

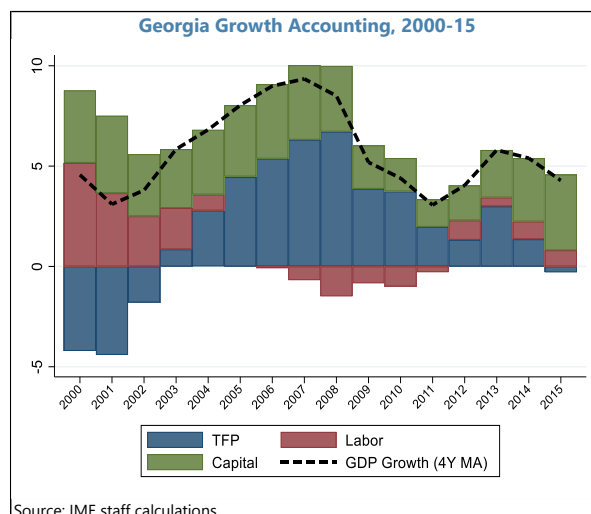
ASSESSING MACROECONOMIC AND STRUCTURAL REFORMS IN GEORGIA

This paper quantifies the economic effects of the government's reform agenda. Specifically, the reform package includes a fiscal policy within a declining deficit path which intends to incentivize private investment, a scaling up of public investment, improvement in government's efficiency, and an education reform. Based on modeling analysis, the implementation of this package will provide significant benefits to the economy is beneficial for the economy. Over the long run, real GDP is estimated to be about 5 percent higher than in the baseline and—in the path towards the new equilibrium—annual growth about 0.7 percentage points higher over the medium term. The education reform has sizeable effects, but they only come into effect in the long run.

A. Background

1. Georgia's growth has slowed down, mostly as a result of lower productivity growth.

Average productivity growth—measured with total factor productivity (TFP)—decreased from around 5 percent in 2004-08 to 1.5 percent in 2011-15. The years of high TFP growth were accompanied by marked improvements in the business and regulatory environments as well as robust growth in trading partners. Georgia climbed the rankings of the Doing Business Indicators¹ reducing the distance to the frontier to about 20 percent in 2017. At the same time, Georgia was aided by growth in trading partners, which supported the country's net exports. However, as the gains from the first wave of structural reforms declined and the external environment deteriorated after the 2008 global financial crisis, productivity growth in Georgia slowed down.



2. However, Georgia has potential for higher growth. There is an opportunity to increase productivity, given that (1) the production and export base can be broadened; (2) unemployment is high and employment is concentrated in low-productivity sectors; and (3) the business environment can be further improved. Additionally, the quality and stock of human capital can be further improved, and physical capital can be increased to fully exploit the country's comparative advantage as a platform for markets and as a tourist destination in the region.

3. As a small open economy, Georgia needs to fully reap the benefits of tighter global integration and competitiveness. Improving key infrastructure is crucial to leveraging Georgia's

¹ The Doing Business Indicators are a set of indices which describe private sector's perception of the business environment. They are survey-based and they are published by the World Bank.

strategic position as a logistic hub for the region. Enhancing the business environment will help attract private capital and will strengthen the role of the private sector in generating sustainable and inclusive growth. Finally, bolstering the quality of human capital will support the diversification of production and exports toward more complex and higher value-added goods.²

4. Improving education and skill matching is key to increasing growth potential. According to the Global Competitiveness Report, an “inadequately educated workforce” is generally ranked as among the most problematic issues for businesses. In Georgia, the quality of education must be improved, especially in rural areas where educational outcomes are particularly bad, which contributes to high unemployment. Enrolment in universities is about 50 percent of Georgian students, lower than 60 percent in Central and Eastern Europe and 70 percent in Western Europe—and vocational training is not popular. As a result, there is considerable skill mismatch in the labor market, and businesses lament the lack of technical specialists in various fields, from agriculture to engineering.

5. Addressing all these challenges requires a comprehensive reform package. Since the 2016 Parliamentary elections, the governing coalition has united around a robust reform agenda—the so-called 4-Point Plan. This is composed of (1) an improvement in tax administration and the tax system to enhance the role of private sector activity; (2) an increase in infrastructure investments to leverage Georgia’s strategic position; (3) improvement in government efficiency to enhance the business environment; and (4) education reform that addresses the skill mismatches in the labor market.

6. The government has made clear its plans and has already taken some actions toward the implementation of its reform agenda. To improve government efficiency and the business environment, the government plans to (1) set up a Business House to provide a one-stop shop for public services to enterprises; (2) introduce International Financial Reporting Standards for corporations; and (3) reform insolvency law. To increase the stock of human capital, the government has embarked on a path to implement comprehensive education reform that includes curriculum standards, the introduction of a new framework for teachers, vocational training, and adult learning. However, more must be done in terms of upgrading the quality of early childhood education, improving learning outcomes, enhancing vocational training, and strengthening education in science and technology.³ Finally, to improve the stock of physical capital, the government aims at scaling-up infrastructure spending to transform Georgia into a transport and logistics hub connecting Europe and Asia.

