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AN EMPIRICAL NOTE ON THE PHILIPPINES' POLICY RESPONSES TO MANAGING CAPITAL FLOWS:

Evidence from the Crisis Periods

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Introduction

The aftermath of the 2007–2009 Global Financial Crisis (GFC) resulted in a large circulation of capital flows. This, in turn, revived discussions on dealing with these types of flows. While capital inflows provide emerging market economies, like the Philippines, with substantial gains in pursuing economic and financial development, large and volatile capital inflows can exert appreciation pressures on the local currency. These can also induce excessive bank lending, investment, as well as speculative activities that could lead to potential vulnerabilities in the balance sheets of the private sector. Meanwhile, the sudden turnaround of capital flows could result in currency crises, investment collapse, and banking sector stress, among other things.

Theoretically, there are five potential tools that policymakers can deploy to manage and address any untoward risks associated with capital flow volatilities (Blanchard et. al, 2014). These are: (1) foreign exchange (FX) intervention, (2) monetary policy, (3) fiscal policy, (4) macroprudential policy measures (MPMs), and (5) capital controls. Although there is anecdotal evidence on managing capital flows using this suite of macroeconomic policy tools, formal empirical investigation of the topic lacks in the Philippines. This study intends to fill that gap. In particular, this study aims to examine the policy responses of the Philippines to net capital flows (both inflows and outflows) by estimating the policy reaction functions for all macroeconomic policy responses². In addition, this

paper analyzes the differences in the Philippines' policy responses by type of flows across various forms of financial capital such as foreign direct investment (FDI), portfolio investments, and other investments.

Results of the study show that FX intervention policy is used proactively in responding to capital flows, absorbing about 4.6 percent of net inflows. While the monetary policy reaction function of the Bangko Sentral ng Pilipinas (BSP) reflects its policy preferences, no evidence of counter-cyclical monetary policy amid episodes of capital inflows was found. Results also show that fiscal policy is acyclical to both net inflows and outflows across all types of financial capital. Further, the study provides evidence that MPMs are more likely to be eased amid episodes of extraordinary crises. During the COVID-19 pandemic, the BSP relaxed some of its MPMs to complement its monetary easing measures.

² The authors note that the study does not include capital controls amid the views of the BSP that imposing capital controls cause more costs than benefits (The Exchange Rate Primer, March 2020).

Variables and Data Characteristics

The dataset used consists of quarterly data from Q1 2005 to Q2 2021. It is broadly categorized into four types, namely, policy response variables, net capital flows, domestic factors, and global indicators. The proxy variables for the policy measures—which are also the dependent variables—are presented in Table 1.

Table 1. Measures of Policy Response Variables

VARIABLES	DESCRIPTION	SOURCE
Measure of FX Intervention Response		
FX reserves as % of gross domestic product (GDP)	Refers to the United States (US) dollar value of holdings of FX at the end of a given period; Computed as the ratio of gross international reserves to GDP, in percent	BSP Department of Economic Statistics
Measures of Monetary Policy Response		
Reverse repurchase rate (RRP)	The overnight RRP, or borrowing rate, is a transaction between the central bank and local banks	BSP-DER
Weighted monetary operations rate (WMOR)	Computed as the weighted average of RRP, overnight deposit facility (ODF), and term deposit facility (TDF); Note that the computation for WMOR from Q3 2020 to Q2 2021 incorporates the issuance of BSP securities	
Reserve requirement (RR) ratio	Refers to the percentage of bank deposits and deposit substitute liabilities that banks must set aside in deposits with the BSP, which they cannot lend out, or where available, through reserve-eligible government securities	
Countercyclical buffers	Categorical variable that takes the value of 0, 1, or 2 to denote the probability that MPMs will be maintained, tightened, or relaxed, respectively	Authors' calculations
Conservation		
Capital requirements		
Leverage limits		

