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## Labor Market Issues in the Caribbean: Scope to Mobilize Employment Growth

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**IMF Working Paper**

Western Hemisphere Department

**Labor Market Issues in the Caribbean: Scope to Mobilize Employment Growth**

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**Abstract**

The paper examines the determinants of employment growth, drawing on data available across a sample of Caribbean countries. To that end, the paper analyzes estimates of the employment-output elasticity and the response of employment growth to major sources of labor market determinants, in the long and short run. The main determinants of employment include government investment and private sector credit, while the major determinants of external performance are real effective exchange rate, the price of major exporting commodities, the number of tourists, and growth in major trading partners. The paper concludes with a menu of policy recommendations and structural reforms towards sustaining high employment growth and higher living standards in the Caribbean.

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## I. INTRODUCTION

**Caribbean countries are small open economies that have been subject to frequent external shocks.**<sup>2</sup> They are diverse in terms of resources—including commodity exporters and service-based economies with heavy reliance on tourism receipts and financial services. The common macroeconomic challenges faced by the various groups relate to their vulnerability to external shocks because of very high openness to international trade. In addition, Caribbean countries are highly exposed to natural disasters and except for resource-rich ones, are constrained by limited scope for stabilization policies, reflecting rigid exchange rate regimes and tight fiscal space to weather external shocks.

**Countries in the region are mostly characterized by low growth and high debt.** Despite the region-wide diversity in resources, individual country overreliance on a single resource, mainly tourism, has increased their vulnerability to external shocks. Moreover, because of limited fiscal resources, governments have pursued a pro-cyclical fiscal policy stance further exacerbating economic fluctuations. Many of these economies have resorted to extensive borrowing over the years in the face of external shocks that necessitated an increase in government spending, and thereby pushing debt ratios to levels that have posed increasing risks to debt sustainability. In 2012, overall public debt in the region was estimated at about 79 percent of regional GDP. Concerns about debt sustainability have weakened confidence and limited resource availability in support of private sector activity and economic diversification.

**External shocks and high indebtedness in the Caribbean countries have hampered prospects for growth, increasing unemployment.** Growth in the Caribbean has stagnated in the last two decades, except in the commodity exporters. The last episodes of rapid growth the region experienced were fueled by factors that are not attributed to domestic policies and/or structural reforms. Instead, growth fluctuated in response to commodity prices, tourism receipts, banana production, and external grants. Further, the job content of growth has been limited during economic booms, reflecting deep-rooted structural impediments that have left unemployment at high levels over time.

**Failure to mobilize growth has taken a severe toll on the population of many Caribbean economies.** Unemployment has fluctuated over time with cyclicity in real growth, resulting in severe loss of jobs during contractions and limited job creation, particularly in high value-added sectors of the economy during booms. The result has been slow growth of per capita income,<sup>3</sup> rising unemployment rates, particularly among youth and women, increased vulnerability of large segments of the population to external shocks, and rising poverty.

**This study takes stock of conditions in the labor market to evaluate the association between employment and output growth and the prospect for job growth going forward.** More specifically, the research agenda aims at providing answers to: (i) why the unemployment rate has been historically high across many countries in the Caribbean? and (ii) to what extent

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<sup>2</sup> The study focuses on English-speaking Caribbean countries.

<sup>3</sup> Growth per capita can rise because of technology and higher employment rates (Cahuc and Zylberberg (2004)).

varying country experiences reflect domestic policies and structural rigidities? To that end, the paper tracks developments in the labor market in relation to economic cycles. Further, the evidence sheds light on the role of domestic policies and external shocks in determining employment growth in the long and short term, and the prospects to unlock future potential.

**To provide additional insights and complement the empirical evidence, the research documents structural impediments and rigidities** that have hampered job creation and compounded the adverse effects of cyclicalities on the labor market. The combined evidence underpins a menu of policy recommendations and structural reforms to remove impediments and increase the scope of job creation and sustainable human development in the Caribbean.

## II. EMPIRICAL ANALYSIS

**The empirical analysis comprises four steps.** In the first step, we present available labor market indicators for Caribbean countries and draw relevant insights. The second step relies on country-specific and panel data estimations to measure the employment-output elasticity and forward looking projections of unemployment, assuming baseline growth projections and two alternative scenarios that target absorbing new entrants to the labor market and 50 percent reduction in the unemployment rate. The third step provides structural estimates to explain variation in the employment-output elasticity and contrast labor market flexibility and the transmission channel of cyclical growth to unemployment across countries. The last step aims at drawing a menu of policy recommendations by estimating determinants of employment growth, both in the long and short run, to identify the significance of domestic policies and external factors.

### A. Labor Market Indicators: Visual Traction

The first step of the analysis relies on graphical illustrations of key indicators in the labor market for the countries under investigation over time based on available data submitted to desks from national authorities, and international sources (Appendix **Figures 1–8**) which were only available through 2012 at the time of the paper’s analysis. In the interest of brevity, major stylized facts are summarized below.

#### The Bahamas

**A reduction in the unemployment rate through 2000 coincided with a pickup in real growth over time.** This association is evident, particularly in the late nineties. Subsequently, growth slowed down significantly during most of the last decade, which coincided with a surge in the unemployment rate. The labor force is predominately made of secondary school graduates (63 percent) followed by tertiary graduates (25.5 percent). The composition of the labor force reflects a pronouncedly higher unemployment rate, estimated at 18.9 percent, among the youth in 2007, in contrast to an aggregate unemployment rate of 7.9 percent in the same year. However, the latter has risen to 14.2 percent in 2009. Productivity growth points to a downward trend over time, and sharp negative swings in 1998, 2003, and 2009, which coincided with economic slowdown and rising unemployment.

## Barbados

**Throughout most of the last two decades, until 2009, unemployment followed a downward trend declining from double digits in the early nineties to low single digits in 2007.** Robust growth performance helped push the unemployment rate down in late nineties. Subsequently, output contraction in early 2000s pushed the unemployment rate upward, which was soon reversed by a pickup in growth accompanied by a reduction in the unemployment rate that lasted for most of the last decade. However, the economy experienced a severe contraction in 2009, reflecting deterioration in global conditions that pushed the unemployment rate significantly upward. Subsequently, unemployment has been following an upward trend, climbing to 11.2 percent in 2011. Unemployment is significantly higher among the youth, with cyclicity that mirrors the trends at the aggregate level. Secondary school graduates make up almost two-thirds of the labor force. Growth of productivity points to an upward, although extremely volatile trend. Negative productivity swings are evident in 1994 and early 2000s, which coincided with economic slowdown and a surge in unemployment.

## Belize

**The unemployment rate has varied cyclically, despite a high growth rate.** High unemployment coincided with low growth in the late nineties. As the growth momentum picked up in the early part of the last decade, there was a marked reduction in the unemployment rate. More recently, the unemployment rate has been on an upward trend, surging to a record high of 16.1 percent in 2012. The composition of the labor force indicates heavy concentration in categories with less educational attainment, as job seekers with primary or less than primary education account for approximately 75 percent of the total labor force. Employment is predominately in the private sector, accounting for nearly 90 percent of total employment. Productivity growth has been volatile over time, with zero net gain on average. The upsurge during the early part of the last decade coincided with a pickup in real growth and significant reduction in unemployment. However, the cycle was reversed in the second half of the last decade and never recovered since then, resulting in low growth rates and high unemployment.

## Guyana

**The unemployment rate fluctuated with the growth cycle over time, but remains persistently high.** High growth rates in the early nineties pushed the unemployment rate downward, declining from a high of 16.8 percent in 1980 to 11.7 percent in 1992. Despite volatile growth in late nineties and early 2000s, the unemployment rate remained in double digits, reaching 10.7 percent in 2006, the latest available observation. Youth unemployment was significantly higher, however, estimated at 24 percent in 2002. Structural reforms should be put in place to unlock further potential to grow jobs with the pickup in real growth more recently.

## Jamaica

**Over the last two decades, unemployment has been in the double digit range, although on a downward declining path in the early part of the last decade.** The unemployment rate remained steadily high in the early nineties despite impressive growth rates. However, a pickup in the growth momentum in early 2000s helped push the unemployment rate downward till the

economy experienced a sustained severe contraction in the latter part of the last decade that pushed the unemployment rate upward. The unemployment rate was 13.9 percent in 2012 despite some recent signs of growth recovery. Youth unemployment is more than double aggregate unemployment with cyclicity that mirrors, to a great extent, what is observed at the aggregate level. On average, productivity growth has been flat over time. Upward cyclical surges are limited to short episodes of high growth during the nineties. Subsequently, productivity growth has been negative for the most part, reflecting low output growth, relative to employment growth.

### **St. Lucia**

**Growth in St. Lucia has been highly cyclical.** Unemployment has been, however, constrained by structural rigidity as the economy gradually shifted away from banana production. In some episodes, employment varied cyclically with fluctuations in real growth, although with a lag. For example, the unemployment rate increased following years of low growth in late 1990s. In early 2000s, negative growth pushed the unemployment rate high till growth rebounded in mid 2000s, significantly reducing the unemployment rate. More recently, the unemployment rate increased significantly, reflecting lower growth in late 2000s.

**High unemployment rate is primarily driven by the surge of unemployment for young groups,** accounting for the largest shares, 54 percent between 15–19 years and 34 percent between 20–24 years. There is a high share of low education in the labor force, 43 percent with no education or only primary education, followed by 33.5 percent with secondary education, while those with tertiary education represents a smaller share of only 11 percent. Wage growth has been disconnected from productivity growth, particularly in the public sector where wages grew faster than productivity, with the growth mostly imputable to public sector wages after mid-2000s. Employment remains predominantly private. Workers' productivity reflects sectoral contribution to growth, with the services sectors leading productivity growth. Employment flows during 1994–2011 have been driven by growth of employment in public administration, education and health services, followed by private services employment in hotels and restaurants, transport and communication and wholesale and retail trade. In contrast, employment has been shrinking in commodity-producing sectors, primarily in manufacturing and in agriculture, forestry and fishing.

### **Suriname**

**The unemployment rate fluctuated with the growth cycle over time.** High unemployment rate in the 1990s coincided with low growth rates. However, the growth momentum picked up in the early part of the last decade which had a marked reduction on the unemployment rate. Subsequently, a reduction in the growth rate increased unemployment but the trend was later reversed with a pickup in growth towards the end of the last decade, pushing the unemployment rate to a historical low record. Productivity growth has been flat, on average. A surge in the early nineties coincided with a pickup in growth and a reduction in unemployment. Subsequently, productivity growth shrank in late nineties reflecting low growth and high unemployment. The pickup in productivity in the last decade coincided with a pickup in real growth and a reduction in the unemployment rate. However, the most recent trend of productivity has been downward, reflecting failure to mobilize output growth in line with employment.

## Trinidad and Tobago

**The trend reduction in the unemployment rate does not appear to coincide with the growth cycle.** However, robust downward trend reflects a structural shift that coincided with increased energy resources over most of the last decade. Underlying the structural shift is a deliberate government strategy to lower unemployment via social programs, regardless of the growth cycle. The strategy has paid off to push the unemployment rate to a historical low level in the latter part of the last decade. Despite the oil wealth, productivity growth has been extremely volatile. However, productivity growth has been on a downward trend more recently, which has coincided with a significant reduction in unemployment. The evidence points to job creation that is not well aligned with real growth and workers' productivity. This trend does not bode well for diversification and job creation in the non-energy sector of the economy.

## Common Patterns across Most of the Countries

**Unemployment has been rising despite cyclical growth, implying low job content of growth during economic booms.** Only resource-rich countries appear to have been able to increase employment, driven by public employment, which does not appear to follow closely the growth cycle and productivity indicators. For tourist-dependent economies, failure to decrease unemployment during boom periods signifies high rate of informality and risk-averse strategy towards over-commitment to formal employment in light of continued vulnerability to cyclical shocks. To formalize the information regarding the job content of growth, the analysis of the next section measures the employment-output elasticity over time in individual countries.

### B. Employment-Output Elasticity Analysis

**The employment-output elasticity measures average historical association between developments in the labor market and growth.** We quantify the association between employment and growth by measuring the employment-output elasticity over time. The analysis is based on a template for analyzing and projecting labor market indicators (see Chami et.al, 2012), which generates: (i) estimates of employment-growth elasticity, (ii) a medium-term labor market outcomes table, and (iii) unemployment projections assuming three different scenarios for growth.

#### Estimates of Employment-Growth Elasticity

**Estimates are produced using a variety of econometric methods including individual country time-series regressions and panel data estimation methods.** In particular, for each country, the following equation is estimated:

$$\ln(E_t) = \alpha + \beta_i D_i \ln(Y_t) + \theta' X_t + \omega_t \quad (1)$$

Where,  $E_t$  is the level of employment at time  $t$ ,  $Y_t$  is the level of output at time  $t$ , and  $X_t$  is an optional vector of control variables, including time trend.  $D_i$  is the estimate of the country-specific coefficient for output slope and  $\beta_i$  captures the long-term elasticity. The main advantage



of this approach is that it directly provides country-specific employment estimates. As variables employed are likely to be I(1), i.e., non-stationary, OLS estimates approximate a co-integration relationship. In this connection, we estimate the model with and without time trend to verify the impact on the elasticity parameter. Further, we opt to drop the lagged dependent variable in the equation upon evidence of high degree of persistence characterizing employment in the countries under investigation. Further, we account for persistence by employing lags in the instruments list that is used to address endogeneity of output. Hence, the model is estimated using 2SLS, with and without a time trend.

**The second approach aims at addressing the problem of limited sampling**, by relying on a longitudinal framework in which the employment-output elasticity is estimated using country-specific estimates for output slopes as follows:

$$\ln(E_{it}) = \alpha + \beta_0 \ln(Y_{it}) + \beta_i D_i \ln(Y_{it}) + \theta' X_{it} + \omega_{it} \quad (2)$$

The estimates of the country-specific coefficients for output slopes are then used to compute country-specific measures of long-term employment-output elasticity  $\beta_i$ .

**Table 1 summarizes the long-run employment-output elasticity for the various countries, under six different estimation and model specifications:** (i) 2SLS regression for each country employing instrumental variables, with and without time trend, (ii) fixed effects panel estimation, with and without time trend, and (iii) panel estimation correcting for serial correlation plus country fixed effects, with and without time trend.

