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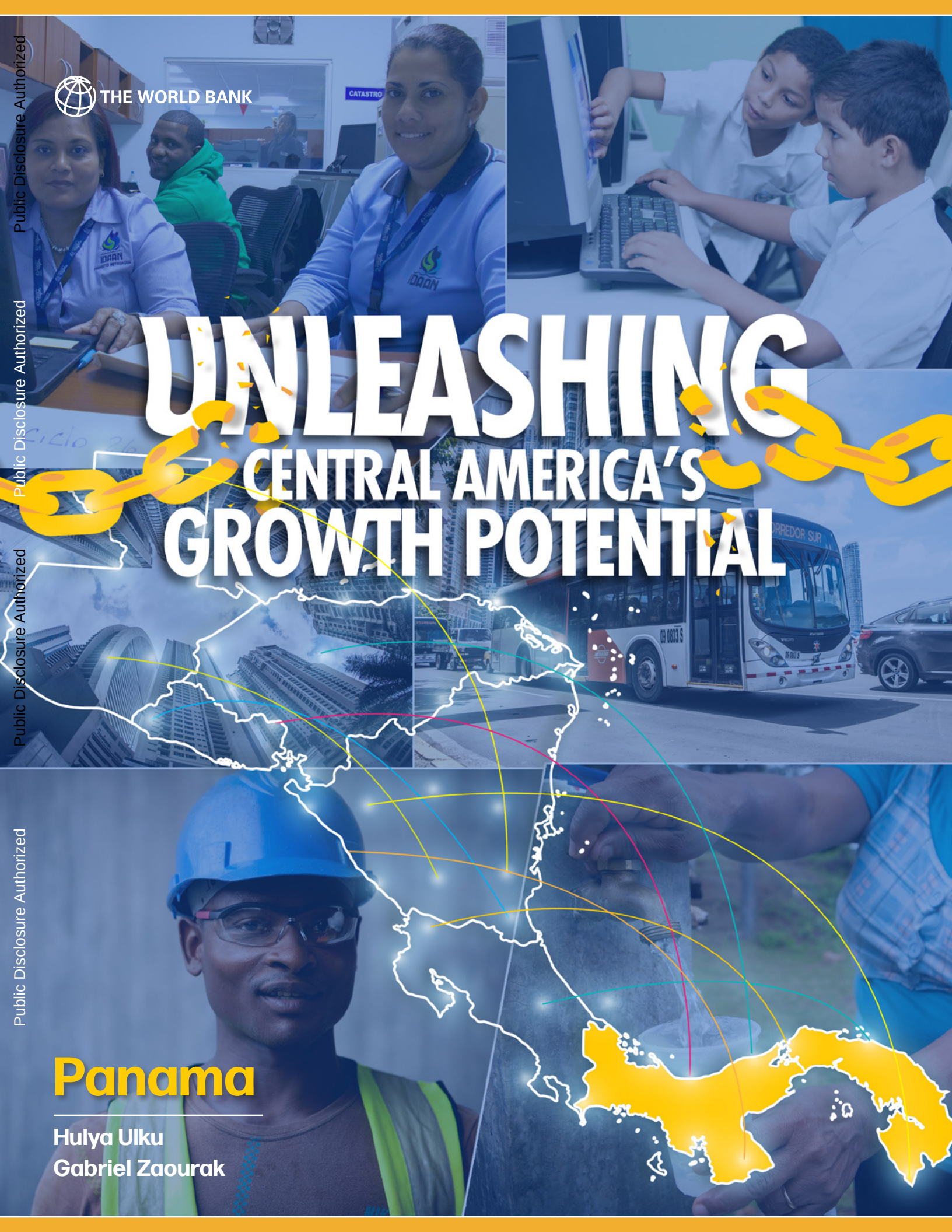
UNLEASHING CENTRAL AMERICA'S GROWTH POTENTIAL



Panama

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Contents

List of Acronyms and Abbreviations

AEs	Advanced Economies
BF	Business Freedom
CA	Central America
CABEI	Central American Bank for Integration
CAFTA-DR	Central America Free Trade Agreement (DR and US)
CBOE	Chicago Board Options Exchange
CGE	Computable General Equilibrium model
CIF	Cost Insurance and Freight
CPI	Corruption Perception Index
CRI	Costa Rica
DB	Doing Business
DGE	Dynamic General Equilibrium
DR	Dominican Republic
DVA	Domestic Value Added
EAI	Economic Activity Indicator
ECLAC	Economic Commission for LAC
EF	Economic Freedom
EMDEs	Emerging Markets and Developing Economies
EPU	Economic Policy Uncertainty
FDI	Foreign Direct Investment
FoB	Free on Board
FVA	Foreign Value Added
GDP	Gross Domestic Product
GDyn	Dynamic GTAP
GNI	Gross National Income
GTM	Guatemala
GVC	Global Value Chain
HND	Honduras
IADB	Inter-American Development Bank
ICSE	International Classification of Status in Employment

ICT	Information and Communications Technology
ILO	International Labor Organization
IMF	International Monetary Fund
IOM	International Organization for Migration
IRF	Impulse-response Functions
LAC	Latin America and the Caribbean
MIMIC	Multiple Indicators Multiple Causes
NIC	Nicaragua
NTB	Non-tariff Barriers
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
PAN	Panama
ppp	Purchasing Power Parity
SEMP	Self-employment Data
SICA	Central American Integration System
SLV	El Salvador
SME	Small, Medium Enterprises
TFA	Trade Facilitation Agreement
TPS	Temporary Protected Status
U.S.	United States of America
UN	United Nations
UNECLAC	United Nations Economic Commission for LAC
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
VAR	Vector Auto Regression/Regressive
VAT	Value-added Taxation
VIX	Volatility Index
WB	World Bank
WDI	World Development Indicators
WEF	World Economic Forum
WGI	Worldwide Governance Indicators
WoRLD	World Revenue Longitudinal Data
WTO	World Trade Organization

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1. Introduction*

Panama's growth model is at crossroads and the country must be prepared for the new growth model. Panama's economic growth over the last decade or more has been driven by construction and investment. Large public projects such as the expansion of the Panama Canal (the Canal), a metro system, airport expansion, new highways and urban regenerations combined with private investment in apartments and office and retail space to create a construction sector that tends to contribute around a quarter of all economic growth each year. This growth generated employment that made a significant dent in poverty, particularly in urban areas. Yet this model of growth is running out of steam as additional large investments bring lower returns. The country is reaching a point at which additional airport expansions or additional bridges bring less additional economic growth than previous investments.

The objective of this study is to investigate the drivers and constraints of growth and productivity in Panama and explore areas with high growth potential. Drawing on Panama's historical growth experience and employing a range of analytical tools, this chapter aims to provide an in-depth analysis of the drivers and constraints of the country's economic growth. The chapter first takes stock of Panama's historical growth and macro performance, before moving to the growth accounting exercise to understand the past drivers of country's growth. The chapter's subsequent section analyzes aggregate trends in productivity—that is, the engine of the long-term growth— and its link with the process of structural transformation. It then uses a cross-country benchmarking and regression analysis based on the growth diagnostic developed by Hausmann et al. (2005) to find the binding constraints to growth. Finally, the analysis concludes with the link between Panama's growth, diversification, and exports.

The value added of the study is to provide an in-depth analysis of the drivers and constraints of Panama's growth using a wide range of analytical tools. The analysis employs several quantitative methods to provide an objective assessment of the drivers and constraints of growth in Panama, including the long-term growth model (LTGM), computable general equilibrium model (CGE), growth diagnostics and product space analyses. The novelty of this study is to employ the same framework, analytical tools and data to conduct a parallel analysis for each Central American country to allow for a meaningful cross-country comparison. Therefore, given the wide breadth of the study, in terms of the methodologies used, themes analyzed, and countries covered, it does not envisage to deep dive into each driver and constraint of growth and provide granular policy recommendations. The core objective of this study is to inform the policy makers and other interested parties about the country's strengths and weaknesses for its growth, and to establish the analytical basis for a subsequent investigation of specific areas.

As Panama's single engine growth model reaches its limits it needs to be ready to switch to one with multiple engines. Panama has two important new growth engines. The first, smaller scale investment projects, particularly outside of Panama City, will be key for improving quality of life and providing opportunities for businesses to flourish outside of the capital. Such territorial development could include road, water and Information and Communication Technology (ICT) infrastructure that make it easier for tourists to access Panama's natural beauty and that provide nascent start-ups the modern services they need to thrive. The second, boosting productivity by investing in skills and innovations at all levels will be key for sustaining growth over the medium- to long-term, while providing economic opportunities for those at all levels of the income distribution.

* For all reports of "Unleashing Central America's Growth Potential" analytical body of work and the appendix, please see www.worldbank.org/BoostCentralAmerica.

This includes providing lifeline learning to improve skills in areas such as English, computer literacy or small business operations, as well as higher-level technical skills needed in the modern service economy.

Panama's short-term growth can be boosted by removing labor market distortions and implementing policies that make it easier for females to work. Results from a computable general equilibrium model show that increasing female labor force participation to reach half of that of men would increase GDP by 6.4 percent in 2030. At the same time, a recent study shows that despite significant movement from lower to higher productivity sectors during the 1970s to 1990s, there remain significant distortions that reduce worker mobility across sectors. These include rules that make it more difficult to hire and fire workers. Reducing these distortions could facilitate labor mobility and translate into large output gains.

Longer term, sustained growth requires further boosting productivity through means other than large infrastructure investment and Panama stands out as lagging in two areas that could contribute: corruption reduction and innovation. Panama's investment in Research and Development (R&D) and innovation lags both that of its structural and aspirational peers[1] and has been declining. Panama's R&D expenditure declined from 0.36 percent of GDP in 2000 to 0.06 percent in 2013 (the latest data available), averaging 0.2 percent of GDP during 2000-2013, compared to 1.6 and 0.6 percent in its aspirational and structural peers, respectively. The country's innovation index averaged 34 out of 100 during 2011-2018, on par with its structural peers but far below its aspirational peers (51) and has been decreasing from 38 in 2014 to 32 in 2018. Special economic zones, such as City of Knowledge, aim to improve innovative activity, however their contribution to the whole economy appears to be limited. This is especially important given that Panama actually seems to be falling behind in terms of innovation in some senses: the share of modern services exports declined marginally between 2010 and 2018, from 18 percent of service exports to 16 percent, mostly due a significant increase in traditional exports. Panama also performs worse than many of its peers in corruption indicators and has not shown much progress in controlling corruption over the last two decades. Corruption and impunity pose serious challenges to the country affecting the police, judiciary, and high levels of government. In 2018, Panama ranked 93rd out of 180 countries in Transparency International's corruption perception index. By comparison, Chile and Costa Rica ranked 27 and 48, respectively. Financial services, government procurement and the judicial system appear to have the highest number of corruption cases, involving bribery, embezzlement, money laundering, conflicts of interest, and omission of asset declaration, among others.

According to the analysis in this chapter, even in areas where Panama performs well overall, parts of the country lag, resulting in a drag on growth. This includes areas such as property rights and, perhaps surprisingly, access to banking services. Analysis in this chapter shows that property rights protection in Panama is weak relative to its structural and aspirational peers, achieving a score of just 37 out of 100 during 2000-2018, around half the score of its aspirational peers and high-income peers in Latin America and the Caribbean (LAC). Panama's property rights score is among the lowest vis-à-vis the comparator economies. Panama's rule of law index also lags its structural peers, including Costa Rica, as well as its aspirational and high-income regional peers, and has been more volatile in recent years. While Panama tends to perform well on many financial variables, some access to finance indicators lag aspirational and structural peers. For example, access to banking is burdensome and highly centralized. Financial inclusion in Panama is limited, given the high requirements and costs of opening and maintaining a bank account. The opening of a standard bank account is subject to evidence of regular income and personal references in addition to an average opening deposit of US$50. Most financial services are located in the province of Panama, which makes access to banks difficult for people in rural areas or far from big cities. These factors limit the access of people with low incomes or informal jobs to the formal banking system. National statistics show that only 14 percent of all bank accounts belong to the persons in the two poorest income quintiles.

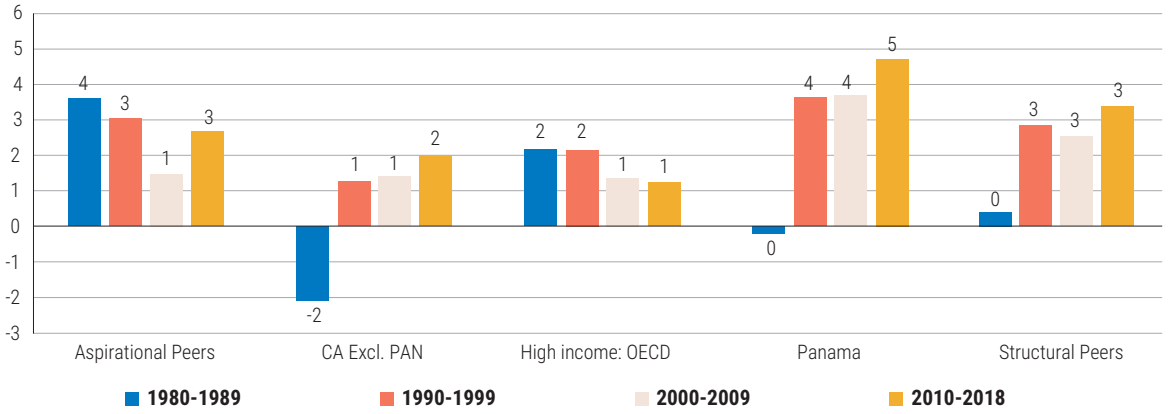
Reforms to address issues such as these can help Panama take advantage of its geographical position and further its development as a small, open, and export-oriented economy. Better institutions, better skills and greater innovation could help Panama develop more complex and modern goods and services as well as more basic ones which have the potential to further territorial development, such as tourism. An economic environment with well-defined rule of law is associated with comparative advantages in complex services, and

as a result with a higher export of complex services. This is because complex services are dependent on good institutions that enforce contracts: better institutions increase the probability that contracts are enforced and therefore complex services with multiple tasks have a higher probability of been delivered. Similarly, complex services require higher skilled workers, and therefore the quality of the pool of workers is a key enabler of the services trade. Improved institutions combined with Canal traffic can generate demand for transport, warehouse, insurance and logistics services. In addition, despite being a major air transport hub connecting countries in LAC, tourism still has untapped opportunities to support growth. A mere 10 percent of travelers that transit through Panama stay in the country to visit; incentivizing travelers to visit the country for a couple of days could generate considerable returns. Finally, investing in ICT and improving Panama's internal transportation network is necessary to improve the country's overall competitiveness.

2. Macroeconomic and Growth Performance: Historical Context

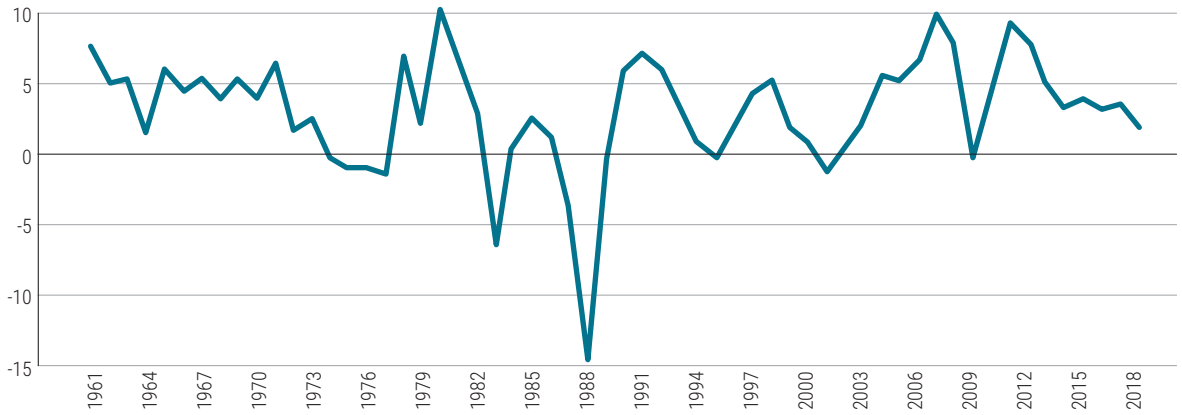
With an average growth rate of 6 percent since 1990, Panama has been one of the fastest-growing economies globally, enjoying high per capita income and a stable macroeconomic environment.[2] Panama's real GDP per capita growth averaged 3.9 percent during 1990–2008 and 5.1 percent during 2010–2017, surpassing its structural, aspirational, and regional peers (Figure 1).[3] Due to sustained high growth rates that were interrupted only briefly by global economic crises (Figure 2), Panama's real GDP per capita doubled relative to that of the United States during 1990–2017, increasing from 11 percent in 1990 to 22 percent in 2017 (Figure 3). Its absolute GDP per capita increased twofold in the last 15 years (from US$5,866 in 2004 to US$11,723 in 2018)—the largest increase in Latin America.[4] Historically, Panama's strong growth performance has been accompanied by low levels of inflation and government debt, and a low budget deficit. The inflation rate has been in the single digits, at an average of 2.7 percent[5] from 1960–2018—with the exception of 1974 and 1980, when the oil and debt crises broke out—which is well below Central America's average for most of this period. Although government debt was 83 percent of GDP in 1994, it has decreased steadily before stabilizing around 38 percent of GDP since 2014—one of the lowest levels globally (Figure 4). Historically, the country also has a low budget deficit, at 2 percent in 2018 (Figure 4) and low government revenue, at 20 percent in 2018.[6]

Figure 1. Real GDP per capita growth rate by decade



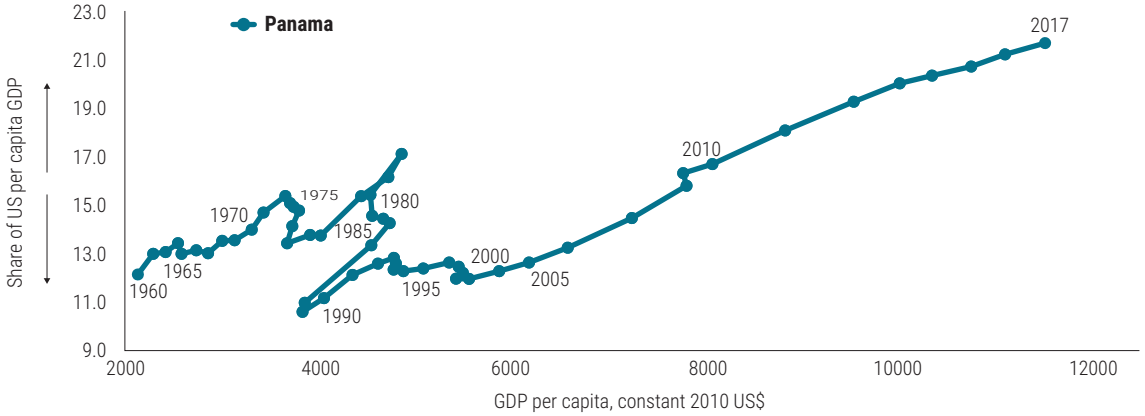
Source: Authors' computation based on data from WDI and WEO.

