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# BENIN

## SELECTED ISSUES

January 2018

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# BENIN

## SELECTED ISSUES

November 28, 2017

Approved By
**The African Department**

Prepared by a team led by Norbert Toé and comprised of Aissatou Diallo, Karim Barhoumi, Shirin Nikaein Towfighian, and Rodolfo Maino.

## CONTENTS

# GROWTH, STRUCTURAL TRANSFORMATION, AND EXPORT DIVERSIFICATION

*While Benin has delivered high economic growth over recent years, it faces critical challenges regarding export diversification and domestic production. Based on cross-country experiences, this note evaluates the type of structural reforms and economic diversification that could contribute to boost and sustain diversified growth in Benin, underscoring the need for improving infrastructure, trade networks, and market access, reducing barriers to entry for new products, deepening financial markets, and investing in human capital.*

## A. The Structure of the Beninese Economy

**1. During the last decade, growth in Benin has been comparatively highly volatile.** Per capita GDP growth however has been stagnating. Real economic growth rebounded to 4 percent in 2016 compared to 2015, where the growth rate slowed significantly to 2.1 percent due to weak agriculture output generated by unfavorable weather and negative spillovers from Nigeria. From 2006 to 2016, real GDP growth averaged 4.2 percent (with a maximum of 7.2 percent in 2013 and a minimum of 2.1 percent in 2010 and 2015), driven mainly by the services. Growth remains volatile, despite having strengthened in recent years. Per capita GDP growth has been stagnating and Benin has been lagging six fastest growing non-resource intensive SSA-economies. Inflation turned negative in 2016 after a moderate increase in 2015. The devaluation of the naira counterbalanced the fuel subsidies' cut, which led to lower domestic fuel prices, a major component of the consumer price index. The fiscal deficit grew from -0.4 percent of GDP in 2012 to -6.2 percent of GDP in 2016, with a maximum of -8.0 percent of GDP in 2015. The fiscal deficit growth was essentially driven by a net increase in current transfers, especially subsidies to the cotton and electricity sectors, as well as a higher wage bill, while tax revenues weakened. The external current account deficit dropped by 1.5 percentage points of GDP in 2016 compared to 2015 mainly due to continued strong export performance.

**2. In addition, economic growth was not inclusive.** Notwithstanding recent progress, Benin remains a low-income country with 11 million people and a per capita income of US$790 in 2015. Agriculture accounts for a quarter of GDP and 51 percent of the country's employment with cotton as its primary export commodity. The informal sector, including subsistence agriculture, contributes up to almost 60 percent of GDP and engages over 80 percent of the labor force.[1] Re-export to Nigeria contributes up to a quarter of the government's revenue. Nonetheless, rapid population growth—averaging 3.5 percent per year—led to a modest and unequal increase in household consumption. Poverty levels grew from 36.2 percent in 2011 to 40.1 percent in 2015. Due to its low productivity, growth was modest in agriculture, which employs almost half of the labor force. The economy

[1] See Medina et al. (2017)

remains poorly diversified and vulnerable to external shocks, underscoring the urgency to promote economic diversification. In particular:

- Poverty remains spread and it is characterized by significant regional disparities. Female-headed households have typically experienced lower poverty levels (Text Table 1), divested of economic opportunities.

**Text Table 1: Benin: National Poverty and Inequality Rates 2007–2015**

| | 2007 | 2009 | 2011 | 2015 |
|---|---|---|---|---|
| Poverty rates | | | | |
| Urban | 28.0 | 29.8 | 31.3 | 35.8 |
| Rural | 36.0 | 38.4 | 39.7 | 43.6 |
| Male-headed households | | 36.2 | 38.0 | 40.2 |
| Female-headed households | | 30.4 | 27.6 | 39.7 |
| Benin Total | 33.0 | 35.2 | 36.2 | 40.1 |

Source: INSAE, 2015

- There is a dichotomy between economic growth and poverty reduction. During the last five years, higher growth was mainly driven by more capital-intensive sectors like banking, telecommunications and maritime activities at the port of Cotonou. In contrast, agriculture, which is a main driver of poverty reduction, have grown, mostly, from expansion of cultivated land and the associated labor rather than increase in productivity.

- Rapid population growth further limited the growth in per capita income and its impact on poverty reduction. Furthermore, regional trade had a negative spillover from the Nigeria's economic slowdown and policy changes. There were diminished opportunities in both goods and services between Benin and Nigeria affecting the broader sector of informal trade, where gas flows informally from Nigeria to Benin, and in the broader consumer goods sector, where

rice, chicken, edible oil, used cars, used clothing etc., flow from Benin to Nigeria. For instance, the suppression of subsidies in Nigeria's oil sector affected negatively the informal Beninese gas trade in areas adjacent to Benin's border with Nigeria, where poverty increased from 34.8 percent in 2011 to 50.4 percent in 2015.

**3. Diversification slowly advances led by the agriculture and service sectors.** There has been relatively little evidence of structural change in Benin over time (Figure 1). The sectoral composition of output has remained remarkably stable and the level of diversification low. During the period (2000-2012), the service sector contributed to the real GDP growth by 2.2 percent while the industry and agriculture sectors participated respectively by 0.4 and 1.1 percent. During the following decade, the contribution of the different sectors remained roughly the same. During the period (2010-2016), the primary sector contributed by 0.5 percent to the real GDP growth while the secondary and tertiary sectors agriculture accounted for around 1 percent and 2.2 percent respectively, shares that have changed little since 1990 for when data are first available. The level of output diversification—based on a Theil Index measure (Box 1)—is also low and has remained stagnant, in contrast to faster growing benchmark countries, which have witnessed sharp increases in diversification over time.

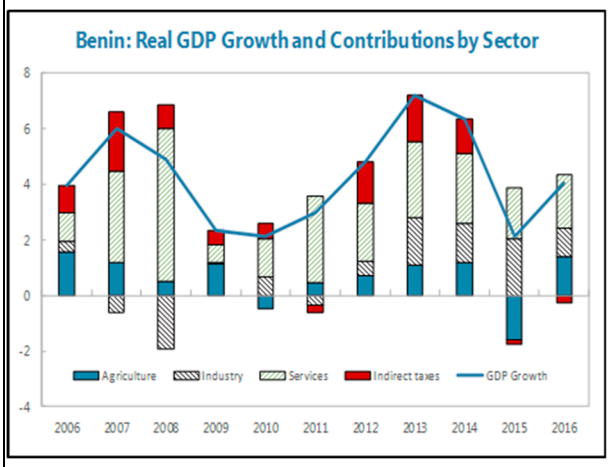
**4. The agricultural sector in Benin is highly dependent on rainfall patterns and, mostly, on one major commodity (cotton).** Despite its low productivity, agriculture remains one of the main sources of growth and employment in Benin. Nonetheless, to further contribute to economic growth and poverty reduction, the agriculture sector needs to buttress its productivity considerably. Specifically, agricultural production systems heavily rely on increases in cropped areas and family labor, with limited use of improved inputs, production methods, and farm equipment. Agricultural exports are concentrated on three groups of products: cotton, fruits (pineapple), and nuts (cashews) and oilseeds (soy and cottonseed). Nonetheless,

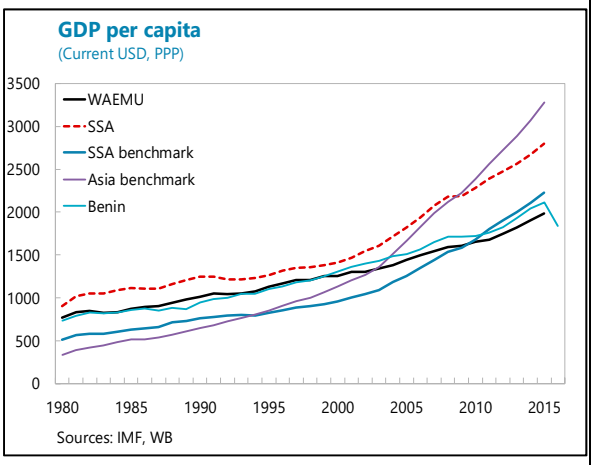
- to address the needs of a growing urban population, the country continues to import a large share of horticultural products from neighboring countries (mostly, Burkina Faso and Nigeria), rice from Asia, wheat, frozen meat and milk from Europe, and frozen poultry products from Brazil.

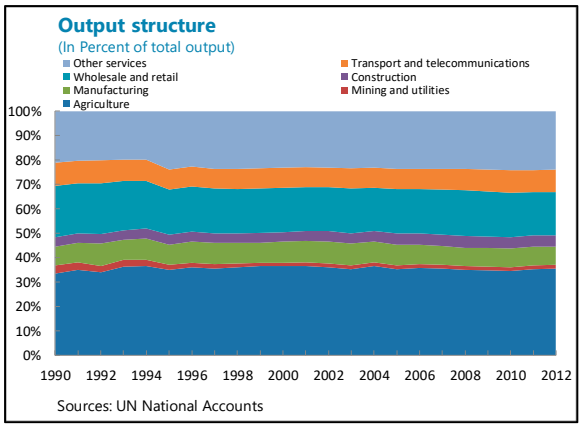
- the agricultural sector faces the triple challenges of diversifying exports (consolidating cotton exports and increasing export volume for pineapple and cashew nut), increasing food production, and sustainably increasing farm and post-harvest productivity—these challenges must be addressed by improving the structural vulnerability of the country's agricultural production system to floods and occasional droughts; and

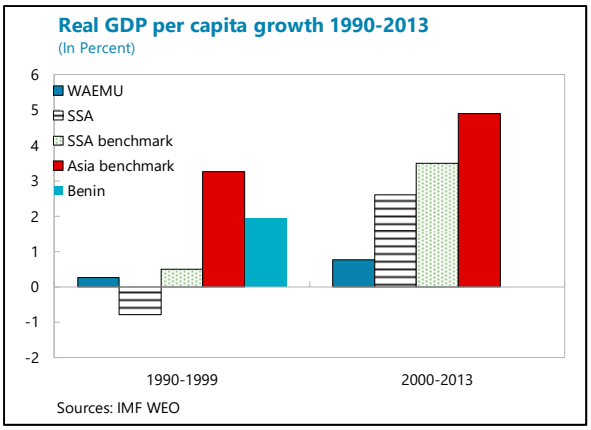
- access to financing is limited outside the cotton system. The country's agricultural trade performance is generally weak, with a persistently negative agricultural trade balance.

**Figure 1. Benin: Real GDP Per Capita and Output Structure**



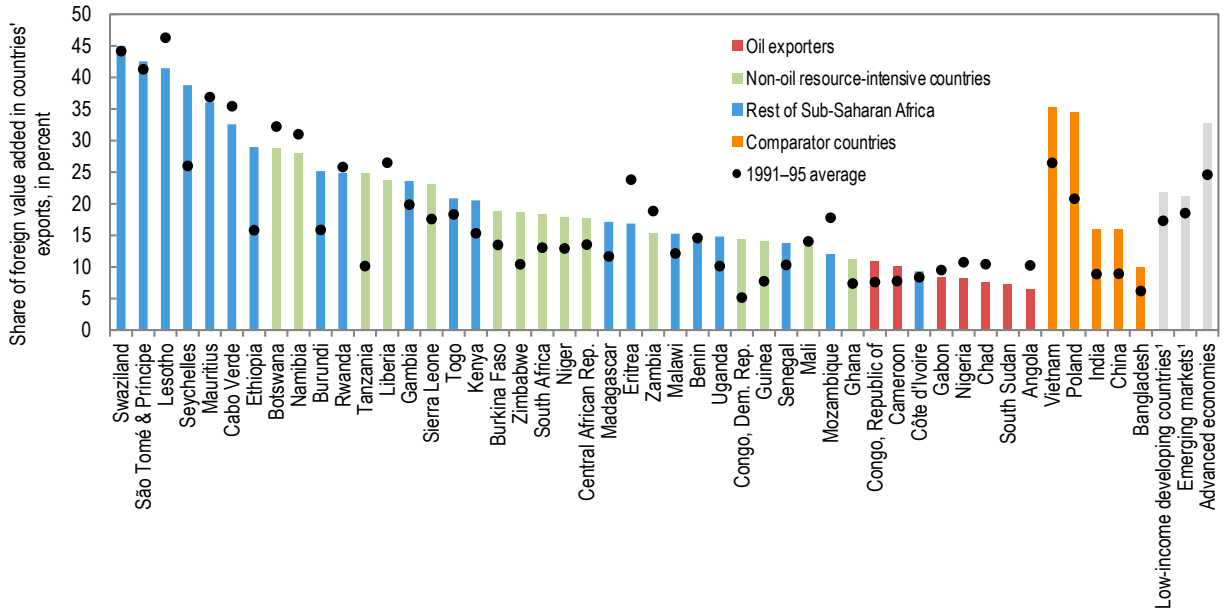

**5. Benin has experienced a modest de-industrialization, contrasting with a sharp industrial expansion in this sector among benchmark countries.**[2] The share of the manufacturing sector in output fell from 22 percent to 12 percent in Benin during the period going from 2000 to 2012 but increased from 10 percent to 16 percent in the Asian peer group between 1990 and 2012. Conversely, the share of the agricultural sector has declined across low-income countries over time but has remained elevated in Benin. During the decade 2000-2009, the share of the agricultural sector was estimated on average at 24 percent. It remained constant and has been valued at 22 percent during the period 2010-2016.

**6. Benin has exhibited good performance regarding integration into value chains recently.** The Regional Economic Study (2015) showed that integration into global value chains had indeed been accompanied by a pickup in income levels. To measure the depth of this integration, the REO relied on the extent of foreign value added in a country's exports—traditionally referred to as backward integration. By this measure, rising depth of integration has been associated with rising

[2] Dominguez-Torres and Foster (2011).

income over time for developing and emerging market economies higher share of its exports enter as inputs for other countries' exports, reflecting the still-predominant role of commodities in many countries' exports in the region. By this metric, Benin is aligned with the rest of SSA (Figure 2).

**Figure 2. Sub-Saharan Africa and Comparator Countries: Depth of Integration in Global Value Chains, Average 2008–13**




Source: Regional Economic Outlook, African Department. IMF (April, 2015).

**7. Against this backdrop, structural change and economic diversification become critical aspects of economic development.** Export diversification is not only associated with lower output volatility but also with higher economic growth rates.[3] At the same time, output diversification—including employment diversification—is associated with higher income per capita.[4] Also, the type and quality of export products increases pari passu with the diversification of production.[5] This note examines growth potential and benefits from diversification for Benin.

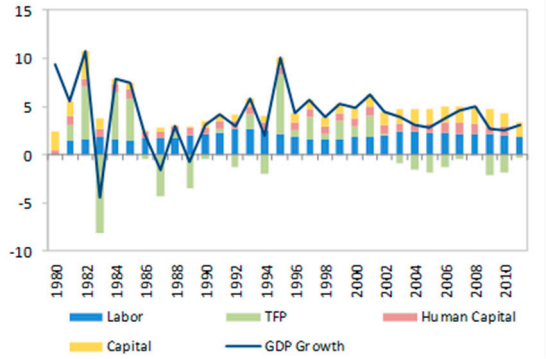
[3] Papageorgiou, Perez-Sebastian, and Spatafora (2013).

[4] Imbs and Wacziarg (2012).

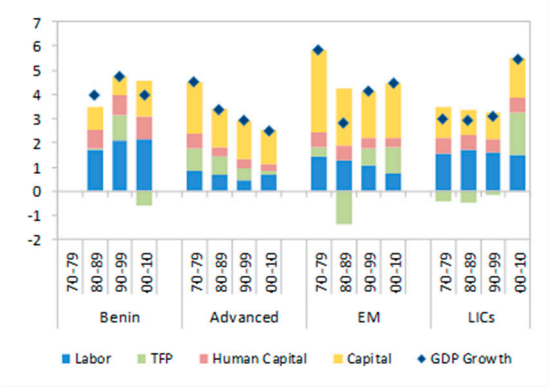
[5] Papageorgiou, Perez-Sebastian, and Spatafora (2013).

