Reaction of the Philippine stock market to domestic monetary policy surprises: an event study approach

Maran, Raluca

3 October 2022

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Abstract: This paper uses an event study analysis to assess how stock prices in the Philippines have reacted to domestic monetary-policy changes using data at a daily frequency from 2017 to 2022. A major contribution of this paper is the construction of a monetary-policy surprise measure for the Philippines, as the difference between the actual change in the monetary policy rate and the change anticipated by professional forecasters. My results are consistent with the literature, suggesting that unanticipated monetary policy changes exert a significant influence on stock prices in the Philippines. Overall, I find that an unexpected increase of 25 basis points in the monetary policy rate increases stock prices by about 1.09% on average. These results are robust to the inclusion of additional control variables in the baseline regression model, such as the implementation of restrictions to economic activity to curb the spread of the COVID-19 outbreak or revisions to macroeconomic forecasts released concomitantly with the monetary-policy rate announcement.

Key words: event study; government policy responses; monetary policy surprise; Philippines; stock market returns.

1. Introduction

The impact of monetary policy on financial markets has been an area of growing importance over the last few years. This topic is gaining even more attention in the current macroeconomic context characterised by sharply rising inflation rates worldwide. Central banks around the world are mostly raising interest rates in response to a combination of supply constraints and rising domestic demand. In line with its inflation-targeting mandate[1], the Bangko Sentral ng Pilipinas (hereafter "BSP") – the central bank of the Philippines – is currently hiking policy rates in an attempt to temper domestic demand and align it with the still constrained supply. This requires a delicate balancing act. If monetary tightening is too aggressive, the risk of an economic recession increases. On the other hand, if the central bank is too slow to act, inflation and inflation expectations could spiral. Hence the importance of understanding the full impact of monetary policy on various sectors of the economy, including financial markets.

Despite the large number of empirical studies on the financial market impact of monetary policy in various advanced and emerging market economies and to the best of my knowledge, there is currently no study dealing with the specific case of the Philippines. The purpose of this work is to bridge the gap by assessing the impact of unexpected changes to the monetary policy rate on stock market returns in the Philippines. The Philippines is one of the largest economies in the Association of Southeast Asian Nations (hereafter "ASEAN") and therefore of particular interest for such an analysis. In addition, financial markets in the Philippines have developed considerably since the Asian financial crisis of 1997-98. This warrants a better understanding of the overall impact of monetary policy on stock markets.

The empirical methodology I use in this paper belongs to the category of event studies. For the period running from January 2017 to September 2022, I assess the effect of the unexpected component of monetary policy decisions – which is also known in the literature as the monetary policy surprise – on stock returns on the days these decisions are announced. The surprise component is measured as the difference between the announcement of the BSP policy rate decision and the expectation of market participants. My sample covers 47 meetings of the Monetary Board of the BSP, from 9 February 2017 to 22 September 2022. For the measurement of stock market returns, I use the returns of the Philippine Stock Exchange Index, and of the 30 individual stocks therein. I calculate the daily returns of the stock index as the log-difference of the daily closing prices. The choice of a daily frequency is motivated by the fact that it facilitates the identification of exogenous monetary policy surprises.

The paper is structured as follows. Section 2 presents a literature review on the impact of unexpected changes to monetary policy on stock market returns. Section 3 presents the empirical strategy used to measure the impact of monetary policy surprises on stock returns in the Philippines, as well as the main data used. Section 4 presents the estimation results from the high-frequency data analysis and discusses

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[1] Bangko Sentral ng Pilipinas (BSP) acts in accordance with an inflation-targeting regime. The inflation target is at 3% ± 1 percentage point in 2022. In December 2020, the BSP decided to maintain the same inflation target for 2023 and 2024.

some policy implications. Section 5 concludes the paper.

2. Literature review

There is extensive evidence that monetary policy does not only affect inflation and the real economy, but it also has an impact on stock-market developments. Policymakers in central banks therefore have a great interest in understanding how monetary policy is transmitted to financial markets. According to the efficient market hypothesis (Fama, 1970), the influence of monetary policy on stock markets will materialise through unanticipated changes in monetary policy (i.e. monetary policy surprises), given that anticipated changes are already priced into stock values prior to the monetary policy announcement. As such, when monetary policy decisions are announced, what will move stock prices is announcements that deviate from those anticipated by market participants.

Numerous studies have assessed the impact of unanticipated monetary policy changes on stock returns. The bulk of this literature nevertheless focused on the United States of America (hereafter "USA") and other advanced economies. For the USA, for instance, Rigobon and Sack (2004), Bernanke and Kuttner (2005), Kontonikas and Kostakis (2013) and more recently Neuhierl and Weber (2018) explore how monetary policy surprises affect the stock market. For Germany, Fausch and Sigonius (2018) study the impact of monetary policy changes by the European Central Bank (hereafter "ECB") on the German stock market. Similar studies have focused on stock markets in Spain (Ruiz, 2015) or the United Kingdom (Ioannidis and Kontonikas, 2006), among others. The main conclusion of these studies is that monetary policy surprises have a significant impact on stock markets, in the sense that an unexpected decrease (increase) in the monetary policy rate is associated with an increase (decrease) in stock prices.

