the share of public spending on the health sector in total government spending—high substitutability and (ii) the share of public spending in total public expenditure devoted to defense, justice, and general administration—low substitutability.

29. **We find that the distortionary impact of public employment is stronger in countries with high public-sector rents and public production is highly substitutable with the private sector.** We estimate simultaneous equation regressions based on splitting the sample according to the rent in the public sector and degree of substitutability. In all country group regressions, but substitutability based on health expenditure, public employment has a positive and statistically significant effect on the unemployment rate (Table I.6). In addition, the coefficient of public employment is larger than it was in the regression with the full sample, suggesting public employment's impact on the unemployment rate is much stronger in the countries with higher rents for public jobs or higher substitutability between public and private production. Similarly, the impact of public employment on private employment is statistically significant and much more negative than it was for the full sample. This implies that public employment destroys more jobs in countries where public-sector wages are higher relative to private-sector wages, and the public sector produces goods highly substitutable with private production.

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[17] We do not have relative wage data for two countries in our sample.

Table 6. Three-Stage Least Squares Estimates of Public Employment Impact on Unemployment and Private Employment Based on the Size of Public Rent and the Substitutability of Public Production

	High Wage Premium	High Corruption	High Public Goods Substitutability (Spending on Defense)	High Public Goods Substitutability (Spending on Health)
Unemployment rate				
Public employment	0.464*	0.219**	0.334***	0.321
	(0.28)	(0.10)	(0.09)	(0.35)
Productivity	-2.480**	-2.646***	-4.751***	-2.819*
	(1.21)	(0.94)	(0.91)	(1.62)
Fixed effect	Yes	Yes	Yes	Yes
Time effects	Yes*	Yes*	Yes*	Yes*
R-squared	0.935	0.94	0.967	0.924
Number of observations	83	54	48	60
Private employment				
Public employment	-1.451**	-0.192	-1.125***	-1.882**
	(0.69)	(0.36)	(0.30)	(0.82)
Productivity	3.961	6.832*	10.1	1.27
	(3.11)	(3.63)	(6.29)	(4.11)
Fixed effect	Yes	Yes	Yes	Yes
Time effects	Yes*	Yes*	Yes*	Yes*
R-squared	0.935	0.868	0.43	0.947
Number of observations	80	53	45	56

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

E. Conclusions

30.   **Policymakers often use public employment programs as a response to persistently high level of unemployment.** While in the short-run there might be some gains, in the long-run, public employment may well increase unemployment. Public job creation could cause the destruction of private jobs through, for example, increasing labor taxes or exerting competitive pressure on private producers' output and wages in the labor market in general.

31.   **The results of our study suggest that public employment and wage policies in MICs have significant impact on labor market outcomes in the medium term.** This supports the need for reforms to reduce the rents and the size of the public sector to improve labor market performance. A large pool of well-paid public jobs creates biased incentives and attracts many people into the public sector, influencing their schooling decisions and eventually giving rise to a skill mismatch in the labor market. The negative impact of public employment on labor market outcomes is amplified when the government hires workers to produce goods substitutable with private sector goods, putting competitive pressure on private producers' output. The main findings of our cross-country empirical work are the following:

- Increased public employment, on average, crowded out private employment in the selected middle-income countries (MICs) of our sample during the period 1995–2011. Thus, creation of 100 public jobs, on average, destroys 70 private jobs, increases the number of unemployed by 20, and increases labor-force participation by 50.

- The impact of the public sector employment on unemployment and private employment is stronger in countries with higher public-sector wage premiums and higher substitutability between public and private production.

32.   **However, our results should be interpreted with some caution.** They do not provide an assessment for the optimal level or size of public employment in MICs. To determine the optimal level of public employment for these countries, policymakers should take into account a number of other country-specific features, such as exposure to international trade, the level of education, the size of the country, the degree of urbanization, and access to natural resources.[18] However, our results underscore the need for aligning public-sector wages with those of the private sector, and for the public sector to provide complementary goods to the private sector, to improve labor market outcomes in these countries.

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[18] For more details see Hart O., A. Shleifer and R. Vishny, 1997; Rodrik, 1998; IMF (February 2013), "Macroeconomic Issues in Small States and Implications for Fund Engagement.

Appendix 1. Theoretical Model

We consider a labor market with private and public jobs. Working-age population is normalized to 1, and N ≤ 1 denotes labor market participation. In the private sector, a representative firm produces output using labor as the only factor in the production function:

$$AF(L_p) = AL_p^a/a, \ a \in [0,1], \ A > 0,$$

where L_p denotes private employment.
There are L_g jobs in the public sector, each producing a unit of a public good. All individuals have the same preferences, and an individual whose income is w has the following utility:

$$w + H(L_g), \text{ with } H'(\bullet) > 0, H''(\bullet) < 0.$$

Unemployed workers have no income, and only derive utility from the public good. There is no job-to-job mobility. The unemployed workers ($U = N - L_p - L_g$) can search either for a public job or for a private job. In equilibrium, they must be indifferent between the two choices on the basis of rational expectations as to wages and employment prospects in the two sectors.

A trade union aims at maximizing the total utility of the N_p workers who belong to the private sector. If the expected utility of an unemployed worker in the private sector is

$$Z_p = u_p H(L_g) + (1 - u_p)[w_p + H(L_g)] = H(L_g) + (1 - u_p)w_p \quad \text{(A1)}$$

where w_p and $u_p = (N_p - L_p)/N_p)$ are the wage and the unemployment rate in the private sector. The objective of the trade union is

$$V_p = L_p[w_p + H(L_g)] + Max(N_p - L_p, 0)Z_p \quad \text{(A2)}$$

The implications of this simple model are qualitatively similar to those of a model with explicit flows between employment and unemployment.[19] A standard right-to-manage Nash (1950) bargaining program with $\pi \in [0, 1]$ bargaining power of workers and disagreement payoffs N_pZ_p for the union and zero for the firm yields the following condition:

$$\max_{w_p} L_p^\pi [w_p + H(L_g) - Z_p]^\pi [F(L_p) - w_p L_p]^{1-\pi} \qquad \text{s.t. } AF'(L_p) \qquad \text{(A3)}$$

$$AF'(L_p) = w_p = \mu_p [Z_p - H(L_g)], \ \mu_p = \frac{a+\pi(1-a)}{a} \geq 1 \quad \text{(A4)}$$

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[19] See Layard, R., S. Nickell, and R. Jackman (1991).

This provides an interior solution with $L_p < N_p$.[20] The Cobb–Douglas technology implies that the unemployment rate is independent of the labor-force size, and only depends on the wage markup μ_p in the private sector. By substituting (A4) in (A1) we have.

$$u_p = \frac{\mu_p - 1}{\mu_p} \qquad (A5)$$

Thus, private-sector unemployment is not directly influenced by public employment, which can affect aggregate unemployment by altering the allocation of N_g and N_p workers to the two sectors. Hence, the private wage, $w_p = AF'[N_p(1 - u_p)]$, is also influenced by the size of the public sector through changes in N_p.

In the public sector, the job-finding probability is L_g/N_g. Thus, the expected utility of a worker who looks for a job in the public sector is

$$Z_g = H(L_g) + \frac{L_g w_g}{N_g} \qquad (A6)$$

where w_g denotes the wage in the public sector. For simplicity, let the wage in the public sector be proportional to the private wage, $w_g = \lambda w_p$, where $\lambda > 0$ measures the relative level of public-sector wages with respect to private-sector wages.[21]

In equilibrium, unemployed workers must have the same expected utility in the private and public sectors:

$$Z_p = Z_g \equiv Z, \qquad (A7)$$

Which, combined with equations (A1), (A5), (A6), and (A7), yields:

$$N_g = \lambda \mu_p L_g \qquad (A8)$$

Hence, the number of workers in the public sector increases with the number of public jobs, and does so more strongly when λ is large (public wages are high relative to private wages). Using (A5), (A8), and the identity $u_g N_g = N_g - L_g$ yields

$$\lambda(1 - u_g) = 1 - u_p$$

This suggests that the unemployment rate is higher in the public sector than in the private sector if and only if $\lambda > 1$, i.e., if wages are higher in the public sector.