Loan loss provisions	Categorical variable that takes the value of 0, 1, or 2 to denote the probability that MPMs will be maintained, tightened, or relaxed, respectively	Authors' calculations
Systematically important financial institutions measures		
Loan restrictions		
Limits on the loan-to-value Ratio		
Liquidity requirements measures		
Reserve requirements		
Limits on foreign exchange positions		
Other MPMs		
Measures of Fiscal Policy Response		
Real government consumption spending cyclical component	Cyclical component of the real government consumption spending obtained from the Hodrick-Prescott filter, in percent, of trend	Authors' calculations

Meanwhile, net capital flow indicators cover both inflows and outflows across various types of financial capital—FDIs, portfolio investments, and other investments. The control variables for domestic factors include the real GDP growth rate, domestic credit, inflation, inflation gap, and financial depth index for financial markets. Finally, the control variables for global factors consist of stock price index volatility, US Federal Funds Rate, and dummy variables for the 2007–2009 GFC, the 2013 taper tantrum, and the 2020 COVID-19 pandemic crisis periods.

Model Specification and Methodology

The estimation methodology draws from Ghosh, Ostry, and Qureshi (2017). The baseline policy reaction functions for each macroeconomic policy response to net capital flows are estimated as follows:

FX Intervention

$$FXI_t = \alpha + \beta_1 CF_{j,t} + \sum_{k=1}^K \omega_{k1} GF_{k,t} + \sum_{l=1}^L \gamma_l DF_{l,t}^{fxi} + \varepsilon_t \quad eq.(1)$$

Monetary Policy

$$MP_t = \alpha + \beta_2 CF_{j,t} + \sum_{k=1}^K \omega_{k2} GF_{k,t} + \sum_{l=1}^L \delta_l DF_{l,t}^{mpm} + \varepsilon_t \quad eq.(2)$$

Fiscal Policy

$$FP_t = \alpha + \beta_3 CF_{j,t} + \sum_{k=1}^K \omega_{k3} GF_{k,t} + \sum_{l=1}^L \rho_l DF_{l,t}^{fp} + \varepsilon_t \quad eq.(3)$$

where:

FXI_t represents the FX intervention policy response at time t . Following Ghosh et. al (2017), FX reserves (in % share of GDP) is the proxy variable to measure BSP's FX intervention;

MP_t represents the monetary policy response at time t , which is proxied by central bank monetary policy tools, such as the overnight RRP and WMOR;

FP_t represents the fiscal policy response at time t . Like most empirical studies, real government consumption spending was used as the measure—instead of fiscal balance or fiscal variables scaled against GDP—since it is less likely to be directly endogenous to the cyclical nature of fiscal policy (Kaminsky, Reinhart, and Végh, 2005).³

The parameter, β , refers to the estimated coefficient for the net financial capital flows, CF_j , where j pertains to the aggregate financial capital, FDIs, portfolio investments, and other investments.

The notation $DF_{L,t}$ is a vector of control variables for domestic factors, whereas $GF_{k,t}$ is for global factors.

The three equations were estimated using linear regression with robust standard errors.

Macroprudential Policy Measures

The likelihood of implementing easing and tightening of MPMs vis-à-vis no policy change in response to net capital flows and other relevant control variables was tested and analyzed. The following multinomial logit regression models were estimated to evaluate the relative changes in the odds of implementing tight (Equation 4) or loose (Equation 5) MPMs over the baseline policy response (i.e., no policy change or neutral) amid changes in net capital flows and other explanatory variables:

$$\frac{\Pr(MPMs_t = tight)}{\Pr(MPMs_t = neutral)} = F \left(\alpha + \beta CF_{j,t} + \sum_{k=1}^K \omega_k GF_{k,t} + \sum_{l=1}^L \phi_l DF_{l,t}^{mpm} + \varepsilon_t \right) \quad eq.(4)$$

$$\frac{\Pr(MPMs_t = loose)}{\Pr(MPMs_t = neutral)} = F \left(\alpha + \beta CF_{j,t} + \sum_{k=1}^K \omega_k GF_{k,t} + \sum_{l=1}^L \phi_l DF_{l,t}^{mpm} + \varepsilon_t \right) \quad eq.(5)$$