**The employment-output elasticity estimates vary based on the estimation method.** The elasticity of employment growth to output growth varies from a low of 0.16 in the Bahamas to a high of 1.63 in Jamaica. In general, point estimates are highly correlated across different specifications and econometric techniques (Crivelli et al., 2012).<sup>4</sup>

**The distribution of the elasticity parameter across countries confirms close association between output and employment across many countries in the Caribbean over time.** The lowest association between employment and real growth is in Trinidad and Tobago where the government has persistently expanded employment opportunities, independently of the growth cycle. The highest association between employment and real growth appears in Jamaica, reflecting frequent cyclical fluctuations in output growth that have determined the rise and reduction in the unemployment rate over time in consistency with a large size labor market.

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<sup>4</sup> For alternative approaches to estimate the employment-output elasticity, see, e.g., Islam and Nazara (2000), Kapsos (2005), Center for Mediterranean Integration (2012), and World Bank (2011, 2012).

## Medium-Term Labor Market Scenarios

**Employment-output elasticity provides the basis for forward looking analysis of the labor market.** Equations (1) and (2) allow computation of the employment-output elasticity at different time future horizons ( $k$ ) which are then used for projections. In particular, for each period  $k$ , the  $k$ -ahead response of employment to output can be computed using average historical time-series estimate,  $\beta$ , coupled with country desk projections for real growth.

Employment-Output Elasticities			
	Lowest	Average	Highest
Bahamas	0.16	0.53	0.77
Barbados	0.34	0.79	1.34
Belize	0.24	0.69	0.87
Jamaica	0.41	1.06	1.63
St. Lucia	0.29	0.54	0.75
Trinidad & Tobago	0.22	0.32	0.39

Sources: National authorities; World Economic Outlook; International Labor Organization; and IMF staff estimates and projections.

**Forward indicators in the labor market vary with growth projections and the underlying employment-output elasticity.** We complement elasticity estimates with the following data: labor force in 2012 and projection for 2018, the unemployment rate, number of unemployed, number of employed, new entrants to the labor force, total number of currently unemployed and new entrants, average real GDP growth rate (2002–2012) and the latest in 2012, average real GDP growth forecast (2013–2018) provided by Desk Economists, and average employment growth (2002–2012) and the latest in 2012.

**Subsequently, we summarize medium-term unemployment rate based on medium-term growth projections (baseline)** and compare it with two hypothetical scenarios for the unemployment rate, assuming no policy change in the labor markets and conditions underlining the norms produced by the template: (i) annual employment growth required to stabilize unemployment, i.e., to absorb entrants to the labor market, and (ii) annual employment growth required to reduce the unemployment rate by 50 percent. We produce the evidence for each country, using the lowest, average and highest elasticity estimate in the range discussed above. **Figure 9** provides a graphical illustration of the three scenarios for each country.

**In sum, the upshot of the analysis is that high growth rates would be required to maintain unemployment at the current level and be able to absorb new entrants to the labor market in most countries.** Also, in all countries covered, significantly higher growth rates, compared to medium-term projections in the baseline, would be necessary to reduce unemployment from its current high level by 50 percent.

- **Over the last decade, real growth has been historically low, generating low employment growth.** During 2002–2012, average real growth ranges from 0.62 percent in the Bahamas to 4.7 percent in Trinidad and Tobago. At the same time, employment growth averaged as low as 0.03 percent in Barbados and as high as 1.9 percent in the Bahamas. Over the medium term, real GDP growth is estimated to average 1.6 percent in Barbados, the lowest, and 2.5 percent in the Bahamas, the highest. The medium-term unemployment rate, based on medium-term growth projections and average employment-output elasticity, is the lowest in Trinidad and Tobago, 4 percent, and the highest in St. Lucia, 25.8 percent.

- **Higher growth is necessary to absorb new entrants to the labor market over the medium term.** The employment-output elasticity determines the necessary output growth to increase employment over time, in line with the growth of the labor force, and maintain the unemployment rate at its current level, i.e., to create jobs in line with projected entrants in the labor market over time. Hence, variation in the required annual real GDP growth to absorb new entrants is dependent on the estimate of the employment-output elasticity and growth of labor force in each country. Accordingly, the highest annual real growth to absorb new entrants is in the Bahamas, at 3.8 percent. In contrast, the lowest growth rate required to absorb new entrants to the labor market is in Trinidad and Tobago, at 1.71. The corresponding annual employment growth to absorb new entrants yields the cumulative change in employment growth over the 5-year projection span which is pronouncedly higher in three countries: The Bahamas (12.7), Belize (13.1), and St. Lucia (16.7). The cumulative employment growth to absorb new entrants to the labor market over a 5-year span in Barbados, Jamaica, and Trinidad and Tobago are 6 percent, 7.3 percent and 3.3 percent, respectively.
- **Even significantly higher growth is needed in the sample of countries to halve current unemployment rates by 2018.** A more ambitious strategy could aim at reducing unemployment by 50 percent over the projection span. To that end, it would be necessary to increase employment growth beyond what is required to absorb new entrants. Based on the employment-output elasticity estimate and the required annual employment growth, the analysis envisages a total cumulative employment growth of 30.7 percent over 2013–18 and an annual output growth rate of 4.5 percent in St. Lucia, the highest in the sample. Assuming average employment–output elasticity, the corresponding annual output growth is estimated at 8.4 percent. For Trinidad and Tobago, a cumulative employment growth of 6.2 percent during 2013–18 and an annual growth rate of 1 percent is necessary to reduce unemployment by 50 percent from its current low level, the lowest in the sample. The corresponding annual output growth is estimated at 3.2 percent assuming average employment-output elasticity. Despite proactive agenda to create jobs in the public sector in line with the energy cycle in Trinidad and Tobago, higher non-energy growth will be necessary to drive job creation and significantly reduce unemployment in the future.

Medium-Term Labor Market Outcomes 1/						
	BHS	BRB	BLZ	JAM	LCA	TTO
<b>Growth</b>						
Average real GDP growth rate (2002-12)	0.62%	1.13%	3.79%	0.65%	2.56%	4.69%
Real GDP growth rate (2012)	2.50%	0.00%	5.29%	0.08%	-0.43%	0.41%
Average real GDP growth rate (2013-18)	2.53%	1.60%	2.50%	1.78%	2.17%	2.44%
<b>Labor Force</b>						
Average employment growth (2002-12)	1.88%	0.03%	3.62%	1.61%	1.41%	1.24%
Employment growth (2012)	2.18%	2.12%	3.32%	1.04%	-0.27%	0.52%
Labor force (millions) (2012)	0.21	0.15	0.15	1.28	0.09	0.62
Unemployment rate (2012)	11.00%	11.00%	16.10%	13.00%	21.83%	5.50%
New entrants to the labor force (2013-18)	0.02	0.01	0.02	0.08	0.01	0.02
Total number of currently unemployed and new entrants (2013-18)	0.05	0.02	0.04	0.25	0.03	0.05
<b>Baseline 2/</b>						
Medium-term unemployment rate based on medium-term GDP growth projections	13.37%	8.92%	16.24%	8.57%	25.86%	4.01%
<b>Scenario 1 (Absorb new entrants) 2/</b>						
Change in employment required (percent)	12.70%	6.00%	13.10%	7.35%	16.71%	3.32%
Annual percentage growth in employment required (percent)	2.01%	0.98%	2.07%	1.19%	2.61%	0.55%
Required annual real GDP growth rate for 2013 - 2018 (percent)	3.80%	1.24%	3.01%	1.13%	4.83%	1.71%
Unemployment rate	9.88%	10.44%	14.51%	12.22%	19.31%	5.33%
<b>Scenario 2 (50% unemployment reduction) 2/</b>						
Change in employment required (percent)	18.88%	12.18%	22.70%	14.82%	30.68%	6.23%
Annual percentage growth in employment required (percent)	2.92%	1.93%	3.47%	2.33%	4.56%	1.01%
Required annual real GDP growth rate for 2013 - 2018 (percent)	5.52%	2.46%	5.03%	2.21%	8.44%	3.18%
Unemployment rate	4.94%	5.22%	7.25%	6.11%	9.65%	2.67%
<b>Memorandum items:</b>						
Annual percentage employment growth implied by historical growth and elasticity estimates	0.33%	0.89%	2.61%	0.69%	1.38%	1.49%
Annual percentage employment growth achieved at current growth forecasts and elasticity estimates	1.34%	1.26%	1.72%	1.88%	1.17%	0.78%
Sources: National authorities; World Economic Outlook; International Labor Organization; and IMF staff estimates and projections.						
1/ Data for 2012 could be subject to revision.						
2/ Based on average elasticity estimates.						

### C. Variation in the Unemployment-Output Elasticity

**Underlying the unemployment-output elasticity are relations between developments in the labor market and the growth cycle (Okun's law).** To explain how unemployment rates vary in response to cyclical fluctuation in output in Caribbean countries, we estimate a system of equations that provides the building blocks for the observed patterns and medium-term scenarios for the labor market and their relations with the growth cycle:

$$E_t - E_t^* = \alpha_1 + \gamma(Y_t - Y_t^*) + \mu_t \quad (3)$$

$$U_t - U_t^* = \alpha_2 + \delta(E_t - E_t^*) + \epsilon_t \quad (4)$$

$$U_t - U_t^* = \alpha_3 + \beta(Y_t - Y_t^*) + \varphi_t \quad (5)$$

Here, the unemployment gap is the unemployment rate  $U$ , relative to its natural rate,  $U^*$ , the rate of unemployment that corresponds to full capacity utilization. The output gap is the level of (log) output  $Y$ , compared to its full capacity (log) level,  $Y^*$  and the employment gap is the level (log) employment  $E$ , relative to its full-equilibrium (log) level,  $E^*$ . Natural rates are obtained using a Hodrick-Prescott filter that irons out cyclical fluctuations.

**The unemployment rate is expected to decrease relative to its natural rate in response to a business cycle when output exceeds its full capacity level.** However, there are scenarios that

could weaken the association between cyclical fluctuations in output and the unemployment rate. In one scenario, cyclical fluctuations in output may not translate to high employment growth if employers refrain from formal hiring and resort to informal employment or variation in hours worked to accommodate the business cycle and avoid over-committing labor resources in light of uncertain cyclical outlook. In another scenario, an increase in job offers could be barely adequate to absorb new entrants to the labor force, maintaining a high unemployment rate. However, where job offers are not enough to accommodate job seekers, the unemployment rate would be rising despite employment growth with output growth. Despite higher employment growth, relative to full-equilibrium employment growth, the job content of growth during a boom may not be adequate to exceed labor force growth, resulting in higher unemployment.

**To determine the scope to create formal jobs during a boom and the adequacy of job growth to reduce unemployment, a system of equations is estimated.** Estimates will determine fluctuations in formal employment around its potential level, in response to output changes, and fluctuations in the unemployment rate around its natural level, relative to deviation in employment from full-equilibrium level. The last equation in the system measures the reduction in unemployment due to growth, as a synthesis of the job content of the output growth, relative to movements in the labor force.<sup>5</sup> To the extent that output growth translates into higher employment and employment growth during a boom exceeds labor force growth, the unemployment rate declines relative to its natural rate.

**Results for four Caribbean countries show that, with the exception of Barbados, Okun's Law coefficients for unemployment are generally low in a global context.** Table 2 reports the results of an estimation of Okun's Law coefficients for Barbados, Belize, Jamaica, St. Lucia, and Trinidad and Tobago. It appears that the specific characteristics of each single country may have influenced the coefficient. Results for Barbados show a relatively more flexible response of both employment and unemployment rate to the cycle, signaling a better functioning of the labor markets relative to the other countries in the sample. In the case of Trinidad and Tobago, a low variation of unemployment with the cycle is related to a very low cyclical response of employment to the output gap. This could be explained by a strong presence of temporary public sector employment, which is less sensitive to the cycle. In the case of Jamaica, on the other hand, a high elasticity of employment to output is associated to a very low variation of the unemployment rate with employment, as a result of a strongly pro-cyclical variation in the size of the labor force. For St. Lucia, the low response of the unemployment rate to the cycle is attributable to both a modest variation of employment with the output gap and of unemployment to employment change. Figure 10 shows that while other Caribbean countries in the sample are characterized with low Okun's Law coefficients for unemployment, Barbados ranks among the countries with high unemployment response to cyclical fluctuations.

#### D. Determinants of the Employment-Output Elasticity

**The employment-output elasticity varies with underlying policies and structural constraints across countries.** The employment-output elasticity provides an average historical

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<sup>5</sup> The system of equations has been estimated with a restriction on the coefficients  $\beta = \delta * \Upsilon$ , using the delta methods.

measure of the responsiveness of employment to output. This responsiveness is likely to vary over time as a function of structural changes in the economy. Further, domestic policies are important determinants of this elasticity. These policies vary with public spending and credit availability to the private sector. In addition, economic openness and export orientation are likely to have a strong bearing on this elasticity in small open economies. We account for these factors by zeroing in on developments in the real effective exchange rate, the price of major exporting commodities, the number of tourists, and growth in major trading partners.

**Employment growth varies with underlying domestic policies and determinants of external performance over time.** The determinants of employment growth vary with the determinants of output growth in each country. To explain the determinants of the employment-output elasticity and account for the endogeneity of output growth, we substitute for output with major domestic policy variables and external factors that underlie developments in the labor market. It is important to note here that ineffective structural policies governing labor and product flexibility are likely to have an important bearing on the employment-output elasticity, constraining domestic policies from producing their full benefits in the labor market. To that end, the next section will seek to frame the empirical evidence in the context of a review of structural and institutional constraints and their implications on employment-output relations in the Caribbean.

**Employment in the Caribbean tends to fluctuate with public spending and private credit growth.** An increase in government spending may be targeting higher public employment. Further, if government spending is targeting capacity building, an increase in spending could stimulate an increase in private employment. However, an increase in government spending, if financed by higher debt, could be detrimental to employment growth. Higher borrowing by the government would increase concerns about debt sustainability, eroding confidence and crowding out private activity. If the latter channel is dominant, an increase in government spending could have a negative net effect on employment. Private credit availability is likely to have a positive effect on employment. Hence, failure to grow private credit, on account of higher domestic financing of government spending, could shrink private activity and available jobs in the private sector.