From equations (A5) and (A8) and the identity $N = N_p + N_g$ we have

$$L_p = \frac{N}{\mu_p} - \lambda L_g \qquad (A9)$$

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[20] An efficient bargaining model as in MacDonald and Solow (1981) would have the same qualitative implications.
[21] It could be shown that such proportionality can be rationalized by an explicit model of collective bargaining in the public sector.

This suggests that private jobs are necessarily crowded out by public jobs, and the effect is stronger when λ is larger. We can derive an expression for the aggregate unemployment rate using the identity $U + L_p + L_g = N$ together with (A5) and (A9).

$$u = \frac{U}{N} = \frac{L_g}{N}(\lambda - 1) + \frac{\mu_p - 1}{\mu_p} \qquad \text{(A10)}$$

Public-sector expansion decreases the unemployment rate if and only if $\lambda = w_g/w_p < 1$. Derived results above took the participation rate as given. It is not difficult, however, to study the effects of public employment on participation. Let individuals enjoy different utility levels $\bar{Z}$ when out of the labor market. The distribution of utility levels is denoted $F(\bar{Z})$. Labor market participation is only attractive for individuals whose Z is such that utility out of the labor force, $\bar{Z} + H(L_g)$, is lower than the Z level of utility defined in (A7). Using equations (A6) and (A8) and the relationship $w_p = AF'(L_p) = AF'[\frac{N}{\mu_p} - \lambda L_g]$, we can write the participation rate $F[z - H(L_g)]$ of the unitary population as follows:

$$N = F[\frac{AF'\left[\frac{N}{\mu_p} - \lambda L_g\right]}{\mu_p}] \qquad \text{(A11)}$$

This equation implies that the participation rate increases with public employment, which crowds out private jobs, increases marginal productivity and wages in the private sector, and therefore attracts workers into the labor market. According to equation (A9), there are $N/\mu_p - \lambda L_g$ private jobs: hence, higher participation increases private employment, and reduces the crowding-out effect of public jobs on the private sector. Accordingly, our basic model suggests that the response of participation to public employment tends to soften the crowding-out effect of the public sector. Public jobs, however, may influence participation through several other channels. They can affect the out-of-labor market welfare $\bar{Z}$ by producing goods valuable in that state, and they can also influence productivity in the private sector.

For public employment we consider the case where its level is chosen by a benevolent government to maximize the difference between a public good's social value, $H(L_g)$, and its cost, $w_g L_g$. For simplicity, suppose public employment is financed on a lump-sum basis. Then, public labor demand is given by the following condition $H'(L_g) = w_g$. Also for simplicity, let participation be exogenous ($N = 1$), and suppose public wages are bargained by a representative trade union and the government.[22] Then, the objective function of the public-sector trade union is similar to the private-sector one above:

$$V_g = L_g[w_g + H(L_g)] + Max(N_g - L_g, 0)Z_g \qquad \text{(A12)}$$

With the $\gamma \in [0, 1]$ relative bargaining power of public sector workers, wages are set by the Nash program as follows:

$$\max_{w_g} L_g^\gamma [w_g + H(L_g) - Z_g]^\gamma [H(L_g) - w_g L_g]^{1-\gamma} \qquad \text{s.t. } H'(L_g) = w_g,$$

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[22] Holmlund (1993) makes similar assumptions in a model focused on distortionary taxation effects.

whose interior solution satisfies

$$H'(L_g) = w_g = \mu_g[Z_g - H(L_g)], \qquad \mu_g = \frac{\beta + \gamma(1-\beta)}{\beta} \geq 1 \qquad \text{(A13)}$$

where $\beta = L_g H'(L_g)/H(L_g)$. Equation (A13), together with equation (A4) and the arbitrage condition (A7) implies:

$$w_g = \lambda w_p, \text{ with } \lambda = \frac{\mu_g}{\mu_p} \qquad \text{(A14)}$$

Thus, relative wages in the two sectors are determined by wage markups, which in turn depend on labor demand elasticity and bargaining power parameters. According to Ehrenberg and Schwarz (1986), labor demand elasticity is empirically similar for public and private jobs. Trade union density, however, is usually higher in the public sector. Thus, employees may enjoy higher rents in the public rather than the private sector.

Because the public wage is equal to the marginal productivity in the private sector, (A9), (A13), and (A14) yield:

$$H'(L_g) = \lambda A F'[\frac{1}{\mu_p} - \lambda L_g] \qquad \text{(A15)}$$

This equation shows that the government creates public jobs up to the point where the marginal utility of the public good is equal to its marginal social cost. As the marginal cost of the public good increases with the ratio $\lambda = w_g/w_p$, a high wage in the public sector induces the government to create fewer public jobs.

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SUSTAINING GROWTH AND ENHANCING ECONOMIC DIVERSIFICATION IN BOTSWANA [1]

Returning to a period of strong growth is a challenge for many small middle-income countries. Over the years, the Botswana government has been pursuing an approach to enhancing economic diversification, but the largely "picking winners" strategy, has generally not led to improved outcomes. This chapter aims to identify the policy lessons that Botswana can draw from peer countries on how best to return to a period of strong growth and help facilitate progress toward greater economic diversification. The analysis shows that achieving high growth would require reform-oriented, innovative policies to reinvigorate the growth of total factor productivity. Leveraging its areas of comparative advantage and improving the skill base of the labor force would improve prospects for diversification. Delivering good outcomes on these policies would require supportive measures to liberalize the service sectors and reduce the domestic regulatory burden on firms. Beyond these, ensuring macro-micro congruence in policy design and implementing some of the "low hanging fruits" could help lead to quick gains in terms of strengthening Botswana's competitiveness and diversifying the sources of growth.

A.   Introduction

1.   **After a period of rapid ascent, many middle income countries (MICs) including Botswana, have experienced a slowdown in trend growth in the last decade.** Recent research has found that most of the growth moderation in MICs can be explained largely by slowdowns in total factor productivity growth. This chapter examines the slowdown in growth and productivity in MICs and draws policy lessons on how to return Botswana to high and sustained growth.

2.   **As part of efforts to find new engines of growth and support sustainable long-term and broad-based growth, Botswana has over the years also vigorously pursued policies to diversify the economy**. Commodity exports can bring enormous fiscal revenue for resource-abundant nations, but large foreign exchange inflows and volatility in commodity prices complicate macroeconomic management and make countries vulnerable to sudden price fluctuations. With a few notable exceptions, resource-rich countries are poorly diversified in terms of production and exports. During the 2008–09 global financial crisis, on average, resource-dependent countries experienced a plunge of about 7 percent in their real GDP, from an average growth rate of 5 percent in 2008 to a negative 2 percent in 2010. This experience provided compelling evidence that these

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[1] Prepared by Friska Parulian. This paper also leverages on recent work on Diversification and Structural Transformation for Growth and Stability in Low Income Countries that was presented at the joint IMF-DFID conference in February 2013 (http://www.imf.org/external/np/seminars/eng/2013/spr/index.htm#prg).

economies, without economic diversification, remain highly vulnerable to various external shocks. Neither the creation of special resource or revenue stabilization funds nor the implementation of rigid fiscal rules, can fully protect these countries from the negative impact of commodity price fluctuations. The existing research provides some evidence that diversification can reduce significantly countries' vulnerability to external shocks and provide a more robust basis for sustained long-term growth. This chapter therefore also takes stock of Botswana's progress on diversification, the challenges, and lessons learned from peer middle-income countries that have made significant progress in diversification. The chapter highlights the factors that may have facilitated or undermined Botswana's diversification efforts over the years and discusses several policy alternatives based on Botswana-specific circumstances and the lessons from the success stories for MICs in other regions.