B. Modeling the Policy Package

7. The effects of the reform package are analyzed using the IMF’s Global Integrated Monetary and Fiscal (GIMF) model, calibrated to key stylized facts of the Georgian economy.⁴ The parameters governing the steady-state properties of the model were calibrated to match basic stylized

² See the accompanying SIP “Georgia’s Path to Economic Diversification”

³ See the accompanying SIP “Georgia’s Labor Market and Education System”

⁴ See Box 1 for further details about the GIMF model.

facts for the Georgian economy (that is, structure of GDP, labor and capital share of income, structure of government expenditure and revenues, etc.). The components of GDP were calibrated to match the April 2018 World Economic Outlook, and the trade structure was calibrated to match Georgia's trade with its main partners. As for the fiscal policy block, debt to GDP was anchored at 45 percent in the long run, and the long-run output elasticity of public investment was calibrated to 0.25 (as in Bom and Lighthart 2013).⁵ The inflation target is calibrated to 3 percent—as per the “Main Directions of Monetary Policy” published by the National Bank of Georgia. The parameters governing the dynamics of the model (that is, the degree of price and wage rigidities, investment adjustment costs, and others) were calibrated following the standard calibration for emerging market economies (EMEs). Such parameters do not affect the long-run outcomes of the model. We assume that structural reforms affect economy-wide productivity, and we borrow from a large body of literature on macro-structural linkages to calibrate their quantitative effect.

8. The policy package is as follows:

- **Fiscal package:** Since 2017, the government has embarked on a strategy of scaling up public infrastructure investment while compressing current spending. Also, to increase incentives for private investments, the government has reformed the corporate income tax and introduced a distributed-dividend taxation, effective January 2017. This taxation system, introduced in Estonia in 2000, abolishes taxation of retained earnings and maintains a corporate income tax based solely on distributed profits. Although it generates revenue losses in the short run, this taxation scheme is thought to incentivize private investments in the medium run through retained and reinvested earnings. To compensate (at least partially) for the revenue shortfall, the government increased fuel and tobacco excises in January 2017. The yields from this fiscal policy package are evaluated with respect to a baseline scenario that does not include any measure (Table 1 below).⁶

The fiscal impulse—in deviation from the baseline—takes the following form:

- Capital spending increases progressively by a maximum of 2.3 percentage points of GDP and then progressively declines. We assume that capital investments in steady state will stabilize at around 5.3 percent of GDP, which is about 0.4 percent of GDP higher than under the baseline.
- Current spending contracts by about 2.5 percent of GDP and this compression is assumed to be permanent. These cuts in current spending come mostly from reduction of the wage bill, cuts in administrative expenditures, and efficiency gains in health expenditure.
- The distributed dividend taxation translates into a permanent loss of revenue of around 1 percentage point of GDP, while excise increases boost revenues by around half a percentage point of GDP.

⁵ Bom and Lighthart (2013) find that the output elasticity to public capital is between 0.08 in the short-run and 0.25 in the long run. This means that if the stock of public capital is, say, 50 percent of GDP—the returns to public investments range between 15% and 25%.

⁶ We construct the baseline scenario by updating our 2016 fiscal projections—which did not contemplate any fiscal measure—with our latest assumptions on GDP growth and the lari/dollar exchange rate. This way, both our baseline and our latest fiscal projections are based on the same macroeconomic assumptions so that their difference yields an estimate of the fiscal measures

Table 1. Georgia: Calibration of the Fiscal Package

	2017	2018	2019	2020	2021	2022	2023	Steady State
BASELINE SCENARIO (From 2016 Art IV)								
Capital Spending	5.4	5.7	5.5	5.4	5.4	5.4	5.4	5.4
Current Spending	22.9	22.4	22.1	22.1	22.0	22.0	22.0	22.0
CIT Revenue Corporates	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9
Excises Revenue	3.1	3.0	2.9	3.0	3.0	3.0	3.0	3.0
FISCAL PACKAGE (Recent Framework)								
Capital Spending	6.1	6.8	7.0	7.7	7.9	7.7	7.6	7.6
Current Spending	22.9	21.8	21.2	20.4	19.4	19.4	19.4	19.4
CIT Revenue Corporates	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Excises Revenue	3.8	3.5	3.5	3.5	3.4	3.4	3.3	3.3
DIFFERENCE								
Capital Spending	0.6	1.1	1.5	2.3	2.5	2.3	2.2	0.3
Current Spending	0.1	-0.6	-0.9	-1.6	-2.6	-2.6	-2.6	-2.5
CIT Revenue Corporates	-0.8	-0.9	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Excises Revenue	0.7	0.5	0.6	0.5	0.5	0.4	0.4	0.5

Source: IMF staff calculations.

