# GUATEMALA

## SELECTED ISSUES

This paper on Guatemala was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on July 8, 2024.

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# INTERNATIONAL MONETARY FUND

# GUATEMALA

## SELECTED ISSUES

July 8, 2024

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# SOCIAL UNREST IN GUATEMALA: MAIN EFFECTS[1]

*Guatemala has experienced various episodes of social unrest over the past ten years. Two episodes (2015 and 2023) stood out because of their duration, nature, scope, and effects. Both episodes, however, showed marked differences. How has social unrest impacted Guatemala's economy? This paper estimates the effects of social unrest on Guatemala's economy from 2001 to 2023, using the monthly* Reported Social Unrest *Index as a measure of social unrest. We find that, on average, the effects of social unrest on economic activity are limited and temporary. Moreover, social unrest does not seem to have long-standing effects on the external sector and credit to the economy.*

## A. Background

**1.     The frequency and intensity of social unrest increased, on average, in Guatemala since 2015.** The Reported Social Unrest Index (RSUI) developed by Barrett et al. (2021)[2] shows that the 2015 episode has been, to date, the largest episode of unrest in Guatemala. Prior to 2015, on average 36 articles of unrest were reported each month, with a standard deviation of 96. Since 2015, the average number of articles has increased to 290 per month, with a monthly standard deviation of 392. Since 2015, there have been other episodes of unrest (from 2017 to 2019) but of much lower intensity. The most recent episode took place in the months following the 2023 general election unexpected outcome and had some effects on the economic activity.[3]



**Figure 1. Reported Social Unrest Index**
(Monthly average unrest articles count)

Source: Barrett et al. 2021 (RSUI) and IMF Staff's calculations.

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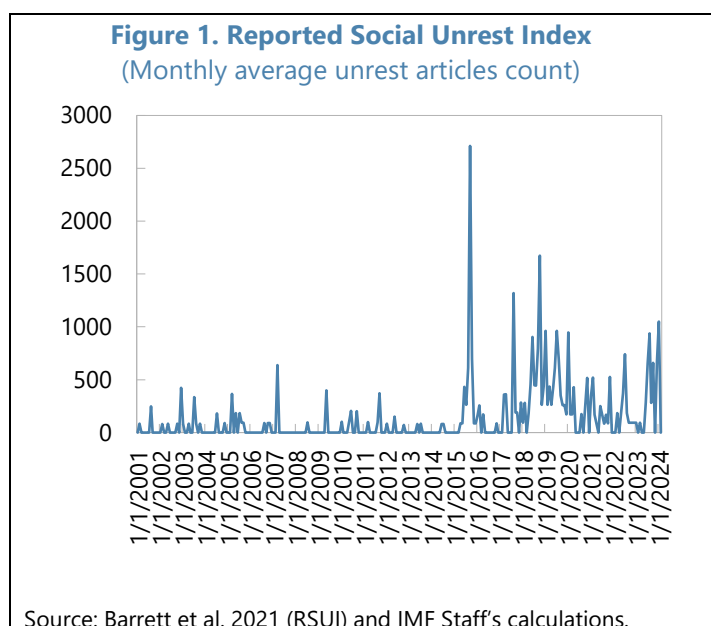
[1] Prepared by Paula Beltran (RES), Andrea Paloschi, and Maria Oliva (all WHD).

[2] As defined in Hadzi-Vaskov et al. (2023), the RSUI is defined as:

$$RSUI_{i,t} = \frac{x_{i,t}}{\frac{1}{12}\sum_{j=1}^{12} z_{t-j}} \cdot \frac{100}{\overline{x_i}/\overline{z}}$$

where $x_{i,t}$ is the article count related to unrest in country $i$ in month $t$; $z_t$ is the overall count in period $t$; and $\overline{x_i}$ and $\overline{z}$ are the corresponding averages over all time periods.

[3] Banguat estimates the 2023 GDP cost of the 2023 unrest episode to be around 0.3 percent of GDP, with hotels and restaurants being the most affected industry (-2.5 percent).

**2.      The latest major social unrest episode occurred in the second half of 2023.** The episode lasted eight months, from June 2023 until January 2024. Protesters requested the attorney general's resignation following the June/August 2023 election results, with intense protests, businesses closures, and blockages around the country concentrated from October 2nd to October 18th. Additionally, street blockades were reported afterward in 2023, making this episode more intense and (partially) disrupting the country and the region's economic activity. Protests eased after President Arevalo took office in January 2024.

**3.      How do social unrest episodes affect a country's short- and medium-term economic outlook?** This analysis builds on the framework and analyses developed in Hadzi-Vaskov et al. (2023), which employs the monthly Reported Social Unrest Index (RSUI) constructed by Barrett et al. (2021) as a proxy for social unrest. The index, available for many countries and employed in similar studies, collects evidence from newspapers concerning social unrest for each country in the dataset and develops a measure for social unrest consistent across countries. Larger values of the RSUI imply higher social unrest. The cross-country evidence provided by Hadzi-Vaskov et al. (2023) suggests that the effects of social unrest on economic activity are significant and persistent. Other papers studied the relationship between social unrest and economic outcomes. Among them, Alesina and Perotti (1996) studied the effect of social unrest, determined by income inequality, on investment and found an inverse correlation between the former and the latter. Rodrik (1999) argues that domestic social conflicts drive divisions in society, ultimately leading to weaker growth rates. Other branches of the literature, such as Cerra and Saxena (2008), found high output loss persistence after financial crises and some types of political crises. Jong-A-Pin (2009) concludes that, among different dimensions of political instability, only political regime instability has a robust and significant negative effect on growth. Regarding determinants, Aisen and Veiga (2013) establish that political instability adversely affects growth mainly through lower productivity growth rates and only marginally through physical and human capital accumulation.

**4.      Will the recent social unrest and political turmoil impact Guatemala's short- and medium-term economic trends?** Did these past episodes put a brake on Guatemala's economic performance? Guatemala stands out in the LAC region for its macroeconomic stability and prudent policies despite large external shocks and large infrastructure and social needs. The analysis suggests Guatemala's economic performance responds more to external factors than to domestic events.

## B.  Empirical Model of Social Unrest in Guatemala

**5.      The empirical model builds on Hadzi-Vaskov et al. (2023) to estimate the effects of social unrest on the outcome variable at monthly frequency.** This paper also uses monthly RSUI collected for 2001-2023 at a monthly frequency. Other economic variables include Guatemala's IMAE as a proxy for the level of economic activity, headline inflation (CPI), bank credit to the private sector, exports, imports, terms of trade, and sovereign risk (EMBI). This approach focuses on domestic perceptions and domestic news of social unrest specific to the country with a higher frequency and with up-to-date information. The estimation method relies on local projection

estimation methods (Jordà (2005)) of social unrest on the economic activity. The empirical model estimates the effects of a three standard deviations shock to the RSUI, corresponding to the highest

### Figure 2. Evolution of the Main Economic Variables

*Economic activity has increased broadly, led by retail and manufacturing, with transportation falling behind....*

*With food inflation growing faster than headline inflation, and credit in foreign currency growing faster than credit in local currency....*

**IMAE and its main components**
(Index, Base 100=Jan 2013)

**Credit and CPI**
(Index, Base 100=Jan 2001)

*Remittances have grown considerably with imports, and exports not keeping up...*

*With the nominal exchange rate and risk being stable.*

**External Sector**
(Index, Base 100=Jan 2014)

**Nominal Exchange Rate (NER) and EMBI**

Source: Banguat, Haver and IMF Staff's elaborations

level recorded during the 2023 unrest episode. The empirical model of the impact of social unrest is given by:

$$y_{t+h} - y_{t-1} = \delta_h + \beta^h RSUI_t + \sum_{j=1}^{h} \mu^{j,h} RSUI_{t+j} + \sum_{s} \tau^s RSUI_t^s + \theta X_t + \varepsilon_{t+h},$$

where $y_{t+h}$ denotes the outcome variable at time $t + h$ and $RSUI_t$ is the measure of social unrest, expressed in standard deviations. As in Hadzi-Vaskov et al. (2023), we control for potential unrest spillover from neighbor countries $RSUI_t^s$ and we control for potential anticipated effects of social unrest on the outcome variable. Intuitively, the empirical model aims at estimating the effects of an unanticipated, non-persistent, social unrest shock. Finally, $X_t$ is a vector of controls variables which is closely connected with Hadzi-Vaskov et al. (2023), although the authors employ quarterly-level data for a large panel of countries. To control for potential domestic cofounding explanations, we include present and lagged values of the dependent variables, past and future values of the RSUI, present and past values of the IMAE annual growth rate, the terms of trade and foreign exchange interventions. In addition, to control for external factors, we include first differences of the

logarithm of commodity prices, present and past values of VIX, Federal Funds Rate and US Broad Dollar Index. Finally, we include dummies for the COVID-19 pandemic and the Global Financial Crisis.

**6.        The effects of social unrest on the real sector appear to be mild and temporary (Figure** 3). A three-standard deviation shock on social unrest produces mild effects on economic activity (-0.2 percent), disappearing after four months from the shock. A finer analysis of the effects on different sectors allows identifying retail as the (only) sector affected by social unrest. In this sector, production's decline is lagged, with a maximum effect of one percent three months after the shock, and the effects are reabsorbed within five months. No significant effects are estimated on other industries, such as transport and manufacturing.

### Figure 3. Social Unrest Effects on the Real Sector

*Mild and temporary effects on the economic activity....*

*Mainly explained by a temporary decline in retail....*



*With no contemporaneous effects on transportation...*

*And no effects on manufacturing....*



Source: IMF's Staff calculations.
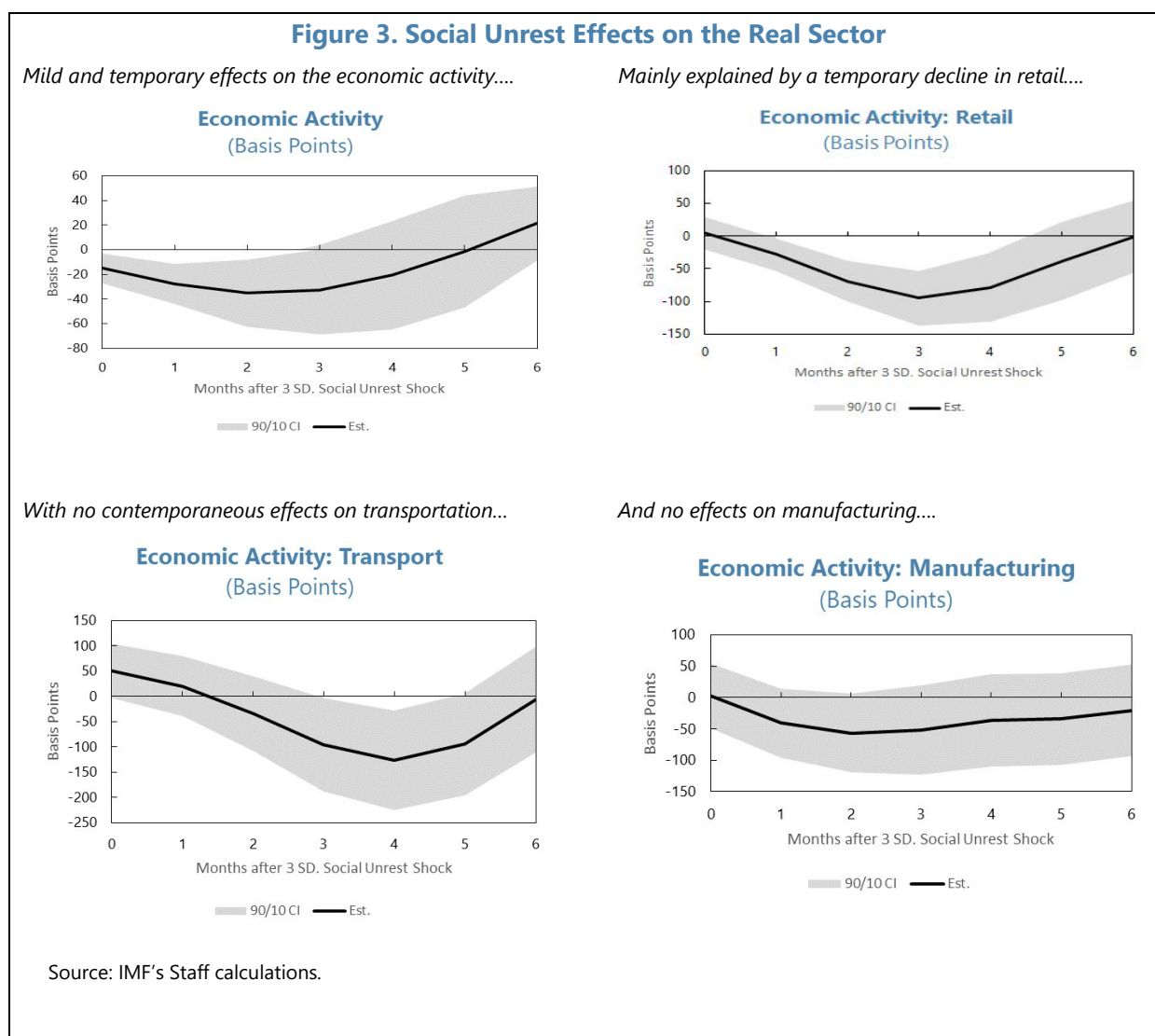
**7.        Financial outcomes are not affected by social unrest shocks (Figure 4)**. On average, the empirical estimates suggest that social unrest shocks do not produce significant effects on the main

financial variables analyzed. Bank credit growth, both in domestic and foreign currency, and sovereign spreads are not affected by social unrest. We also study the effects of social unrest on headline CPI. Social unrest does not seem to have a contemporaneous effect on headline CPI at the considered horizon.

**Figure 4. Social Unrest Effects on the Financial Outcomes**



Source: IMF's Staff calculations.
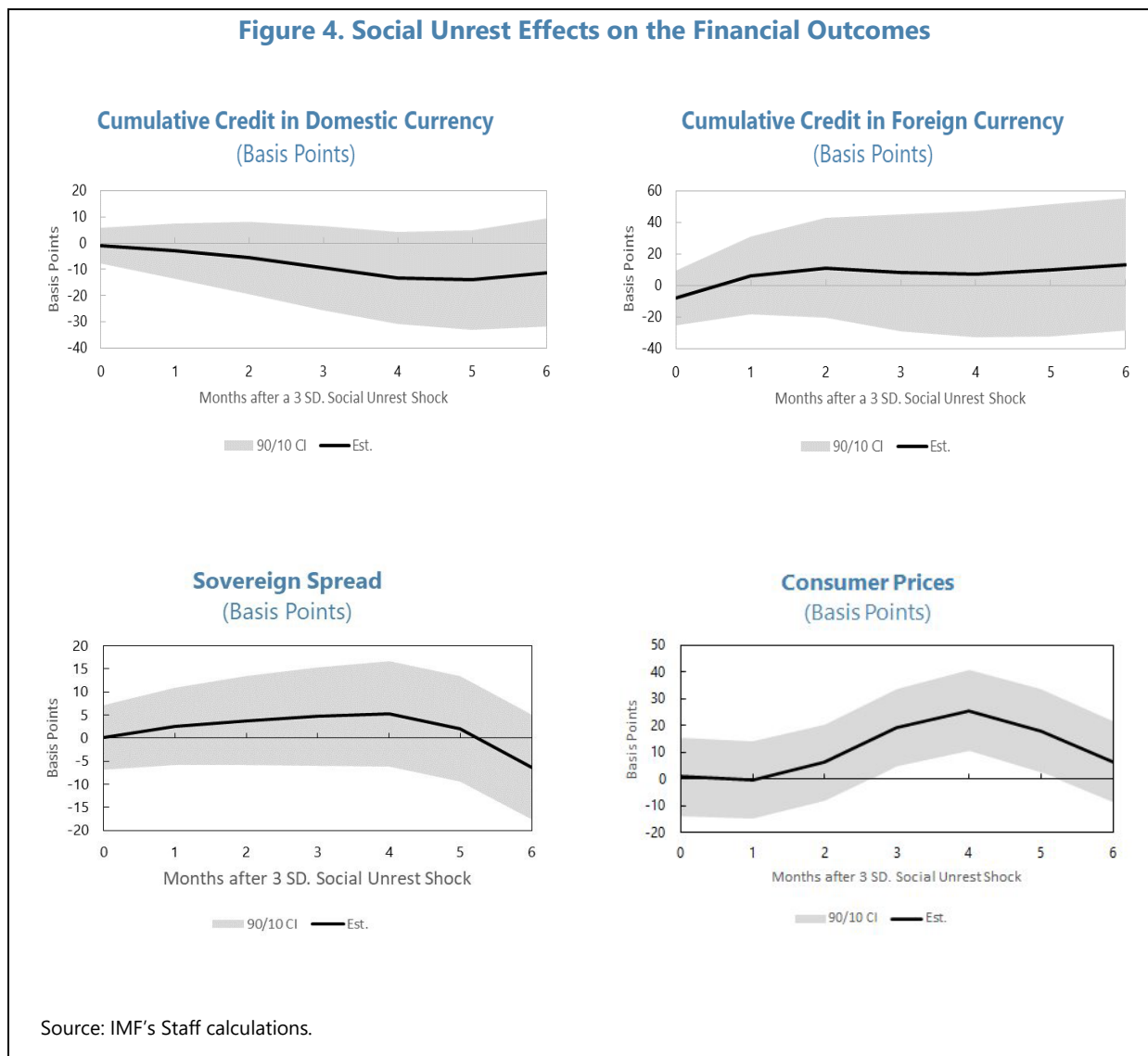
**8.      Social unrest does not seem to produce a significant impact on external outcomes either (Figure 5).** The estimations of the empirical model suggest no effects of social unrest episodes on the main external sector variables. In particular, the average effects on trade (exports and imports) and the nominal exchange rate are non-significant. Additionally, remittances do not seem to be affected by unrest episodes, consistent with the observation that domestic activity is only mildly and temporarily affected.

## Figure 5. Social Unrest Effects on External Outcomes

**Exports**
(Cumulative Growth, Basis Points)

**Imports**
(Cumulative Growth, Basis Points)

**Nominal Exchange Rate Cumulative Depreciation**
(Q per USD, Basis Points)

**Remittances**
(Cumulative Growth, Basis Points)
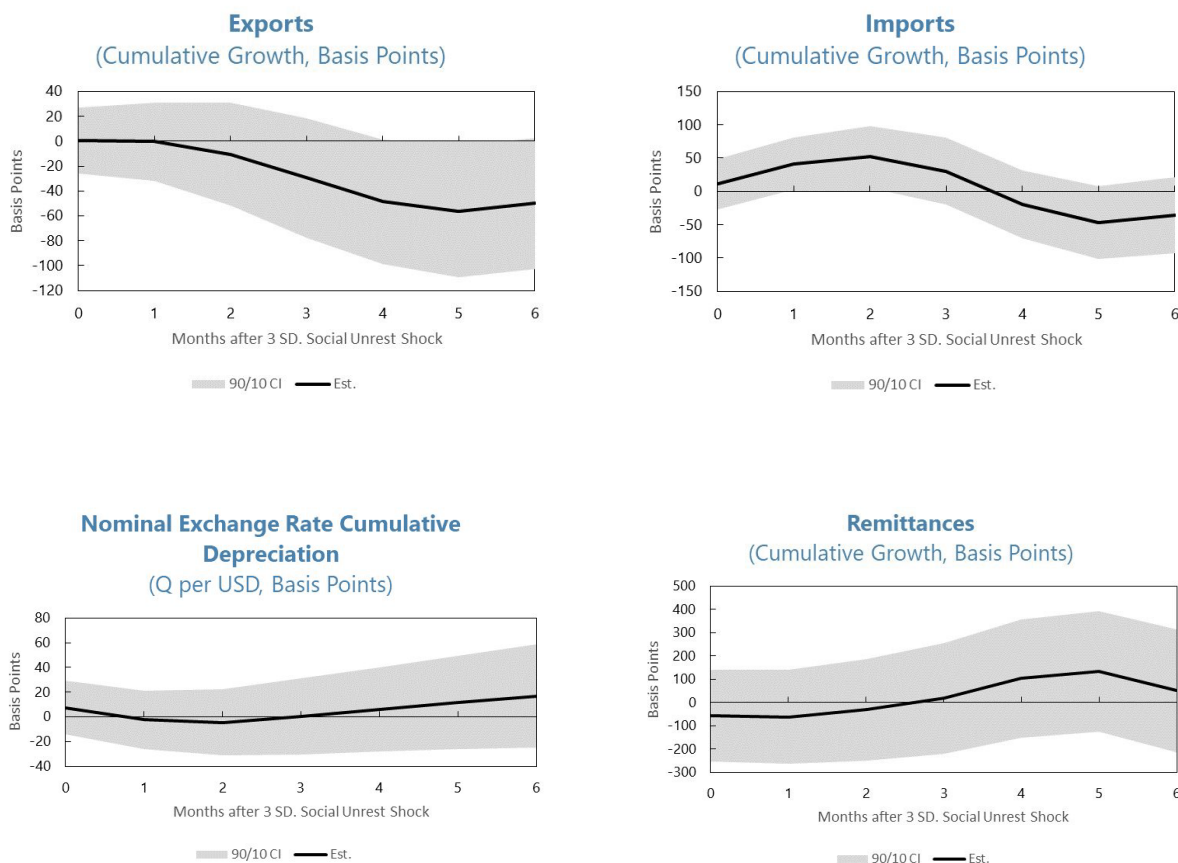
Source: IMF's Staff calculations.

**9.      The empirical evidence suggests little to no impact of social unrest in Guatemala.**
Contrary to Hadzi-Vaskov et al. (2023), the analysis of the effects of social unrest in Guatemala suggests that the effects on the real, monetary, financial, and external sectors are mild, limited, and temporary if not negligible. Hadzi-Vaskov et al. (2023) studied the effects of social unrest at the quarterly level on a large sample of countries, which allowed to control for institutional differences across countries (e.g., rule of law, corruption indexes). On the one hand, the lack of cross-country dimensionality is a limitation of our analysis, but on the other hand, exploiting monthly data allows us to disentangle unrest episode effects at higher frequencies than other papers in the literature. Overall, our results are robust to different specifications; the set of controls is extensive and includes controls for future social unrest shocks autocorrelations. Our results suggest that Guatemala is resilient to unrest shocks at business-cycle frequencies, even of considerable magnitude.

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Jordà, Ò. (2005). "Estimation and Inference of Impulse Responses by Local Projections." American Economic Review, 95 (1): 161-182.

Rodrik, D. (1999). "Where did all the growth go? External shocks, social conflict, and growth collapses". Journal of economic growth, 4, pp.385-412.