B.   Identifying Factors and Reforms for Sustaining Growth in Middle-Income Countries

3.   **In recent years, many MICs have experienced a slowdown in trend growth of GDP and productivity (Figure II.1).** The World Bank (2012) estimates that of the 101 middle-income economies in 1960, only 13 became high-income economies by 2008. Formal evidence on growth slowdowns suggests that at per capita income of about US$16,700 (PPP 2005 constant prices), the growth rate of per capita GDP typically slows from 5.6 to 2.1 percent.

Figure 1. Evolution of Real Per Capita GDP Relative to Middle Income Trap line
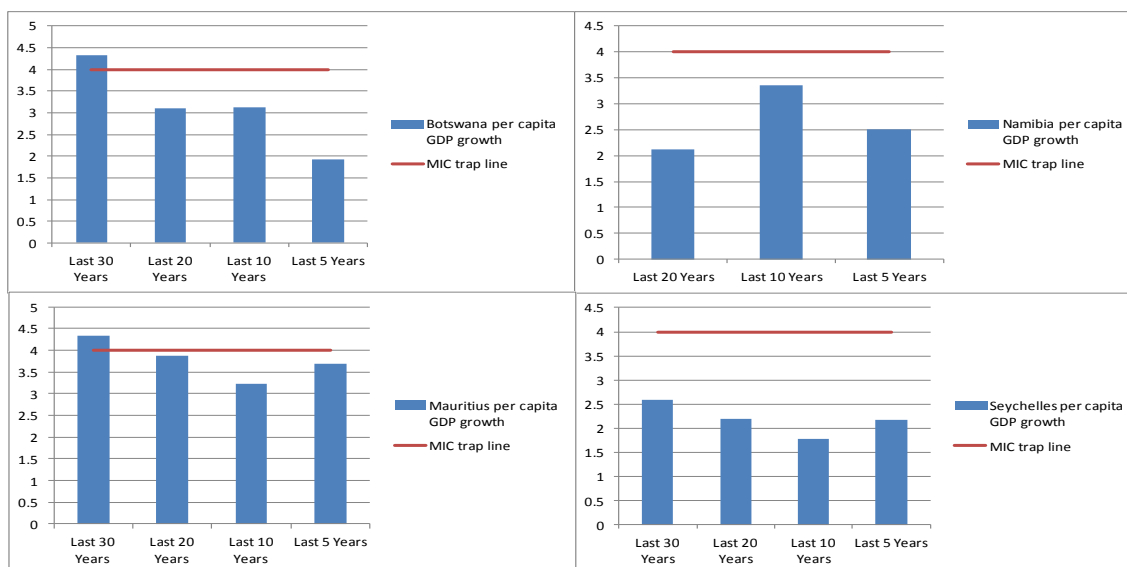
Source: IMF staff calculations and Felipe (2012).

4.   **Growth slowdowns are essentially identified as productivity growth slowdowns (Figure II.2).** Eichengreen, Park, and Shin (2011) found that 85 percent of the slowdown in the rate of output growth can be explained by a slowdown in total factor productivity growth (TFP), much more than any slowdown in physical capital accumulation. An alternative characterization of growth slowdowns

was also developed by Agenor and Canuto (2007). Several factors may affect productivity growth, in particular individual decisions to acquire skills, access to different types of public infrastructure, and a higher share of workers with advanced education engaged in innovation activities.

Figure 2. Total Factor Productivity Contribution to Growth

Source: IMF staff calculations.
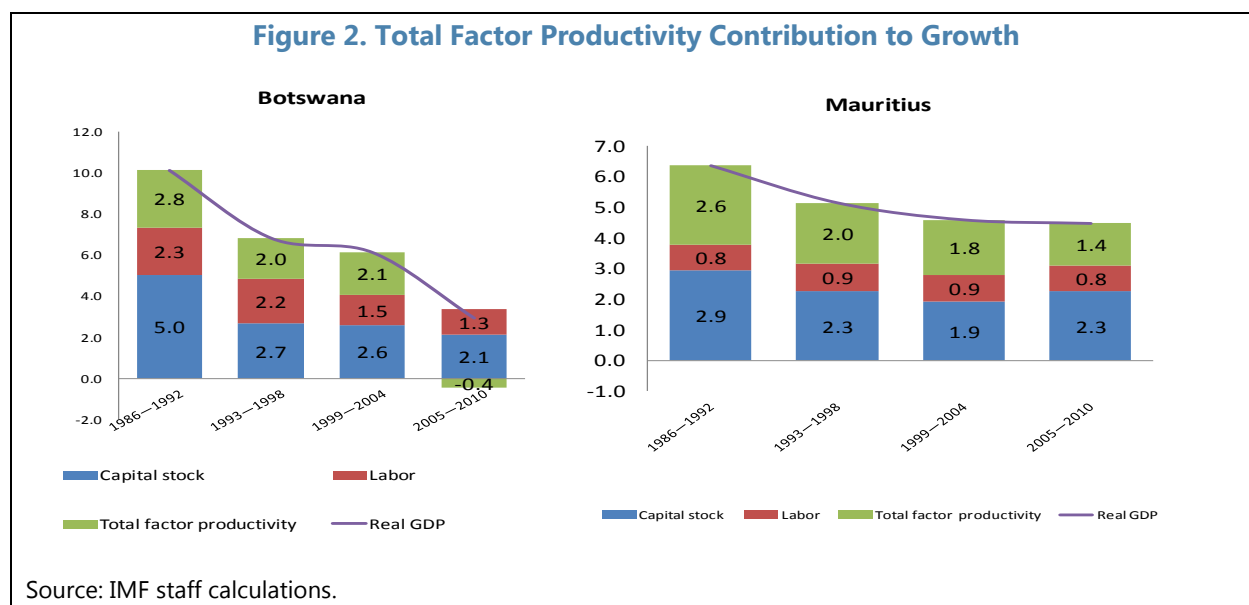
5.   **Empirical studies show that reducing government involvement in the economy and deregulating labor, product, and credit markets reduces the likelihood of subsequent slowdowns.** Some gradual alignment of product market regulations in a broad range of non-manufacturing sectors (energy, transport, communication, professional services and banking) could boost aggregate labor productivity. A study by Bourlès, Cette, and Cozarenco (2010) shows that aligning product market regulation in upstream sectors has the potential to deliver sizable productivity gains in most Organisation for Economic Co-operation and Development (OECD) countries. Under a fairly gradual and slow implementation, multifactor productivity levels could be raised by ½ to 3½ percent in the next 5 years, and by 1 ½ to 10 percent in the next 10 years. The wide variance in the estimated gains reflects cross-country differences in the stringency of current regulations in upstream sectors, the intensity of downstream intermediate consumption of products from regulated sectors, and composition effect owing to the different sector shares of value added in different countries. The analysis of Aiyar and others (2013) also shows that MICs face a higher probability of experiencing growth slowdowns than low- or high-income countries. The main factors that explain this high probability of a growth slowdown in MICs are the level of infrastructure development, degree of regulation, and the size of the government. The extent of government involvement in the economy hampers the capacity of the private sector to innovate and expand.[2]

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[2] For a more detailed staff analysis of the factors that could explain the growth slowdown in MICs in sub-Saharan Africa, see also a recent selected issues paper issued earlier this year in SM/13/22.

6.   **Labor market reform packages have also enhanced productivity growth in many OECD and non-OECD G20 countries.** Flexible labor markets policy has allowed the reallocation of labor across sectors within the most successful economies in the region and has facilitated new labor transition toward innovative occupations. Though the impact is estimated to be smaller than product market reforms, it could raise productivity by 1 to 2 percent in a decade where employment protection is strict.

7.   **Distance to markets and progress toward regional integration are also important determinants of growth slowdowns.** The greater the GDP-weighted distance of a country from potential trading partners, the higher the probability of a growth slowdown; and the greater the share of intraregional trade undertaken by a country, the less likely is a slowdown.

