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BSP Vision

The BSP aims to be a world-class monetary authority and a catalyst for a globally competitive economy and financial system that delivers a high quality of life for all Filipinos.

Mission Statement

The BSP is committed to promote and maintain price stability and provide proactive leadership in bringing about a strong financial system conducive to a balanced and sustainable growth of the economy. Towards this end, it shall conduct sound monetary policy and effective supervision over financial institutions under its jurisdiction.

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Comparative Analysis of Value at Risk, Stressed VaR, and Expected Shortfall Using Philippine Data

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1. Introduction

In May 2012, the Basel Committee on Banking Supervision (BCBS) released a consultative document on trading book reforms which explicitly raised the possibility of completely phasing out the use of Value-at-Risk (VaR) and replacing it with a better tool, that is, Conditional VaR (C-VaR) also known as Expected Shortfall (ES).[1] The implementation of such initiative has moved forward as the committee released in September 2014 the results of a quantitative impact study (QIS) on the trading book using a hypothetical portfolio. The QIS showed that the move to ES from using the sum of VaR and stressed VaR (SVaR) in measuring market risk increases the overall risk measure. Finally, the standards on the minimum capital requirements for market risk were released on 14 January 2016, which incorporate the shift from VaR to ES as the metric for measuring the market risk capital charge using the internal models approach (IMA).

Discussions on the use of ES as a measurement tool for market risk can easily be found in numerous literature, which were published after the decision of the BCBS to finally adopt the use of VaR as the underlying measure for the implementation of IMA in the 1996 amendment to Basel I (BCBS, 1996). There is a view that the use of VaR was initially preferred as the measure can be validated through backtesting (Chen, 2014). On the other hand, among the weaknesses of VaR is its non-compliance with the theory of coherence particularly on sub-additivity (Acerbi & Tasche, 2001) and the inability to measure tail risk (Yamai & Yoshiba, 2001). The latter was further exemplified during the global financial crisis of 2008 (Chen, 2014).

With the revised standards already out, the shift from VaR to an ES measure is already required for IMA, which some argue should have been the case a decade ago (Yamai & Yoshiba, 2002). An important question would be, "is there a possibility that the shift from VaR to ES could have provided a better measure of risk?"

Most universal and commercial banks in the Philippines use VaR as their market risk metric. However, the use of ES in place of VaR in international standards is expected to provide Philippine banks a good reason to also adopt the ES metric. It should be noted, however, that the use of the ES metric may still be limited to internal market risk measurement and will not necessarily result in a bank's adoption of the IMA for capital charging. This is currently the case for most universal and commercial banks in the Philippines.[2]

This discussion paper aims to compare VaR and ES and provide an empirical analysis

1 VaR measures the maximum amount of loss that a trading portfolio could lose at a certain confidence level. ES, on the other hand, measures the expected loss conditional to VaR. Hull (2002) explains that in essence, VaR asks the question "How bad can things get?" whereas, C-VaR asks: "If things do get bad, how much can we expect to lose?"

2 To date, only two foreign bank branches calculate market risk capital charge using IMA.

using Philippine financial market data. This paper will also investigate the discrepancy between the market risk exposure measured using ES and that computed using VaR. For this purpose, historical prices were gathered for a period spanning 15 years, i.e., from March 2000 to March 2015, which encompasses both normal and stressed conditions. Specific price data were chosen to represent the primary sources of market risk affecting financial institutions in the Philippines, namely, (i) interest rates, (ii) foreign exchange rates and (iii) equity prices.

Please note that, to the knowledge of the author, no empirical paper exists which analyzes the impact of using ES against VaR for measuring market risk in the Philippines. The rest of the paper proceeds as follows. Section 2 describes the approaches for measuring market risk in the trading book. Section 3 describes the primary difference between VaR and ES in the context of coherence and elicitability. Section 4 provides an empirical analysis of market risk measures. The last section discusses the results and implications of the findings on Philippine banks.