## Figure 3. Benin: Productivity

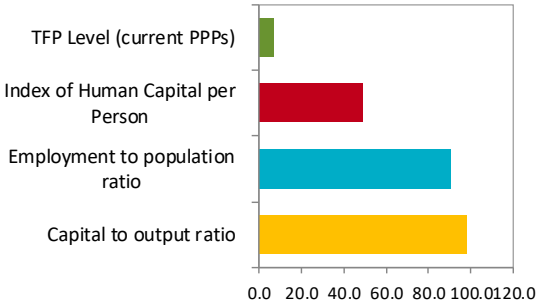
*The contributions of capital has been weak while labor and TFP were stable (after 2000)…*



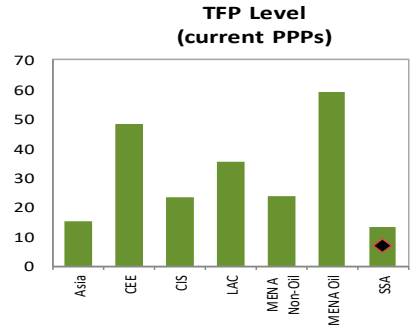

*…and the country shows a positive profile in recent years compared to previous years.*



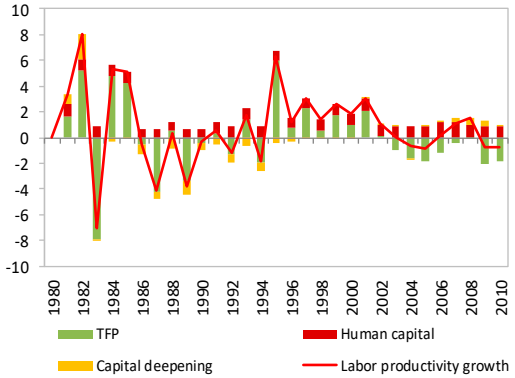

*Factor inputs were all positive in 2011….*



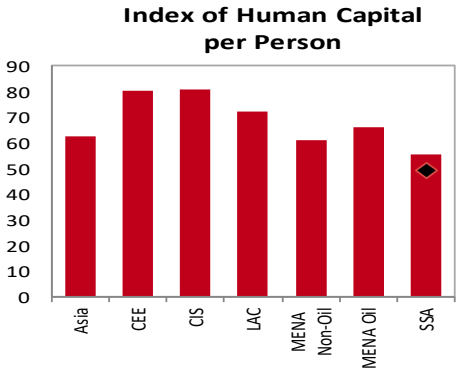

*…but comparatively TFP levels are still low.*




*The decomposition of labor productivity shows small contributions by human capital…..*




*…given human capital room for improvement.*

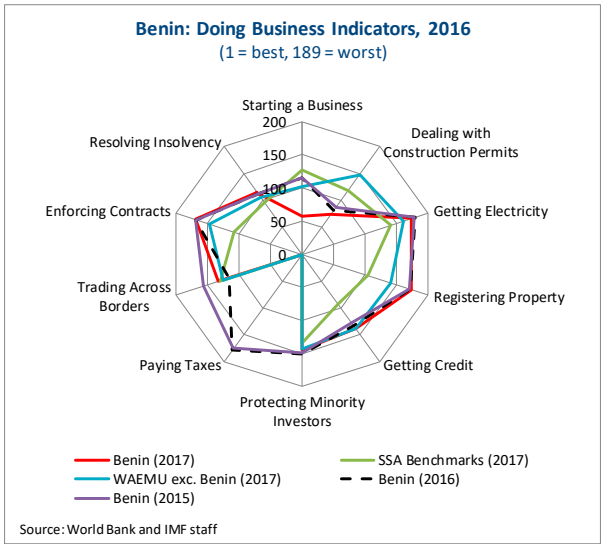


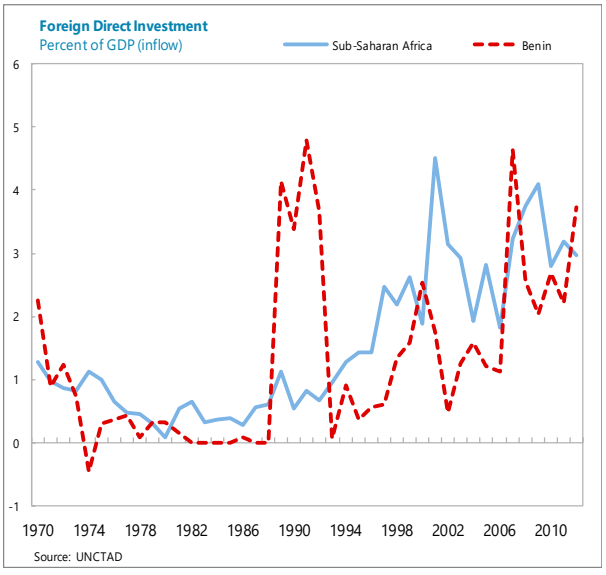
## B. Growth and Factor Inputs

**8. Low human capital accumulation and total factor productivity appear to have driven volatile growth.** A growth decomposition exercise suggests that two thirds of growth over the past two decades can be attributed to labor accumulation, while capital accumulation accounts for almost a third. In contrast, human capital and productivity appear to have been the main drivers of the mediocre growth performance, and are the factors in Benin lags most relative to other countries. Basic education rates in Benin are significantly lower compared to SSA and Asian benchmark countries, and more unequally distributed across the population. Public investment efficiency remains relatively low, and a challenging business environment impedes productive private sector activity. These factor 'gaps' suggest that policies should target access and quality of education, public financial management (PFM) reforms to improve the efficiency of public investment, and key areas of the business environment, such as contract enforcement, access to credit and efficient electricity provision.

**9. Benin's competitiveness is impaired by structural bottlenecks and a challenging business climate.** The 2016 Doing Business Indicators (DBI) report ranks Benin 155th (out of 189 countries), worse than most peer countries in the region. Indicators related to education, health, access to water, and infant mortality have improved in recent years but at a slow pace, making it unlikely that Benin will achieve none of the MDGs in 2015. Growth has been accompanied by a low level of job creation with widespread underemployment affecting especially women and the youth in urban areas. However, the participation of women in services has shown an improvement in the last decade. FDI is keeping its pace with SSA but more investment is needed.

**Figure 4. Benin: DBI and FDI**



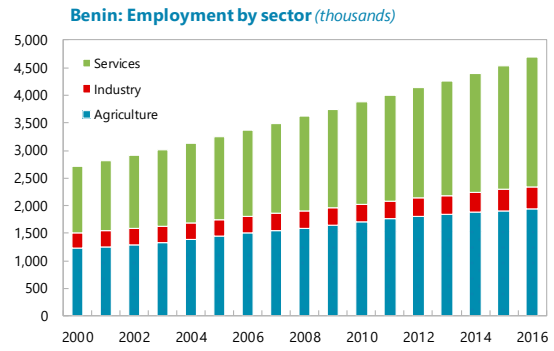



**10. Benin has maintained a steady sectoral share in the last decade**. Notwithstanding the increase in overall participation recently, Benin was lagging almost half of the SSA countries in terms of its manufacturing and services as a share of GDP. Structural changes that followed the country after 2004 gradually brought the country to a much more favorable position today. Comparing Benin to SSA countries presently, the share of manufacturing and services is ahead of most of the SSA countries, reaching 75 percent of GDP. While its exports per capita remain lower than for most SSA countries, they improved a lot during this ten-year period.

**11. Structural transformation and diversification of output has the potential to boost growth and reduce volatility in Benin.** While 'between-sector' structural transformation through the reallocation of resources from low productivity sectors such as agriculture to higher productivity sectors such as manufacturing**,** structural transformation can also happen through 'within-sector' generating productivity gains by implementing quality improvements to existing products and services or diversifying into new high value added products.

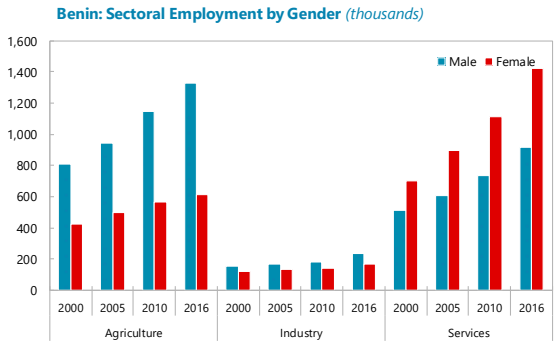
**Figure 5. Benin: Employment by Sector and Gender**

*The shares in employment by sector have been steady….*




Source: ILO - Trends Econometric Models, October 2013.

*With an increase in female participation in services.*




Source: ILO - Trends Econometric Models, October 2013.

## C. Export Diversification

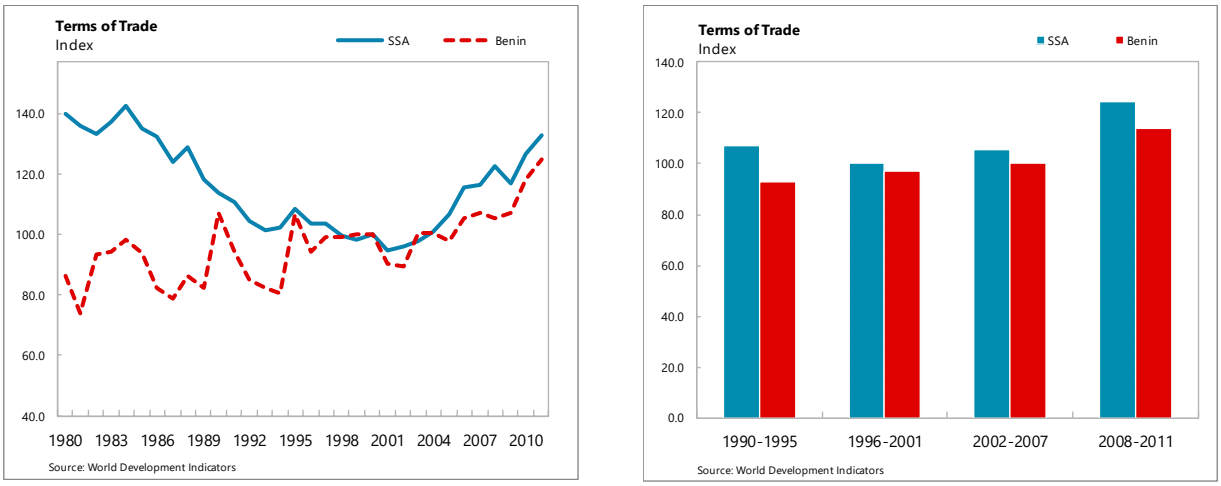
**12. Export diversification has not taken place.** African benchmark countries diversified quite strongly after 1990 and have caught up to Asian benchmark countries whose diversification levels were already comparatively high before that time (Figure 3). The number of export partners has increased on average, but the shares of the main export partners remain dominant. Cross-country experiences show that policies need to build on a country's endowments and existing strengths and be tailored to tackle specific challenges to yield successful diversification.[6]

**13. Product diversification could yield growth gains (Figure 3, last chart).** Further increasing product variety similar to diversification could yield further growth gains. Based on the estimates in

[6] REO 2017, October.

IMF (2014a), a one standard deviation increase in LIC's export diversification raises the growth rate by about 0.8 percentage points.[7] For Benin, this translates into estimated growth gains of 0.2 percentage point if export diversification was raised to levels observed in comparators like Vietnam.

**Figure 6. Benin: Terms of Trade**




**14. Following IMF 2014a, the following specification for the growth volatility estimations is used:**

$$Vol_{i,t} = \alpha Vol_{i,t-1} + \beta Div_{i,t} + \delta x_{i,t} + e_{i,t}$$

The data cover the time period from 1992-2015. $Vol_{i,t}$ denotes growth volatility in country i at time t, which is calculated as the standard deviation of GDP growth using a five-year window. $Div_{i,t}$ denotes the diversification index. The first two indices, Total Theil and the Herfindahl index, capture the effect a country's overall level of diversification has on volatility. The second two indices, the extensive and intensive margins, can be obtained from a decomposition of the overall Theil index. Extensive diversification occurs when a country exports new product lines, while intensive diversification occurs when a country exports a more balanced mix of existing products. Lower values for all four indices indicate a higher level of diversification. Also, $open_{i,t}$ denotes the trade openness level defined as total exports and imports as a share of GDP. Several regressions include

[7] IMF (2014a) finds that output diversification has a decisive impact on growth for LICs. The standard deviation of output diversification in low income countries is 0.078, resulting in a predicted increase in the growth rate of LICs by 100 x (-0.078) x (-0.176) = 1.373 percentage points.

interaction terms between the diversification index and a measure of trade openness $x_{it}$ denotes the interaction term); $tot_{i,t}$ denotes other control variables such as terms of trade volatility, inflation volatility, and exchange rate volatility while $e_{i,t}$ is residual error. The data are five-year averages for each variable in order to exclude extreme values and business cycles; thus, t denotes each five-year period. The regressions are estimated using the two-step GMM model because of the dynamic nature of the regression equation. Since there is a lagged dependent variable in the estimation, fixed effects model estimates are biased. Following Arellano and Bond (1991), the GMM estimator thus is necessary to obtain consistent estimates.

**Box 1. Benin Measuring Export Diversification**

Following Henn et al. (2013), export product diversification is measured by the Theil index, which could be decomposed into "between" and "within" sub-indices:

$$Theil\ Index = \frac{1}{N}\sum_{i}^{N}\frac{Export\ Value_i}{Average\ Exp.Value}\ln\frac{Export\ Value_i}{Average\ Exp.Value} =$$

$$Theil\ Index = Theil_{between} + Theil_{within}$$

where *i* represents the product index and *N* the total number of products. The "between" Theil index captures the *extensive margin* of diversification, i.e. the number of products, while the "within" Theil index captures the intensive margin (product shares).

**Export partner diversification.** The Theil index is also available across export partners. In this case, *i* and *N* in the above relationship represent the export partner index and number of export partners, respectively.

**Export quality** is measured by the export's unit value adjusted for differences in production costs, relative distance to the trade partner, and the development of a country through the following relationship:

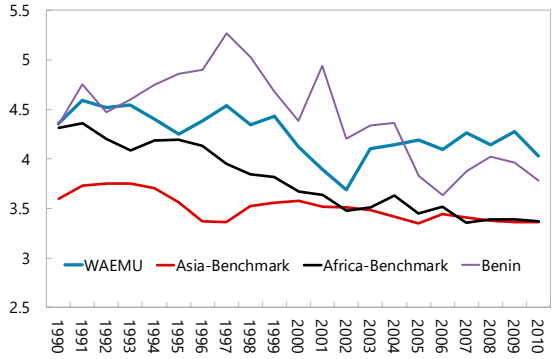
$$Trade\ PRICE_{mxt} = \alpha_0 + \alpha_1 \ln\ unobservable\ quality_{mxt} + \alpha_2 \ln\ p\ c\ income_{mxt} + \alpha_3 \ln\ DISTANCE_{mxt} + error_{mxt}$$

where the sub-scripts *m, x*, and *t* denote importer, exporter and time period respectively

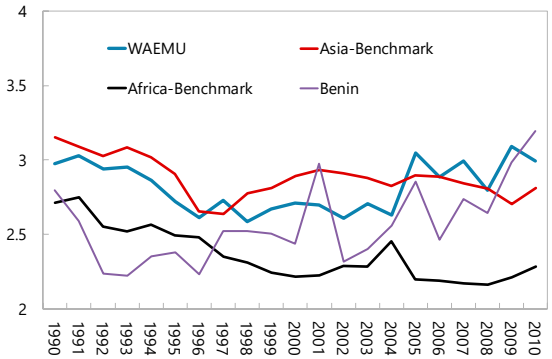
**15. Export diversification helps to reduce growth volatility** (Table 1). Following the methodology in IMF (2014a), Table 1 presents the results of a two-stage GMM regression to quantify the effect of diversification on the volatility of growth in a dynamic panel, focusing on Benin and extending the regressions to include the effects of the extensive margin of product diversification. Results show that decreases in volatility are more likely to be achieved through increasing the intensive margin of product diversification. *Ceteris paribus*, the estimates imply that increasing product diversification could decrease volatility by about one fifth and a third, respectively (Figure 9).

## Figure 7. Benin: Export, Output Diversification

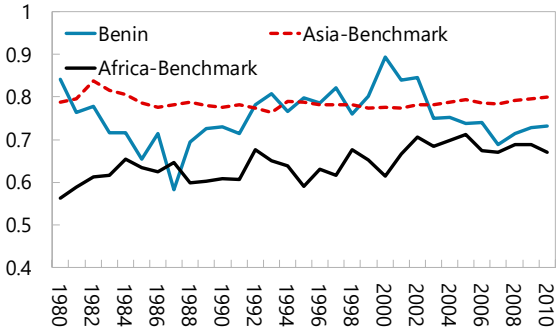
### Export Product Diversification
(Theil Index Decomposition, Lower Values=More Diversication)