8.   **Improving access to advanced infrastructure and enforcement of property rights can also help avoid the middle-income growth trap.** The availability of good-quality information and communications infrastructure plays an important role in fostering innovation by facilitating inexpensive circulation of disembodied knowledge flows and by reducing the transaction cost of international trade and foreign investment. Thus, improving access to advanced infrastructure boosts production and wages in the design sector, drawing more labor, and triggering the shift in labor supply that magnifies the benefit associated with exploiting the existing idea. Improved enforcement of property rights also enhances innovation and translates into higher wages in the design sector, which would draw more high-skilled workers into that sector.

9.   **The recent midterm review of National Development Plan 10 (MTR-NDP10) tries to emphasize policies that could address the decline in Botswana's global rankings on competitiveness.** The business environment, while favorable, still faces some challenges. Among the most problematic areas in the survey on ease of doing business out of 183 economies are: trading across borders (where the country's ranking was 150), dealing with construction permits (132), getting electricity (91) and starting a business (90). Low labor productivity also continues to undermine Botswana's global competitiveness and prospects for higher growth and faster job creation. The strategy is aimed at harmonizing regulations to support the business environment and tackling skill mismatch in the labor market to boost job creation. For the rest of the NDP 10 period, policies and strategies aim at improving the general education program, skill development program, national human resource planning, and national internship program, to boost economy-wide productivity growth.

10.   **The authorities are also making efforts to accelerate growth, economic diversification, employment creation and poverty alleviation.** The midterm review of the National Development Plan (NDP 10) reemphasized the policy thrust to reduce the size of government spending (as a share of GDP) so the private sector could take the lead in generating Botswana's economic growth. The policy document also acknowledges that the key policy challenge is how best to provide an enabling environment where the private sector can thrive and contribute to growth and the development process in general.

C. Enhancing Economic Diversification in Botswana

11.   **Diversification has been a longstanding objective of many developing countries.** Most developing countries, including MICs, have historically relied for a large share of their export earnings on a narrow range of traditional primary products and a few export markets. The question is whether such limited diversification may result in less broad-based and sustainable growth, with production and exports concentrated in sectors characterized by low technology spillovers and limited opportunities for productivity growth or quality upgrading. Another key concern is that the lack of economic diversification may increase a country's exposure to adverse external shocks and lead to a rise in macroeconomic volatility.

12.   **Recent analytical work suggests a close link between diversification and the early stages of the development process and structural transformation.** Empirical evidence of a positive effect of export diversification on growth in income per capita is provided by Hesse (2008) and Lederman and Maloney (2007). Other analyses indicate that higher incomes per capita are associated first with diversification, and then with re-concentration, in production and employment (Imbs and Wacziarg, 2003). Nonlinearity between a country's income level and export diversification has also been found by Hesse (2008). Diversification therefore appears desirable, but we have only limited experience regarding which aspects of diversification are important, what its drivers are, and how to promote it while avoiding the risks of policies that "pick winners."

13.   **Export diversification should be decoupled from the notion that only industrial products and services should be promoted for a country to successfully evolve in economic terms**. As in the positive experiences in Chile, Canada, the United States, and the Scandinavian countries, natural resources exports could continue to play an important role for economic development. Martin and Mitra (2001) reported total factor productivity growth to be larger in agriculture than in manufactures in a large sample of advanced and developing countries, and mining has been suggested by Wright (2001) and Irwin (2000). The same argument has been proposed for forestry in Scandinavia (Lederman and Maloney, 2003; Blomström and Kokko, 2002). The Chilean case has been invoked by Herzer, Nowak-Lehmann, and Siliversotvs (2006) as an example of an export diversification based on natural resources that positively affected growth. It has also been stated that, nowadays, natural resources exhibit higher technology content, having the ability to generate upstream and downstream activities (Bonaglia and Fukusaku, 2003; Bebczuk and Berrettoni, 2006). The promotion of natural resource-based industries should therefore continue to be encouraged, but should take into account the necessary introduction of broader skills and knowledge bases.

14.   **Productive physical and human capital, level of income, investment, good institutions, and technology absorption capability are some of the determinants of successful diversification.** Hammouda and others (2006) pointed out that countries that have succeeded in improving their position are those that maintained during the last three decades a high investment rate, particularly in the industrial sector. This investment enabled them to access new technologies and improve the productivity and competitiveness of their economies. These links have enabled these countries to increase their exports and improve their international integration. Hausmann,
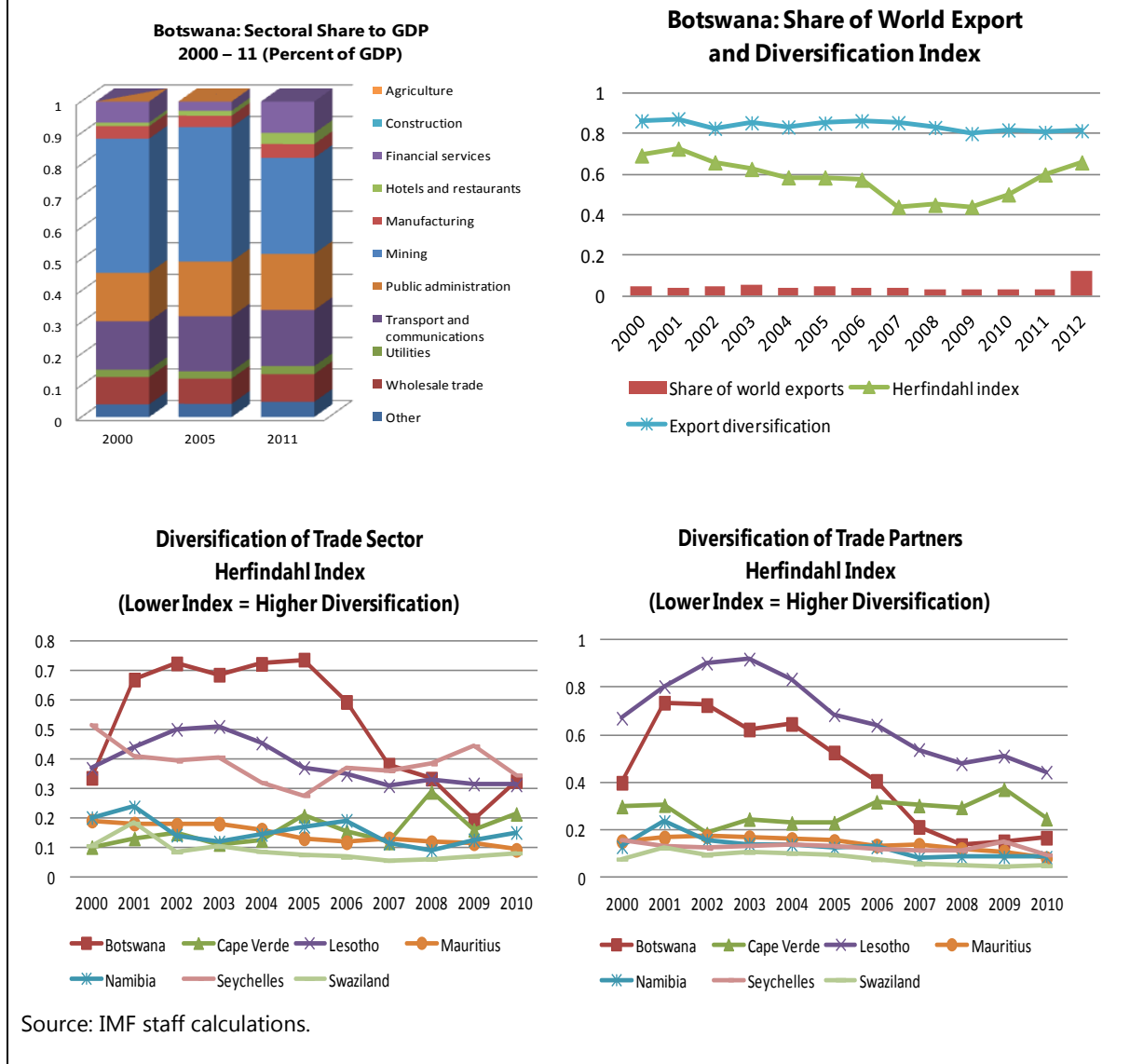
Hwang, and Rodrik (2007) also contend that in addition to physical and human capital, natural resources, and good institutions, market failures play an important role in affecting export diversification and through it, economic growth. What a country exports does matter; and they conclude that in the presence of market failures, governments can spur export diversification.