2. Approaches in measuring market risk using the internal models

By definition, VaR is a statistically-derived estimate of the maximum amount by which a trading portfolio could decline during a specific period of time using a pre-defined degree of confidence. In formal terms, given a random Loss, L, and a confidence level, α, $VaR_\alpha(L)$ can be defined as the greatest lower bound (infimum) with a probability α on the cumulative distribution function F of any financial position L, expressed as a random variable (BCBS, 2011; Chen, 2014).

$$VaR_\alpha(L) = -inf\{x|F_L(x) \geq \alpha\}$$

As a matter of statistical modelling, parametric VaR is computed as a product of the statistical percentiles/quantiles of a standard normal distribution function z_α, standard deviation σ, total value of the portfolio v, and the square root of time, which can be expressed as follows:

$$VaR_\alpha(L) = -z_\alpha \cdot \sigma \cdot v \cdot \sqrt{t}$$

Under the amendment to the Capital Accord to incorporate market risk issued by BCBS (1996), banks opting to calculate capital charges using IMA should, at a minimum, adopt the VaR measure at the 99th percentile, using a one-tailed confidence interval and a minimum holding period of ten trading days. The historical observation period for calculating VaR is constrained to a minimum length of one year. No particular type of model was prescribed.[3] The recommendation set out by BCBS in January 1996 was adopted in the Philippines under BSP Circular No. 360 dated 3 December 2002. However, most of the universal and commercial banks in the country opted not to adopt the IMA in measuring the capital charge for market risk but use the VaR methodology for internal risk measurement purposes. To date, only two foreign bank branches have been granted approval to calculate their market risk capital charge using IMA.

3 Banks are free to use models such as variance-covariance matrices (parametric approach), historical simulation, or Monte Carlo simulation.

VaR was put to a test during the global financial crisis of 2008 and was unfortunately proven incapable of capturing extreme losses particularly during a crisis (Chen, 2014). A revision to the Basel II market risk framework, commonly known as Basel 2.5, was published in response and introduced the concept of stressed VaR (BCBS, 2009). Stressed VaR extended the conventional VaR metric through the use of a one-year historical dataset that encompasses "a continuous 12-month period of significant financial stress relevant to the bank's portfolio (BCBS, 2009)."

However, Basel 2.5 recognizes two particular cases where the stressed VaR might be inappropriate. First is when "a period of financial stress... corresponds to directional moves which would lead to the bank making money." Second is when periods of stress may cause "some price factors" such as credit spreads "to have absolute values" that may distort the correspondence between large, volatile movements in those factors (Chen, 2012).

In the 2012 consultative document released by BCBS on trading book reforms, the prospect of phasing out VaR and replacing it with ES was explicitly raised (BCBS, 2013). The expected shortfall (ES) for any loss function L with confidence level 1-α is defined formally as a transformation of VaR for L.

$$ES_\alpha(L) = \frac{1}{\alpha}\int_0^\alpha VaR_\tau(L)d\tau$$

Intuitively, ES can be expressed as the expected loss conditional on the loss beyond the limit defined by α.

$$ES_\alpha(L) = E(L|L \geq VaR_\alpha)$$

For purposes of calculations using a historical simulation, ES can be computed by getting the expected (average) losses beyond VaR. On the other hand, the parametric approach for calculating ES assuming normally distributed profits and losses would use the formula:

$$ES_\alpha(L) = E(L|L \geq VaR_\alpha) = \frac{e^{-\frac{q^2_\alpha}{2}}}{\alpha\sqrt{2\pi}}\sigma_L$$

where q^2 is the upper 100α percentile of the standard normal distribution and σ_L is the standard deviation.

The formula above is based on the assumption that the distribution of profits and losses is normal, which implies that ES and VaR are scalar multiples of each other since both are also scalar multiples of the standard deviation, as provided by Yamai & Yoshiba (2002). Thus, at 99 percent confidence interval, standard deviation is multiplied by 2.33 for VaR; for ES, standard deviation is multiplied by 2.67 following the formula above.

3. VaR and ES in the context of coherence and elicitability

There is a continuing discussion on the viability of using VaR as a risk measure as it is not able to satisfy one of the four accepted properties of a "coherent" risk measure. The theory of coherence requires that a measure of risk satisfy four mathematical criteria, namely:

(a) translation invariance, (b) positive homogeneity, (c) monotonicity and (d) sub-additivity.[4] Acerbi & Tasche (2001) point out that the first three conditions are neither difficult to satisfy nor controversial among experts in quantitative finance. However, VaR fails to satisfy sub-additivity. Although ES for any confidence interval is derived directly from VaR for that interval, ES has been proven to be sub-additive. The reason for this apparent anomaly stems from the mathematical properties of the two measures (Chen, 2014). A risk measure can be characterized by the weights it assigns to percentiles of the loss distribution. VaR gives 100 percent weighting to the X^{th} quantile and zero to other quantiles. ES gives equal weight to all quantiles greater than the X^{th} quantile and zero risk weight to all quantiles below the X^{th} quantile (Hull, 2012).

