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MFM PRACTICE NOTES

Lower Volatility, Stronger Financial Systems Help Growth

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Do countries more exposed to macroeconomic volatility grow less than more stable nations? Are profligate governments more likely to exacerbate volatility? What about the role of the financial sector; are volatility, growth, government spending and financial development correlated? Recent research reported here confirms that an increase in volatility results in lower GDP growth and that the negative impact of volatility on growth is more pronounced in less financially developed countries and in countries where fiscal policy is more pro-cyclical. The challenges associated with macroeconomic volatility are even more pronounced in small island states due to their higher intrinsic volatility, smaller size, lack of scale economies, less diversified production structure, and tighter financial and fiscal constraints.

How does volatility affect growth?

A common finding in the literature is that volatility is often associated with lower economic growth, especially in less developed economies. [Loayza and Hnatkovska \(2004\)](#), for example, estimate that a one standard deviation increase in macroeconomic volatility (measured as standard deviation of output gap) leads to a 1.28% average loss in annual per capita GDP

growth. The negative effects of volatility on growth may arise if recessions are accompanied by tighter financial constraints, thus leading to lower consumption and investment rates. To the extent that lower investment hinders growth, we will see a negative relationship between growth and volatility.

In the same spirit, a negative link from volatility to growth may arise in the presence of fiscal constraints. Specifically, if fiscal constraints are tighter during downturns, recessions can lead to less human capital development and lower productivity – for instance, through cuts in expenditures on infrastructure, public health, education, etc. – leading to lower growth rates (see [Talvi and Végh \(2005\)](#)).

Volatility also typically entails substantial welfare costs in developing countries. This is because their risk-sharing mechanisms are fewer and underdeveloped. In that context, macroeconomic volatility leads to much more unstable consumption paths than in developed economies. Moreover, by reducing economic growth, volatility also lowers future consumption. It is therefore, not surprising that the welfare gains from reducing volatility in developing countries can be substantial (see, for instance, [Athanasoulis and van Wincoop \(2000\)](#)).

Does procyclical government spending affect volatility?

¹ This note was cleared by Miria Pigato, Practice Manager (GMFDR).

Government spending can mitigate the negative effect that volatility has on growth if it is counter-cyclical and its impact on output is positive. If government spending is procyclical and the government spending multiplier is positive, then increases in the variance of exogenous shocks will have a more negative effect on growth. Government spending tends to be pro-cyclical in (the majority of) developing countries. [Talvi and Végh \(2005\)](#) find that fiscal policy is acyclical in G7 countries while it is procyclical in most developing countries. More recent studies have found signs of improvement in the fiscal policy stance of developing countries in recent years. For instance, [Frankel, Vegh, and Vuletin \(2013\)](#) showed that while fiscal policy still remains predominantly pro-cyclical in developing countries, many of these countries are moving away from pro-cyclicality. [Carneiro and Garrido \(2015\)](#) extend this analysis to a larger sample of countries, and show that among 104 developing countries in their sample, about 50% followed or switched to counter-cyclical fiscal policies during 1990-2010.

There is a number of reasons that explain a procyclical fiscal policy behavior by developing countries. One explanation is that frictions in the international credit markets prevent developing countries from borrowing in bad times. As a result, developing countries' governments are forced to lower spending during recessions ([Gavin and Perotti \(1997\)](#), [Caballero and Krishnamurthy \(2004\)](#)). Other explanation for pro-cyclical government expenditures rely on political economy reasons which suggest that during good times governments face political pressures and temptations to keep spending high and run fiscal deficits. Lastly, delays in the implementation and execution of fiscal policies in developing economies also contribute to fiscal policy pro-cyclical in these countries.

What is the nexus between financial development, volatility, and growth?

The level of financial development is believed to affect the impact that volatility has on economic growth. [Aghion et al. \(2010\)](#) identified a

transmission channel through the existence of credit constraints in the economy. In the absence of financial frictions, i.e. when markets are perfect, long-term investment is believed to be counter-cyclical because the cost of long-term investment is lower in recessions. Moreover, [Carneiro and Hnatkovska \(2016\)](#) argue that when domestic financial markets are underdeveloped, domestic households and firms face binding financial constraints that become tighter in bad times, and this could amplify the effects of interest rate fluctuations on domestic activity. To the extent that higher volatility leads to lower investment rates, output and consumption, it will result in lower economic growth and welfare.

Recent studies suggest that beyond a certain level, however, financial development may generate decreasing returns to growth and stability ([Arcand, Berkes, and Panizza \(2012\)](#); [Sahay et al. \(2015a\)](#)). A few arguments might explain why this is so. One such view is that too much finance may increase the frequency of booms and busts thus increasing volatility and affecting economic growth negatively. Excessive availability of finance can also cause a diversion of talent and human capital away from productive sectors and toward the financial sector without a clear net positive impact on growth. Also, excessive leverage and risk taking can lead to increased economic and financial volatility, with potentially negative consequences for long-term growth, especially if regulation and supervision are inadequate (IMF (2003); Reinhart and Rogoff (2011); Sahay et al. (2015a) and (2015b)).

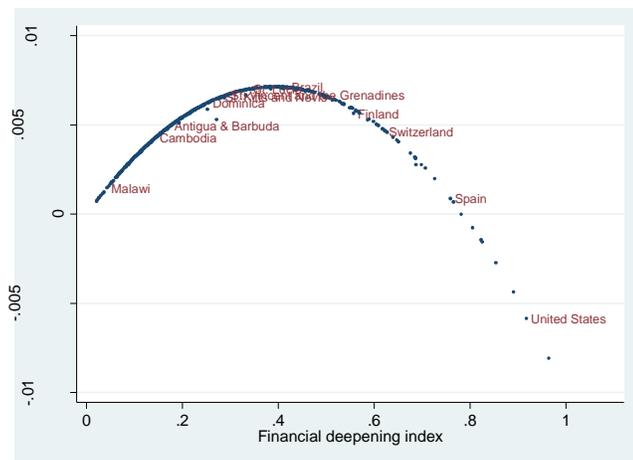
What is at stake for small island economies?