D. Diversification in Botswana—Where Are We and What Has Been Done?

15.   **Despite numerous diversification initiatives, Botswana's economy remains substantially dependent on diamond revenues.** The economy remains heavily dependent on mining, with the private sector heavily dependent on public expenditure. In 2006–07 the mining sector accounted for 75 percent of national export earnings, 30 percent of GDP, and 45 percent of government revenue. It is important to note that in recent years, the government has been trying to promote value addition and beneficiation in the diamond mining industry by facilitating downstream activities, including manufacturing diamond jewelry and retailing. Diamond Trading Co. Botswana (DTCB) was in part established to support the creation and growth of the downstream diamond industry in the country.

16.   **Botswana's economy has a low level of industrialization despite government efforts to encourage it.** For several years the manufacturing sector was earmarked as the principal sector through which the twin goals of economic diversification and employment creation could be achieved. The manufacturing sector also has received preferential treatment both in terms of targeted policies and financial support, but the sector has consistently failed to perform to expectations. The private sector also remains highly dependent on general public expenditure through government contracts and on consumption expenditure by civil servants. As part of the strategy, the government has also adopted several complementary policies to promote industrialization through private-sector development. The Financial Assistance Policy (FAP) was introduced in 1982, but ended in 2000. In 2001 the government also established the Citizen Entrepreneurial Development Agency (CEDA), which provides loans at subsidized interest rates to viable private businesses as opposed to outright grants. The Local Procurement Program (1997) and the Policy on Small, Medium, and Micro Enterprises (1998) are other initiatives aimed at enhancing the development of local entrepreneurs.

Figure 3. Botswana Diversification Trend

Botswana: Sectoral Share to GDP 2000 – 11 (Percent of GDP)

Agriculture
Construction
Financial services
Hotels and restaurants
Manufacturing
Mining
Public administration
Transport and communications
Utilities
Wholesale trade
Other

Botswana: Share of World Export and Diversification Index

Share of world exports — Herfindahl index
Export diversification

Diversification of Trade Sector Herfindahl Index (Lower Index = Higher Diversification)

Botswana — Cape Verde — Lesotho — Mauritius
Namibia — Seychelles — Swaziland

Diversification of Trade Partners Herfindahl Index (Lower Index = Higher Diversification)

Botswana — Cape Verde — Lesotho — Mauritius
Namibia — Seychelles — Swaziland

Source: IMF staff calculations.

17. **Several factors that limit the growth of the manufacturing sector in Botswana have been well documented in the past.** These include limited availability of domestic financing or access to capital; absence of a critical mass of citizen entrepreneurs; a limited input base; inadequate skilled personnel and supporting services; and a small domestic market in a landlocked country.

18. **Botswana is also highly specialized in peripheral products weakly connected to other products, which hinders the process of economic and export diversification toward other sectors.** Hausmann and Klinger (2007) introduced the concept of a "product space" to explain how countries change their export mix by jumping to new export activities near their current activities.

The difficulty for Botswana is lack of activities near the current activities, which are mainly diamonds, nickel, and copper. Given this orientation in the product space, it is not surprising that Botswana, thus far, has been slow to move from diamond exports to other export activities.

19.   **Botswana has managed to broaden its export portfolio and maintain its market share, but only by small margins.** Export diversification can be at the intensive margin (a more evenly spread portfolio); or at the extensive margin (more export items). Hummels and Klenow (2005) have proposed a variant where new export lines are weighted by their share in world trade. The intensive margin is defined as a country's market share in what it exports, while the extensive margin is measured as the share of product belonging to a country portfolio in world trade. Figure II.4 compares Botswana's story to the success story of Malaysia, which managed to diversify at both the intensive and extensive margins on a bigger scale; or to Chile, which followed a different path of focusing on a narrow portfolio but bigger market share.

20.   **Expanding into new markets is still challenging for Botswana.** One possible explanation for this is that it is relatively easier for a producer to expand into a new market with existing products than to start exporting new products. Brenton and Newfarmer (2009) proposed an index of export market penetration, defined at the product level as the share of potential destination markets that the country actually reaches (e.g., the ratios of the number of destination countries for product k relative to the number of countries importing product k from anywhere). Successful countries, such as Chile and Malaysia, have performed well in increasing their export penetration of overseas markets; while Botswana's market penetration index has remained broadly stagnant.[3]

21.   **Botswana is also exporting less sophisticated products compared to its peak in 2001.** Botswana's export composition shows a declining trend in terms of the EXPY index,[4] meaning Botswana is exporting lower-value products compared to its peak in 2001. Table II.1 shows the development of Botswana's exports and their level of sophistication during the last decade. The products where Botswana has revealed competitive advantages are in the $3,500–$7,655 PRODY index and in the category of low and medium technology.

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[3] The concentration of the diamond cutting and polishing and the diamond exchanges at few centers such as Antwerp, Tel Aviv, and New York may imply that export market penetration index may be particularly unfavorable for Botswana.

[4] Designed by Hausmann, Hwang, and Rodrik (2007), PRODY and EXPY are indexes that measure export sophistication that suggests a notional level of income for a product and a country's export, respectively. The core idea is that an economy is better off producing goods that richer countries export. PRODY measures how sophisticated is a particular product, while EXPY measures how sophisticated is a country's export basket.

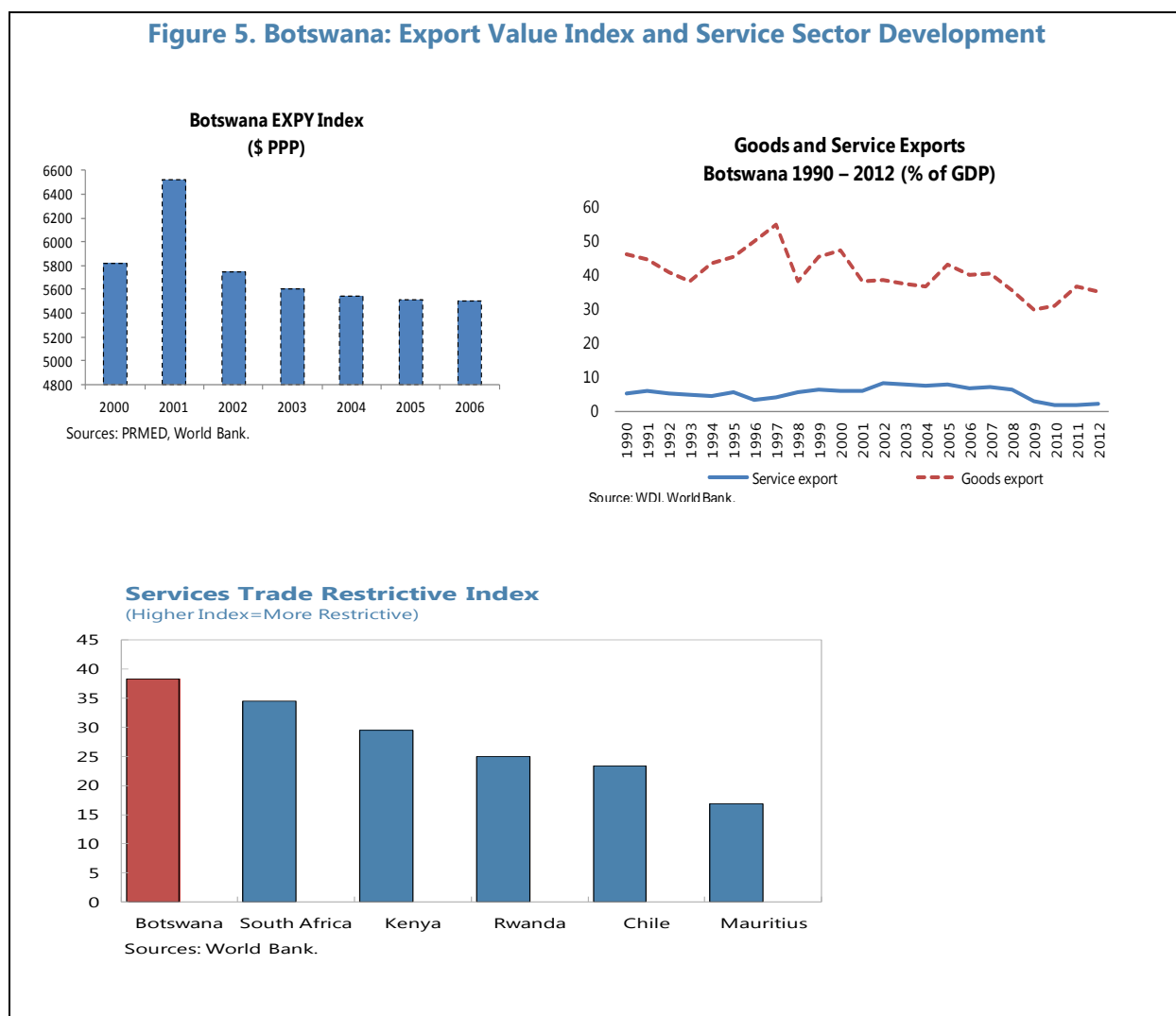## Figure 4. Evolution of Export Portfolio and Export Market Penetration