On the other hand, ES fails in the context of elicitability. The value of an elicitable risk measure is that it can be subjected to a consistent scoring function that properly reports the measure's reliability in forecasting future losses. ES cannot be reliably backtested; that is, forecasts of ES cannot be verified through comparison with historical observations. This is the primary respect in which VaR holds a regulatory advantage vis-a-vis ES as a measure of risk. VaR is modelled such that the quantile at which it is measured not only identifies the frequency with which it is expected to encounter legally significant losses, but also sets the level of the loss that triggers regulatory attention (Chen, 2014).

4. Empirical analysis on the use of models – VaR, Stressed VaR, and ES

a. Data description

With the clear BCBS direction of replacing VaR with ES for the purpose of determining capital requirements for trading book exposures, it is befitting to conduct a study on the value of shifting from VaR to ES in the Philippine context. The empirical study is based on a dummy trading portfolio involving three risk factors: (a) interest rates, (b) foreign exchange rates and (c) equity prices. The data set comprises prices of a long-term ROP bond (ROP19), USD/PHP rates, and the Philippine stock index for 15 years (i.e., March 2000 to March 2015). The historical data set is intended to be simple and practical to better illustrate the impact of shifting from a VaR to an ES model.

b. Methodology

The calculation of VaR and ES is based on a single factor approach using a one-tail loss distribution with a 99 percent confidence interval. Both historical and parametric approaches were employed. Historical VaR is computed by taking the 99^{th} percentile of profit and loss (P&L) using 250 days of rolling data while the parametric VaR is calculated by getting the product of the notional amount of the exposure, volatility, and the standard normal parameter at 99 percent confidence interval, 2.33. Historical ES, on the other hand, is calculated by getting the expected (average) loss conditional to the initially computed VaR while parametric ES is computed similarly as VaR but using the ES standard normal multiplier, 2.67. The empirical study

4 A risk measure ρ is coherent if it satisfies the following axioms:

(i) Translational invariant for all X and real number c: $\rho(X+c) = \rho(X) + c$

(ii) Positively homogeneous for all X and all $\lambda > 0$: $\rho(\lambda X) = \lambda \rho(X)$

(iii) Monotonic for all X1 , X2: $X1 > X2 \rightarrow \rho(X1) > \rho(X2)$

(iv) Sub-additive for all X1, X2: $\rho(X1+X2) < \rho(X1) + \rho(X1)$

also includes the computation of stressed VaR, which is derived by determining a 12-month period of stress that occurred within the 15-year sample period and subsequently generating the VaR during the stressed period. The inclusion of the stressed VaR will provide a holistic appreciation of the evolution of market risk models.

c. Results

The results of the empirical analysis are provided in Figure 1, where the disparity of results between the risk models is quite evident. The resulting VaR, ES, and Stressed VaR under both business-as-usual and stressed scenarios are also compared against the largest daily loss experienced during the period covered by the analysis. This can provide an insight on the capability of risk models to predict daily losses. Risk metrics using the historical and parametric approaches are both shown.

Figure 1
Risk Metrics for Republic of the Philippines Bond (ROP 19)
(Notional: $100 Thousand)