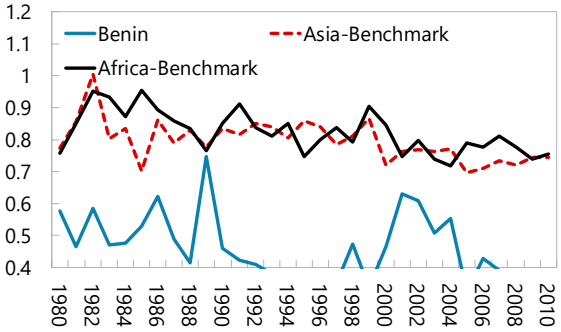

### Export Partner Diversification
(Theil Index Decomposition, Lower Values=More Diversication)



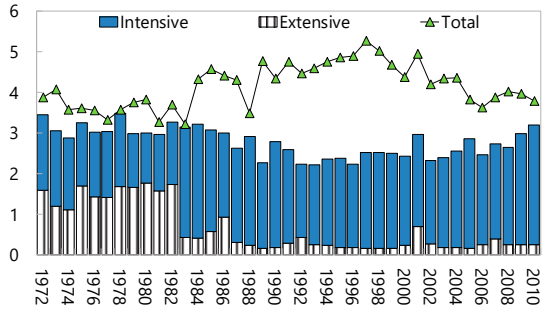

### Manufacturing Quality
(1 = 90 Percentile of All Countries)



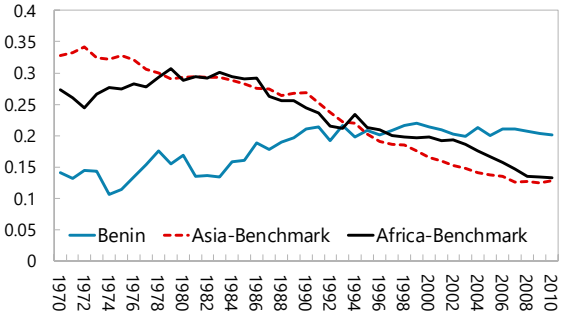

### Commodity Quality
(1 = 90 Percentile of All Countries)




### Benin: Export Partner Diversification
(Theil Index Decomposition, Lower Values=More Diversication)

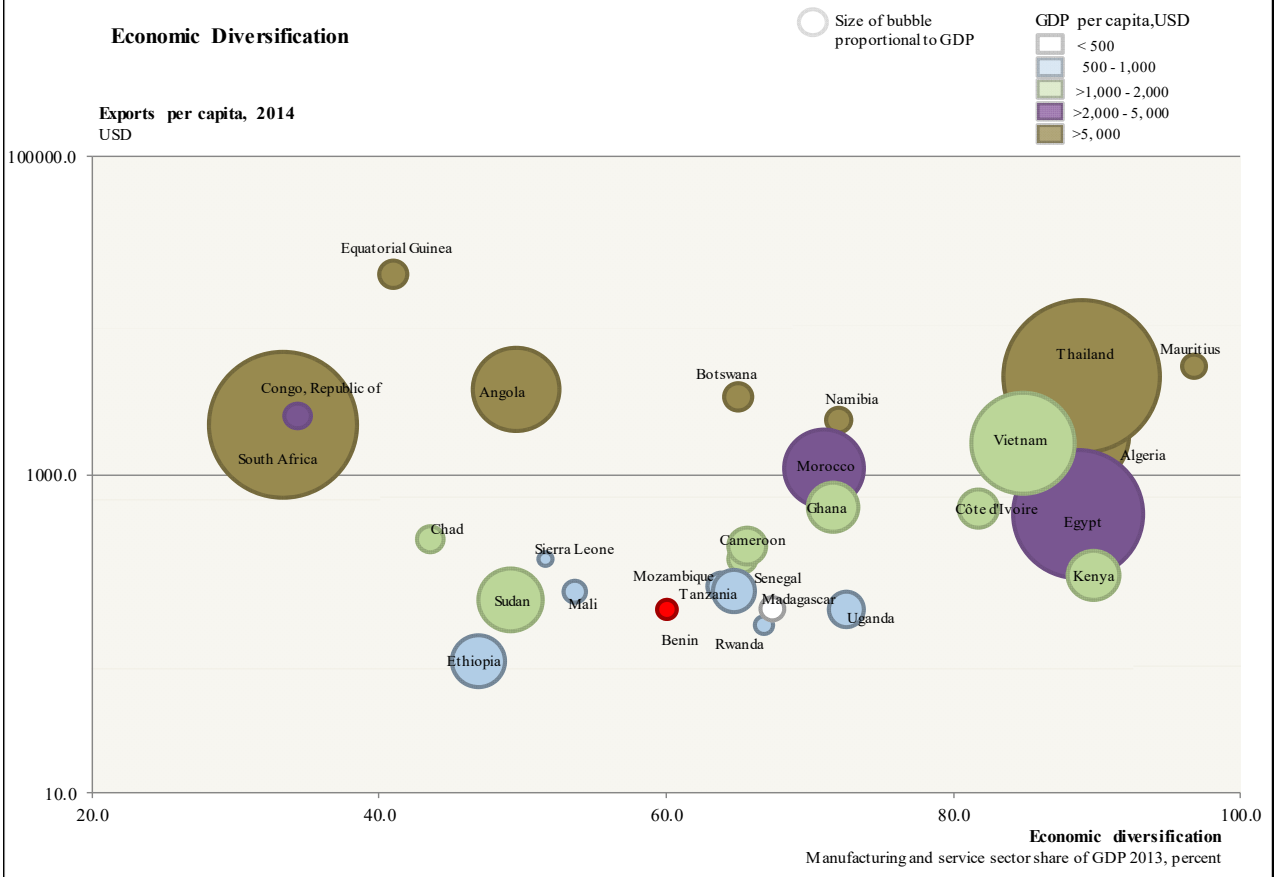



### Output Diversification
(Theil Index; Lower Values=More Diversification)




Source: IMF (2014a).

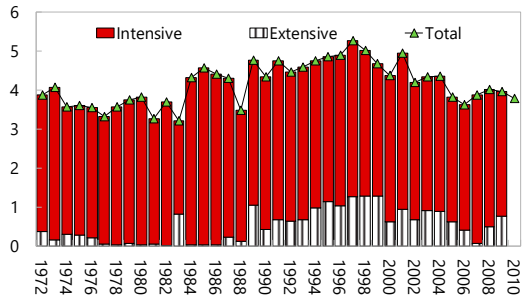
## Figure 8. Economic Diversification: Benin vs. SSA countries, 2014



## Figure 9. Export Diversification

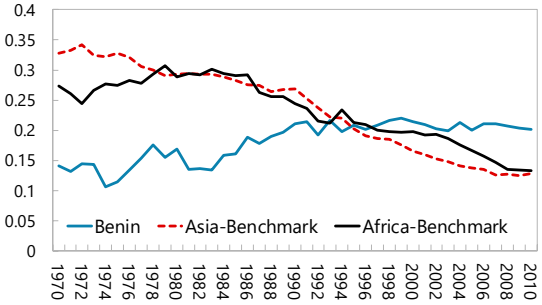
*Product diversification improves on the back of better intensive margins....*

**Benin: Export Product Diversification**
(Theil Index Decomposition, Lower Values=More Diversication)




*...along with benchmarks detected in comparators.*

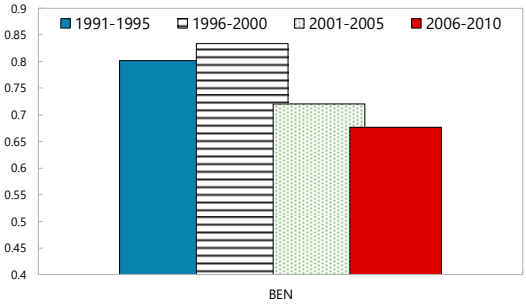
**Output Diversification**
(Theil Index; Lower Values=More Diversification)




Source: IMF (2014a).

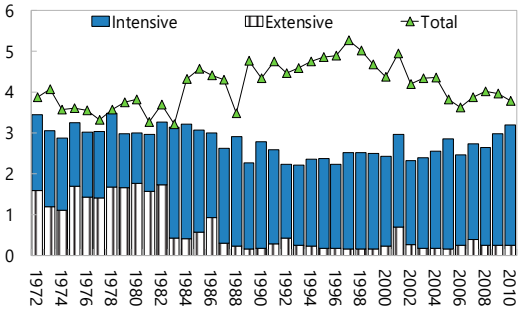
*.....as main export categories remain stable....*

**Share of Three Major Exports in Total Exports, 1991-2010**
(Export Product Measured at 2-Digit SITC Level)



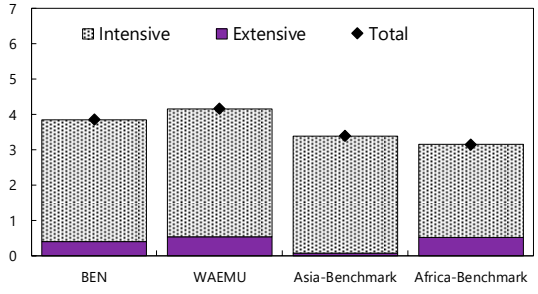

*...while the number of export partners has been increasing, enhancing export partner diversification....*

**Benin: Export Partner Diversification**
(Theil Index Decomposition, Lower Values=More Diversication)



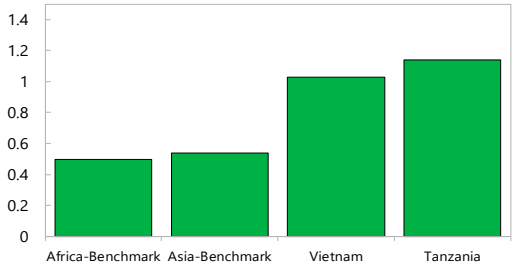

*...and comparing favorably with comparators.*

**Export Product Diversification, 2006-2010**
(Theil Index Decomposition, Lower Values=More Diversication)




*Positive growth effects could be substantial.*

**Benin: Growth Effects from Increased Diversification**
(Increase in Annual Growth Rate, Average 2001-2012)

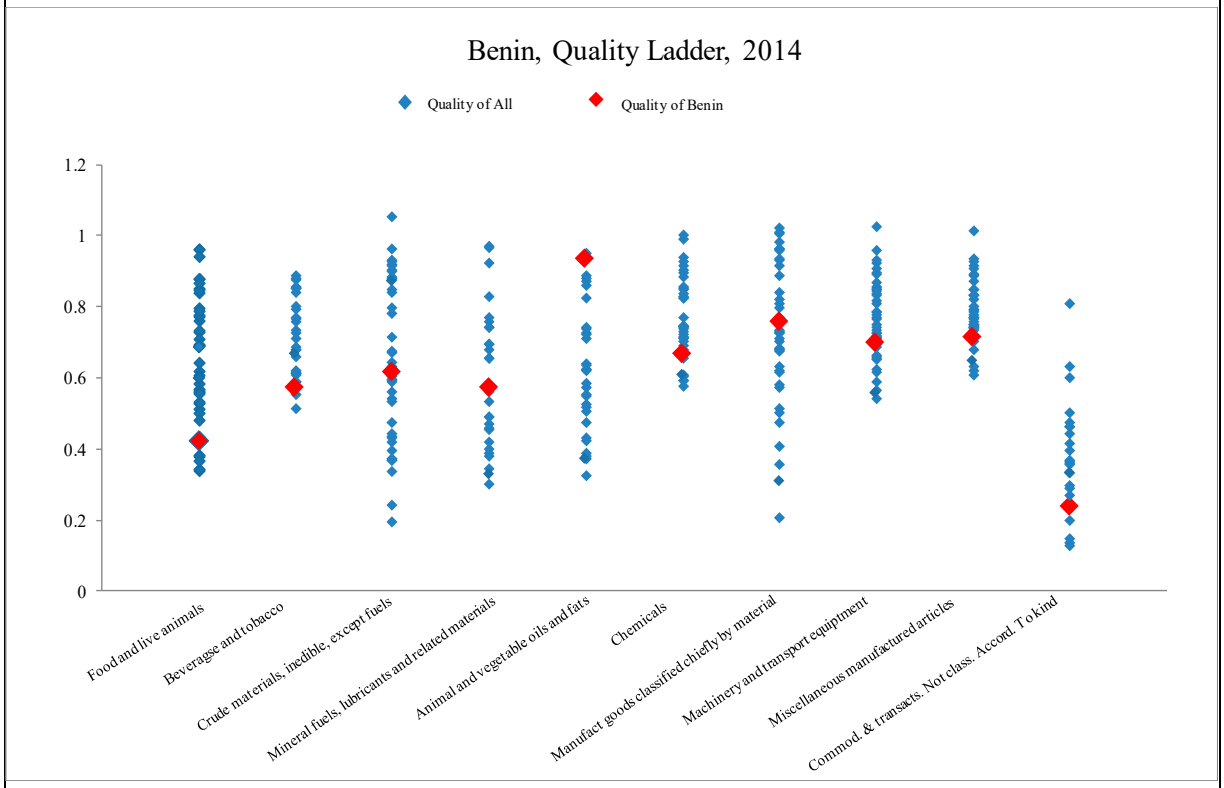


## Table 1. Benin: Output Volatility and Product Diversification (Higher Theil Index = Less Diversification)

| | Export Diversification | | Export Diversification and Openness | | Export Diversification and Control Variables | | Export Diversification, Control and Trade Interaction | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (1) | (2) | (1) | (2) | (1) | (2 |
| Variables | | | | | | | | |
| Lagged growth | 0.035 | 0.035 | 0.106 | 0.051 | 0.719 | 0.057 | 0.031 | 0.122 |
| | (0.145) | (0.023) | (0.052) | (0.020) | (0.594) | (0.032) | (0.041) | (0.074) |
| Theil Index within export | -0.731 | | | -1.011 | | | -2.109 | |
| | (0.122) | | | 0.129 | | | (0.923) | |
| Theil Index between export | | 0.975 | 2.107 | | 2.668 | | | 2.703 |
| | | (0.277) | (0.530) | | 1.134 | | | (0.998) |
| Trade Openness | | | -0.000 | -0.000 | -0.000 | -0.001 | | |
| | | | (0.000) | (0.000) | (0.000) | (0.001) | | |
| Interaction from within index and Openness | | | | | | | 0.002 | |
| | | | | | | | (0.001) | |
| Interaction of between export and Openness | | | | | | | | -0.006 |
| | | | | | | | | (0.222) |
| Terms of Trade | | | | | -0.005 | 0.003 | -0.006 | 0.005 |
| | | | | | (0.006) | (0.005) | (0.003) | (0.005) |
| Exchange rate | | | | | -0.002 | 0.005 | -0.005 | 0.002 |
| | | | | | (0.003) | (0.002) | (0.003) | (0.866) |
| Inflation | | | | | 0.020 | 0.001 | 0.012 | 0.021 |
| | | | | | (0.017) | (0.009) | (0.014) | (0.001) |
| Constant | 4.528 | 1.891 | -0.252 | 5.015 | -0.347 | 2.068 | 7.903 | 0.4530 |
| | (0.145) | (0.556) | (1.151) | (0.124) | (1.476) | (0.960) | (1.963) | (1.524) |
| Observations | 47 | 47 | 47 | 47 | 47 | 47 | 47 | 47 |

**16. The quality of exports in Benin keeps up with the average rating in SSA.** The export diversification index produced by IMF covers 187 countries including most low-income countries and provides information on export product diversification and quality from 200-2010. Since higher values of the index indicate higher quality levels, we observe that the product quality for Benin exports have remained relatively mediocre overtime.

**Figure 10. Export Diversification and Quality Index**




Source: IMF, WEO

## D. Conclusions

**17. Benin's competitiveness is impaired by structural bottlenecks**. A challenging business climate, low productivity, and weak human capital. Low and stagnant productivity in the agriculture sector is perhaps a primary cause of the limited poverty reduction in rural areas.[8]

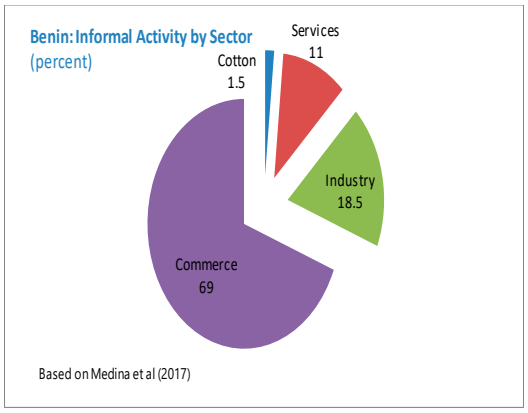
[8] In particular, growth has been the result of expanded acreages and increased labor effort rather than increases in productivity. With nearly half of the labor force involved in agriculture, a lack of productivity increases in the sector would serve as a primary explanation for the lack of robust poverty reduction. Although workers who have gradually

**18. Policies to promote structural transformation and diversification should focus on addressing weaknesses that hinder entry into new lines of economic activity.** Further progress on strengthening the business climate, addressing electricity shortages, and increasing human capital could provide significant benefits.

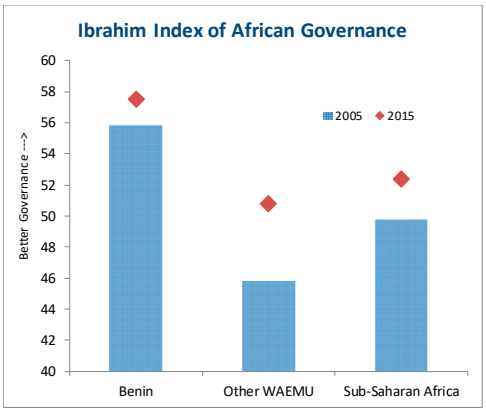
**19. In particular, measures that could help improve productivity in the short run includes**: (i) the support the promotion of large-scale adoption of improved technologies (production, post-harvest, processing and storage), including climate-smart production systems, reduce vulnerability of farming activities to climate change and weather vagaries of farming activities; (ii) development of production and market infrastructure to enhance productivity through efficient water management, reduction of post-harvest losses and better access to market through warehouses and other facilities; (iii) support to value chain coordination and access to finance through sustainable use of the financial management instruments set up under the original project; (iv) institutional support to the Ministry of Agriculture and other stakeholders in the sector (civil society and producers' organizations) with a particular focus on capacity building. Furthermore, measures to improve education and productivity could render significant impacts on the informal economy, which is estimated to be at more than half of GDP. Product diversification could yield higher growth rates.

**Figure 11. Benin: Informality and Governance**

*The shares ..... have been steady....*




*With an increase in female participation in services.*




moved out of low-productivity informal agriculture, they have settled in similarly low-productivity informal commerce and other services.

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# FINANCIAL INCLUSION AND DEVELOPMENT

*While access to finance is improving, relatively to other sub-Saharan countries, a number of reforms could foster financial deepening and financial inclusion and complement efforts to promote the expansion of the private sector and employment creation.*

## A. Background

**1. Benin's financial sector is shallow, segmented, and with limited financial inclusion.** Benin has a small and segmented financial sector in which 3 categories operate: the banking sectors, the microfinance institutions and other nonbank financial institutions. As of end-2016, there were 15 commercial banks, with 4 banks holding about 80 percent of credits to the banking system (Table 1). Banks' capital adequacy has increased from 8.8 percent (end-June 2015) to 10.6 percent, above the 8 percent minimum but still below the WAEMU and SSA averages.[1] The ratio of non-performing loans (NPLs) remains high when compared against peer countries in the WAEMU region (Figure 2). Other indicators are also lagging behind WAEMU averages, including the provisioning ratio for NPLs (12 percent of risk-weighted assets in 2014–15), the liquidity ratio, and profitability indicators.