While there is extensive empirical evidence on the impact of domestic monetary-policy changes on stock markets in advanced economies, much less is known about emerging and developing markets. Some studies have documented the impact of monetary policy surprises on stock markets in large emerging market economies such as China (Tang et al., 2013), India (Prabu, Bhattacharyya and Ray, 2016), Turkey (Abdioglu and Aytekin, 2016) or Brazil (Val et al., 2018), while Suhaibu, Harvey and Amidu (2017) provide empirical evidence for a panel of 12 African countries. In a more recent paper, Sequeira (2021) studies the impact of unexpected changes to monetary policy in Singapore and concludes that monetary policy surprises can have either a positive or negative impact on stock returns depending on the type of policy lever they are associated with. To the best of my knowledge, there is currently no empirical evidence in this regard for the Philippines. Although the financial system in the Philippines remains dominated by the banking sector, there have been important changes in the structure of financial intermediation in this country, with a growing role for capital markets (Dakila, 2020).

Studies on the impact of monetary policy surprises on stock markets typically look at additional factors that could influence stock market returns. An example of control variable is the release of macroeconomic projections by the central bank outlined during the press conference following the monetary policy meeting. This approach is used, for instance, in Grande, Locarno and Massa (1998) and more recently in Parle (2021). Grande, Locarno and Massa (1998) for the Italian case conclude that revisions to the inflation forecast are highly significant, as they exert some influence on the excess return investors require on stock portfolios. For its part, Parle (2021) controls for revisions to the forecasts of both inflation and gross domestic product (hereafter "GDP") in the euro area announced during the ECB press conference. As regards revisions to the medium-term inflation forecast, Parle (2021) documents a negative and highly significant impact on stock returns when considering a sub-sample prior to July 2013, which is when the ECB started to provide formal forward guidance. By contrast, the author does not find evidence of a significant impact of GDP revisions in any of the model specifications.

Another common variable used in recent studies is the impact of the novel coronavirus 2019 (hereafter "COVID-19") pandemic on stock market returns. The pandemic has constituted an unprecedented shock for economic activity around the world, as it simultaneously affected supply and demand. This event led to a growing literature on the effects of pandemic-related policy responses on financial markets. These studies provide compelling empirical evidence on the negative impact the pandemic has had on equity prices (Scherf, Matschke and Rieger, 2022; Mazur, Dang and Vega, 2021; Alfaro et al., 2020; Zaremba et al., 2020), while Bats, Greif and Kapp (2022) complement these results with findings at the sectoral

level. Single-country studies on the stock market impact of the pandemic in emerging market economies are relatively scarcer and mostly focus on large economies such as China (Xu, Li and Wei, 2022; Sun et al., 2021; Duan, Liu and Wang, 2021; Zhang et al., 2021), Brazil (Costa, Da Silva and Matos, 2022), Chile (Gonzalez and Gallizo Larraz, 2021), India (Guru and Das, 2021) or Indonesia (Utomo and Hanggraeni, 2021). Camba and Camba (2020) provide evidence for the Philippines.

3. Empirical strategy and data

3.1. Empirical strategy

There are two widely used approaches to estimating the impact of monetary-policy announcements, namely the event-study approach developed by Bernanke and Kuttner (2005) and the identification-through-heteroskedasticity model proposed by Rigobon and Sack (2004). To identify the impact of monetary policy surprises on financial markets more accurately, numerous papers have conducted event studies based on high-frequency observations, such as daily data. In this paper I use the event-study approach proposed by Bernanke and Kuttner (2005). In this approach, the returns of stock market indices for a short window of time around the announcement are regressed around the surprise component of policy rate changes. The regression coefficient measures the magnitude and direction of the response. This method is therefore suitable for identifying the behaviour of stock prices around the specific time of the announcement, by filtering out other sources of price changes.

In the baseline model, the relationship between monetary policy and stock prices can be expressed in the following manner (Bernanke and Kuttner, 2005):

$$r_t = \alpha + \beta \Delta PR_t^e + \gamma \Delta PR_t^u + \delta X_t + \varepsilon_t \qquad (1)$$

Where r_t is the daily return of the benchmark stock-market index, namely the Philippines Stock Exchange Index (hereafter "PSEi Index") on announcement day t; PR_t^e is the expected change in the overnight reverse repurchase facility (hereafter "monetary policy rate") on announcement day t; PR_t^u denotes the unexpected change in the monetary policy rate on announcement day t; X is a vector of other factors that could influence the daily return of the benchmark stock market index besides the monetary policy rate (Refer to sub-section 3.2 for details); and ε is the residual. The coefficient of interest is γ.