**Caribbean countries are small open economies, vulnerable to external shocks, on account of fluctuations in trade, tourism receipts, and other financial flows in the Balance of Payments.** As sources of foreign demand dry up, domestic activity could shrink, with a negative effect on employment. The empirical model accounts for two determinants of external fluctuations that could impact employment over time. An appreciation of the real effective exchange rate is likely to have a negative effect on competitiveness and job creation in connection to tourism and merchandise exports.<sup>6</sup> Similarly, an increase in the price of major exporting commodities would increase international reserves and boost domestic capacity to create jobs.

**The empirical model captures potential determinants of employment, both domestic and external, in the short and long run.** Using the multivariate co-integration approach proposed

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<sup>6</sup> The theoretical channel is articulated in Kandil and Mirzaie (2002).

by Johansen (1988), the model explains domestic employment by local and foreign factors. Long-term determinants of employment are likely to produce short-run shocks that are exacerbated by supply-side bottlenecks and structural constraints. The empirical model is an error-correction model, where the co-integrating vector captures the longer-term determinants of employment and the short-run dynamics traces the effects of the shocks in the following year. The specification of the short-run dynamics varies based on evidence of the degree of persistence in employment adjustment to shocks impinging on the economic system within each country.

**The error correction model explains determinants of cyclicality in employment growth.** The coefficient on the error correction term captures the speed of adjustment towards equilibrium in response to short-term fluctuations. Employment growth could rise in the short term in response to unexpected increase in government spending; higher growth of private credit, depreciation of the real effective exchange rate in support of competitiveness, and/or unexpected increase in international prices for major exporting commodities. In addition, employment growth may rise in the short run on account of a sudden increase in the number of tourists' arrivals and/or unexpected growth in major trading partners.

**The empirical model includes domestic and external determinants of employment in the long run.** Domestic determinants of employment include two main sources of movement in domestic policy: government spending and private credit. External variables include the real effective exchange rate, and the price of major exporting commodities. More specifically, employment in the long run is modeled as follows:

$$E = f(REER, P^*, PC, G)$$

Where,  $E$  is the employment level,  $REER$  is the real effective exchange rate,<sup>7</sup>  $P^*$  is the price of major exporting commodities,  $PC$  is private credit, and  $G$  is government spending. While government investment could help support job creation both in the public and private sectors, public consumption may not be conducive to growth and employment, given limited scope to create jobs in the public sector in light of the limited scope to increase fiscal revenues in general. Hence, the analysis will decompose government spending into investment and consumption components to detect the difference on employment, both in the long- and short-run. **Table 3** summarizes the long-run coefficients based on the co-integration test for Caribbean countries. The results indicate the existence of at least one co-integrating vector.

**The empirical model for cyclical employment growth combines the determinants of employment in the long run with short-term dynamics.** An error correction model is specified as follows<sup>8</sup>:

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<sup>7</sup> By construction, the real effective exchange rate is a weighted average of real bilateral exchange rates relative to currencies of major trading partners. Data for estimation are based on WEO submissions by various Desks.

<sup>8</sup> The ECM is estimated in response to stationarity test results that indicate that the variables are I(1). Upon first differencing, variables become stationary. The error correction charts are available upon request.

$$\begin{aligned} \Delta e_t = & c + \delta(e_{t-1} - \alpha_1 reer_{t-1} - \alpha_2 p_{t-1}^* - \alpha_3 pc_{t-1} - \alpha_4 g_{t-1}) \\ & + \sum_{i=1}^k b_{1i} \Delta e_{t-i} + \sum_{i=1}^k b_{2i} \Delta reer_{t-i} + \sum_{i=1}^k b_{3i} \Delta p_{t-i}^* + \sum_{i=1}^k b_{4i} \Delta pc_{t-i} \\ & + \sum_{i=1}^k b_{5i} \Delta g_{t-i} + \sum_{i=1}^k b_{7i} \Delta ta_{t-i} + \sum_{i=1}^k b_{8i} gtpar_{t-i} \end{aligned}$$

Here,  $k$  is the number of lags defining short-run dynamics. Lower case variables represent the log transformation of determinants of employment in the long run, as defined above. In addition to the long-run variables, two additional variables enter the short-run dynamics, the first difference of the log value of the number of tourists,  $ta$ , and a measure of growth in major trading partners,  $gtpar$ . **Table 4** summarizes the short-run coefficients based on the estimates of the error-correction model. The specification of the short-run dynamics, including the number of lags in the model, varies based on the degree of persistence that characterizes employment adjustment to shocks impinging on the economic system and the available degrees of freedom based on available data for each country. Interpretation of the evidence is subject to the small sample caveat.

**In Barbados, public investment and private credit have helped mobilize employment growth in the long run, which is further boosted by the growth in private credit, growth in major trading partners and improved competitiveness in the short run.** The long-term co-integration coefficients indicate that public investment has helped mobilize job creation over time, attesting to the importance of spending for capacity building in support of the employment agenda. In contrast, public consumption has a negative, although insignificant, effect on employment in the long run. There is limited scope to create jobs in the public sector and higher public consumption could be chocking off resources, increasing crowding out of private employment. In contrast, maintaining credit availability to the private sector has sustained employment growth over time.

**The short-run coefficients suggest a broader menu of determinants of cyclicity in employment growth in Barbados.** Cyclical fluctuations in employment growth are characterized by high degree of persistence, as evident by the positive and statistically significant response to its lag. Lagged appreciation of the real effective exchange rate has a negative and significant impact on competitiveness and job growth. The positive and significant response of employment growth to cyclicity in private credit growth signifies potential to grow private jobs during economic upturns. In contrast, the negative significant coefficients reinforce concerns about pro-cyclical fiscal spending, both on investment and consumption, and continued reliance on domestic borrowing to finance the fiscal deficit. The end result is crowding out potential to grow jobs in the private sector, reflecting rising concerns about debt sustainability and higher cost of borrowing.<sup>9</sup> Given the high degree of openness, employment growth has varied positively

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<sup>9</sup> For more direct evidence of crowding out of private sector employment by public sector employment, see Behar and Mok (2013).



and persistently with growth in major trading partners.<sup>10</sup> Finally, the negative and significant coefficient on the error-correction term indicates fast reversal to steady-state employment following a shock in the short run.

**In Jamaica, private credit growth stands out as the primary determinant of growth in employment over time.** The long-term co-integration coefficients indicate that private credit has helped support employment growth over time. However, an increase in government spending on investment is not conducive to job growth and employment in the long run. The short-run coefficients do not spell out important significant determinants of cyclical employment growth. The insignificant evidence points to a scope to further mobilize employment growth via effective policy interventions to maintain exchange rate competitiveness and invoke proper stimulus via private credit growth and/or fiscal adjustments. Moreover, structural impediments block the potential to create jobs over time.

**In St. Lucia, private sector credit has helped mobilize employment growth in the long run, which is further boosted by public investment in the short run.** The long-term co-integration coefficients indicate that the importance of private credit growth to employment growth, signifying large contribution of private employment to job creation over time. Hence, the rising unemployment over time could be associated with a collapse of available credit to the private sector. The short-run coefficients do not spell out many significant determinants of employment growth. Employment growth is not characterized by high degree of persistence, warranting suppression of its lag in the model. While government investment stimulates employment growth, government consumption appears insignificant. The evidence attests to the importance of public investment for capacity building and employment growth. In contrast, government consumption does not stimulate employment growth, despite an aggressive agenda to increase public employment that warrants an increase in the wage bill. Finally, competitiveness could matter to the employment agenda. Appreciation of the exchange rate has a negative effect on employment growth, albeit insignificant, providing a scope to mobilize employment by maintaining competitiveness and boosting exports.

**In Trinidad and Tobago, employment growth has surged with growth in private credit which could be further reinforced by a boost of competitiveness over time.** The coefficients of the co-integration vector indicate significant increase in employment with growth in private credit in the long run. Further, employment grows with depreciation of the real effective exchange rate in the long run. This evidence emphasizes the importance of stemming appreciation of the real effective exchange rate to boost competitiveness and job creation in steady state. In contrast, job growth has not varied in response to higher price of major exports, implying failure to grow the employment agenda with energy resources over time. The coefficients of the error-correction model do not present significant determinants of cyclical employment growth in the short run. Specifically, there is no evidence that employment growth responds positively and significantly to growth of government spending despite a proactive

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<sup>10</sup> In contrast, growth in tourism is not well aligned with employment growth, as evident by the negative and significant coefficients. While data are not available to attest to the informal nature of jobs created in response to cyclical tourists' arrival, the evidence is clear regarding formal jobs created in response to a boost in confidence surrounding episodes of high growth in major trading partners.

agenda to create jobs in the public sector during periods of economic booms. While government spending targets employment growth in the short run, it crowds out private credit with a negative effect on prospects to grow further jobs in the private sector. The sign and significance of the coefficient on the error correction term indicates tendency to revert to steady-state equilibrium beyond the cycle.

**Overall, panel estimation highlights the importance of private credit and public investment to sustain employment growth in the long run, which is supported by growth in private credit, in tourism and in major trading partners in the short run.** Pooling individual country data in panel estimation highlights the determinants of employment growth across the Caribbean sample. In the long run, private credit, consistent with the evidence for individual countries, has helped sustain employment growth in the region, attesting to the importance of credit availability to support private investment and reduce unemployment. Additionally, public investment is conducive to job growth in the region in the long run. In contrast, public spending on consumption could be detrimental to job creation in the long run, reinforcing concerns about increased current spending on wages and salaries which crowds out resources that could be made available in support of private employment. The short run evidence further attests the importance of private credit availability to job creation during the cycle. Tourist arrival, in contrast to individual country evidence, is significant to mobilize employment growth in the pooled sample. The evidence affirms the importance of tourism to job creation, which appears to be significant, albeit cyclical, in the pooled sample of Caribbean countries under investigation. Further, growth in major trading partners is conducive to job creation in the pooled Caribbean sample, attesting to high degree of openness and vulnerability to global conditions.

### III. INSTITUTIONAL AND STRUCTURAL FEATURES IN CARIBBEAN LABOR MARKETS

**Structural and institutional challenges remain at the centre of labor market issues of the Caribbean.** Downes (2006) outlines many of Caribbean-specific features of the labor market: (i) mismatch between labor demand and supply, reflecting a small cadre of professional, technical and managerial personnel, despite general improvement in educational attainment, (ii) growth of service-oriented workforce at the expense of a decline in the agriculture and industrial-oriented components of the workforce, (iii) high levels of unemployment, especially among young females, (iv) a general upward trend in real wages in excess of productivity improvement, (v) rigid regulations, (vi) less presence of the trade union movement in wage negotiations and labor protection across the economy, (vii) low rate of labor force growth, reflecting high emigration rates and the “ageing” population, (viii) an increase in female labor participation and stagnant male participation rate, (ix) slow growth of the formal sector, and (x) an increase in the number of self-employed over time. To what extent may these features have hampered the growth of employment and job creation over time? The analysis of this section sheds light on these issues and provides a venue for policy discussions.

## Skills Mismatch and Youth Unemployment<sup>11</sup>

**Skills mismatch in the Caribbean has widened as the sectoral shift on the demand side in many of the economies was not accompanied by adequate growth of skills.** A widening mismatch between the demand and supply of skills has in turn increased unemployment, which is more prevalent among the low-skill end of labor force. The sectoral shift, generally from agriculture to services, has provided many new positions at the professional, technical and managerial levels for the skilled workers, equipped with higher education. In contrast, unskilled workers are facing difficulties in getting job placements because of inadequate training, besides a shrinking demand for the low-skill end of the labor market. Despite rising unemployment, there is a shortage in the output of education institutions and training agencies, relative to the needs of labor markets. Scarce opportunities for acquiring job-related training forced many unemployed unskilled workers to enter the informal sectors at the risk of eventually becoming unemployable in the formal sectors.

**Young segments of the population are disproportionately hurt by the skills mismatch problem, resulting in high youth unemployment in the region.** The persistent increase of youth unemployment in the Caribbean, standing at twice as high as the national rate, has drawn attention to underlying imbalances in the labor market. While lack of work experience leaves young people more easily unemployed, the persistently high unemployment among them also reveals underlying issues in the educational system that potentially fails to equip them with necessary skills to meet the needs of employers. A main reason is the nonexistence of direct information on the skill needs of employers in most of the countries in the region, which leads to very slow adjustment in the school system to align the curricula with current skill demand in the labor market. Youth employment also has social costs as rising unemployment among the young population in depressed areas has given rise to criminal activity.

## Productivity and Wage Growth

**Labor productivity has been declining, or at best stagnating, in many Caribbean countries, except for the resource-rich ones.** In the region, trends in workers' productivity reflect the changing sectoral contribution to growth by the key sectors, with the services sectors in tourism-dependent countries and the energy sector in the commodity-exporting countries leading productivity growth. In tourism-dependent countries, the decline of tourist arrivals and the deterioration of hospitality business during the recessions have taken their toll on productivity, where the efficiency in the manufacturing sector remains subdued. Productivity in the commodity-exporters has improved, owing to the greater demand from emerging markets, favorable international prices, and higher capital investment. However, this trend has come at the expense of diversification and job creation in the non-extractive sector of the economy where productivity remains an issue. In general, continued decline in productivity and its slow recovery have impaired the international competitiveness of many of the countries in the region and presented serious challenges to mobilize employment and create jobs.

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<sup>11</sup> For more details on data sources, see Downes (2006).

**Many countries in the region have seen real wages growing in excess of productivity, reflecting inflexible wage arrangements.** Wage adjustments that are not well aligned with productivity may have adversely affected price competitiveness and export growth in many Caribbean countries where rigid exchange rate arrangements prevail. Excessive wage growth that is not well aligned with productivity growth could depress labor demand and further limit the scope to create jobs for a growing population. For example, the ratio of wage to per capita GNI is pronouncedly high across countries in the Caribbean and in St. Lucia where the unemployment rate is the highest in the region and the wage to per capita GNI ratio also tops other countries. Further, Caribbean countries score low in international comparison based on index of wage determination in the Global Competitiveness Report, reinforcing concerns over the rigid wage arrangements that are not well aligned with workers' productivity. The illustrative evidence warrants a reconsideration of the wage scheme with a view to ease rigidity that could unlock more employment opportunities.