- Improvement in government efficiency:** These reforms should help mobilize domestic and foreign investment. Modeling structural reforms requires assumptions on how much these will help improve government efficiency and the business environment, and then how much these would yield in terms of higher productivity. Georgia fares relatively well on both governance and business environment indicators. On average, its distance to the frontier is about 10 to 20 percent (Figure 2). Yet, we assume that the government's reforms will cut half the distance to the frontier over the course of five to 10 years. This implies an 8-percent improvement in the governance indicator. We assume that such increase translates into a gradual increase in TFP of 1 percent over a 10-year period.⁷
- Education reform:** The education reform will increase government spending in the short term, with long-term benefits in terms of human capital and TFP growth. We assume that spending for education as a percentage of GDP would converge to ½ of the average level of OECD countries (about 12 percent of GDP). This would require a permanent increase in spending of about 2.5 percent of GDP. Government spending will gradually increase starting in 2019, and will be partially compensated by higher consumption taxes. We assume that the government will cover 50 percent of the increase in spending by higher taxes on consumption. We expect the remaining 50 percent to initially be covered by higher borrowing, and then by progressively lowering capital spending to its steady state level.

We estimate that the education reform could increase TFP growth by about 0.5 percentage point over the medium run. To assess the impact of the education reform on productivity, we inspect the relationship between TFP and quality of education. Following Islam et al. (2014), we run a cross-section regression for average TFP growth.⁸ Both the stock of human capital—as

⁷ Consistent with empirical findings (Bourles et al (2010) and Barnes (2014)). By looking at a panel of OECD countries, Bourles et al (2010) and Barnes (2014) found that a 10-percent improvement in regulatory environment increases TFP by 1.3- 1.7 percent.

⁸ Data are from 2000 to 2016. TFP is taken from the Penn World Tables; Investments to GDP ratio and CPI inflation are taken from the World Economic Outlook Database; Years of schooling come from the UNDP's Human Development Index database; PISA scores for math and sciences are taken from the OECD database.

measured by years of schooling—and the quality of human capital—as measured by the score in the PISA test for math and sciences—are found to affect productivity growth. The PISA score is transformed into an index which takes value 1 for highest score in the sample and value 0 for the lowest one. Our preferred specification (column 4 of the table below) is the one where we allow for a non-linear effect between the stock and the quality of human capital (as in Islam et al. 2014). Given Georgia’s relative high marks in years of schooling (around 12), the returns from improving the quality of education are expected to be the largest. The marginal effect improving the quality of education for given years of schooling (Figure 1 below) shows that with 12 years of schooling, improving the quality of education from the lowest to the highest score translates into about 1.5 percentage points higher productivity growth.⁹ We assume that Georgia will be able to close half the gap to the frontier in terms of quality of education in the medium run. This would improve the quality of education in Georgia up to the average for OECD countries. In terms of its quantitative effects, our estimates suggest that this would translate into a gain in productivity growth of about ½ of a percentage point. Given that in Georgia average years of schooling is around 12, the effects of the reform will gradually increase in the medium to long run.

Table 2. Georgia: Long-Run Effects of Education Reform		Figure 1. Georgia: Marginal Effects of Education Reform		
VARIABLES	(1) TFP Growth	(2) TFP Growth	(3) TFP Growth	(4) TFP Growth
Investment to GDP	0.014** [0.007]	0.019* [0.010]	0.019* [0.010]	0.013 [0.010]
CPI Inflation	-0.001* [0.000]	-0.000 [0.001]	-0.000 [0.001]	-0.000 [0.001]
TFP - Distance to the Frontier	0.060*** [0.003]	0.054*** [0.004]	0.054*** [0.004]	0.053*** [0.003]
Years of Schooling	0.034*** [0.012]		0.065** [0.027]	-0.066 [0.051]
Pisa Index		0.799*** [0.191]	0.381 [0.241]	-1.177 [0.781]
(Pisa Index)*(Years of Schooling)				0.189** [0.079]
Observations	110	60	60	60
R-squared	0.852	0.853	0.862	0.909
Standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1				

Source: IMF staff calculations.

C. Results

Fiscal Policy Package

9. The government’s fiscal package has positive effects on GDP and growth (Figure 3). The scaling up in productive public investments and public capital stock allows for higher productivity in private firms. Moreover, by replacing taxes on capital with taxes on consumption, the government moves to a less distortionary way of financing its spending. As a result, real GDP increases by 3 percent in the new steady state. In converging to the new steady state, GDP growth increases by about 0.4 percentage point in the medium term. In the long run, the growth of the economy remains driven by productivity and population growth.

⁹ These results are consistent with what is found in the literature (see Islam et al. 2014 and OECD 2010).

10. The lower tax burden on firms generates higher private investment.¹⁰ Private investment increase steadily both in levels and as a share of GDP, and in the new steady state investment share to output ends up being about 1 percentage point of GDP higher than in the baseline. The dynamics are further helped, at least temporarily, by a moderate decrease in the cost of borrowed funds. With increased profitability, the external finance premium temporarily decreases (financial accelerator).¹¹

11. Private consumption reacts more gradually to the fiscal package, but increases in the new steady state. Higher labor productivity and lower tax distortions increase output and demand for labor, pushing up real wages and supporting higher consumption. The initial response of consumption is, however, muted because of higher consumption taxes. Also, consumption is compressed by the need to increase savings to finance higher private investment. As a result, consumption initially declines as a share of GDP, then it progressively increases by about 1.5 percent above baseline in the new steady state.