# IMPROVING SOCIAL SPENDING TO BOOST INCLUSIVE ECONOMIC GROWTH [1]

*Guatemala's human capital is weak. Low and inefficient social spending, if compared to other countries, hinders inclusive economic growth. Reducing the gap by investing in a well-trained labor supply with well-targeted education and health spending will boost Guatemala's potential economic growth. This note compares the social spending gap and human capital between Guatemala and regional and income-peer countries. Then, it estimates social spending efficiency and identifies the key indicators to improve efficiency.*

## A. Social Spending Background in Guatemala

**1.      Guatemala's spending on education and health is below regional peer countries (Figure 1).** While spending on education in Guatemala has slightly increased from about 2.8 percent of GDP in 2010 to about 3.2 percent of GDP in 2022, the level of spending remains the lowest in the region. Health expenditure in Guatemala has remained around two percent of GDP; peer countries have maintained larger ratios, with an uptick during COVID-19.



**Figure 1. Social Spending in Guatemala**

**General Government Education Expenditure**
(Percent of GDP)

**General Government Health Expenditure**
(Percent of GDP)

Source: Word Bank and WHO.
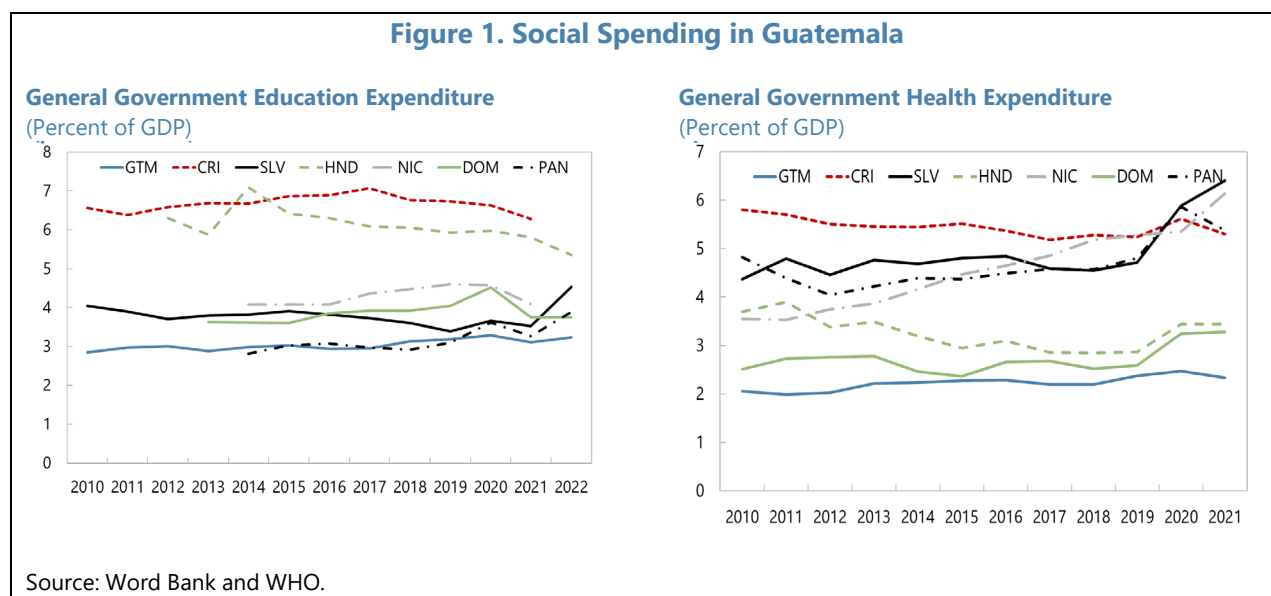
**2.      Guatemala has a substantial room to improve human capital (Figure 2).** The Human Capital Index (HCI) is a proxy indicator measuring the contribution of education and health to future labor force productivity. Guatemala stands about 10 percent below the correlation line between HCI and GDP per capita. At the same time, the index shows the gap between Guatemala and regional and peer-income-level countries.

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[1] Prepared by Ryotaro Sawada.

**Figure 2. Human Capital Index, 2020**

**Human Capital Index**
(Point)
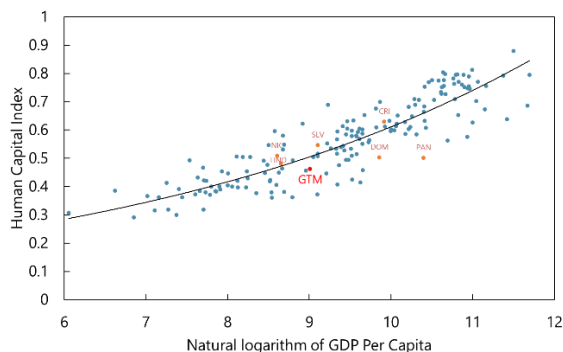


**Human Capital Index**
(Point)
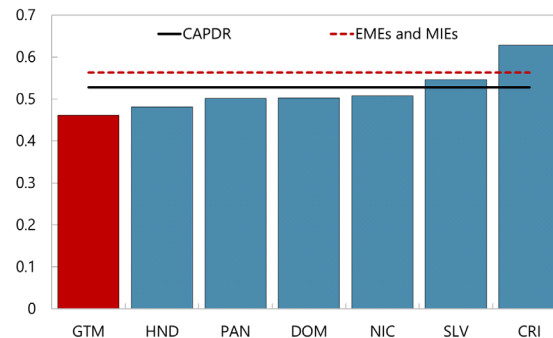


Source: Word Bank and IMF Staff's calculations.

**3.     Today's young generation will supply the future labor force (Figure 3).** The population under 18 peaked in 2019, while the labor force population between 19 and 64 is expected to

continue growing until 2062. Increasing the well-trained labor force by improving the education and health conditions of the young generation will boost future economic growth.

## B.   Social Spending Efficiency in Guatemala

**4.     To measure the efficiency of social spending in Guatemala, staff uses Data Envelopment Analysis.** This estimation calculates efficiency based on the most efficiently operated countries, comparing educational and health

**Figure 3. Demographic Change**
(Thousands)
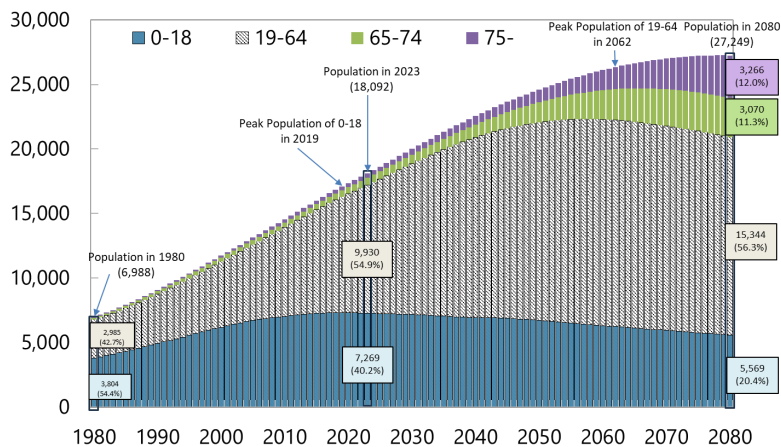


Source: United Nations and IMF Staff's calculations.
Note: The estimation is based on medium variant.

average government expenditures between 2015 and 2019 and the HCI in 2020. Box 1 summarizes the model that estimates efficiency.

**5.     Estimated social spending efficiency is 0.52, lower than the regional and income peer countries' average (Figure 4).** A low-efficiency number indicates that Guatemala's human capital is not high enough, given the level of education and health expenditures compared to other countries. Moreover, Guatemala stands lower than the fitted line between efficiency and GDP per capita, suggesting Guatemala should be able to improve the efficiency of its spending if compared to other countries.

**6.** **Low expected school years and children's malnutrition mainly explain Guatemala's human capital gap.** When looking into the subcomponents of the HCI, Guatemala's aggregate harmonized test scores are close to the income level of peer countries. However, there is about a two-year difference between Guatemala and income-peer countries in terms of expected school years, and schooling for children under age five needs to be revised. In Guatemala, 47 percent of children under age five face malnutrition compared to below 15 percent of children facing nutrition challenges in other regional and income peer countries.

## Figure 4. Social Spending Efficiency in Guatemala
### (Point)



Source: Word Bank, ILO, and IMF Staff's calculations.

## Figure 5. Components of Human Capital Index in 2020

*Expected Years of School*
*(Years)*

*Harmonized Test Scores*
*(Point)*
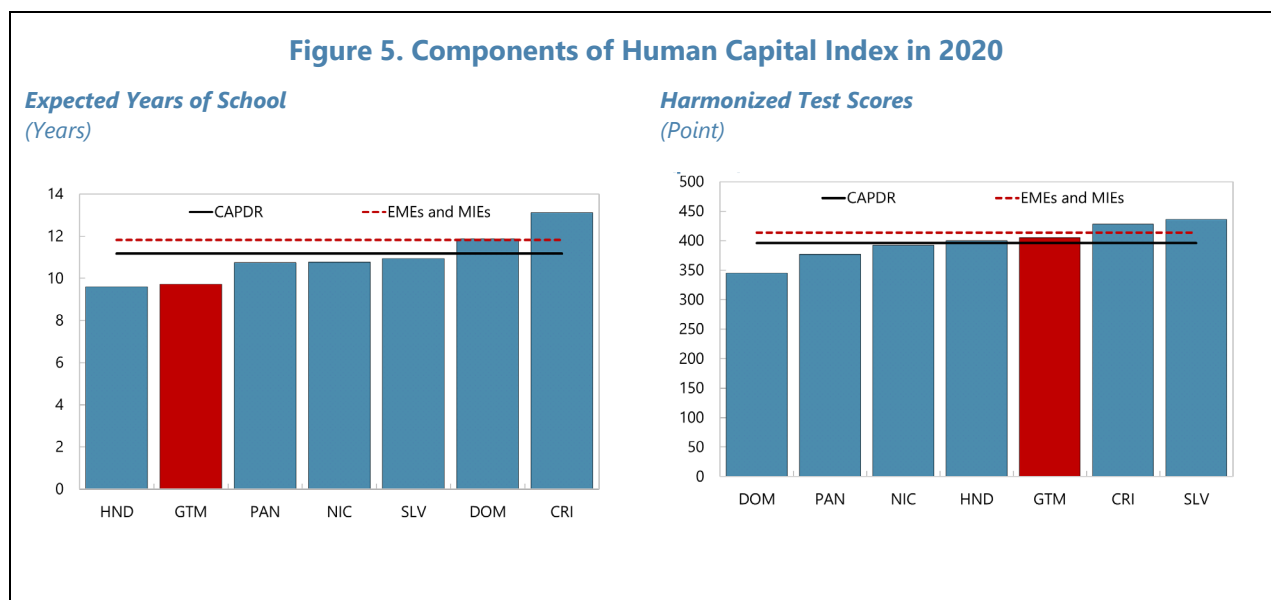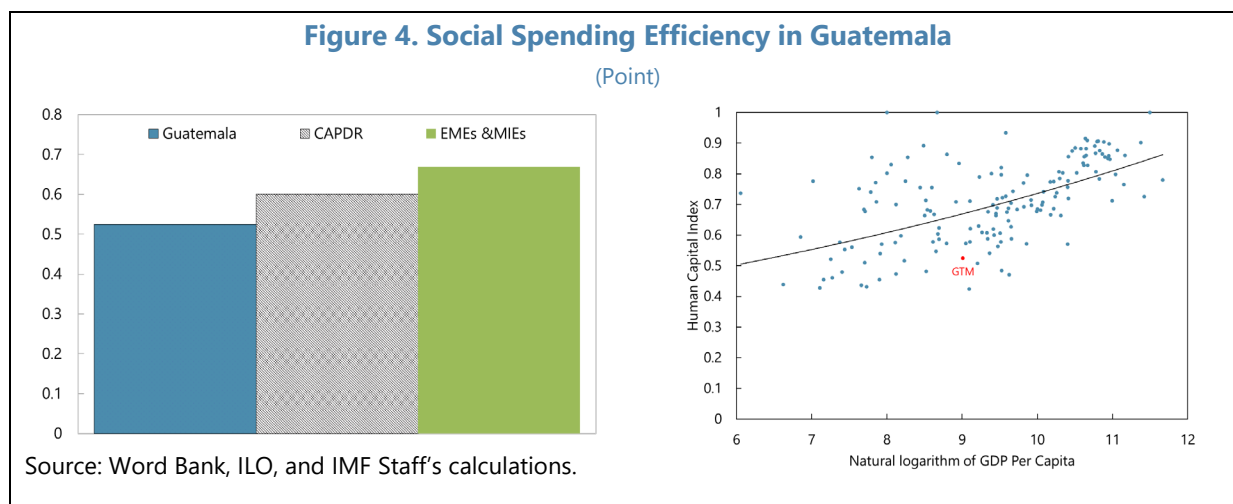
## Figure 5. Components of Human Capital Index in 2020 (concluded)

**Fraction of Children Under 5 Not Stunted**
(Percent)



**Adult Survival Rate**
(Percent)



**Probability of Survival to Age 5**
(Percent)



Source: Word Bank and IMF Staff's calculations.

## C. Educational Spending

**7.     Low secondary school enrollment explains the gap in expected school years (Figure 6).** The gross enrollment ratio to primary school in Guatemala achieves regional and income peer countries level with aged students' enrollment. On the other hand, there is a considerable gap in enrollment in secondary school. The gross enrollment in the lower secondary school is 62.9 percent, and only 33.8 percent of students take upper secondary education, which is lower than regional and income peer countries' level. In addition, the fact that these enrollment ratios to secondary school have declined in the last five years shows that the educational opportunities for students have decreased. This trend does not change even if the net enrollment ratio does not include aged students in the number of students.

**Figure 6. Gross Enrollment Ratio in 2021**

(Percent)
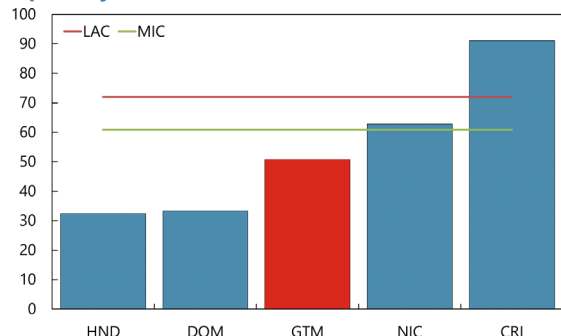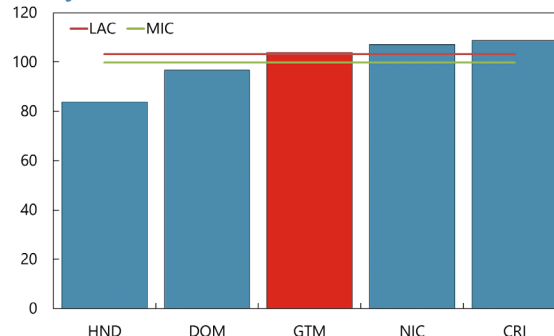
**Preprimary School**



**Primary School**



**Lower Secondary School**



**Upper Secondary School**
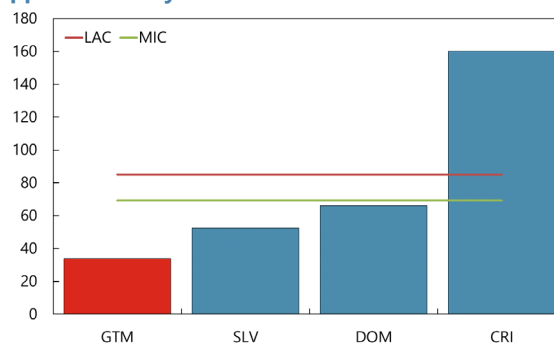


Source: UNESCO and IMF Staff's calculations.

**8.      Government expenditure in 2021 shows gaps in secondary education (Figure 7).** Compared to regional peer countries, Guatemala focuses on preprimary education, with spending at 0.43 percent of GDP. On the other hand, expenditures on secondary education and primary education are limited. Guatemala only spends 0.38 percent of its GDP on combined lower and upper secondary schools; spending should triple to reach the regional countries' average. At the same time, the spending on primary education has a gap of 0.2 percent of GDP.

## Figure 7. Government Expenditure in 2021
### (Percent of GDP)

**Preprimary School**
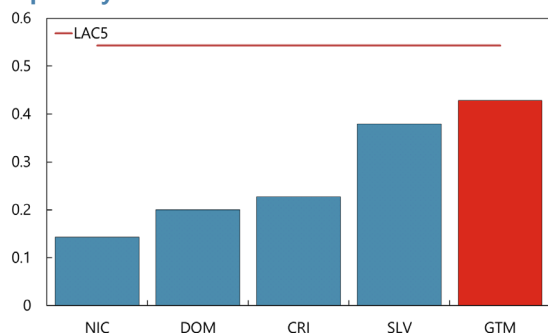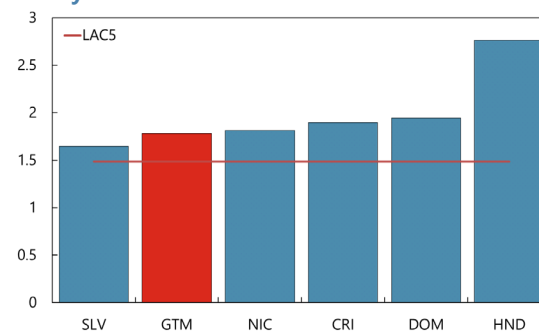
**Primary School**

**Lower Secondary School**
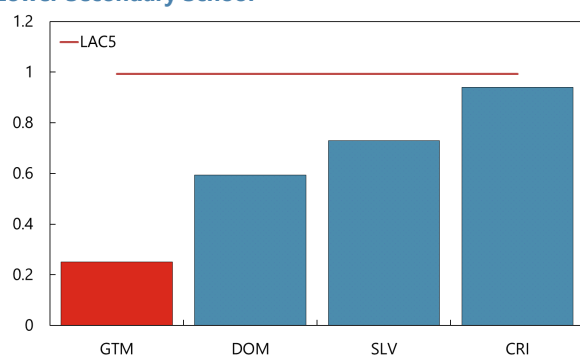
**Upper Secondary School**
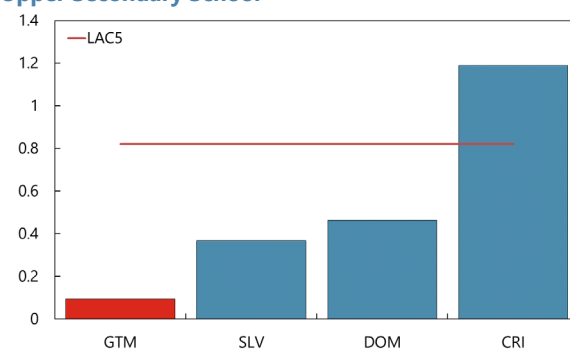
Source: UNESCO and IMF Staff's calculations.
Note: Government expenditures on secondary education in Honduras and Nicaragua are 1.01 percent of GDP and 0.56 percent of GDP, separately in 2021.
LAC5 countries are Brazil, Chile, Colombia, Mexico, and Peru. The average of LAC5 countries is based on 2019 data due to data availability.

**9.      Government expenditure gaps do not change even if the number of pupils is considered (Figure 8).** The expenditure on preprimary school per pupil is close to 13 percent of GDP per capita, the highest number in the region. Meanwhile, primary school spending per pupil is only about 13 percent of GDP per capita, despite that other countries spend around 20 percent of GDP per capita. Moreover, the expenditure gap has expanded in secondary school. The government in Guatemala spends only 6 percent and 4 percent of GDP per capita on lower and upper secondary schools, respectively. Other countries spend more than 12 percent of GDP per capita.

## Figure 8. Government Expenditure Per Pupil in 2021
### (Percent of GDP per capita)

**Preprimary School**



**Primary School**



**Lower Secondary School**



**Upper Secondary School**



Source: UNESCO and IMF Staff's calculations.
Note: The number of pupils is estimated by school age population and gross enrollment ratio.
LAC5 countries are Brazil, Chile, Colombia, Mexico, and Peru. The average of LAC5 countries is based on 2019 data due to data availability.

**10.    The number of teachers is aligned with regional and income peer countries (Figure 9).** The pupil-teacher ratio in Guatemala is the same or below regional and income peer countries' level at any level of education. It means that the number of teachers is generally adequate for the current number of students. A teacher in lower secondary school has only 12 students in Guatemala compared to 16 students in middle-income countries' average. Furthermore, higher secondary school teachers in Guatemala only have seven students, although the average in middle-income countries is 17.

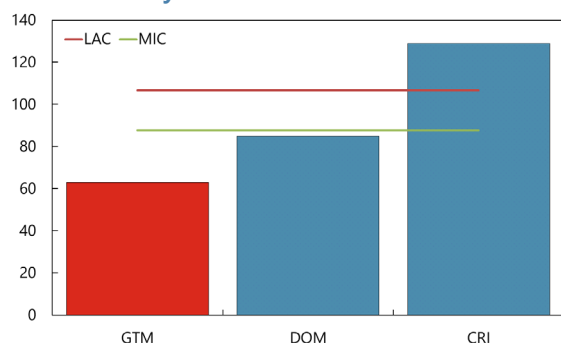## Figure 9. Pupil Teacher Ratio in 2021
### (Pupil)

**Preprimary School**



**Primary School**



**Lower Secondary School**



**Upper Secondary School**



Source: UNESCO and IMF Staff's calculations.
Note: The number of pupils is estimated by school age population and gross enrollment ratio.

**11.** **Secondary school education is mainly provided by private institutions (Figure 10).** Guatemala's private institution ratio in preprimary and primary schools is similar to that of regional peer countries. In contrast, the ratio in secondary schools is significantly higher than in other countries in the region. The fact that the private institution ratio is lower than 30 percent in any other country except for Guatemala highlights that Guatemala, where more than 50 percent of secondary schools are private, highly relies on private sectors in secondary education.