Caribbean: International Wage Comparisons										
	Per capita GDP 1/		Per capita GNI 1/		Agriculture	Manufac- turing	Construc- tion	Hotels and Restaurants	Public Administration	All Categories
	Annual	Monthly	Annual	Monthly						
(In U.S. dollars per month)										
<b>ECCU</b>										
St. Lucia 2/	11,597	966	11,220	935	338	421	292	557	606	536
<b>Other Caribbean</b>	<b>10,083</b>	<b>840</b>	<b>9,470</b>	<b>789</b>	...	<b>381</b>	<b>441</b>	<b>304</b>	...	<b>411</b>
Jamaica 3/	7,083	590	6,660	555	...	362	514	287	...	390
Trinidad & Tobago 4/	13,084	1,090	12,280	1,023	225	401	369	321	...	433
(Ratio of monthly wage to monthly per capita GNI, in percent)										
<b>ECCU</b>										
St. Lucia 2/					36.2	45.0	31.2	59.5	64.8	57.3
<b>Other Caribbean</b>					...	<b>52.2</b>	<b>64.3</b>	<b>41.5</b>	...	<b>56.3</b>
Jamaica 3/					...	65.2	92.6	51.7	...	70.2
Trinidad & Tobago 4/					22.0	39.2	36.1	31.4	...	42.3
Sources: World Bank, World Development Indicators database; Statistical Institute of Jamaica; National Insurance Corporation, St. Lucia; Central Statistical Office, Trinidad and Tobago; and IMF staff calculations.										
1/ Purchasing power parity (PPP), in current international U.S. dollars.										
2/ Data for St. Lucia refers to 2011.										
3/ Data for Jamaica refers to 2005.										
4/ Data for Trinidad & Tobago refers to 2001.										

Caribbean: Wage Determination Flexibility		
	Score (1-7)	Rank (out of 144)
Barbados	4.7	98
Guyana	5.3	47
Jamaica	4.9	84
Suriname	5.0	76
Trinidad and Tobago	4.2	119
Source: World Economic Forum, Global Competitiveness Report 2012-2013.		

## Labor Market Legislations, Regulations and Institutions

**Labor market institutions increased non-wage labor costs and further constrained labor market efficiency.** Social partnerships, which involve tripartite discussions among the government, labor unions and employer associations, have become increasingly dominant in labor market arrangements and wage settings (see Box 1, 2, 3, and 4 for more specifics on Barbados, Suriname, Trinidad and Tobago, and St. Lucia). Regulations and institutional mechanisms have been focused on measures to protect workers' rights. Resorting to non-wage benefits renders the wage series inadequate to measure the degree of rigidity in Caribbean labor markets. Analysis focused on wage indices in the Caribbean (Rama, 1995 and Marquez and Pages, 1998) that suggests a lower degree of labor market rigidity, in contrast to Latin American countries, did not factor in these non-wage labor costs. It is also noteworthy the high share of government employment of the labor force has been frequently cited in IMF staff reports as a source of inflated wages and associated benefits for public civil servants. In addition, the wage setting of public servants may have forced a parallel accommodation in the private sector, at the expense of increasing unemployment and informality.

Caribbean: Labor Market Policies and Institutions									
	ILO Conventions Ratified	Annual Leave with Pay (days)	Maternity Leave (days)	Social Security Contributions (% of wage)	Government Employment (% of labor force)	Minimum Wage/Avg. Wage (%)	Severance Pay (days)	Unionization of Labor Force (%)	Index of Labor Market Rigidity 1/
<b>ECCU</b>									
Antigua & Barbuda	15	12	55	10.6	27.5	49.6	240	24	0.380
Dominica	20	10	50	8.9	17.7	18.8	245	25	0.223
Grenada	25	...	50	8.0	26.2	...	0	47	0.328
St. Kitts & Nevis	...	...	64	10.5	...	...	260	33	0.476
St. Lucia	25	...	57	10.0	14.1	...	245	20	0.306
St. Vincent & the Grenadines	...	...	55	7.8	20.7	49.5	200	12	0.251
<b>Other Caribbean</b>									
Bahamas	...	...	...	...	21.0	...	0	25	...
Barbados	35	15	84	12.0	38.0	...	112.5	31	0.580
Belize	27	6	50	7.0	16.0	21.9	100	13	0.182
Guyana	...	12	59	12.5	25.0	...	0	32	0.415
Jamaica	25	10	56	5.0	9.7	...	250	24	0.278
Suriname	26	12	...	2.0	45.0	...	0	42	0.283
Trinidad & Tobago	13	14	55	8.4	29.8	30.8	275	28	0.354
Sources: Rama (1995); International Labor Organization; and IMF staff estimates.									
1/ The LMR index, sometimes called the worker protection index, is a numerical measure based on a number of labor market policies that protect workers, such as restrictions on hiring and firing, paid leave, maternity leave, and severance payments.									

**Several empirical studies have documented inefficiencies of regulations and institutions as main constraints on the functioning of labor markets in the Caribbean.** Studies find many of these regulations are worthy of revision to allow for evolution in labor market institutions with a goal to increase labor mobility and labor market efficiency in the region. While the evidence varies across studies (see, e.g., Downes, Mamingi and Antoine (2004) and Strobl and Walsh (2002, 2003, and 2004)), the upshot of the analysis suggests inefficient regulations underlie high levels of unemployment in the region.

## Labor Market Policy Discussions

**Structural reforms should embrace a vigorous agenda to address the labor market issues in the Caribbean.** Countries in the region generally have heavy reliance on government to create jobs, while the troubled public finance in many of the countries has greatly limited public employment opportunities. The reform agenda should aim at addressing structural bottlenecks to improve productivity and flexibility and provide scope for job creation in the private sector, while providing effective social safety nets. The strategy should embrace: (i) restructuring and refocusing the system of education and training, (ii) boosting labor productivity (iii) mobilizing demand for employment by enhancing competitiveness to grow exports while ensuring adequate supply of skills in demand and addressing shortcomings in regulations to enhance flexibility and adaptability, (iv) strengthening the dialogue among social partners to achieve the objective of labor market policy reforms, (v) revising labor rules and regulations to be compatible with the need to strengthen the legal framework for necessary reforms, and (vi) last but not least, strengthening data availability for analysis and policy recommendations.

**Revamping training and the education system is urgently in need to solve the youth unemployment issues.** To address the skills mismatch, several programs and institutions have been developed to upgrade skills and train individuals, especially in the business/managerial areas. Several programs have been specifically designed and implemented to mobilize youth employment in the region (Pantin, 1996, 2005). These programs include the vocationalization of the secondary schools system, subsidized employer training, youth entrepreneurial development programs, and skill training programs, among others. However, the latest available data indicate limited impact of these programs on the youth unemployment problem. Related to that is the need to revamp educational curricula to increase vocational training and equip graduates with basic skills to facilitate labor market entry.

**Improving labor productivity is a key component of job creation in the private sector.** To that end, investment in human and physical capital is necessary (Downes and Alleyne, 1998 and Bannister, 2004). Several initiatives have been implemented to boost productivity in the region, including the establishment of productivity agencies, competition through trade integration, investment in infrastructure, education, training, technology and innovation, etc. Addressing brain drain and trying to retain human capital will also help boost productivity and mobilize economic growth.

**Recent structural reforms have aimed to establish a higher degree of flexibility in Caribbean labor markets.** To enhance labor mobility across the region and broaden the scope for job creation, based on resource availability, the Caribbean countries have introduced the CARICOM Recognition of Skills Certificate, aimed at reducing skills mismatch and stemming brain drain across the region. While the Certificate facilitates the movement of professional within CARICOM, it could end up exacerbating the skills shortage in some countries. Indeed, the labor market indicators still point to significant challenges for which a thorough review of existing laws and regulations and a serious dialogue among social partners are warranted to improve the labor market flexibility.

### Box 1. The Barbados Labor Market: Institutions, Regulations, and Practices

**Labor legislations in Barbados appear outdated, and are not seen as adequately meeting the needs of modern times.** A survey-based study by Archibald, Lewis-Bynoe and Moore (2005) finds rigidity of working hours as the most restrictive aspect of the market, perhaps reflecting more of industrial practices and less of regulations that constrain flexibility to increase working hours. The difficulty in firing arises from the need to notify and seek approval from labor unions, or the labor ministry as the case may be, particularly with respect to group dismissal, and the existence of certain rules relating to dismissals and re-employment.

**A notable regulatory impediment is the restriction on night work, which appears to hamper the services sector with pervasive implications on employment in light of Barbados' heavy reliance on tourism.**<sup>1</sup> Overall, Downes, Mamingi and Antoine (2004) find that the level of distortions caused by regulations relating to national insurance contributions, severance payments, and minimum wages are minimal, reflecting long-standing rigidities that demand a voluntary approach to industrial relations. ILO conventions form the basis for labor regulations, government policies and programs in Barbados. As of 2009, the government has ratified up to 39 of such conventions, surpassing some peers in the Caribbean. Downes (2008) reaffirmed employers' concerns that rules in place under the many "collective agreements" with employer groups have led to quasi-fixed labor costs, which adversely affects demand for labor.

**High level of youth unemployment, coupled with high incidence of workers without certification presents a 'mismatch' problem associated with a dysfunctional education system (Downes, 2006).** Employers have expressed difficulties in hiring workers with required work ethic, attitude, job and technical skills (Downes, 2008). Recent data from the Barbados Statistical Service (BSS) indicate that close to 70 percent of the employed workforce during 2012 Q4 are in the low and semi-skilled categories. Yet, the country has a highly educated populace, with an estimated 18 percent of the labor force completing tertiary education in 2003, according to the World Bank.

**For bargaining purposes, employers usually recognize labor unions** once a given number of their employees (at least half) wish to be represented and when the Department of Labor verification process is followed. Similarly, workers are free to exercise their rights to form and belong to trade unions. About 70 percent of the estimated organized workforce is concentrated in three unions (Fashoyin 2001). Although the Ministry of labor puts union density at 30 percent of the labor force, Fashoyin (2001) considers that it might be higher (about 52 percent), considering the demonstration effects of collective agreements in the organized sector.

**The general approach to collective bargaining is supported by a voluntary tradition and has remained an overriding feature of Barbados' industrial practice.** Wages and conditions of employment are negotiated collectively both at the industrial, and national levels. Barbados has occupational minimum wages for categories such as shop assistant, domestic workers, and agricultural workers; although average wages tend to be higher than the minimum wage. At the national level, an umbrella organization, which plays a facilitating role among various unions, is the Congress of Trade Unions and Staff Associations of Barbados (CTUSAB), while the private sector counterpart is the Barbados Private Sector Agency (BPSA). Under the social partnership, the CTUSAB and BPSA have worked with the government (represented by the Department of Labor) in crafting and implementing the broader economic and social policy agenda for the country.<sup>2</sup>

**Barbados has a national insurance and social security system,** which has extensive coverage including for the self-employed. The unemployment insurance component introduced in 1981 offers cash benefits to the unemployed, subject to qualifying conditions, in addition to a reverse tax credit for low income earners, and welfare grants program.

**Active labor market policies designed to improve the employability of labor are in place.** The National Employment Bureau (NEB) offers free labor market information services for both local and overseas job seekers, undertakes career counseling and job application services, and facilitates placement of persons seeking jobs in overseas migrant worker programs. Technical and vocational training is an important part of human capacity development in the country.

<sup>1</sup> The Shops Act limits night work to 10pm unless approval is received from the Chief Labor Officer.

<sup>2</sup> The Barbados model of social partnership, which came into force in the early 1990s, was a response to the need to find a joint solution to the economic crisis at that time. In the context of an IMF Program, the social partners implemented a number of price and income policies, including wage freeze.

### Box 2. The Suriname Labor Market: Institutions and Reforms

**Suriname has stringent employment protection.** According to the 2012-2013 World Competitiveness Report, Suriname is ranked 137 out of 144 countries in hiring and firing practices. Practically all firing decisions require employers to seek some kind of permission from regulators, and pursuant to the *Dismissal Permits Act*, it is impossible for the employer to give notice to terminate an employee without a valid reason. For government employees, dismissal is even more difficult so that in practice, government employees are typically only suspended and continue to receive their salaries (including raises) and benefits.

**Private sector provides less than government access to health and pension benefits.** With the exception of some large companies, employees in the private sector do not have employer-provided health insurance and pension schemes, while government employees have both benefits. Unemployed persons are eligible to apply for medical care support and financial support from the Ministry of Social Affairs and Housing. This creates an incentive for job seekers to turn down private sector jobs, claim unemployment and health care benefits from the government, and engage in informal employment while waiting for a position in the government to open up, which in turn increases official unemployment data. Close knit family support networks, including from the large Surinamese population living in the Netherlands, reportedly make this option a relatively viable one for a substantial segment of the population.

**Wage bargaining in the private sector is generally firm-based, but influenced by outcomes of the large employers.** Most bargaining is firm-based with the exception of 6 federalized trade unions in the mining sector and one central trade union for government employees. Collective agreements on conditions of employment often cover more than one year, but wage bargaining is typically done on an annual basis, and union demands are typically based on inflation/cost of living, company performance, and the agreements struck by key large companies and government. Thus, given the dominant share of government employment, wage increases granted by government can have a significant effect on wage negotiations in the private sector.

**The authorities are planning to establish a national health care and pension system to improve labor mobility.** Led by the Vice President, a competitiveness unit of Suriname is preparing to implement the national health care and pension system by early 2014. In addition to improving health outcomes and old age security, such a universal system aims to equalize access to social benefits between the private and public sectors, between large and small companies, and between the formal and informal sectors, and reduce current impediments to job-switching, thus enhancing the flexibility and efficiency of the labor market.

**A minimum wage system is under discussion.** During the Article IV mission in 2013, IMF staff was informed that as one pillar of social security system reform, tripartite meetings were held between government, employer representatives and trade union representatives to discuss the establishment of a minimum wage in Suriname. The minimum wage will be in the range of SRD 3 per hour to SRD 5 (equivalent to the current salary of a cleaning job in the public sector) per hour. To the extent that there are substantial portions of economic activity currently being remunerated at less than the envisaged minimum, instituting the minimum wage could hurt job creation at the lower end of the wage scale or drive such activities into the informal sector, which would be detrimental to the very people the law is designed to help. It would be advisable to gather more data about wage developments in a broad cross section of society to inform the decision on the appropriate minimum wage.