Figure 2. Real GDP per capita growth rate of Panama



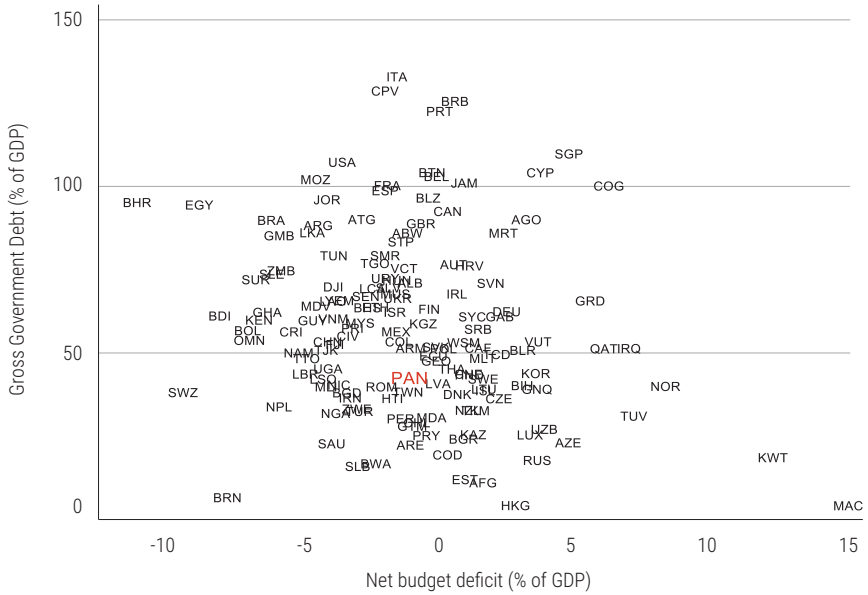
Source: Authors' computation based on data from WDI and WEO.

Figure 3. Panama's per capita GDP relative to U.S.



Source: Authors' computation based on data from WDI and WEO.

Figure 4. Government gross debt vs. budget deficit in 2018



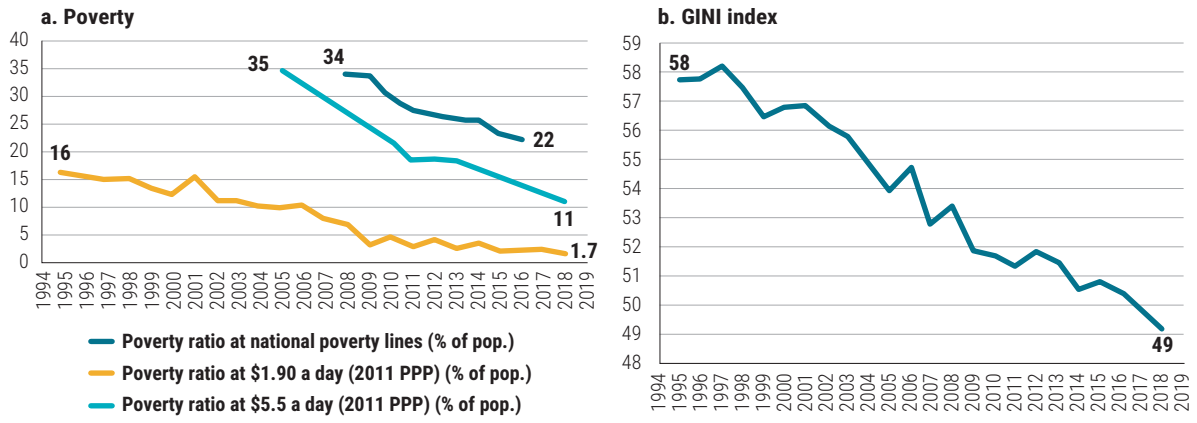
Source: Authors' computation based on data from WDI and WEO.

The Canal and related economic activities such as infrastructure, construction, and professional services have contributed significantly to Panama's high economic performance.[7] The late 1970s and the 1980s were marked by a regional debt crisis that interrupted the country's growth progress significantly. The government implemented several economic reforms starting in the mid-1990s, including the liberalization of international trade and banking sector reforms, and joined the World Trade Organization (WTO) in 1998. The transfer of the Canal to Panama in 2000 allowed the country to benefit from rising global trade and take advantage of its geographical position to become a well-connected logistics and trade hub as well as a financial center. Infrastructure projects and foreign investment have contributed to Panama's stable growth after the 2000s, due to the Canal and a competitive financial sector.[8] Following the comprehensive reforms implemented in the 1990s and the increased economic activity in the Canal, whose capacity doubled in 2016, Panama has been experiencing strong growth rates and per capita income gains since the 2000s. [9]

Fast economic growth has led to significant progress in the reduction of poverty and inequality since the mid-1990s. The expansion of labor-intensive sectors such as construction and infrastructure helped reduce poverty in Panama over the past two decades. The national poverty line declined from 34 percent in 2008 to nearly 22 percent in 2016. Extreme poverty, measured as US$1.90 a day, decreased from 17 percent in 1995 to below 1.7 percent in 2018; and the poverty rate at US$5.5 a day decreased from 35 percent in 2005 to 11 percent in 2018. Although poverty reduction in Panama was greater than the LAC average, inequality remains high, despite a steady decrease in the Gini coefficient, from 58 since the mid-1990s to 49 in 2018 (Figure 5).

However, not all groups have benefited equally from poverty reduction. Despite the significant reduction in nationwide poverty from 2007–2012, poverty among the indigenous population remained above 70 percent, and extreme poverty above 40 percent. The decline in extreme poverty between 2007 and 2012 was 40 percent in urban areas, 15 percent in rural areas, and 4 percent in indigenous territories, which accounted for 12.3 percent of the population in the 2010 census. The indigenous population's access to basic public services—water, electricity, sanitation, internet—is lower in Panama than in the 12 other LAC countries with high indigenous populations. In 2019, the average life expectancy of the indigenous population was 11 years lower than the national average (67.75 vs. 79 years), and the maternal mortality rate was four times higher among Indigenous women living in *comarcas* (indigenous regions) than the national average (462 vs. 92 per 100,000 births). Two-thirds of the urban population living in Panama City benefit disproportionately from the activities around the Canal and related sectors through increased labor income, with little spillover of these benefits to rural areas through social transfers or other channels. In 2018, agriculture employed 14.2 percent of the Panamanian population, with a high concentration of the indigenous population, despite its small share of GDP (2.2 percent). In recent years, the Panamanian government has been collaborating closely with the World Bank to improve access to basic services in indigenous territories.

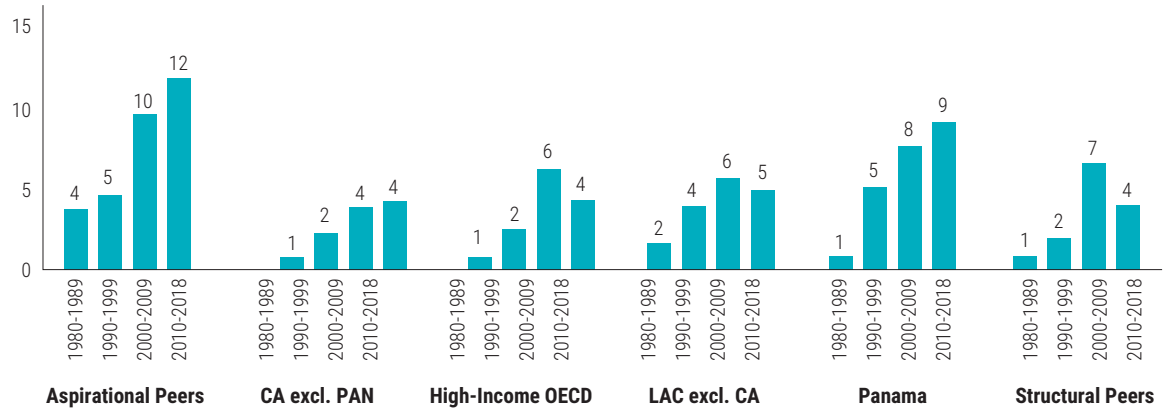
Figure 5. Poverty rates and GINI index, Panama (1994–2019)



Source: World Development Indicators (WDI).

Foreign direct investment (FDI) inflows to Panama have been strong historically and have expanded over time, in line with global trends since the 1990s (Figure 6). FDI inflows, a stable source for financing current account deficits, arguably have supported productivity gains as well during the past two decades. As a share of GDP, FDI inflows increased from 1 percent in the 1980s to 9 percent in the 2010s. Panama's average annual FDI growth rate over the past two decades outperformed its structural peers and the Central American average but remained slightly below its aspirational peers. The Canal expansion and construction of infrastructure projects such as the metro in Panama City attracted foreign investment during the 2000s.[10] In addition, improving the business environment contributed significantly to the rise in FDI inflows.[11] FDI inflows finance most of the current account deficits and support GDP growth in Panama: a one percentage point increase in the FDI-to-GDP ratio was associated with 0.6 and 0.8 percentage point gains in short- and long-term growth rates, respectively.[12] FDI is highly concentrated in the service sectors such as communications, transport, commerce, and finance.[13]

Figure 6. FDI Inflows (% of GDP)



Source: WDI.

3. Drivers of Growth: Growth and Development Accounting

3.1. Growth accounting

An analysis of the role of factor accumulation and productivity in economic growth provides a clear framework to understand Panama's recent economic growth history.[14] This "growth accounting," complemented by a benchmarking analysis that compares Panama to its structural and aspirational peers, not only provides an idea of what factors drove past economic growth, but also sheds light on potential areas of improvement to foster economic growth in the long run.

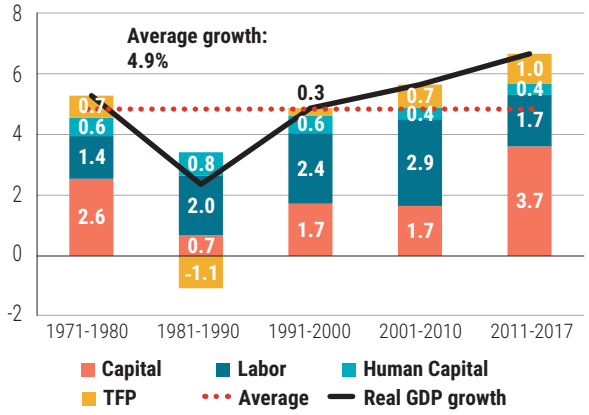
For the past 50 years, Panama's economic growth model has been mainly driven by factor accumulation, especially capital and labor, but productivity has been gaining raising since the 1990s. Total Factor Productivity (TFP) had an insignificant contribution for most of the period analyzed (1970–2017). The analysis of the decomposition of the GDP growth shows that the contribution of labor and human capital to aggregate GDP growth (at an average of 4.9 percent per year) was 54 percent per year, while capital accumulation contributed 40 percent, and TFP contributed the remaining 6 percent. However, as a result of several reforms during the 1990s, including the liberalization of international trade and banking sector reforms, the contributions of capital and TFP have been increasing over time, from an average of 1.7 and 0.3 percent per year, respectively, in the 1990s, to 3.7 and 1.0 per year, respectively, in 2000–2017. During the same period, labor as a growth driver has lost relevance: while in the 1990s its contribution to growth on average was 48 percent, between 2010 and 2017 its contribution was 25 percent.

Historically, low productivity growth has been an impediment to improving living standards, but there is evidence of improvement in recent years. In the period 1970–2017, annual TFP growth averaged 0.3 percent, with significant fluctuations over time. In the 1970s, TFP gains contributed positively to GDP growth, but an overall decline in TFP in the following decade as a result of the regional debt crisis subtracted on average 1.1 percentage points per year from average annual GDP growth (at 2.4 percent) (Figure 7). Thereafter, and as a result of trade liberalization and FDI inflows that spilled over throughout the economy, the productivity growth rate increased from an average of 0.3 percent per year in the 1990s to 0.7 percent per year from 2001–2010, and to 1 percent on average per year in the last eight years of the period under study. Following the methodology in Caselli (2016), if Panama reached the level of TFP of the United States, given the actual levels of capital, labor, and education, the level of output per worker would be 2.2 times the current level. This counterfactual provides a clear indication of the benefits of increasing productivity.

Since 2000, Panama's capital accumulation has been strong relative to its peers, and was mostly driven by non-residential construction and the expansion of the Canal. From 2000 to 2018, total investment was 29 percent on average, higher than all other four groups of comparison peers, in which investment ranged from 21 to 27 percent of GDP during this interval (Figure 8). The high levels of investment observed in Panama during this period were driven by large private and public investments in non-residential construction starting in 2009. Private investment averaged 24 percent between 2000 and 2018, but increased from 25 percent in 2009 to 34 percent in 2018. Public investment was driven by the announcement of a large public investment program

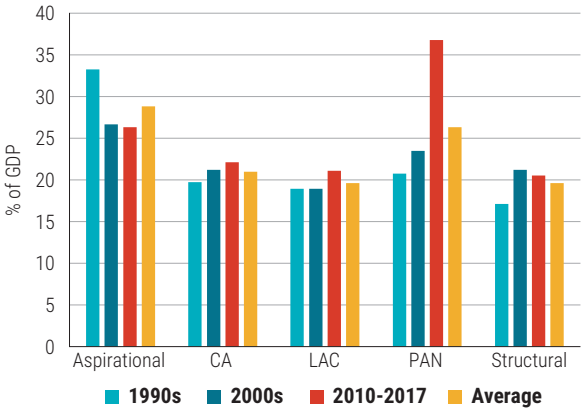
that included the expansion of the Panama Canal, infrastructure upgrades in six airports, and the metro line in Panama City, among others. Based on this, public investment averaged 5 percent between 2000 and 2018, but increased from 4 percent in 2009 to a high of 11 percent in 2013. These high levels of investment were financed both with a high local savings rate of 24 percent and FDI, which contributed an average of 8.4 percent per year.

Figure 7. Growth decomposition, 1971–2017: average (%) per year



Source: World Bank staff using data from Penn World Tables 9.1.

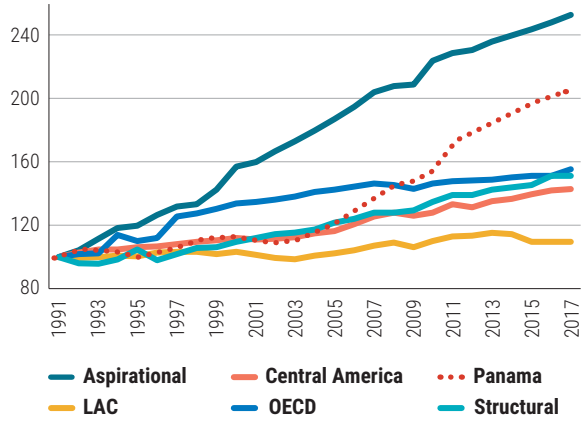
Figure 8. Investment as a share of GDP, 1990–2017



Source: World Bank staff using WDI.

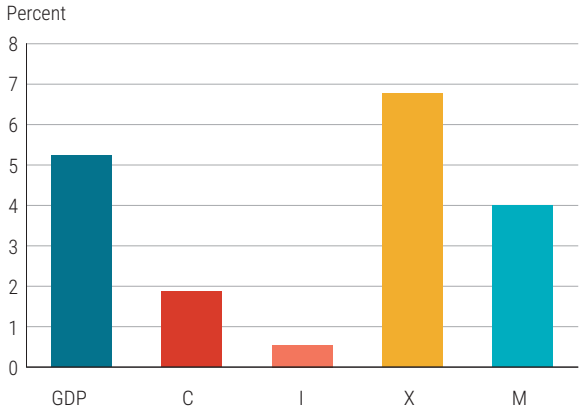
The acceleration in TFP that started in the 1990s is reflected in Panama's labor productivity, which was outpaced only by its aspirational peers. Labor productivity is a measure closely linked to TFP, and it is calculated as value added per worker.[15] Between 1992 and 2017, value added per worker in Panama grew more than all comparison groups except aspirational peers (Figure 9): while labor productivity in Panama increased on average 3 percent per year, it increased 1.4 percent on average for OECD countries and 3.7 percent in aspirational peers. As a result, the gap in labor productivity between Panama and OECD countries decreased significantly, especially since the 2000s. The acceleration in labor productivity observed since the 2000s is purely a result of faster TFP growth, since the contribution of capital to growth between the 1990s and the 2000s remained constant.