Meanwhile, to estimate the differences in the Philippines' policy responses by type of flows across different forms of financial capital, j , the baseline models were extended. This was done by regressing each policy response on net capital inflows and outflows.⁴

³ The use of fiscal balance is often associated with a countercyclical fiscal policy such that governments run deficits and surpluses in bad and good times, respectively. Likewise, the use of fiscal variables as a share of GDP could generate misleading results as the cyclical behavior of output might dominate the cyclical stance of fiscal policy.

⁴ Due to insufficient observations for our categorical variable, MPMs, we were not able to estimate the response of MPMs to net inflows and outflows. Nonetheless, the results for macroprudential policy response to net flows across various types of financial capital are robust enough to conclude that MPMs are not the BSP's first policy option when responding to or managing capital flows.

Analysis of Model Results

FX intervention responds to net financial capital flows

Estimating the reaction function for FX intervention policy confirms that the BSP's measures respond strongly to net capital flows. This also holds for other types of financial capital, such as net FDIs and net portfolio investments. On aggregate, the BSP absorbs an estimated average of 3.4 percent of net capital flows through an increase in the BSP's FX reserve accumulation. The estimates also show that the extent of the BSP's intervention in the FX market is relatively modest, which provides empirical support to the argument that a flexible exchange rate system remains the BSP's first line of defense in dealing with capital flow volatilities and that the BSP will participate in the market when warranted (i.e., to temper overheating concerns or currency appreciation pressures).

FX intervention reacts more to surge in net inflows than in net outflows

Disaggregating net capital flows into inflows and outflows suggests that FX intervention is used more actively in response to episodes of net inflows than during periods of net outflows, as evidenced by the statistically significant coefficients across all types of financial capital. The results also show that net inflows are strongly associated with FX reserve accumulation. On average, FX intervention absorbs about 4.6 percent of net capital inflows. By type of financial capital, the central bank absorbs about 24.6 percent and 8.0 percent of net FDIs and net portfolio inflows, respectively.⁵

Monetary policy reaction function reflects the BSP's price stability objectives

The statistically insignificant results show that monetary policy adjustment is not the central bank's first choice when responding to capital flows. When we disaggregated net capital flows to inflows and outflows, the results remained consistent with the finding that monetary policy does not respond to either type of flow. The results also hold across various types of financial capital.

Instead, estimation results affirm the BSP's adherence to its inflation targeting framework, with monetary policy responding to standard Taylor Rule variables, such as inflation and output gaps, as well as real effective exchange rate (REER). On average, the estimates indicate that the BSP raises its policy interest rate by approximately 50 to 75 basis points (bps) for every 10.0 percent increase in output gap and inflation gap, respectively. Meanwhile, the policy rate is reduced by about 25 bps when the REER appreciates. Furthermore, the statistically insignificant coefficients of capital flows and standard Taylor Rule variables confirm that FX intervention and monetary policy tools are generally used by the BSP for different policy objectives.

Fiscal policy is acyclical to net financial capital flows

Our empirical results support the argument of Ghosh et al. (2017) that fiscal policy is broadly neutral or acyclical toward net capital flows. The correlation between the cyclical component of real government spending—our measure of fiscal policy response—and net capital flows is statistically insignificant, regardless of the type of financial capital. This suggests that the ebbs and flows of financial capital do not lead to a fiscal policy response. In the case of the Philippines, fiscal policy is the least deployed tool, or perhaps not an option, when responding to capital flow

⁵ One probable reason for the substantial FDI inflows in the country is the existing investment incentive and regulatory system in the Philippines, which include corporate tax incentives, free-trade economic zones, less stringent requirements, and cheaper cost of investment, such as on raw materials and labor.

volatility. One probable reason is the relatively slow budgetary process in the country, where the lags in policy response may aggravate instability associated with volatile capital flows. At the same time, capital flow volatility is typically best addressed by the quick and more straightforward tool of FX intervention.