**Table 1. Benin: Structure of the Banking System, 2014-17**

| | 2014 | 2015 | 2017 1/ |
|---|---|---|---|
| | (CFAF billions) | | |
| Credits | 1,096 | 1,078 | 1,195 |
| top 4 banks | 899 | 841 | 991 |
| short term | 596 | 643 | 710 |
| medium term | 463 | 392 | 420 |
| long term | 37 | 43 | 65 |
| Treasury Notes | 211 | 295 | 393 |
| Deposits | 1,355 | 1,503 | 1,643 |
| top 4 banks | 935 | 1,082 | 1,101 |
| sight Deposits | 631 | 686 | 752 |
| term Deposits | 724 | 817 | 891 |

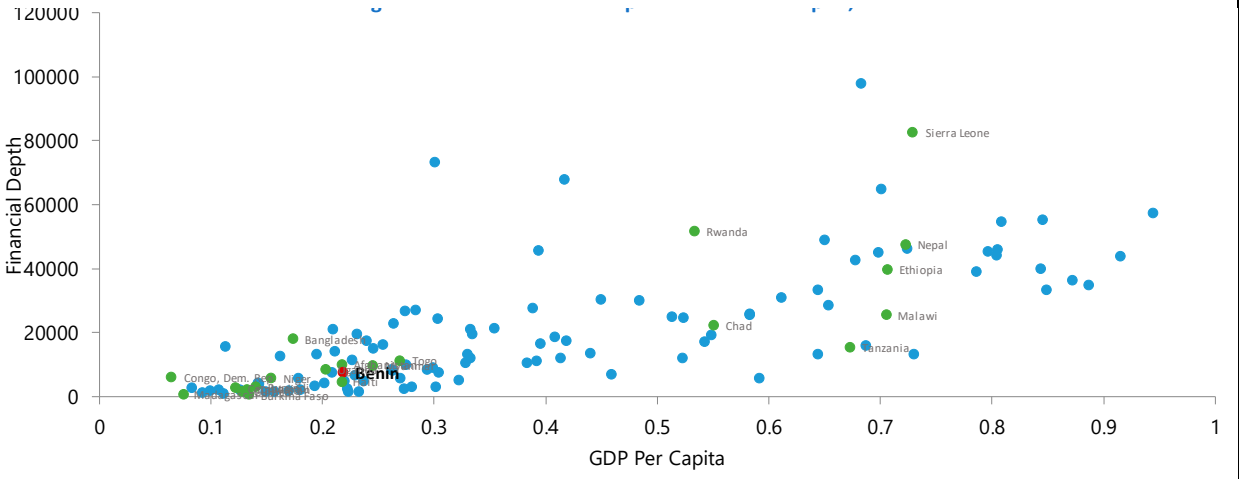
Source: BCEAO
1/ as of June

**2. Although the banking system remains stable, its depth has not improved.** The banking sector is broadly sound but plays a limited role in financial inclusion. According to the BCEAO estimations (2010), there is a low level of access to banking service. More precisely, the number of

[1] The January 2016 Selected Issues Paper for Benin (IMF Country Report No. 16/7) presented a financial sector review, including banking sector vulnerabilities and risks as of June 2015.

deposit accounts in commercial banks relative to the active population is around 5 percent. In Benin, the banking services are targeting the high income urban population, the low population density and the large size of the informal sector limited the access to the banking services. In addition, the interbank market is no existent. The depth of the Beninese banking system ranks just below the average of its peers the WAEMU region (with private credit and domestic deposits at 21 and 30 percent of GDP, respectively). Despite banks have developed branch networks in the country, only 17 percent of the population had a bank account in 2015. Access to finance is difficult for some vulnerable groups and for small and medium-sized enterprises. Overall, the ratio of broad money (M2) to GDP rose modestly from 34 percent in end-2012 to 40 percent at June 2017. Despite this significant growth, there is still considerable scope for financial deepening (Figure 1).

**Figure 1. Benin: Financial Depth and GDP per Capita, 2015**




Source: FINDEX 2014, World Development Indicators, Sahay and others (2015)

**3. The fast-growing microfinance institutions (MFIs) is still showing rising risks.**

Microfinance sector (MFIs) composed by 721 MFIs, where only 226 are licensed. The microfinance sector plays an important role in providing financing to both sectors of the economy and rural population (4.5 million) that are underserved by banks. Despite the fact, that microfinance sector plays an increasing in reducing poverty in Benin; it lacks to provide financing to small and medium enterprises, in particular, long term loans. The large number of unauthorized MFIs (deposit taken institutions) represent a high-risk exposure for the banking system, requiring a further tightening of licensing requirements, also contributed to the prevalence of unauthorized MFIs. Despite the size of the deposit collected by unauthorized MFIs is currently about ½ percent of GDP, suggesting a limited contingent fiscal liability, any potential shock affecting this fast-growing sector could hamper

confidence and undermine financial deepening.[2] Annual on-site supervisions will strengthen the risk-based approach being adopted by the authorities, including enhance data collection, and enable technological innovations in this subsector.

**4. Other nonbank financial institutions.** This sector is composed by insurance companies, pension funds and postal checking services. The pension funds include a public entity for permanent civil servants—*Fonds national de retraite du Bénin* and an autonomous entity for private sector employees and contractual civil servants—*Caisse nationale de sécurité sociale*, which manages resources from employees' and employers' contributions. Also, there are 15 insurance companies, including eight in damage-related insurance and six life insurers.

## B. Financial Access and Development

**5.** The authorities are striving to enhance financial services delivery by addressing hindrances to financial inclusion and deepening, covering access, depth, and efficiency.

- **Access.** Although the number of bank branches has been recently increasing, in particular in rural areas, there is room to further expand financial inclusion by strengthening the regulatory framework of agency banking. High documentation requirements to open, maintain, and close accounts and for loan applications could impede access to finance (participation costs).
- **Depth.** To further enhance credit culture and cover all, the authorities could consider setting a credit reporting bill to unify the collateral registration system, avoiding any potential fragmentation across registries. It could also be useful to strengthen the insolvency/bankruptcy procedure, and improve land titling, which can ease collaterals demanded by lenders. Further, improving contract enforcement in the judiciary sector could contribute to relax collateral constraints and addressing gaps in financial market infrastructure.
- **Intermediation efficiency.** Efficiency is generally associated with the state of competition and is reflected in interest spreads and banks' overhead costs. Intermediation costs (i.e., high interest rates and fees) reflect asymmetries of information between borrowers and banks.

**6. Access to an account in Benin compares poorly with averages from low income countries** (Figure 5). Male reported higher access than females in Benin and the level of education is also a factor determining access to an account. Access is relatively low across all income groups and when compared by wages and employment.

[2] Benin SIP (2016).

## Figure 2. Benin: Comparative Indicators of Banking System Soundness


Sources: country authorities and IMF staff calculation.

1/ Latest data in 2013–15.

**Figure 3. Benin: Having an Account, 2015**
(Percent)

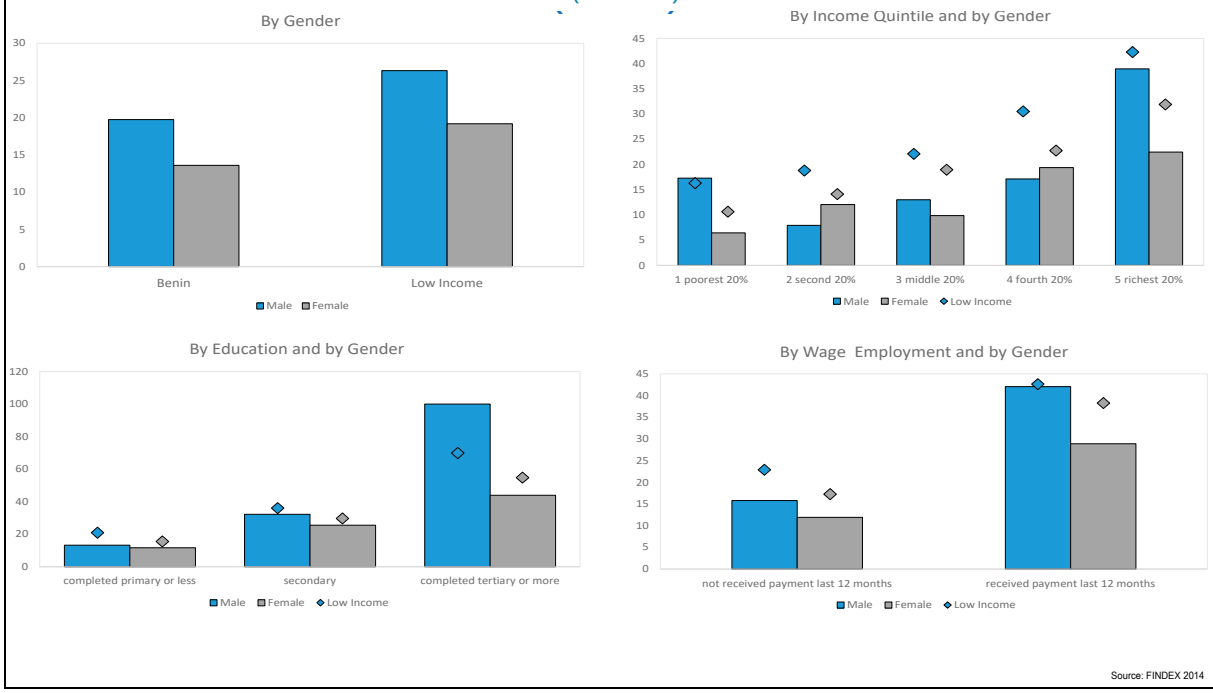
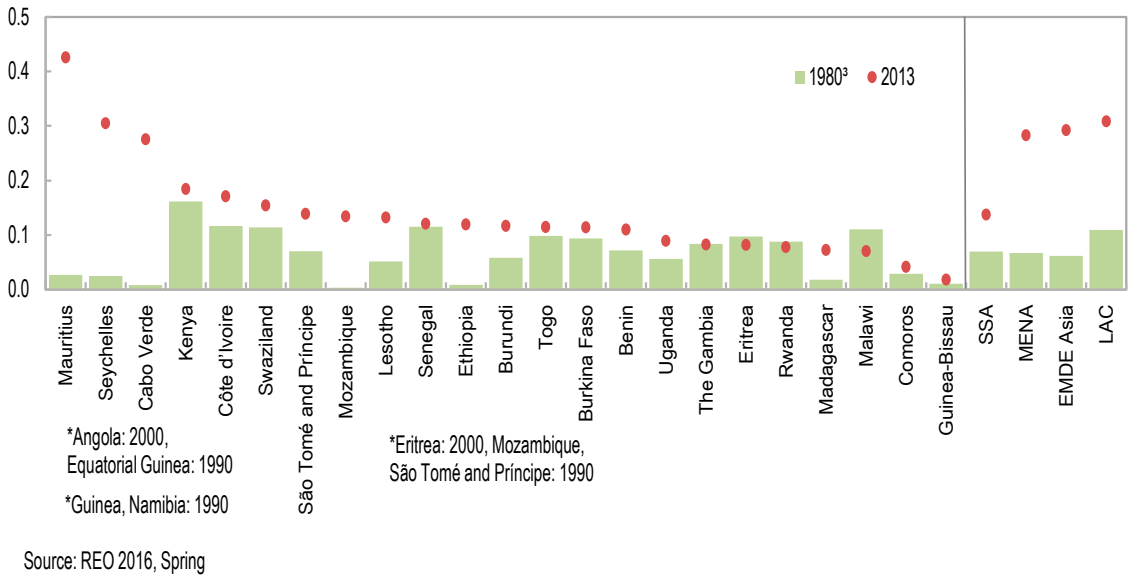



**Figure 4. Benin: Financial Development Index, 1980-2013**




Source: REO 2016, Spring

**7. Financial development has modestly improved in Benin over the past ten years.** The composite index of financial development suggests that financial development in Benin has been

lackluster over the past three decades. Figure 4 depicts the level of financial development for different country groups, including Benin. Relative to middle-income countries (Mauritius, Namibia, Seychelles, and South Africa), Benin shows a modest improvement in achieving higher rates of financial development and lacks behind the average for SSA countries and other regions.[3]

**8. Benin's financial sector provides limited contribution to private investment**: Firstly, the banking sector do not contribute in significant manner to finance private investment (table 2) because (i) the institutional framework discourages commercial banks from taking risks, they are actively involved in WAEMU sovereign borrowing due to their high yield (6 to 7%). (ii) Difficult to commercial banks to provide financing to some economic activities, due to the limited scope for guaranteeing loans to small and medium size enterprises. (iii) The small size of the formal sector and specially, the manufacturing sector, (iv) The cost of establishing bank branches in rural area is very high. Secondly, the microfinance sector is able to finance private due to the lack of long term funds.

**Figure 5. Benin: Financial Inclusion, 2015**


[3] Regional Economic Outlook for sub-Saharan Africa, Fall 2016.

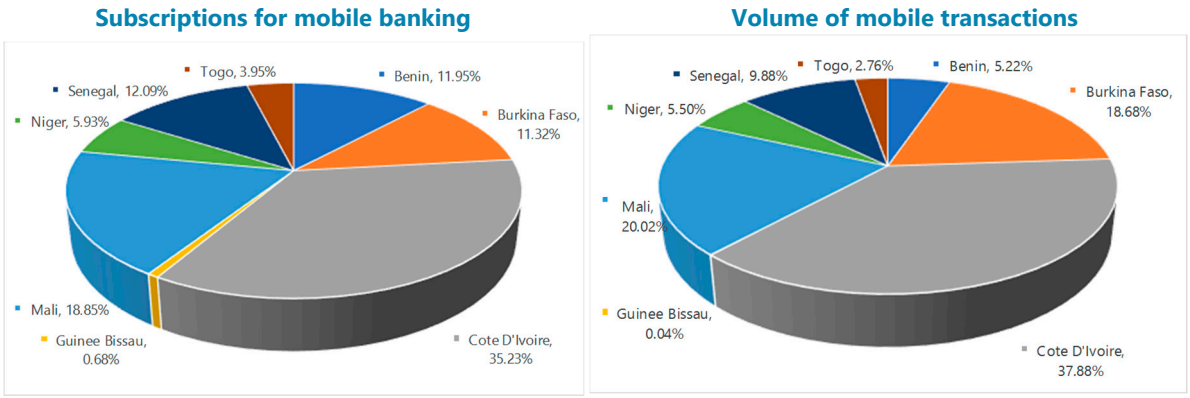
**Table 2. Financial Soundness Indicators 2011–17**

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 June |
|---|---|---|---|---|---|---|---|
| | (Percent unless otherwise indicated) | | | | | | |
| Regulatory capital to risk-weighted assets | 12.5 | 12.8 | 12.9 | 12.7 | 12.6 | 9.5 | 10.0 |
| Core capital to risk-weighted assets[1] | 11.7 | 11.9 | 11.8 | 11.2 | 10.5 | 7.6 | 8.6 |
| Provisions to risk-weighted assets | 10.7 | 10.8 | 10.3 | 10.7 | 11.7 | 15.6 | 19.8 |
| Capital to total assets | 7.3 | 7.3 | 7.2 | 6.7 | 5.7 | 3.8 | 4.4 |
| Composition and quality of assets | | | | | | | |
| Total loans to total assets | 55.2 | 55.0 | 55.9 | 54.6 | 53.1 | 39.3 | 56.1 |
| Concentration: Credit to the 5 largest borrowers (in terms of total capital) | 92.9 | 92.3 | 75.1 | 88.6 | 113.1 | ... | 487.0 |
| Credit by sector[2] | | | | | | | |
| Agriculture, Forestry, and Fishing | 2.9 | 2.6 | 2.9 | 3.1 | 3.2 | ... | ... |
| Extractive Industries | 2.2 | 1.6 | 1.8 | 2.0 | 2.0 | ... | ... |
| Manufacturing | 18.8 | 18.2 | 17.0 | 17.9 | 17.2 | ... | ... |
| Electricity, Water, and Gas | 3.2 | 3.2 | 3.7 | 3.9 | 4.2 | ... | ... |
| Buildings and Public Works | 6.7 | 6.7 | 7.8 | 8.7 | 9.4 | ... | ... |
| Commerce, Restaurants, and Hotels | 32.3 | 34.7 | 33.5 | 31.1 | 31.5 | ... | ... |
| Transportation and Communication | 11.2 | 10.0 | 11.2 | 9.3 | 9.5 | ... | ... |
| Financial and Business Services | 5.5 | 6.1 | 6.0 | 6.5 | 6.6 | ... | ... |
| Other Services | 17.2 | 16.8 | 16.2 | 17.0 | 16.4 | ... | ... |
| Non-Performing Loans (NPLs) | | | | | | | |
| Gross NPLs to Total loans[3] | 15.9 | 16.0 | 15.5 | 14.4 | 14.4 | 21.4 | 20.3 |
| Provisioning rate | 64.2 | 63.4 | 61.0 | 62.8 | 62.8 | 63.2 | 66.3 |
| Net NPLs to total loans | 6.4 | 6.5 | 6.6 | 6.1 | 5.9 | 9.1 | 7.9 |
| Net NPLs to capital | 47.8 | 48.8 | 51.1 | 50.0 | 54.9 | 95.2 | 100.8 |
| Earnings and profitability[4] | | | | | | | |
| Average cost of borrowed funds | 2.4 | 2.5 | 2.8 | 2.4 | 2.4 | ... | ... |
| Average interest rate on loans | 9.7 | 9.8 | 10.7 | 9.1 | 2.4 | ... | ... |
| Average interest margin[5] | 7.3 | 7.3 | 7.9 | 6.7 | 6.4 | ... | ... |
| After-tax return on average assets (ROA) | 1.2 | 0.9 | 0.9 | 1.1 | 1.2 | ... | ... |
| After-tax return on average equity (ROE) | 13.7 | 10.1 | 11.5 | 15.5 | 16.4 | ... | ... |
| Noninterest expenses/net banking income | 61.6 | 61.0 | 60.7 | 58.6 | 58.6 | ... | ... |
| Salaries and wages/net banking income | 26.4 | 25.7 | 26.5 | 25.4 | 25.4 | ... | ... |
| Liquidity | | | | | | | |
| Liquid assets to total assets | 33.6 | 32.5 | 32.2 | 30.9 | 29.4 | ... | ... |
| Liquid assets to total deposits | 46.1 | 45.8 | 46.1 | 45.9 | 43.8 | ... | ... |
| Total loans to total deposits | 84.3 | 86.2 | 90.0 | 89.5 | 87.0 | 68.4 | 71.8 |
| Total deposits to total liabilities | 72.9 | 71.1 | 68.5 | 63.4 | 67.1 | 57.4 | 78.0 |
| Demand deposits to total liabilities[6] | 37.8 | 36.5 | 35.5 | 34.5 | 35.4 | 24.3 | 34.2 |
| Term deposits to total liabilities | 35.1 | 34.6 | 33.0 | 32.8 | 31.7 | 33.1 | 43.8 |

Source: BCEAO.
Note: ... = not available.
[1] Tier 1 Capital.
[2] Identified sectors represent at least 80 percent of credit
[3] The improvement of NPLs since 2014 includes the reduced exposure by several banks to a business group that encountered difficulties in 2012-14.
[4] Some account elements available semi-annually.
[5] Excluding taxes on banking operations.
[6] Including savings accounts.