Evolution of Intensive and Extensive Margins of Export Portfolio

Export Market Penetration Index
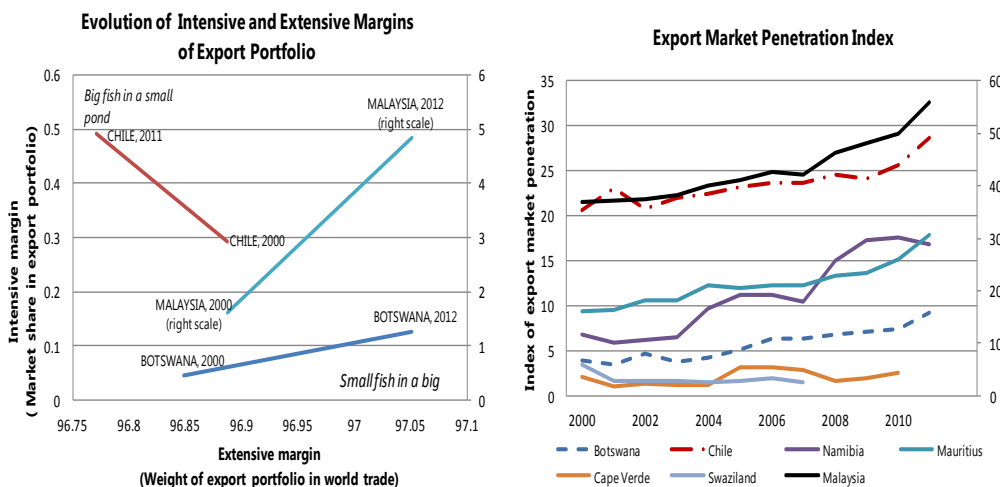
Source: WITS database, World Bank

Table 1. Botswana's Sectoral Competitive Advantage

Classics	RCA 2000	RCA 2012	PRODY 2012	Share 2000	Share 2012
Meat and edible meat offal	2.97	1.31	6286.95	1.86	1.08
Salt; sulphur; earth & stone; plastering material, lime and cement	1.01	1.15	3558.54	0.26	0.31
Other made up textile articles; sets; worn clothing and textile articles, rags	1.49	1.25	5802.85	0.41	0.22
Natural/cultured pearls, prec or semiprecious stones & metals, imitation jewellery, coins	45.94	19.56	6971.97	82.96	80.87
Emerging Champions	RCA 2000	RCA 2012	PRODY 2012	Share 2000	Share 2012
Ores, slag and ash	0.01	1.23	6482.15	0.01	1.61
Explosives; pyrotechnic prod; matches; pyrop	0.08	1.71	5896.63	0.00	0.04
Umbrellas, walking sticks, seat sticks, whips, riding crops and parts thereof	0.03	1.45	6971.97	0.00	0.01
Nickel and articles thereof.	0.00	26.86	7655.51	0.00	5.58
Dissapearances	RCA 2000	RCA 2012	PRODY 2012	Share 2000	Share 2012
Prep.of cereal, flour, starch/milk; pastry cooks' products	1.14	0.08	6615.68	0.29	0.03
Inorganic chemical; organic and inorganic compunds of precious metal, rare-earth metal, radioactive elements or isotopes	1.05	0.92	5451.56	0.69	0.63
Article of apparel & clothing access, knitted or crocheted	0.49	0.49	4260.06	0.63	0.38
Copper and articles thereof	9.12	0.13	6971.97	5.84	0.11

Source: IMF staff calculations

22.	**Botswana's export of services also remains low, indicating that the services sector is mainly in the non-tradable sector and is less open to external trade.** Services are an important margin of trade growth for many countries. Service trade expansion is usually linked to foreign direct investment (FDI) if the privatization of service provision (e.g. telecommunication, transport, energy) attracts foreign investors. Botswana's services sector has in general lagged behind its middle-income peers, and FDI inflows have also remained sluggish. The Word Bank's Service Trade Restrictiveness Index indicates Botswana is substantially more restrictive in services than its comparator countries, especially in professional services, transportation, and telecommunications.[5] It is more than twice as restrictive as Mauritius and substantially more restrictive than Chile. In fact, it is much more restrictive in professional services, transportation, and telecommunications.

Figure 5. Botswana: Export Value Index and Service Sector Development

Botswana EXPY Index ($ PPP)

Sources: PRMED, World Bank.

Goods and Service Exports Botswana 1990 – 2012 (% of GDP)

Source: WDI, World Bank.

Service export — — Goods export

Services Trade Restrictive Index
(Higher Index=More Restrictive)

Botswana   South Africa   Kenya   Rwanda   Chile   Mauritius

Sources: World Bank.

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[5] Botswana Development Policy Review: An Agenda for Competitiveness and Diversification. World Bank Report 73049-BW, September 2012.

23.   **Lack of openness in the service sectors contributes to below average performance in two sectors important to trade: transport and telecommunications and professional services.** The restrictions on entry in Botswana are substantially higher than in comparator countries—particularly for legal services, engineering, and accountancy. Moreover, entry restrictions on foreign firms supplying the three principal skill groups are higher in Botswana than in Korea, Chile, and even China. In addition, despite shortages in supply and high payoffs for employing foreign professionals, enterprises complain that obtaining access to work visas and permits is unusually difficult. Work permits can take up to six months even though the target time is two weeks.

24.   **In recent years, the government has realized the importance of reevaluating its policies on economic diversification.** The most notable efforts in this area include the Economic Diversification Drive (EDD) and the complementary policy of the Human Resources Development Strategy (HRDS), which aims to develop skills to support private-sector development. The tourism sector has also been identified as a key strategic area that holds some potential. In addition, establishing Botswana as a logistic and innovation hub for Southern and Central Africa, introducing free trade zones, enhancing banking and other financial services, and diversifying across the mining sector are important aspects of the authorities' diversification strategy.

E.   Case Studies of Successful Economic Diversification: Malaysia and Chile

Malaysia

25.   **The first phase of Malaysia's diversification was based essentially on broadening the range of primary commodities and derived products.** Exports of tin, crude oil, and rubber were joined by palm oil, and crude oil gained prominence in the 1970s following the first oil shock. Although some of the shifts in export shares are explained by commodity prices, the primary sector did diversify during the first decades after independence.