The daily returns of the benchmark PSEi Index are computed using the log-difference of the daily closing prices, as follows:

$$r_t = \ln\left(\frac{P_t}{P_{t-1}}\right) \qquad (2)$$

Where P_t is the closing price of the PSEi Index on day t.

Monetary policy surprises can be computed in several ways. Bernanke and Kuttner (2005) assume that the price of policy-rate based futures contracts will be a reasonable measure of market participants' expectations. Another approach is described in De Pooter et al. (2018). They use changes in the two-year nominal Treasury yield during a 60-minute window around the monetary policy announcement as a proxy for monetary policy surprises. However, given the limited availability of financial derivative data for the Philippines, I use the approach suggested in Ehrmann and Fratzscher (2002, 2003) and more recently in Ilek (2021), whereby the monetary policy surprise is measured as the difference between the decision announced by the central bank and the market expectation with respect to the policy rate. As shown by Ehrmann and Fratzscher (2002, 2003), the performance of the survey-based measures is very similar to that of expectations data derived from policy-rate futures contracts.

I therefore define the monetary policy surprise as the difference between the announced policy rate by the BSP for month t and the average forecast by a poll of professional forecasters for the same month drawn just one day before the announcement. The unexpected change in the policy rate, ΔPR_t^u, is determined as follows:

$$\Delta PR_t^u = PR_t - PR_{t-1}^f \qquad (3)$$

Where PR_t represents the policy rate announced by the BSP for month t; and PR_{t-1}^f is the average policy-rate forecast by professional forecasters in the Philippines for month t, drawn one day before the official announcement.

As a corollary, the expected change in the policy rate, ΔPR_t^e, is given by:

$$\Delta PR_t^e = \Delta PR_t - \Delta PR_t^u \qquad (4)$$

Where ΔPR_t is the actual change in the monetary policy rate in month t.

3.2. Data

The dependent variable is the daily return of the PSEi Index, which is the benchmark stock market index of the Philippines Stock Exchange. The PSEi Index is composed of a fixed basket of 30 firms selected based on specific criteria. It is computed as a market capitalisation-weighted price index[2]. Figure 1 illustrates the evolution of stock market returns in the Philippines during the sample period. In the sub-period spanning from January 2017 to December 2019, average returns were relatively meagre. Subsequently, the poor performance in returns throughout the first half of 2020 mostly resulted from the stock market crashes that followed the outbreak of the COVID-19 pandemic. The Philippine stock market has thereafter recovered in line with global markets, most notably in the final quarter of 2020 and more recently during the July-August 2022 period. Without experiencing the scale of the early-2020 downturn, Philippine equities displayed mostly negative returns during the first half of 2022 amid a combination of rising COVID-19 infections and geopolitical tensions.

Figure 1. **Return on the benchmark PSEi Index, January 2017 to September 2022**
30-day moving average, percentage
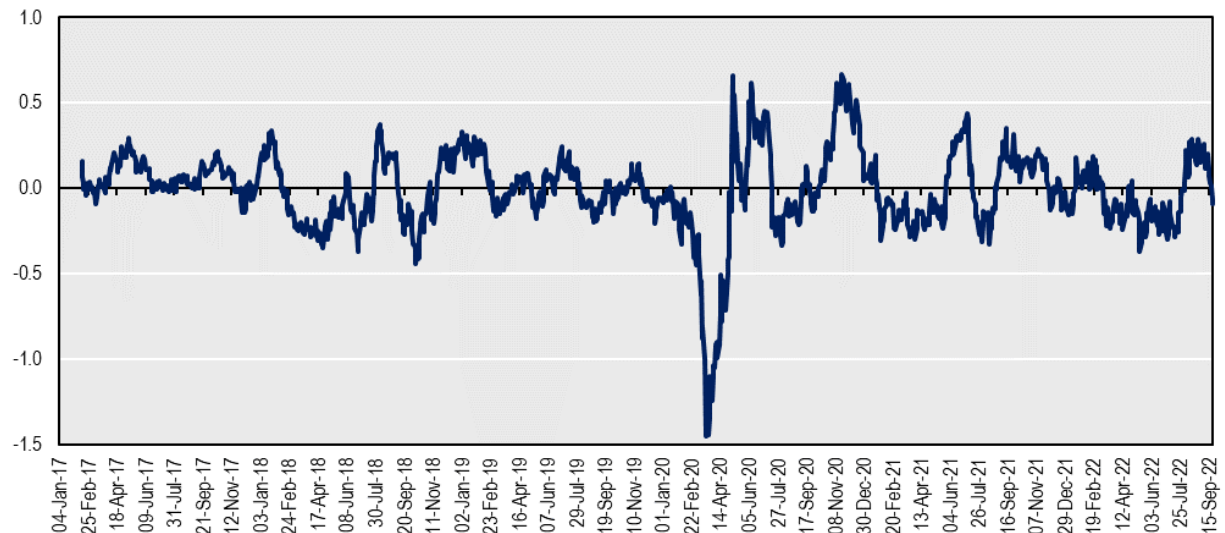
Note: Figures refer to the price return.
Source: Author's calculations based on data from WSJ Markets (n.d.), *PSEi Index,* https://www.wsj.com/market-data/quotes/index/PH/PHILIPPINE%20STOCK%20EXCHANGE/PSEI/historical-prices (Accessed on 23 September 2022).