12. Because higher consumption taxes do not fully cover higher government spending and the revenue losses from lower capital taxes, public debt initially goes up. The public debt-to-GDP ratio increases by about 3 percentage points with respect to the baseline, and then progressively declines back to 45 percent of GDP in the new steady state—it is assumed that the government does not want to increase its debt-to-GDP ratio. As government investment progressively declines to a level only slightly higher than in the baseline and current spending remains contained, the fiscal balance deteriorates only mildly in the medium run. Moreover, higher consumption taxes—together with a higher tax base—support the fiscal adjustment.

13. The increase in real wages puts upward pressure on prices of domestically produced goods, and the central bank moderately increases the policy rate. The increase in the interest rate is consistent with the initial appreciation of the lari. The appreciation of the lari, as well as the import component of demand (also from higher government and private investment), temporarily deteriorates the current account—which worsens by a maximum of 1.5 percent of GDP. However, as higher productivity allows for lower prices, the real effective exchange rate depreciates, and the current account returns to its baseline level.

Improving Government Efficiency

14. The improvement in government efficiency increases GDP permanently and growth temporarily. Because of the reforms, TFP increases progressively by 1 percent, translating into higher GDP in the new steady state, and temporarily higher growth on the path to the new equilibrium (Figure 4). The increase in productivity increases the marginal product of the factors of production, so that demand for capital and labor increases. This translates into higher real wages and rental rate on capital.

15. Investment responds faster than consumption to the gradual increase in productivity. The increase in productivity makes investing more profitable, which also incentivizes consumers to increase savings on impact, despite the increase in real wages. As such, investment to GDP increases, while the consumption-to-GDP ratio remains in line with the baseline and increases only in the long run.

¹⁰ This is to be interpreted as an “upper bound.” Chances are that the reaction of private investments will be sluggish—especially in a context like Georgia where corporates might already be over-leveraged.

¹¹ In reality, as the experience of Estonia shows (see Masso et al. 2011), firms are likely to move to lower their leverage with a higher portion of investment financed using retained earnings.

16. The current account worsens temporarily because of higher domestic demand. Higher investment and consumption result in a larger current account deficit. With the prospects of higher productivity in the future, the current account response is not a sign of disequilibrium but an expected and desirable outcome (Obstfeld and Rogoff 1994). However, in the medium run, the depreciation of the exchange rate corrects the current account imbalance. In the new steady state, the current account reverts to a small surplus.

Fiscal Package and Education Reform

17. When the fiscal package is modified to accommodate higher education spending and higher taxes, the effects on GDP are still positive, but private consumption contracts by up to 1 percent of GDP (Figure 5). The fiscal stimulus coming from higher government spending on education increases aggregate demand and output. Overall GDP in the new steady state is about 1 percent higher than with the simple fiscal package analyzed above. This happens despite the higher taxes on consumption. Consumption, in fact, remains at the baseline level. As a share of GDP, it declines throughout the transition to the new steady state. Because the government finances some of the higher spending through borrowing, public debt is about 2 percent of GDP higher than with the simple fiscal package, peaking at around 50 percent, before declining to its steady state level of 45 percent. Higher demand translates partly into higher imports, thus deteriorating the current account balance.

18. The education reform has positive long-run effects on the economy, and these are likely to be sizeable. However, because it bears effects only in the long run through the build-up of human capital, and because such effects are inherently uncertain, the quantitative analysis of the education reform is outside the scope of the DSGE model used for the study. For this purpose, a regression analysis is used instead and is a more appropriate tool to assess the effects of the education reform in the long run. The regression output presented earlier suggests that an education reform that improves the quality of education to the average level of OECD countries improves the growth rate of TFP by half a percentage point. In terms of steady state levels of output, this improvement can be quite sizeable. To gauge the level effect, we perform the following thought experiment: We assume that—given the elevated average years of schooling in Georgia—the effect on productivity start to materialize after 12 years. The growth rate of TFP then increases progressively by half a percentage point above the baseline (the full effect of the reform) and then progressively declines as Georgia closes the gap with the countries at the productivity frontier. Overall, this translates into a level of output between 5 and 10 percent higher than under the baseline.¹²

Adding Reforms to Improve Government's Efficiency

19. The fiscal reforms—including education spending—and the improvement in government efficiency have relatively large effects (Figure 6). When all of the reforms are included in the model at the same time, real GDP increases in the long run by about 5 percent compared to the baseline, and growth temporarily increases by about 0.7 percentage point in converging to the new steady state. Again, because of the increase in taxes needed to partially cover the education spending, the gains in

¹² We found similar results when we performed a panel regression on the *level of total factor productivity* rather than on the growth rate.

private consumption mostly accrue in the long run. On the other hand, higher productivity induces more investment and increased real wages. On top of that—as we saw earlier—the productivity gains from the implementation of the education reform could boost output further in the long run between 5 and 10 percent.