### **Box 3. Labor Market in Trinidad and Tobago: Institutions, Regulations and Practices**

The Trinidad and Tobago labor market is ruled by a host of regulations that prioritize job security and ensure significant benefits to formal sector workers. While the legal framework intends to reach high standards for the workers' wellbeing, in practice they contributed to create a segmented market with significant presence of public sector jobs and insufficient mobility. In addition, government employment programs and other conditions in the low-skill segment of the market appear to validate the existence of considerable levels of underemployment.

#### **Legal framework**

The three most important labor laws are the Industrial Relations Act, the Retrenchment and Severance Benefit Act, and the Minimum Wage Act. The industrial relations act sets forth legislation concerning strikes and the registration and certification procedures for trade unions; the Retrenchment and Severance Benefit Act, guarantees severance payments as a function of the length of uninterrupted service in the case of dismissal due to redundancy; and the Minimum Wage Act created a minimum remuneration level that was implemented nation-wide in 1998 at an initial level of TT\$7.00 per hour (US\$1.10). On January 1, 2011, the minimum wage was raised to TT\$12.50 (US\$1.9) per hour, up from TT\$9.00 in the previous year, placing Trinidad and Tobago's minimum wage among the highest in the Caribbean region.<sup>1</sup> In addition, Trinidad and Tobago counts with the National Insurance Board (established in 1971) to provide social security services for employees (self-employed are not covered). Other major labor laws include the Equal Opportunity Act (in 2000, amended in 2001), the Maternity Protection Act (1998), the Occupational Safety and Health Act (enacted in 2004, amended in 2006), and the Trade Union Act (1933). As a member of the International Labor Organization (ILO) since 1963, Trinidad and Tobago has ratified nineteen ILO Conventions.

#### **Unionization and collective negotiations**

Collective bargaining takes place fundamentally at the firm level. There are 123 registered trade unions, with the size of memberships ranging from 4 people to 20 thousand for the largest union. Per the Industrial Relations Act, all collective agreements in Trinidad and Tobago must cover a period of at least 3 years and no more than 5 years. The recent experience shows that unions tend to negotiate wage increases to cover a 3-year span but with considerable lags (e.g., in late 2012 the wage negotiation for the period 2008–10 was concluded) and with retroactive benefits.

While some researchers have found that minimum wages exert important effects on the rest of the labor market in Trinidad and Tobago, mainly by shifting the entire wage structure upwards and negatively affecting formal sector employment (Rambarran, 1998),<sup>2</sup> other studies concluded that labor market regulations do not impact employment significantly. Downes et.al. (2004) analyzed the impact of minimum wage, contribution to the national insurance system, and severance payment and found that they do not impact employment significantly, although the lack of changes in labor regulations in the period of their study may explain such finding.

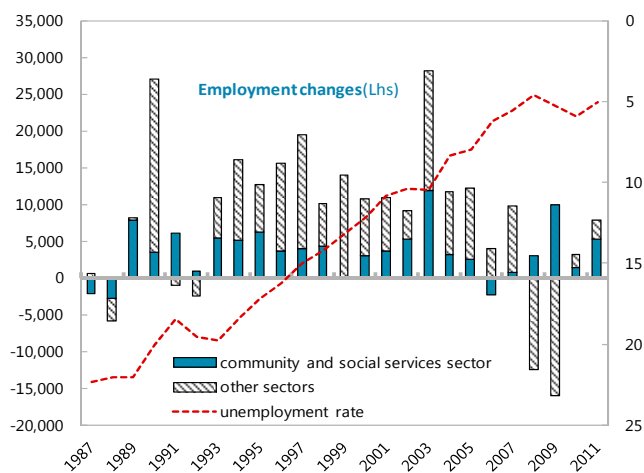
#### **Government employment programs**

Recent evidence suggests that the rate of employment has been fairly stable through the economic cycle, and that government-sponsored employment programs have served to buffer the impact of economic volatility on the unemployment rate. In the past two decades, the government has introduced various employment support and training programs under the Social Sector Investment Program (SSIP) aimed at reducing unemployment in certain disadvantaged segments of the population. The two largest programs are the Unemployment Relief Program (URP) introduced in 1992 and the Community Environment Protection and Enhancement Program (CEPEP) introduced in 2002, which provide unskilled or semi-skilled people with temporary jobs for less than 8 hours per day, resulting in average hourly wages surpassing the

minimum wage. The URP provides 3 consecutive two-week jobs and allows re-registration after a three-month break. The CEPEP jobs last from 1–3 years. In FY 2012, the number of beneficiaries of these two programs alone exceeded the average number of unemployed between 2008 and 2012.

While these programs have an important role in the country's social safety net and reduce measured unemployment, their de facto non-transitory nature and the associated remuneration levels create a distortion in the labor market that appears to contribute to the relatively high underemployment in Trinidad and Tobago compared with other developing countries.<sup>3</sup> In fact, the latest Continuous Sample Survey of the Population (CSSP) provides some direct evidence that underemployment was severe in the *Community Social and Personal Service sector*, the sector that includes the URP and CEPEP, as in 2011 it accounted for 45 percent of the total employees who worked less than 33 hours/week for the specific reason of having “no more work to do”.

Finally, the prevalence of underemployment in Trinidad and Tobago's labor market is likely aggravated by the presence of informal activities and temporary migration from other islands, especially outside the main cities.



<sup>1</sup> Central Bank of Trinidad and Tobago, “Understanding Wages in a Small Open Economy: The Case of Trinidad and Tobago”, WP 11/2013 February 2013.

<sup>2</sup> Rambarran, A. “Labor Market Adjustment in an Oil-Based Economy: The Experience of Trinidad and Tobago” in Dabri-Alai, P. and M. Odekon, *Economic Liberalization and Labor Markets*, London: Greenwood Press, 1998.

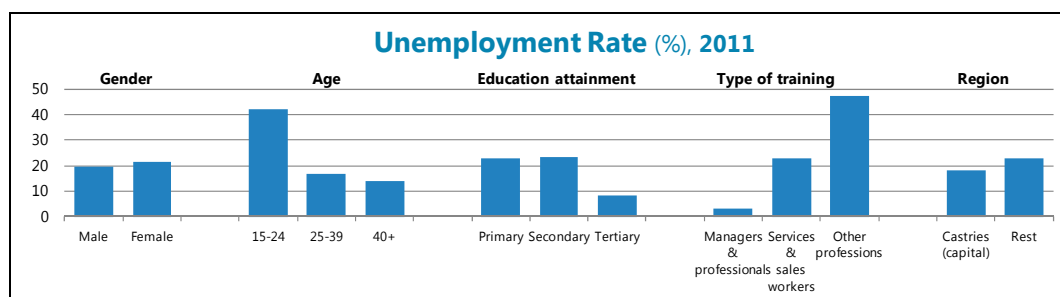
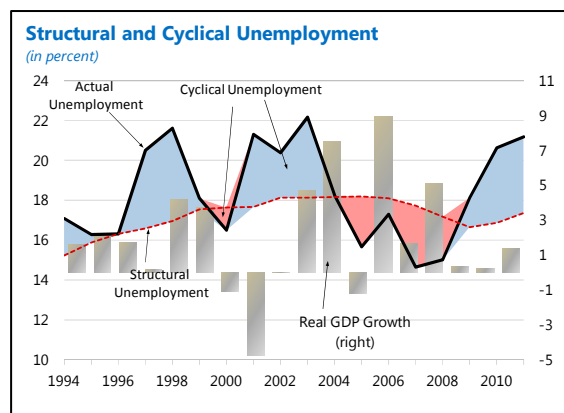
<sup>3</sup> Gorg and Strol, “Minimum Wages and Compliance: The Case of Trinidad and Tobago”, *Economic Development and Cultural Change*, Vol 51, No. 2. 2003.

### Box 4. Some Structural Issues Behind High Unemployment in St. Lucia

**Unemployment in St. Lucia has been historically very high, and was pushed up even further by the recent cyclical downturn.** Over the past two decades (for which data are available) unemployment averaged 18.6 percent, and it increased markedly to over 20 percent by mid-2012 with the economic slowdown. Staff estimates that structural unemployment is currently close to its long-term historical averages (18.6 percent), with the remaining 3 percentage points is a result of the cycle.

**The concentration of unemployment among the young and unskilled provides some insights into the reasons behind the structurally high unemployment.**

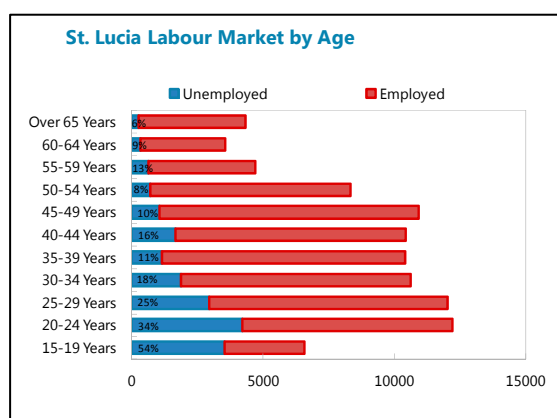
Unemployment rate among young labor force is extremely high, reaching about 45 percent, and it is also strongly concentrated among the unskilled: unemployment is above 20 percent among those without tertiary education and close to 50 percent for persons with non-knowledge-based training. Today, the great majority of the unemployed, about 95 percent, holds secondary education or less and only 5 percent holds tertiary or university education. A number of factors account for these unemployment outcomes:



- Sectoral shifts in the economy.** The shift in the structure of the economy from agriculture and labor-intensive manufacturing to services over the past two decades—which accelerated in the past couple of years in the aftermath of hurricanes and the banana leaf disease outbreak—has required the employment of relatively more skilled workers. While other sectors, such as construction, transportation and retail were able to absorb part of the unskilled, recent low growth in those sectors has penalized even more the displaced low skilled workers. As a result, the unemployment rate of the less skilled has been higher recently than in the 1990s, when the major structural shifts occurred: it increased by about 7 percentage points in the last three years relative to the 1990s, while the unemployment rate among the skilled increased only by 2 percentage points relative to the 1990s.
- Weaknesses in the education system have left the vast majority of the new entrants into the labor force unskilled and little prepared for entrance into the job market.** The great majority, almost 90 percent of the labor force has at most secondary education: 43 percent of the labor force has none or primary education and 34 percent has secondary education. Incomplete education due to dropout is quite consistent: about 13 percent of the labor force currently has incomplete primary and secondary education. A large number of drop outs from primary and secondary education and an almost nonexistent vocational education appear to be the main reasons behind the low-skilled labor force, and subsequent skill mismatches in the labor market. The introduction of universal secondary

education in 2000 led to a rapid expansion in the secondary education system but this did not lead to a significant increase in the number of students with completed secondary education. There are two main factors that may account for that: (i) the mandatory schooling age remained at 15, although secondary education extends to 17; and (ii) weaknesses in the *primary* education system, including inability to deal with students that have not mastered the requirements of their current grades, leave a large number of entrants into the secondary education unprepared and quickly disillusioned in their ability to catch up. The vocational education system is very thin, leaving even those with completed secondary education little prepared for the skills sought out in the job market and leading to notable skill mismatches in the labor market. This makes the unemployed labor force difficult to hire and can lead to a low productivity in instances when low skilled are hired and have to be trained on the job. Indeed, St. Lucia has been characterized by decreasing productivity in the past 5 years, which has taken a toll on competitiveness. Moreover, as a result of the “un-employability” of the unemployed, most of the social programs targeting employment through hiring incentives are not effective.

- Low growth and young demographics.** The rapid growth in fertility rate during the 1980s (which subsequently dropped in the early 2000s) resulted in a rapid population growth, with the great majority of the labor force currently very young. At the same time, the relatively low growth has not generated sufficient jobs to absorb these large inflows into the labor force, resulting in very high youth unemployment (45 percent in 2011). Staff estimates that, under projected demographic flows, a growth of at least 2.1 percent growth to absorb the new entrants into the labor market over the near and medium term, somewhat higher than under staff’s current baseline projections.



**In light of the young and almost entirely unskilled profile of the unemployed, increases in the minimum wage would further exacerbate the problem of youth unemployment.** Over the past few years, the authorities have studied proposals to increase the existing minimum wage (currently very low, unbinding, and unchanged since 1985), some of which would impose binding constraints on the cost of labor in some sectors and affect employment, especially among the youth; staff cautioned against such increases during past discussions with the authorities. Plans to reconsider the existing minimum wage have been put on hold for now.

#### IV. SUMMARY AND CONCLUSION

**Employment growth has varied with the business cycle in many countries in the Caribbean.** Cyclicity in employment growth has reflected labor markets’ vulnerability to external shocks, given uncertainty and limited scope to apply timely countercyclical policies. Except for resource-rich countries in the region, cyclicity of growth has produced high unemployment rates during cyclical downturns and limited scope to mobilize employment during cyclical upturns. Productivity growth has remained stagnant, on average, attesting to failure to enhance productivity towards a more vigorous agenda of job creation.

**The employment-output elasticity further attests the importance of growth to job creation and sustainable human development.** In most countries, the magnitude of elasticity indicates

close association between employment and output, except for resource rich countries where structural policies have targeted a reduction in unemployment over time, independently of the growth cycle.

**Efforts to mobilize additional growth and job creation should take top priority going forward to reduce poverty and increase real per capita GDP in Caribbean countries.**

Capitalizing on historical employment-output elasticity, three scenarios are produced for prospective developments in the labor market. In the first scenario, medium-term projections estimate the unemployment rate, assuming baseline growth projections. Given limited scope to mobilize growth and create jobs, medium-term unemployment projections remain high in most countries. Two other hypothetical scenarios for growth are considered, capitalizing on historical employment-output elasticity. The second scenario calculates output growth rates that are necessary to stabilize the unemployment rate at its current level, i.e., create jobs to absorb new entrants to the market. The third scenario embarks on a more ambitious strategy to calculate growth rates necessary to reduce the unemployment rate by 50 percent. The upshot of this analysis warrants a comprehensive agenda that should be in place to mobilize growth and sustain lower unemployment rates over the medium term, given prevailing high unemployment in many countries of the Caribbean.