For the event study, the sample period runs from January 2017 to September 2022. The Monetary Board of the BSP usually meets eight times a year, in February, March, May, June, August, September, November and December. There were 47 BSP monetary policy meetings during the 2017-2022 sample period, of which two off-cycle meetings held on 16 April 2020 and 14 July 2022, respectively (Refer to Annex 1 for the full list of BSP monetary policy meetings). During the sample period, the BSP delivered a total of four unexpected changes to the monetary policy rate, as outlined in Table 1 below. The average monetary policy surprise was of -37.5 basis points. The most significant unexpected interest rate increase was 25 basis points in July 2022 and the most significant unexpected interest rate cut was 50 basis points

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[2] This is a type of stock market index whose individual components are included in amounts that correspond to their total market capitalisation. Each firm's market capitalisation is computed by multiplying the price of a stock by its total number of outstanding shares.

in June 2020. All these unexpected interest rate changes have occurred during the COVID-19 pandemic, which began to gradually spread in the Philippines starting from March 2020.

Table 1. **Overview of unexpected monetary-policy rate changes by the BSP, January 2017 to September 2022**

Date of the monetary policy meeting	Actual change in the monetary policy rate	Forecasted change in the monetary policy rate*	Expected change in the policy rate (bps)	Unexpected change in the policy rate (bps)
16 April 2020	Policy rate cut by 50 basis points (hereafter "bps")	Policy rate to be cut by 25 bps	-25 bps	-25 bps
25 June 2020	Policy rate cut by 50 bps	Policy rate to remain unchanged	0 bps	-50 bps
19 November 2020	Policy rate cut by 25 bps	Policy rate to remain unchanged	0 bps	-25 bps
14 July 2022	Policy rate raised by 75 bps	Policy rate to be raised by 50 bps	+50 bps	+25 bps

Note: *Forecast by a survey of professional forecasters in the Philippines one day before the monetary policy announcement, as quoted by ING Think. The expected change in the monetary policy rate is calculated as the difference between the actual change in the monetary policy rate and the unexpected change in the monetary policy rate, as described in Equation (4) from above. The unexpected change in the monetary policy rate is computed as the difference between the actual change in the monetary policy rate and the forecasted change in the monetary policy rate, as shown in Equation (3).

Source: Author's elaboration based on data from BSP (n.d.), *Price Stability – Monetary Policy Decisions,* https://www.bsp.gov.ph/SitePages/PriceStability/MonetaryPolicyDecision.aspx (Accessed multiple times in September 2022) and ING Think (n.d.), *Economic and Financial Analysis,* https://think.ing.com/.

While monetary policy significantly impacts financial markets, there are several other variables that could influence the causal relationship between unexpected monetary policy changes and stock market returns. In order to provide robust insights into the causal relationship, it is imperative to control for potential omitted variables that could bias this relationship. Table 2 hereafter lists the control variables included in the empirical analysis.

Table 2. **Description of control variables included in the empirical analysis**

| Control variable	Description	Measurement unit	Data source
COVID-19 restrictions	A discrete variable that takes a value of "-1" if pandemic-related restrictions were loosened; a value of "0" if there was no change to the stringency of restrictions; and a value of "1" if restrictions were tightened.	Discrete variable taking the values of -1, 0 and 1	Hale et al. (2021)
Macroeconomic projections released	A dummy variable that takes a value of "0" if no medium-term macroeconomic projections were released at the same time as the monetary policy announcement and a value of "1" if any medium-term macroeconomic projections were released simultaneously with the monetary policy announcement.	Dummy variable	BSP press releases
Revision to medium-term inflation forecast	Change in the forecast for the headline inflation rate for the next calendar year in the macroeconomic projections released at the same time as the monetary policy announcement (if applicable).	Change in basis points	BSP press releases

Source: Author's elaboration.