20. Overall, the effects of the government’s reform package are positive, but they are no magic bullet. The effects on GDP and growth—to be interpreted as an upper bound of the reform package—are non-negligible. The DSGE model and the econometric model employed also suggest that the reform package, with higher public capital and higher productivity in the economy, will be able to effectively catalyze private sector activity, in that private investment will become the main engine for long-term growth. However, the results do rely on crucial assumptions: that all public spending will be employed productively and that fiscal sustainability will be preserved.

Box 1. The IMF’s Global Integrated Monetary and Fiscal (GIMF) Model

We use the GIMF model to quantify the impacts of fiscal and structural reforms. GIMF is a multi-country structural dynamic general equilibrium model. The model used in this paper features Georgia, the euro area, emerging Asia, the United States, and the rest of the world. (See Kumhof and others (2010) and Anderson and others (2013) for more detailed documentation and key properties of the model).

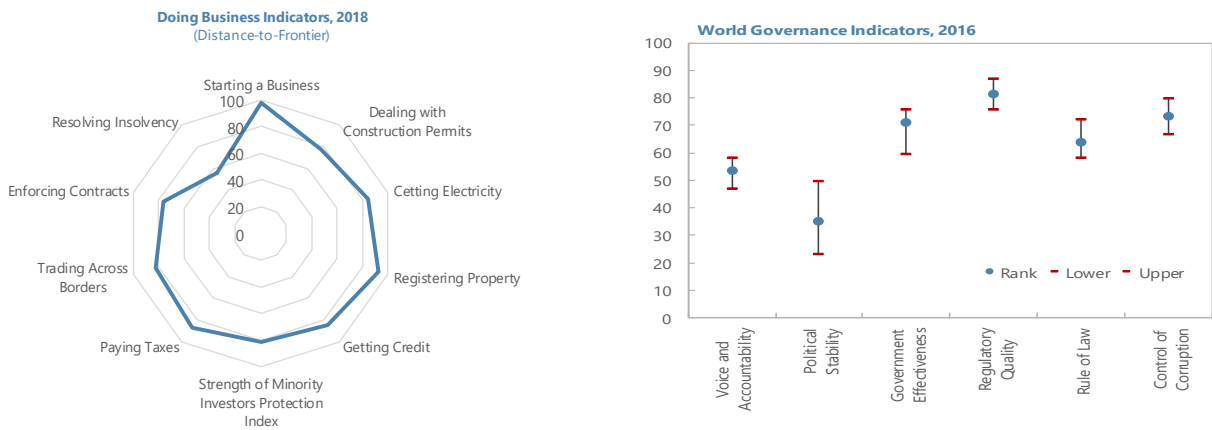
GIMF links the behavior of households, firms, and the government within and among countries. The model has a consistent system of national accounting and stock-flow budget constraints for all sectors. The model belongs to the exogenous-growth type of models; that is, the long-term growth of output is exogenous. Hence, all fiscal or structural measures may change only the structure of the economy, possibly increasing permanently the level of real output per capita; never long-term growth.

There are two types of households in the model that differ in their behavior. The optimizing overlapping-generations (OLG) households have access to financial markets and can borrow and save out of their labor and financial income to smooth consumption over their effective planning horizon. They have finite lives, following the Blanchard-Weil-Yaari framework (Blanchard, 1985). On the other hand, the liquidity-constrained (LIQ) households do not have access to financial products and consume their after-tax labor income fully every period. The presence of OLG and LIQ households breaks Ricardian equivalence, which is important for realistic results of fiscal policy in the short and long run. Households gain utility from consumption and disutility from labor effort, they consume traded and non-traded services and goods, receive labor income, transfers from the government, dividends from corporations, and pay taxes—income, consumption, and lump-sum taxes.

Firms produce tradable and non-tradable goods and services. Firms hire labor, capital, and purchase imported intermediate goods to produce both final and intermediate goods.

