Monetary and fiscal policy interactions in the wake of the pandemic

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Abstract

Public spending can only be sustainable if it is financed with sustainable revenue sources. Dislocations between expenditure and revenue may cause increases in market interest rates and the risk premia attached to public debt. To illustrate the challenges for monetary policy in achieving an inflation target when fiscal authorities loosen their stance, we use a semi-structural model of a small open economy. We capture the effects of two exogenous shocks that induce a worsening of the fiscal stance in the model: (i) an increase in the public deficit and (ii) an increase in country risk. Our results show that a loose fiscal policy stance tightens financial conditions while exerting upward pressure on expected inflation, thus increasing the trade-offs for monetary policy. Given the high level of trade openness and the highly liquid markets for the currency, the Mexican economy is highly exposed to external shocks. Therefore, a sound fiscal position helps to bolster the country's resilience in the face of shocks, providing room for monetary policy manoeuvre.

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Introduction

A solid macroeconomic framework is a necessary condition for an orderly adjustment of the Mexican economy. Key elements of this framework are a monetary policy focused on achieving low and stable inflation, and a sustainable path for public finances.

Sustainability of public finances relies on the ability to fund public expenditure decisions with sustainable revenue sources. Dislocations between expenditure and revenue may cause increases in the market interest rates and risk premia attached to public debt. This scenario would pose bigger challenges in conducting monetary policy since the trade-offs faced by the central bank, while pursuing low levels of inflation and financial stability, may be exacerbated.

There are multiple combinations of debt, public expenditure and revenue that can be sustainable over time. Hence, it is desirable that a public expenditure strategy aimed at mitigating the economic downturn in the short term is complemented by an increase in tax revenues in the future.

The Federal Budget and Fiscal Responsibility Law in Mexico comprises specific metrics and guidelines for medium term budgeting that relates to fiscal sustainability: (i) a budget balance rule establishes that, excluding investments by the state-owned company Pemex (with some escape clauses), the overall federal public sector balance must be zero; (ii) an expenditure rule caps current spending excluding pensions; and (iii) a medium-term framework establishes that the public sector borrowing requirement (PSBR, the widest definition for the public deficit) must be in line with the financing capacity of the public sector, and is conducive to the stabilisation or reduction of the debt-to-GDP ratio.

In emerging market economies (EMEs), debt levels are a very important element in the assessment of country risk and provide the basis for the financing costs for the economy as a whole. Therefore, in the conduct of monetary policy we closely monitor external evaluations of the performance of the economy, the strength of institutions, and the stance of fiscal policy.

International financial institutions play an important role. For instance, the International Monetary Fund Debt Sustainability Framework provides some useful considerations for EMEs. Specifically, in terms of debt sustainability and gross debt/GDP ratios:

1. Below 50% of debt to GDP, the Debt Sustainability Framework of the Fund considers this a low surveillance range and only basic debt sustainability analysis is performed.
2. Between 50% and 70% of debt to GDP, there is a need for more in-depth surveillance, including fiscal risk analysis and an assessment of the debt profile.
3. Above 70% of debt to GDP, this is a high-risk zone where debt sustainability could be compromised.

Credit rating agencies also provide additional assessments and warnings about sovereign debt sustainability, which influence financing opportunities and market access. Specifically, a deterioration in creditworthiness would increase the overall cost of funds in the economy.

EMEs are capital import economies that need to be mindful of maintaining adequate sources of finance. Thus, we also need to be mindful of the policy space available. Sudden changes in a country's debt sustainability outlook, or in risk appetite (associated to global or idiosyncratic factors), can trigger a rapid shift in investors' portfolios. EMEs which are highly integrated with global financial markets can experience larger portfolio adjustments.

In order to implement a comprehensive package of near-term support, credible medium-term strategies to anchor fiscal sustainability could be pursued, in combination with pro-growth and investor-friendly structural reforms. A strong short-term expenditure programme would alleviate current distress and limit job losses and bankruptcies. Credible medium-term fiscal reforms would increase policy space in the near term, reduce risk premia, and generate needed resources for public investment and social spending.