**9. Lastly, Benin is performing relatively well regarding access to finance and use of mobile banking but there is scope for further progress** (Figure 6). Benin holds around 5 percent of the total volume of mobile transactions in the WAEMU region with a total number of subscription of 12 percent.

**Figure 6. Benin: Mobile Phone Activity, 2016**




**10. Improving access to credit is a multifaceted problem.** The benefits from developing financial institutions in Benin are large. Thus, an appropriate sequencing would emphasize developing institutions at early stages, with increasing attention to developing markets as income per capita rises. Benin could adapt regulation and infrastructure to make investment by private sector participants easier while allowing them to hedge risks and enabling capital to be efficiently channeled into investment projects. Finally, continuing the development of insurance and the pension system can help broaden the investor base and, as a result, improve the depth and breadth of the capital market.

# EFFICIENCY OF PUBLIC INVESTMENT IN BENIN: AN EMPIRICAL ASSESSMENT[1]

*Benin could improve the efficiency of public investment by considering a strategy to strengthen the oversight of public investment projects and revamp the framework for managing public investment. Based on data of current infrastructure, Benin's public investment efficiency compares unfavorably with benchmark countries, including other sub-Saharan African (SSA) countries. The results of panel estimation suggest that strong institutions can play a crucial role in fostering the efficiency of public investment.*

## A. Introduction

**1. Benin is projected to increase public investment volumes significantly to help close the region's infrastructure gap.** Benin's infrastructure gap is relative large and has been widely identified as a growth bottleneck (Figures 1 and 2). Benin's infrastructure needs are substantial (Dominguez-Torres and Foster 2011). In particular, Benin is lagging behind SSA average in electricity supply, paved road density and telecommunication infrastructure.

**2. Benin has historically spent much less on public investments than its neighbors.** Public investments as a proportion of the national budget were maintained at an average annual rate of 36.7 percent from 2010 to 2014 despite significant needs. The country performances regarding public investment appear weaker in comparison to similar countries and economies. Although Benin's public investment effort is above the West African Economy and Monetary Union (WAEMU) countries average, it has drastically decreased since 2010; with the investment to GDP ratio dropping from 9.0 percent in 2009 to 5.1 percent in 2010. Capital expenditure has risen again in recent years (8.1 percent in 2015), but remains below SSA average. Despite the high investment effort mentioned previously, public capital stock has continuously deteriorated recently. Also, the perception of the quality of Benin's infrastructures remains lower than both SSA and WAEMU countries averages. Access to public infrastructure such as electricity or treated water has scarcely improved and even decreased like in the health sector since the 1990's.

**3. Insufficient or inefficient infrastructure reduces the return to trade and economic activity and constraints growth prospects.[2]** To close this gap, Benin is envisioning to significantly boost public capital expenditure in the medium term. The Government's Action Program (PAG), 2016–21 encourages the use of innovative financing such as Public-Private Partnerships (PPPs) to ensure project implementation.

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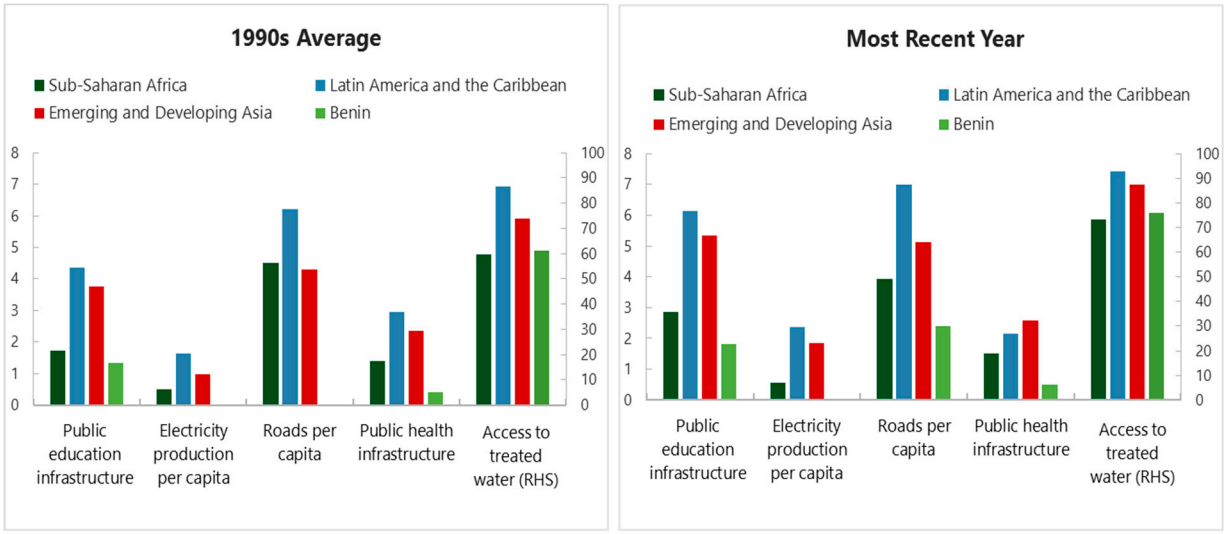
[1] This work draws on current work at the IMF on public investment efficiency—in particular, on Making Public Investment More Efficient. 2015. International Monetary Fund.

[2] Commission for Africa (2005); Foster and Briceño-Garmendia (2009).

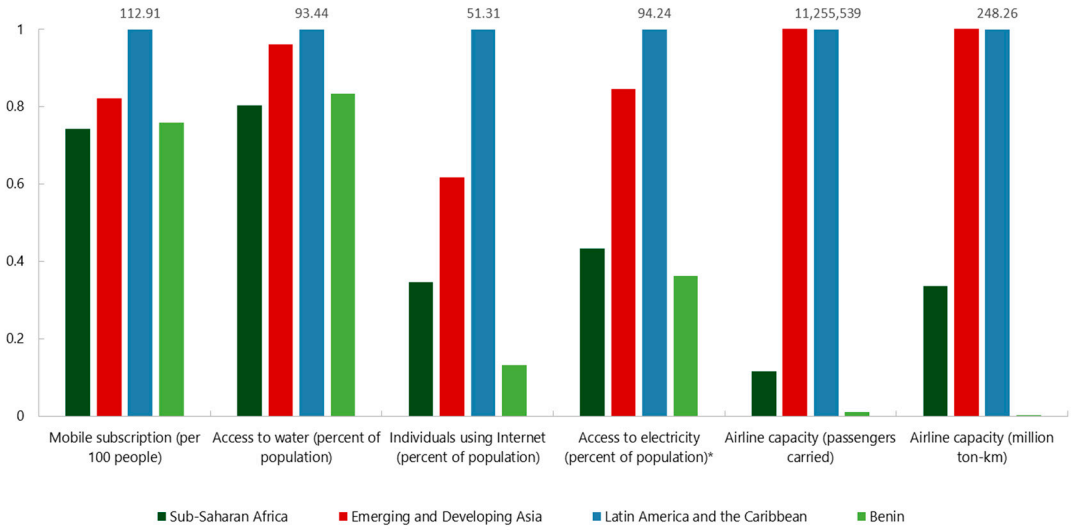
## Figure 1. Measures of Infrastructure, 2000-2015




Source: World Development Indicators; and IMF staff estimates.
*Units vary to fit scale. Left hand axis: Public education infrastructure is measured as secondary teachers per 1,000 persons; Electricity production per capita as kWh per 1,000 persons; Roads per capita as km per 1,000 persons; and Public health infrastructure as hospital beds per 1,000 persons. Right hand axis: Access to treated water is measured as percent of population.

## Figure 2. Benin Selected Quantitative Indicators of Infrastructure, 2015

(normalized indices, LAC=1)




Sources: World Development Indicators, and IMF Staff estimates.
* Latest available data for Access to electricity is from 2014.
** EDA's value for airline capacity is 3.6 (40,456,902 passengers) and 5.7 (1,410.90 million ton-km), but it's not shown in the graph so that smaller values are visible.

**4. In addition to the infrastructure gap, however, Benin's infrastructure is also perceived as being of relatively low quality, and investment efficiency appears low (Figure 4).** The most recent World Economic Forum's (WEF) Global Competitiveness Indicators ranks Benin behind the SSA average and SSA regional groups. The quality of electricity supply, railroads and roads scored below SSA benchmark countries' average as well. At a comparable level of real public capital stock, Benin's overall infrastructure quality is perceived lower than that of regional peers.

**5. This note uses several empirical approaches to assess the public investment efficiency for Benin, and highlights its main determinants.** It first assesses the infrastructure gap in Benin based on the efficiency frontier analysis. Then, it distills the determinants of public investment efficiency through panel regressions. A concluding section presents the main findings and the policy implications.

**6. Caveats**. Due to data limitations, this note does not analyze public and private sector infrastructures separately. Likewise, the note does not derive the efficiency of investment spending by type of infrastructure due to missing breakdown of data.

**Figure 3. Infrastructure Quality, 2006-2015**
Scale: 1-7 (best)

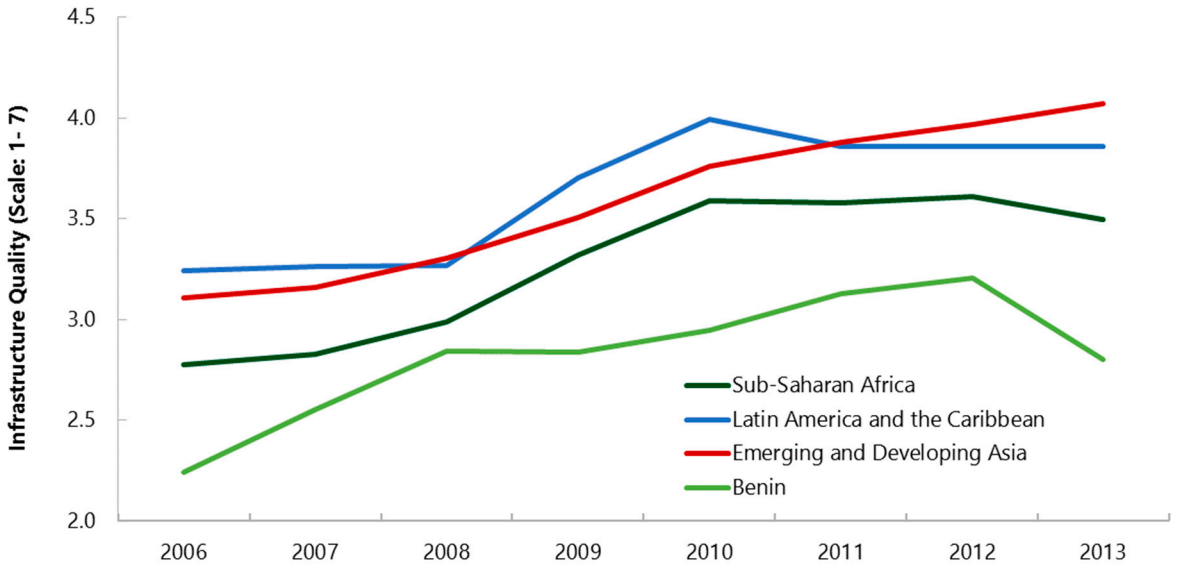
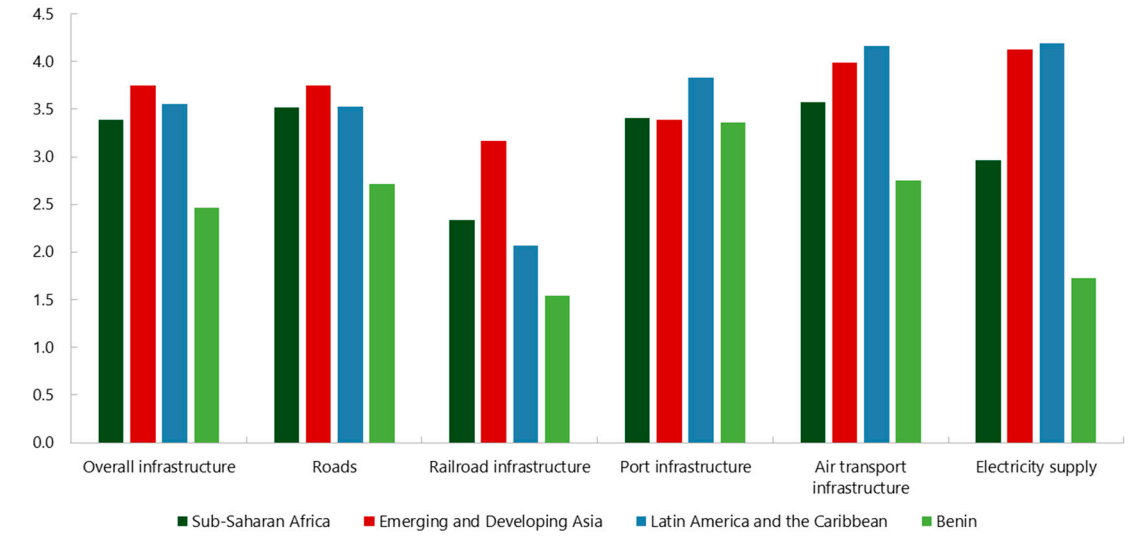


**Figure 4. Indicators of Infrastructure Quality, 2015**
Scale: 1-7 (best)




Sources: Global Competitiveness Index, and IMF Staff estimates.

## B. Assessing Public Investment Efficiency in Benin

**7. The efficiency frontier assesses the relative efficiency of Benin in translating public investment (inputs) into infrastructure (outputs).** Following, IMF (2015), Grigoli and Kapsoli, (2013) and Albino-War and others (2014), we use the popular data envelopment analysis (DEA) methodology— the standard approach in the literature using non-parametric methods—to calculate the efficiency of public investment. The DEA is a deterministic algorithm that calculates the efficient frontier through linear approximations enveloping all decision-making units (DMU) performance observations. Efficiency scores are then calculated relative to a peer group consisting of linear combinations of input-output observations for efficient DMUs[3]. We calculate efficiency scores using an output oriented model.

[3] The original DEA model assumes constant return to scale which implies that all DMUs in the sample are performing at an optimal scale. This is a strong assumption when dealing with a heterogeneous set of countries; therefore, we use DEA with variable return to scale to guarantee that each DMU (country) is only compared to others with similar characteristics.

**8. The assessment of the efficiency of public investment is carried out with a two inputs-one outputs model over the period 2000–15.**

- **Inputs:** The first input is the real public capital stock per capita.[4] The second input is per capita GDP, which is used as a proxy for the contributions of the private sector to infrastructure services.

- **Outputs:** To measure infrastructure output, we follow IMF's (2015) approach by using three measures of infrastructure quality and access:[5]

    - *A physical indicator* which combines data on the volume of economic infrastructure (length of road network, electricity production, and access to water) and social infrastructure (number of secondary teachers and hospital beds).[6]

    - *A qualitative indicator* based on the World Economic Forum's survey of business leaders' impressions of the quality of key infrastructure services.[7]

    - *A hybrid indicator, which combines the physical and survey-based indicators into a synthetic index of the coverage and quality of infrastructure networks.*

**9. Estimated efficiency scores clearly show that Benin's public investment efficiency compares unfavorably with regional comparators and there is substantial scope to improve efficiency.** We estimate for each infrastructure output index mentioned above its corresponding efficiency score. Overall, Benin's performance lags that of all comparator groups, and the magnitude of the inefficiency depends on the efficiency score index (Table 1). Under the three efficiency scores index, the results indicate that Benin could increase investment efficiency by 55 percent in average with the same amount of investment.

[4] Details regarding the estimations of public capital stocks, see IMF (2015).

[5] Data are provided by the Investment and Capital Stock Template prepared by IMF Fiscal Affairs Department.

[6] While this indicator provides a sense of the coverage of infrastructure networks and physical output of public investments, it does not fully measure the quality of the infrastructure.

[7] While this indicator provides a measure of the quality of infrastructure assets, it is affected by individual perception biases and fails to capture the coverage dimension adequately.