**Figure 10. Private Institution Ratio in 2021**

(Percent)

**Preprimary School**



**Primary School**



**Lower Secondary School**



**Upper Secondary School**



Source: UNESCO and IMF Staff's calculations.
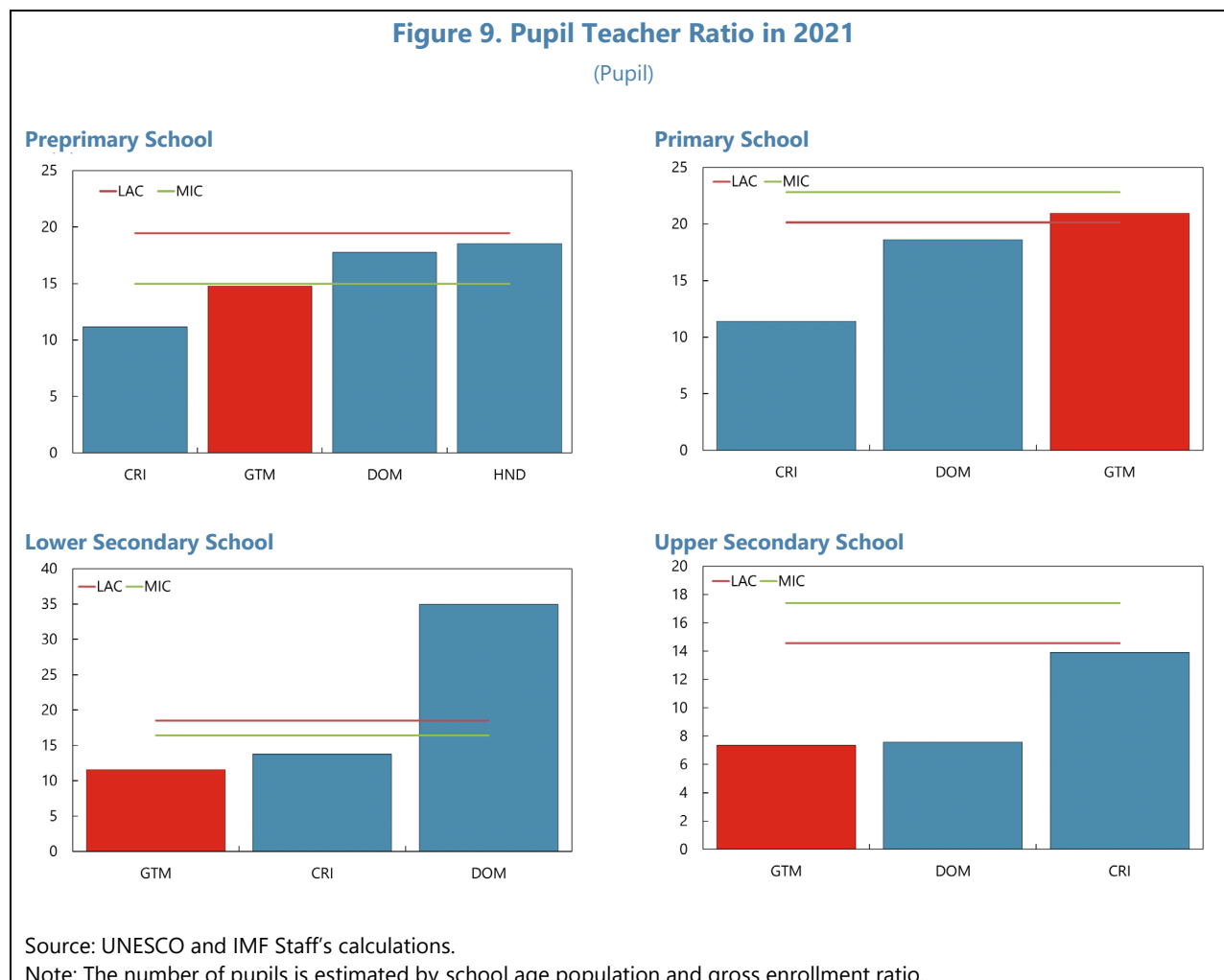Note: The averages among LAC and MIC in lower and upper secondary school are the average in secondary school.
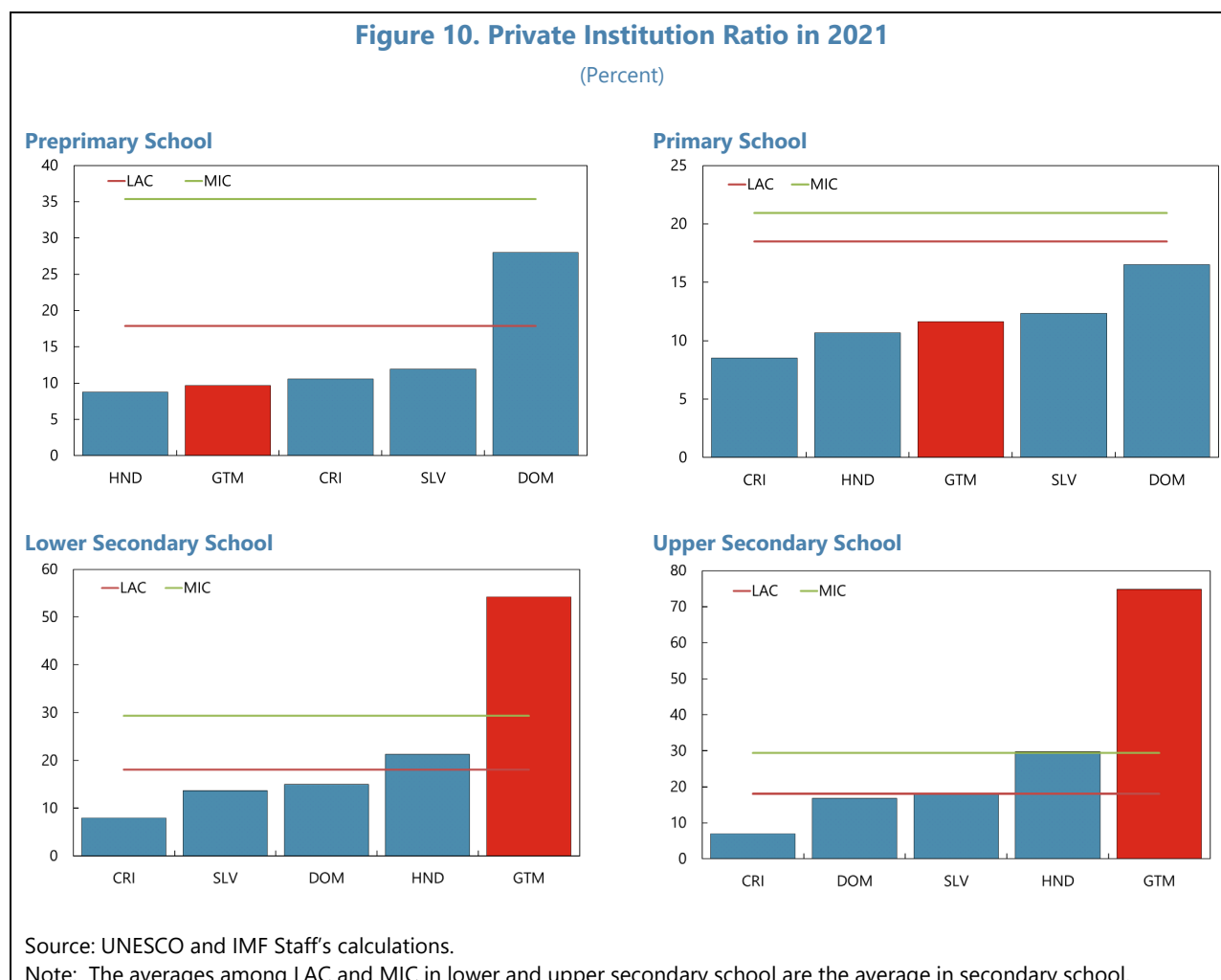
**12.     The situation surrounding secondary education has remained the same as in previous studies.** Other research shows that expanding coverage at secondary schools is one of the policy priorities (Perez et al., 2019; Acosta et al., 2016). The literature also identifies low per-student spending at the secondary level, low secondary student-teacher ratio with low secondary enrollment, and secondary education dependent on non-public schools (Acosta et al., 2016).

## D.  Health Spending

**13.     Decreasing stunting children under age five is one of the urgent challenges (Figure 11).** In the last two decades, Guatemala has experienced some improvement, but the rate of progress is slower than the global trend (32 percent from 2030). The global target of reducing the number of children with stunting in SDGs is decreasing to 13.5 percent in 2030 (WHO et al., 2023). The gap will have expanded if Guatemala has not accelerated. Looking at the success of regional peer countries, Guatemala has much room to improve the nutrition of children under five.

**14.** **Malnutrition damages children's development until adulthood.** A person's first 1,000 days, or the period from conception to age two, is the most crucial for the development of their body, brain, metabolism, and immune system because a child's developing brain and body suffers irreparable damage from insufficient nutrition in the first 1,000 days of life (Likhar et al., 2022). For example, children may never attain their full possible height, or their brains may never develop to their full cognitive potential. Furthermore, the damages have continued after they become adults. They might have learning difficulties in school, earn less as adults, and face barriers to community participation (WHO et al., 2023). Improving malnutrition in early childhood is very important.

**15.** **The temporary expansion of well-targeted spending for malnutrition would support future economic growth (Figure 12).** The expenditure for the Ministry of Public Health and Social Protection has increased during the COVID-19 pandemic, but the amount of expenditure for infants and children has not changed in the last seven years. Considering the severity of malnutrition when compared to global trends, spending more on improving nutrition and targeting challenging areas should be a priority.



**Figure 11. Stunting Children Under Five**
(Percent)

Source: Word Development Indicators and IMF Staff's calculations.
Note: LAC5 countries are Brazil, Chile, Colombia, Mexico, and Peru.
World refers to all population

**Figure 12. Health Spending**
(Percent of GDP)

Source: Ministry of Finance and IMF Staff's calculations.
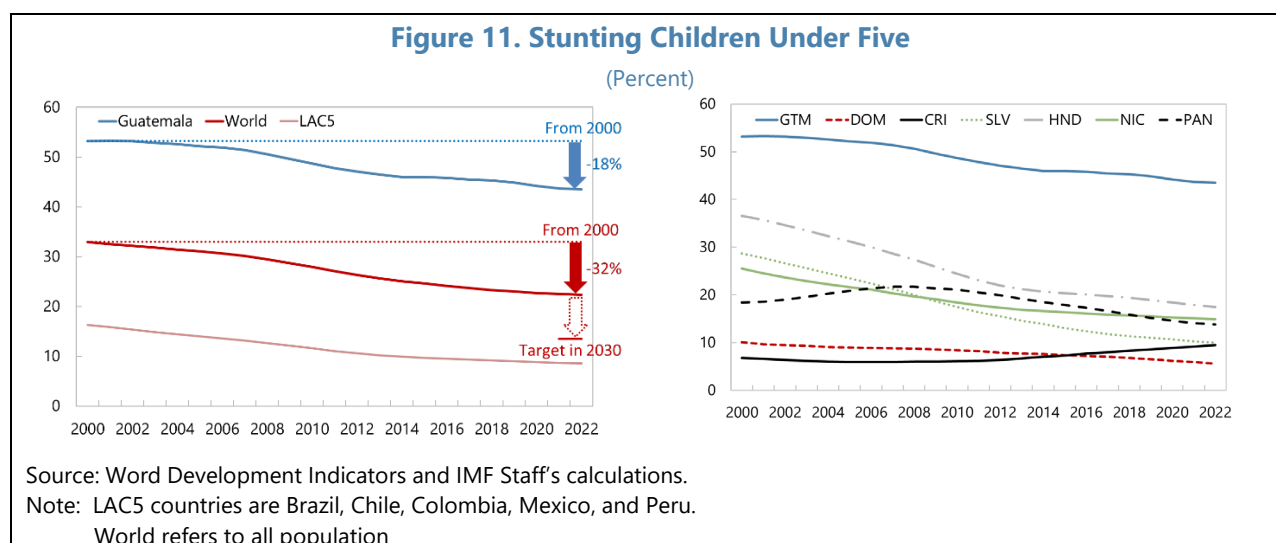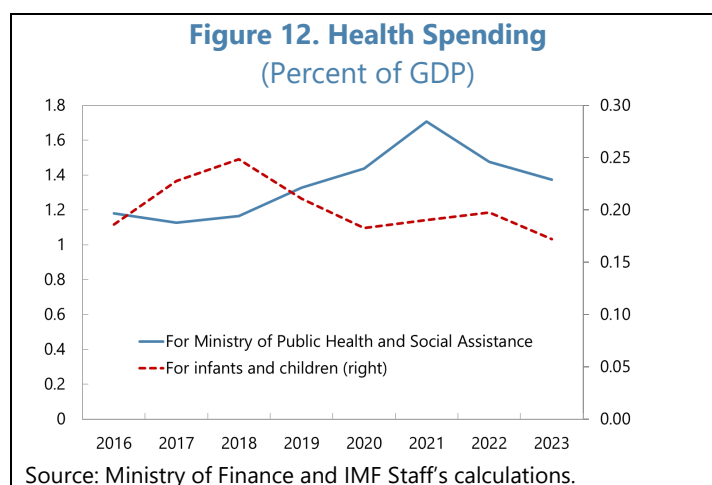
## E. Conclusion

**16.** **Guatemala has significant room for improving human capital.** Spending on education and health in Guatemala has remained low, with low spending efficiency compared to regional and income peer countries. The low human capital is mainly explained by children's malnutrition and low expected school years. Based on the demographic change, improving the young generation's skillset will boost future economic growth.

**17.** **Cross-country analysis shows that secondary education coverage is limited.** Low expected years of education in Guatemala can be attributed to fewer students going on to secondary education than in other countries. Government expenditure on secondary education is low; this trend remains the same per pupil. The low number of public schools in secondary education may be one of the reasons, and improved access to higher education would contribute to economic growth through a supply of a well-trained labor force.

**18.** **Addressing child malnutrition is urgent.** Stunting children under the age of five in Guatemala remains high, and the gap with global trends will widen without taking measures. Scaling up targeted support to children with malnutrition is urgent, given that malnutrition's damage to children's development continues until adulthood.

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### Box 1. Computing Social Spending Efficiency

The method follows the output-oriented Data Envelopment Analysis with two inputs and one output model to assess the efficiency of social spending in Guatemala.

Each country's social spending efficiency is calculated as:

$$\theta^* = max\ \theta$$

$$s.t. \quad x_{io} \geq \sum_{j=1}^{n} \lambda_j\, x_{ij}$$

$$\theta\, y_{ro} \leq \sum_{j=1}^{n} \lambda_j y_{rj}$$

$$\sum_{j=1}^{n} \lambda_j = 1$$

$$\lambda_j \geq 0$$

$$i = 1,2\ (inputs) \quad r = 1(output)$$

$$j = 1,2,\dots,n\ (each\ of\ the\ countries)$$

- $x_{1j}$ is General government expenditure for education in country j on average between 2015 and 2019 from World Development Indicators.

- $x_{2j}$ is General government expenditure for health in country j on average between 2015 and 2019 from WHO.

- $y_{1j}$ is Human Capital Index in 2020 from World Bank.

- $n$ is country. Staff uses 156 countries.

Source: IMF Staff calculation

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# STRUCTURAL FISCAL AGENDA [1]

*Guatemala is a small, open economy with a solid fiscal outlook and low debt that could greatly benefit from its young population dividend and geographical proximity to the U.S. market. These opportunities could unfold with a stronger infrastructure and quality education and health systems. Public investment in Guatemala has decreased over time and stands below regional and income peers. Over the years, investment (in volume) has declined, and spending efficiency remained subdued. How can trends be reversed? How can Guatemala catch up and close these long-standing gaps that have been hampering Guatemala's business environment and competitiveness? How can Guatemala invest more and better? The discussion below builds on the public investment management assessment (PIMA)/climate (C)-PIMA exercise completed in 2023 [2] and the 2022 Fiscal Transparency Assessment [3].*

## A. Public Investment Management in Guatemala

**Public Investment in Guatemala**

**1.      Guatemala's public investment levels have declined since the mid-2000s and remain below regional and income peer levels. (Figure 1).** Estimated at about 1.5 percent of GDP in 2023, public investment levels remain below the average levels for CAPDR and Emerging Markets Economies in 2019.



Figure 1. Public Investment (Percent of GDP)

Sources: Banguat and IMF Staff calculations

**2.      Low public investment in infrastructure, health, and education continues limiting development, with social and infrastructure gaps widening (Figure 2).** In 2022, the government capital expenditure was 2.5 percent of GDP, of which infrastructure accounted for less than 1 percent of GDP, well below regional peers. Social investment, including education and health, also remained low at 0.3 percent of GDP in 2022.

**3.      The execution of the public investment agenda in Guatemala is mostly decentralized, with local governments accounting for 67 percent of the budget in these areas (Figure 3).** Between 2014 and 2022, the central government's direct capital expenditure has ranged between

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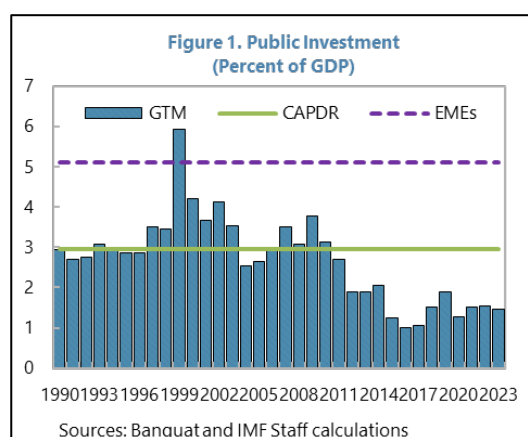
[1] Prepared by Ryotaro Sawada and Alfredo Alvarado.

[2] "Guatemala: Technical Assistance Report-Public Investment Management Assessment – PIMA and Climate-PIMA (C-PIMA)" was Published on March. 12, 2024, https://www.imf.org/en/Publications/technical-assistance-reports/Issues/2024/03/12/Guatemala-Technical-Assistance-Report-Public-Investment-Management-Assessment-PIMA-and-546208

[3] "Guatemala: Technical Assistance Report-Fiscal Transparency Evaluation" was published on August. 4, 2023, https://www.imf.org/en/Publications/CR/Issues/2023/08/03/Guatemala-Technical-Assistance-Report-Fiscal-Transparency-Evaluation-537472

0.3 and 1 percent of GDP (and 1.5 and 2.5 percent of GDP if including local governments). Local governments accounted for 67 percent, on average, well above the 55 percent levels recorded, on average, in OECD countries in 2021. At the same time, one-third of the budget allocated to local governments operates through Departmental Development Councils (CODEDE).

| Figure 2. Public Investment Composition in 2022 (Percent of GDP) | Figure 3. Composition of Central Government and Local Governments Direct Investment, by the level of the Government in 2014-2022 |
|---|---|
|  | (Percent of GDP)<br> |
| Source: National Authorities and IMF Calculations<br>Note: CRI and PAN are not included in CAPDR. | Source: PIMA Report. |
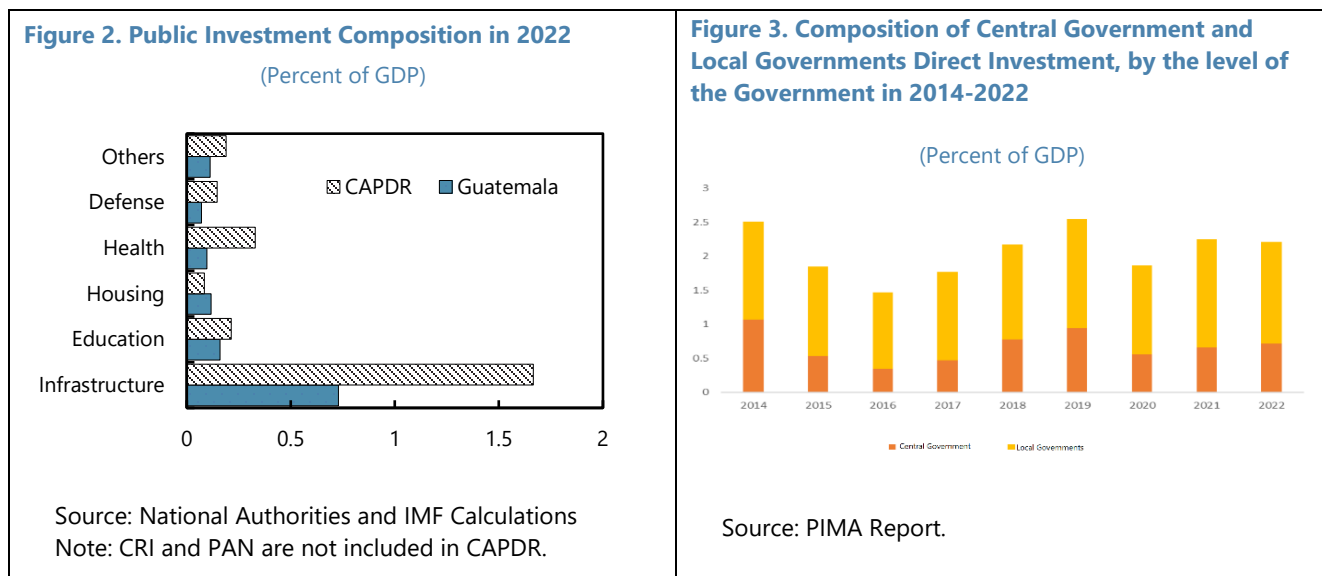
## B.   Guatemala's Investment Framework: Key Strengths and Opportunities

The PIMA identified several strengths related to the resilience and macro-stability of the economy as well as the institutional framework in general. It also found significant weaknesses related to implementation and effectiveness in public investment.

**Guatemala's Investment Framework: Successes and Progress**

4.      **Guatemala's strengths compared to peer countries in the same region, according to the PIMA scores, are (Figure 4):**

(i)  **Macro-fiscal stability—**with low fiscal deficits and low sovereign debt. Guatemala does not have an explicit fiscal rule. However, the implementation of the budget has systematically recorded a fiscal deficit of less than two percent of GDP. This explains a stock of sovereign debt below 30 percent of GDP. The prudent fiscal stance provides space for boosting much-needed pro-growth public investment without jeopardizing medium-term fiscal sustainability.

(ii)  **All investment projects under consideration are subject to detailed project formulation, evaluation, and selection guidance and are registered.** Regardless of their size, all the projects are systematically subjected to technical, economic, financial, and risk analysis under the National Public Investment System (SINIP) and the Formulation and Evaluation of Public Investment Projects (FEPIP). The risk analysis also includes a natural risk disaster assessment. All projects require a

favorable opinion from SEGEPLAN, with the completion of the requirement from the SINIP standards before they can be implemented.

**(iii) Project financing rules that shield funds budgeted for investment and carry-over projects, in particular**. The Constitution establishes that approved budgeted funds may not be transferred from investment programs to operating programs or to the payment of public debt. Furthermore, the Constitution also establishes that, when contracting multi-year projects, future budgets should include sufficient funds for their completion. The Budget Law establishes a similar rule.