Transmission channels from fiscal to monetary policy

In this section, a semi-structural model of a small open economy is used to illustrate how a loose fiscal policy stance, even a temporary one, may imply challenges for monetary policy in achieving an inflation target. Indeed, results show that a loose fiscal policy stance increases the trade-offs that monetary policy faces by tightening financial conditions in the economy and simultaneously causing upward pressure on expected inflation. In particular, a loose fiscal stance increases the country risk premium, causing a fall in the demand for domestic assets and an increase in the funding costs for the economy. This, in turn, translates into a depreciation of the exchange rate via a country-risk-augmented interest rate parity condition. Since the depreciation puts upward pressure on inflation, the central bank raises the policy nominal interest rate. This process prevents the monetary authority from accommodating the increase in funding costs for the economy.

The model features two main blocks, a fiscal and a monetary block. Moreover, external variables determined either in global markets (eg oil prices), or by foreign authorities (eg the US federal funds rate) are modelled as autoregressive processes.

Among the main features of the fiscal block are:

- Tax and oil revenue
- Domestic and foreign debt
- Public spending (excluding interest payments)
- Public sector deficit.

Tax revenue is a function of economic activity, while oil-tax revenue is a function of global oil prices,oil exports and the exchange rate. The stock of both domestic and foreign debt are a function of thepublic deficit. The latter is, in turn, a function of country risk. Public sector financial costs are a function of both domestic and foreign interest rates, the public deficit, and the country risk. In this model, the country risk premium is endogenous and depends on its observed and expectedbehaviour, it also depends on the public deficit.

The main features of the monetary block, assumed to have a DSGE-VAR structure, are:

- Country risk premium
- An IS curve
- A Phillips curve
- An uncovered interest rate parity condition
- A Taylor rule.

The IS curve is a function of both the (private sector) output gap and public spending gap. The IS curve features financial channels in the form of country risk premium and the exchange rate. The standard Phillips curve is used to model inflation dynamics. The uncovered interest rate parity condition includes the country risk. Finally, the Taylor rule determines the policy interest rate, and includes the rate's past behaviour, and both inflation and output gaps.

The model is solved sequentially, so that the effects from fiscal policy enter the monetary block and, in turn, the monetary authority sets its policy rate. This strategy corresponds to a fiscal authority and a central bank that each have their own policy rules. The fiscal authority pursues a public deficit target level which makes the debt-to-GDP ratio sustainable over time, while the central bank pursues an inflation target.

It is assumed that both authorities are fully committed to attaining their respective targets. Hence the following impulse-response analysis shows how temporary deviations from a sustainable fiscal policy stance affect the trade-offs that monetary policy faces. In particular, regardless of the level ofeconomic activity and current inflation, the best response from the central bank to said deviations is to raise the monetary policy rate.

The main transmission mechanisms from the fiscal policy stance to monetary policy are now detailed. In particular, it is possible to induce a worsening of the fiscal stance in the model throughdifferent shocks:

- An increase in the public deficit (eg due to an increase in public expenditure funded through debt issuing)
- An increase in country risk (eg due to a renegotiation of a long-standing trade agreement, causing uncertainty around investment returns).

Impulse response functions are displayed in Graphs 1 and 2, and shocks are normalised so that theycorrespond to a 25 basis points of increase in the monetary policy rate from its steady state.