Figure 9. Labor productivity over time, 1991–2017 (1991=100)



Source: WB staff using data from WDI.

Figure 10. Increasing female labor force participation: macroeconomic effects, 2030



Source: WB staff based on Pennings and Guzman (2019).

The decline of labor accumulation as a source of growth could be counterbalanced by increasing female labor force participation, which would have strong positive effects on growth. Women's labor force participation in Panama is currently at 50 percent, well below that of men (78 percent), but still the highest in Central America (43 percent). Educational and labor market policies that remove barriers and incentivize female labor

force participation could have significant positive impacts on Panama's growth, productivity, and development.[16] In addition, introducing more economic support for parents and addressing gender norms that perpetuate disparities could boost female participation in the labor market. Based on simulations using a computable general equilibrium (CGE) model, increasing women's labor force participation to reach half of that of men would gradually boost labor supply and is estimated to increase GDP by 6.4 percent (Figure 10).[17] Traditional labor-intensive services sectors (business services and public administration) are shown to benefit the most. According to the model, higher levels of economic activity would encourage investment (both domestic and foreign) in Panama, estimated to increase by 0.5 percent by 2030 and boost exports by 6.8 percent. Households would also benefit through an increase in household income and consumption, estimated to increase by 2 percent by 2030.

3.2. How would reforming the drivers of TFP affect growth?

To boost TFP growth, reforms in innovation, education, market efficiency, infrastructure, and institutions are needed. As widely cited in both the theoretical and empirical literature, TFP—also referred to as technical progress—is the main driver of the long-term growth rate of an economy.[18] This section uses an extended LTGM to quantify how an increase in the determinants of TFP, which include innovation, education, market efficiency, infrastructure, and institutions,[19] affects the long-term growth rate in Panama. The analysis uses the latest available data to construct the indexes for all five determinants of TFP (see Appendix III for details on the construction of the indicators).[20] In each of these five indicators, Panama underperforms its aspirational peers. This highlights the need for reforms in these areas in order to promote the country's long-term growth.

The goal of the reform scenario is to reach the levels of Panama's aspirational peers in each determinant of TFP by 2035. To implement these reforms, it is assumed that each TFP determinant increases linearly, so that by 2035 the country reaches the target (Table 1). This scenario generates a path of TFP that follows an inverted U-shape, rising from a growth rate of 0.6 percent in 2020 to a maximum of 1.8 percent by 2032, and then declining gradually over time. On average, the growth rate of TFP between 2019 and 2050 is 1.4 percent per year, which is almost 0.9 percentage points higher than in the baseline scenario (0.5 percent). Annual GDP per capita growth would be 1.5 percentage points higher than the baseline and the poverty rate would be 2 percentage point lower than in the baseline.

Table 1. TFP reform scenario

Determinant	PAN	Aspirational peers	Target Year
Innovation	3.2	44.4	2035
Education	53.0	77.2	2035
Efficiency	63.2	88.5	2035
Infrastructure	48.3	67.8	2035
Institutions	44.8	65.1	2035

Source: World Bank staff elaboration.

The above evidence suggests that Panama needs to raise TFP growth to continue closing the gap with rich countries. Panama's growth has been driven mainly by factor accumulation (labor and capital) and, to a lesser extent, human capital accumulation. From a historical perspective, TFP has been an impediment to closing the gap with high income countries. However, TFP has accelerated since the 1990s, due to the large inflow of foreign investment and the development of the Panama Canal. Since the 2000s, capital accumulation has become a major driver of growth, with the large investments in non-residential construction, led by the expansion of the Canal. At the same time, labor's contribution to growth has declined over time. Since female labor force participation is well below that of men, increasing female labor force participation would have significant returns. However, this alone will not be enough to catch up with rich countries. Raising productivity growth is key to continue the path started in the 1990s and to sustain poverty reduction over time. As documented in Section 4, the main reforms needed in Panama entail improving the financial system to promote investment and accelerate innovation and strengthening the business environment through reductions in insecurity and controlling corruption. Before looking at the key determinants constraining growth in Panama, it is useful to analyze further the main determinants of the TFP dynamics in the country.

4. Aggregate Trends in Productivity and Structural Transformation

4.1. Employment composition and structural change

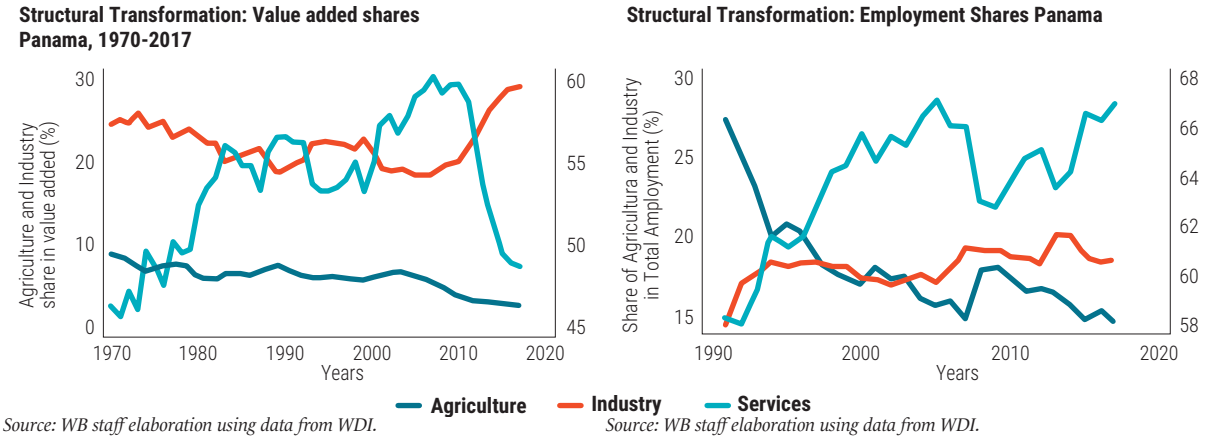
As countries develop, they move resources away from agriculture to industry and services. This process is known as structural transformation.[21] The structural transformation literature established that as an economy grows, the following patterns emerge:

1. The employment share and nominal value-added share in agriculture declines;
2. The employment share and nominal value-added share in services rises; and
3. Industry follows a hump-shaped path: the employment share and the value-added share of industry rise at early stages of development, eventually reach a peak, then decline as the economy grows.

Panama's economic expansion was accompanied by a shift in its sectoral composition. Figure 11 displays the evolution of nominal sectoral shares of GDP for agriculture, industry, and services. Agriculture's share of GDP (left panel) declined steadily from about 9 percent in the early 1970s to around 3 percent in 2017. The industrial share did not follow the standard hump-shape path observed in other countries, but declined from about 25 percent in the early 1970s to 19 percent in the late 2000s, before rebounding sharply in the following years, reaching 29 by 2017. This was a result of a construction boom since 2010 that included the expansion of the Canal and commercial and residential construction. The evolution of the share of services in GDP mirrors that of the industry share, increasing from 67 percent in the early 1970s to 76 percent in the late 2000s, before plunging to a bit over 68 percent by 2017.

Panama also experienced a significant change in its structure of employment across sectors. In 1991, more than 26 percent of workers were employed in agriculture, about 51 percent in services, and 15 percent in the industrial sector (Figure 11, right panel). By 2018, the employment share of agriculture shrank to 15 percent, while those of services and industry increased to 58 percent and 19 percent, respectively.[22] The reallocation of Panama's workers away from agriculture to services and, to a lesser extent, industry, is consistent with a long tradition in development economics in which poor countries need to undergo a process of structural change where labor reallocates from traditional, low-productivity sectors of the economy toward modern, high-productivity sectors to achieve high levels of aggregate productivity.[23]

Figure 11. Structural transformation in Panama: Value added share and employment share in agriculture, industry, and services



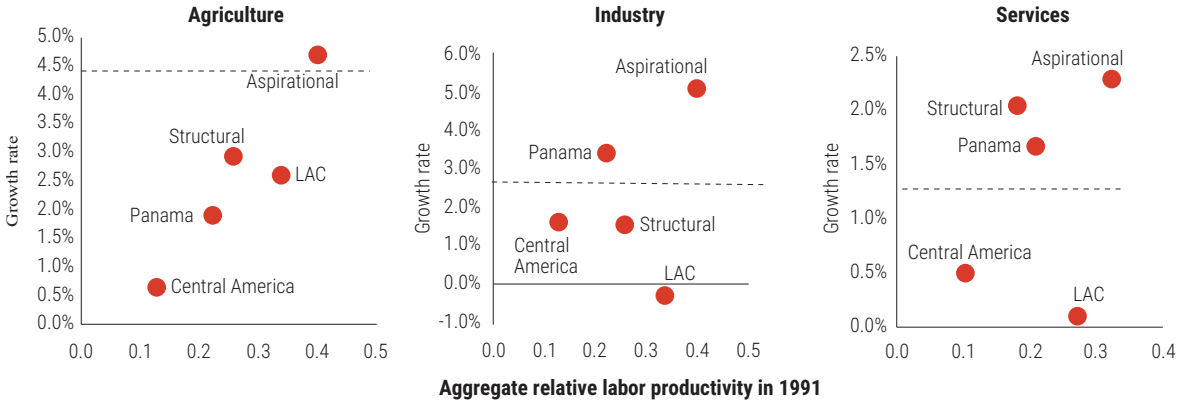
Source: WB staff elaboration using data from WDI.
Note: Value added, constant 2010 US$.

Source: WB staff elaboration using data from WDI.

4.2. Sectoral labor productivity growth and structural transformation

Panama's labor productivity growth performance relative to its peers varies across sectors, and in recent years labor productivity in industry and services has closed the gap with rich countries. The process of structural change is characterized, among other things, by differences in the pattern of productivity growth across sectors and countries.[24] Figure 12 depicts the relationship between average labor productivity growth in each sector and aggregate labor productivity in 1991 for Panama and a set of its peers, together with a dotted blue line representing the labor productivity growth for OECD countries. Between 1991 and 2017, agricultural labor productivity grew, on average, 2 percent per year, a pace significantly below that of OECD countries, and below that of most of its peers, with the exception of Central American countries. Panama's industrial labor productivity grew a robust 3.6 percent per year in the same period, a pace that was exceeded only by its aspirational peers. Finally, Panama was outpaced in services by its aspirational and structural peers.

Figure 12. Sectoral labor productivity growth



Source: World Bank staff elaboration using data from WDI.

Differences in productivity across sectors are in line with evidence. Empirical evidence shows that there tend to be large differences in productivity at the firm level within sectors and between sectors.[25] In addition, these gaps tend to be larger in developing countries than in advanced economies, pointing to larger distortions in the allocation of resources across sectors in the former, with a higher negative impact on aggregate productivity. However, large productivity gaps across sectors could potentially increase aggregate productivity if workers reallocate from sectors with low productivity to sectors with high productivity. In the case of Panama, the relative labor productivity gap between agriculture in 2016 (the least productive sector) and the most productive

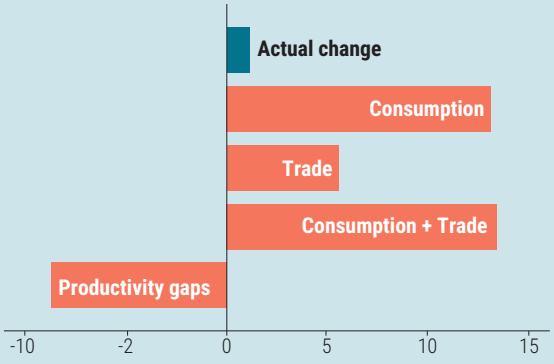
Box I. Drivers of industrial Employment in Panama between 1999 and 2017

In a background paper for this report, Sinha (2019a) investigates the relative strength of different forces in shaping the behavior in industrial employment in Central America, using a model that links production in one sector to production in other sectors and countries. In this model, employment in a sector is affected by three channels: (i) domestic consumption; (ii) net exports; and (iii) labor market distortions restricting the flow of labor between sectors. While the first two forces increase sectoral employment, the third one contracts it. These distortions are important to account for the difference in the value added and employment share of a sector as seen in the data.

In Panama, the industrial share of employment grew by 1.1 percentage points between 1999 and 2017. To understand how much each channel contributed to the actual change in employment, the model is used to perform the following counterfactual: what would be the industrial employment share in 2017 if all variables were kept fixed at the initial year of analysis except for the variable that corresponds to the channel of interest? Figure I provides the results of this exercise. The observed change in distortions affecting labor mobility (productivity gaps) were the principal channel driving down industrial employment in Panama. What counterbalanced this effect was a stronger expansionary force generated by a change in domestic consumption profile and trade. Changes in domestic consumption alone implied an increase of 13 percentage points in employment share. In contrast, changes in distortions implied a drop of 9 percentage points. In line with results obtained in neighboring countries, shifts in trading patterns amplified the impact of consumption channels.

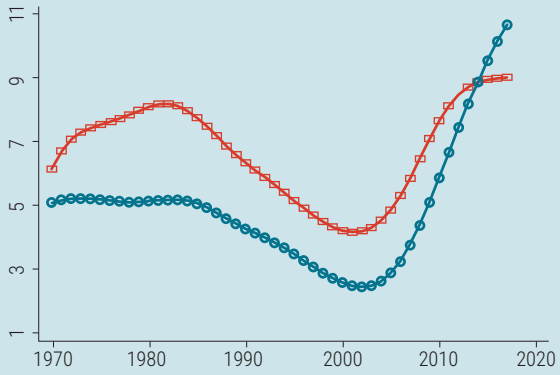
When compared to its neighbors, and based on model estimates, Panama has the highest levels of labor market distortions in both the industry and services sectors. Like most Central American economies, the services sector experiences larger distortions, and the economy faces higher barriers in hiring labor in recent years than at the beginning of the 1990s (Figure II). The elimination of the distortions that weakened structural change imply an output gain of 4 percent.

Figure I: Decomposition of changes in employment share



Source: Sinha (2019a). Note: The blue bar represents the actual change in employment shares. The pink bars depict the counterfactual change in employment shares when the variables pertaining to a factor are changed, keeping all the other variables fixed at the initial levels

Figure II: Estimates of labor market distortion



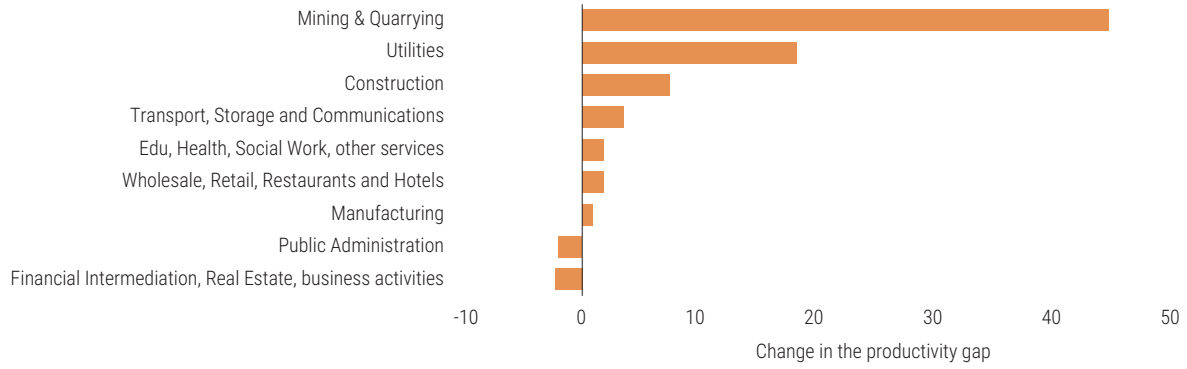
Source: Sinha (2019a). Note: Circles (○) and squares (□) denote the labor market distortions in industry and services, respectively. An increase in the value of the distortion in a given sector means that it is costly to workers to reallocate from agriculture to that sector.

sectors is large: mining and quarrying was 47.6 times more productive; utilities was 29 times more productive; and the financial intermediation, real estate, and business activity sector was 14 times more productive.

Panama still has possibilities for growth-enhancing reallocations that could be exploited. Between 1991 and 2016, the productivity gap relative to agriculture increased in some sectors and decreased in others, indicating uneven productivity growth across sectors. Moreover, mining and quarrying and utilities, already the most productive sectors in 1991, experienced the largest gains in productivity between 1991 and 2016 (Figure 13). On the other hand, sectors like public administration and financial intermediation, real estate and business activities closed the productivity gap with agriculture (2.3 and 2.4 percentage point reductions in the gap,

respectively). As a result, the heterogeneity in labor productivity across sectors is even higher today than in 1991, implying higher potential gains in aggregate labor productivity from the reallocation of labor toward the most productive sectors in the economy. An important point to highlight is the fact that in developing countries, labor markets are segmented, which implies that there are distortions preventing the mobility of workers between sectors. Box 1 in this chapter shows that removing those barriers in Panama translates into important output gains. The next section examines the contribution of structural transformation to aggregate labor productivity.

Figure 13. Change in sectoral productivity gap relative to agriculture 1991–2016



Source: World Bank staff elaboration using WDI.