**The Road Toward A More Efficient Investment Framework**



Figure 4. PIMA Scores

Source: PIMA Report
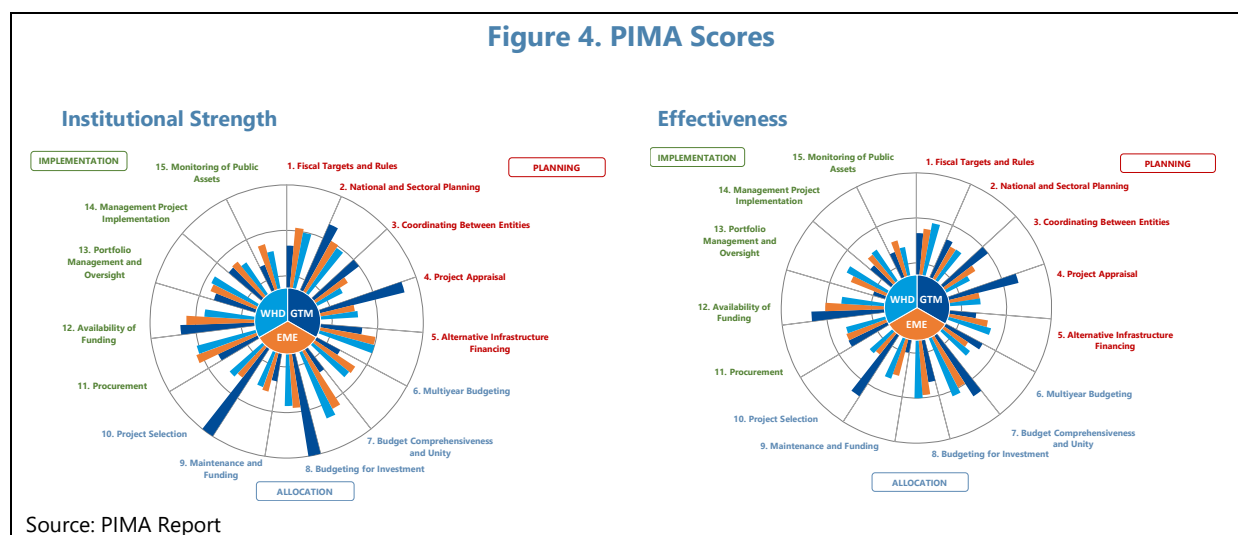
**5.      The investment agenda in Guatemala has been lagging behind the peers**. On infrastructure, significant deficiencies in the amount and quality of roads, ports, and airports have limited interconnectivity across the country and imposed significant losses in competitiveness and efficiency. In addition to increasing investments, which are low relative to peers, correcting the gaps will also require:

*(1) Strengthening SEGEPLAN's institutional mandate and monitoring capacity*, along with improving the prioritization, monitoring and implementation follow-up of projects with a cost-benefit analysis. SEGEPLAN needs to have:

- *A clear mandate ensuring that only projects complying with required evaluations and requirements are included in the budget.* Public investment projects are being incorporated ad-hoc by Congress during the budgetary process. The practice should be limited to emergency projects only. To avoid the diversion of the limited resources needed for existing projects and ensure quality of spending, ad-hoc projects which are lacking SEGEPLAN's priorly issued favorable technical opinion should not be included in the budget but postponed for further technical evaluation.

- *A realistic budget allocation* SEGEPLAN should monitor the financial execution of current projects, maintain actual dialogues with line ministries and local governments, and be engaged in decisions regarding project cost modification and performance. At the same time, SEGEPLAN should be in a position to define the amount available for new projects in the budget and avoid the inclusion of new projects at the expenses of unconcluded existing projects.

- *A focus on the project lifecycle*—with multi-annual programming and the follow-up of large-impact projects' execution (physical and financial). SEGEPLAN needs a multi-annual vision for multi-annual investment projects and formal controls to assess the accumulated physical and financial execution of ongoing multi-annual projects. SEGEPLAN only controls annual execution but lacks a follow-up record of past accumulated expenses incurred and of future expenses (beyond the annual budget). In practice, many projects require budgetary adjustments of 20 percent or more of the original amount budgeted. Lack of staffing and capacity helps explain these gaps, which are often linked to delays in execution and budgetary overruns for specific projects. SEGEPLAN should monitor and publish quarterly the accumulated physical and financial execution of projects since inception, at least of the country's large public investment projects.

- *Project management and post-evaluation*. Cost overruns happen too frequently, questioning the credibility of the original plans approved by SEGEPLAN. Overruns exceeding 10 percent during the lifetime of the project should be identified and should require an additional SEGEPLAN cost/benefit assessment before the additional resources are disbursed. Furthermore, the audits issued by la Contraloria General de Cuentas should discuss gaps between the total cost of the project originally budgeted and the actual costs of execution, and lessons should be incorporated in the approval of future projects.

*(2)* **Strengthening the investment budget to ensure:**

- *Accuracy in costing and realistic budgeting.* Plans need to have realistic costs and objectives. In 2023, for instance, the projects included in the public investment program amounted to 14.4 billion quetzales, but the budget only assigned 23 percent of this total to government entities and an additional 23 percent of the total to development councils. Budgets do not include carry-over costs associated with multi-year projects, which explains why about 30-40 percent of projects initiated in previous years are unfunded.

- *Multi-annual budgeting, with detailed multi-annual costing.* The public investment agenda needs to be supported by realistic medium-term operational plans that are aligned with national, sectoral, and strategic goals. In practice, a large share of projects considered priority in the medium-term operational sectoral plans (large projects included in the largest sectors of public investment such as roads) are not prioritized for inclusion in the budget. Furthermore, the budget law needs to incorporate not only multiannual budget

appropriations but also the total cost of multi-annual projects, including past and future expenses and the project's initial and modified costs.

- *Current and capital expenses for key projects should be consistent and detailed in the budget proposal.* The maintenance and capital expenditures required by the entity in charge of road conservation (COVIAL), and the Ministry of Finance's department of public credit (Dirección de Crédito Público) should also be consolidated and evaluated. In practice, these costs are added in different budgetary lines, and this lack of transparency makes it difficult to assess if the allocations are appropriate. Recurrent expenditures of investments channeled through extra-budgetary agencies should also be included in the budgetary process. Guatemala's Constitution does not allow for capital investment transfers toward recurrent expenses.

### *(3) Strengthening the private sector's role and coordination with public enterprises:*

- *Private companies appear to have little interest in public investments, with very few offers per bidding processes open by the administration.* Between 2022 and April 2023, out of 13 public investment projects (over QTZ 200 million) submitted to open and transparent bidding processes, nine received only one offer, two received two bids, and one received four bids. Mechanisms to track potential arrears and to ensure timely payment of bills need to be strengthened. Also, the automatic removal of low bids should be re-evaluated.

- *Public-Private Partnerships (PPPs) could be a cost-effective path to develop infrastructure*, but only one project has been approved after more than a decade since the law was approved. The Law of Partnerships for the Development of Economic Infrastructure, approved in 2010, establishes the main rules for bidding, contracting, supervision, and operation of PPPs. A decentralized entity – the National Agency of Alliances for the Development of Economic Infrastructure (ANADIE) – technically supports state entities that want to contract a PPP. In practice, however, only one project was approved by Congress in 2021, with six more in the pipeline.



Source: Infrascope 2021/22, World Bank
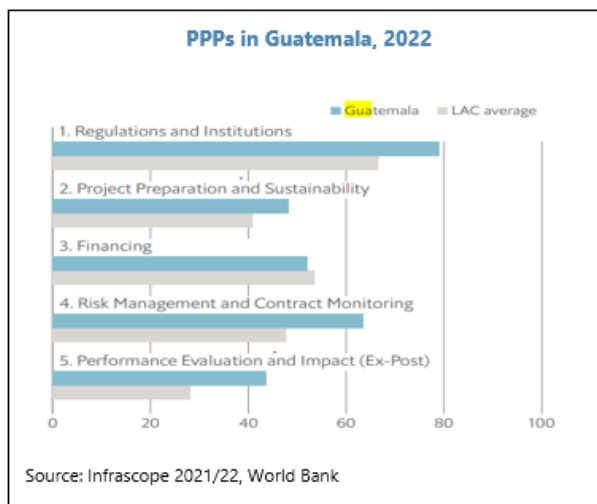
- *Further process adjustments are needed to make the PPP framework more accessible.* Congress has shown some opposition to PPPs in the last years. This resulted in delays, blockages, and litigation during the contract approval process. In addition to political will, there is a need to strengthen institutional support in project preparation and financing. For instance, independent funding (project development fund or viability gap fund), support to

improve project bankability, and post-bidding feedback to unsuccessful project bidders would also help strengthen the process.

**Guatemala's Investment Framework for Climate Change**

6. **Guatemala is highly vulnerable to natural disasters and will be even more with the climate change.** Natural disasters include floods, earthquakes, tsunamis, volcanic activity, extreme heat, and landslides. In the last 30 years, the frequency and economic losses from the natural phenomena have rapidly increased. Given the continuing climate change, mitigating the effects of climate issues is needed.

7. **Adopting climate change considerations in public investment has progressed but still needs further efforts.** SEGEPLAN has included climate mitigation and adaptation in its land use guide but has not monitored its implementation. Although the Ministry of Finance conducts fiscal risks related to natural disasters, formulating policies to adapt public sector infrastructure assets to climate challenges is needed. A thematic climate change budget classifier was created to identify expenditures that contribute to implementing these strategies. However, its consistent and effective use has been limited.

8. **Strengthening the Ministry for Environment and Natural Resources (MENR)'s mandate and capacity are needed to carry out**

- *An effective coordination of climate investment.* As public investment planning is implemented by each public sector, including ministries, decentralized entities, subnational governments, and public enterprises, there is no coordination mechanism from a climate point of view.

- *Monitoring from the point of view of compliance with the country's climate objectives.* A highly decentralized framework hinders MENR's coordination responsibilities with SOEs even if their climate change-related investments are not consistent with national climate change policies**.**

## C.   Fiscal Transparency Evaluation

9. **Guatemala's fiscal transparency has significantly advanced since the last 2016 Fiscal Transparency Evaluation.** The Fiscal Affairs Department of the IMF conducted the update of Guatemala's fiscal transparency evaluation in 2022; the report comparing Guatemala's practices against the Good Practices on Fiscal Transparency Code was published in 2023. The evaluation identified progress, especially in the areas of fiscal reporting and fiscal risk analysis and management.

**Figure 5. Results Comparison 2016 vs 2022**

Results 2016 (Percentage)

Results 2022 (Percentage)

Legend: ■ Not Met ■ Basic ■ Good ■ Advanced
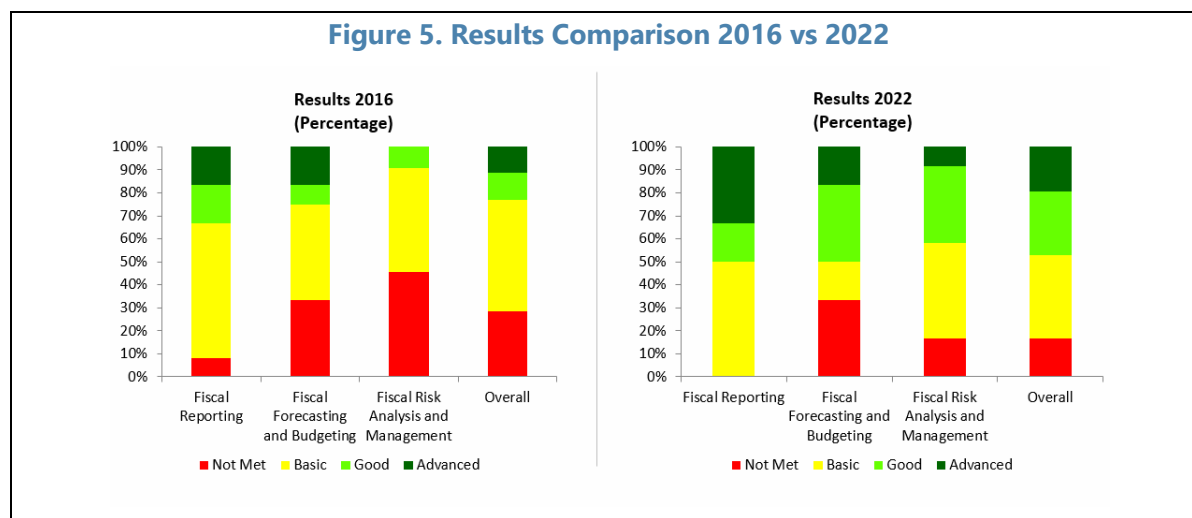
**10.    The evaluation identifies critical areas for improvement for fiscal reporting, fiscal forecasting and budgeting, and fiscal risk analysis and management.** This holistic enhancement is crucial for fostering transparency, predictability, and efficiency in the country's financial governance.

*Fostering Comprehensive and Transparent Fiscal Reporting*

**11.    To elevate fiscal reporting standards, a unified approach is proposed. This involves consolidating various reports generated throughout the fiscal year, including those related to budget settlement and the financial closure of the central government, along with its decentralized entities.** Enhancing the reconciliation process between financial statements and budget settlements is vital, ensuring that fiscal statistics are comparable across different reports. Moreover, the inclusion of central government debt, as held by the Bank of Guatemala (BANGUAT) and the Guatemalan Social Security Institute (IGSS), in addition to the actuarial liabilities of public employee pension systems in the central government's consolidated balance, is emphasized. This approach extends to calculating and reporting interest accruals and conducting thorough performance evaluations to understand the impact of fiscal expenditures comprehensively.

*Elevating Fiscal Forecasting and Budgeting Practices*

**12.    Improving the coherence of the budgetary framework is a priority, with a call for the integration of non-budgetary central government entities into budgetary documentation.** The process also demands a transparent articulation of GDP components and assumptions, leveraging the most recent macroeconomic information to ensure consistency in fiscal forecasts. This consistency is particularly sought in the Multi-Year Budget and the Medium-Term Budget Framework (MPMP). Additionally, there is a need for clear communication regarding adjustments in projections and the establishment of mechanisms to mitigate the impacts of delayed budget approvals. Setting realistic budget ceilings and clarifying fiscal policy objectives, along with establishing a regime for periodic monitoring, are also highlighted.

### *Enhancing Fiscal Risk Analysis and Management*

**13.      The scope of budgetary contingencies is recommended to be broadened, encompassing well-defined criteria for unforeseen general expenses.** The long-term sustainability of pension fund debt, especially in the context of demographic shifts, calls for careful analysis. The valuation of assets, particularly those derived from natural resources like hydrocarbons and mining, requires detailed attention, incorporating independent studies on subsurface reserves. Furthermore, a focus on compiling and publishing risk management statistics and including financial asset risk analysis in budgetary documentation is advocated.

# REMITTANCES AND RESERVES ACCUMULATION IN GUATEMALA [1]

*Guatemala has experienced a large and unprecedented inflow of remittances over the past ten years, doubling as a percentage of GDP to nearly 19 percent. This structural change in the economic model has contributed to a large improvement in the country's current account balance (CAB), which has increased from -3.9 percent in 2008 to +1.3 percent in 2022. The CAB improvement has fueled a significant increase in international reserves holdings, amounting to approximately 21 percent of GDP in 2022. This paper studies the role of remittance growth in Guatemala's economy using a small open economy dynamic stochastic model. We find that remittance growth accounts for higher consumption levels, reserves holdings, and current account balances while exhibiting depressing effects on GDP. Furthermore, this note shows that keeping reserves/imports constant would have had positive welfare effects on Guatemala's households.*

## A.  External and Monetary Sectors' Development in Guatemala

**1.      Guatemala's flow of remittances doubled from 2008 to 2022, stabilizing at about 19 percent of GDP.** Remittances have been stable after the Great Recession until 2015, at 10 percent of GDP. Since 2016, Guatemala experienced a significant and unprecedented surge in remittance inflows, predominantly from the U.S., with peak inflows in 2023 (approximately 19 percent in terms of GDP). In the first months of 2024 remittances growth has continued, though with lower growth rates.



**Figure 1. Remittances**
(percent of GDP)

Source: IMF Staff elaborations
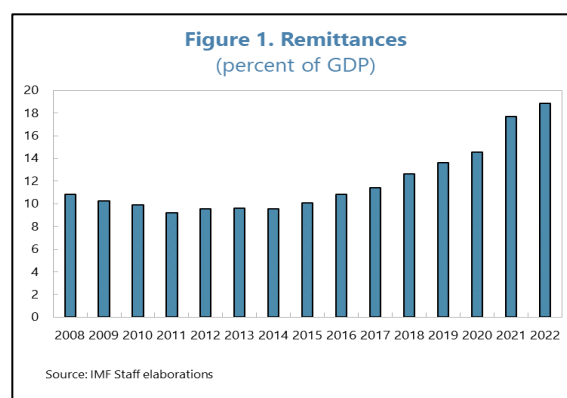
**2.      Reserves accumulation doubled as well from 2008 to 2022, having reached 19.6 percent of GDP (Figure 2).** International reserves peaked at 22.7 percent of GDP in 2021 to stabilize around 19.6 percent of GDP in 2022 (Figure 2a). In terms of months of imports, the increment in international reserves has been remarkable, from 3.5 months of (current) imports in 2008 to 6.6 in 2022, with a peak of 10.8 months in 2020 (Figure 2b).

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[1] Prepared by Andrea Paloschi.

**Figure 2a. Reserves**
(percent of GDP)

Source: Banguat and IMF Staff elaboration

**Figure 2b. Reserves**
(months of imports)

Source: Banguat and IMF Staff elaboration
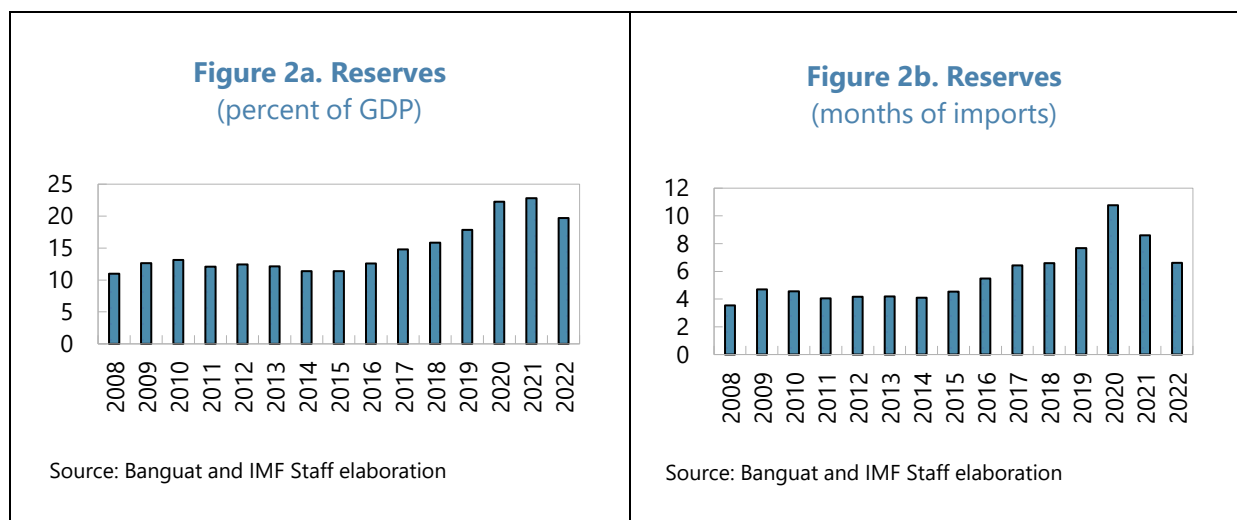
3.      **Guatemala's CAB displays a significant improvement after 2015.** Prior to 2016, Guatemala's current account position was negative, with an average deficit of approximately 2.7 percent of GDP. From 2016 Guatemala started recording moderate and strong current account surpluses (2 percent of GDP on average), with a peak of 5 percent in 2020. As depicted in Figure 3, the CA improvement has come from the improvement in remittances inflow and lower imports bills (on average, 34.2 percent, and 29.1 percent in terms of GDP before and after 2015).

**Figure 3. Contributions to Current Account**
(in percent of GDP)

Exports  Remittances  Imports  Other  Current Account

Source: Banguat and IMF Staff elaborations
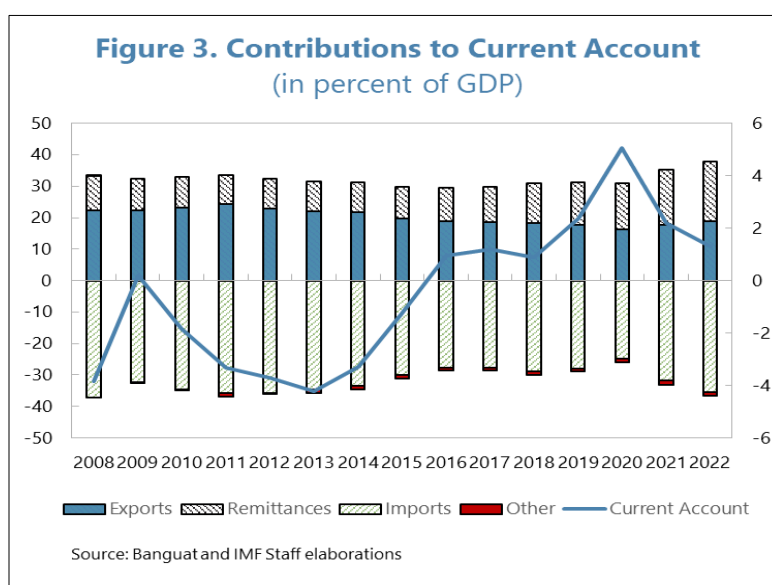
4.      **Inflation remains low and the nominal exchange rate has remained relatively stable around 7.7-7.8 quetzales per US$.** Following the Great Recession Guatemala has managed to keep the inflation rate under control and within the 4 ±1 percentage point inflation target for almost the entire period, with the recent exemption of 2022-early 2023, which was characterized by high commodity prices (Figure 4a). The nominal exchange rate maintained its value over the period. The quetzal experienced a moderate appreciation from 2009 to 2017, with the exchange rate moving

from 8.2 to 7.4 quetzales per US$. From 2018 onwards, the exchange rate has depreciated and converged to the medium-term average of 7.7 quetzales per USD (Figure 4b).



**Figure 4a. Inflation**
(Percent)

Source: Banguat and IMF Staff elaboration



**Figure 4b. Nominal Exchange Rate**
(Quetzales per US Dollar)

Source: Banguat and IMF Staff elaboration
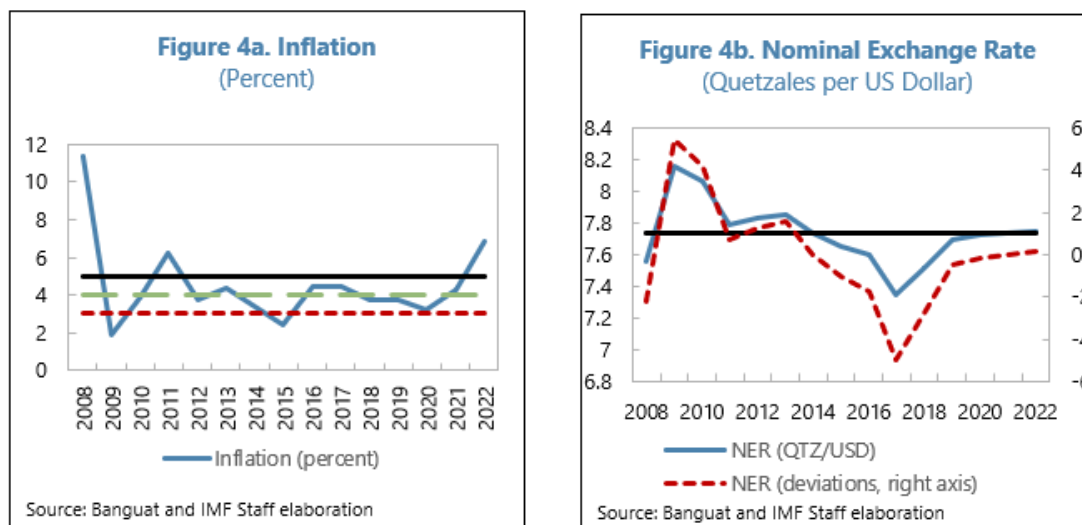
## B. A Quantitative Model to Study Remittance Growth

**5.      This paper studies the transition of Guatemala from a low-remittance to a high-remittance country and assesses the suitability of the current reserves accumulation policy.** We construct a structural model that captures the change from a low-remittance to a high-remittance regime and its transitional dynamics. We study the dynamics of such transition using the impulse response functions approach, which shows the evolution of GDP, current account, consumption, and inflation, among other outcomes. Furthermore, we construct a counterfactual economy where the monetary authority keeps the reserves/import ratio constant. Finally, we compare the counterfactual economy with the baseline economy to assess whether the counterfactual economy could have been welfare improving.