An increase in public deficit

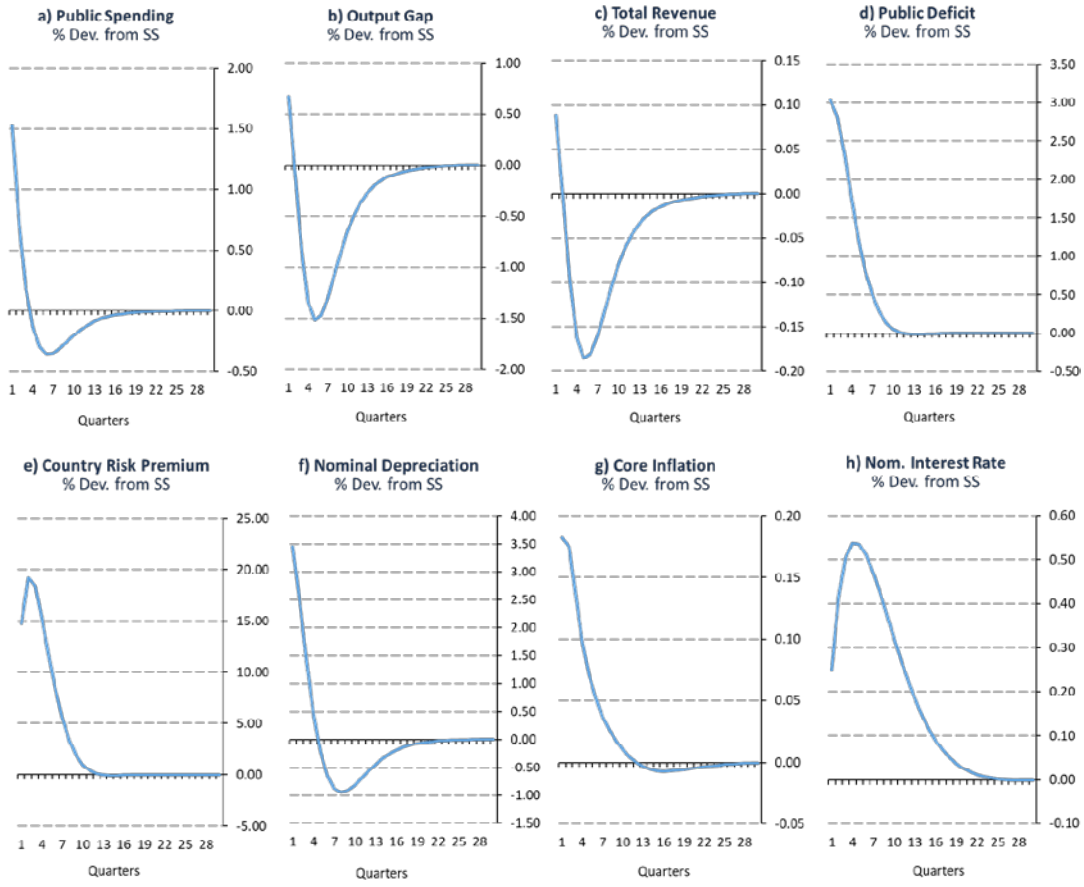
An exogenous increase in the public deficit may be observed, for example, when the government aims to maintain a level of public spending in the face of lower revenues (Graph 1a). This stance temporarily stimulates aggregate demand but results in tighter financial conditions.

- In this model, the IS curve includes explicitly the (primary) public expenditure, hence the latter exogenous increase induces a (temporarily) positive output gap (Graph 1b).
- Even if the level of tax revenues increases temporarily, given the positive output gap, the public deficit increases (Graphs 1c and 1d).

- In this context, the higher debt-to-GDP ratio raises the country risk premium and the funding costs for the public sector, while reducing demand for domestic assets (Graph 1e). In this model, country risk and debt dynamics depend on the public deficit.
- The fall in demand for domestic assets causes a depreciation of the nominal exchange rate (Graph 1f).In the face of inflationary pressures from the increase in the output gap and the depreciation of the exchange rate (Graph 1g), the monetary authority increases the policy interest rate in order to maintain inflation expectations (Graph 1h).
- In the medium term, public spending decreases in line with the commitment to attain the public deficit target. The latter induces future primary surpluses and a decrease in debt-to- GDP.
- The initial rise in the output gap is transitory, since an increase in the country risk premium translates into lower aggregate demand through, for example, a fall in investment.
    - In this model the IS curve explicitly includes the country risk premium. In particular,increases in risk premium have a negative impact on aggregate demand.