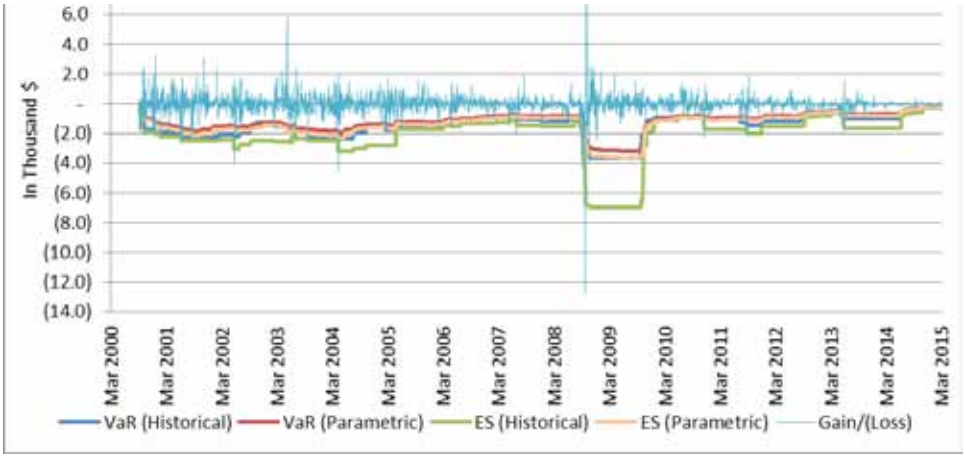

Table 1
ROP 19 Bond - VaR and ES Historical Simulation Results
(Notional: $100 thousand)

	Business As Usual (31 March 2015)	Stressed Scenario (10 Oct 2008 – 28 Oct 2009)
Value at Risk	$247.80	$2,136.40*
Expected Shortfall	$298.67	$6,375.00
Maximum Loss	$323.00	$12,765.00

** Stressed VaR*

Clearly, a significant disparity can be observed between the estimate of potential loss in a business-as-usual (BAU) scenario and the estimate for a stressed scenario as provided in Table 1 above. In a BAU scenario, VaR was able to capture 76.7 percent of the maximum loss while ES was able to cover 92.5 percent. During a stressed scenario, the coverage of both VaR and ES went down to 16.7 percent and 49.9 percent, respectively. Meanwhile, stressed VaR overestimated the risk by 661.4 percent during the normal scenario but only estimated 16.7 percent of losses during stressed conditions.

Figure 2
Risk Metrics for Overbought USD Position
(Notional Peso equivalent: ₱100 Thousand)

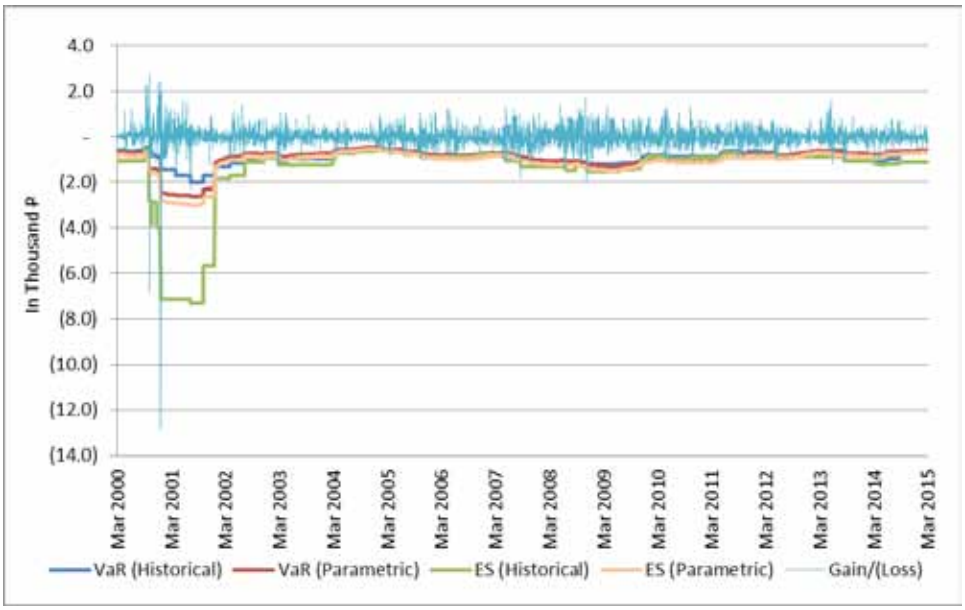

Table 2
Overbought USD Position- VaR and ES Historical Simulation Results
(Notional Peso equivalent: ₱100 Thousand)

	Business As Usual (31 March 2015)	Stressed Scenario (21 Nov 2000 – 6 Nov 2001)
Value-at-Risk	₱721.56	₱1,715.88*
Expected Shortfall	₱1,099.35	₱5,645.31
Max Incurred Loss	₱1,243.45	₱12,813.37

** Stressed VaR*

Similar to the observation above, the risk metrics for USD/PHP rates as provided in Figure 2 and Table 2 also prove inadequate when faced with a stressed scenario. In a BAU scenario, VaR was able to capture 58.0 percent of the maximum loss while ES was able to cover 88.4 percent. During a stressed scenario, however, the coverage of both VaR and ES signficantly went down to 13.4 percent and 44.1 percent, respectively. Consistent with the measurement results for the ROP, stressed VaR overestimates the measurement of risk during a normal scenario and understimates the same during a stressed scenario.