4.3. The contribution of sectoral change to growth

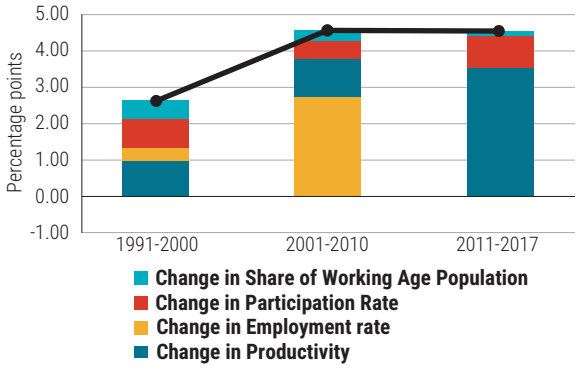
Changes in GDP per capita (or value added per capita) can come from four sources: (i) demographic changes; (ii) changes in labor force participation and employment levels; (iii) changes in sectoral productivity (within-sector component); and (iv) the reallocation of labor across sectors (between-sectors component). This last component is typically known in the literature as structural change or structural transformation. Furthermore, the structural transformation component can be decomposed into a "static" and a "dynamic" component. While the "static" component measures whether workers move to sectors with above-average productivity, the "dynamic" component measures whether productivity growth is higher in sectors with an increase in employment.

Panama exhibited a similar average annual growth in value added per capita in each of the last two decades, with labor productivity as the main driver. After averaging 2.6 percent per year in the 1990s, per capita GDP growth stepped up to an annual average of about 4.5 percent in the following two decades. Figure 14 presents a decomposition of per capita GDP growth into the sources described above. In the period 1991–2017, the main drivers of growth were rises in labor productivity and in labor force participation, contributing 63 percent and 15 percent of the total change, respectively. Labor productivity growth, an important contributor to per capita GDP growth in the 1990s (38 percent), became its main driver in the following two decades, contributing 60 percent in the 2000s and 78 percent in 2011–2017, coinciding with the transfer of the Panama Canal.[26] Rises in the labor participation rate contributed to growth in all sub-periods: about 30 percent in the 1990s, 11 percent in the 2000s, and 19 percent in 2011–2017.

Labor productivity increased significantly and at an accelerating pace in the period 1991–2017, largely driven by within-sector productivity gains since 2000. Labor productivity growth stepped up from about 1 percent in the 1990s to about 2.75 percent in the 2000s, and to 3.5 percent in 2011–2017. Figure 15 decomposes the evolution of average annual labor productivity growth into within- and between-sector components (reallocation). The contribution of the within-sector component increased from only 0.03 percentage point in the 1990s to over 2.6 percentage points in the 2000s, and to 3.3 percentage points in recent years, largely explaining the labor productivity gains over the last 17 years. As previously documented, labor productivity in services and industry drove the aggregate increase in labor productivity.

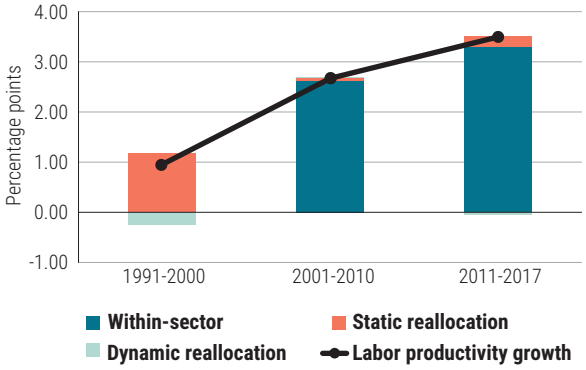
The reallocation of workers across sectors contributed significantly to labor productivity growth in the 1990s, but contributed only modestly thereafter. Further decomposing the reallocation component into static and dynamic components as discussed above, Figure 15 shows that the former added 1.2 percentage points to labor productivity growth in the 1990s, while the latter subtracted 0.2 percentage point. In the subsequent two decades, the reallocation of workers across industries had only a modest impact on labor productivity growth, most of which was driven by the static reallocation component.

Figure 14. Value added per capita decomposition



Source: World Bank staff elaboration using data from WDI.

Figure 15. Decomposition of annual growth of labor productivity



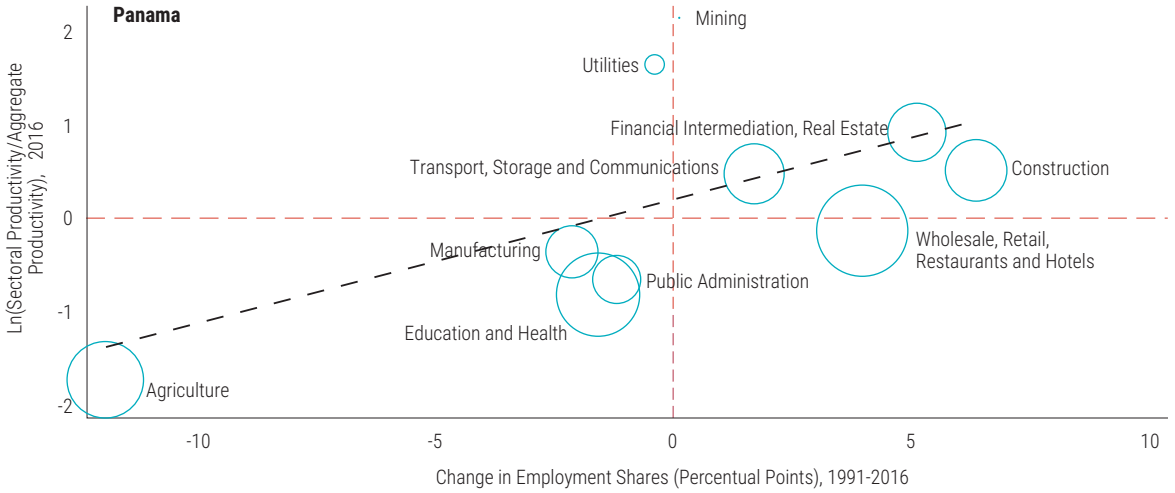
Source: World Bank staff elaboration using data from WDI.

Labor reallocation from low-productivity sectors such as agriculture toward high-productivity sectors such as services and construction was the main source of labor productivity gains from the structural shifts. Figure 16 shows changes in employment shares and the relative productivity of sectors, measured as the log of the ratio between sectoral productivity and average productivity between 1991 and 2016. Positive structural change occurs when: (i) workers move to relatively high-productivity sectors, or (ii) workers move out of relatively low-productivity sectors. In the case of Panama, workers reallocated from sectors with below-average productivity (such as agriculture, public administration and education, and health) to sectors with above-average productivity (construction, transport, storage, and communications, and financial intermediation and real estate), thereby increasing aggregate productivity. Notice that all of these sectors with above average productivity contain activities related to the Canal activity: logistics, transportation, insurance, and finance.

The employment share of agriculture declined by more than 10 percentage points in the period 1991–2016, contributing to Panama's overall productivity growth in that period. Figure 16 shows that labor reallocated away from low-productivity sectors, such as agriculture, manufacturing, and education and health. However, the decline in the employment shares of these sectors is largely offset by an increase in the shares of construction and wholesale, retail, restaurants, and hotels, two sectors with near-average productivity. As a result, the contribution of structural change to aggregate labor productivity was only moderate in this period.

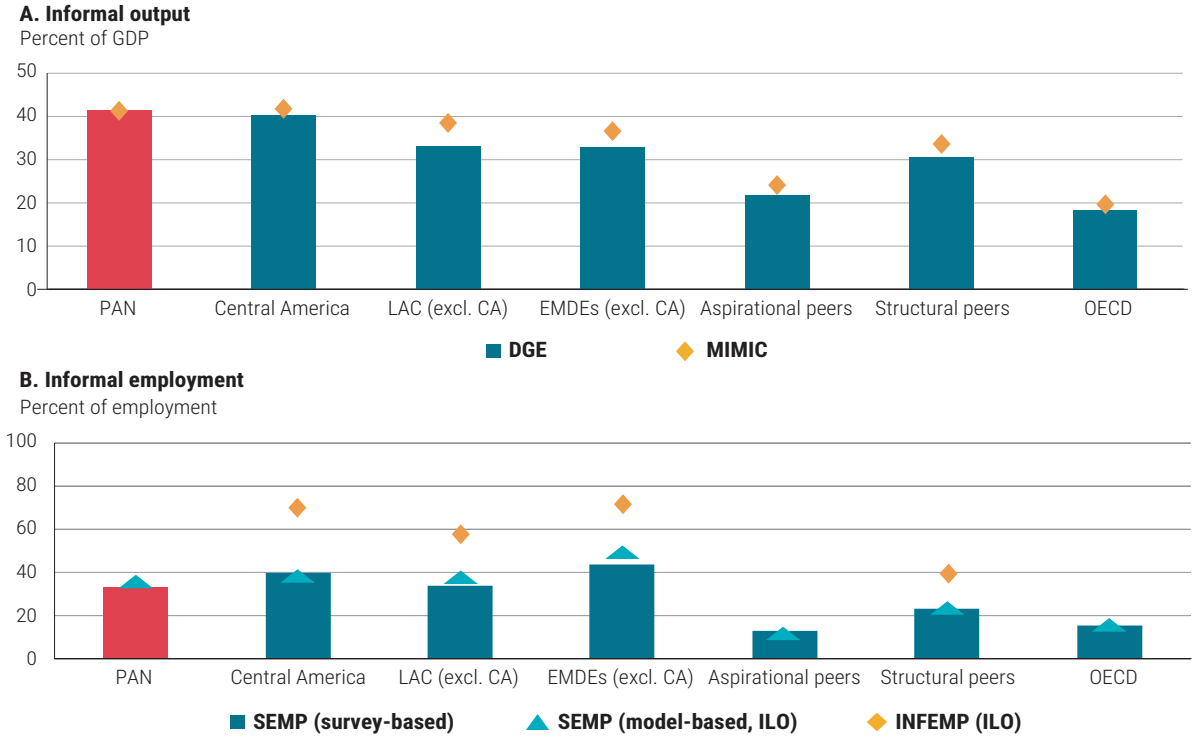
Panama also has a large informal sector, where the productivity of most workers is far lower than in the formal sector. The informal sector produced 40 percent of GDP in Panama in 2016, utilizing about 33-36 percent of total employment (Figure 17).[27] While the share of informal output in Panama exceeds the average share of informal output in other Emerging Markets and Developing Economies (EMDEs) by 5-8 percentage points of GDP, its share of self-employment is lower than the average share in EMDEs by 10-13 percentage points of employment (Figure 17). This reflects potentially a relatively higher ratio of informal labor productivity over total labor productivity in Panama compared to the EMDE average. The relative labor productivity ratio in Panama is close to one, suggesting that workers in the informal sector are, on average, as productive as their counterparts in the formal sector.[28] On average, the levels of both informal output and informal employment in Panama remain above OECD and aspirational peers by around 20 percentage points, even after having gone through a contraction in informal output in the past few decades.

Figure 16. Change in average employment share and deviation from average labor productivity, ratio



Source: World Bank staff using data from United Nations and International Labour Organization (ILO).

Figure 17. Informality in Panama



Source: Elgin et al. (2019), ILO, World Bank (2019b).
Notes: DGE (MIMIC) = DGE-(MIMIC-)based estimates on informal output as a percent of official GDP. SEMP (INFEMP) =self-employment (informal employment) as a percent of total employment. Data are from the latest year available (2016 for DGE, MIMIC and model-based SEMP estimates).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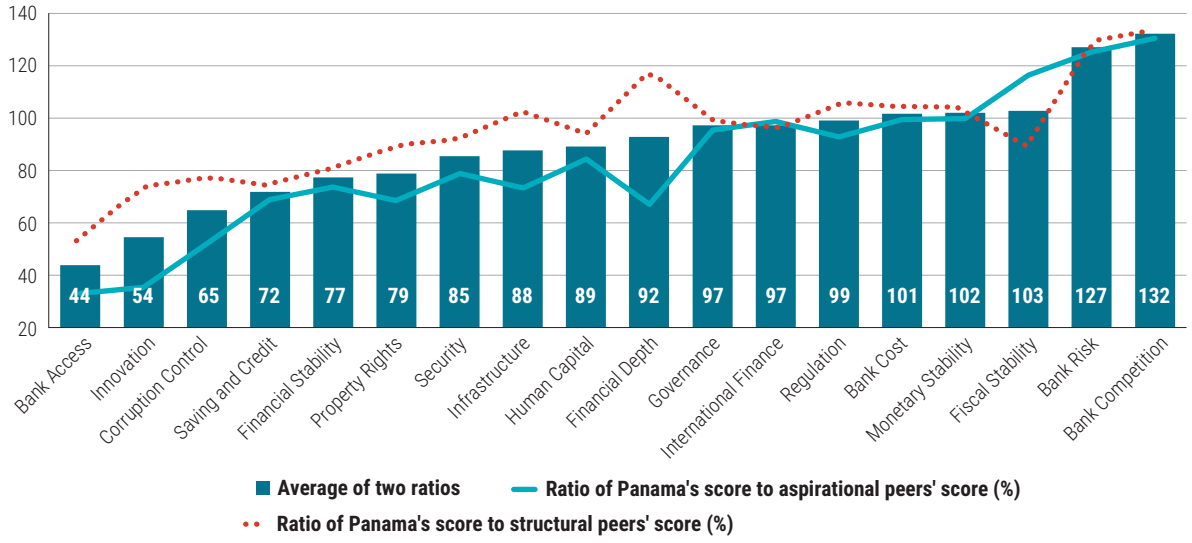
5. Growth Diagnostics Analysis

Drawing on the growth diagnostics analysis of Hausmann et al. (2005), this section investigates constraints to Panama's investment and growth. The analysis is carried out in two steps. In the first step, 18 areas of Panama's economy are assessed from 2000 to 2018, using 138 indicators, to identify the areas where the country has a poorer performance in comparison to its structural and aspirational.[29] Each indicator is first standardized to range from 0 to 100, with higher values referring to stronger favorable outcomes, which are then averaged to create aggregate indexes proxying the performance of each of the 18 areas.[30] In the second step, the relationship between economic performance indicators and the five areas where the country has the weakest performance relative to its structural and aspirational peers is analyzed using panel data fixed effects regression analysis. Figure 18 presents the scores in 18 areas of Panama's economy compared to its structural and aspirational peers. It shows that Panama has the lowest relative score in the financial sector (bank access, savings rate and credit, financial stability), innovation, corruption, property rights, and security. The remainder of this section provides an in-depth analysis of these indicators and their association with Panama's GDP growth and per capita GDP to better understand whether and to what extent they constrain the country's growth performance.

Figure 18. Growth diagnostics indicators of Panama, 2000–2018



Source: See Table 5.1 in the appendix for methodology and sources of all indicators.

5.1. Innovation

Panama's investment in R&D and innovation lags behind both its structural and aspirational peers and has continued to decline. Panama's R&D expenditure has declined from 0.36 percent of GDP in 2000 to 0.06 percent in 2013 (the latest data available), averaging 0.2 percent of GDP during 2000–2013, compared to 1.6 and 0.6 percent in its aspirational and structural peers, respectively (Figure 18). The country's innovation index averaged 34 out of 100 during 2011–2018—on par with structural peers but far below aspirational peers, at 51

(Figure 19)—and has decreased from 38 in 2014 to 32 in 2018. Patent applications are generally low in LAC, and Panama is no exception: with six applications per million population on average between 2000 and 2018, Panama's patent applications are also the lowest among comparator economies. The special economic zones such as City of Knowledge aim to improve innovative activity. However their contribution to the whole economy appears to be limited.[31] The National Secretariat for Science, Technology, and Innovation has implemented several programs to improve the country's science, technology, and innovation framework, including conducting specific mission-oriented research programs in strategic areas, including water, energy, and health, and inclusive human capital formation programs.[32]

Figure 19. Innovation indicators, 2000–18

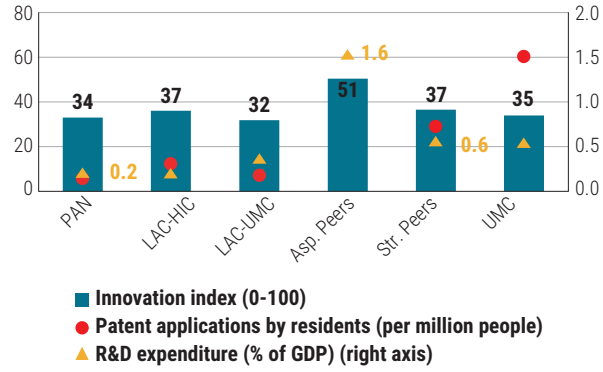
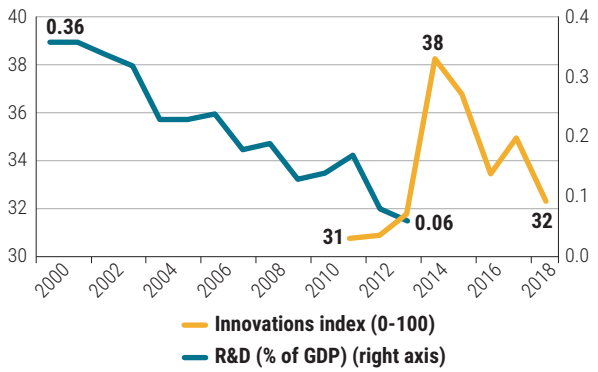


Figure 20. Innovation indicators of Panama



Source: Authors' computation using data from the World Bank and World Economic Forum (WEF).
Note: Aspirational peers' patent applications are not reported above as the number is very high at 529, skewing the graph.