Response to a public deficit shock in percentage deviations from the steady state

(% Dev.from SS) Graph 1

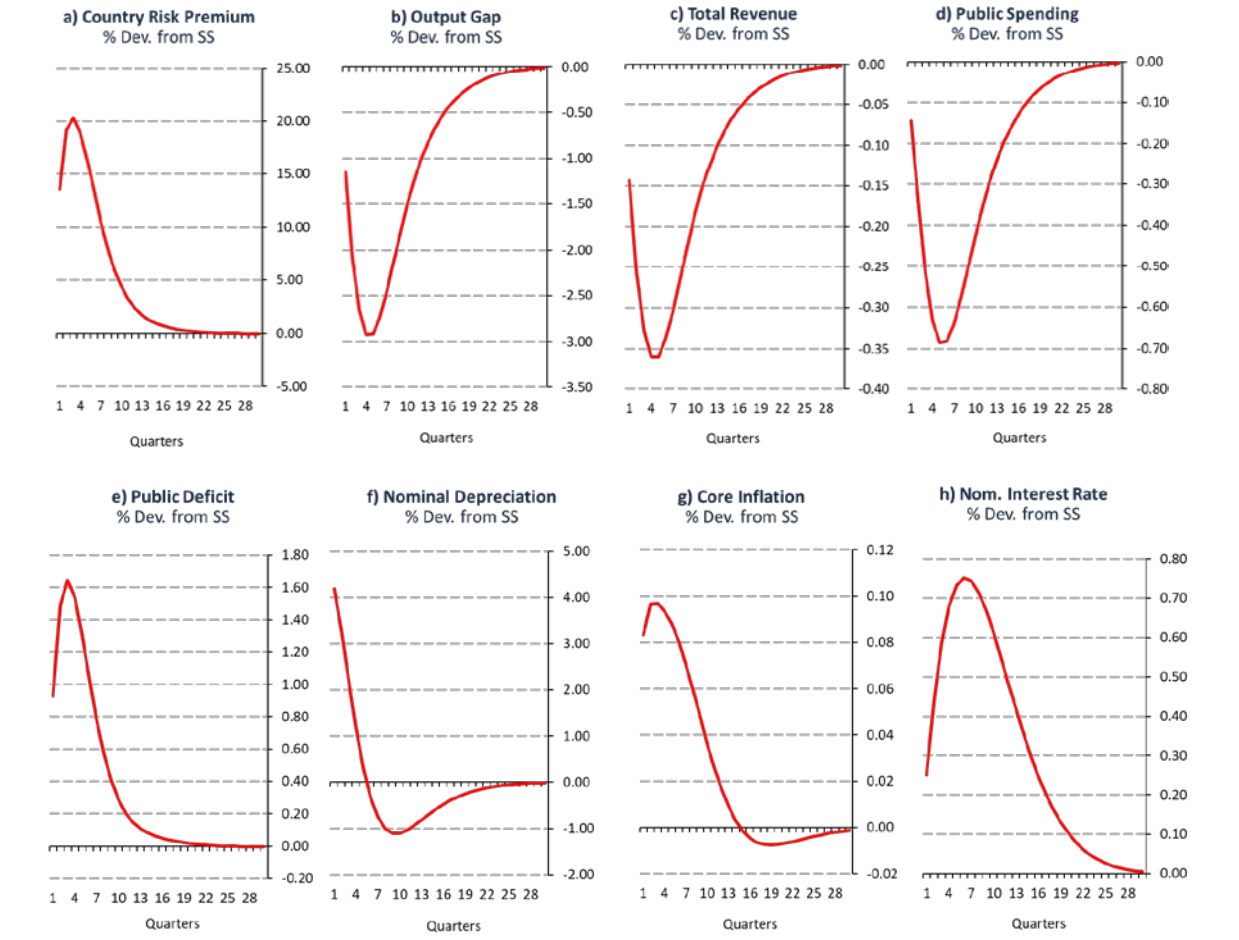


An increase in country risk

An exogenous increase in country risk premium caused, for example, by the re-negotiation of a long-standing trade agreement, as was the case with NAFTA in recent years, may introduce additional sources of uncertainty (Graph 2a). The latter may deter private domestic and foreign investment, and translate into negative demand and supply shocks. Less benign financial terms for funding thepublic deficit, in turn, translate into tighter financial conditions for the economy as a whole.