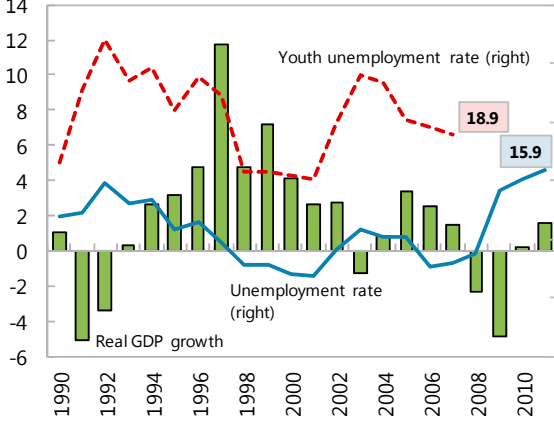
**Estimates of structural coefficients indicate sharp variation in the transmission of growth to unemployment across Caribbean countries.** In Trinidad and Tobago, low cyclical response of unemployment to the output gap reflects an employment strategy which is highly dominated by public employment and has persistently pushed the unemployment rate downward independently of the growth cycle. In Jamaica, despite high cyclical employment with growth, the unemployment response has been low, reflecting low job content of growth, compared to growth of the labor force over time. In St. Lucia, the low unemployment response to the growth cycle reflects low formal job content of growth and high growth of the labor force, relative to formal employment. The larger response of employment/unemployment to the growth cycle in Barbados reflects relatively higher formal employment and better ability to create jobs in excess of new entrants to the labor market.

**Domestic policies and structural reforms that support private investment should be at the core of job creation and growth enhancement strategy.** The results of estimating empirical models identify important domestic and external determinants of employment over time and cyclical in the short term. The menu of explanatory variables include domestic policy variables, government investment and private credit, and determinants of external performance--real effective exchange rate, prices of major exporting commodities, number of tourists, and growth in major trading partners. In general, government spending, private credit and/or improved competitiveness have helped support trend growth in employment over time. However, pro-cyclicality in government spending could be detrimental to job creation, because of crowding out of private activity and increased concerns about debt sustainability. Indeed, the evidence points to the importance of sustaining credit growth to the private sector to mobilize employment growth. Further, maintaining competitive real effective exchange rate helps the employment agenda, which is further supported by confidence boost surrounding episodes of high growth in major trading partners. In a pooled sample across the Caribbean over time, a boom in tourism has helped create jobs in support of cyclical growth of employment.

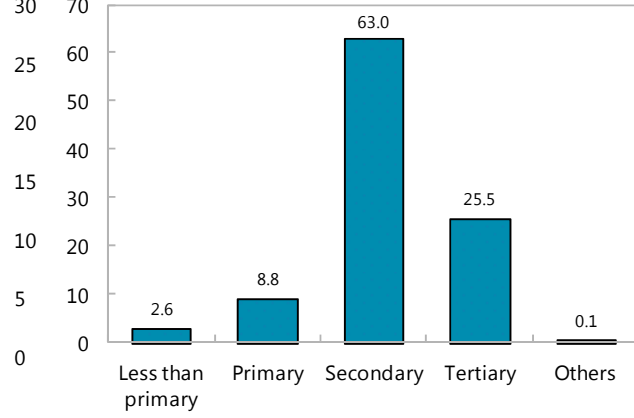
**Structural and institutional impediments have constrained the scope to create jobs, even during episodes of high growth, and hampered success of domestic policies.** To explain the empirical evidence and further shed light on necessary reforms, the paper takes stock of existing rules and regulations governing labor markets in a sample of Caribbean countries. Major challenges relate to youth unemployment, the mismatch between skills and jobs, low levels of labor productivity, and inadequate labor market information. To address these shortcomings, the structural reform agenda should embrace a vigorous agenda to close the mismatch between educational output and skill demand, target higher productivity through training and skill upgrade, promote social partnerships to strengthen labor market institutions, revise labor laws, and improve capacity and flexibility to boost competitiveness and reap the benefits of greater integration in the global economy. Addressing these shortcomings will help job creation to make growth more inclusive.

**Figure 1. Bahamas: Selected Labor Indicators**

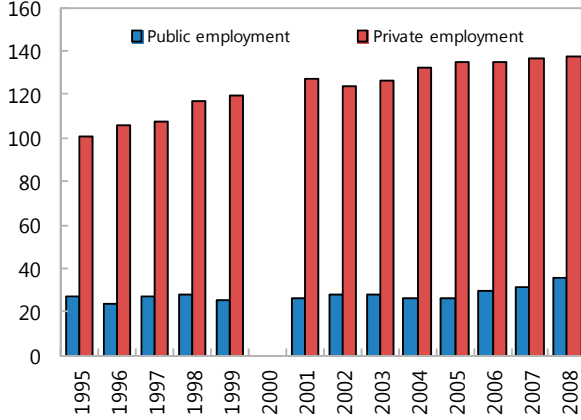
**Unemployment Rate and Growth**  
(percent)



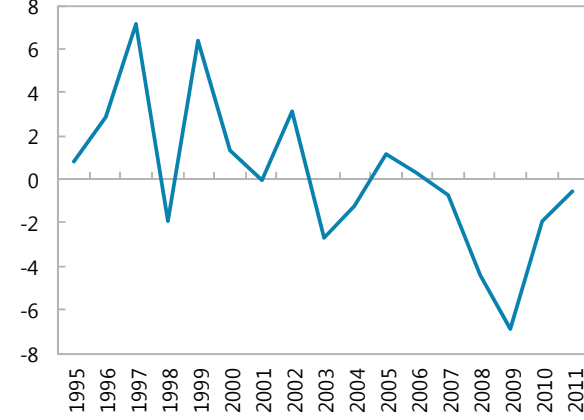
**Labor Force by Educational Attainment**  
(2006, percent share)



**Private and Public Sector Employment**  
(thousands)



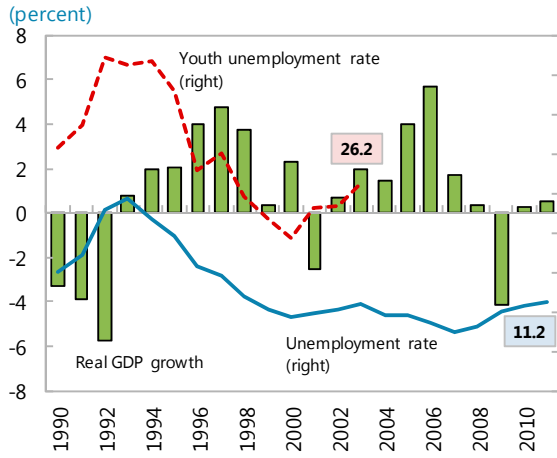
**Productivity Growth**  
(percent change)



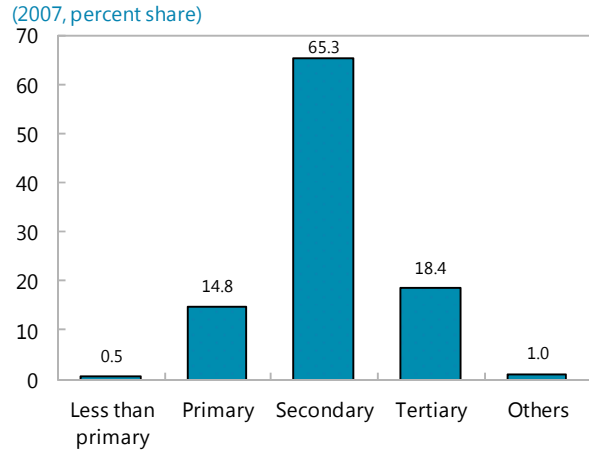
Sources: National authorities; World Economic Outlook; and International Labor Organization.

**Figure 2. Barbados: Selected Labor Indicators**

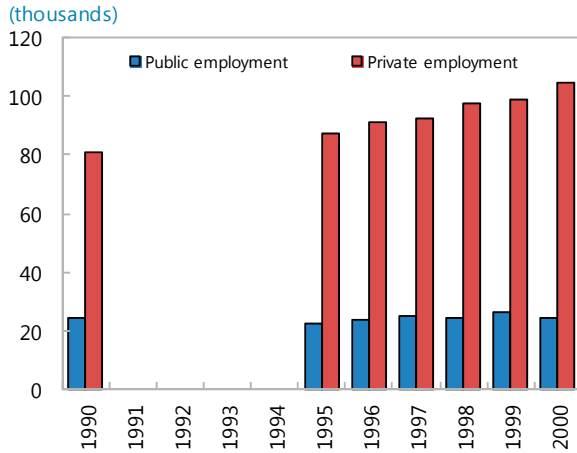
**Unemployment Rate and Growth**



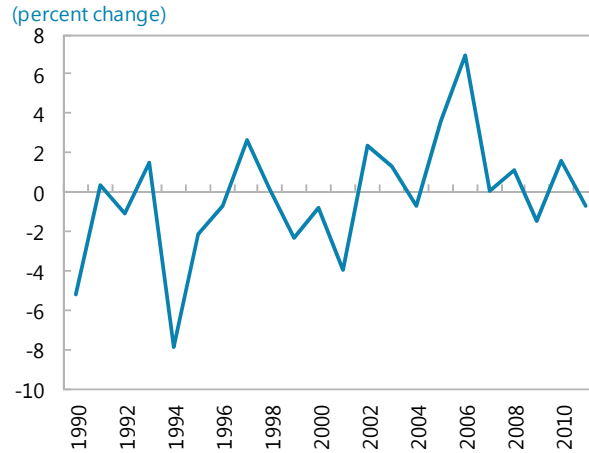
**Labor Force by Educational Attainment**



**Private and Public Sector Employment**



**Productivity Growth**

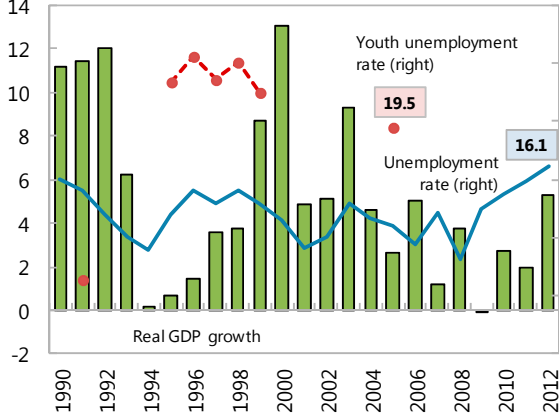


Sources: National authorities; World Economic Outlook; and International Labor Organization.

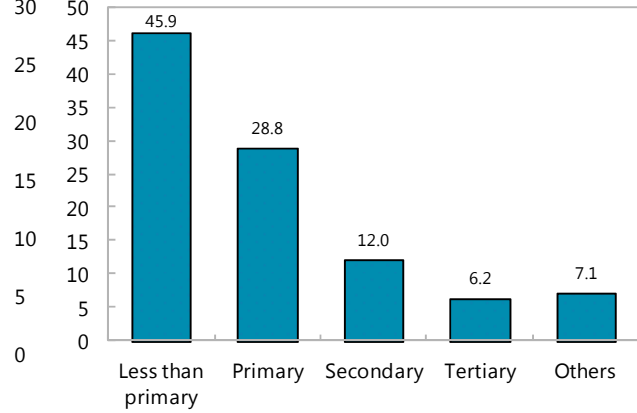


**Figure 3. Belize: Selected Labor Indicators**

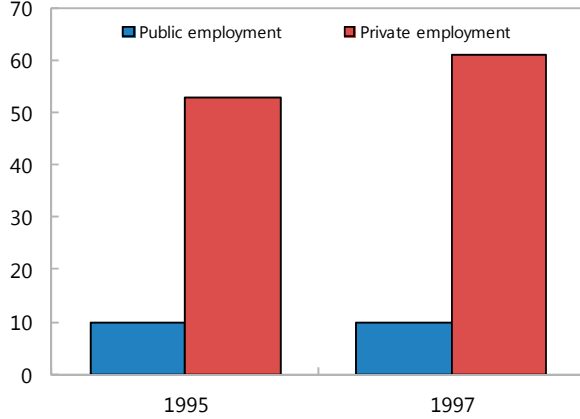
**Unemployment Rate and Growth**  
(percent)



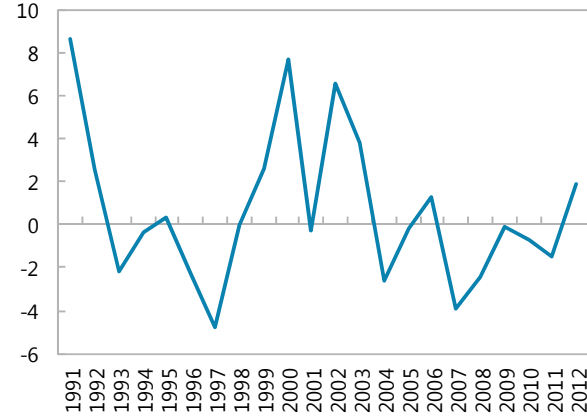
**Labor Force by Educational Attainment**  
(2012, percent share)