All the unexpected changes to the monetary policy rate included in the sample have occurred since March 2020, when COVID-19 was officially declared a pandemic. It is therefore natural to assume that the outbreak of the pandemic, and in particular the restrictions on economic activity that were implemented to curb its spread, have had an impact on stock markets in the Philippines. I therefore include a variable that captures changes to the stringency of pandemic-related restrictions in the Philippines between March 2020 and September 2022. In order to construct this variable, I use the methodology deployed by Kuttner and Shim (2016), who build a measure of the macroprudential policy stance. The authors construct a monthly variable that takes on discrete values depending on whether the

macroprudential stance was tightened, loosened or kept unchanged. Instead of using a monthly approach as in Kuttner and Shim (2016), I assess the changes to the COVID-19 policy stance on a daily basis. The data source for the COVID-19 policy stance is the overall stringency index from the Oxford COVID-19 Government Response Tracker (Hale et al., 2021). The discrete variable that captures the stance with respect to COVID-19 restrictions is defined as:

$$COVID19_t = \begin{cases} -1 \ if \ the \ policy \ stance \ was \ loosened \ with \ respect \ to \ day \ t-1 \\ 0 \ if \ there \ was \ no \ change \ in \ the \ policy \ stance \ with \ respect \ to \ day \ t-1 \\ 1 \ if \ the \ policy \ stance \ was \ tightened \ with \ respect \ to \ day \ t-1 \end{cases}$$

Figure 2 below illustrates the evolution of the COVID-19 policy stance as defined above, using the Oxford Government Response Tracker and the stringency index contained therein (Hale at al., 2021) as a measure of government restrictions. The first restrictions to curb the spread of the pandemic were implemented in the Philippines on 24 January 2020. The policy stance was subsequently loosened for the first time on 1 May 2020. Overall, between 24 January 2020 and 22 September 2022, there were a total of 21 tightening episodes and 61 loosening episodes. In the remaining 893 days, there was no change to the COVID-19 policy stance. The most recent tightening episode occurred on 16 April 2022, while the most recent loosening one took place on 8 September 2022.

Figure 2. **COVID-19 policy stance in the Philippines, 4 January 2020 to 22 September 2022**
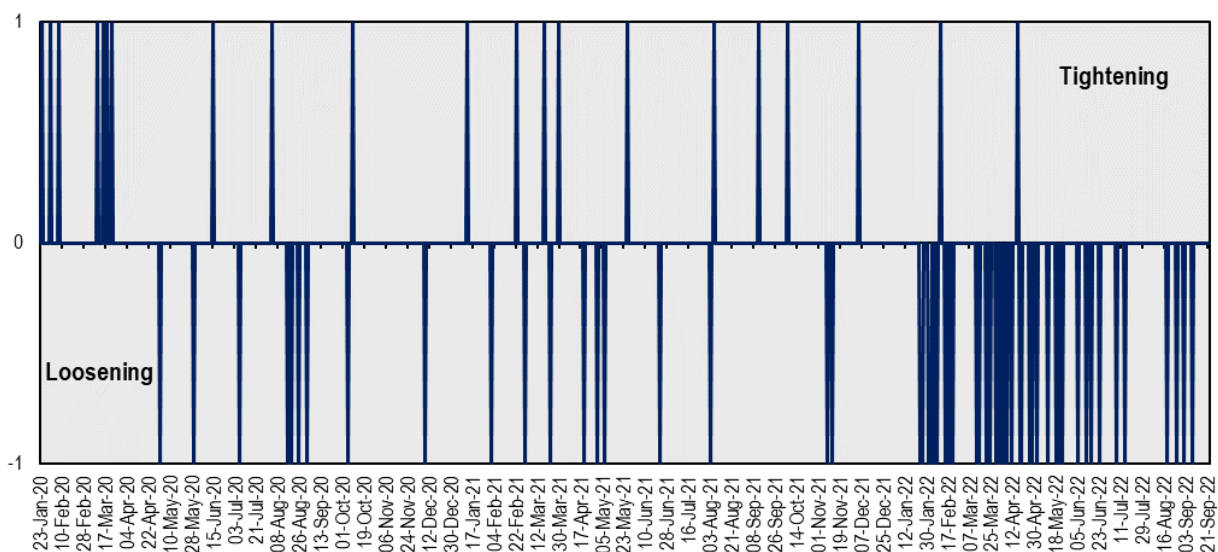
Note: Figures capture changes to the composite index of pandemic-related restrictions, which is based on nine response indicators. The nine metrics used to calculate the stringency index are: workplace closures; school closures; cancellation of public events; restrictions on public gatherings; closures of public transport; stay-at-home requirements; public information campaigns; restrictions on internal movements; and restrictions on international travel. For each day, a value of "-1" corresponds to a loosening of pandemic-related restrictions compared to the previous day; a value of "0" means there was no change to the stringency of restrictions from the previous day; and a value of "1" corresponds to a tightening of restrictions compared to the previous day.
Source: Author's elaboration based on data from Hale et al. (2021), "A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker", https://doi.org/10.1038/s41562-021-01079-8 (Accessed multiple times in September and October 2022).