Response to a country risk shock in percentage deviations from the steady state

(% Dev.from SS) Graph 2



The increase in country risk premium associated with a less certain outlook for the economy weakens economic activity since, for example, it deters private investment(Graph 2b).

Since the IS curve depends on the country risk premium, increases in risk premium have a negative impact on aggregate demand.

The public deficit increases due to a fall in tax revenue, and an increase in borrowing costs of funds from abroad (Graphs 2c, d and e).

The nominal exchange rate depreciation is induced by a higher risk premium, and the corresponding fall in demand for domestic assets (Graph 2f).

The depreciation leads to inflationary pressures (Graph 2g).

In this model, the upward pressures on inflation from the exchange rate depreciation more than compensate the downward pressures on inflation from the fall in aggregate demand.

The central bank increases the policy interest rate to keep inflation expectations anchored (Graph 2h).

In the medium term, public spending should decrease to achieve the public deficit target.

Conclusion

A prudent fiscal policy contributes to the reduction of additional risk premia embedded along the yield curve, and consequently, of financing costs. Orderly adjustments of the domestic yield curve are desirable, since the components of the aggregate demand respond to different segments of the curve.

In order to maintain low risk premia, and consequently lower financing costs along the yield curve,it is necessary to preserve a solid macroeconomic framework. If a worsening of the outlook for public finances leads to increases in country risk premia and a fall in the demand for domestic financial assets, it may result in tighter financial conditions for the economy as a whole. The latter may cause exchange rate fluctuations, which are relevant for monetary policy since they may have an impact on price stability and, thus, inflation expectations.

Given the high level of trade openness and the highly liquid markets for the currency, the Mexican economy is highly exposed to external shocks. In this sense, a sound fiscal position contributes to an increase in the country's resilience in the face of said shocks, in turn providing room for monetary policy manoeuvre.

Appendix: model equations

Fiscal block[1]

1. Primary Public Spending	$\widehat{G}_t = \psi_1 \widehat{G}_{t-1} - (1-\psi_1)\psi_2 \widehat{DD}_t + \varepsilon_t^g$
2. Public Revenue	$\widehat{T}_t = \widehat{T}_t^{tax} + \widehat{T}_t^{oil} + \widehat{T}_t^{oyes} + \widehat{T}_t^{other}$
2.1. Tax Revenues	$\widehat{T}_t^{tax} = \tau_1 x_t + \varepsilon_t^{tax}$
2.2. Oil Revenues	$\widehat{T}_t^{oil} = \lambda_1 WTI_t + \lambda_2 \widetilde{Xoil}_t + \lambda_3 RER_t + \varepsilon_t^{oil}$
3. Public Deficit (Target)	$\widehat{DD}_t = \widehat{D}_t + \widehat{FC}_t + \varepsilon_t^{DD}$
3.1 Primary Deficit	$\widehat{D}_t = \widehat{G}_t - \widehat{T}_t$
3.2 Public Sector Financial Cost	$\widehat{FC}_t = \phi_1 \widehat{FC}_{t-1} + (1-\phi_1)[\phi_2 i_t - \phi_3 \pi_t + \phi_4 i_t^{US} - \phi_5 \pi_t^{US} + \phi_6 \widehat{D}_t + \phi_7 EMBI_t] + \varepsilon_t^{FC}$
4. Public Debt	$\widehat{B}_t = \widehat{B}_t^h + \widehat{B}_t^f$
4.1. Domestic Debt	$\widehat{B}_t^h = \kappa_1 \widehat{B}_{t-1}^h + \kappa_2 \widehat{DD}_t + \varepsilon_t^{B^h}$
4.2. Foreign Debt	$\widehat{B}_t^f = \mu_1 \widehat{B}_{t-1}^f + \mu_2 RER_t + \mu_3 \widehat{DD}_t + \varepsilon_t^{B^f}$