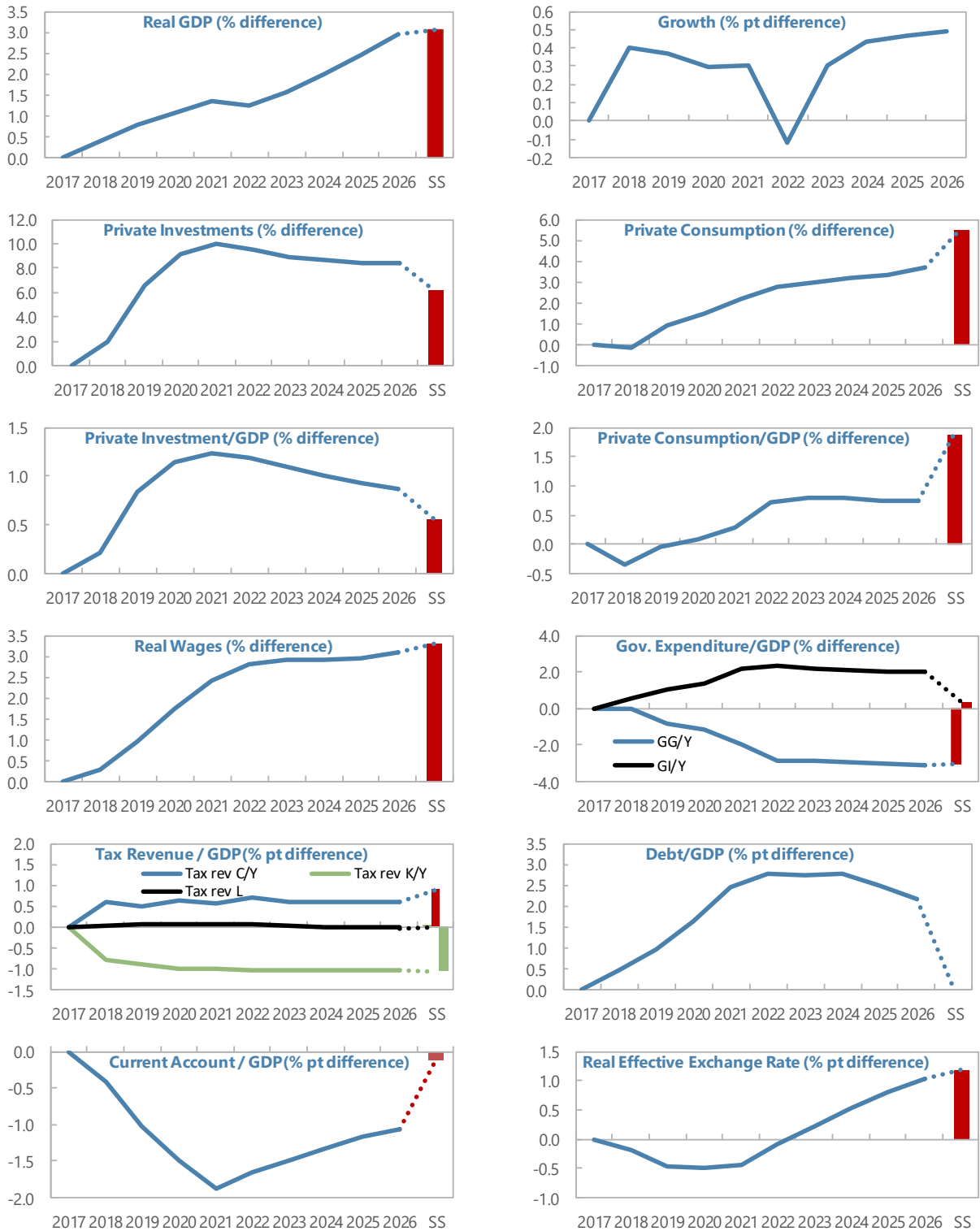
The **government** purchases final goods for consumption and productive public investments, and levies taxes and on consumption, labor income, capital and lump-sum taxes. It also provides transfers to households. The government follows a fiscal rule that stabilizes the debt-to-GDP ratio at a chosen level and uses a mix of instruments to achieve it. The government’s commitment to sustainable public finance is credible for firms and households, who hold the stock of government bonds. The monetary policy regime operates under an inflation-forecast-targeting framework and the **central bank** follows a standard Taylor-type rule, with the monetary policy rate as instrument.