**6.      We build a small open economy dynamic stochastic model to reproduce the dynamics of the Guatemalan economy (Box 1).** The model is an adaptation of the small open economy New-Keynesian model of Gali and Monacelli (2005) that incorporates remittances as a source of income for the economy. In addition to households, producers, and the rest of the world, we account for an inflation-targeting monetary authority that engages in the market for international reserves to stabilize the relative consumption of domestic goods and imports and smooth consumption over time. Households consume both domestically produced and imported goods, while firms produce domestic goods, which are sold to households and exported to the rest of the world. Remittances constitute a source of foreign currency that can be used to purchase imports. The monetary authority purchases and sells international reserves to smooth the consumption of imports over time and stabilize inflation by affecting the change in relative prices (i.e., the terms of trade).

**7.**     **The model simulates the observed increase in remittances from 10 to 20 percent of GDP and replicates the patterns of international reserves (Figure 5a). We simulate the model** to replicate the observed growth in remittances observed in the mid-2010s in Guatemala, and we calibrate the model to generate the observed pattern of reserves accumulation. We model the growth of remittances as a regime change in a two-stage Markov process: before 2015, remittances followed a "low" regime accumulation process, while after 2015, the process switched to a "high" accumulation regime. At the onset of the shock, the drift term of the remittance process changes permanently. The autoregressive component of remittances makes the transition slow, reflecting the observed data pattern.

### Figure 5a. Impulse Response Functions

*At time t=0 remittances start growing....*

**Remittances**
(Percent of GDP)

*Boosting the demand of imports from abroad....*

**Imports**
(Percent of GDP)

*And increasing the demand for domestic goods....*

**Domestic Consumption**
(Percent, from steady state)

*Which deteriorates the terms of trade....*

**Terms of Trade**
(Percent, from steady state)

*Reducing the demand of exports from abroad...*

**Exports**
(Percent of GDP)

*And having a negative effect on GDP in the long run....*
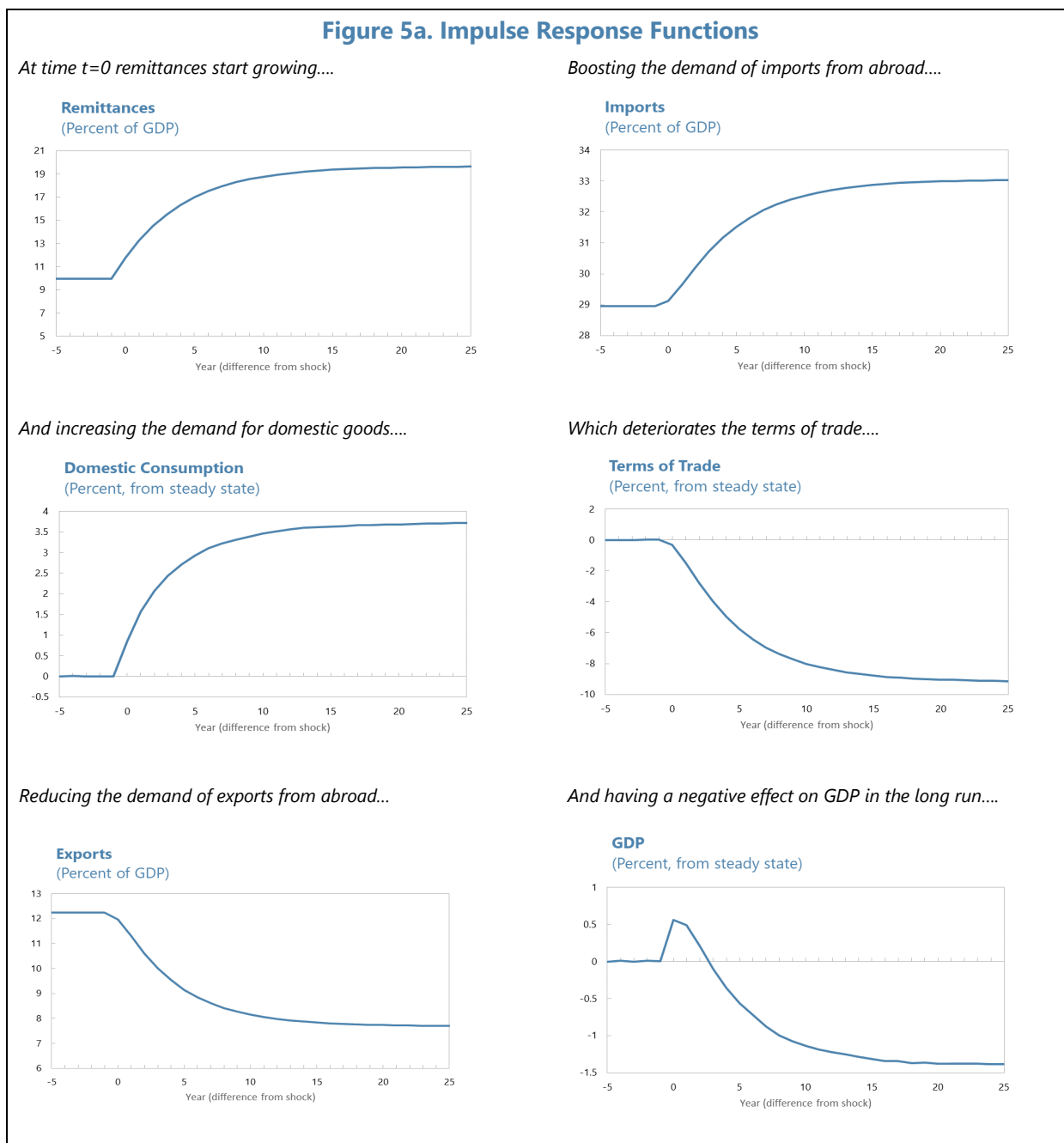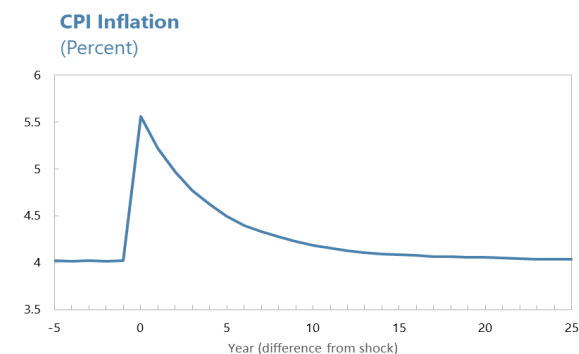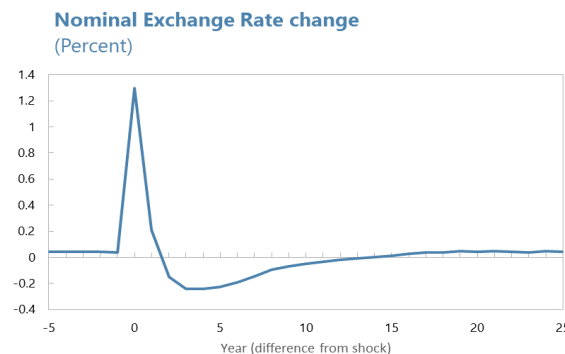
**GDP**
(Percent, from steady state)

**Figure 5a. Impulse Response Functions (concluded)**

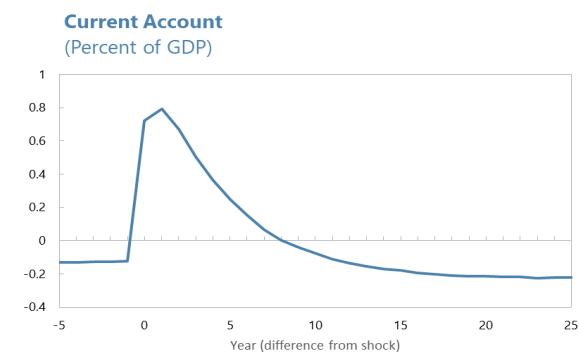*The initial positive GDP effect creates inflationary pressure....*

**CPI Inflation**
(Percent)

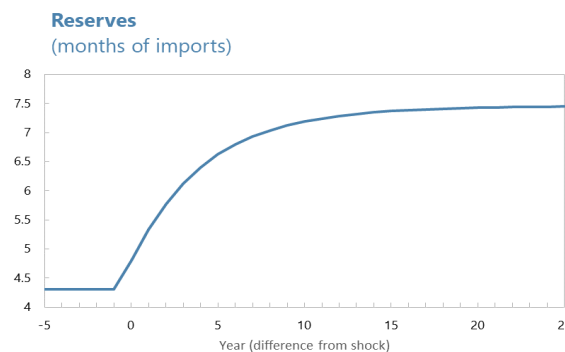

*Generating, firstly depreciation pressures, and then appreciation....*

**Nominal Exchange Rate change**
(Percent)



*The current account improves in the short run....*

**Current Account**
(Percent of GDP)



*Fueled by a strong reserves accumulation process.*

**Reserves**
(months of imports)



Source: IMF Staff elaboration.

**8.      The model predicts a 1.5 percent drop in output, a 3.5 percent increase in consumption, and a current account deterioration in the long run.** The increase in remittances constitutes an additional source of foreign currency for the households that can be spent for purchasing additional foreign goods. Moreover, the increased demand for imports generates, on the one hand, an additional demand for domestic consumption because of complementarity reasons and, on the other hand, a deterioration of the terms of trade, as the relative price of foreign goods is lower. Initially, the increased demand for domestic consumption is satisfied by lower export volumes, caused by a deterioration of the terms of trade, which in turn reduces production needs and causes an output drop. The long-run combined effect of higher imports and lower output deteriorates the trade balance, which is not sufficiently compensated by the higher remittance support, causing a deterioration of the current account as well.

**9.** **The impulse response functions to a regime change shock replicate the observed dynamics of the transition from a low-remittance to a high-remittance economy (Figure 5a and Figure 5b).** We construct the impulse response function to assess the dynamics of the variables during the transition from a low to a high-remittance economy. Interestingly, the regime change produces an initial positive effect on GDP caused by an increased demand for domestic goods. The increased demand cannot be accommodated immediately through lower exports, forcing producers to increase production in the short term, generating inflationary pressures and depreciating the domestic currency. In the long run, reducing export volumes allows the economy to sustain lower production levels, lowering the GDP. Part of the resources arising from remittances are saved, allowing a strong accumulation of international reserves and improving the current account in the short run. In the long run, once the reserves accumulation process has stopped, the return generated by the high level of reserves allows the economy to sustain a larger current account deficit, which is partially mitigated by less favorable terms of trade.

## C.  Counterfactual Exercise and Welfare Analysis

**10.** **The counterfactual exercise shows the dynamics of the regime transition under a constant reserves' accumulation rule (Figure 6a and Figure 6b).** We extend the analysis of the model by considering the dynamic impact of remittance growth under an alternative reserves accumulation policy. Under such a policy, the monetary authority keeps the reserves/imports ratio constant at 4.3 months of imports, the steady state value of reserves in the "low" remittance regime (i.e., average value pre-2016 with the switch to the "high" remittance regime).
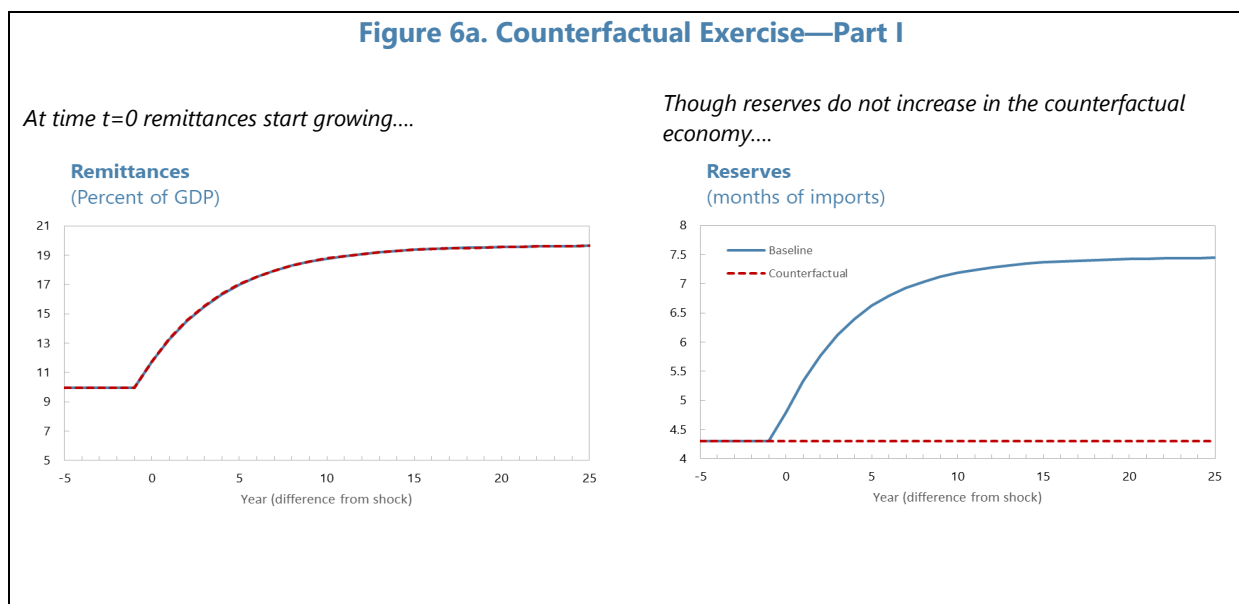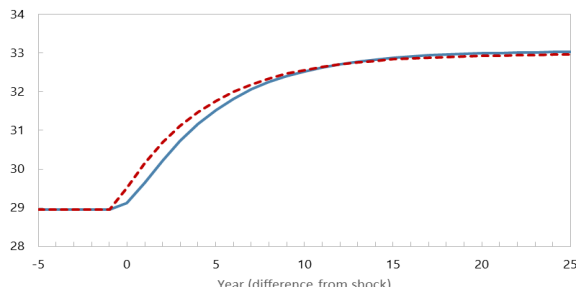
### Figure 6a. Counterfactual Exercise—Part I

*At time t=0 remittances start growing....*

*Though reserves do not increase in the counterfactual economy....*



**Remittances**
(Percent of GDP)

**Reserves**
(months of imports)

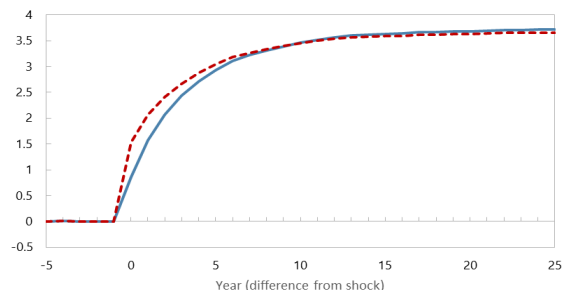## Figure 6a. Counterfactual Exercise—Part I (concluded)

*Freeing more resources for imports in the short-run....*
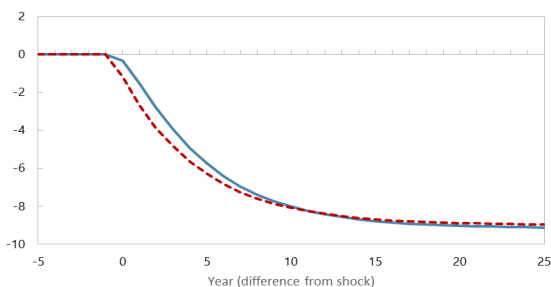
**Imports**
(Percent of GDP)

*And stimulating a higher demand for domestic goods....*

**Domestic Consumption**
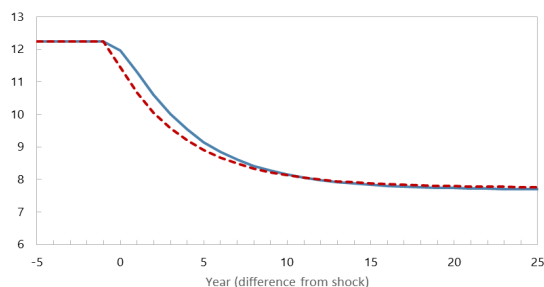(Percent, from steady state)

*Further deteriorating the terms of trade...*

**Terms of Trade**
(Percent, from steady state)

*Damaging the foreign demand for exports.*

**Exports**
(Percent of GDP)

Source: IMF Staff elaboration.

**11.     Under the counterfactual policy rule, households consume a higher share of remittances, and the trade balance deteriorates more.** In the model, the lower reserves accumulation policy implemented by the monetary authority frees resources for consumption. Households increase the demand for imports, contributing to a deterioration of the trade balance. The complementarity of the two consumption goods leads to a stronger demand for domestic goods, which, paired with stronger import demand, leads to a more intense deterioration of terms of trade. Consequently, exports decline more, amplifying the trade balance deficit.

**12.     The output contraction is faster, with lower inflationary pressure and a less pronounced current account improvement.** Given the faster export deterioration, GDP falls faster than in the baseline economy, alleviating inflationary pressures on domestic producers. Nominal exchange rate depreciation is more negligible, with faster appreciation dynamics after that. Finally, the current account improvement is more limited since the combination of higher imports and lower exports worsens the trade balance. In the long run, the lower levels of reserves accumulated generate less resources for the economy, which does not allow to afford the larger current account deficit sustained in the baseline scenario.

**13.** **Holding reserves constant would have led to a welfare gain of 0.02 percent units of consumption for the households.** We compare the two models, the baseline and the counterfactual economy. Given the paths of consumption, labor supplied, and inflation of both models, the welfare gain is defined as the additional units of consumption that households should receive every period, such that the two economies are indifferent to the households. According to the simulations, households should receive 0.02 percent units of consumption as compensation for living in an economy with the baseline reserves accumulation rule rather than living in a world with a constant reserves rule. Figure 5a and Figure 5b provide some intuition for the welfare gain: the lower reserve accumulation allows households to consume more, work fewer hours, and enjoy a lower level of inflation in the short-run, at the onset of the remittance growth period, which provides a higher level of utility. In the long run, the inflation rate and the hours households work are roughly the same for both economies. At the same time, consumption levels are higher in the baseline economy, owing to the initially higher saving rate. However, since households are impatient, the short-run gains more than compensate for the higher long-run benefits of higher consumption, explaining the welfare gain of the counterfactual economy.

**14.** **Relaxing the domestic goods-imports elasticity improves GDP in the long-run (Figure 7).** To assess the robustness of our results, we ease the assumption concerning the elasticity of domestically produced good and imports, and we compare the results with the baseline model. We recalibrate the model to match the observe patterns of reserves accumulation of the two models. Relaxing the elasticity of substitution assumption reduces the negative long-run effects on GDP. As in the baseline calibration, higher remittances inflow increases the demand for domestically produced goods, which is partially satisfied by lower exports. However, the increased marginal utility of consumption does not impact labor supply in the long run, thus eliminating the negative effects on production of domestic goods. The dynamic response of the current account balance and the welfare experiment are not affected by this robustness check.

**Figure 6b. Counterfactual Exercise–Part II**

*GDP falls sooner than in the baseline economy....*

*Reducing inflationary pressure....*



**GDP**
(Percent, from steady state)

**CPI Inflation**
(Percent)
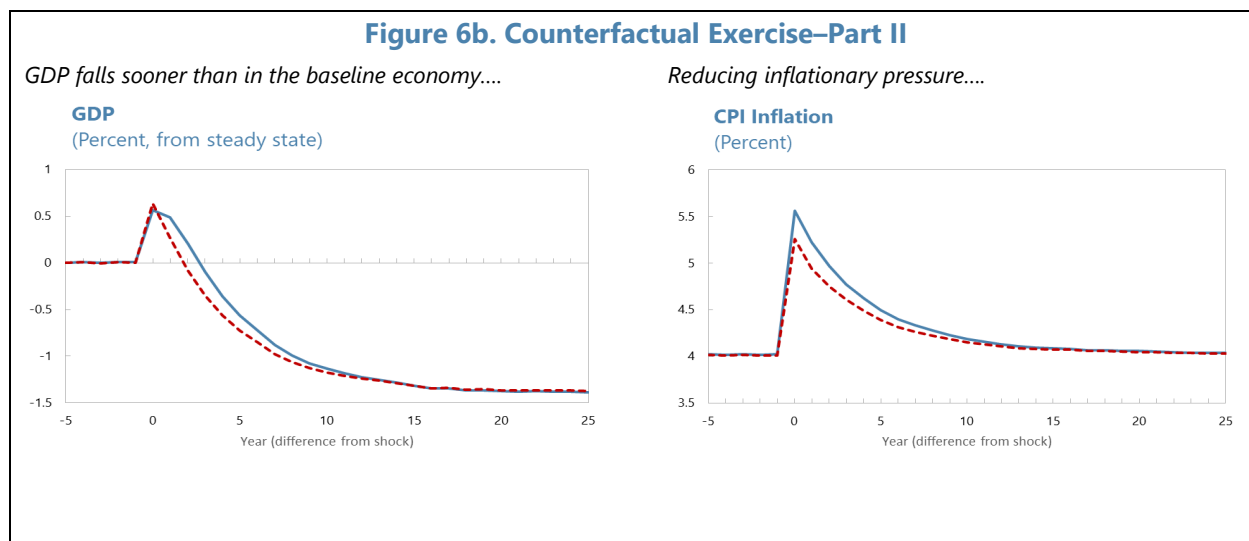
## Figure 6b. Counterfactual Exercise–Part II (concluded)

*Leading to lower nominal depreciation and faster appreciation in the short-run....*

*With a weaker current account improvement in the short-run, and a higher current account deficit in the long-run.*

**Nominal Exchange Rate change**
(Percent)
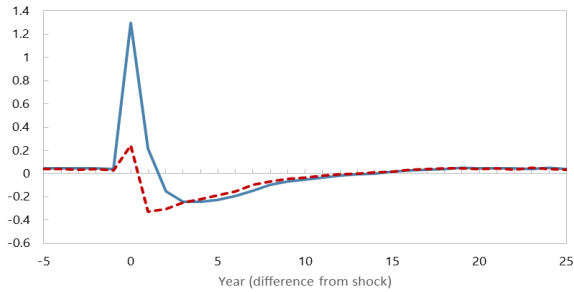
**Current Account**
(Percent of GDP)
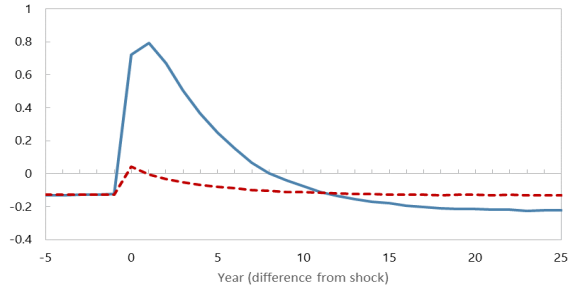
Source: IMF Staff elaboration.