Monetary block

1. IS Curve	$x_t = \alpha_1 x_{t-1} + \alpha_2 E_t[x_{t+1}] - \alpha_3 r_t + \alpha_4 RER_t + \alpha_5 \widehat{G}_t - \alpha_6 \widehat{T}_t - \alpha_7 EMBI_t + \alpha_8 x_t^{US} + \varepsilon_t^x$
2. Phillips Curve (Target)	$\pi_t = \beta_1 \pi_{t-1} + (1-\beta_1) E_t[\pi_{t+1}] + \beta_3 x_{t-1} + \beta_4 RER_t + \varepsilon_t^\pi$
3. Uncovered Interest Rate Parity	$RER_t = (1-\gamma_1) RER_{t-1} + \gamma_1 E_t[RER_{t+1}] - \gamma_2 r_t + \gamma_3 r_t^{us} + \gamma_4 EMBI_t + \varepsilon_t^{RER}$
4. Risk Premium	$EMBI_t = \xi_1 EMBI_{t-1} + \xi_2 E_t[EMBI_{t+1}] + \xi_3 \widehat{DD}_t + \varepsilon_t^{pr}$
5. Taylor Rule (Monetary Policy)	$i_t = \rho_\pi i_{t-1} + \delta_1 \pi_t^g + \delta_2 x_t + \varepsilon_t^i$

Variables

$\hat{G}_t$ = Primary Public Spending.

$\widehat{DD}_t$ = Public Sector Deficit.

$\hat{T}_t$ = Public Revenue.

$\hat{T}_t^{tax}$ = Revenue from Income Tax.

$\hat{T}_t^{oil}$ = Revenue from Oil-Sector Taxes and Royalties.

[1] All fiscal block variables with a hat are deflated with the CPI and expressed as a percentage of GDP.

$\hat{T}_t^{oyes}$ = Revenue Generated by Government Agencies and State-owned Firms.

$\hat{T}_t^{other}$ = Revenue Composed of Other Types of Revenue.

x_t = Domestic Output Gap.

x_t^{US} = Foreign Output Gap.

WTI_t = Price of US Oil WTI Barrels.

$\widetilde{Xoil}_t$ = Domestic Oil Production.

RER_t = Real Exchange Rate.

$\hat{D}_t$ = Primary Deficit.

$\widehat{FC}_t$ = Public Sector Financial Cost.

i_t = Domestic Policy Interest Rate

i_t^{US} = Foreign Policy Interest Rate.

r_t = Domestic Real Interest Rate.

r_t^{us} = Foreign Real Interest Rate.

π_t = Domestic Inflation Rate.

π_t^{US} = Foreign Inflation Rate.

π_t^g = Domestic Inflation Gap.

$EMBI_t$ = Emerging Markets Bonds Index built by JP Morgan.

$\hat{B}_t$ = Public Debt.

$\hat{B}_t^h$ = Domestic Debt.

$\hat{B}_t^f$ = Foreign Debt.

ε_t^g = Exogenous Shock to Primary Public Spending.

ε_t^{tax} = Exogenous Shock to Revenue from Income Tax.

ε_t^{oil} = Exogenous Shock to Revenue from Oil-Sector Taxes and Royalties.

ε_t^{FC} = Exogenous Shock to Public Sector Financial Cost.

ε_t^{DD} = Exogenous Shock to the Public Sector Borrowing Requirements.

$\varepsilon_t^{B^{\mathrm{h}}}$ = Exogenous Shock to Domestic Debt.

$\varepsilon_t^{B^f}$ = Exogenous Shock to Foreign Debt.

ε_t^x = Exogenous Shock to Domestic Output Gap.

ε_t^{π} = Cost-Push Shock to the Domestic Economy.

ε_t^{RER} = Exogenous Shock to Real Exchange Rate.

ε_t^{pr} = Exogenous Shock to EMBI.

ε_t^i = Monetary Policy Exogenous Shock.