Figure 2. Georgia: Governance Indicators



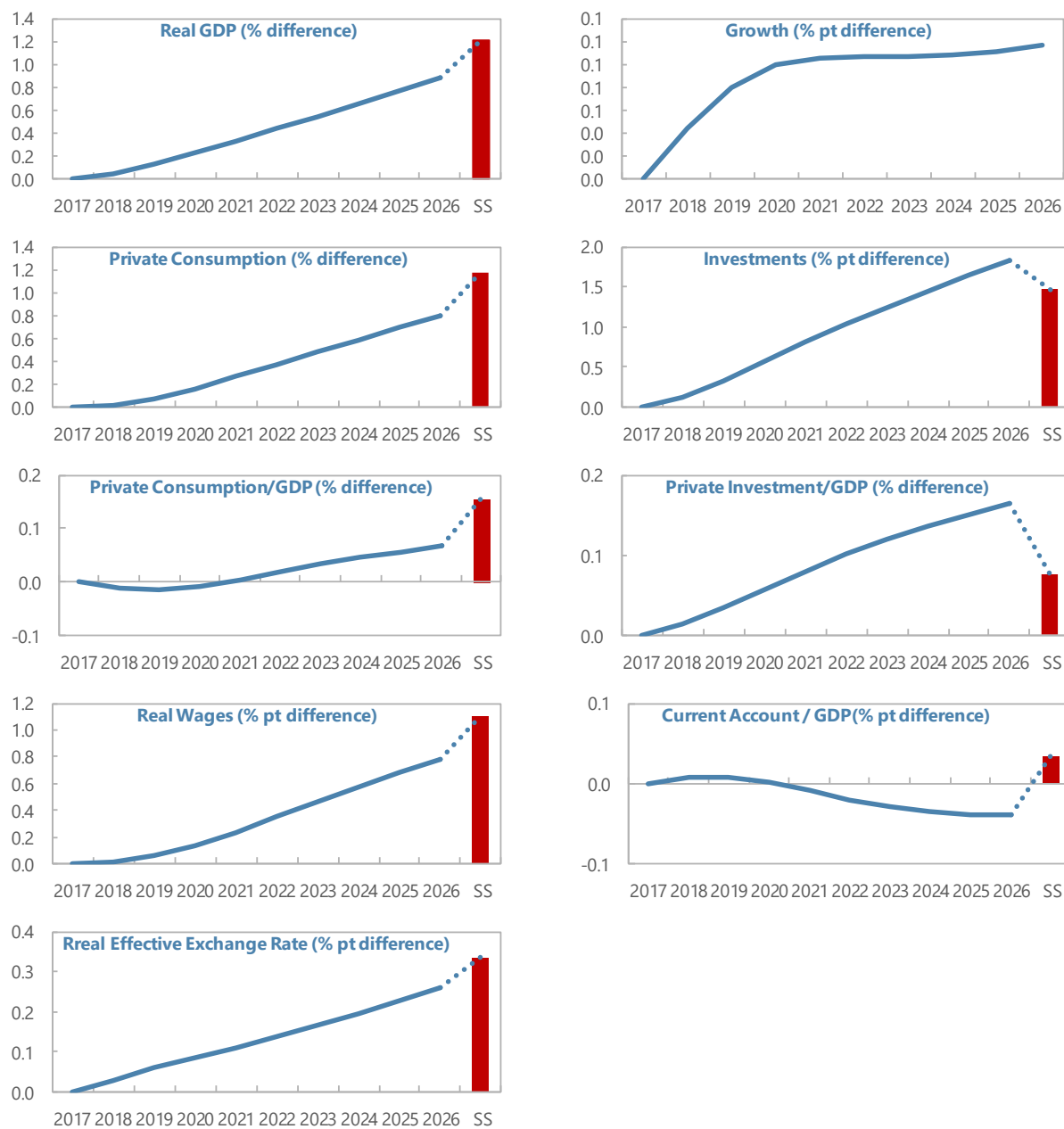
Source: World Bank *Doing Business 2018*, and *World Governance Indicators 2016*.

Figure 3. Georgia: Effects of the Fiscal Reform



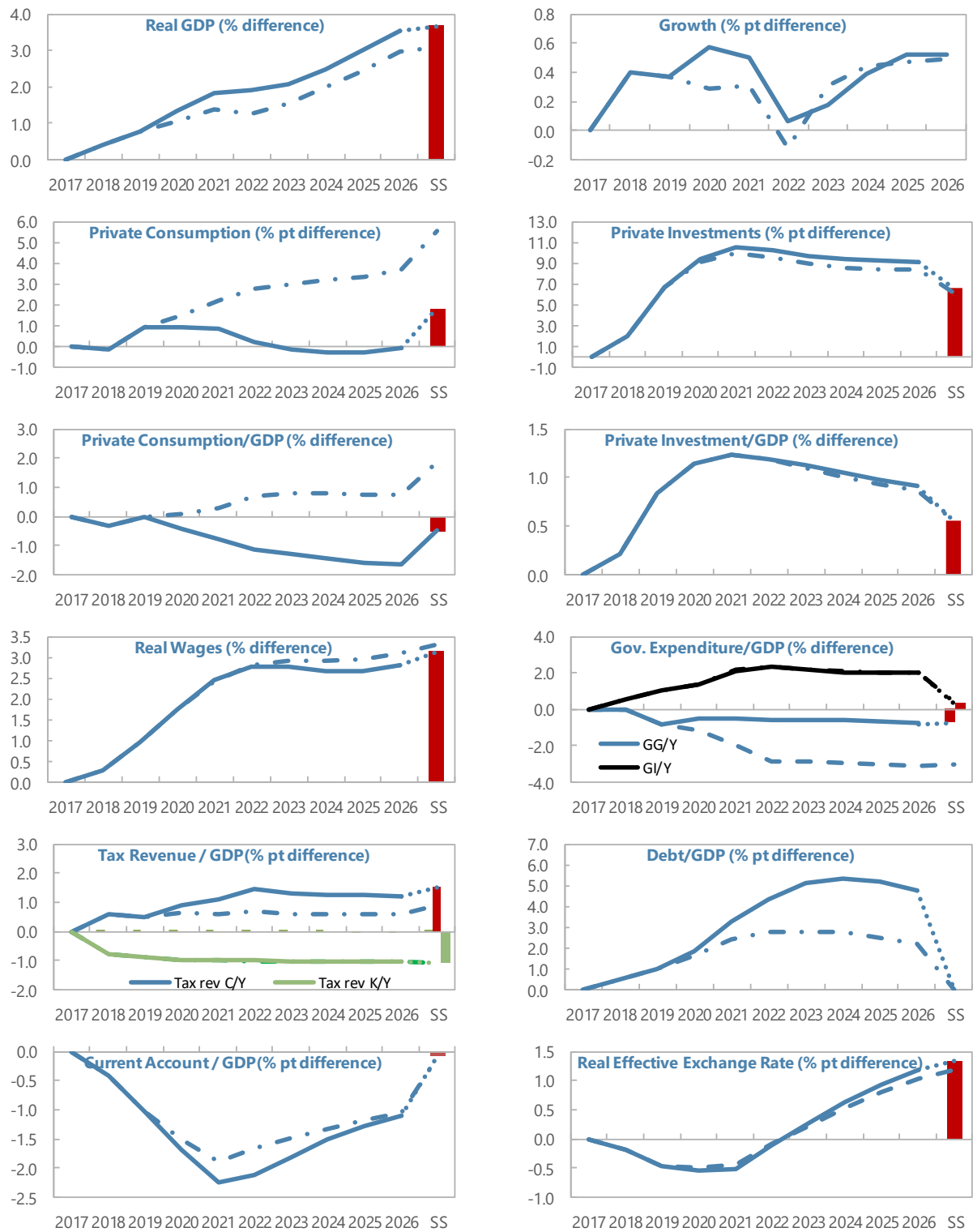
Source: GIMF simulations.