Innovation activity in Panama is positively associated with real GDP per capita, productivity, and R&D investment. The link between R&D and innovation activities and between innovation, productivity, and growth has been well-established in the literature.[33] Since firms cannot increase their output by continuously increasing their capital per worker, due to diminishing returns to capital, the only way to sustain output growth in the long term is to increase the efficiency of production through innovation. In Panama, an increase of one patent application per 1000 people is associated with a 0.01 percent increase in real GDP per capita.[34] Panamanian firms that invest in R&D are more likely to introduce new technological innovations than those that do not, and innovative firms have higher labor productivity than non-innovative firms.[35] Moreover, investing in ICT is shown to increase innovative activities in small- and medium-size enterprises in Panama.[36]

Panama needs to increase the level and quality of its innovation activities to promote productivity and growth. As mentioned above and in other studies, innovation activities in Panama are low compared to similar country groups, and the existing innovation is concentrated in limited areas in manufacturing and transport.[37] The country needs to promote technological innovation through investment in education, science, and ICT to maintain its strong economic performance and catch up with OECD high-income economies. In 2009, Panama's Program for International Student Assessment (PISA) test scores in mathematics, reading, and science were among the lowest in 65 countries. Investing in human capital and improving the mobility of high-skilled foreign workers can help to foster innovative activity in Panama.[38] This would also improve economic diversification by shifting the focus from Canal-related construction and services sectors toward higher value-added sectors[39] such as biodiversity and medical-related services, which have high potential for innovation and international collaboration.[40]

5.2. Corruption

Panama performs worse than many of its peers on corruption indicators and has not shown much progress in controlling corruption over the last two decades (Figure 21 and Figure 22). Corruption and impunity pose serious challenges to the country, affecting the police, judiciary, and high levels of government.[41] Consistent with the trend in LAC, Panama's corruption indicators have not improved much over the past two decades. In fact,

they have worsened somewhat following the publication of the "Panama Papers" in 2016, which uncovered the extent of corruption and collusion in the country's financial and commercial sectors (Figure 22).[42] According to the Panama Papers, 20 percent of the 214,000 shell companies around the world were incorporated in Panama.[43] In 2018, Panama ranked 93rd out of 180 countries in Transparency International's corruption perception index. In contrast, Chile and Costa Rica ranked 27 and 48, respectively. Financial services, government procurement, and the judicial system appear to have the highest cases of corruption, involving bribery, embezzlement, money laundering, conflicts of interest, and omission of asset declaration, among others.[44] During 2015–2016, bribery was reported as the most frequent crime activity in the country, 48 percent of which involved traffic police.[45]

Figure 21. Corruption indicators, 2000–18

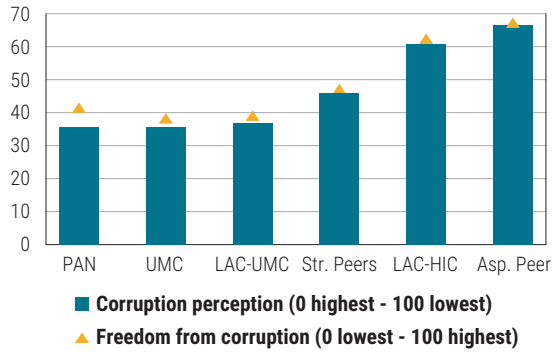
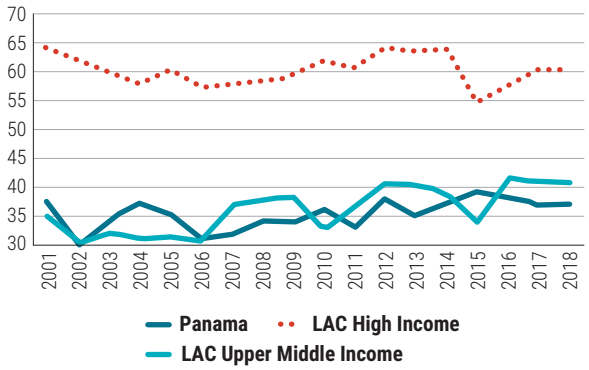


Figure 22. Corruption perception index

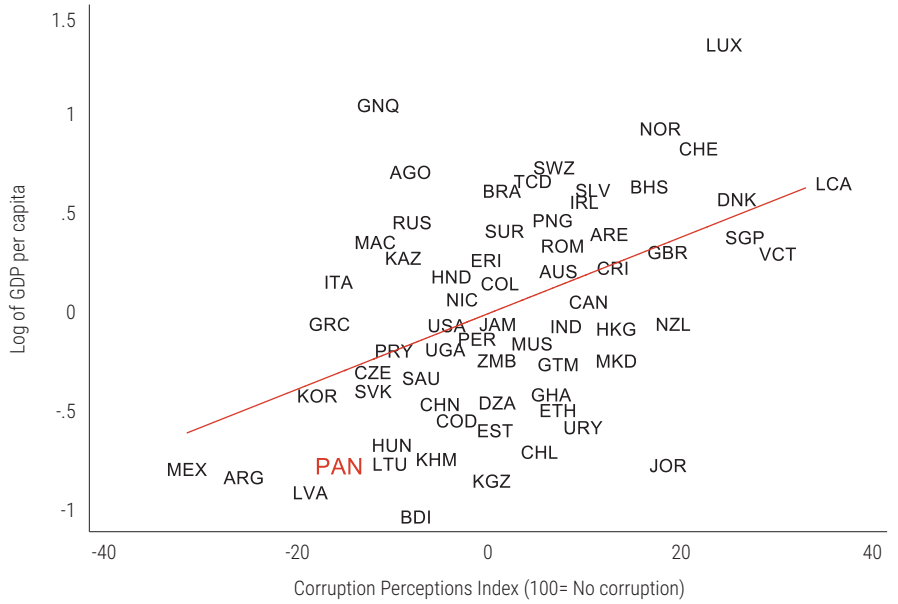


Source: Authors' computation using data from Transparency International and Heritage Foundation.

There is no clear evidence on the association of corruption indicators with output per capita in Panama. Both theoretical and empirical literature provide compelling evidence for the negative impact of corruption on productivity and growth. Corruption reduces firm productivity by diverting resources away from their best uses and increasing the premium on rent-seeking, creating secrecy and uncertainty and undermining public resources.[46] Fixed-effects regression analysis does not provide clear-cut evidence on the link between corruption indicators and Panama's output per capita.[47] This is in line with previous research that has been unable to gauge the relationship between corruption and the country's economic performance. One potential explanation is the difficulty of separating the effect of corrupt activities from the effects of booming sectors, such as construction and finance, where corruption is prevalent.[48] Therefore, further analysis is needed to isolate the impact of corruption on productivity and growth in Panama. Figure 23 presents a high correlation between low levels of corruption and output per capita, revealing two salient pieces of information. First, Panama has higher corruption perception than the majority of the countries in the figure. Second, Panama's real GDP per capita is far below those of other countries with similar corruption perceptions, suggesting the presence of other impediments to the country's economic performance.

Given the adverse effects of corruption on the drivers of productivity and long-term growth, there are significant potential gains to Panama from combatting corruption. Research provides strong evidence on the negative effects of corruption on FDI, gross fixed capital accumulation, innovation, talent, public resources, and efficient allocation of domestic resources.[49] Since Panama aspires to lead the region and join the ranks of developed economies with robust economic and institutional environments, it has a lot to gain from restraining corruption, reducing red tape, and increasing transparency.[50] The country has implemented substantial reforms to combat corruption over the past two decades, including in 2001 the criminalization of money laundering and tax evasion that led to the removal of the country from the international black list, the regulation of bearer shares in 2015 to minimize anonymity and increase transparency, and more recently, after the Panama Papers, the actions to grant access to information and data and increase citizen participation to promote transparency and accountability.[51] The country also has many anti-corruption measures in place such as asset forfeiture, witness protection, and conflict-of-interest rules. However, it still remains vulnerable and needs to strengthen its efforts to control corruption.

Figure 23. GDP per capita vs. corruption perception index, 2000–18



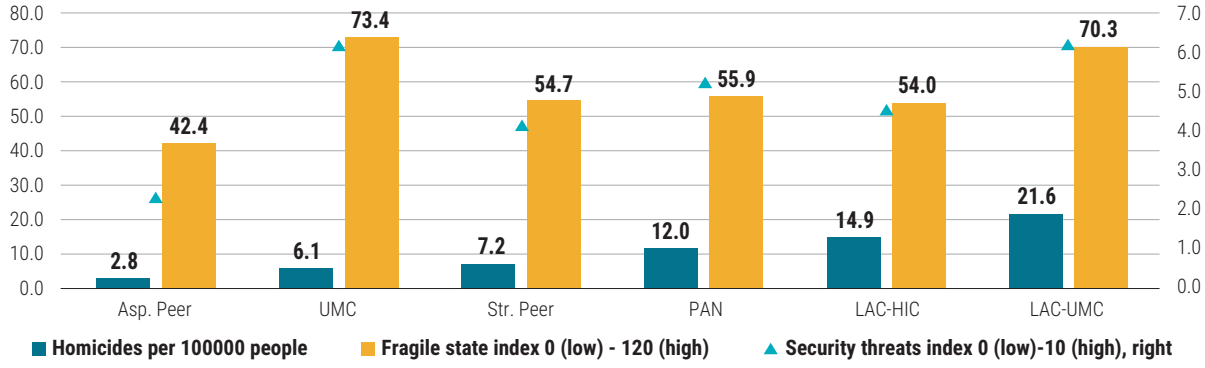
Source: Authors' computation using data from World Bank and Transparency International.
Note: Figure 23 is obtained from the cross-sectional regression analysis of real GDP per capita (log) that controls for investment, human capital, labor participation, income category, and regions. The corrpution perecption index takes on larger values for lower perception of corruption.

5.3. Security

During 2000–2018, violence and crime in Panama were on par with high-income regional peers but higher than structural and aspirational peers (Figure 24). Both homicide rates and fragile state indexes remain considerably high in Panama despite significant progress since 2012 (Figure 24 and Figure 25). In 2017, Panama had about 10 homicides per million people, below the averages of LAC upper-middle-income and high-income countries, with 22 and 16 homicides per million people, respectively, but above structural peers (with 7) and aspirational peers (with 1.4).[52] Due to its strategic location, weak judicial system, high levels of corruption, booming economy, and Colón Free Trade Zone, Panama has been used as a transit point for illicit trade, a negotiation site for criminal organizations, and a place to launder money. Transnational networks, such as Colombian guerrilla groups and Mexican cartels, have made their way into the country, collaborating with domestic gangs and increasing illicit trade and violent crime.[53] According to the National Survey of Victimization and Citizen Security Perception (ENVI), carried out by the Ministry of Public Security and the National Institute of Statistics of Panama, 19 percent of the population over 18 years of age have been the victim of a crime in 2015–2016, and the total cost of insecurity and crime is estimated at US$200.5 million.[54]

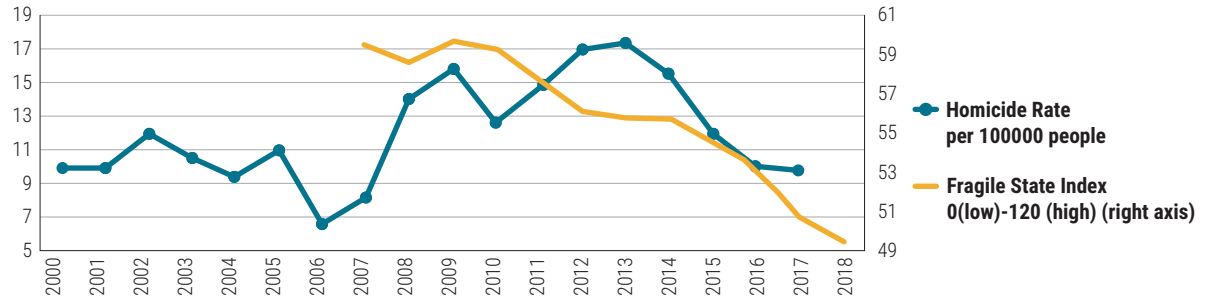
Even though crime and violence are shown to impose significant costs for businesses in Panama, they do not seem to be a major constraint for the country's economic performance. Crime and violence constrain economic growth and productivity by depleting human, physical, and social capital; increasing uncertainty and the cost of doing business and shifting resources from productive to unproductive activities, among others. As seen in Figure 26, there is a negative association between the security threat index and real GDP per capita. In addition, Panama's real GDP per capita is lower than that of other countries with similar security threat levels, suggesting the presence of other factors related negatively to the country's GDP per capita. Furthermore, the fixed effects regression results do not provide uniform evidence on the nature of the association between crime and violence and GDP per capita, suggesting the need for further analysis of the subject using up-to-date micro-level data.[55] According to the latest Enterprise Surveys conducted in 2010, 8 percent of Panamanian firms reported crime as a major constraint to their businesses and 36 percent paid for security, compared to 29 and 61 percent in LAC and 10 and 58 percent in Europe and Central Asia (ECA), respectively.

Figure 24. Security indicators 2000–2018



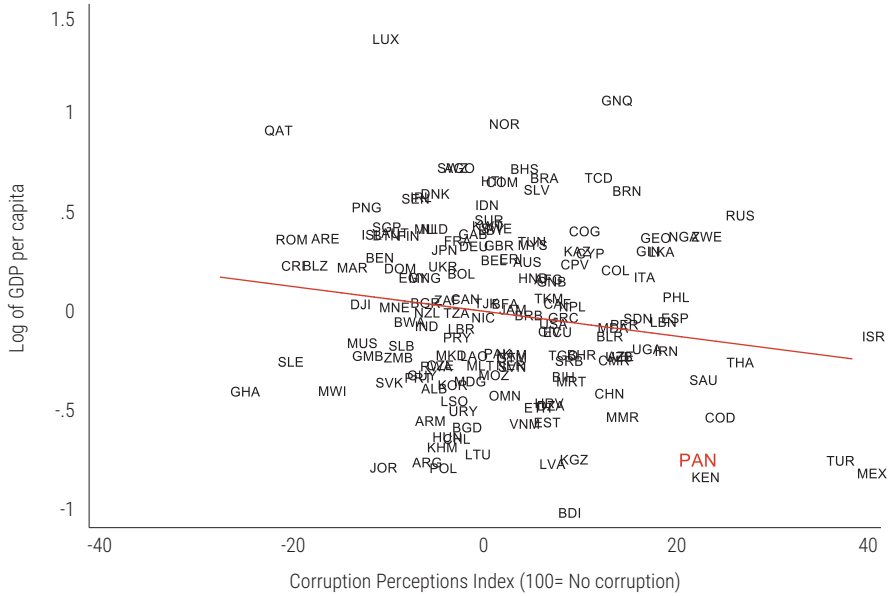
Source: World Bank, United Nations and Fund for Peace.

Figure 25. Homicide rate and fragile state index, Panama



Source: World Bank and Fund for Peace.

Figure 26. Security threat index vs. real GDP per capita, 2000–18



Source: Authors' computation using data from World Bank, Transparency International and other sources listed in Table 5.1 in the Appendix. Figure 26 is from the cross-sectional regression analysis of real GDP per capita that controls for investment, human capital, labor participation, income category, and regions.

Given the prevalence of crime and violence in Central America and its links to organized crime in LAC, as well as the strategic location of Panama, promoting security in the country is likely to benefit not just its development, but that the entire region. Crime has historically been considered a constraint for growth and living standards in the northern region of Central America. High crime rates in the region contribute to outward migration and limit the operations of small businesses.[56] Policies promoting higher returns to legal

activities, strengthening the effectiveness of the criminal justice system, and improving the reintegration of ex-convicts in legal activities are likely to contribute to Panama's sustainable development prospects by shifting resources to more productive activities and curbing organized crime in the region.[57]

5.4. Property rights

Property rights protection in Panama historically has remained weak relative to its structural and aspirational peers. Strong property rights promote productivity and growth through several channels, as they: (i) reduce distortions in resource allocation by decreasing the need to allocate resources to protect assets; (ii) help channel assets to their most productive uses by making their trade easier; (iii) reduce the financing constraints of individuals/firms by increasing their wealth and serving as collateral when borrowing; and (iv) increase investment in assets by setting ownership rights and reducing expropriation risk.[58] At 37 out of 100 during 2000–2018, Panama's property rights score is among the lowest vis-à-vis comparator economies. This score is about half of the score of aspirational peers and high-income LAC countries, both of which are around 75-76 (Figure 27). Panama's rule of law index during 2000-2018 also lags its structural peers, including Costa Rica, as well as its aspirational and high-income regional peers, and has been more volatile in recent years (Figure 28).[59]

Figure 27. Property rights and expropriation risk index, 2000–18

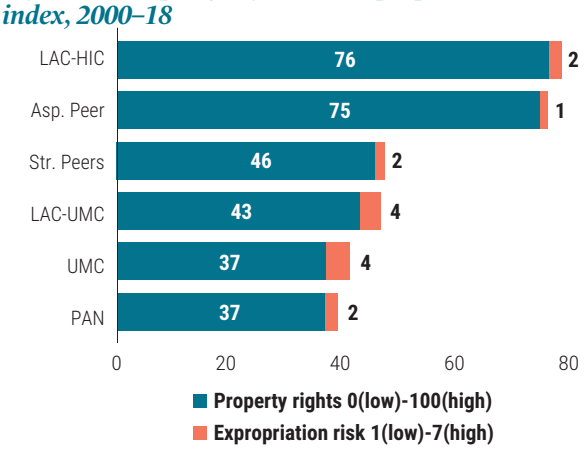


Figure 28. Rule of law index, Panama and Costa Rica

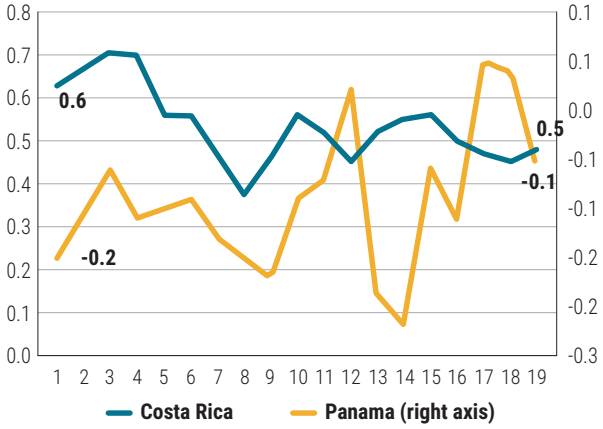
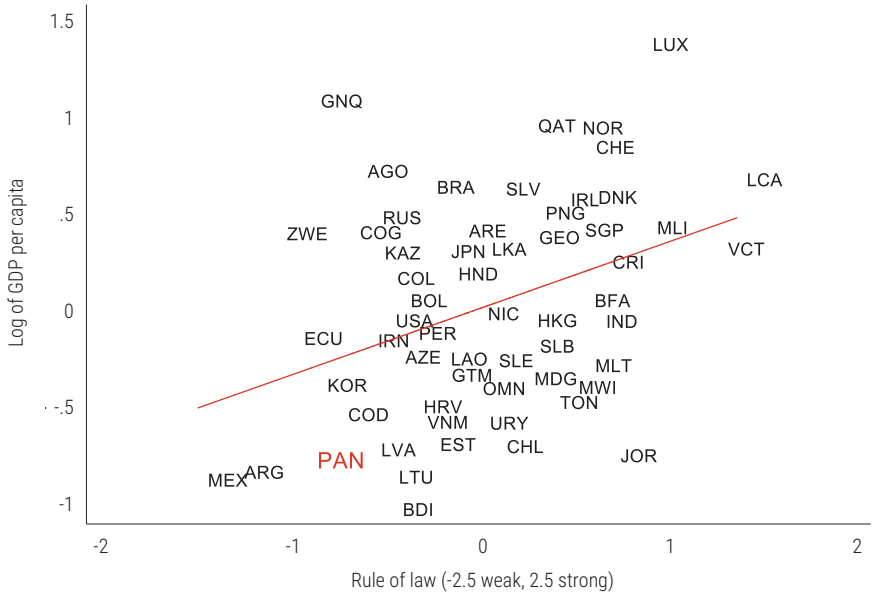


Figure 29. Rule of law vs. real GDP per capita, 2000-2018



Source: Authors' computation using data from Heritage Foundation, Credendo Group, and other sources shown in Table 5.1 in the Appendix. Figure 29 is from the cross-sectional regression analysis of real GDP per capita (log) that controls for investment, human capital, labor participation, income category, and regions.