## Figure 7. Counterfactual Exercise with Robustness-Check Calibration

**Imports**
(Percent of GDP)
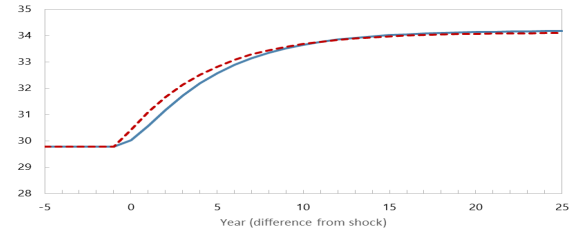
**Exports**
(Percent of GDP)
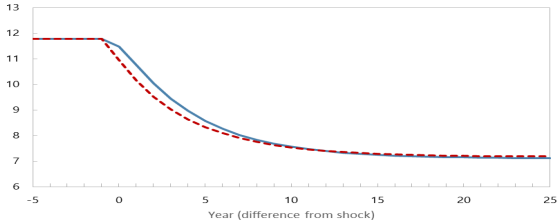
**Domestic Consumption**
(Percent, from steady state)

**GDP**
(Percent, from steady state)
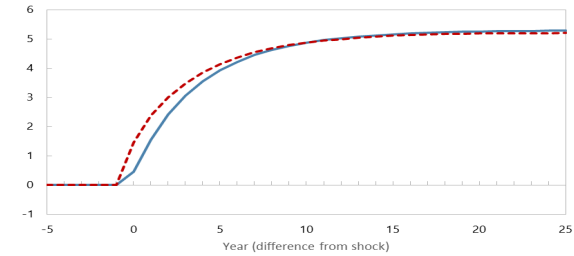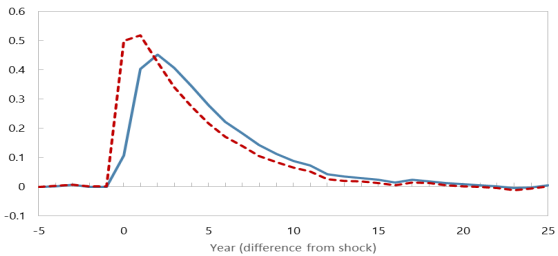
**CPI Inflation**
(Percent)
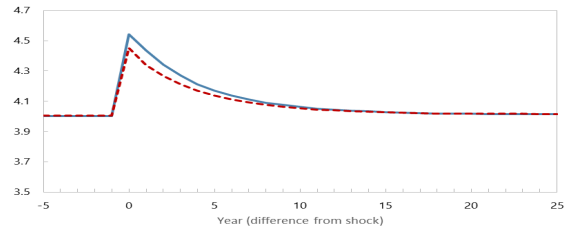
**Current Account**
(Percent of GDP)
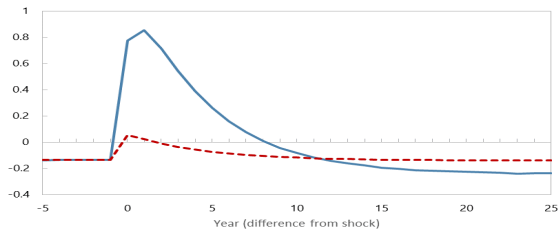
Source: IMF Staff elaboration.
Note: baseline (solid); counterfactual exercises (dotted).

## D. Conclusion

**15.      Transitioning from a low-remittance to a high-remittance country leads to structural changes in the economic model.** Guatemala has seen remittances doubling as a percentage of GDP from 2008 to 2022. This structural change has modified the composition, sign, and magnitude of the current account. The large remittance inflow has improved the sustainability of trade deficits, with higher current account balances fueled by strong reserve accumulation.

**16.      Higher remittance inflows have positive effects on consumption yet negative effects on production.** The large inflow of remittances allows households to sustain higher consumption levels, both imports and domestic goods, thus having a positive welfare effect. However, higher remittances lead to a permanently lower GDP in the long run. This decline is rationalized by a deterioration of the terms of trade, which makes exports less favorable, thus reducing the need to produce domestic goods despite the higher levels of domestic consumption.

**17.      Keeping the reserves/imports ratio constant would have improved welfare along the transition from a low remittance to a high remittance country.** As previously discussed in the counterfactual exercise and the welfare experiment, a different reserves accumulation rule that keeps the reserves/imports ratio constant at 4.3 months of imports would have led to a welfare gain of 0.02 units of consumption. Such gain would have arisen from additional volumes of imports and additional domestic consumption in the initial phase of the transition, which would have more than compensated for the (smaller) additional consumption in the long run.

**Box 1. A Small Open Economy New-Keynesian DSGE Model for Guatemala**

**Model structure.** The model is a small open economy which follows Gali and Monacelli (2005), also followed by Arellano et al (2020), with two types of goods and four agents, i.e. households, domestic producers, monetary authority and rest of the world. The types of goods are:

- *Domestic goods:* produced by domestic firms and consumed by households and the rest of the world (exports)

- *Foreign goods:* produced by the rest of the world, imported and consumed by households.

The types of agents are:

- *Households:* consume the two types of goods, supply labor to domestic firms in exchange for a wage, receive remittances from the rest of the world, profits from domestic firms and a (net) transfers from the monetary authority. The budget constraint of households, in units of the domestic goods can be represented as:

$$C_D + pC_F = wh + pr + pa - pq_a a' + Z_D$$

where $C_D, p, C_F, w, h, r, a, a', q_a, Z_D$ represent, respectively: domestic consumption, terms of trade, imports, real wages, hours worked, remittances, initial reserves, final reserves, price of buying one unit of reserves and profits from domestic producers. Households aggregate domestic consumption and imports through a CES function, which yields a consumption basket $C$:

$$C = \left(\gamma C_D^{-\mu} + (1-\gamma)C_F^{-\mu}\right)^{-\frac{1}{\mu}}$$

With $\gamma, \mu$ being, respectively, the share of domestic goods in the consumption basket and the elasticity of substitution between domestic goods and imports.

Subject to the budget constraint, households choose the optimal values $C_D, C_F, h$ that solve the maximization problem:

$$\max_{C_D, C_F, h} E \sum_{t=0}^{\infty} \beta^t \left(\frac{C_t^{1-\sigma}}{1-\sigma} - \frac{\chi}{1+\varphi}h^{1+\varphi} - \frac{\chi_\pi}{2}(\pi - \bar{\pi})^2\right)$$

The instantaneous utility function displays risk aversion in consumption and a quadratic disutility from inflation. This functional form (see Ottonello and Perez (2019)) is a reduced form version a model with cash-in-advance constraint or money in the utility function and it is intended to capture the welfare cost of inflation, as shown in Lucas (2000).

- *Domestic firms:* produce domestic goods in a monopolistically competitive environment with price-adjustment costs (a la Rotemberg) and sell the goods to households and the rest of the world. There is a continuum of firms in the unit interval, each producing a different variety $j$ of the domestic good. The demand schedule faced by each firm is:

$$Y_t(j) = \left(\frac{P_t^D(j)}{P_t^D}\right)^{-\epsilon}$$

where the numerator is the price set by the individual firm, the denominator is the aggregate price of domestically produced goods and $\epsilon$ is the elasticity of substitution of the individual variety of the differentiated good. The production function of the differentiated good is represented as:

**Box 1. A Small Open Economy New-Keynesian DSGE Model for Guatemala (continued)**

$$Y_t(j) = z_t h_t(j)$$

where $z$ is the aggregate productivity. Subject to the demand schedule and the production function, and the production function each firm solves the maximization problem:

$$\max_{P_t(j)} E \sum_{t=0}^{\infty} \Lambda_{t,t+1} \left( P_t^D(j) Y_t(j) - w_t h_t(j) - \frac{\phi}{2} \left( \frac{P_t^D(j)}{P_{t-1}^D(j)} - \bar{\pi} \right)^2 Y_t \right)$$

where $\Lambda$ is the stochastic discount factor from the households' problem and $\phi$ is the price-adjustment cost in the Rotemberg setup. Each firm faces the following demand for exports:

$$X_t(j) = p_t^\rho \bar{X}$$

where we denote with $\rho$ the elasticity of exports with respect to the terms of trade and $\bar{X}$ is a demand shifter.

- *Monetary authority:* sets the inflation rate (CPI) of the economy and engages in the market for international reserves, transferring the (net) profits of the operations to households. CPI Inflation is characterized by the following equation:

$$\pi = \pi^* \Delta e \left[ \frac{(1-\gamma)^{\frac{1}{1+\mu}} + \gamma^{\frac{1}{1+\mu}} p^{-\frac{\mu}{1+\mu}}}{(1-\gamma)^{\frac{1}{1+\mu}} + \gamma^{\frac{1}{1+\mu}} p_{-1}^{-\frac{\mu}{1+\mu}}} \right]^{\frac{1+\mu}{\mu}}$$

where $\pi, \pi^*, \Delta e$ represent CPI Inflation, foreign inflation and nominal exchange rate change. The monetary authority accumulates reserves following the empirical rule given by:

$$a' = \beta_0 + \beta_1 z + \beta_2 r + \beta_3 a$$

- *Rest of the world:* buy domestic goods from domestic firms (exports), sell foreign goods to households (imports), sell international reserves to the monetary authority and transfer resources to households in the form of remittances.

The (domestic) goods market clearing condition and the Balance of Payment (BOP) condition of this economy can be represented as:

$$C_D = y - X$$
$$C_F = r + a - q_a a' + \frac{X}{p}$$

The stochastic process for the aggregate productivity follows a log-normal AR(1) process, while the stochastic process for remittances follows and AR(1) process with drift.

**The model is solved using non-linear solution techniques.** The Euler equation method is employed for solving the model, a solution technique that delivers accurate results both close to and far away from the steady state. In particular, the method used is the policy function iteration (Coleman, 1990) and time iteration (Judd, 1998). Expectations are computed using Gaussian quadrature (in particular, the Gauss-Hermite polynomials), using linear interpolation over the exogenous state variables $z, r$ and cubic spline interpolation over the endogenous state variables $p, a$.

**Box 1. A Small Open Economy New-Keynesian DSGE Model for Guatemala (concluded)**

**The model is calibrated to Guatemala's data from 2008 to 2022.** The calibration process truncates the data in two subsets, before and after 2015. We assume that before 2015 the remittances process follows an AR(1) with a "low" drift process, while after 2015 the drift regime unexpectedly shifts to "high". The reserves accumulation rule is calibrated to match the average reserves/imports ratios before and after the regime change, while all the other parameters are calibrated from the literature, the data and internally.

**The impulse response functions simulate an unexpected rise in remittances.** We simulate the unexpected change in the regime process for remittances and we compute the response of the variables following the shock. Prior to the shock, remittances follow a process with a "low" drift. When the shock occurs, remittances start following a process with a "high" drift for the remainder of the simulation period.

**The counterfactual exercise simulates a constant reserves/imports accumulation rule.** In our simulation we compare the baseline model with another model where the monetary authority follows a different reserves accumulation rule. More specifically, we assume that the monetary authority keeps the reserves/imports ratio constant to the steady state value of the "low" remittance process. We then repeat the calibration exercise and the impulse response functions with this alternative policy rule and compare the results of the two models in terms of economic performance.

**The welfare analysis assesses the performance of the baseline model in terms of the constant reserves/imports model.** We compare the baseline and the alternative model to assess the welfare gains arising from having a different reserves accumulation rule. The value functions of the baseline and the alternative models are represented, respectively, as:

$$V_{B,t} = E \sum_{t=0}^{\infty} \beta^t \left( \frac{C_{B,t}^{1-\sigma} - 1}{1 - \sigma} - \frac{\chi}{1 + \varphi} h_{B,t}^{1+\varphi} - \frac{\chi_\pi}{2} \left( \pi_{B,t} - \bar{\pi} \right) \right)$$

$$V_{A,t} = E \sum_{t=0}^{\infty} \beta^t \left( \frac{C_{A,t}^{1-\sigma} - 1}{1 - \sigma} - \frac{\chi}{1 + \varphi} h_{A,t}^{1+\varphi} - \frac{\chi_\pi}{2} \left( \pi_{A,t} - \bar{\pi} \right) \right)$$

The welfare gain from the alternative model is characterized by $\lambda$, which denotes the extra units of consumption that households should receive in every period under the baseline scenario such that the value function of the baseline economy matches the value function of the alternative economy. Following Samano (2022) we use the same realizations of the exogenous state variables, productivity and remittances, to construct the time series of consumption, hours worked and inflation for both models. Both patterns simulate the immediate switch from "low" to "high" remittances.

Source: IMF Staff based on SPR tool adapted for Guatemala

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# CLOSING GENDER GAPS IN LABOR MARKETS: UNTAPPED OPPORTUNITIES TO BOOST ECONOMIC GROWTH [1]

*Gender gaps in labor markets have remained significant overtime in Guatemala and hinder economic growth. The estimated potential large gains of closing labor force participation gaps are about 30 percent of GDP. This note describes the gender gaps in labor market in Guatemala, estimates the macroeconomic gains of closing the identified gaps, and describes the link between remittances and female labor force participation in Guatemala. The analysis finds evidence that migration and remittances are linked to lower female labor force participation in Guatemala. Other factors such as social norms, gender gaps in education, and low female empowerment play also a role.*

## A.  Gender Gaps in Guatemala's Labor Market

**1.      At 40 percent, Guatemala's female employment continues to trail male employment levels (Figure 1).** Despite some co-movement in the aftermath of the Global Financial and the Covid-19 crisis in the female and male employment ratios, gaps widened pre-COVID, with the female employment-to-population ratio further dropping, while male employment increasing



**Figure 1. Employment Gap in Guatemala**

Source: Word Bank, ILO, and IMF Staff's calculations.

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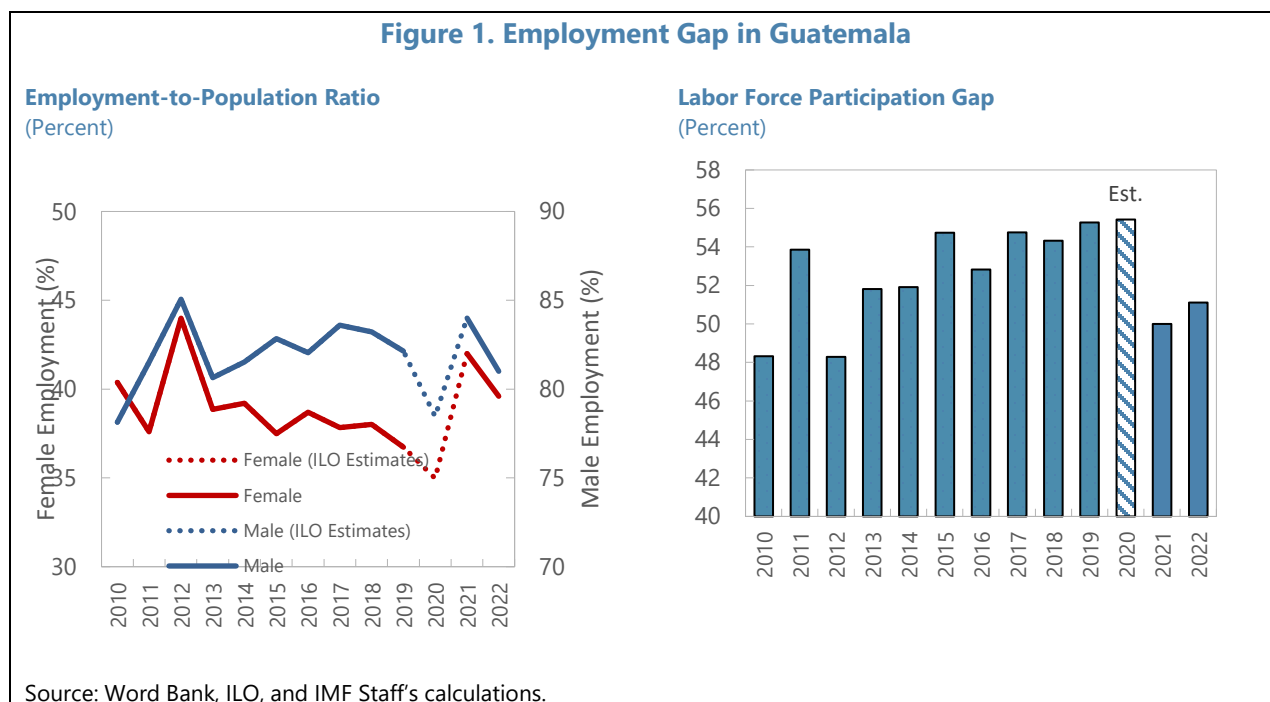
[1] Prepared by Paula Beltran and Maria Oliva, with inputs from SPR Gender Unit.

until year 2019 (Figure 1, left panel). The male-female employment gap[2], was estimated at 48 percent in 2010. The latest data shows the 2022 female employment ratio is about half of the males (Figure 1, right panel).

**2.      Significant labor force participation gaps have contributed to a sizable male-female employment gap if compared against regional and income-group peers (Figure 2).** In 1980, Guatemala's female labor force participation levels were close to 14 percent, with 2010-2019 levels surging to a 40 percent average rate and stalled in recent years. Despite this significant progress, Guatemala's gender gap in labor force participation, estimated at 54 percent in 2021-22, remains the highest among CAPDR region economies and well above Guatemala's similar income-group peers' levels (Figure 2, left panel). Guatemala's large labor force participation gap (Figure 2, right panel) is due to low female labor market participation, which exceeds 15 percentage points of the regional median levels.



**Figure 2. Participation and Employment Gap, 2022**

Source: Word Bank, ILO, and IMF Staff's calculations.
Note: The gap is defined as the ratio difference with respect to equality. For example, a gap of 51 percent implies female participation is below male participation by 51 percent.
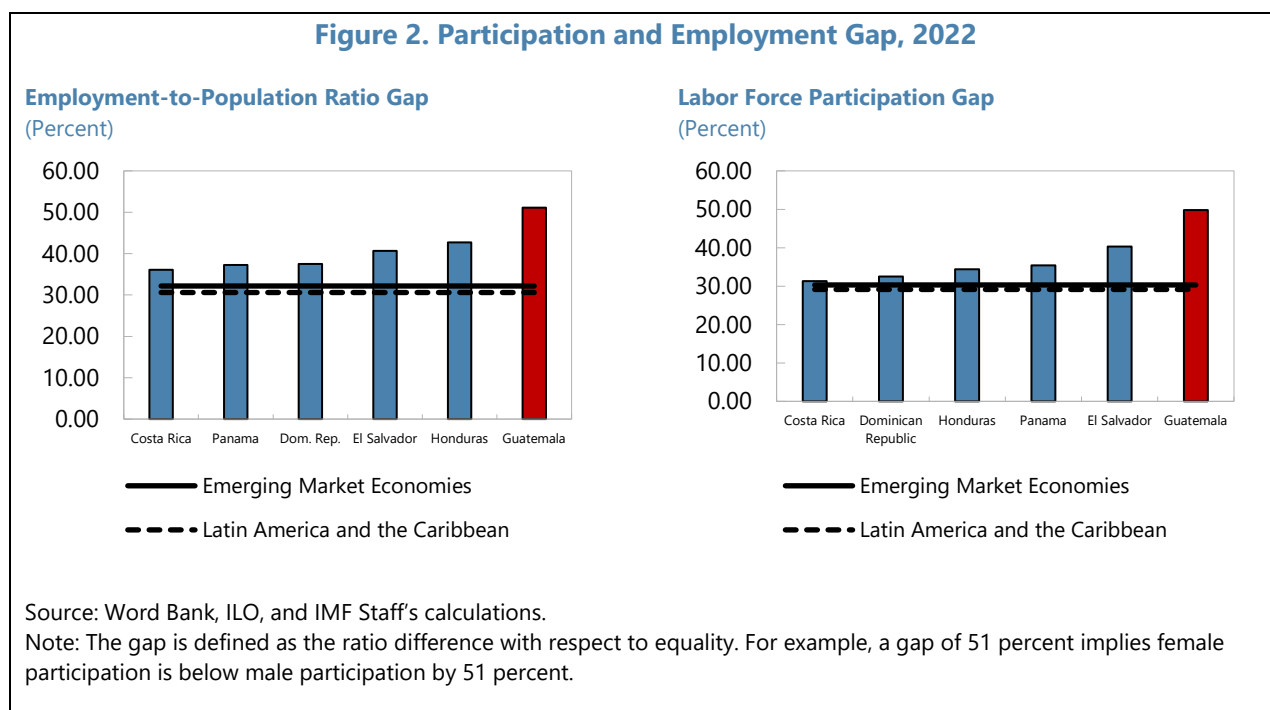
**3.      Reducing gender gaps in labor markets in Guatemala will unlock untapped resources and foster inclusive economic growth.** Low female labor participation is a constraint on growth potential (IMF, 2013). The correlation between female labor force participation and GDP per capita among middle- and high-income countries is positive (Figure 3). For example, countries with GDP per capita levels exceeding Guatemala's level by about 10 percent are associated with female labor force participation rates that are roughly 9 percent higher.

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[2] The male-female employment gap is defined as $\frac{MaleEmploymentR - FemaleEmploymentR}{MaleEmploymentR}$. This ratio ranges between 0 and 1 and uses employment ratios to population by gender (i.e., 0 male-female employment gap means full equality).

**Figure 3. Female Labor Participation and Development
Labor Force Participation Across Countries**
(In Percent of Female Population)



Source: World Development Indicators 2019 and IMF Staff's calculations.
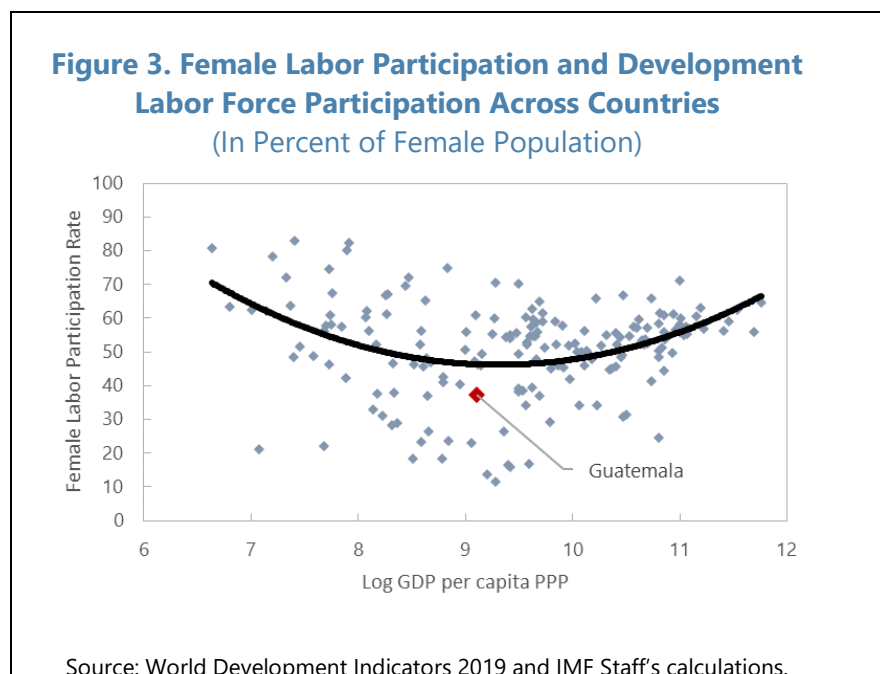
## B.   Macroeconomic Gains of Closing Gender Gaps in Guatemala

**4.      Staff measured the potential economic gains of closing gender gaps in Guatemala's labor market using *the back of the envelop* SPR's Equity Gains method.** This estimation calculates the GDP gains of closing unemployment, participation, wage, and occupational gender gaps by conducting counterfactual scenarios under the assumption that wages reflect the marginal product of labor (Box 1). [3]

**5.      Estimated GDP gains of closing gender gaps for Guatemala are at 33.7 of GDP (Figure 4).** Major gains would be achieved by reducing female participation gaps in the market, followed by a reduction of the wage gap (Figure 4). By factor, the 33.7 percent estimated gains can be decomposed as follows:

- **Unemployment Gap (potential gains = 0.3 percent of GDP):** Female formal unemployment In Guatemala was 3.4 percent in 2022, but 2.2 percent for males. Equity gains associated with closing the unemployment gap are small (albeit positive), in line with small unemployment gaps.