Figure 4. Georgia: Effects of the Increase in Government Efficiency



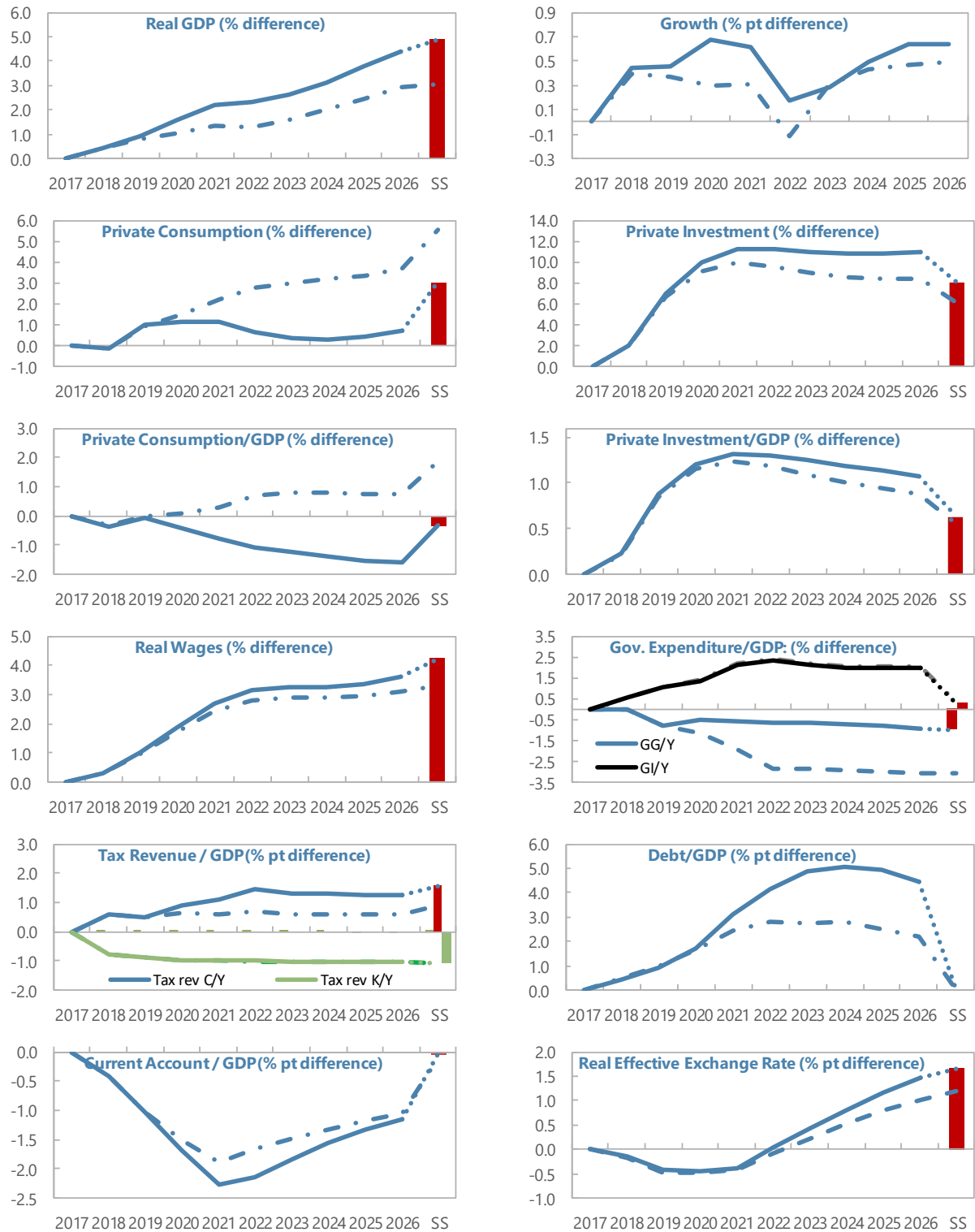
Source: GIMF simulations.

Figure 5. Georgia: Effects of the Fiscal Reform—Including Spending on Education



Source: GIMF simulations.

Figure 6. Georgia: Putting Pieces Together



Source: GIMF simulations.

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