**Table 1. Efficiency Scores in Benin**

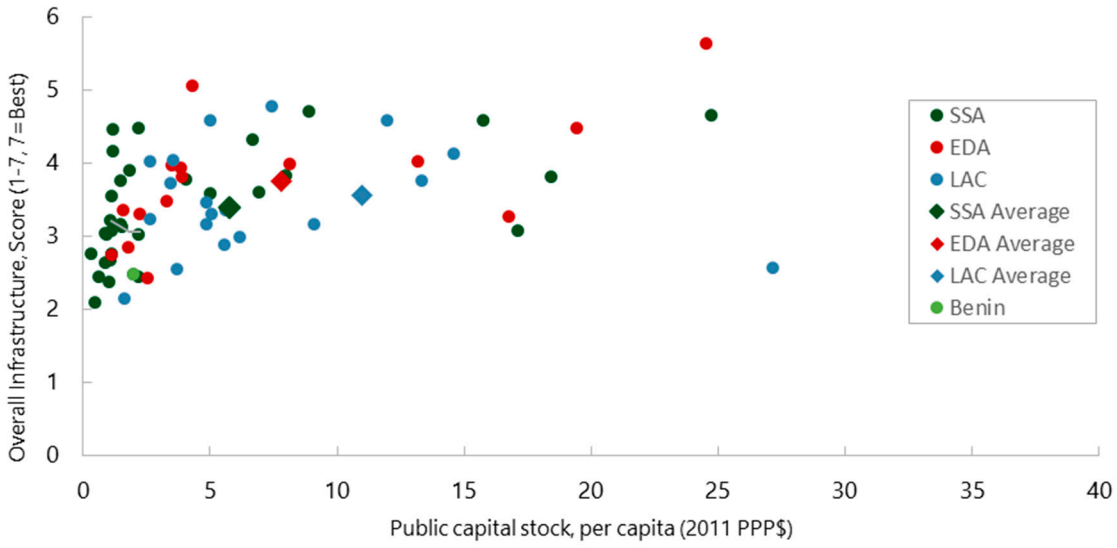
| Region | Physical Infrastructure | Quality of Infrastructure | Hybrid Indicator |
|---|---|---|---|
| Sub-Saharan Africa | 0.4597 | 0.8033 | 0.6417 |
| CEMAC | 0.3046 | 0.6247 | 0.5108 |
| EAC | 0.4875 | 0.8736 | 0.7351 |
| WAEMU | 0.3694 | 0.8137 | 0.6188 |
| Benin | 0.4725 | 0.7114 | 0.4976 |
| Oil exporters | 0.1958 | 0.5938 | 0.2687 |
| Non-resource-intensive | 0.4464 | 0.8577 | 0.6981 |
| Other resource-intensive | 0.6019 | 0.8134 | 0.6563 |

**10. The low quality of infrastructure is only loosely correlated with public investment levels, pointing to significant inefficiency in Benin compared to regional comparators.** As shown in Figure 5, the relationship between real public capital stock per capita and perceptions of infrastructure quality is positive but relatively weak. This suggests that there is considerable scope to enhance the efficiency and impact of public investment in Benin.

**11. Investment in Benin appears to have been less effective in generating growth than in other peers.** The increase in investment rates over the past couple of decades has not been concomitant with an improvement in the growth performance throughout the region. The correlation between real GDP growth and investment in 2015 has been weaker than in other SSA countries (Figure 6).

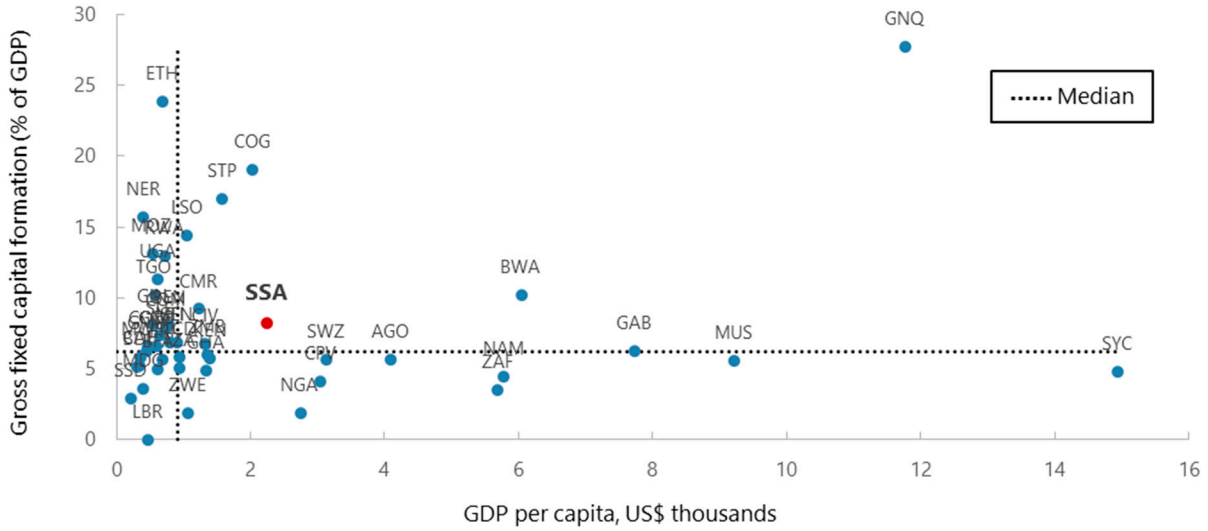
**Figure 5. Real Public Investment and Quality of Overall Infrastructure, 2015**

Scale 1-7 (best)




Sources: World Development Indicators, and IMF Staff estimates.
* Equatorial Guinea and Trinidad and Tobago are not shown in the graph as they are outliers.

**Figure 6. GDP per Capita vs. Gross Fixed Capital Formation, 2015**




Source: Investment and Capital Stock Database; World Economic Outlook; and IMF staff estimates.

## C. Explaining Public Investment Efficiency in Benin

**12. Empirical literature highlights that higher public investment efficiency is generally associated with stronger institutions and low dependency on natural resource revenues.** Albino-War et al (2014), Grigoli and Mills (2014) and Gleb and Grassman (2010) found that in countries with weak institutional quality, governments may use capital spending as a vehicle for rent-seeking, leading to inefficient public investment. To examine the main factors explaining public investment efficiency in SSA countries, we regress over the period 2000–15 the efficiency scores,[8] estimated previously, on a set of explanatory variables such as: (i) quality of institutions: measured by two World Development Indicators (WDI), namely control of corruption and regulatory quality,[9] (ii) Official Development Assistance (ODA), (iii) percentage of urban population,[10] and (iv) natural resources dependency to capture a country's dependence on its natural resources.[11]

**13. Cross-country regressions suggest that quality of institutions is the main determinant of public investment efficiency in Benin.** Overall, our estimations show a positive correlation

[8] The sample includes 154 countries including 45 SSA countries.

[9] It captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.

[10] Urban population refers to people living in urban areas as defined by national statistical offices. The data are collected and smoothed by United Nations Population Division.

[11] We construct a dummy variable with 1 being a LIC or LMIC rich in non-renewable natural resources.

between the public investment efficiency and the quality of institutions and a negative association between the dependency on natural resource and public investment efficiency (Table 2). Consistent with previous research, our results show that in countries with weak institutional quality, governments may use capital spending as a vehicle for rent-seeking (Keefer and Knack, 2007; Grigoli and Mills, 2014), which leads to inefficient spending.

**14. Using an alternative empirical methodology and different indicators of institutional quality did not affect the results significantly.** The empirical analysis considers an alternative estimation method (Table 3) as well as alternative measures of efficiency scores.[12] The impact of institutional quality on public investment efficiency is significant under both alternative measures of efficiency scores as well as indicators of institutional quality.

**Table 2. Determinants of Public Investment Efficiency in Benin**

| **Dependent Variable:** Hybrid Efficiency Score | (1) | (2) |
|---|---|---|
| Corruption | 0.11292*** | |
| | (3.061) | |
| Regulatory Quality | | 0.11552*** |
| | | (3.130) |
| ODA | -0.00000 | -0.00000 |
| | (-0.225) | (-0.696) |
| Proportion of Urban Population | -0.00002 | -0.00045 |
| | (-0.021) | (-0.416) |
| Natural Resource Receipts | -0.12216** | -0.11708** |
| | (-2.129) | (-2.030) |
| Constant | 0.75330*** | 0.77387*** |
| | (11.065) | (11.043) |
| Observations | 93 | 93 |
| R-squared | 0.216 | 0.220 |

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**15. Strong institutions can play a crucial role in fostering efficiency of public investment in Benin.** Based on various specifications, a 10 percent increase in the control of corruption index or the regulatory quality index could improve public investment efficiency in Benin by about 15 percent on average and could lead to a reduction in Benin's efficiency gap. Therefore, Benin should speed up the necessary institutional and anti-corruption reforms, which will require significant legal and institutional changes to get more "growth" for their invested "buck." Obviously, the necessary institutional changes cannot be introduced overnight; it will require the development of new skills and capacities, and time to deliver the envisaged benefits.

[12] As an alternative approach, we estimate a Tobit Model.

**Table 3. Determinants of the Quality of Public Investment in Benin**

| Dependent Variable: Quality Efficiency Score | (1) | (2) |
|---|---|---|
| Control of Corruption | 0.11783*** | |
| | (4.588) | |
| Regulatory Quality | | 0.10568*** |
| | | (4.148) |
| Official Development Assistance | 0.00000 | 0.00000 |
| | (1.443) | (0.934) |
| Proportion of Urban Population | -0.00146** | -0.00159** |
| | (-2.066) | (-2.180) |
| Natural Resources Dependency | -0.02733 | -0.02801 |
| | (-0.748) | (-0.750) |
| Constant | 0.89319*** | 0.88955*** |
| | (19.280) | (18.940) |
| Observations | 103 | 103 |

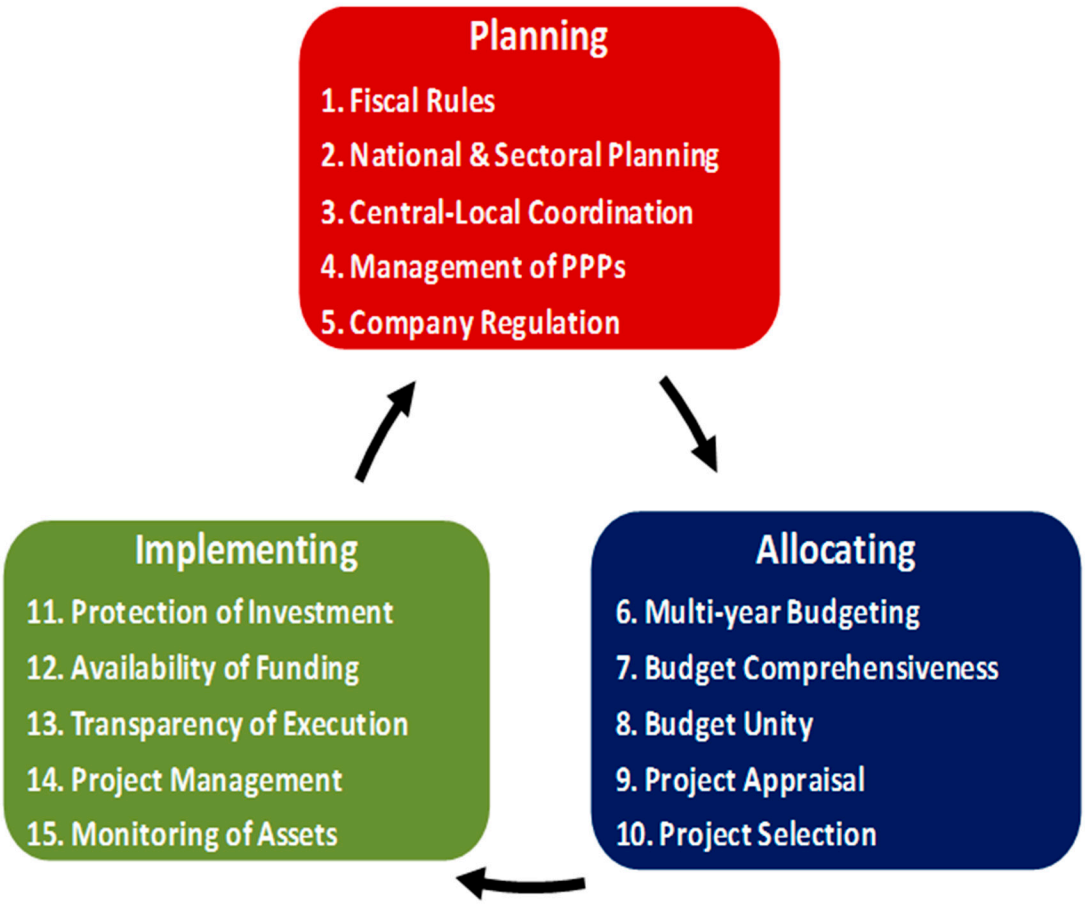
t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

## D. Improving Public Investment Management to Reduce Efficiency Gap in Benin

**16. The difference in the efficiency of public investment between Benin and other comparator countries is in part a function of the relative strength of their PIM institutions.** The impact of public investment on infrastructure quality and economic performance is, of course, mediated by a range of factors. These include, for example, the level of economic development, the quality of governance, geography, and climate. However, a growing body of literature underscores the role of legal, institutional, and procedural arrangements in determining the level, composition, and impact of public investment.

**17. Fund staff has developed a new Public Investment Management Assessment (PIMA) framework to identify main areas for strengthening public investment efficiency.** The PIMA evaluates 15 key institutions for planning, allocation, and implementation of public investment. These PIM institutions are a subset of the broader framework of "budget institutions" that govern the public financial management process (Figure 7).

**Figure 7. PIMA Framework**




**18. Benin needs to identify key public investment management (PIM) institutions that could reduce the efficiency gap.** The IMF's new PIMA framework could help Benin evaluate the strength of its PIM practices. The PIM institutions that shape decision-making at the three key stages of the public investment cycle:

- Planning sustainable investment across the public sector;
- Allocating investment to the right sectors and projects; and
- Implementing projects on time and on budget.

## E. Conclusion and Main Findings

**19. There is substantial room to improve public investment efficiency in Benin.** The analysis finds that Benin's public investment efficiency seems weak relative to that of the best performers in SSA, using efficiency frontiers. The regression analysis suggests that stronger institutions could reduce the public investment efficiency gap in Benin. Benin, therefore, needs to evaluate the strength of the PIM practices of its institutions and agencies in charge of public investment. Improving public investment efficiency, in turn, could help boost growth and speed up progress in realizing the development agenda.

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# MACRO-STRUCTURAL POLICIES AND INEQUALITY[1]

**1. Benin shows high levels of poverty and inequality, with different patterns in terms of urban-rural populations.** The highly informal nature of the economy and low productivity—particularly, in the agricultural sector—are the main causes of the lack of inclusiveness. Despite the drop of the overall non-monetary poverty in recent years, the data shows a high incidence of poverty in rural populations (north part of the country) compared with urban populations (concentrated in the south). At the same time, low tax revenues constrain the government's ability to achieve social objectives.[2] Based on a dynamic general equilibrium framework developed by Adrian et al (2017) and Fabrizio et al (2017), this paper discusses the medium-term macroeconomic and distributional impacts of structural policies and reforms being undertaking in Benin. The reforms considered center on measures to mobilize domestic resources.

**2. The dynamic general equilibrium framework used builds on key structural characteristics of low income developing countries (LIDCs).** The model is a small-open economy featuring two areas—rural and urban—and four sectors—domestic agricultural, exporting agricultural, manufacturing, and informal service. Value added taxes (VAT) are imposed on consumption of domestic agricultural and manufacturing goods (Box 1). The model is calibrated to match salient macro and distributional features of the Beninese economy, including share of different sectors in consumption and production, tax structure, and rural and urban income Gini indicators.

**3. The framework generates an endogenous distribution of households that respond to changes in government policy in Benin.** Changes in households' behaviors when aggregated, help to predict the potential macroeconomic and distributional impacts of the policy reforms under consideration. The framework also captures both inequality across sectors and inequality within sectors. On the one hand, inequality across sectors depends on the mobility of workers across areas of activities. On the other hand, within-sector inequality is explained by the fact that, although households of a given type and location may be ex ante identical, their individual productivity is subject to shocks over time, thereby affecting their income in any given period. As a result, households end up with different incomes. Furthermore, government policies and financial sector features affect different groups of the economy differently, driving both macroeconomic performance and distributional outcomes.

[1] Prepared by Benin team in close collaboration with Marina Mendes Tavares and Xin Tang (both SPR).

[2] See INSAE (2015) for the most recent analysis of poverty in Benin based on a survey conducted in 2015, encompassing also a comparative analysis of inequality (2011-15).

## A. Reforms for Enhancing Domestic Resource Mobilization

**4. To address large macroeconomic imbalances and accommodate an ambitious investment plan, Benin launched a reform strategy in 2017 centered on domestic revenue mobilization.** Benin faced a difficult macroeconomic situation characterized by the following observations: growth had slowed significantly, the fiscal accounts had weakened, and the public debt-to-GDP ratio had increased by 43 percentage points over three years, reaching 47 percent of GDP in 2016. Persistently low tax revenue constraints the size of the budget and, hence, limits the government's capacity to pursue social objectives. The reform package sought to boost tax revenues through an increase in the VAT rate and cut non-priority recurrent spending to contain the accumulation of public debt. A quantitative assessment is required to assess the interaction of VAT and the distribution prospects of the economy (Box 2).

### Box 1. General Structure of the Model

- ✓ The model is a small-open economy with two areas (urban and rural), and four sectors (domestic agricultural good, exporting agricultural good, manufacturing, and informal service). *
- ✓ Households are heterogenous in their productivity, supporting an endogenous distribution of consumption, and income. Lower productivity rural households work for exporting farms which produce domestic and exporting agricultural goods, while higher productivity rural households work on their own plots, producing domestic agricultural good. On the contrary, lower productivity urban households produce informal service goods, and higher productivity urban households work for formal manufacturing firms.
- ✓ Households save through a risk-free asset, which is all turned into capital used by manufacturing firms. Government collects taxes through VAT, PIT, and CIT. Taxes can be used either in a non-productive way, or for cash transfer program and infrastructure investment. Both the international account and the government account is balanced in the model.
- ✓ In the equilibrium, all households and firms optimize, taken prices and government policies as given. Prices, wages, and interest rate clear all markets.