- **Participation Gap (potential gains = 25.4 percent of GDP):**  Female participation in the labor market shows a large gap, and thus, there are large potential output gains by closing it over the medium-term. For instance, closing the participation gap by 1/5 of the existing gap would bring significant gains—i.e., about 0.5 percent in potential output growth per year. Furthermore, GDP potential gains are twice the median of income peers (Figure 4, right panel), consistent with an above the median participation gap that continues to widen for Guatemalan females.

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[3] This exercise does not consider equity gains from closing gaps in hours worked due to data limitations.

- **Wage Gap (potential gains = 7.8 percent of GDP):** Gains associated with closing the wage gap would be driven by the 14.4 percent wage differential between Guatemala's female and male working population.

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**Figure 4. GDP Gains of Closing Gender Gaps in Labor Markets in Guatemala**

**GDP Gains of Closing Gender Gaps in Labor Markets by 100 percent** (Percent of GDP)
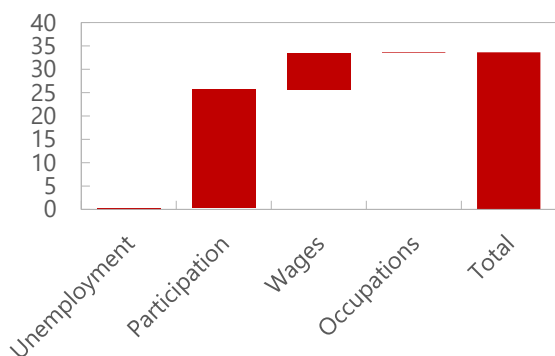
**GDP Gains of Closing Labor Force Participation Gap** (Percent of GDP)
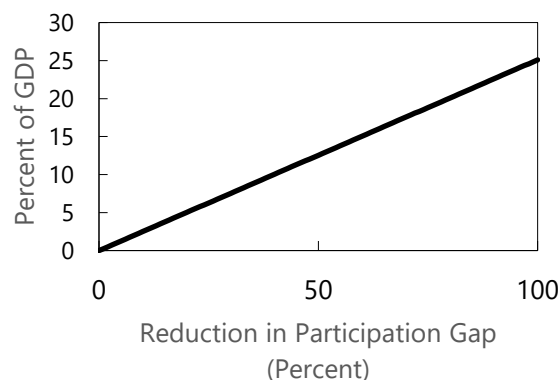
**Medium-Term Potential GDP Gains of Closing the Female Labor Market Participation Gap by 20 percent** (100= 2023 GDP)
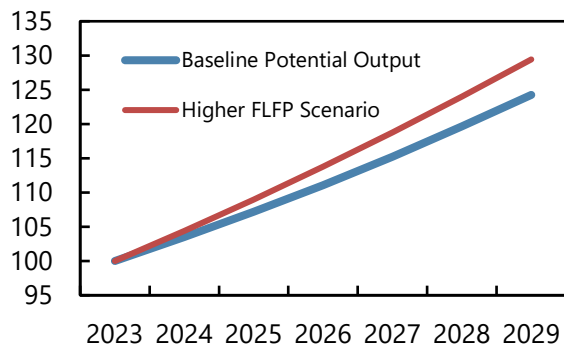
**GDP Gains of Closing the Female Labor Market Participation Gap /1**
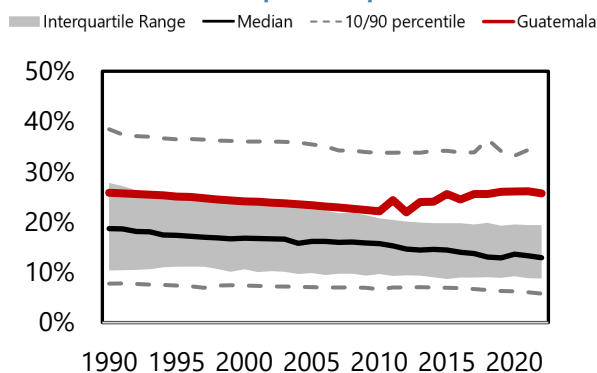
Source: Word Bank, ILO, and IMF Staff's calculations.
1/ Based on Ostry, Alvarez and Papgeorgiou (2018) using $\delta = 0.6, \sigma = 100. \pi = -1$

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- **Occupational Gaps (potential gains = 0.2 percent of GDP):** Occupational gaps in Guatemala in high skill jobs remain and potential gains are estimated at 0.2 percent of GDP.

## Box 1. Computing GDP Gains of Closing Gender Gaps

**The quantitative analysis of Guatemala's economic gains of closing gender gaps in the labor market draws from SPR's tool (2023).** The tool uses a shift-share technique developed in Buckman et. al. (2021) to construct a counterfactual world with no gender gaps if different labor market measures (employment rates, earnings, and occupational shares) are used. The analysis computes the total gains to GDP to be obtained by closing existing gender gaps. The computation assumes the floor of each labor market measure equals that of men.

**The group-specific labor contribution to GDP is calculated as:**

$$GDP^{Counterfactual} = \sum_{g=\{female,male\}} \sum_{occupation} Pop_g * Participation_g * (1 - u_g) * S_{g,occupation} * W_{g,occupation} \, ,$$

where $g$ is gender and $occupation$ is the type of worker. We classify workers in 3 skill-levels: manager and professional; technicians; and clerical support, services, agricultural, machine operators and craft workers. The key explanatory variables used to explain the counterfactual GDP ( $GDP^{Counterfactual}$) are:

- $Pop_g$ is the working age population over the age of 15 from the World Bank.

- $Participation_g$ is the participation rate from the World Bank.

- $u_g$ is the gender-specific unemployment rate from ILO.

- $S_{g,occupation}$ is the gender-specific occupation share from ILO.

- $W_{g,occupation}$ is the gender-specific average wages from ILO.

**The counterfactual exercises adjust the GDP by closing the gaps sequentially as follows:**
- *Closing the participation gap:* This counterfactual assumes an increase in the female participation rate, while holding the remaining variables fixed. The implied GDP is:

$$GDP^{Counterfactual}_{Participation} = \sum_{g=\{female,male\}} \sum_{occupation} Pop_g * Participation_{male} * (1 - u_g) * S_{g,occupation} * W_{g,occupation} \, ,$$

and the gains with respect with the baseline are computed as:

$$\Delta GDP^{Counterfactual}_{Participation} = \sum_{g=\{female,male\}} \sum_{occupation} Pop_g * (Participation_{male} - Participation_g) * (1 - u_g) * S_{g,occupation} * W_{g,occupation}.$$

- *Closing unemployment gaps:* This counterfactual assumes a reduction in the female unemployment rate, while holding the remaining variables fixed. The implied GDP is:

$$GDP^{Counterfactual}_{unemployment} = \sum_{g=\{female,male\}} \sum_{occupation} Pop_g * Participation_{male} * (1 - u_{male}) * S_{g,occupation} * W_{g,occupation} \, ,$$

<div style="border:1px solid">

**Box 1. Computing GDP Gains of Closing Gender Gaps (concluded)**

and the gains with respect with the baseline are computed as:

$$\Delta GDP_{unemployment}^{Counterfactual} = GDP_{unemployment}^{Counterfactual} - GDP_{participation}^{Counterfactual}.$$

- *Closing earning gaps*: This counterfactual assumes an increase in wages by occupation, while holding the occupational shares fixed. The implied GDP is:

$$GDP_{earnings}^{Counterfactual} = \sum_{g=\{female,male\}} \sum_{occupation} Pop_g * Participation_{male} * (1 - u_{male}) * S_{g,occupation} * W_{occupation}^{Max},$$

where $W_{occupation}^{Max}$ is the male average wage when it is higher than that of female average wage and vice versa.

- *Closing occupation gaps*: This counterfactual assumes placing workers in more skilled occupations. The exercise assumes the share of workers by occupation of the counterparts. The implied GDP is:

$$GDP_{occupations}^{Counterfactual} = \sum_{g=\{female,male\}} \sum_{occupation} Pop_g * Participation_{male} * (1 - u_{male}) * S_{occupation}^{best} * W_{occupation}^{Max},$$

Where $S_{occupation}^{best}$ is the counterfactual occupational share.

Source: IMF Staff based on SPR tool adapted for Guatemala

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## C.  Social Norms and Women Empowerment in Guatemala

**6.      Social norms in Guatemala and low women empowerment can impact labor market gender gaps**. The literature shows that social norms can constrain female labor market participation.[4] Previous studies show women empowerment, visibility, and social norms about childcare and domestic tasks weigh on female labor market participation.

**7.      Women in Guatemala have lower political and economic empowerment than men** (Figure 6 and 7)**.** Political representation remains below that of men in Guatemala and below that of regional and income peers. The legal framework is also not fully aligned with women's empowerment, and women's economic empowerment remains below that of men. In addition to lower labor force participation rates, women's earnings in the private sector are lower than men. At the same time, women's self-employment rate is 40 percent, reflecting high levels of informality and low incentives to participate in the formal labor market.

**8.      Social norms related to teen pregnancy and early marriage can also affect women's labor market outcomes.**  Teenage pregnancy is six percent, higher than the income peer average,

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[4] See, for example, Alesina et. al., 2013; Bertrand et. al., 2015; Chamlou et. al., 2016; Fernandez, 2013; Gauri et. al., 2019; and the World Bank, 2012.

and women suffer high maternal mortality rates. In addition, seven percent of women in Guatemala are married before the age of 15 and 30 percent before the age of 18, in line with the regional average but above the levels of income peers. Staff estimates significant economic benefits of reducing child marriage in Guatemala (Box 2). Female childcare and domestic work are also important for women, as women spend 7.5 times more hours on unpaid work than men.

## Figure 5. Gender Indicators: Health

*Adolescent fertility rates continue above income peers limiting labor participation*

*Maternal mortality ratio continues to be high…*

**Adolescent Fertility Rate**
(Births per 1000 Women Ages 15-19)

**Maternal Mortality Ratio**
(Ratio per 100000 Births)
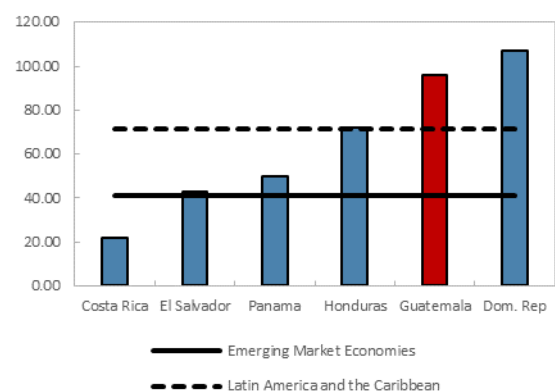


Source: IMF staff using UNDP's Gender Development Index Database, UNDP's Gender Inequality Index Database, WEF's Global Gender Gap Index, ILO's ILOSTAT Database, WB's World Development Indicators.

# Figure 6. Gender Indicators: Leadership, Social, and Demographic

*Women in leadership is below regional peers...*

## Parliament Seats Held by Women
(Ratio to Total Seats, Percent)



— Emerging Market Economies

---- Latin America and the Caribbean

## Women in Ministerial Level-Positions
(Ratio to Total Ministerial Positions, Percent)



— Emerging Market Economies

---- Latin America and the Caribbean
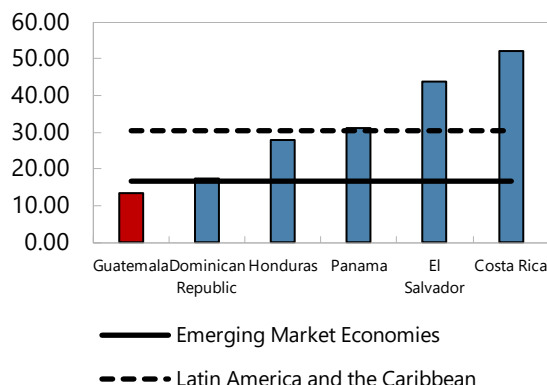
*Business climate is also below peers*

## Women Business and the Law Index
(Index, 0-100)



— Emerging Market Economies

---- Latin America and the Caribbean
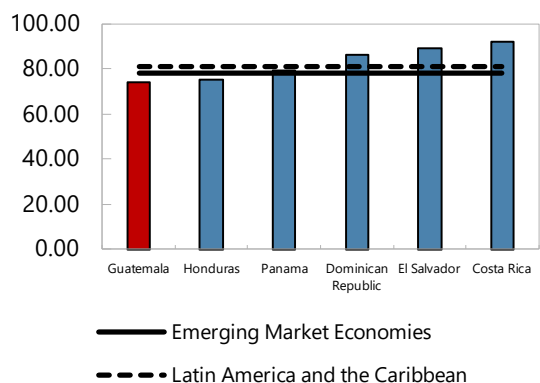
*And domestic violence compares with regional peers*

## Experienced Domestic Violence
(Percent)



— Emerging Market Economies

---- Latin America and the Caribbean
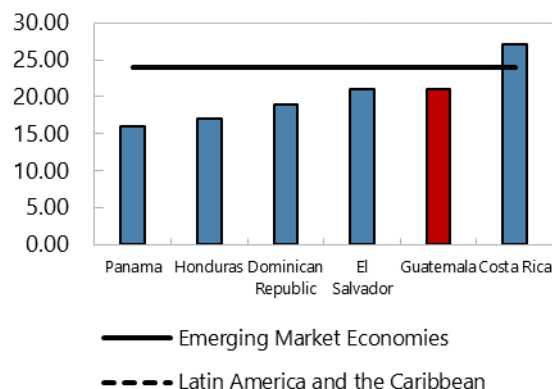
## Women Aged 20-24 Married before Age 15
(Percent)



— Emerging Market Economies

---- Latin America and the Caribbean
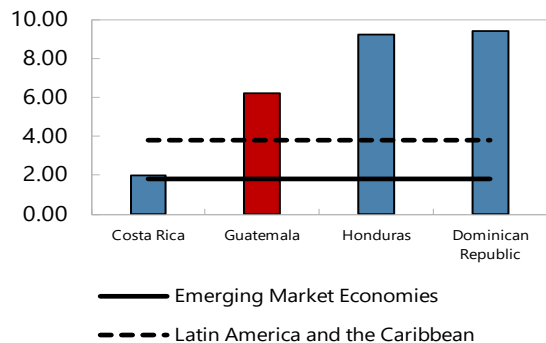
## Women Aged 20-24 Married before Age 18
(Percent)
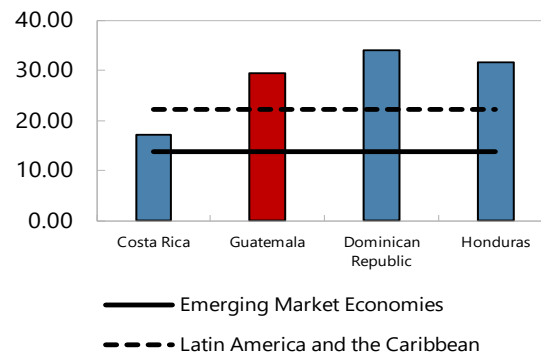


— Emerging Market Economies

---- Latin America and the Caribbean

Source: IMF staff using UNDP's Gender Development Index Database, UNDP's Gender Inequality Index Database, WEF's Global Gender Gap Index, ILO's ILOSTAT Database, WB's World Development Indicators.

## Figure 7. Gender Indicators: Labor and Income

*Women's earnings in the private sector are below those of men*

*While women's earnings in the public sector are broadly aligned with those of men*

**Private Sector Median Earnings**
(Female to Male Ratio, Percent)



**Public Sector Median Earnings**
(Female to Male Ratio, Percent)
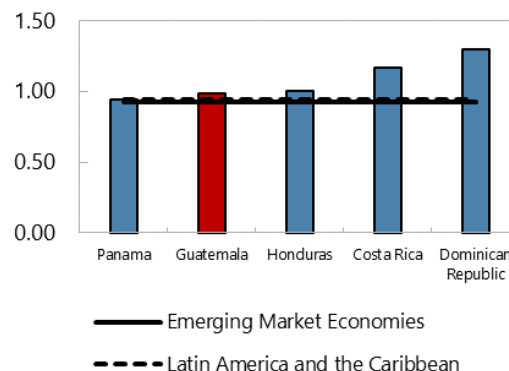


*The ratio of female full-time workers is still lagging but approaching the average of EMEs...*

*And female self-employment above regional and income peers.*

**Permanent Full-Time Workers**
(Ratio to Permanent Full-Time Workers, Percent)



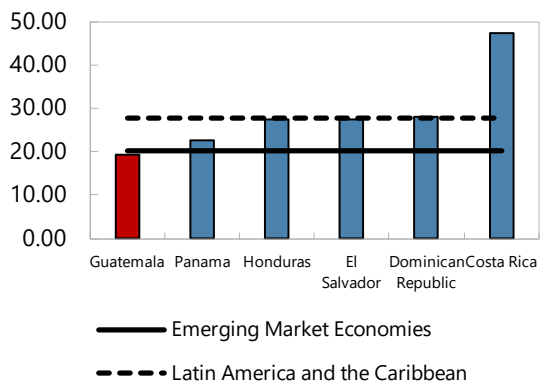**Female Self-Employment**
(Percent)
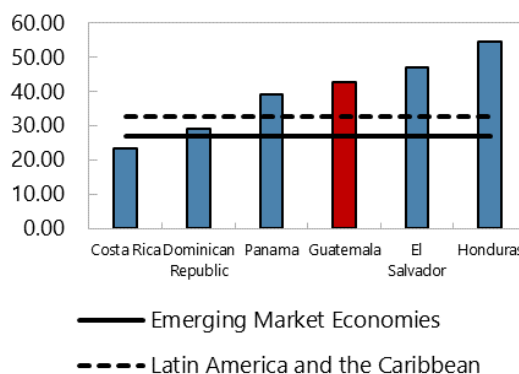


Source: IMF staff using UNDP's Gender Development Index Database, UNDP's Gender Inequality Index Database, WEF's Global Gender Gap Index, ILO's ILOSTAT Database, WB's World Development Indicators.

## D.   What is the Impact of Ample Remittances on Gender Gaps?

**9.        The broad-based surge in remittance inflows to Guatemala in the last decade disproportionally impacted women.** In 2022, remittance inflows accounted for 19 percent of GDP, well above export receipts. According to the 2022 OIM survey conducted for Guatemala,[5] about 40 percent of Guatemalans are directly benefiting from remittance inflows. Women are more likely to

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[5] The survey includes 3,500 households that were remittance recipients in 2022. It provides information on the size of remittances received, the number of household members, education, age, occupation, and gender, among other characteristics.

receive remittances and receive larger receipts per remittance inflow than men. The survey reports that, on average, women receive U.S.$168 per capita per month, while men receive U.S. $125 on average.

**Guatemala: Remittances**
(Percent of GDP)



Sources: World Bank World Development Indicators, and IMF Staff's calculations

**10. Significant remittance inflows could impact labor market outcomes.** The effect of remittances on labor market outcomes could arise from many channels. On the one hand, remittances could positively impact the labor market when proceeds foster labor productivity via physical and human capital investment. On the other hand, remittances could reduce labor force participation by reducing the dependence on labor-related income and increasing the incentives to focus on non-market activities, such as caretaking. Previous research found households that receive remittances exhibit lower female labor force participation because of the incentives to focus on non-market activities (Cabegin, E. 2006; Ayalew, H. et al., 2022).
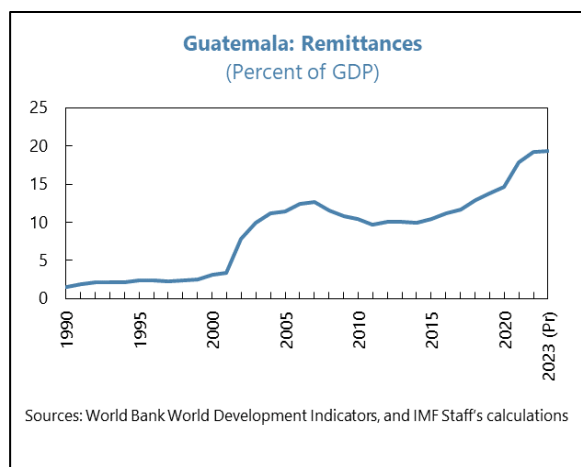
**11. Remittances are associated with reduced female labor force participation in Guatemala (Figure 8).** The 2022 OIM remittances survey revealed that, among households receiving remittances in 2022, the labor force participation rates were approximately 79 percent for men and 30 percent for women. These findings, along with national gender-based participation rates[6], suggest that individuals receiving remittances usually exhibit lower labor force participation rates, with a more pronounced effect observed among females. Women receiving remittances are approximately 20 percent less likely to participate in the labor market than those not. Nevertheless, the lower participation rates of women with respect to men also likely reflect caretaking responsibilities, social norms and development drivers (e.g., educational outcomes, poverty, among others).

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[6] The gender-specific ($g$) participation rate of the population not receiving remittances is defined as follows:

$(LFP_g - LFP_g^{receives} * share\_receivers_g)/ (1 - share\_receivers_g)$, where $LFP_g$ is the national estimate, $LFP_g^{receives}$ is the participation rate estimate from the OIM survey, and $share\_receivers_g$ is the estimated population share of individuals who receive remittances. This share is calculated assuming the survey's sample weights and a working-age population of 63 percent.