In addition, the BSP sometimes releases the results of its headline inflation projections for the current year, as well as for the following two calendar years, concomitantly with the announcement on the monetary policy rate[3]. This information can have significant impacts on financial markets. Following the methodology of Parle (2021), I include a dummy variable to control for BSP meetings when medium-term macroeconomic projections are released in parallel with the monetary-policy rate

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[3] These projections are usually made public in a distinct report titled "Highlights of MB Meetings on Monetary Policy", which is published with a lag of one month following each policy decision. The publication schedule for 2017-2022 is available at: https://www.bsp.gov.ph/Pages/PriceStability/ScheduleOfMeetingsOfTheAdvisoryCommitteeAndMonetaryBoardOnMonetaryPolicy.aspx. The BSP sometimes makes these revisions public during the press reference that follows the monetary policy meeting. Only those revisions are considered for the empirical analysis.

decision. Parle (2021) also includes two additional variables that capture the impact of revisions to the headline inflation and GDP forecasts for the next calendar year. However, the BSP does not release medium-term GDP projections simultaneously with its monetary-policy rate announcement. GDP revisions are typically published at a later date following the Monetary Board meeting. As such, I will only include a variable that captures revisions to the medium-term inflation forecast, when such a revision is announced on the day of the monetary policy meeting. Table 3 hereafter lists all revisions to the medium-term inflation forecast stated in the BSP press release.

Table 3. **Revisions to the medium-term inflation forecast announced concomitantly with the monetary-policy rate decision, January 2017 to September 2022**

Date of the monetary policy meeting	Revision to the medium-term inflation forecast
19 March 2020	The baseline inflation-rate forecast for 2021 was revised downwards by 50 basis points, from 2.9% at the previous meeting to 2.4%.
24 March 2022	The baseline inflation-rate forecast for 2023 was revised upwards by 30 basis points, from 3.3% at the previous meeting to 3.6%.
19 May 2022	The baseline inflation-rate forecast for 2023 was revised upwards by 30 basis points, from 3.6% at the previous meeting to 3.9%.
23 June 2022	The baseline inflation-rate forecast for 2023 was revised upwards by 30 basis points, from 3.9% at the previous meeting to 4.2%.
18 August 2022	The baseline inflation-rate forecast for 2023 was revised downwards by 20 basis points, from 4.2% at the previous meeting to 4%.
22 September 2022	The baseline inflation-rate forecast for 2023 was revised upwards by 10 basis points, from 4% at the previous meeting to 4.1%.

Note: The medium-term inflation forecast is considered to be the forecast for the next calendar year as of the date of the monetary policy meeting. Figures refer to the headline inflation rate.
Source: Author's elaboration based on data from BSP (n.d.), *Price Stability – Monetary Policy Decisions,* https://www.bsp.gov.ph/SitePages/PriceStability/MonetaryPolicyDecision.aspx (Accessed multiple times in September 2022).

4. Results and policy implications

In Table 4, I report the results from a baseline regression without any control variables. The independent variables are the expected change and the unexpected change to the monetary policy rate in the Philippines. The results show a positive and significant relationship between immediate movements in the PSEi Index and the unexpected change in the monetary policy rate. The relationship is significant at the five percent level. Quantitatively, the results imply that an unexpected increase of 25 basis points in the monetary policy rate increases stock prices by around 1.09% on average. Monetary policy is, however, only responsible for a small proportion of variation in stock prices, as illustrated by the low R-squared value. It is not uncommon to find a positive sign for the coefficient of the unexpected policy rate change in an emerging market economy. Similar results were obtained, for instance, by Sequeira (2021) for Singapore and by Suhaibu, Harvey and Amidu (2017) for a panel of 12 African countries, albeit the latter study used a different methodology.

Table 4. **Baseline regression of PSEi Index returns on expected and unexpected changes in the monetary policy rate in the Philippines**

	PSEi Index
Expected policy rate change	0.0346***
	(0.0090)
Unexpected policy rate change	0.0437**
	(0.0200)
Constant	-0.0087
	(0.0348)
Observations	1 392
R-squared	0.0165

Note: The dependent variable measures the change in percentage points of the PSEi Index of prominent firms listed on the Philippines Stock Exchange from before to after the BSP monetary policy announcement. The sample period comprises 47 policy actions between 1 January 2017 and 22 September 2022. Standard errors are reported in parentheses. *, **, *** denote statistical significance at the 10%, 5% and 1% level, respectively.
Source: Author's calculations using R Core Team (2022), https://www.R-project.org/.

The dependent variable is composed of changes in the short-run window around the BSP monetary policy announcement. As a result, any significant values for the β coefficient in Equation (1) should be interpreted as short-term effects rather than more persistent effects in the long-term.