MPMs are more likely to be eased amid extraordinary crisis episodes

Results show that MPMs are used depending on the nature of the crisis. MPMs are more likely to be relaxed amid crises or, at least, during moments of extreme economic duress, such as the COVID-19 pandemic. The BSP eased some of its macroprudential tools at the start of the public health emergency, which helped the financial system absorb the impacts of the shock. This also lessened the credit crunch that might have otherwise amplified the effect on the real economy.

Meanwhile, the BSP did not expand the use of its MPMs during the 2007–2009 GFC. It may be recalled that the conservative appetite of Philippine banks led to marginal exposure to derivatives or structured products (Guinigundo, 2010). On top of this, banking reforms implemented in the past years strengthened the industry in terms of risk management, corporate governance, and transparency. These contributed to the limited impact of the crisis on the Philippines' financial markets.

Robustness Tests

To ensure the robustness of the model and ascertain that the empirical results are not conditional on the authors' data selection, sample coverage, and period, some modifications were considered in the regression. First, a one-quarter lag of capital flows (% of GDP) was added to the model specification. Second, the robustness of our monetary reaction function (*Equation 2*) was tested by replacing the dependent variable, BSP's key policy interest rate, with other monetary policy tools—as proxied by the WMOR⁶ and RR ratio. Third, the variable REER was dropped in the model specification to test the consistency of the results for the monetary policy response to net capital flows. Finally, the policy reaction functions were estimated to gross foreign portfolio inflows and outflows.

Results show that the country's policy responses to net capital flows remain consistent and robust, regardless of model specifications. On the other hand, even after using WMOR and RR, as well as excluding the REER variable, no evidence of monetary policy adjustments during episodes of capital flows was found. The results also provide baseline inference that when the scale or volume of capital inflows is not considerably expansionary or inflationary, monetary adjustment need not be considered. Further, the robustness test results reflect the BSP's price stability objectives, where the policy interest rate is raised in response to higher inflation and a larger output gap.

⁶ The WMOR is the weighted average of the interest rates on the ODF, RRR, TDF, and BSP securities facility.

Conclusion

In this study, the authors identified and examined the systematic Philippine policy responses to capital flows by estimating policy reaction functions for each macroeconomic policy response—FX intervention, monetary, macroprudential, and fiscal—from 2005–2021. This was done using linear regression with robust standard errors and multinomial logit regression models. The formal empirical analysis confirms the following findings:

First, FX intervention responds to net flows across all types of financial capital, particularly amid episodes of inflows. This supports the widely held view that FX intervention is the first line of defense when managing capital flows. Specifically, results show that net capital inflows are positively and strongly related to FX reserve accumulation. Meanwhile, estimation results indicate that FX intervention is not used under episodes of net outflows.

Second, no evidence of countercyclical monetary policy amid episodes of capital inflows was found. The results are consistent with the BSP's price stability objectives—where monetary policy is used to address inflation and output gap concerns. Across all model specifications, the policy interest rate tends to be tightened in response to a larger output gap and higher inflation and lowered amid real exchange rate appreciation.

Third, fiscal policy is acyclical to net capital flows across all types of financial capital. The authors' analysis shows that fiscal policy is the least deployed tool when responding to capital flow volatilities. This is probably due to the relatively slow budgetary process in the Philippines. Such a lag in fiscal policy response may aggravate instabilities associated with volatile capital flows (Montiel, 2013; Ghosh et. al, 2017).

Finally, the study provides evidence that MPMs are more likely to be eased amid episodes of extraordinary crisis. During the COVID-19 pandemic, the BSP relaxed some of its MPMs to complement its monetary easing measures. Likewise, it was noted that MPMs are generally deployed to address financial stability risks associated with volatile capital flows.

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