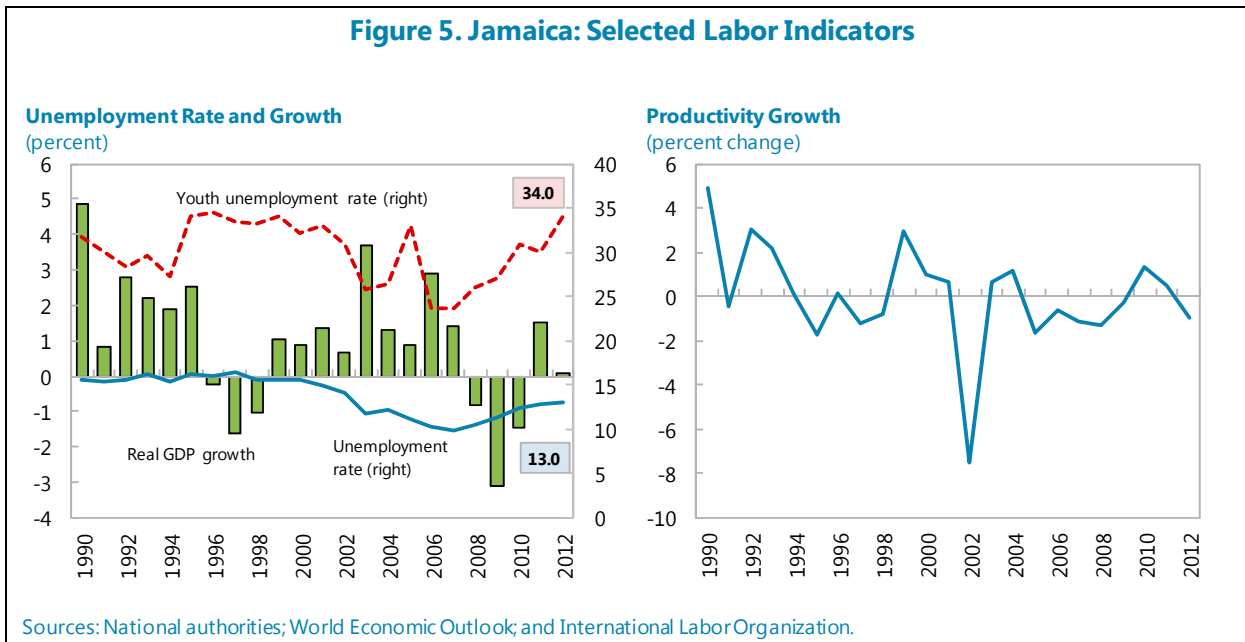
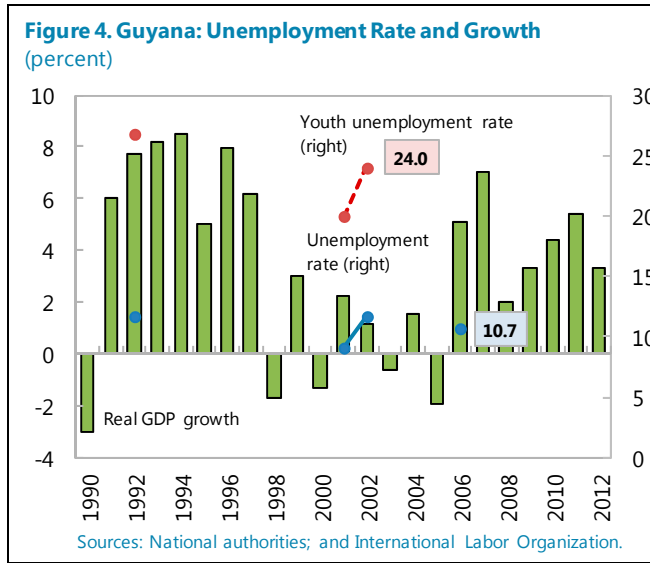
**Private and Public Sector Employment**  
(thousands)



**Productivity Growth**  
(percent change)

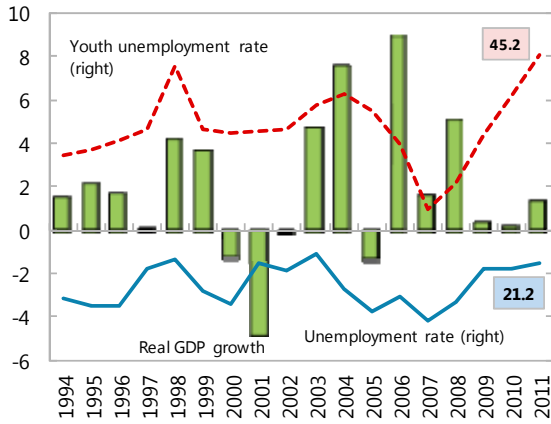


Sources: National authorities; World Economic Outlook; and International Labor Organization.

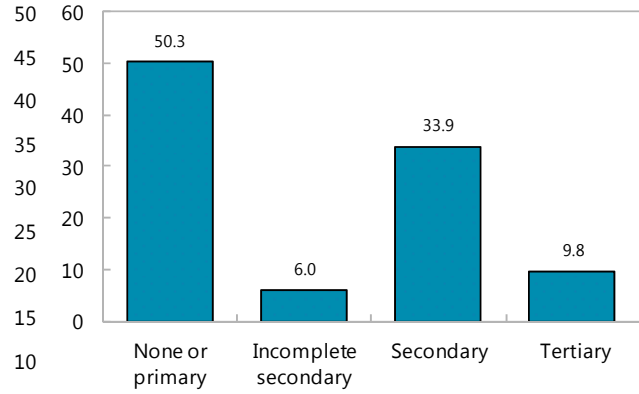


**Figure 6. St. Lucia: Selected Labor Indicators**

**Unemployment Rate and Growth**  
(percent)

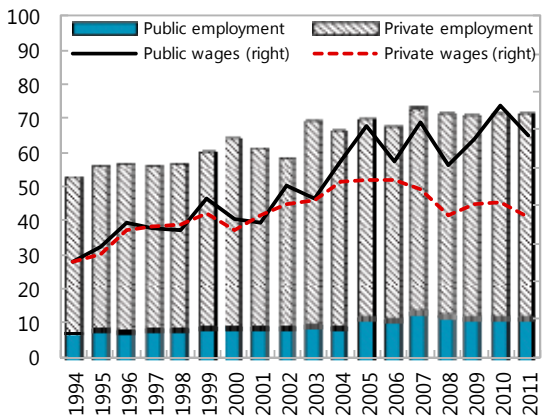


**Labor Force by Educational Attainment**  
(2011, percent share)



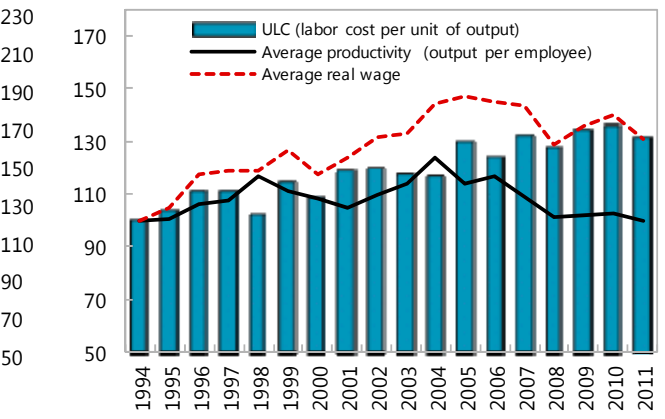
**Employment and Wages**

('000 numbers of workers, real wage index 1994=100)



**Average Wages and Productivity**

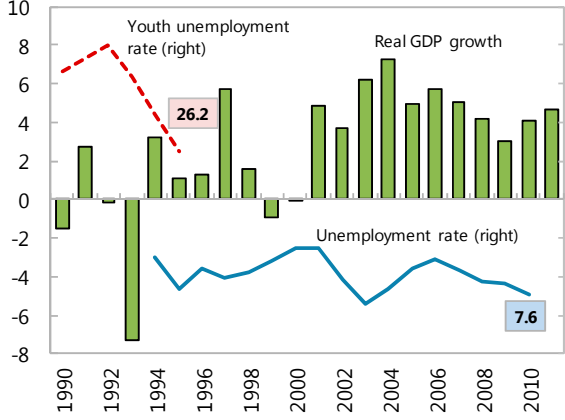
(index: 1994=100, weighted by industry's share in total employment)



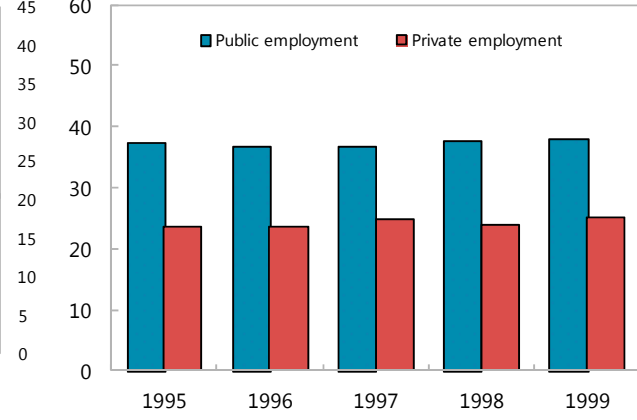
Sources: National authorities; and Labor Force Surveys.

**Figure 7. Suriname: Selected Labor Indicators**

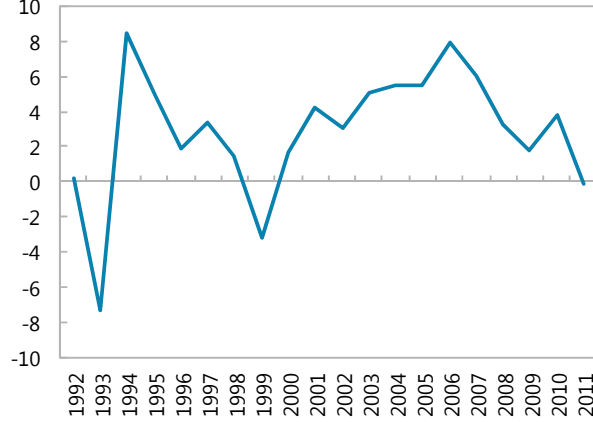
**Unemployment Rate and Growth**  
(percent)



**Private and Public Sector Employment**  
(thousands)



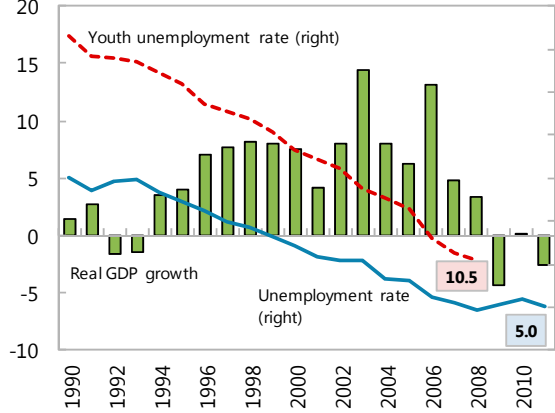
**Productivity Growth**  
(percent change)



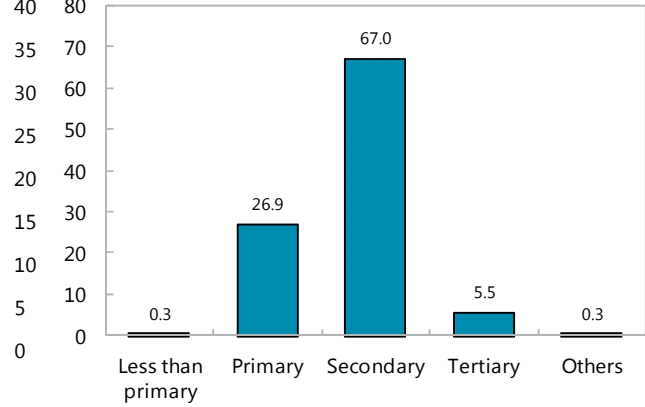
Sources: National authorities; World Economic Outlook; and International Labor Organization.

**Figure 8. Trinidad and Tobago: Selected Labor Indicators**

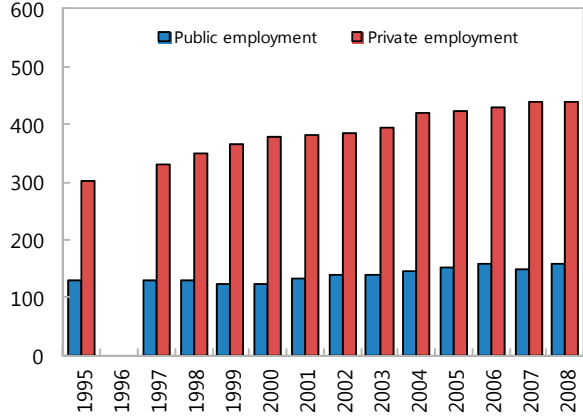
**Unemployment Rate and Growth**  
(percent)



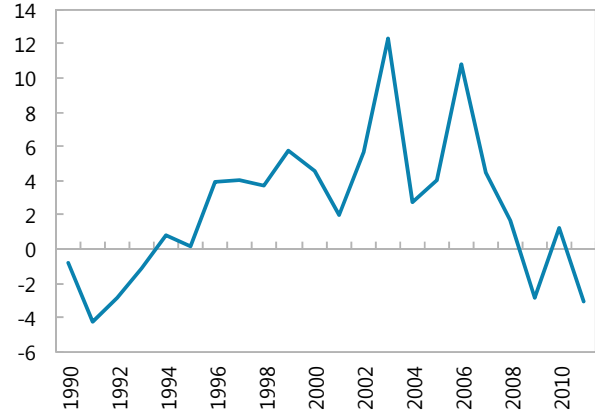
**Labor Force by Educational Attainment**  
(2008, percent share)



**Private and Public Sector Employment**  
(thousands)



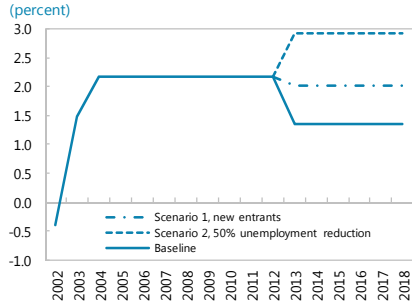
**Productivity Growth**  
(percent change)



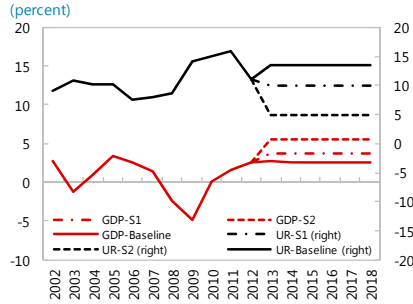
Sources: National authorities; World Economic Outlook; and International Labor Organization.