Table 5 illustrates the results of the full model specification, which includes additional independent variables, as outlined in sub-section 3.2 above. Across all specifications, the coefficient on the unexpected change in the monetary policy rate remains positive and significant at either the five percent or at the ten percent level. As anticipated, COVID-19-related restrictions on economic activity have a negative impact on stock prices, in the sense that a tightening of the policy stance (coded as "1") is associated with a decline in stock prices, while a loosening of the stance (coded as "-1") is associated with an increase in the average stock price. In addition, macroeconomic projections and revisions to the BSP medium-term inflation forecast released concomitantly with the monetary policy rate announcement also have a highly significant impact on stock market prices in the Philippines.

Table 5. **Regression of the PSEi Index returns on expected and unexpected changes in the monetary policy rate and control variables**

	PSEi	PSEi	PSEi	PSEi
Expected policy rate change	0.0346***	0.0332***	0.0509***	0.0328***
	(0.0090)	(0.0091)	(0.0093)	(0.0096)
Unexpected policy rate change	**0.0437****	**0.0426****	**0.0344***	**0.0424****
	(0.0200)	**(0.0200)**	**(0.0197)**	**(0.0194)**
COVID-19 restrictions		-0.2796*	-0.4123***	-0.3856**
		(0.1594)	(0.1580)	(0.1557)
Macroeconomic projections released			-3.8028***	-4.0597***
			(0.5485)	(0.5421)
Revision to medium-term inflation forecast				0.1140***
				(0.0176)
Constant	-0.0087	-0.0161	-0.0064	-0.0040
	(0.0348)	(0.0350)	(0.0345)	(0.0340)
Observations	1 392	1 392	1 392	1 392
R-squared	0.0165	0.0187	0.0515	0.0791

Note: The dependent variable measures the change in percentage points of the PSEi Index of prominent firms listed on the Philippines Stock Exchange from before to after the BSP monetary policy announcement. The sample period comprises 47 policy actions between 1 January 2017 and 22 September 2022. Standard errors are reported in parentheses. *, **, *** denote statistical significance at the 10%, 5% and 1% level, respectively.
Source: Author's calculations using R Core Team (2022), https://www.R-project.org/.

Understanding the impact of monetary policy on the stock market is highly important for policymakers in the Philippines. Indeed, stock market developments are a good barometer of the economic situation since they can have an impact on the real economy via household consumption and corporate investment. First, as household consumption is influenced by income and asset ownership – such as real estate and financial assets through the "wealth effect" – any change in wealth will have an impact on households' spending decisions. Since the early work by Ando and Modigliani (1963) on quantifying the effect of changes in wealth on household consumption, an extensive empirical literature has emerged. The international evidence is broad for advanced and emerging market economies alike. For example, in the US, the estimates of the marginal propensity to consume out of wealth are in the range of four and eight cents from a dollar increase in aggregate wealth (Caceres, 2019; Carroll, Otsuka and Slacalek, 2006; Ludvigson and Steindel, 1999). In the United Kingdom (hereafter "UK"), Marquez, Martinez-Canete and Perez-Soba (2013) provide estimates for the marginal propensity to consume out of wealth of between 0.03 and 0.14. For China, Painter, Yang and Zhong (2021) report an elasticity of 0.023, while Rungcharoenkitkul (2011) suggests an elasticity of around 0.02-0.03 for Thailand.

In a similar vein, stock market movements also have an impact on corporate investment, which operates via Tobin's Q. According to Tobin's Q theory, if the market value of a firm over its book value is greater than one, then the respective firm should increase its capital stock because investment is profitable (Tobin, 1969). Because national income depends on private investment, a fall in this metric will trigger an immediate economic contraction. Most studies on this topic have used macroeconomic data. Davis

and Stone (2004), for example, concluded that Q was significant on average for a panel of 19 economies belonging to the Organisation for Economic Cooperation and Development (hereafter "OECD"). Their results suggest that a 1% increase in Q is associated with a 1.1% rise in the level of long-term investment in the 19 OECD economies. Strauss and Yang (2021) for a panel of 11 developing economies similarly found that Q is a significant determinant of investment over 1997-2017.

Furthermore, stock market developments also influence cross-border capital flows. A large empirical literature has documented the benefits of international capital flows for recipient countries, in particular for emerging market economies (Igan, Kutan and Mirzaei, 2016; Obstfeld, 2012); however, extreme episodes such as sudden stops in cross-border flows are typically associated with considerable output losses, as shown by David and Goncalves (2019), Ghosh, Ostry and Qureshi (2016) and Hutchison and Noy (2006), among others. In the context of capital flows, the recipient country's macroeconomic outlook plays a determinant role, as it affects the rate of return on investment. Many empirical studies rely on financial asset prices as a proxy for the macroeconomic outlook. Eguren-Martin et al. (2021), for instance, use the information contained in financial asset prices and show that both push and pull factors have significant effects across the distributions of gross capital flows.