*/ Manufacturing should be understood as the modern, high productivity sector of the economy (and thus include some services like banking, finance, etc.; while services refer to the informal non-taxable activities, such as personal services.

**5. Simulation results of an increase in tax revenue equaling two percent of GDP through VAT (the main simulation) suggest that the reform leads to a direct negative impact on consumption and output.** This is due to the fact that tax revenues are assumed to be used in a non-productive way. The impact on investment, however, is positive due to an increase in the relative price of saving to consumption, crowding in private savings, which are channeled to capital used by firms. The negative impact on consumption and output can be mostly mitigated, if the

**Box 2. Quantitative Assessment of Tax Incidence: Why is it Needed? ***

LICs have four prominent features that make VATs particularly effective and attractive to them than other tax instruments:

- compared to developed countries, LICs usually are characterized as a "dual-economy" with large agricultural and informal sectors;
- LICs often show low level of capital accumulation.
- a large informal sector reduces the effectiveness of labor income taxes, and
- low capital accumulation provides a very small tax base for capital return taxes.

As a result, the implementation of a policy recommendations to achieve fiscal consolidation in LICs, usually show pros and cons:

- Due to the large incidence of informal sectors, tax evasion becomes a a typical characteristic, as most of the transactions are executed through means of cash transactions and alike.
- Consequently, higher VATs create extra wedges between prices of different goods, distorting resource allocation towards informal sectors, which eventually leads to an informal sector that is larger than otherwise predicted by a frictionless model.
- Furthermore, by definition, VATs tax people with higher consumption heavier. Given the large share of groups of poor households in LICs—who spend a large share of their income on food consumption—VATs impose a relatively higher tax burden on these poor households measured as percentage of total income.

Hence, the distributional impacts of the VATs could worsen situations of inequality. And this has a more pronounced incidence in LICs. On the other hand, tax revenues collected can be channeled to build infrastructure that benefits long-run economic growth, protect the poor, and finance redistributive social welfare programs to reduce inequality and poverty rate.

The interactions between VATs and specific features of LICs lead to channels that affect the growth and distribution prospects of the economy both positively and negatively. Thus, the overall effect is theoretically ambiguous, and needs to be investigated quantitatively.

*/ Based on Xin Tang (2017).

additional tax revenue collected are used for infrastructure investment that boosts the productivity in all sectors of the economy (Box 3, upper-left/right panel).

**6. A comparison of simulation results of revenue mobilizations equaling 2 percent GDP through VAT, corporate income taxes (CIT), and personal income taxes (PIT) suggests that VAT is the least distortive in terms of aggregate output**. The reason is specifically because the crowd-in effect of private investment (Box 3, lower-left panel). The use of personal income taxes (PIT) or corporate income taxes (CIT) leads to higher reduction in economic activity. CIT reduces the return of investment, which leads to a large decrease in economic activity. The PIT reduces the disposable income of the richer households, leading to a reduction of the aggregate savings of the economy and consequently to lower investment and economic activity. Thus, due to its neutral impact on investment, VAT taxes are the least distortive tax on this economy.

**7. The VAT reform results in higher income inequality in urban areas.** In urban areas, poor households work in the non-tradable sector, which is informal, while richer households work in the manufacturing sector. The VAT reform reduces aggregate demand and the prices of non-tradable goods leading to a reduction on the income of the urban poor. The urban rich households observe an increase in income due to the increase in the investment in the economy, which leads to relative higher wage in the manufacturing sector (Box 2, upper-left panel).

**8. The VAT reform leads to lower income inequality in rural areas.** The decrease of aggregate demand leads to a reduction of agricultural prices affecting rural households. The richest rural households are affected more because they sell a largest share of their production, which leads to lower levels of income inequality in the sector (Box 2, upper-left panel).

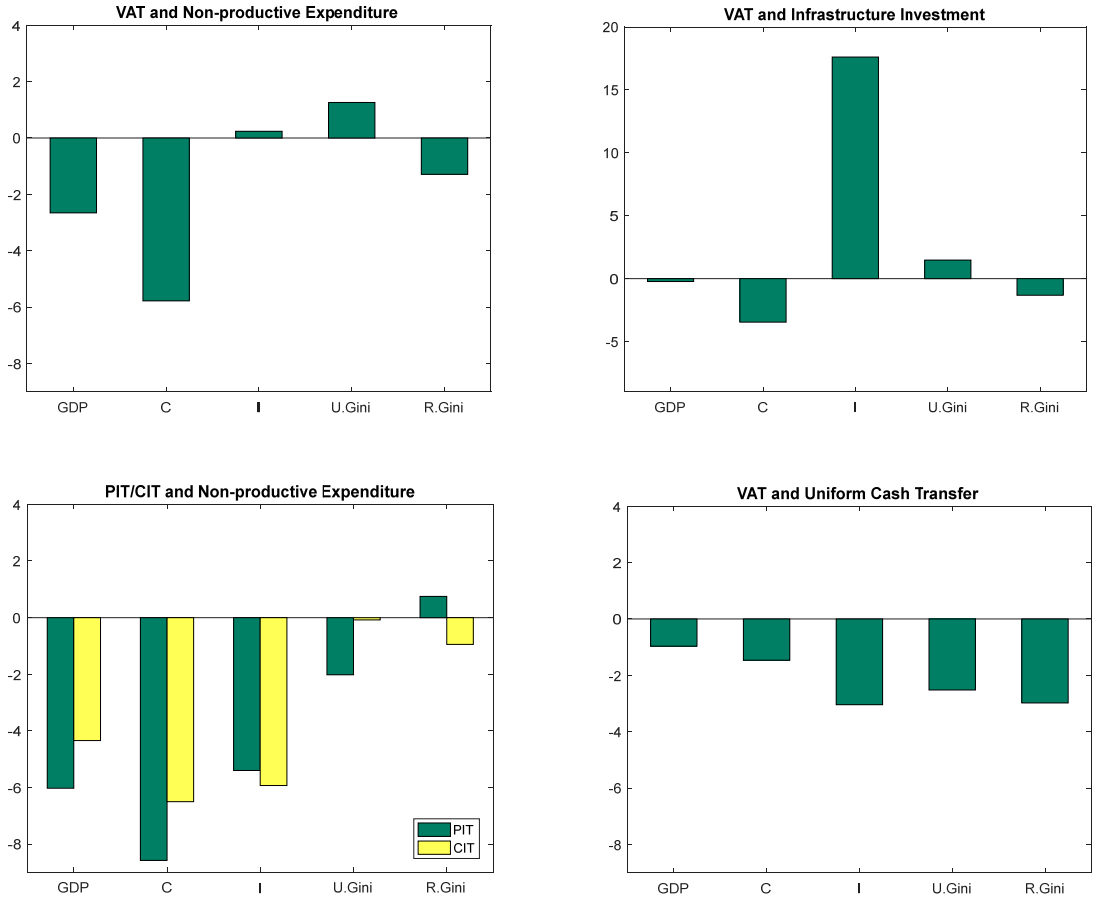
**9. The implementation of universal basic income (UBI) reduces both consumption inequality and income inequality.** Inequality is reduced because the UBI boosts the income of poor households directly and indirectly.

- directly due to the fact that the transfers represent a larger share of poor households' income, and
- indirectly through a 4 percent increase in the relative price of non-tradable goods that are produce by the poor (Box 2, lower-right panel).

**10. Scenarios**. The framework is simulated for five different scenarios using the benchmark equilibrium as the base.

| Scenario | Description |
|---|---|
| 1 | Additional tax revenue equaling 2 percent of GDP by VAT, additional tax revenues used in non-productive governmental expenditure. |
| 2 | Additional tax revenue equaling 2 percent of GDP by VAT, additional tax revenues used for uniform cash transfer. |
| 3 | Additional tax revenue equaling 2 percent of GDP by VAT, additional tax revenues used to finance infrastructure investment that boosts overall productivity by 1.74%. |
| 4 | Additional tax revenue equaling 2 percent of GDP by CIT, additional tax revenues used in non-productive governmental expenditure. |
| 5 | Additional tax revenue equaling 2 percent of GDP by PIT, additional tax revenues used in non-productive governmental expenditure. |

**Figure 1. Macroeconomic and Distributional Impacts of Tax Reforms**




* All results are percentage changes of the corresponding x-axis variables using the initial equilibrium (the status quo) as the benchmark.

## B. Policy Implications.

**11. Success of Benin's revenue mobilization reform depends, highly, on the nature of the tax instrument chosen and how the government revenue is used.** The analysis indicates that for Benin, VAT is the least distortive instrument to raise revenue when compared to PIT and CIT. Specifically, model simulations indicate that increasing the VAT rate would be slightly progressive and would raise revenue with a smaller negative impact on economic activity than PIT and CIT hikes.

**12. The presence of a large informal sector in Benin would shield the income of producers of informal (agricultural) goods, thus turning the tax slightly progressive.**[3] The model's results

[3] See Medina et al (2017)

are consistent with the analysis made for many LIDCs that have a small share of the population working for formal wages, a large unproductive agricultural sector, and scarce capital goods. If the government revenues are used on unproductive government consumption, revenue mobilization will lead to a contraction in economic activity. However, if they are used to finance efficient infrastructure investment, revenue mobilization can even boost economic growth if the investment has high return and it is efficient. In practice, it could be done through investment in roads, electrification, irrigation, agricultural research and development, and on agricultural services.

**13. An implementation of UBI reduces the negative impact of revenue mobilization on economic activity.** UBI also contributes to a reduction the inequality and poverty in both rural and urban areas. The increase in poor households' consumption offsets some of the negative impact of VAT on output, making cash transfer program a desired policy instrument for inclusive growth.

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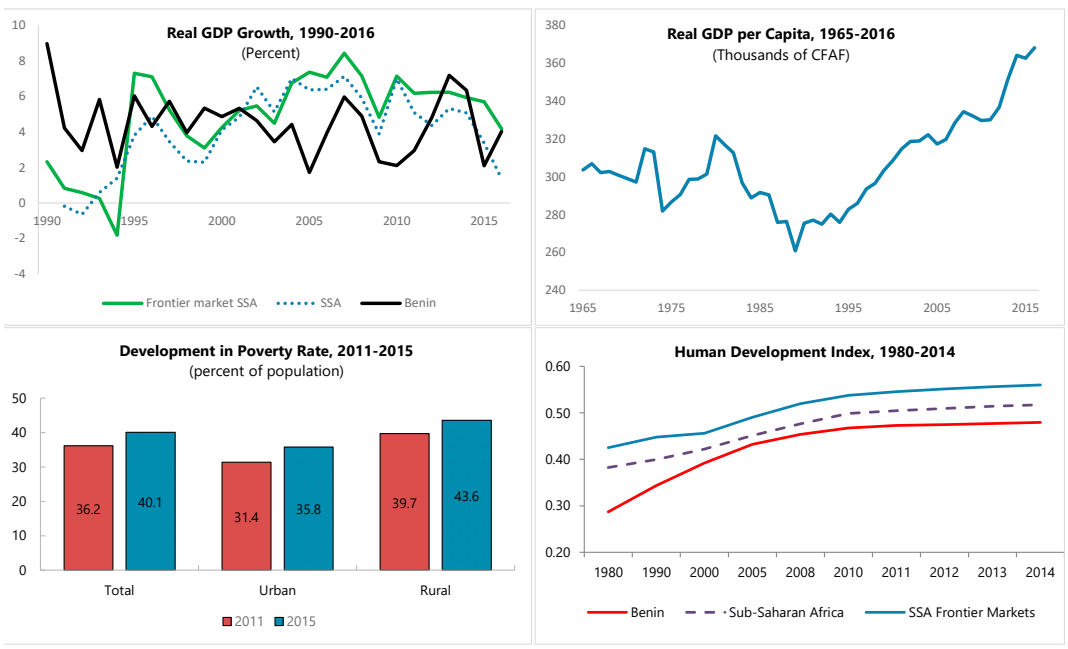
# FISCAL INCIDENCE AND INEQUALITY[1]

*This paper evaluates the impact of redistributive fiscal policies in Benin by estimating their incidence on household-level income inequality and poverty rates. The value of taxes (both direct and indirect) paid by lower-income households and incorporated into the analysis exceeds the value of benefits created by social expenditures incorporated into the analysis. The analysis concludes that targeting spending to lower-income households is key to achieve social objectives.[2]*

## A. Poverty in Benin

**1. Solid macroeconomic performance did not translate in a meaningful reduction in poverty in Benin.** Following a decade of mediocre economic performance, growth over the last 3 years (2013–15) averaged 5.2 percent, closing the gap with the sub-Saharan Africa (SSA) average in

**Figure 1. Benin: Elusive Inclusiveness, 1990-16**




Sources: Beninese authorities and IMF staff calculations.

[1] Prepared by Benin team in close collaboration with Jon Jellema, Maya Goldman (both at CEQ). This analysis was undertaken as part of a joint project between Commitment to Equity (CEQ) and IMF staff, as well as with the Organization for Economic Cooperation and Development (OECD) in the context of the EU Social Protection Systems Programme, which is co-funded by the European Union, the OECD and the government of Finland. However, the contents can in no way be taken to reflect the views of the European Union or the government of Finland.

[2] Due to data availability, the analysis has excluded certain elements of the expenditure and revenue portfolios, so the analysis is not comprehensive but partial.

per capita GDP growth (Box 1). However, growth remains non-inclusive, thereby calling for a better strategy to improve the living standards of the poorest sectors over the medium term (Figure 1).

**2. Poverty indicators deteriorated in recent years.** Despite the increase in real GDP per capita since 1987, the poverty rate in the country deteriorated in recent years (Figure 1). An overall estimate of poverty in Benin conducted by the National Institute of Statistics and Economic Analysis (INSAE) shows that poverty indicators deteriorated from 36.2 percent of population in 2011 to 40.1 percent in 2015. The result is mainly explained by the contraction of consumer spending. The survey conducted by the INSAE also found:

- Women experienced higher levels of (non-monetary) poverty than men. However, regarding monetary poverty, the analysis found that groups led by women are better off than those led by men (women heads of households generally enjoy sufficient economic autonomy, resulting in part from their marital status, household size and sectors of activity, and by the fact that women are benefiting from better access to credit).

- Individuals living in households headed by persons with at least primary education are less affected by monetary or non-monetary poverty.

**3. Benin ranked 167 out of 185 against 166 in 2015 in human development.** At the regional level, Benin ranked 35th against 31st in 2015. However, Benin's level of development has remained virtually unchanged, as its Human Development Index has risen from 0.480 in 2015 to 0.485 in 2016 below the average of 0.497 for countries in the low human development group and below the average of 0.523 for countries in sub-Saharan Africa (SSA).

**4. Poverty in Benin is underpinned by poor governance indicators.** In 2015, Benin is placed 16$^{th}$ (out of 54) in overall governance, registering only a marginal progress over the decade (+0.7). The country's high scores in *Participation & Human Rights* and *Safety & Rule of Law*, in which Benin achieves respectively the 9$^{th}$ and 11$^{th}$ ranks, are offset by weaker performance in *Human Development* and *Sustainable Economic Opportunity*, in which Benin features in the bottom half of the continental rankings, at 31$^{st}$ and 28$^{th}$ respectively.

- Moreover, Benin has deteriorated in *Safety & Rule of Law* over the decade (-1.9), driven by decline in *National Security* (-7.9) with *Cross- border Tensions* and *Government Involvement in Armed Conflict* featuring among the country's ten most deteriorated indicators over the decade. Benin also registers a decline, albeit marginal, in *Personal Safety* (-1.0), showing considerable deterioration in the indicators *Safety of the Person* and *Social Unrest*, while *Police Services* registers the second largest improvement on the continent.

- Benin receives its highest category score in Participation & Human Rights (68.6), but shows no change in performance over the decade. In fact, the country registers considerable decline in Rights (-9.3), being the seventh most deteriorated country on the continent. Human Rights Violations features among Benin's ten most deteriorated indicators over the decade, with

concerning regression also registered in Freedom of Expression and Freedom of Association & Assembly.

- Benin's very minimal progression in Sustainable Economic Opportunity (+0.1) is driven entirely by Infrastructure (+5.6), although it remains a relatively low ranking country in this sub-category (37th). The country registers decline in all three other sub-categories – Public Management, Business Environment and Rural Sector – and five of Benin's ten most deteriorated indicators over the decade sit in this category.

- Improvement in Human Development (+4.5) is driven by progress across all three sub-categories, although this remains its lowest ranking category (31st). Benin is the eighth most improved country in Education (+10.6) on the continent, with Education Quality and Primary School Completion featuring among the country's ten most improved indicators over the decade.

## B. Taxation

**5. Evaluating the redistributive impact of fiscal policies requires a comparison of incomes and expenditures with and without the benefits or burdens created by fiscal policy.** The assessment here incorporates most of the social spending portfolio (e.g., education and healthcare) in Benin; spending on defense, security, and infrastructure, is excluded. The assessment analyzes the redistributive impact of fiscal policies at a point in time and remains silent on the dynamic effects of these policies on income inequality.

**6. On the government revenue side, only VAT and grants are included in the analysis** whereas corporate income tax, corporate withholding tax, customs duties, and nontax revenue are excluded (Text Table below).