Property rights in rural areas are weak, and nearly half of Panama's agricultural land is not properly titled. [60] Even after 50 years of intense disputes on land regulations, in 2010, only half of the land used for agriculture was titled. [61] Historically, high levels of informality and unequal access to land with high agricultural potential, where the majority of the indigenous population lives, have characterized land tenure in Panama. Weaknesses in the judiciary and contract enforcement, as well as in the legal and institutional framework that regulate land rights, contribute to weak property rights in the country. [62] Although registering property in Panama is faster and cheaper, on average, than in both LAC and OECD (at 22.5 days and 2.3 percent of property value in 2019, compared to 63.7 days and 5.9 percent in LAC and 23.6 and 4.3 percent in OECD), the quality of its land administration system—which measures the reliability of infrastructure, transparency of information, geographic coverage, land dispute resolution, and equal access to property rights—at 11 out of 30 is lower than the averages of both LAC (12) and OECD (23.2).

Stronger property rights and rule of law are associated with higher output per capita in Panama. Fixed effects regression analyses show a positive association between property rights index and rule of law and the real GDP per capita in Panama.[63] As seen in Figure 29, there is a strong positive association between rule of law and GDP per capita, and Panama's rule of law score is below the majority of the countries included in the analysis. Moreover, Panama's GDP per capita is below that of countries with similar scores on rule of law, suggesting the presence of other impediments to growth in the economy. Given the findings of this section and the evidence from other studies showing that stronger property rights and rule of law are significant determinants of access to finance, productivity, and FDI, among others, strengthening property rights and rule of law would likely promote productivity in Panama.[64]

5.5. Financial sector

A well developed, inclusive, and stable financial sector is one of the key drivers of economic growth and productivity. A well-developed financial sector increases saving and investment in an economy by offering a wide range of financial instruments and channeling them effectively into production and capital accumulation. A large body of work provides evidence on the positive effects of financial development on reducing risk through providing insurance, increasing liquidity in the market, and promoting entrepreneurship, innovation, and productivity.[65] Inclusive financial markets decrease poverty, inequality, and unemployment, and promote entrepreneurship by making finance accessible and affordable to a wide range of groups, including the poor, women, and aspiring entrepreneurs with limited loan history.[66] Increased funds in the formal financial sector lead to higher economic activity through the multiplier effect.[67]

5.5.1. Access to banking

Bank penetration indicators in Panama are generally on par with regional peers, however some access to finance indicators lag its aspirational and structural peers (Figure 30). Panama has one of the most developed and affordable financial and credit services in Central America. There are 53 ATMs per 100,000 adults in Panama, which is above the average of upper middle-income countries, but below its structural and aspirational peers, at 65 and 88, respectively. Panama is ahead of its aspirational and regional peers in the number of bank branches per 100,000 adults, at 23. However, only 9 and 23 percent of adults have a credit card and a debit card, respectively, as opposed to 22 and 48 percent, and 71 and 14 percent in its structural and aspirational peers, respectively. Progress with improving access to banks has been broad-based—both the number of ATMs and bank branches per adults have increased significantly since 2007 (Figure 31). According to Enterprise Surveys conducted in 2006 and 2010, the percent of firms identifying access to finance as a major constraint for their operations declined from 10 to 1 between 2006 and 2010.[68]

Figure 30. Bank penetration indicators, 2000–2018

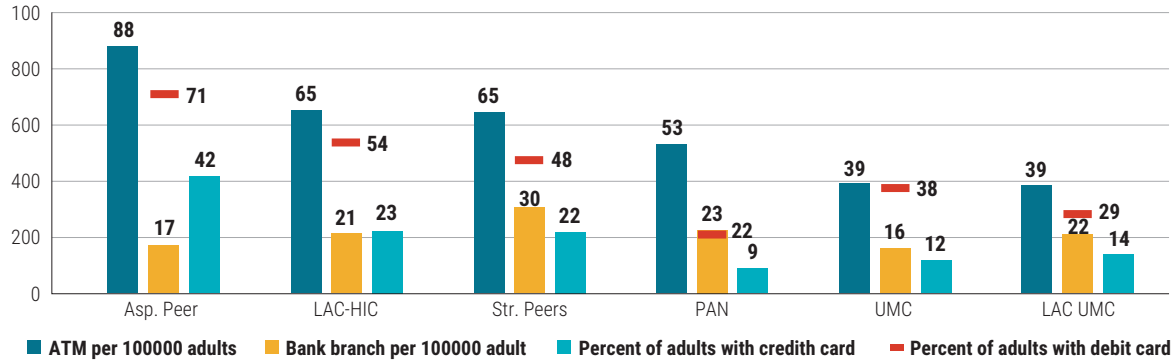


Figure 31. ATMs and bank branches over time, Panama

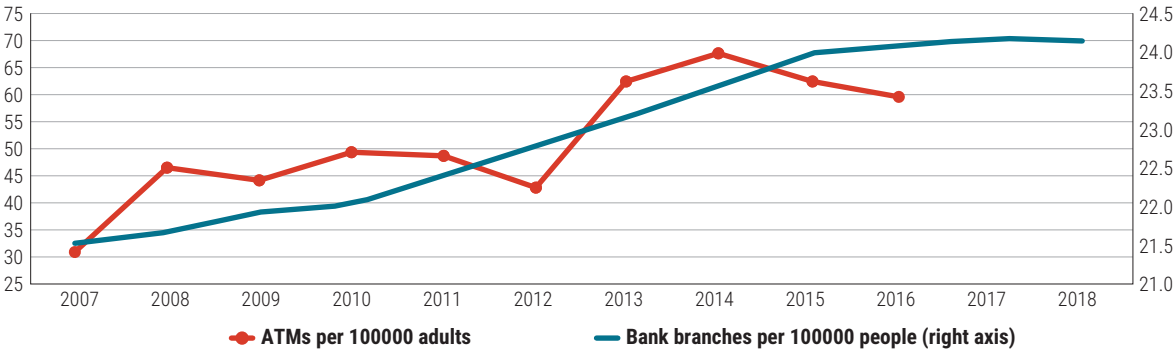
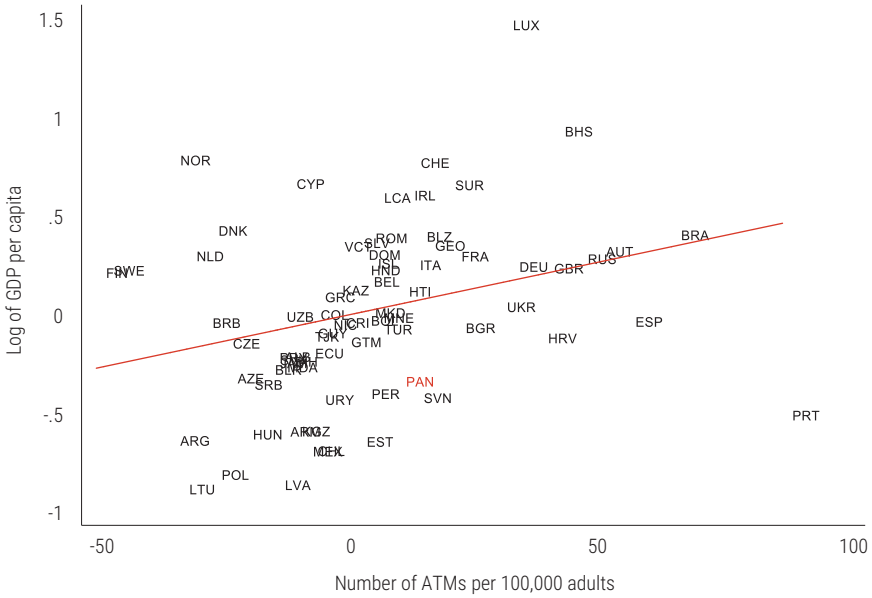


Figure 32. Bank branches per capita and GDP per capita



Source: Authors' computation using data from World Bank and IMF and other sources listed in Table 5.1.in the Appendix
Note: *Figure 32 is from the cross-country regression analysis of real GDP per capita (log) that controls for investment, human capital, labor, income category, and regions, using average data across countries.*

Access to banking is constrained by burdensome paperwork and financial requirements and an over-centralized location. The opening of a standard bank account is subject to evidence of regular income and personal references, in addition to an average opening deposit of US$50. Most financial services are located in the province of Panama, which makes access to banks difficult for people in rural areas or far from big cities. These

factors limit access for people with low incomes or informal jobs. National statistics show that only 14 percent of all bank accounts belong to the persons in the two poorest income quintiles.[69]

Access to banking is positively associated with output per capita in Panama. The fixed-effects regressions of real GDP per capita with respect to different indicators of bank access indicate that there is a strong association between improving access to banking and economic outcomes in Panama. For example, an additional bank branch per 100,000 people is associated with a 0.11 percent increase in real GDP per capita in Panama.[70] Figure 32 also reveals a strong positive association between GDP per capita and the number of bank branches for the full sample and shows that Panama has much lower number of bank branches per 100,000 people than other countries with similar GDP per capita. A recent study shows that an increase in financial inclusion increases innovation, generates economic activity, and promotes growth in Latin America.[71] Given the limited access to finance in Panama, particularly for small firms and the rural population, promoting financial inclusion is likely to increase productivity and growth in the country. Strengthening the fintech sector, along with improving the regulatory framework and cybersecurity, could increase financial inclusion in the country and give it the potential to become a regional hub.[72]

5.5.2. Savings and credit

Panama's savings rate is higher than its structural and regional peers, however it lags behind its aspirational peers. Panama's savings as a percentage of GDP averaged 24 percent during 2000–2018, surpassing its structural peers (19 percent) and high-income regional peers (17 percent), but well below its aspirational peers (30 percent). During the same period, bank credit in the country as a percentage of bank deposits was 108 percent, which is above all of its regional peers and on par with its aspirational peers but lags its structural peers. Bank credit as a percentage of GDP (77 percent) lags only its aspirational peers (104 percent of GDP). However, compared to other economies, small firms in Panama have significantly limited access to credit. Only 19 percent of small firms reported having a credit line during 2000–2018, compared to 51 and 44 percent in high-income regional and structural peers, respectively (Figure 33).

The private banks' conservative lending strategy limits credit supply in Panama. According to a recent IMF Country Report, the absence of a central bank, which traditionally serves as the lender of last resort, leads banks to self-insure against shocks by holding high levels of liquidity (almost 60 percent of deposits), limiting credit supply and putting pressure on interest rates. As seen in Figure 34, interest rates in Panama during 2000–2018 were higher than the averages of its aspirational peers, OECD high-income countries, East Asia and Pacific (EAP), and upper-middle-income countries. The IMF (2020) proposed introducing an emergency liquidity facility and a limited deposit insurance scheme to mitigate systemic liquidity risk and increase confidence.[73]

Higher saving rates are associated with faster GDP growth in Panama. Higher savings can reduce the cost of borrowing and encourage business investment. They can also reduce external finance needs and improve macroeconomic stability. In Panama, a one percentage point increase in the savings rate is associated with about a 0.01 percent increase in real GDP per capita. Cross-country regression analysis also shows a strong association between the savings rate and GDP income per capita (Figure 35). A high savings rate facilitates increased financing for innovation and product development, but in order for it to spur long-term economic growth, it needs to be sustained beyond a transitory period.

Figure 33. Saving rate and access to bank credit, 2000–2018

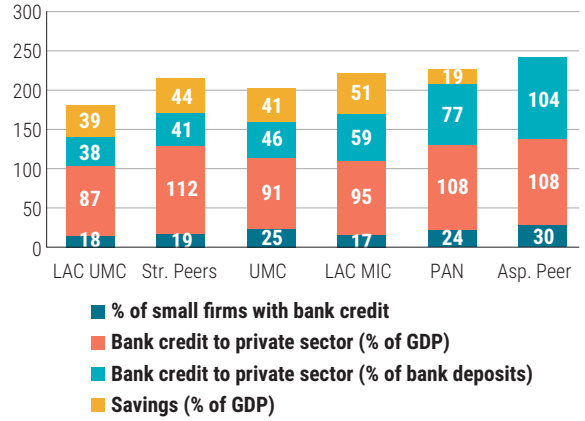


Figure 34. Lending interest rate 2000–18

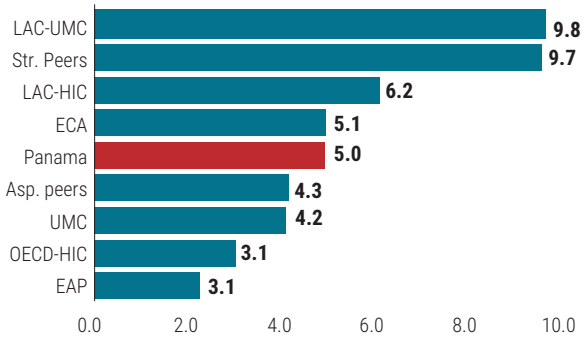
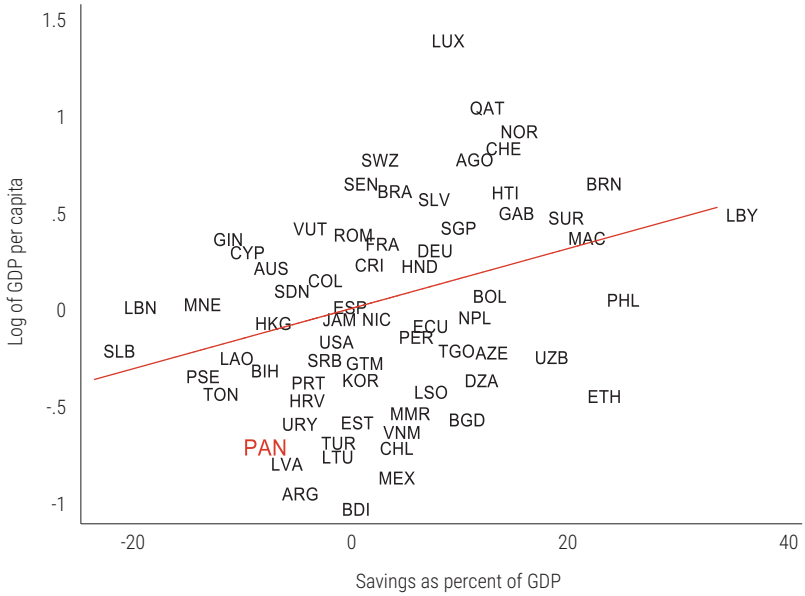


Figure 35. Savings rate vs. GDP per capita



Source of Figure 33 and 34: Authors' computation using data from WDI and WEO. Source of Figure 35: WEO. See Table 5.1 in the Appendix. Note: Figure 35 is from the cross-sectional regression analysis of real GDP per capita (log) with respect to savings share of GDP, after controlling for investment, human capital, labor participation, income category, and regions.