We have been able to confirm that small island economies are particularly susceptible to the impacts that volatility, fiscal policy procyclical, and financial development may have on growth. Research by one of us with Markus Brueckner shows that fiscal procyclical exacerbates the negative growth effect of terms of trade volatility – for the eastern Caribbean region and for other regions of the world ([Brueckner and Carneiro \(2015\)](#)). When

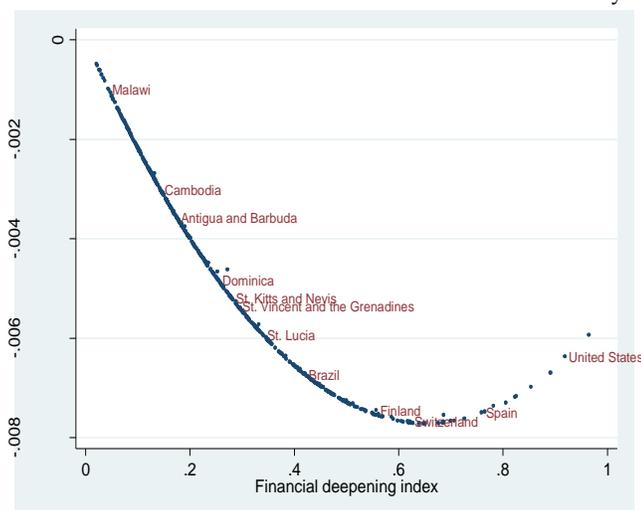
financial development is included in the econometric model, the coefficient on the interaction between terms of trade volatility, financial development, and the indicator representing the eastern Caribbean countries came out as significantly positive. These results thus suggest that counter-cyclical fiscal policy and financial development can mitigate the adverse growth effects of terms of trade volatility in the eastern Caribbean region.

Figure 1: Financial Development, Growth, and Volatility

Panel A: Predicted Contribution to Growth



Panel B: Predicted Contribution to Growth Volatility



Source: Authors' own calculations using the financial deepening index developed by the IMF in [Sahay and others \(2015a\)](#). Note: The curve in Panel A shows the predicted effect of financial deepening on growth for each level of the index, holding fixed other controls. The curve in Panel B shows the predicted effect of financial deepening on growth volatility, holding fixed other controls. Growth volatility is measured as the standard deviation of GDP growth rates over a five-year moving average.

In addition, [Carneiro and Hnatkovska \(2016\)](#) analyzed the business cycle characteristics of the eastern Caribbean countries and showed that macroeconomic aggregates there are quite volatile, with consumption exhibiting higher volatility than GDP. They also found that in these economies real interest rates are very volatile and strongly countercyclical with GDP and other macroeconomic aggregates. Similarly, fiscal expenditures also showed significant volatility, but were pro-cyclical with GDP. They also showed that domestic financial market development plays an important role in buffering the effects of interest rate shocks on the economy. In simulations using impulse-response techniques, by eliminating the working capital constraint, while keeping all shocks in place, the authors observed a significant reduction in the volatility of GDP, consumption, employment and government spending.

Advancing this research agenda, the three of us have confirmed empirically the non-linearity in the association between financial development and growth for the eastern Caribbean countries. Using an index that measures the degree of financial depth recently developed by the IMF (see Sahay et al. [\(2015a\)](#) and [\(2015b\)](#)) our results are unequivocal that financial development impacts growth positively. However, this positive effect weakens at higher levels of financial development and then eventually turn negative portraying a bell-shaped relationship between growth and financial development (see Panel A in Figure 1). We have also confirmed the existence of a non-linear relationship between financial development and volatility. As a mirror image of the dynamics between financial depth and growth, financial development initially lowers volatility up to a certain point where it starts to create additional volatility (see Panel B in Figure 1). The position of the eastern Caribbean countries in the charts shows that most of them have not yet reached the turning point where marginal growth dividends from additional financial development become negative which is good news. This indicates that there is indeed scope for further financial development in the region over the longer

horizon with potentially positive impacts on growth and stability.

What can be done to shield off volatility and spur growth in these countries?

The evidence points to the need for a concerted effort to develop macroeconomic fundamentals in tandem with further financial development so that a country can reap the maximum benefits from financial development for growth and stability. As illustrated by the findings in [Brueckner and Carneiro \(2015\)](#) and [Carneiro and Hnatkovska \(2016\)](#), this should be an interactive process. Strengthening financial systems could be achieved by improving macroeconomic fundamentals, whereas better fundamentals is partly a function of more developed financial systems. To be sure, one way of strengthening the region's ability to shift toward better fundamentals is through a more counter-cyclical fiscal policy stance with the adoption of fiscal rules. These are widely recognized as effective mechanisms that can increase the discipline and credibility of the fiscal authorities. In 2015, Grenada took decisive steps in that direction and adopted a comprehensive rule-based fiscal policy framework, along with various structural reforms, which have contributed to a significant improvement of the macroeconomic fundamentals. Not only would fiscal rules help in making fiscal policy less pro-cyclical in the eastern Caribbean, but they would also help the countries in the region to make significant progress in reigning in fiscal expenditures and implementing effective fiscal consolidation programs. Many countries in similar situations have benefitted from the parallel creation of an independent fiscal council that monitors macroeconomic projections underlying the budgeting process and the compliance with the fiscal rule. The region could innovate and experiment with a regional fiscal council given the many similarities shared by the countries in the region.

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