**Text table. Benin: Composition of Fiscal Revenues, 2011–2017 (percentage of GDP)**

| | 2011-14* | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| | Actual | | Proj. | |
| Tax revenues | 14.6 | 14.5 | 13.4 | 13.5 |
| Tax on international trade | 7.6 | 7.0 | 6.0 | 6.2 |
| Direct and indirect taxes | 6.9 | 7.5 | 7.4 | 7.3 |
| Non tax revenues | 2.3 | 2.2 | 2.0 | 1.9 |
| Total revenues | 16.9 | 16.7 | 15.4 | 15.5 |

* average

Sources: Beninese authorities and IMF staff calculation.

## C. Methodological Summary and Household Survey Data

**7. A Commitment to Equity (CEQ) assessment was carried out to assess the redistributive impact of fiscal policies in Benin.** Typically, a CEQ assessment considers specific fiscal policy elements, (i.e., programs, expenditures, or revenue collections) and allocates them to individuals and households from a micro-level socio-economic survey. Once the allocations are made, CEQ calculates different measures of poverty and impoverishment, inequality and progressiveness, as well as the extent of income redistribution. The effect of redistributive fiscal policy on incomes is based on the comparison of two so-called "income concepts" excluding (i.e., pre-fiscal) and including (i.e., post-fiscal) fiscal policy measures. The construction of these income concepts is presented in Figure 2.

**8. Assessments of impact on inequality and poverty.** The change in the measures of inequality (e.g., Gini coefficient) and poverty (head count) between the pre- and post-fiscal distributions give the magnitude of the impact. For example, the extent to which the system reduces inequality is derived by tracing how inequality evolves as different transfers and taxes are added or subtracted from income. Similarly, the impact on poverty is obtained by tracing the change in poverty across income concepts. Two key concepts are used to describe how progressive or regressive interventions are: "concentration shares", which are the benefits received by households (ranked by per-capita income) measured as a share of total benefits created (via government expenditures); and "incidence", or the benefits received by income-ranked-households measured as a proportion of own income.

## D. Results

**9. Fiscal policy has had a redistributive effect in Benin.** Our findings suggest that while VAT reduces inequality, it also contributes to an increase in the poverty headcount rate. The Gini coefficient for disposable income (0.43) is one Gini point higher than the coefficient for final incomes, i.e., disposable income minus indirect taxes plus in-kind benefits created by the public health and education systems (Figure 3). While inequality is marginally higher in urban areas compared to rural ones, fiscal policy is equally effective in both (Figure 3).

**10.** Health and education spending reduce poverty. The impact on inequality and poverty is approximately the same in urban and rural areas. Poverty rates increase when a combination of indirect taxes and subsidies are considered. Subtracting the indirect taxes that households paid (e.g., through general consumption expenditure) from their disposable incomes increases the share of the population living under the poverty line from 40 percent to 43 percent (see the Poverty Headcount figures for Consumable Income in Figure 3). While poverty in rural areas is higher to begin with, standing at nearly 43 percent of the rural population, the adverse effect from tax and spending tools combined is more muted in these areas (Figure 3).

**Social spending**

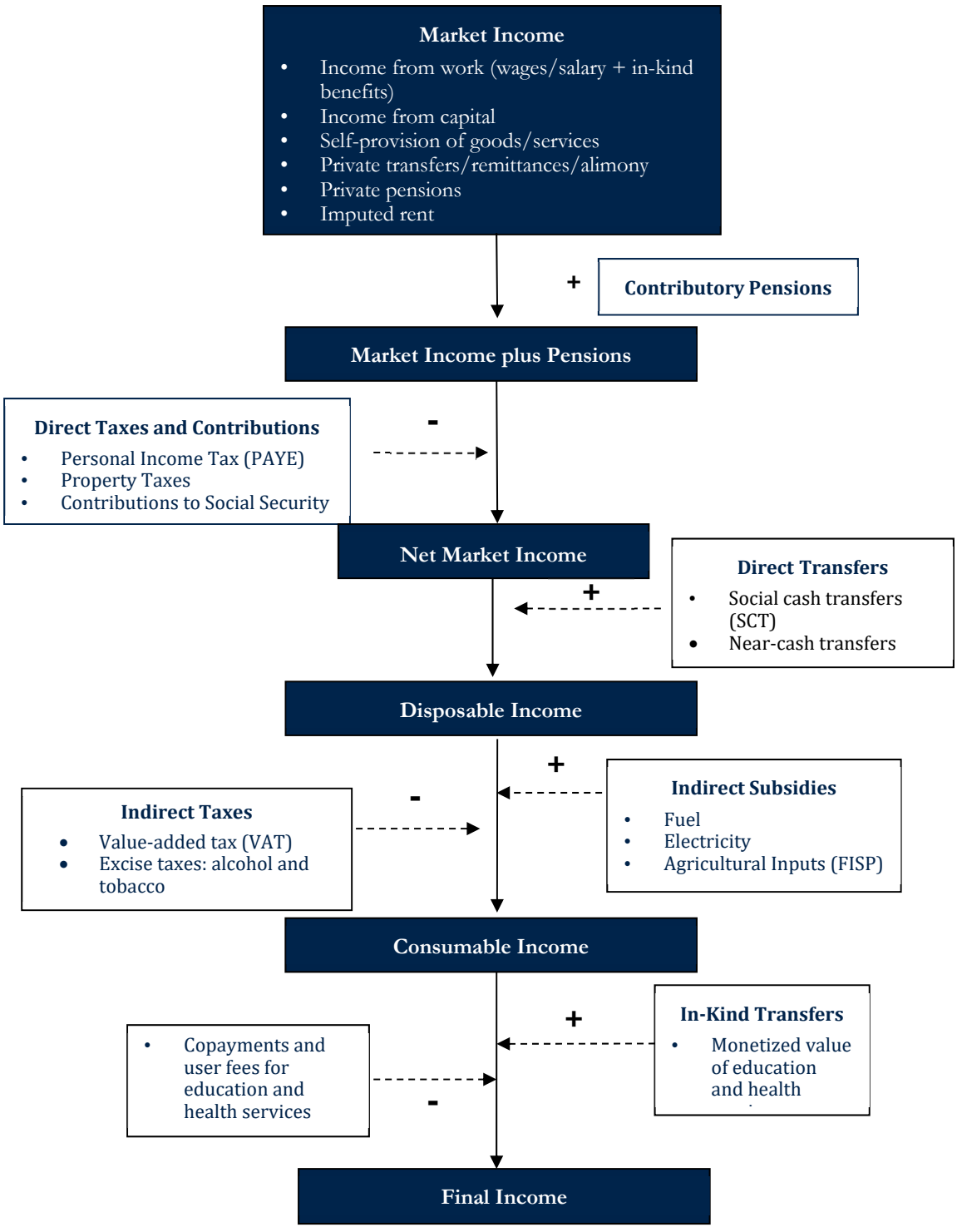
**11. The progressivity of overall education is driven by primary education while tertiary education is regressive.** The progressiveness of all education benefits together in Benin is driven by primary school spending, with most public-school students benefiting from it. However, shares of junior secondary, senior secondary and especially tertiary public school benefits increase with income (Figure 4).

**12. Public education and healthcare spending have a larger redistributive effect on lower-income households than subsidies.** Social spending benefits (i.e., public education and healthcare) account for a large share of poorer households' incomes.

- For instance, health and educational benefits (transfers) contribute, approximately, by four percent of individual income. The Lorenz curve below shows income/consumption expenditures (in red) and the concentration curves for total in-kind benefits received (health, education) as well as total VAT paid.

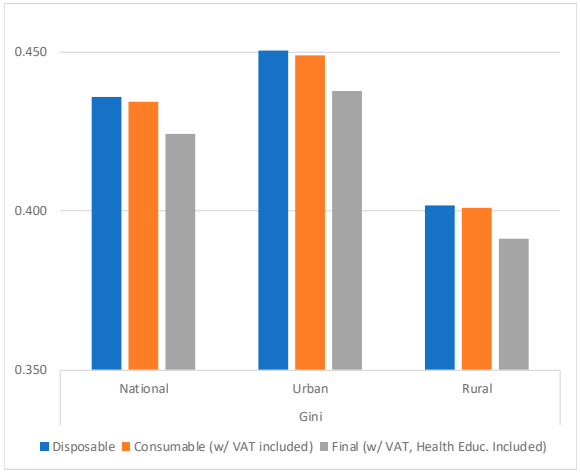
- Greater shares of benefits from the public health and education system are captured by richer individuals in Benin, but those benefit shares are still less than shares of pre-benefit income: the concentration curve for benefits lies below the 45° line, but above the Lorenz curve for income/consumption.

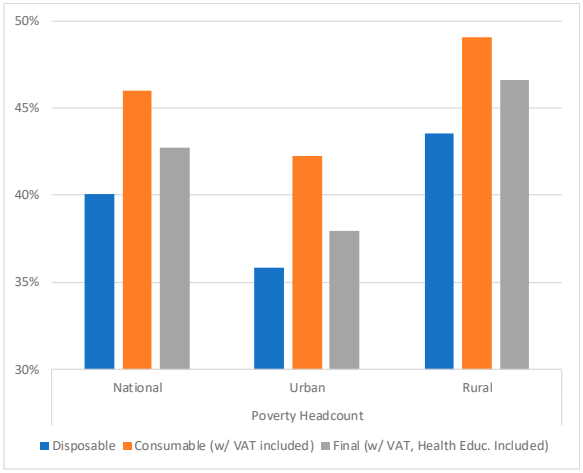
## Figure 2. CEQ Income Concepts



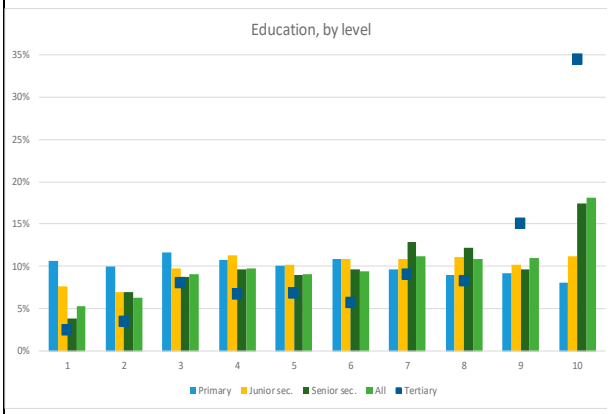

Source: Excerpted from Lustig (2016)

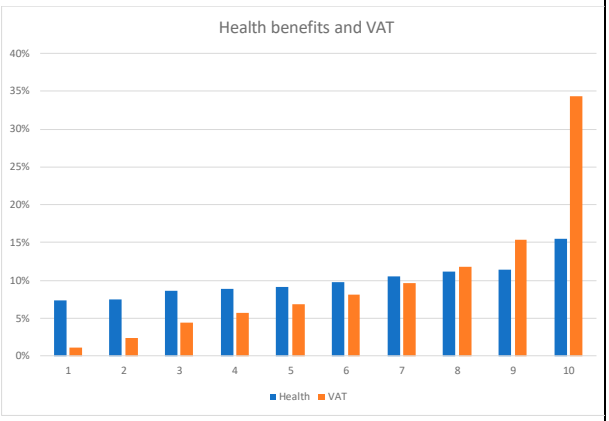
## Figure 3. Benin: Gini Coefficient and Poverty Headcount

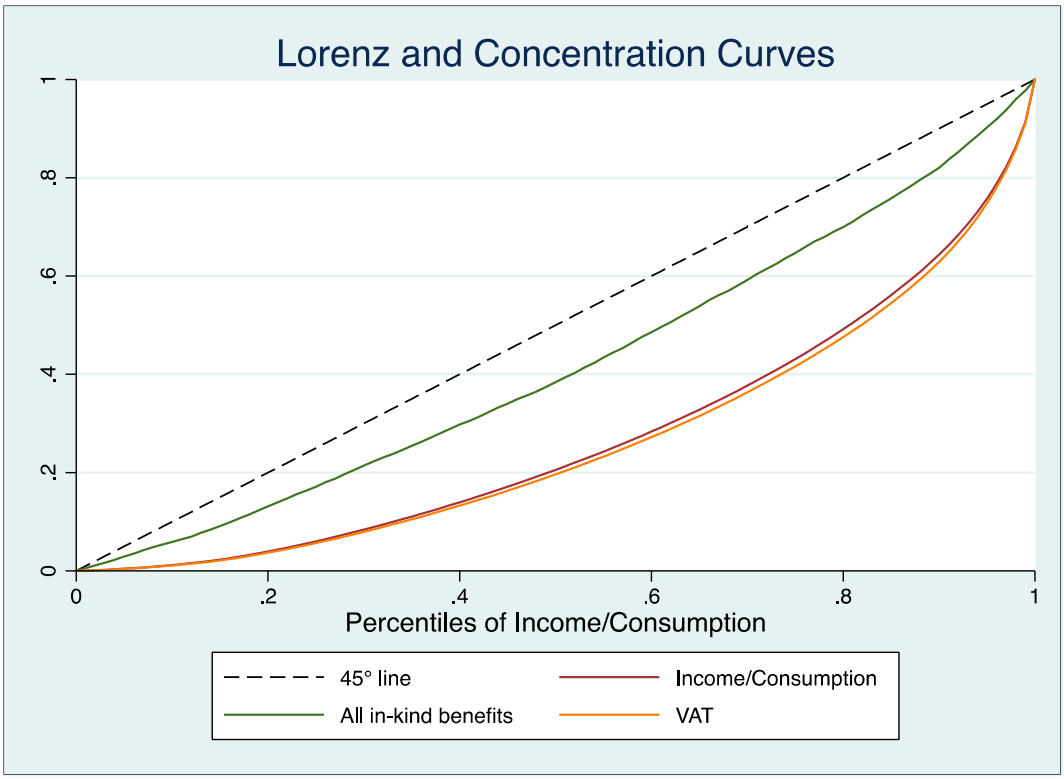



## Figure 4. Benin: Concentration Shares in Education and Health






**Value Added Taxation**

**13. Upper-income households pay larger shares of total VAT collections in Benin.** VAT is equalizing as the VAT burden, measured as a share of pre-VAT income in households, rises with income. VAT is progressively distributed in that richer households are responsible for VAT shares that are greater than their pre-VAT income shares: the concentration curve for VAT lies *below* the Lorenz curve for Income/Consumption. However, any tax represents a reduction in households' purchasing power of all goods and services available.

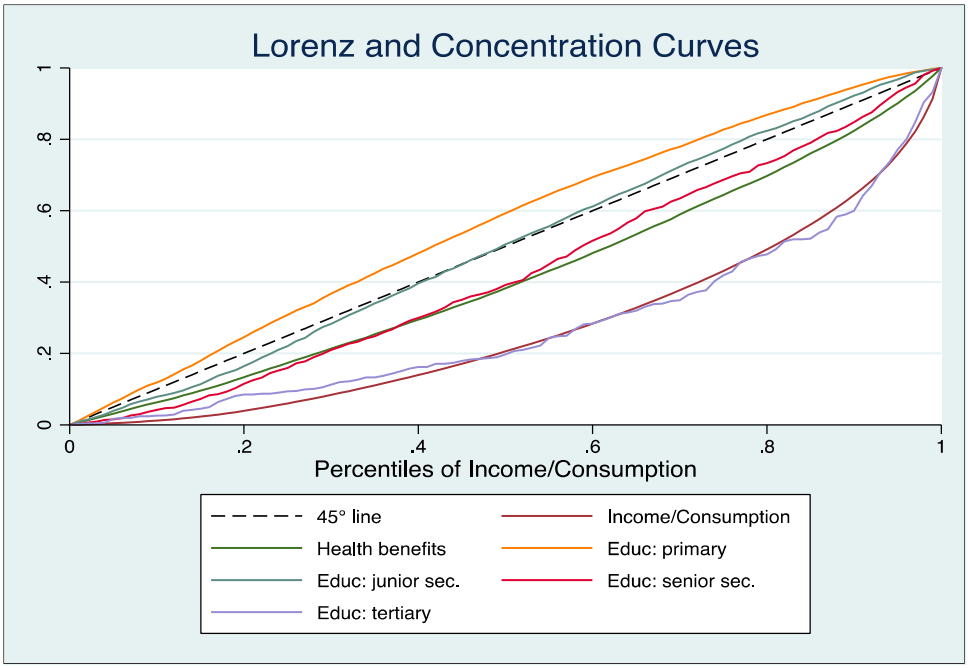
**14. Below is the Lorenz curve for Income/Consumption expenditures (in purple) and the concentration curves for in-kind benefits received at health and education providers.**

- the most progressively distributed in-kind benefit is primary education, shares of which are larger for poorer households than for richer households – i.e. the concentration curve for primary education lies above the 45° line.

- education benefits from the junior secondary level are approximately neutrally or proportionally distributed: shares of benefits are approximately the same regardless of position in the income distribution.

- larger shares of senior secondary education and benefits from health are captured by richer households—the concentration curves for senior secondary education and health lie below the 45° line but above the Lorenz curve for income/consumption.

**15. Tertiary education is the only benefit that is regressively distributed in that shares of tertiary education benefits are rising with income.**




## E. Conclusion and Policy Implications

**16. Fiscal policy in Benin has partially contributed to the reduction of inequality.** The incidence of value added taxes is progressive as wealthier households shows higher total payments. Although education and health expenditures are targeting lower-income households, fiscal policies in Benin increase poverty as more households are suffering the incidence of taxation without being adequately compensated with targeted subsidization programs or direct transfers.

**17. A policy implication from this study calls for considering targeting public spending to compensate lower-income households.** Given that a higher portion of their income is subject to taxation, VAT falls relatively heavier on lower-income households—despite its overall progressivity. Nonetheless, inequality is reduced by indirect taxes and in-kind benefits of health and education. While inequality is marginally higher in urban areas compared to rural ones, fiscal policy is equally effective in both. This finding calls for effectively targeting social spending within the authorities' medium-term strategies for poverty reduction and development.

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