5.5.3. Financial stability

At 7 percent of GDP during 2000-18, Panama's current account deficit stands out among its peers (Figure 36). Upper middle-income countries in LAC had the second-highest current account deficit (6.7 percent) followed by Panama's structural peers (3.2 percent), while its aspirational peers had a current account surplus of 4 percent. Panama's currency inconvertibility and transfer risk index (measuring the inability to convert and transfer out of the host country any funds related to the investment) was 3 out of 7 during 2014–2018, and the special transactions risk index (measuring the premium category set for political risk related to special cash transactions) was 2.8 out of 7, second and third lowest, respectively, compared to its various peer groups (Figure 37). The average interest rate of the country over 2000–18 was in the midrange compared to other peer groups (Figure 34).

Panama's financial sector, contributing 7 percent of GDP, is critical to Panama's macroeconomic stability.[74] Therefore, not surprisingly, higher financial stability is correlated with higher GDP per capita in Panama.[75] Owing to its conservative banking and improvements in supervision and regulation, Panama's banking sector is resilient to shocks (with assets amounting to twice its GDP).[76] However, an IMF (2020) study on Panama suggests the need to further strengthen the country's banking sector and its transparency by implementing Basel

III standards, putting in place financial safety nets, and upgrading the bank resolution framework, especially given the complexity and concentration of its banking system. Panama's transition to the Basel III regulatory system is underway, and since 2018, banks are required to report according to International Financial Reporting Standard (IFRS-9). The IMF further recommends that Panama reduce its dependency on international banks' capital inflows in order to protect itself from sudden stops in international flows.

Figure 36. Current account (% of GDP) 2000-2018

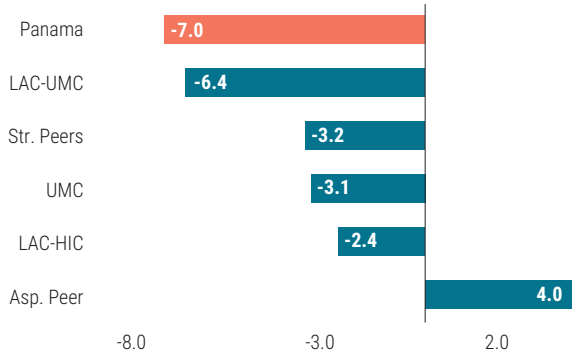
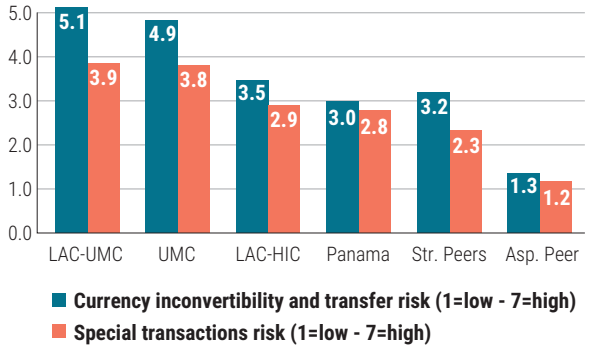


Figure 37. Currency inconvertibility and special transaction risks, 2014–2018



Source: WDI and Credendo Group.

6. Diversification and Exports

6.1. Export-oriented growth

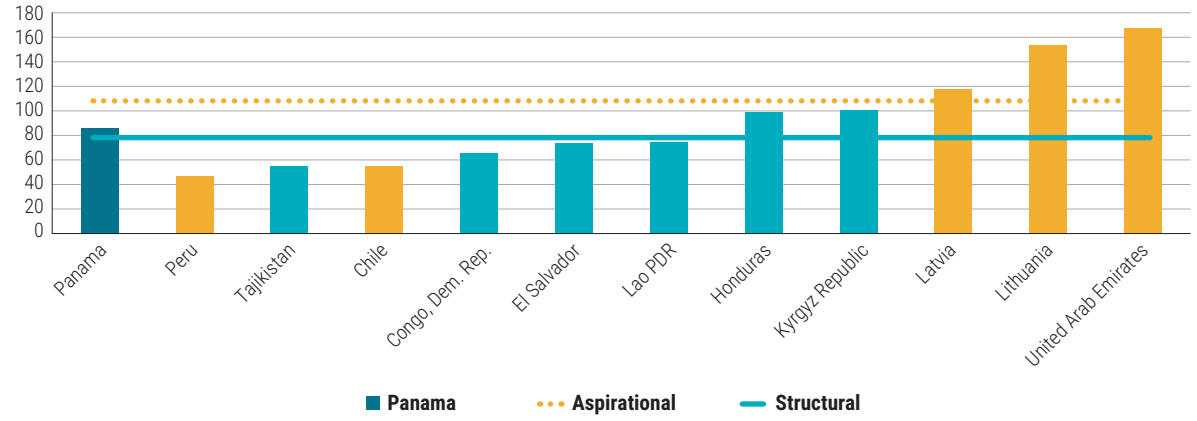
Global trends such as slower trade growth, rising trade in services, and the fragmentation of production and automation pose challenges and opportunities for developing countries. Trade grew dramatically over the past 25 years. Capital flows followed a similar pattern. A wave of structural reforms in the 1990s geared towards trade liberalization and the ascent of China into global markets propelled the rise in global trade flows and a shift in the patterns of production worldwide. More recently, globalization has experienced important transformations: global trade in goods has slowed and is expected to grow modestly in the future, as growth rates in emerging markets even out and trade in services continues to increase in prominence.

The increase in trade in intermediates and the separation of production into tasks has given rise to regional and global value chains (GVCs). The signing of deep free trade agreements has been the main vehicle for bringing in new disciplines that allow factories to connect across borders in a seamless way.[77] Value chains offer low- and middle-income countries a path to diversify production and new ways to export tasks, services, and other activities. However, low wages alone will become less of an advantage in low-skill-intensive industries, as machines replace certain tasks, and logistics and infrastructure aimed at increasing connectivity will become more important.

Since Panama is a small open economy, an export-oriented growth strategy is a sound approach to create job opportunities and generate sustainable growth. Economic diversification is the shift of production and trade toward a more wide-ranging productive structure, pursued to increase productivity, generate jobs, and foster sustainable growth to reduce poverty.[78] Trade plays a significant role in economic diversification. The East Asian countries' successful diversification toward the manufacturing sector was accompanied by their integration into the global economy. In the case of Panama, trade is at the heart of the country's success story.

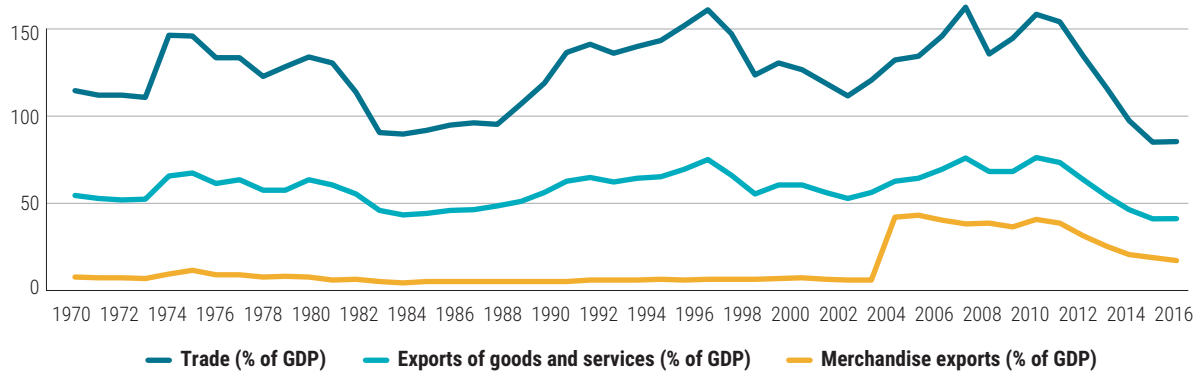
Panama seems to be more open than other countries at the same level of development, displaying higher export and import shares of GDP than most of its peers (Figure 38). At 87.4 percent, Panama's trade openness (exports and imports as share of GDP) is higher than the average openness among its structural peers (79.5 percent). However, it is still lower than the average of its aspirational peers (110 percent). Panama's trade as a share of GDP indicator was highly uneven during the period under study. The trade-to-GDP ratio experienced a significant drop to its lowest point at the end of the period 1970–2017, reflecting less integration into the world economy (Figure 39). While Panama's exports of services are more important than its exports of goods, their importance has decreased significantly since 2005, as their share of GDP declined from an average of 52 percent from 1970–2004 to an average of almost 30 percent in recent years.

Figure 38. Trade as a percentage of GDP, average 2016–2018



Source: World Bank staff using WDI.

Figure 39. Trade, exports of merchandise, and exports of goods and services, Panama (% of GDP)



Source: World Bank staff using WDI.

6.2. Exports of services

Once re-exports are removed, Panama's net exports are mostly concentrated in services (Table 2). Panama has transformed itself into a logistics and trade hub, due to its geographical position, including the Panama Canal. As a result, Panama imports and re-exports many goods, generating transportation services in return. In 2017, almost 94 percent of total exports were concentrated in services, and the remaining balance mostly consisted of fruits and vegetables and fish (1.7 percent of total exports) and crustaceans and mollusks (1.8 percent). Between 2000 and 2017, the share of services in exports increased by almost 30 percentage points, while merchandise exports produced within Panama declined. Today, they do not represent an important source of exports.

Panama's exports of services are above the level expected by its GDP. The performance of service exports as a share of GDP are above the expected level given Panama's per capita income level (Figure 40). In a regional context, Panama and Costa Rica surpass all of their Central American neighbors. Ghani and Kharas (2010) show that there is a linear positive relationship between the growth of services and the growth of GDP, indicating that there is a correlation between high growth in services and high growth in GDP. Figure 40 confirms this correlation. While aspirational peers and OECD countries have large exports of services as a share of GDP, low-income countries minimally participate in trade in services.

Exports of services are concentrated in transport and tourism (Figure 41). Due to the traffic in the Canal, sea transport represented 30 percent of exports of services in 2018. However, the importance of this activity has declined over time—in 2010 those exports represented 39 percent. An important development between 2010 and 2018 was the observed increase in air transport. Panama's network of airports allows the country

to function as a major regional passenger hub for connecting passengers between North, Central, and South America.[79] Tourism more than doubled between 2010 and 2018, and today represents 20 percent of services exports. Overall, traditional services accounted for almost 80 percent of services exports in 2018.

Figure 40. Exports of services as a share of GDP

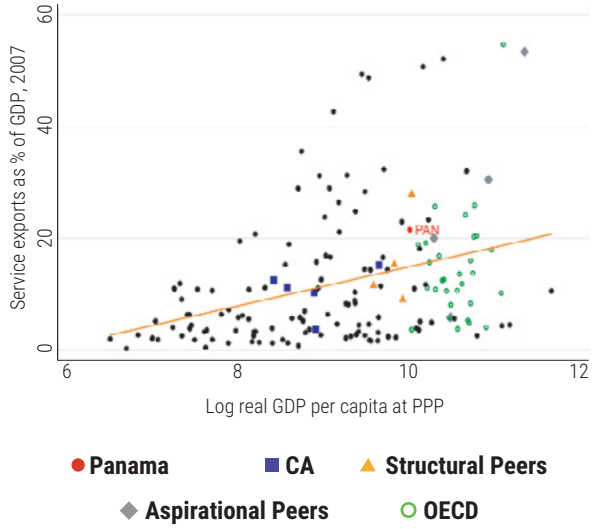
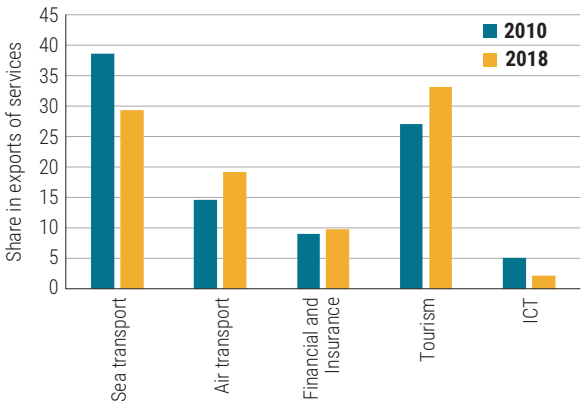


Figure 41. Composition of exports of services, 2010 and 2018



Source: World Bank staff using WDI.

Table 2: Exports of services (millions of dollars, 2010–2018)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sea transport	2492	2826	3104	3036	3207	3417	3352	3856	4071
Air transport	939	1203	1628	2072	2175	1947	2173	2524	2664
Travel	1745	2519	3064	3533	3729	3948	4223	4460	4608
Computer and telecommunications services	327	349	301	303	308	278	293	286	291
Insurance and pension services	123	140	154	138	120	226	227	263	230
Financial services	463	647	1087	1073	989	1244	1258	1223	1129
Information services	0	0	6	8	8	8	8	8	8
Other business services	234	277	377	377	664	547	515	534	547
Other services	90	149	249	261	238	251	279	274	241
Total	6412	8109	9970	10801	11438	11866	12327	13427	13789

Exports of services have become an area of great potential for job creation and growth in developing countries. Two characteristics that made manufacturing the preferred sector for growth in the past were the possibility to face competitive pressures that would force firms to improve efficiency to survive, and the possibility of expanding demand by exporting to global markets. Today, the old view of services being non-tradable, with low scale and low productivity, is being challenged by the disruption of ICT. The evolution of the Internet, digitalization, and electronic storage are allowing a rapid increase in cross-border trade in services, which is an opportunity for developing countries to sustain services-led growth. The increasing prevalence of productivity-enhancing characteristics in services, including in low- and middle-income countries, expands the range of activities that will likely have positive spillovers for development (Ghani and Kharas 2010).

6.3. Modern services

Modern services are consistently gaining ground as a share of total exports worldwide, and therefore they are becoming a potential source of quality job creation. Developed countries tend to export more complex services, often called "modern" or "nontraditional" services.[80] Among these services, economists typically include ICT, financial and insurance services, health, and other business services, which are mostly professional services such as consulting and architecture. A feature of these services is that they are more intensive in high-skilled labor, in general, and this implies that they are important to generate high-wage jobs that allow the absorption of highly-skilled workers. After studying trade in services, Loungani et al. (2017) find that modern services are growing worldwide and present a relevant opportunity for many countries, since they do not require proximity between buyers and supplier. This reduction in trade costs opens the door for developing countries to participate in high-tech markets. Regulatory barriers continue to slow trade in these services, but greater deregulation has coincided with a marked increase in FDI inflows in developing and developed countries.[81] In Panama, the share of modern services in exports declined marginally between 2010 and 2018, from 18 percent of service exports to 16 percent, mostly due a significant increase in traditional exports.

Within modern services in Panama, other business and financial services are growing fast and indicate potential for further growth. From 2010 to 2018, other business services more than doubled and increased from 3.6 to 4 percent of service exports. This sector includes professional, consulting, technical and trade-related, and research and development services. These services have made important progress as a genuine source of exports, and since the sector requires high-skilled workers, continuing support is desirable. Financial services increased at an annualized rate of 10 percent during the same period. Panama is one of the most modern and successful international banking centers in Latin America, containing more than 90 banks from almost 40 countries.

6.4. Other opportunities for growth

Opportunities for further growth appear in transportation and logistics. The transport sector is Panama's most important sector, and given its predominance, is expected to continue to be the main driver of economic growth. The greater volume of cargo passing through the expanded Canal will generate by itself the demand for transport, warehouse, insurance, and logistics services. Nonetheless, gaps in most logistics segments, including customs efficiency, timeliness, tracking and tracing, and infrastructure need to be addressed to unleash the full potential of the sector.[82]

Financial services could benefit from the expansion in logistics and transportation services. The transportation and logistics industries have a natural complementarity with financial services through financial intermediation. The expected growth in logistics and transportation could raise the demand for financial services locally and abroad. In addition, business opportunities are emerging in the insurance and reinsurance markets. The insurance market's penetration is low relative to the region and Panama seeks to position itself as a reinsurance hub for Latin America.[83] Despite this, Panama lags behind comparator economies in small firms' access to finance, availability of credit to individuals and businesses, and cost of borrowing which is higher than many of its counterparts. Addressing these constraints could have large payoffs.

Tourism is a vital sector with an immense potential to continue growing. The fact that Panama is a major hub for international travel, and offers tourists the chance to experience beaches, mountains, rainforest, and a vibrant metropolitan city, make the country more attractive than other regional destinations. Yet, only 10 percent of travelers connecting through Panama actually stay in the country to visit, which implies that incentivizing travelers to visit for a couple of days could generate considerable returns. Further development of the sector is important due to its potential to create jobs for low-skilled workers in related activities such as hotels, restaurants, and entertainment. The expansion of the Canal opened the chance to develop the cruise industry, which has grown fast since 2017. In the future, the sector is expected to grow even more as a result of the construction of the cruise terminal, Amador, which is expected to increase the capacity of visitors to 5,000 per day.

Better institutions and higher levels of education are complementary sources of comparative advantage in the more complex goods and services. The value-added content or complexity of services is not homogenous. For instance, professional services are more complex than hotel services. In general, the production of more complex processes implies a larger number of tasks. An economic environment with well-defined rule of law is associated with comparative advantages in complex services, and as a result with a higher export of complex services. This is because complex services are dependent on good institutions that enforce contracts: better institutions increase the probability that contracts are enforced and therefore complex services with multiple tasks have a higher probability of being delivered.[84] Similarly, complex services require high-skilled workers, and therefore the quality of the pool of workers is a key enabler of services trade.

Strengthening the ICT sector and improving the country's internal transportation network is critical to increase competitiveness. The ICT sector is not only important as a source of growth, but also since it is a key input for trade integration, private sector development, and public service delivery. ICT plays a fundamental role in the developing global value-chains and in shifting parts of the production process to different countries. By using ICT, firms would be able to exchange data almost instantly from any point in the globe, communicate with clients and suppliers, and deliver services efficiently and quickly. Through outsourcing and offshoring, services can be provided by more cost-effective suppliers. ICT could also impact positively sectors like transportation, tourism and construction by reducing the fixed costs of entry into a market through lower search costs and advertising. Also, ICT is critical to improve the country's connectivity through logistics infrastructure that links producers to regional and the already existent infrastructure that is oriented to the international markets.