Figure 9. Medium-Term Labor Market Outcomes 1/

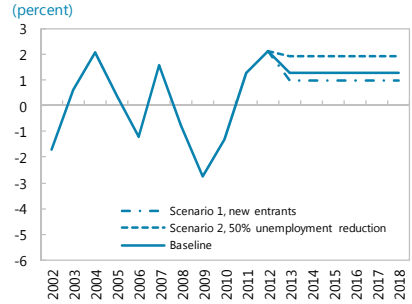
**Bahamas: Employment Growth**



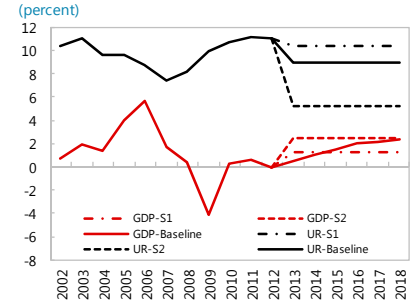
**Bahamas: Real GDP Growth and Unemployment Rate**



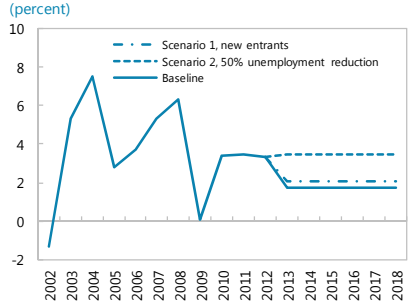
**Barbados: Employment Growth**



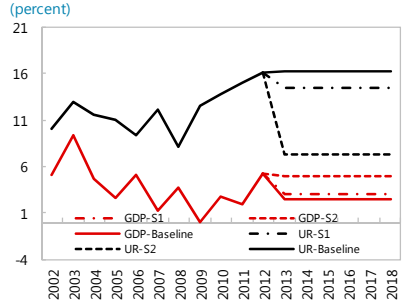
**Barbados: Real GDP Growth and Unemployment Rate**



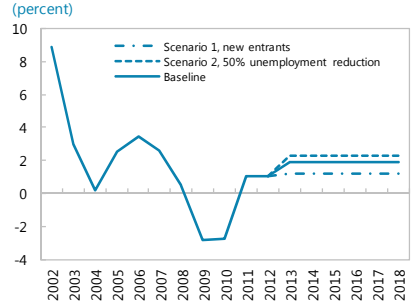
**Belize: Employment Growth**



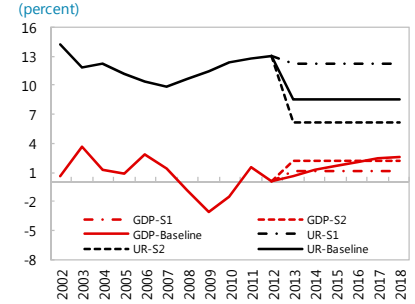
**Belize: Real GDP Growth and Unemployment Rate**



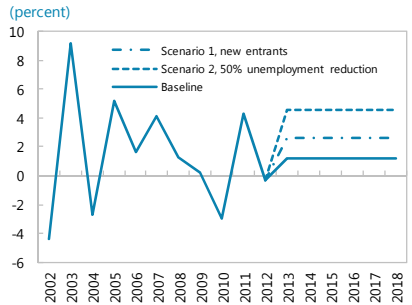
**Jamaica: Employment Growth**



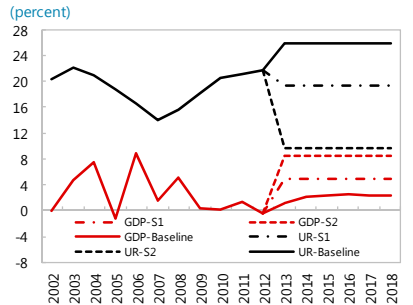
**Jamaica: Real GDP Growth and Unemployment Rate**



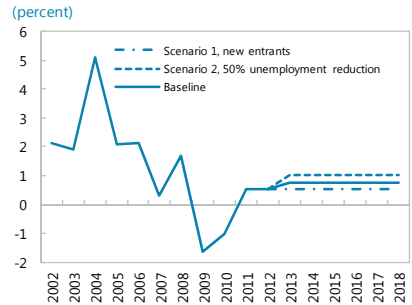
**St. Lucia: Employment Growth**



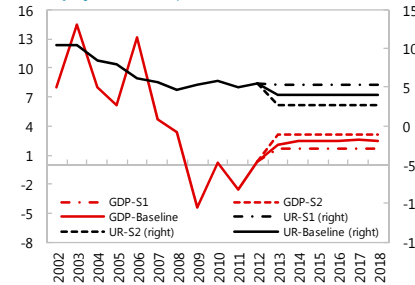
**St. Lucia: Real GDP Growth and Unemployment Rate**



**Trinidad and Tobago: Employment Growth**

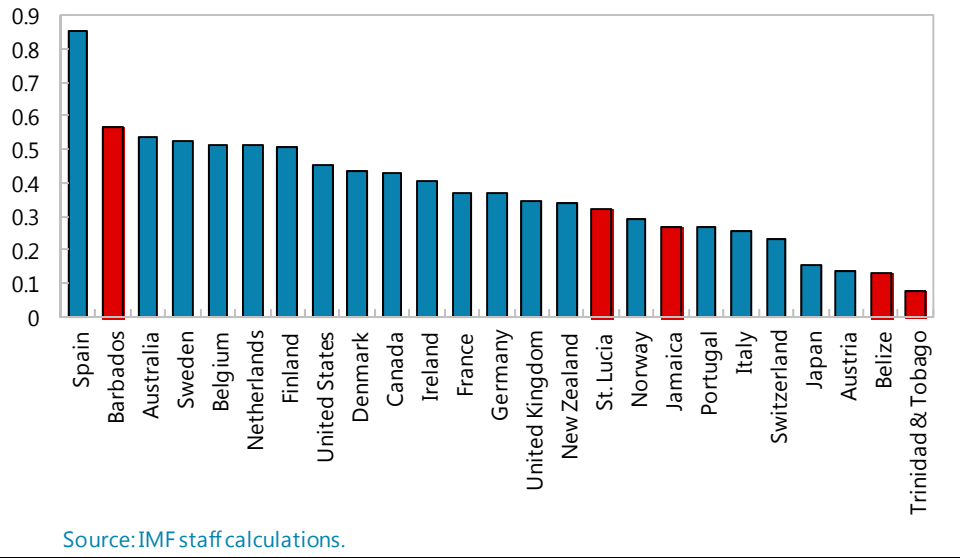


**Trinidad and Tobago: Real GDP Growth and Unemployment Rate**



Sources: National authorities; World Economic Outlook; International Labor Organization; and IMF staff estimates and projections.  
1/ S1: Scenario 1; S2: Scenario 2; and UR: Unemployment rate.

Figure 10. Okun's Law Unemployment Coefficient



**Table 1. Elasticities**

	Individual Country 1/		Individual Country 2/		Panel 3/		Panel 4/		Panel 5/		Panel 6/	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
<b>Log_GDP</b>												
Bahamas	0.158182	4.12	0.767708	11.75	0.755919	1.30E+16	0.437118	3.34	0.660584	6.41	0.40085	3.88
Barbados	1.339672	3.1	0.864358	7.19	0.929432	1.70E+15	0.343	1.42	0.84109	5.71	0.404382	2.64
Belize	0.236694	2.63	0.872925	27.63	0.870548	2.10E+15	0.667798	8.01	0.837746	17.31	0.652209	11.93
Jamaica	1.304168	7.88	1.63419	17.44	1.402202	1.70E+15	0.411901	1.01	1.158896	5.02	0.421661	1.72
St. Lucia	0.488359	1.53	0.754786	12.75	0.729126	1.80E+15	0.294236	1.65	0.654791	5.12	0.318701	2.47
Trinidad & Tobago	0.343156	6.73	0.351038	26.45	0.377546	8.80E+15	0.215839	3.25	0.392237	9.06	0.229507	4.75

Sources: National authorities; World Economic Outlook; International Labor Organization; and IMF staff estimates and projections.

1/ Individual country = Baseline IV using lags as instruments.  
 2/ Individual country = Baseline IV using lags as instruments, w/o year.  
 3/ Panel = Baseline + country fixed effects.  
 4/ Panel = Baseline + country fixed effects + common time trend.  
 5/ Panel = Baseline + country fixed effects, 2-step estimates.  
 6/ Panel = Baseline + country fixed effects + common time trend, 2-step estimates.



**Table 2. Estimates of the Okun's Law and Unemployment-Employment Relation**

	Coeff.	R-sq
<b>Trinidad and Tobago</b>		
Okun's Law Employment ( $\gamma$ )	0.22***	0.63
U-E relation ( $\delta$ )	-0.36***	0.70
Okun's Law Unemployment ( $\beta$ )	-0.08***	0.42
<b>Belize</b>		
Okun's Law Employment ( $\gamma$ )	0.27**	0.20
U-E relation ( $\delta$ )	-0.42***	0.27
Okun's Law Unemployment ( $\beta$ )	-0.13***	0.24
<b>Jamaica</b>		
Okun's Law Employment ( $\gamma$ )	1.12***	0.60
U-E relation ( $\delta$ )	-0.24***	0.56
Okun's Law Unemployment ( $\beta$ )	-0.27***	0.43
<b>St. Lucia</b>		
Okun's Law Employment ( $\gamma$ )	0.54**	0.16
U-E relation ( $\delta$ )	-0.57***	0.54
Okun's Law Unemployment ( $\beta$ )	-0.32**	0.20
<b>Barbados</b>		
Okun's Law Employment ( $\gamma$ )	0.68***	0.29
U-E relation ( $\delta$ )	-0.75***	0.74
Okun's Law Unemployment ( $\beta$ )	-0.57***	0.65

Source: IMF staff calculations.

\* Results for Seemingly Unrelated Regression (SUR), \*\*\* and \*\* indicating statistical significance at 1 and 5 percent level. Natural rates are based on Hodrick-Prescott filter with  $\lambda=100$ .

Equations:

$$E_t - E_t^* = \alpha_1 + \gamma(Y_t - Y_t^*) + \mu_t$$

$$U_t - U_t^* = \alpha_1 + \delta(E_t - E_t^*) + \epsilon_t$$

$$U_t - U_t^* = \alpha_1 + \beta(Y_t - Y_t^*) + \varphi_t$$

**Table 3. Long-Run Coefficients 1/**  
(Dependent Variables: Employment)

	Barbados	Jamaica	St. Lucia	Trinidad and Tobago	Fixed Effects (Panel)
Constant	2.6667 (2.3166)**	5.6895 (11.45)***	8.9955 (0.9787)***	4.3584 (7.39)***	4.2821 (8.56)***
Government consumption	-0.2348 (-1.5963)	-0.0124 (-0.47)	0.0048 (.0658)	0.0437 (0.69)	-0.0552 (-1.79)*
Government investment	0.1382 (4.4084)***	-0.0413 (-1.94)*	0.0314 (0.0430)	-0.0146 (-1.15)	0.0194 (1.71)*
Private sector credit	0.2219 (1.8443)*	0.1303 (3.72)***	0.1528 (3.358)***	0.2653 (4.75)***	0.1597 (5.45)***
Real effective exchange rate	0.1214 (0.6496)	-0.0103 (-0.14)	0.1525 (0.2001)	-0.1696 (-2.32)**	-0.0072 (-0.09)
Price of major exporting commodity				-0.0012 (-2.22)**	
N	18	23	19	21	83

Source: IMF staff calculations.

1/ All variables are in log. T-ratios are in parenthesis. Asterisks \*\*\*, \*\*, \* denote significance at 1, 5, and 10 percent level, respectively.

**Table 4. Short-Run Coefficients 1/**  
(Dependent Variable:  $\Delta$ Employment)

	Barbados	Jamaica	St. Lucia	Trinidad and Tobago	Fixed Effects (Panel)
Constant	-0.0102 (-5.9703)*	0.0070 (0.27)	-0.0053 (0.0309)	-0.0033 (-0.10)	0.0043 (0.58)
$\Delta$ Employment(-1)	1.3029 (18.9915)**	0.4815 (0.75)		0.9300 (0.79)	0.0060 (0.04)
$\Delta$ Employment(-2)		-0.0641 (-0.10)		1.0864 (2.57)	-0.0262 (-0.20)
$\Delta$ Employment(-3)				-0.0288 (-0.07)	
$\Delta$ Real effective exchange rate(-1)	-0.0304 (-1.0622)	-0.0944 (-0.83)	-0.2010 (0.3771)	-1.0677 (-1.98)	-0.0466 (-0.77)
$\Delta$ Real effective exchange rate(-2)	-0.2247 (-6.2813)*	-0.0202 (-0.14)	-0.8711 (0.8049)	0.7333 (1.25)	-0.0129 (-0.20)
$\Delta$ Private sector credit(-1)	-0.1335 (-4.2114)	0.0440 (0.38)	0.1577 (0.2799)	-0.1410 (-0.87)	0.0680 (1.70)*
$\Delta$ Private sector credit(-2)	0.1572 (9.6368)**	-0.0155 (-0.13)	-0.2990 (0.2503)	0.0994 (0.71)	0.0055 (0.14)
$\Delta$ Government consumption(-1)	-0.1035 (-6.9819)*	-0.0395 (-0.42)	0.0962 (0.1794)	0.0673 (0.80)	-0.0447 (-1.16)
$\Delta$ Government consumption(-2)	-0.1269 (-7.1121)*	0.0077 (0.07)		-0.0615 (-0.85)	-0.0016 (-0.05)
$\Delta$ Government investment(-1)	-0.1736 (-13.2896)**	0.0370 (0.77)	0.1200 (0.059)*	0.0205 (1.99)	-0.0104 (-1.64)
$\Delta$ Government investment(-2)	-0.0648 (-5.8533)*	0.0031 (0.08)		0.0049 (0.54)	-0.0069 (-1.09)
$\Delta$ Price of major exporting commodity(-1)				-0.0004 (-0.83)	
$\Delta$ Price of major exporting commodity(-2)				-0.0007 (-1.99)	
$\Delta$ Tourism arrivals(-1)	-0.4018 (-13.9422)**	-0.3880 (-1.20)	-0.2783 (0.4744)	-0.2716 (-1.19)	0.0052 (0.75)
$\Delta$ Tourism arrivals(-2)	-0.5484 (-15.1902)**	0.0849 (0.23)	-0.6041 (0.3420)	0.0625 (0.44)	0.0170 (2.44)**
$\Delta$ Trading partners real GDP(-1)	3.7312 (10.6886)**	0.0462 (0.06)	0.7084 (1.1583)		0.2274 (1.84)*
$\Delta$ Trading partners real GDP(-2)	0.8115 (5.6235)	0.2904 (0.48)	0.7610 (0.7665)		-0.0305 (-0.25)
ECM(-1)	-0.9651 (-7.5789)*	-0.4189 (-0.70)	-0.9453 (0.3387)**	-0.6966 (-0.91)	-0.0658 (-0.80)
N	16	20	16	19	71

Source: IMF staff calculations.

1/ All variables are in log. T-ratios are in parenthesis. Asterisks \*\*\*, \*\*, \* denote significance at 1, 5, and 10 percent level, respectively.

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