26.   **The development of the palm oil industry marked the beginning of Malaysia's diversification process.** At independence in 1957, agriculture was dominated by rubber cultivation. However, the bulk of existing trees were nearing the end of their economic life, and replanting with new varieties capable of higher yields would require a gestation period of seven years. The government offered cash support, but also encouraged switching to palm oil cultivation, which offered quicker returns, through a comprehensive set of policies to promote the cultivation, processing, and export of palm oil and palm oil products (Drabble, 2010). These policies ranged from tax incentives and government support for export promotion activities to publicly funded research and training programs. In addition, the government opened new land for cultivation by smallholders, using the reorientation of the agricultural sector to ease social tensions. The coordinated efforts of government and the private sector fostered the development of new products and manufacturing methods to increase productivity and maximize the value added of palm oil production and processing. These policies helped to diversify Malaysia's export base away from tin and rubber from the early 1970s.

27.   **Parallel to agricultural diversification, the authorities also pursued industrialization.** During the first phase, the goal was import substitution industrialization (ISI), primarily aimed at the domestic market, and some processing of agricultural products for export. The government initially used mainly tax incentives and also provided financial and other assistance (e.g., some tariff protection and, for foreign investors, freedom to repatriate profits and capital) to attract domestic and, importantly, foreign investors (Drabble, 2010). This met with some success, as the share of the manufacturing sector's value added in the economy rose from 8½ percent of GDP in 1961 to 16½ percent in 1975 (Chee, 1987).

28.   **In the late 1960s and early 1970s, the government shifted the focus of its industrial development strategy.** ISI was replaced with an export-oriented and labor-intensive industrial development strategy that relied heavily on free trade zones (FTZs).[6] Again, foreign investment played a key role, rising from 2¼ percent of GDP in 1970 to almost 9 percent in 1992, before declining again. The use of FTZs was complemented by government policies that included sound macroeconomic management, microeconomic deregulation (not only in FTZs) including relatively liberal trade policies, and emphasis on human resource development. In addition, in the 1990s, the government began to emphasize the development of information technology (IT) as part of its strategic push to reach developed-country status by 2020 (Vision 2020). This included the creation of the Multimedia Super Corridor (MSC), which was designed to use IT applications and attract investment by IT companies (Harris, 1998). Political stability after the 1969 riots and a generally benign external economic environment—Malaysia was located in the fastest-growing region in the world—also contributed to the success of this strategy. In terms of industrialization and export growth, this policy was successful: manufacturing rose from 12 percent of GDP in 1969 to a peak of 31 percent in 2006, and from 6 percent of total exports to 74 percent during the same period.

29.   **The geographic destinations of Malaysia's trade were also broadened**. In addition to its traditional trading partners such as the EU, Japan, and Singapore, more recently Malaysian goods reached Mainland China; Hong Kong SAR; Thailand; and other countries in the region and beyond, including emerging and developing economies. Thus, the share of the top five export destinations in total exports declined from 67 percent in 1981 to 51 percent in 2011.

30.   **However, the strong emphasis on FTZs and the emphasis on IT in national economic planning led to a dominant role for the electronics industry.** This industry's share in manufacturing and total exports rose to a peak of more than 72 percent and 58 percent, respectively in 2000. This re-concentration of exports has exposed Malaysia to terms-of-trade shocks akin to those in commodities (to which Malaysia was earlier prone) and has led to higher

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[6] In addition, the state also began to invest directly in particular industries, but these investments never played a significant role in Malaysia's industrial development.

volatility in Malaysia's terms of trade than in other countries in the region. [7, 8] Only in the last decade has the share of electronics in manufacturing and exports declined again.

31.   **Malaysia's experience underscores the possibilities of a deliberate diversification and export promotion policy.** Although diversification has not necessarily been the primary cause of Malaysia's economic growth, it is closely linked: the same policies that helped diversification also promoted growth over time, whether directly or indirectly, through the broadening of the economy's base. However, while government action, including the provision of sector-specific public goods, can provide important impetus for new industries and products, the focus on specific subsectors can also skew the economic structure and become a source of vulnerability, as the experience with electronic exports has shown. In addition, the opportunity cost of government support should also be taken into account.

Chile

32.   **Chile has had remarkable success in achieving broad-based economic growth over the past quarter-century.** GDP per capita—on a PPP (purchasing power parity) basis—rose from less than $4,950 in 1990 to more than $16,100 in 2011. At the same time, the economy became much more open: exports of goods and services rose from about 28 percent to 38 percent of GDP.

33.   **Chile's industrial policy can be analyzed in four stages.** The first, from 1934 to 1973, was based on import substitution. The second, from 1973 to 1989, was based on trade liberalization and market reforms. The third, from 1990 on, was marked by the return to policies based on social economic development. The fourth stage was marked by legal reforms in 2006 that created a sovereign wealth fund and implemented a national strategy for innovation and competitiveness.

34.   **Institutional innovation played a major role in the export discovery and diversification process in Chile.** Two specific programs that targeted specific industries were involved in the initial stage. The first was a strategic bet in the forestry industry based on a tree scarcely grown in Chile, the *pinus radiate* (Monterey pine). The government passed several laws providing legal certainty and incentives for planting the trees. A similar case took place in the salmon industry in which *Fundación Chile* played a key role. Its mission was to find venture capitalists to invest in innovative projects promoting technology transfer and new business models that could benefit the country. Once the start-up company achieved a sustainable operational level, *Fundación Chile* sold its participation and reinvested the proceeds in new projects. *Fundación Chile* adapted Norwegian technology in 1981 to grow salmon. This project was later sold to Nippon Suisan, one of the largest Japanese food

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[7] However, the concentration in the product category "electronics and electrical" in the CEIC database may not capture the movement to higher value-added products.

[8] The standard deviation of terms-of-trade changes over the past two decades for Malaysia has been more than twice as high as for developing Asia as a whole, and is also higher than Vietnam's, which also exports oil (and is hence exposed to oil price shocks, just as Malaysia).

producers. *Fundación Chile* is considered a true institutional innovation that played a major role in the export discovery process (Agosin and Bravo-Ortega, 2009).

35.   **The Chilean government also actively adopted a set of programs that targeted increasing productivity and facilitated access to international markets.** This twofold strategy consisted of programs supporting the creation of small and medium-size enterprises (SMEs) and facilitating their access to financing. The government also initiated an aggressive strategy to fully integrate the economy into the global economy by negotiating free trade agreements, lowering tariffs, and facilitating access to untapped and bigger markets for new exports. *Corporación de Fomento de la Producción de Chile* (CORFO) had a central role in supporting SMEs and facilitating access to financing. Other key players were the General Directorate for Foreign Economic Affairs (DIRECON) and ProChile, who were in charge of negotiating trade agreements.

36.   **The resource windfall from copper exports has enabled Chile to create three funds that have a big impact on Chile's public policy and innovation process—**the Economic and Social Stability Fund (ESFF), the Pension Reserve Fund (PRF), and the Innovation for Competitiveness Fund (ICF). The ICF works by allocating funds to other government agencies for example, the *Comisión Nacional de Investigación Científica y Tecnológica* (CONICYT) and the CORFO's Innova Chile Program. CONICYT manages on average of 42 percent of total funds for innovation and competitiveness used to carry out different programs for science and technology research and development (R&D). Innova Chile is the other major player, implementing vertical policies in support of innovation programs with high technological components.

37.   **Chile's strategy of emphasizing knowledge-based productivity was built on the idea that there was no need to move away from its comparative advantage in natural resources.** Chile's policymakers considered successful models in countries such as Finland, Sweden, Australia, and New Zealand. These countries have skilled human capital, innovative capacities, and applied technology in their productive process, facilitated by high investment in R&D and solid institutional and economic incentives to support entrepreneurship and innovation.