Putzmeister

7. Conclusion

Panama's growth model has been remarkably successful but is reaching its limits and will need to change. Investment in infrastructure has driven economic growth, provided poverty-alleviating jobs, attracted investment and contributed to the productivity of other sectors. Yet this growth model is slowly reaching its limits as each new large infrastructure project brings slightly lower economic returns. Panama will need to find other growth engines to support its long-term growth. The country is well placed to do this, benefiting already from a geographical position that combines with the Canal and existing decent infrastructure for trade and associated services (such as hotels, conference centers, ports, financial hub). The country has also positioned itself as an air hub for the Americas and has outstanding natural beauty.

Building on Panama's existing advantages will require implementing policies that both address weaknesses and further improve its strengths. This chapter has identified several key areas in which Panama lags its comparator and aspirational countries, but which could help boost productivity and growth over the medium to long term. They include:

- Implementing measures to boost female labor force participation. This is low compared to male participation and estimates for this report suggest it could bring a short- to medium-term boost to growth. Results from a computable general equilibrium model show that increasing female labor force participation to reach half of that of men would increase GDP by 6.4 percent in 2030.
- Reducing labor market distortions. Laws that make it more difficult to hire and fire workers and prevent workers from moving from less to more productive jobs, could bring short- to medium- term benefits.
- Strengthening public institutions, including by reducing corruption. Panama's public institutions can become more efficient – examples include implementing post-hoc and risk-based reviews of public procurement by the *Controlaria*. At the same time, Panama has made almost no progress in its corruption ratings during the past decade. This must change.
- Developing infrastructure outside of large cities to facilitate territorial development. This includes, for example, transport and water infrastructure that enables development of a nascent tourism sector, or internet infrastructure than enables development of ICT hubs.
- Improving the business environment. This needs to include improvements to areas that constrain small businesses, including property rights and access to financial services as well as other areas where Panama has been slowly falling behind comparator countries in recent years.
- Improving skills across all segments of the population. Skills are one of Panama's worst raking indicators in the World Economic Forum's Global Competitiveness Index. Improvements are needed across the board: from basic to advanced skills, such as from basic computer literacy and English to high-tech. Improved skills will facilitate small business start-ups, including those outside of Panama City and make it possible for more people to take advantage of the opportunities offered by nascent industries such as tourism. It will also support the development of modern industries such as ICT, as well as further expansion of business services based around Canal traffic.
- Boosting innovation. Improved skills, infrastructure and business environment must enable an environment that encourages innovation to spur productivity.

Panama has shown itself to be adaptable and is in a position to implement the necessary reforms to re-set its growth path. Yet, it takes time to implement reforms that improve institutions and boost skills. It is crucial that efforts begin soon to enable a smooth transition from an infrastructure-led growth model driven by the capital city to one based on higher productivity driven by skills and greater regional development.

Endnotes

1 Structural peers of Panama are Bulgaria, Costa Rica, Croatia, Dominican Republic and Uruguay, and aspirational peers are Hong Kong, Estonia, South Korea, Lithuania, Singapore, Taiwan, and United Arab Emirates. See Table 1.6 in the appendix for the methodology used to determine the structural and aspirational peers of the country.

2 WDI. Growth rate of GDP in constant 2010 US dollars.

3 It recorded 1.9 percent growth in 2018, the lowest since the global financial crisis of 2008.

4 WDI.

5 WDI.

6 WEO.

7 Hausmann et al. (2016).

8 Beaton and Hadzi-Vaskov (2017).

9 Hausmann, Obach, and Santos (2017).

10 Lloyd (2018).

11 World Bank (2019a).

12 Koehler-Geib et al. (2015).

13 UNCTAD (2019a).

14 See Appendix II for a discussion on the concept of productivity and how it is measured.

15 See appendix I for a discussion of different measures of productivity commonly used in the literature.

16 The barriers are typically model as a wedge between that breaks the identity between occupational wages and marginal products. These barriers capture the many taste-based and statistical discrimination. Barriers in human capital accumulation arise as higher relative education costs and envelop a menu of factors such as favorable treatment received by men from parents and teachers, formal and informal restrictions on women entering schools and training programs etc. In addition to the two barriers, the occupational choices across men and women can deviate due to differences in preferences and social norms. See Costa (2000) and Blau et al. (2013).

17 Estimates are based on simulations using the dynamic GTAP model (GDyn) – a multi-sector, multi-region, multi-factor CGE model. The model is ideal for measuring the impact of labor market policies as it takes into consideration general equilibrium linkages such as interactions between consumers, producers, and governments; inter- and intra-industry links; interactions between domestic and foreign markets; and resource constraints. Results capture the long-run impacts of policy changes as results are reported relative to a baseline scenario by 2030.

18 See for example endogenous growth theories of Romer (1990), Aghion and Howitt (1998).

19 Kim, Loayza, and Meza-Cuadra (2016); Kim and Loayza (2019).

20 Please see www.worldbank.org/BoostCentralAmerica for the appendix. Indicators used to conduct the indexes for each of these areas are listed appendix III and the data used to compute these indicators are available upon request.

21 Structural transformation typically holds for developed and developing countries. See the flagship "F and Future of Work in LAC" 2019. Also, see Kutznets (1973) and Herrendorf, Rogerson, and Valentinyi (2014).

22 Industry includes mining, manufacturing (also reported as a separate subgroup), construction, electricity, water, and gas.

23 Lewis 1954, Fei and Ranis (1964) and Chenery (1979).

24 Duarte and Restuccia (2010 and 2018), and Herrendorf, Rogerson, and Valentinyi (2014).

25 For between sectors see Hsieh and Klenow (2009) and Busso and Madrigal (2013), among others. For references on within sector, see Rodrik and Mc Millan (2011).

26 Koehler-Geib et al. (2015).

27 Here informal employment is proxied by self-employment, following former studies (World Bank 2019b).

28 For further discussion please see the cross-cutting chapter and Loayza (2018).

29 Structural peers of Panama are Bulgaria, Costa Rica, Croatia, Dominican Republic and Uruguay, and aspirational peers are Hong Kong, Estonia, South Korea, Lithuania, Singapore, Taiwan, and United Arab Emirates. See Table 1.6 in the appendix for the methodology used to determine the structural and aspirational peers of the country.

30 See Appendix V and Table 5.1. in Appendix V for the methodology used to compute the indexes and full list of all indicators.

31 Hausmann et al. (2017), "Special Economic Zones in Panama: Technology spillovers from labor market perspective."

32 UNCTAD (2019b), "Science, Technology and Innovation Policy Review"

33 See for example Romer (1986; 1990); Young (1998), Aghion and Howitt (1998), Ulku (2007).

34 Result is obtained from the fixed effects regression analysis of real GDP per capita (log) with respect to patent applications of residents per million population, the interaction term between patent applications and country dummies, investment rate, human capital, labor force and year trend. The analysis draws on 1144 observations from 74 countries over 2000–2018 and accounts for heteroskedasticity and cross-sectional correlation.

35 Crespi and Zuniga (2012); Bastos et al. (2011).

36 Peñalba et al. (2015).

37 Bastos, Palma and Cumberbatch (2011).

38 Hausmann et al. (2016), "Shifting Gears: A Growth Diagnostic of Panama".

39 Hausmann, Morales, and Santos (2016), "Economic Complexity in Panama: Assessing Opportunities for Productive Diversification," Faculty Research Working Paper Series 16-046, Harvard University.

40 Dettenhofer and Hampl (2009).

41 Freedom House https://www.ecoi.net/de/dokument/1427303.html.

42 Bertelsmann Stiftung's Transformation Index (BTI) (2020).

43 O'Donovan, Wagner and Zeume (2019). Panama Papers refer to the unprecedent leak of confidential business activities of Panamanian law firm and offshore service provider, Mossack Fonseca, to the media on April 3, 2016. The leak included 11.5 million confidential documents, making it one of the largest data leaks in the world. The documents provide information about the activities of more than 214,000 shell companies in tax havens around the world during the last 45 years. Ninety percent of these shell firms are incorporated in four tax havens: the British Virgin Islands (114,000 firms), Panama (48,000), the Bahamas (16,000), and the Seychelles (15,000), O'Donovan et al. (2019).

44 Gobierno Abierto Panamá, 'Tercer Plan de Acción Nacional de Gobierno Abierto de Panamá (2017-2019)', Observatorio; Regional de Planificación Para El Desarrollo (Gobierno de la República de Panamá, 2019), https://observatorioplanificacion.cepal.org/es/planes/tercer-plan-de-accion-nacional-de-gobierno-abierto-de-panama-2017-2019.

45 Ministerio de Seguridad Pública e Instituto Nacional de Estádisticas, 'Encuesta Nacional de Victimización y Percepción de Seguridad Ciudadana (ENVI)' (Gobierno de la República de Panamá, 2017), https://www.siec.gob.pa/index.php?option=com_phocadownload&view=category&id=16&Itemid=239&limitstart=0.

46 Amin and Ulku (2019); Shleifer and Vishny 1993; Banerjee 1997; Aidt 2016.

47 In particular, out of the three corruption control indicators, fixed effects regression analyses using around 1407- 1,511observations for 90-92 countries for the period of 2000-2018 show that corruption perception index is positively associated with real GDP per capita, while control of corruption and freedom from corruption indexes are negatively associated.

48 Hausmann, Espinoza and Santos (2016).

49 Wei (2000). See Amin and Ulku (2019) for the review of the relevant literature and micro evidence on the relationship between corruption, regulation and productivity.

50 Beaton and Hadzi-Vaskov (2017).

51 Koehler-Geib et al. (2015); Pérez (2017); Gobierno Abierto Panamá (2019), 'Tercer Plan de Acción Nacional de Gobierno Abierto de Panamá (2017-2019)', Observatorio Regional de Planificación Para El Desarrollo.

52 Fund for Peace (2019).

53 InSight Crime, 'Panama Profile', InSight Crime, 2020, https://www.insightcrime.org/panama-organized-crime-news/panama/.

54 Ministerio de Seguridad Pública e Instituto Nacional de Estádisticas, 'Encuesta Nacional de Victimización y Percepción de Seguridad Ciudadana (ENVI)' (Gobierno de la República de Panamá, 2017), https://www.siec.gob.pa/index.php?option=com_phocadownload&view=category&id=16&Itemid=239&limitstart=0.

55 According to the fixed effects regression analysis of real GDP per capita (log) with respect to security indicators and their interaction terms with country dummies (controlling for investment rate, human capital, labor force and year trend), among the three indicators of crime and violence, i.e. homicide rate, security threat index and fragile state index, only the latter is negatively associated with GDP per capita, while the association of the former two is positive.

56 World Bank (2011).

57 IMF (2019).

58 Besley (1995); Besley and Ghatak (2010); Ghatak (2020).

59 Heritage Foundation https://www.heritage.org/.

60 Heritage Foundation 2019. According to IMF (2001) Staff Country Report, 79 percent of poor homeowners and 64 percent of poor landowners lack proper titling.

61 Fuentes Cordoba (2017).

62 IDB (2014); Heritage Foundation (2019): https://www.heritage.org/index/pdf/2021/book/2021_IndexofEconomicFreedom_CHAPTER02.pdf.

63 Results are obtained from the fixed effects regression analysis of real GDP per capita (log) with respect to the indicators of property rights and their interaction terms with country dummies, controlling for investment rate, labor, human capital and year dummies. Both the property rights and rule of law index as well as the aggregate index are positively associated with GDP per capita, while expropriation risk was insignificant. Total numbers of observations used in the regression analyses for property rights and rule of law is 1,595 from 91 countries covering 2000-2018; and for expropriation risk is 393 from 83 countries covering 2014-2016.

64 Staats and Biglaiser (2012); Global Investment Competitiveness Report, 2017/18; de Janvry et al (2015); Johnson et al (2002); Beg (2019).

65 Hamilton and Khan (2001); Levine (2004); Demirguc-Kunt and Levine (2001).

66 Cull et al., (2014); Aghion and Bolton (1997); Banerjee and Newman (1993).

67 Sethi and Acharya (2018); Ghosh (2011); Mehrotra et al. (2009); Beck et al. (2004).

68 World Bank Enterprise Surveys: Panama 2006 and 2010.

69 Ministerio de Economía y Finanzas, 'Propuesta Para La Estrategia de Inclusión Financiera En Panamá' (Gobierno de la República de Panamá, 2019), https://www.mef.gob.pa/documentos/estudios/.

70 Results are obtained from the fixed effects regression analysis of real GDP per capita (log) with respect to the number of bank branches per 100,000 people and its interaction term with country dummies, controlling for investment rate, labor, human capital and year dummies, drawing on 1090 observations from 89 countries for 2000-18. The fixed effects regression analysis of real GDP per capita with respect to other indicators of banking access, such as credit and debit card ownership and number of ATMs per 100,000 adults, also show significant positive association of these indicators with real GDPP per capita.

71 Sethi and Acharya (2018).

72 IMF Article IV for Panama (2020).

73 IMF Country Report No. 20/124.

74 IMF Country Report (2020), No. 20/125 Panama Selected Issues.

75 Fixed effects regression results show a significant and positive association between overall financial stability of Panama and its GDP per capita using 1643 observation from 92 countries.

76 According to IMF Country Report (2020), No. 20/125 Panama Selected Issues.

77 Licetti et al (2018).

78 OECD/WTO (2019).

79 Koehler-Geib et al. (2015).

80 See Anand et al. (2012) and Duarte and Restuccia (2019).

81 Hallward-Driemeier and Nayyar (2017).

82 Beaton and Hadzi-Vaskov (2017).

83 Koehler-Geib et al. (2015).

84 Costinot (2009).

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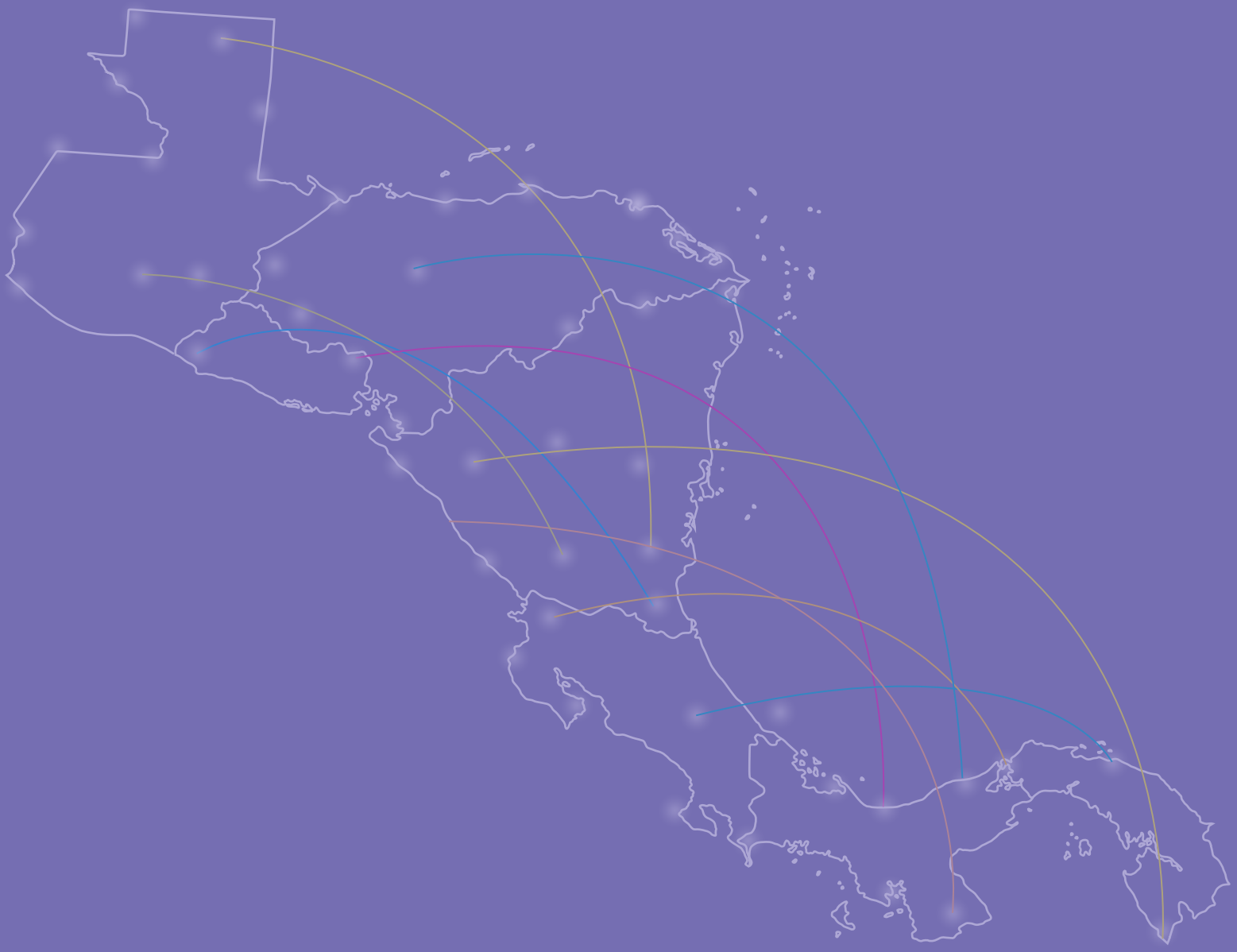

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