5. Conclusion

This paper studies the impact of domestic monetary policy on stock prices in the Philippines. A major contribution of this work is the construction of a monetary-policy surprise measure for the Philippines. The main findings are that stock market movements in the Philippines respond to an unexpected change to the domestic monetary-policy rate (i.e. a monetary policy surprise). The empirical results suggest that an unexpected increase of 25 basis points in the overnight reverse repurchase facility is associated with an average increase of 1.09% in share prices for the 30 firms included in the Philippine Stock Exchange Index. In addition to monetary policy, the restrictions on economic activity implemented to curb the spread of the COVID-19 outbreak and the release of revisions to macroeconomic forecasts are other factors that have significantly impacted stock returns in the Philippines during the sample period.

These findings are potentially useful for Bangko Sentral ng Pilipinas, the central bank of the Philippines, as they could provide more information on the overall impact of monetary policy. Indeed, stock market developments can have a knock-on effect on consumer behaviour, firms' investment decisions and they also influence capital flows. There is nevertheless room for further research in this domain. While the paper explores the impact of monetary policy surprises on the most prominent firms listed on the Philippine stock market, further insights could be gained through a detailed analysis of these effects on various sectors of the economy. It could be equally useful for policymakers to understand the persistence of these impacts on financial markets, that go beyond the short-term effects described in this paper. These constitute avenues for further research.

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Annex 1: Overview of meetings by the Monetary Board of Bangko Sentral ng Pilipinas and decisions with respect to the monetary policy rate, 1 January 2017 to 22 September 2022

Date	Announcement with respect to the monetary policy rate
9 February 2017	Maintained at 3%.
23 March 2017	Maintained at 3%.
11 May 2017	Maintained at 3%.
22 June 2017	Maintained at 3%.
10 August 2017	Maintained at 3%.
21 September 2017	Maintained at 3%.
9 November 2017	Maintained at 3%.
14 December 2017	Maintained at 3%.
8 February 2018	Maintained at 3%.
22 March 2018	Maintained at 3%.
10 May 2018	Raised by 25 bps, from 3% to 3.25%.
20 June 2018	Raised by 25 bps, from 3.25% to 3.5%.
9 August 2018	Raised by 50 bps, from 3.5% to 4%.
27 September 2018	Raised by 50 bps, from 4% to 4.5%.
15 November 2018	Raised by 25 bps, from 4.5% to 4.75%.
13 December 2018	Maintained at 4.75%.
7 February 2019	Maintained at 4.75%.
21 March 2019	Maintained at 4.75%.
9 May 2019	Decreased by 25 bps, from 4.75% to 4.5%.
20 June 2019	Maintained at 4.5%.
8 August 2019	Decreased by 25 bps, from 4.5% to 4.25%.
26 September 2019	Decreased by 25 bps, from 4.25% to 4%.
14 November 2019	Maintained at 4%.
12 December 2019	Maintained at 4%.
6 February 2020	Decreased by 25 bps, from 4% to 3.75%.
19 March 2020	Decreased by 50 bps, from 3.75% to 3.25%.
16 April 2020*	Decreased by 50 bps, from 3.25% to 2.75%.
25 June 2020	Decreased by 50 bps, from 2.75% to 2.25%.
20 August 2020	Maintained at 2.25%.
1 October 2020	Maintained at 2.25%.
19 November 2020	Decreased by 25 bps, from 2.25% to 2%.
17 December 2020	Maintained at 2%.
11 February 2021	Maintained at 2%.
25 March 2021	Maintained at 2%.
13 May 2021	Maintained at 2%.
24 June 2021	Maintained at 2%.
12 August 2021	Maintained at 2%.
23 September 2021	Maintained at 2%.
18 November 2021	Maintained at 2%.
16 December 2021	Maintained at 2%.
17 February 2022	Maintained at 2%.
24 March 2022	Maintained at 2%.
19 May 2022	Raised by 25 bps, from 2% to 2.25%.
23 June 2022	Raised by 25 bps, from 2.25% to 2.5%.
14 July 2022*	Raised by 75 bps, from 2.5% to 3.25%.
18 August 2022	Raised by 50 bps, from 3.25% to 3.75%.
22 September 2022	Raised by 50 bps, from 3.75% to 4.25%.

Note: *Off-cycle meeting. The monetary policy rate in the Philippines is the overnight reverse repurchase facility. 'bps' stands for basis points. Cells with light red background correspond to policy rate increases; cells with light green background correspond to policy rate cuts.

Source: Author's elaboration based on data from BSP (n.d.), *Price Stability – Monetary Policy Decisions*, https://www.bsp.gov.ph/SitePages/PriceStability/MonetaryPolicyDecision.aspx (Accessed multiple times in September 2022).