38.   **Free trade agreements contributed significantly to the broadening and increasing of Chile's exports and fostered FDI.** Today Chile has trade agreements with 57 countries worldwide. These agreements include all of the country's major trading partners and allow access to 86 percent of global GDP. In the Chile-U.S.A Free Trade Agreement (FTA), the immediate tariff exemption covered more than 97 percent of the products and increased Chile's exports to the United States by 31.75 percent from 2003 to 2004 and more than doubled exports by 2006.

F.   Policy Lessons from Peer MIC Countries

39.   **The state can support diversification through deliberate policies, but it will need to be mindful of costs and risks.** Several countries have used state support to underpin specific industries (Malaysia, Chile), but not all were successful. In Malaysia, although targeting specific industries (palm oil, RMGs, electronics) has been successful in its own right, the targeted sectors have become dominant, increasing export concentration. The opportunity cost of this support, in

terms of foregone tax revenue or direct expenditure, should also be taken into account. Although public policies such as achieving macroeconomic stability, removing barriers, and fostering public investment should help to promote economic sectors other than oil, the sheer size of the natural resources sector might, for example, through appreciation of the real exchange rate and a loss of competitiveness in other sectors (Dutch disease), undermine diversification. However, countering these effects with support for specific industries (as opposed to, for example, general low levels of taxation of the non-oil economy) could easily lead to an intensification of rent-seeking behavior, especially in an environment of weak governance.

40.   **The strategy of simply adding new products to export portfolios often leads to use of industrial policies that may not necessarily lead to good outcomes on economic diversification.** Several opportunities can be looked at:

- Improving the quality of existing exports, including expanding downstream of the main export sector. Further diamond processing into jewelry production could bring vertical diversification.

- Exporting into new geographic markets. Given the nature of Botswana's export products in peripheral product space, difficulties in finding nearby new sectors could be compensated for by finding new markets. One of the potential markets is intraregional trade. Intra-industry trade within the Southern Africa Customs Union (SACU) has not taken off compared to East and South East Asia intraregional trade. While the Southern Africa Development Corporation (SADC) exports to the world more than tripled from 2000 to 2008, the share of intraregional exports remained broadly unchanged at about 10 percent of total exports. Export destination matters for exporters; when larger destinations have faster import growth, the export orientation becomes favorable. Botswana's intraregional trade partners have much higher import growth rates than Botswana's current trading partner composition.

- Increasing service exports, especially in health and education, in addition to the ongoing efforts to boost the tourism sector, is also worth exploring.

- Expanding output of goods and services that are inputs to the exports production base could also be considered.

41.   **Entrepreneurs and innovation are crucial to diversification and growth.** Branching out into new activities and improving existing products and processes lie at the heart of successful economic development, and reducing the cost of these processes is important for encouraging diversification. The case studies illustrate the importance of key ingredients in supporting entrepreneurship:

- *Macroeconomic stability.* The experiences of several countries show that successful diversification—and higher growth—have coincided with improved macroeconomic policies and a greater degree of stability. Stability provides a more predictable economic environment and reduces risks arising from volatility, and thus the need to devise strategies

to hedge against these risks. It thereby frees economic agents to concentrate on exploiting new opportunities and addressing entrepreneurial risks.

- *Removal of barriers.* Similar to macroeconomic stability, though more directly, the removal or reduction of direct barriers to entry and operation tends to boost diversification and output. Lower barriers reduce costs and encourage entrepreneurs to spread their reach beyond established activities, thereby contributing directly to diversification.

- *Investment in infrastructure.* Adequate infrastructure is an important ingredient for diversification (and growth) through its lowering of business costs. This implies that the state has a significant role to play in supporting diversification, as producer and/or regulator. Transport costs and transit delays in Southern Africa are higher than in most other regions, in particular for the landlocked countries. The World Bank's Logistics Performance Index (LPI) ranked Botswana 134 out of 155 countries in logistic performance, 119 in infrastructure, 152 in international shipment, and 119 in logistic quality and competence. In Botswana, the government can focus on redirecting its scare resources to the type of public goods needed to support structural transformation.

- *Investment in human capital.* For some middle-income countries, manufacturing has played a large role in diversifying their economies. Although some industries (e.g., textiles) do not require a highly educated workforce, moving up the quality ladder and branching out into more sophisticated industries does. In addition, a better educated workforce is also more likely to spawn successful entrepreneurs. As highlighted in Chapter I, prudent public employment and wage policies may reduce skill mismatch in the labor market and further enhance potential for growth and diversification.

42.   **The service sector might be one opportunity for further diversification for Botswana.** National markets for professionals and professional services in Southern Africa remain underdeveloped, and regional markets are fragmented by restrictive policies and regulatory heterogeneity. Business services, including professional services, are among the most dynamic services sectors; and a greater use of professional services by African firms is associated with higher labor productivity. For example, the average labor productivity of Southern African firms that use accounting, legal, and engineering professional services is 10 to 45 percent higher than that of firms that do not. But there is a large gap between the potential contribution these services could make and the meager contribution they make today. Accounting, engineering, and health sectors are also worth considering, given the gap between needs and available supply with expected quality in the region. Sub-Saharan African countries have critical shortages in health workers. They have only 4 percent of health workers, but 25 percent of the global disease burden. The World Health Organization (WHO) (2010) projected that Africa needs to increase health workers by about 139 percent in the medium and long terms.

43.   **Policies for inducing FDI could also be complemented with labor education programs.** Attracting FDI with several incentives for investors can be linked with a request to the relevant private sector to open vocational schools that train workers with industry-specific skills. The

vocational school, equivalent to high school, trains students in general education and industry-specific skills required by private investors. In practice, the education is free of charge, but students will pay for it with a percentage of salary once they are hired.

G. Conclusions

44.   **Returning Botswana to an era of strong growth requires a set of efficiency-driven reforms to reinvigorate productivity.** Empirical evidence shows that limiting government involvement to the areas that support and enhance private sector productivity and the deregulation the labor, product, and credit markets, can reduce the likelihood of a slowdown in the subsequent period. Carefully designed labor market reform packages also tend to enhance productivity growth and job creation. More broadly, returning to an era of strong growth would require a set of reform-oriented, innovative policies to reinvigorate the growth of economy-wide total factor productivity. These include increasing the quality of public spending, improving the efficiency and effectiveness of the tax system, reducing the costs of doing business, and diversifying the economy.

45.   **Botswana should continue to leverage its comparative advantage in the mining sector, through continued good governance and strong institutions, while pursuing its multipronged approach to diversification.** Horizontal diversification in the mining sector should be continued, accompanied by the expansion into the downstream industry and quality improvements of existing exports. Chile and Malaysia are good examples of countries that started their diversification processes by leveraging their most competitive sectors, while constantly searching for and expanding into new innovative sectors. Recent research has also shown that exporting existing products to new markets has accounted for a greater share of export growth than export of new products to current markets. For Botswana, this suggests that exploring intraregional trade (markets within sub-Saharan Africa) is one vehicle for expanding into new markets.

46.   **The service sector can also contribute to export diversification**. Expanding service and conquering new markets for export services could be another pillar for Botswana's diversification strategy. However, delivering good outcomes from these policies would require supportive measures to liberalize the service sectors and reduce the domestic regulatory burden for firms.

47.   **Diversification policy should also be accompanied by labor market and education policies that support private sector-led development.** More liberal and open labor market policies geared toward attracting foreign skills should be considered in Botswana. High-skilled foreign workers should be seen as a complement instead of a substitute to enable knowledge transfer into new sectors and to support innovation. Public-sector employment and wage policies should also avoid job destruction in the private sector, as emphasized in Chapter I: reforms aimed at reducing the rents and size of the public sector will likely improve labor market performance and make schooling decisions more appropriate for private-sector development. Vocational school programs linked to specific industry needs and ties to their hiring process could contribute to reducing the skill mismatch in the labor market and thereby boost prospects for diversification.

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