**Figure 8. Labor Force Participation and Remittances**
(Percent, 15+)



Sources: World Bank World Development Indicators, IOM remittances survey, and IMF Staff's calculations. Note: LFP of population that does not receive remittances is based on aggregate LFP ratios for 2022. Back of the envelope calculation assumes a 63 percent working age population.
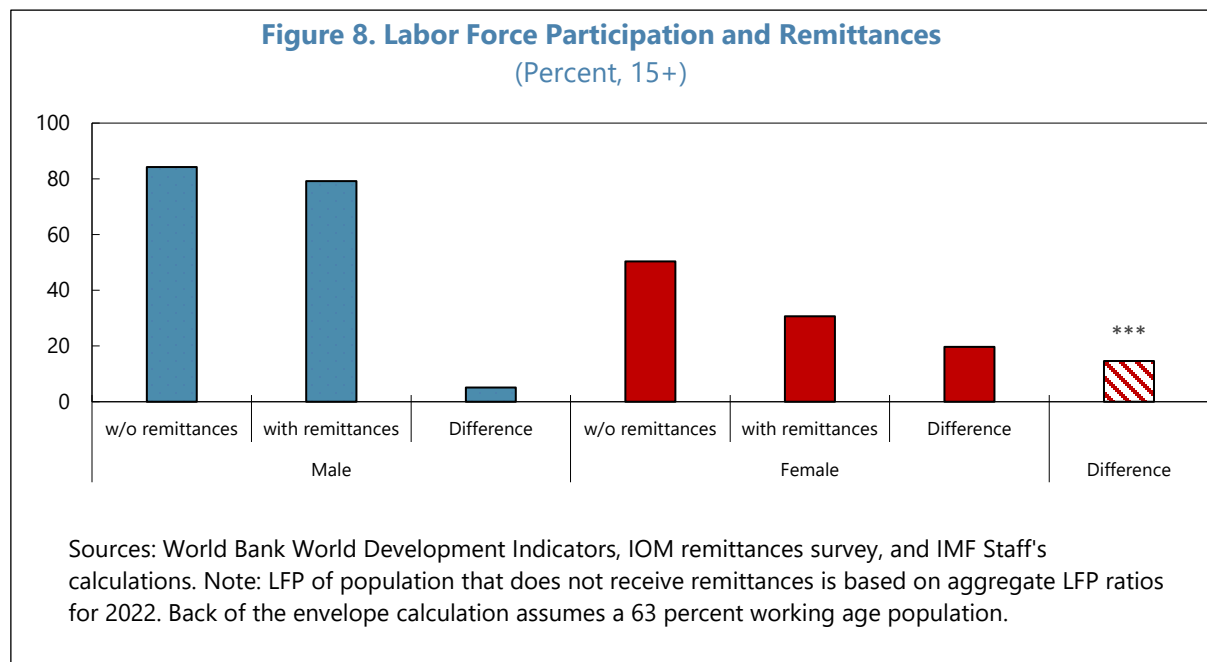
**12.     Cross-country empirical analysis shows that remittances are associated with lower female market participation (Table 1).** The analysis covered a panel of 133 countries between 1990-2022. After controlling for development levels[7], remittance inflows are one of the factors that help explain differences in female labor force participation across countries. Estimates indicate that one percent of GDP increase in remittance receipts is linked to a decline in female labor force participation of about ½ percentage points. Nevertheless, the analysis is not causal, and remittances are also capturing other confounding factors, including hours spent on unpaid work, child and elderly care. Given the large inflow of remittances in Guatemala, these results suggest that the level of remittances, along with caretaking responsibilities, social norms and women's empowerment, may affect women's labor market participation relative to the world average.

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[7] The estimation controls for other observed and unobserved confounders following the literature (IMF, 2018). Regressions include a second-order polynomial of the logarithm of GDP per capita, fertility rates, internet users, female secondary and tertiary education, male tertiary education, and urban population rate from the World Bank World Development Indicators. Regressions also include year fixed effects. Robustness checks include the labor market efficiency index of the World Economic Forum and the logistics performance index from the World Bank. The results on other covariates are broadly in line with the literature (IMF, 2013; IMF, 2016; Bloom et al, 2007; Chami et al, 2018)

**Table 1. Guatemala: Cross-Country Female Labor Market Participation Rate and Drivers**

| *Dependent Variable: Female Labor Market Participation Rate* | | | |
| --- | --- | --- | --- |
| | (1) | (2) | (3) |
| VARIABLES | | | |
| | | | |
| Log GDP | -52.19*** | -52.15*** | -46.98*** |
| | (6.480) | (8.186) | (10.20) |
| Squared Log GDP | 2.984*** | 2.840*** | 2.583*** |
| | (0.370) | (0.472) | (0.553) |
| Remittances as percent of GDP | -0.207*** | -0.133* | -0.473*** |
| | (0.0726) | (0.0765) | (0.175) |
| Fertility rate per 100 | -0.678 | 0.375 | -0.709 |
| | (0.626) | (0.860) | (1.181) |
| Internet Users | 0.0204 | 0.00320 | 0.0374 |
| | (0.0180) | (0.0193) | (0.0454) |
| Share of female secondary education | 0.118*** | 0.117*** | 0.122*** |
| | (0.0231) | (0.0253) | (0.0422) |
| Share of female tertiary education | 0.129 | 0.0647 | 0.173 |
| | (0.0814) | (0.0868) | (0.119) |
| Share of male tertiary education | 8.95e-05 | 0.0319 | -0.0193 |
| | (0.0841) | (0.0866) | (0.129) |
| Share of urban residents | -0.0888 | -0.129 | -0.0187 |
| | (0.0594) | (0.0972) | (0.0907) |
| Labor Market Quality Index | | | 0.0954 |
| | | | (1.151) |
| Logistics Performance Index | | | 0.665 |
| | | | (1.301) |
| | | | |
| Year Fixed Effects | YES | YES | YES |
| Country Fixed Effects | NO | YES | NO |
| Observations | 518 | 518 | 175 |
| R-squared | 0.294 | 0.445 | 0.429 |
| Number of countries | 133 | 133 | 84 |

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

Sources: World Bank World Development Indicators, World Economic Forum, and IMF Staff's calculations.

Notes: Box 2 describes the method and data.

## Table 2. Guatemala: Female Labor Market Participation Rate and Remittances: Microdata Evidence

| Dependent Variable: Labor Force Participation (1= Participates) | | | | |
|---|---|---|---|---|
| VARIABLES | (1) | (2) | (3) | (4) |
| Remittances per family member (thousands) | -0.00776* | -0.0143*** | -0.0242*** | 0.00942 |
| | (0.00421) | (0.00432) | (0.00630) | (0.0103) |
| Age | 0.0547*** | 0.0545*** | 0.0709*** | 0.00621 |
| | (0.00517) | (0.00503) | (0.00969) | (0.0144) |
| Age Squared | -0.000691*** | -0.000704*** | -0.000876*** | -7.54e-05 |
| | (6.83e-05) | (6.61e-05) | (0.000122) | (0.000169) |
| Indigenous | -0.0534* | -0.0236 | 0.0605 | -0.0429 |
| | (0.0273) | (0.0279) | (0.0471) | (0.0570) |
| Divorced | 0.0194 | 0.0327 | 0.166* | 0.113 |
| | (0.0629) | (0.0630) | (0.0861) | (0.161) |
| Married | -0.125** | -0.150*** | 0.00531 | 0.246** |
| | (0.0542) | (0.0546) | (0.0754) | (0.109) |
| Single | 0.0617 | 0.0438 | 0.0840 | 0.262* |
| | (0.0566) | (0.0568) | (0.0799) | (0.136) |
| Water | 0.0868*** | 0.0378 | 0.0270 | 0.154*** |
| | (0.0253) | (0.0267) | (0.0448) | (0.0522) |
| Electricity | -0.0237 | -0.0263 | 0.0284 | 0.0104 |
| | (0.0234) | (0.0235) | (0.0403) | (0.0443) |
| Phone | -0.0653 | -0.0585 | 0.0109 | 0.132 |
| | (0.0478) | (0.0483) | (0.0848) | (0.140) |
| Internet | -0.0239 | 0.0539** | 0.0122 | -0.00892 |
| | (0.0233) | (0.0242) | (0.0387) | (0.0560) |
| Illiterate | -0.352** | -0.400** | -0.729*** | 0.553* |
| | (0.161) | (0.165) | (0.225) | (0.312) |
| Primary Education | -0.175*** | -0.144*** | -0.131*** | 0.0229 |
| | (0.0234) | (0.0229) | (0.0383) | (0.0496) |
| Secondary Education | -0.137*** | -0.112*** | -0.153*** | -0.120** |
| | (0.0278) | (0.0266) | (0.0486) | (0.0598) |
| Number of Children | -0.00672 | 0.00238 | 0.0361 | -0.235*** |
| | (0.0235) | (0.0228) | (0.0325) | (0.0844) |
| Squared Number of Children | 0.00462 | 0.00460 | -0.00281 | 0.0429** |
| | (0.00509) | (0.00517) | (0.00720) | (0.0186) |
| Family Size | -0.0269* | -0.0429*** | -0.0432* | -0.00879 |
| | (0.0159) | (0.0136) | (0.0224) | (0.0375) |
| Squared Family Size | 0.00186 | 0.00248** | 0.00194 | 0.00108 |
| | (0.00129) | (0.00102) | (0.00189) | (0.00349) |
| Number of Senders | -0.00443 | -0.00402 | -0.00978 | 0.00809 |
| | (0.00318) | (0.00334) | (0.0378) | (0.0337) |
| Squared Number of Senders | 2.03e-06 | 1.85e-06 | -5.11e-05 | -0.000150 |
| | (1.59e-06) | (1.66e-06) | (0.000990) | (0.000336) |
| Owns a business | 0.283*** | 0.248*** | 0.289*** | 0.149*** |
| | (0.0255) | (0.0258) | (0.0407) | (0.0540) |
| Municipality Log GDP per capita | -0.0202 | | | |
| | (0.0353) | | | |
| Municipality Development Index | 0.00211 | | | |
| | (0.00396) | | | |
| Urbanization | 0.0222 | | | |
| | (0.0463) | | | |
| Size of Municipality | -4.85e-06 | | | |
| | (2.62e-05) | | | |
| Municipality Log Population | 0.0446*** | | | |
| | (0.0150) | | | |
| Indigenous Descendent Population | 0.0466 | | | |
| | (0.0479) | | | |
| Sample | Female | Female | Female Administers | Male |
| Departmento Fixed Effects | YES | YES | YES | YES |
| Municipality Fixed Effects | NO | YES | YES | YES |
| Method | OLS | OLS | OLS | OLS |
| Observations | 2,154 | 2,422 | 948 | 340 |
| R-squared/Chi-squared | 0.232 | 0.287 | 0.397 | 0.370 |
| Standard errors in parentheses | | | | |
| *** p<0.01, ** p<0.05, * p<0.1 | | | | |

Sources: 2022 IOM Remittances Survey, Fundesa, and IMF Staff's calculations.

Note: Municipality GDP is the GDP by territory in U.S.$ terms for square kilometer.

**13.      Cross-sectional evidence for Guatemala shows that social and demographic characteristics and educational attainment affect female labor market participation (Table 2).** There is evidence that family composition in Guatemala affects female participation. Larger families tend to have lower participation rates, suggesting the importance of child and elder care. Married women also have lower participation rates, likely reflecting social norms. Access to public services is associated with higher participation rates, suggesting that poverty levels may also be associated with lower participation rates. Education improves women's participation. Women with primary and secondary education have lower participation rates than women with tertiary education.

**14.      Microdata evidence also suggests that, while other factors are likely more important in explaining female labor market participations, increases in remittances are associated with lower female labor market participation.** [8] (Table 2). The estimates show one standard deviation increase in remittances per household member decreases female labor force participation by 4.2 percent. The impact is more pronounced on women who directly receive and administer these inflows. Interestingly, no significant effect of remittances on male labor force participation is observed (Table 2, column 4), suggesting a female-specific remittances effect on labor force participation.

**15.      Staff's empirical results are likely a lower bound (Table 3).** The results in Table 2 are subject to endogeneity concerns, given other confounding factors that explain migration and participation, and should therefore not be interpreted as causal. An instrumental variable approach is used to address the endogeneity concerns. The instrument exploits the variation in the city of origin of remittances. The exogeneity assumption is that the city of origin of remittances is not correlated with other factors that explain the labor participation of recipients in Guatemala. The identification assumption is plausible because, conditional on migration, the city of destination is mostly related to network effects in the literature and is unlikely to be correlated with unobserved characteristics of remittance recipients. At the same time, in the cross-section, the city of destination can explain differences in remittance levels, as it captures local strength in local labor markets. The estimated impact of higher remittance proceeds perceived by female household members almost doubled when using instrumental variables. The impact is even more pronounced among households without a tight budget constraint, [9] reflecting economic trade-offs weigh in more for households with tighter constraints. These results appear to be robust to alternative specifications and estimation methods addressing potential biases in estimates (see Table 1).

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[8] Staff's empirical specification is discussed in Box 2. The empirical analysis uses the 2022 IOM survey.

[9] Defined as one if the household reports income is not enough to cover expenses.

## Table 3. Guatemala: Female Labor Market Participation Rate and Remittances: Robustness

| | | | |
|---|---|---|---|
| *Dependent Variable: Labor Force Participation (1= Participates)* | | | |
| | (1) | (2) | (3) |
| **VARIABLES** | | | |
| | | | |
| Remittances per familiy member (thousands) | -0.0222*** | -0.0413* | |
| | (0.000555) | (0.0237) | |
| Budget Constraint= Yes | | | -0.0140 |
| | | | (0.00991) |
| Budget Constraint= No | | | -0.0264*** |
| | | | (0.00727) |
| | | | |
| Sample | Female | Female Administers | Female Administers |
| Departmento Fixed Effects | YES | YES | YES |
| Municipality Fixed Effects | NO | YES | YES |
| Municipality Controls | YES | - | - |
| Method | Probit | IV/2SLS | OLS |
| Observations | 2,154 | 638 | 948 |
| R-squared/Pseudo R-squared | 0.186 | 0.210 | 0.414 |
| Standard errors in parentheses | | | |
| *** p<0.01, ** p<0.05, * p<0.1 | | | |

Sources: 2022 IOM Remittances Survey, Fundesa, and IMF Staff's calculations.
Note: Specifications control for individual and households' characteristics including a polynomial of age, marriage status, number of children, family size, education levels, illiteracy, public services, access to public services (including internet, water swage, electricity, phone service), and business owner indicator. The regression also controls for department fixed effects and municipality controls, including log of GDP, log of population, size, urbanization, Fundesa Development Index, and the percentage of indigenous population.

**16.      Development factors can also influence the effect of remittances on female labor market participation (Table 4).** The empirical analysis also shows local GDP per capita helps increase the incentives to work by increasing the local marginal productivity of labor. A one standard deviation increase in local GDP per capita decreases the elasticity of female labor market participation by 0.3 percentage points on average. Local development levels also affect the incentives to work, with a negative mark driven by remittances received in municipalities with different development levels.

**Table 4. Guatemala: Female Labor Market Participation Rate, Remittances and Development Levels**

| Dependent Variable: Female Labor Force Participation | | |
| --- | --- | --- |
| | (1) | (2) |
| VARIABLES | | |
| Log Thousand remittances per person | -0.190*** | |
| | (0.0156) | |
| Log Thousand remittances per person x Log Municipality GDP | 0.0222*** | |
| | (0.00187) | |
| Log Thousand remittances per person x High Development Index | | 0.255*** |
| (Top 30 Municipality Ranking; Top 5 percentile) | | (0.00607) |
| Log Thousand remittances per person x Medium Development Index | | -0.119*** |
| (Top 98 Municipality Ranking; Top 25 percentile) | | (0.00213) |
| Log Thousand remittances per person x Low Development Index | | 0.0192*** |
| (Below Top 98 Municipality Ranking) | | (0.00123) |
| Departamento Fixed Effects | YES | YES |
| Municipality Controls | YES | YES |
| Method | Probit | Probit |
| Chi-Squared | 0.2 | 0.2 |
| Observations | 2,154 | 2,154 |

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

Sources: 2022 IOM Remittances Survey, Fundesa, and IMF Staff's calculations.
Note: Specifications control for individual and households' characteristics including a polynomial of age, marriage status, number of children, family size, education levels, illiteracy, public services, access to public services (including internet, water sewage, electricity, phone service), and business owner indicator. The regression also controls for department fixed effects and municipality controls, including log of GDP, log of population, size, urbanization, Fundesa Development Index, and the percentage of indigenous population. Development level categories are based on the sample distribution of Fundesa Development Ranking.

## E. Modeling the Economic Forces Behind Female Participation in the Labor Market

**17.      Women receiving remittances face an economic trade-off according to the literature: higher consumption in the future if participating in the labor market against instant gratification without paying the cost of participating in the labor market.** This section describes a theoretical model that captures the empirical findings described in previous sections. First, remittances reduce female labor market participation when households are beyond subsistence levels. Second, market returns and labor market efficiency alleviate the effect of remittances on gender gaps in the labor market. Third, traditional caretaking roles diminish the incentives to work and magnify the impact of remittances on female labor market participation.

---

**Box 2. Unveiling the Economic Incentives of Remittances**

*The stylized model below captures the economic choices involved in female labor market participation, that is, the economic incentives and costs of working as identified in the data.*

**Model Setting**

We consider a stylized woman $i$ who lives two periods and maximizes the lifetime utility V by choosing to participate in the labor market or staying home in period t=1 against the future return to labor market experience in period t =2. The lifetime utility is the weighted sum of the instant utility that follows a Stone-Gary function, an expansion of a Cobb-Douglas function, with subsistence consumption $\bar{c}$, a cost for working weighted by parameter $\varepsilon_i$, and impatience parameter $\beta$:

$$V_i = \log(c_1 - \bar{c}) - \varepsilon_i I(L_{i,1} = 1) + \beta \log(c_2 - \bar{c}),$$

where $c_1$ and $c_2$ denote consumption in periods 1 and 2, respectively; $L_{i,1}$ equal to 1 if the individual $i$ participates in the labor market in period 1. Parameter $\varepsilon_i$ captures the individual's exposure to shocks to the value of non-market activities and follows a logistic distribution with mean $\ln \mu\sigma$ and variance $\sigma$. Shocks are revealed ex-post.

Woman i's budget constraint is:

$$c_1 = wI(L_{i,1} = 1) + R, \qquad\qquad t = 1$$
$$c_2 = w\left(1 + \theta\, I(L_{i,1} = 1)\right) + R, \qquad t = 2, \theta > 0$$

where $R$ denotes remittance proceeds and $w$ is the market labor return.

**Model Implications**

Assuming inelastic labor demand, the female labor market participation rate is:

$$p = \left(1 + \mu\left(1 + \frac{w}{R-\bar{c}}\right)^{(\beta-1)/\sigma}\left(1 + \frac{w\theta}{R-\bar{c}}\right)^{-\beta/\sigma}\right)^{-1}.$$

- Furthermore, the labor market participation rate:Is decreasing in $\mu$, the average value of staying at home, and more so when remittances are large (large $R$ to $\bar{c}$)
- Is increasing in $w\theta$ for $\beta > 0$ and $\sigma < \infty$.
- Is decreasing in remittances, $R$.

---

**18.     The analysis is well-aligned with the extensive literature on labor market participation and incentives.** Some studies (IMF, 2016; López, et al., 2021; Ernst et al., 2022; Sosa et al, 2022; Urquidi et al., 2023) discuss the link between boosting labor productivity to reduce labor market participation gaps. Some reforms to boost productivity include closing infrastructure gaps, improving quality and access to education and health, and improving agricultural market functioning. Other reforms identified in the literature include aligning wages to reflect labor market

productivity by improving labor market efficiency and flexibility, reaping the gains of digitalization, and reducing informality (IMF, 2016; López et al., 2021). Bolstering financial inclusion, enhancing non-discrimination practices in financial markets, and facilitating credit to SMEs could also be effective measures to increase female labor market participation (Sosa et al., 2022; Urquidi et al, 2023).

## F.   A Roadmap to Closing Gender Economic Gaps: The Global Parity Initiative

**19.     Closing gender economic gaps requires the involvement of both the public and private sectors.** Public policy, namely government programs and various tools used to encourage economic agents to close these gaps, is not sufficient. Involvement of the private sector is necessary, making them co-leaders and champions of gender policies within their associations and their own companies.

**Global Parity Initiatives**

**20.     The Gender Parity Initiatives (GPIs) serve as accelerators for closing these economic gaps in various areas.** The Inter-American Development Bank (IADB), along with the World Economic Forum (WEF) and the French Development Agency (FDA), has been promoting actions aimed at closing gender economic gaps for over nine years through public-private partnerships (GPIs) that convene leaders at the highest level within government and the private sector.[10]  GPIs start with a multidimensional diagnosis of gender economic gaps. This diagnosis can cover different dimensions such as education, labor force participation, access to financing, wages, leadership in the public or private sector, digitization, as well as care and household chores, among others. Based on this diagnosis, GPI leaders prioritize objectives to be achieved through an Action Plan, usually over a period of three or four years and framed within national government cycles. From 2016 to date, nine countries have implemented GPIs in the Latin American region.[11]

**21.     These GPIs have managed to create a regional, innovative, and collaborative methodology that enables the closing of gender economic gaps**, while engaging the main economic actors of the countries and articulating the work of different stakeholders, facilitating participatory decision-making, generating, and disseminating knowledge.[12] In aggregate, GPIs achieved the following results to date: nine countries in Latin America have adopted IPGs; eight

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[10] IADB (2023). *Iniciativas de Paridad de Género en América Latina 2016-2022: una alianza público-privada para acelerar la igualdad*. IDB-Iniciativas de Paridad de Género.

[11] These include Chile (2016), Panama (2018), Argentina (2018), Costa Rica (2019), Colombia (2019), Dominican Republic (2020), Ecuador (2021), Mexico (2022), and Honduras (2022).

[12] Key contributions of GPIs include, engaging leaders from both the public and private sectors involved in the economic and productive development of countries; providing companies with a roadmap and tools to close their gender gaps; accelerate political and legislative reforms., committing companies to gender equality; promoting opportunities for women in non-traditional and high-growth sectors; deliver tailored solutions to foster female leadership, fostering dialogue and networks to advance economic recovery from a gender perspective; and generating and disseminating knowledge and exchanges of best practices.

national action plans have been approved; there have been nine diagnoses elaborated characterizing the gender economic gaps of 9 countries; 60 ministers or public officials and 70 CEOs or general managers of companies committed to gender equality; 558 companies adhered to the GPIs; and 16 reports published with data, evidence, and best practices to accelerate the closure of gender economic gaps.

**Guatemala and Gender Disparities: An Option**

**22.      Guatemala could implement a gender gap closure accelerator (e.g., GPIs.)** Addressing gender inequalities is a top priority of the administration's governance policy. And the current cabinet is gender-balanced cabinet. Within the various ministries, addressing gender inequalities in the traditional labor market, household chores, education, among other areas, is among the main objectives[13]. Furthermore, the Guatemalan private sector is a key stakeholder to play an essential role in closing existing gender economic gaps. Firstly, the private sector represents a great opportunity for creating new formal employment positions. Secondly, it is a potential funding source for small and medium enterprises lead by women, and private-sector led initiatives, such as "Guatemala No se Detiene" (Guatemala Doesn't Stop), identify sectors—agribusiness, BPO services, pharmaceuticals and medical devices, manufacturing of electronic devices, among others—where Guatemala could become a regional hub, making them a priority for investments[14] and consequently a source of new job positions.

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[13] SEGEPLAN (2024). *Política General de Gobierno 2024-2028.* SEGEPLAN-PGN

[14] FUNDESA (2024). *Guatemala no se detiene.* FUNDESA-GNSD.

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