Figure 3
Risk Metrics for PSE Index Exposure
(Notional: ₱100 Thousand)

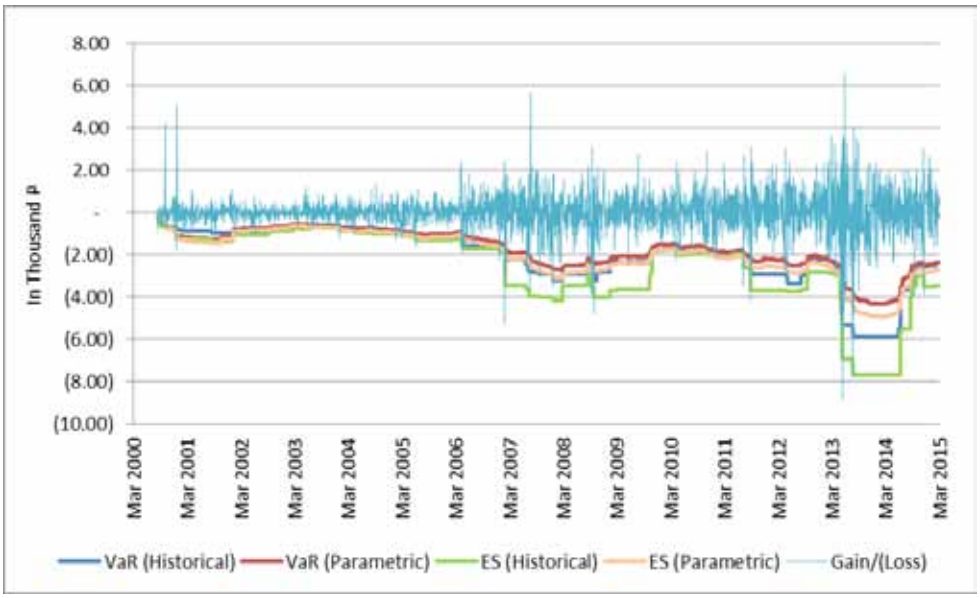

Table 3
PSE Index - VaR and ES Historical Simulation Results
(Notional: ₱100 thousand)

	Business As Usual 31 March 2015	Stressed Scenario 16 Apr 2013 – 28 Apr 2014
Value at Risk	₱2,480.16	₱5,854.24*
Expected Shortfall	₱2,956.73	₱7,671.60
Max Incurred Loss	₱3,760.20	₱8,851.40

** Stressed VaR*

Equity price data yielded a different result as provided in Figure 3 and Table 3. In a BAU scenario, VaR was able to capture 58.9 percent of the maximum incurred loss while ES was able to cover 85.9 percent. During a stressed scenario, the coverage of VaR and ES slightly went up to 66.1 percent and 86.7 percent, respectively. This reflects the prevalence of volatility in equity prices, which is easily captured by both VaR and ES measures.

Overall, from the charts above, it can easily be observed that the gap between the computed VaR and ES is wider when highly volatile market conditions are present particularly when a crisis (financial and/or political) is affecting the economy. For Philippine equities, absent a crisis scenario, the gap between VaR and ES was also prevalent in 2013 mainly due to the unexpected move by the Federal Reserve to taper its quantitative easing measures following the perceived improvement in the US economy.

Figure 1 shows that during the US subprime crisis / global financial crisis of 2008, the price of ROP19 substantially declined and on 23 October 2008, registered a one-day decline of 12.2 percent. It was noted that the actual historical VaR computed on that

day is only 26.1 percent of the actual loss while ES estimated 53.4 percent of the actual loss. Similarly, for the overbought foreign currency exposure (USD/PHP, Figure 2), it was observed that during a political crisis in the Philippines, specifically the impeachment of President Estrada, the USD abruptly depreciated by 10.5 percent from USD/PHP 54.75 to PHP 49 in a single day (i.e., from 18 to 19 January 2001). Historical VaR calculated on this day was just 13.4 percent of the actual loss while ES was able to estimate 44.1 percent of the total loss.[5] When applied to the Philippine Stock Exchange Index data, the results are similar. For instance, on 13 June 2013, when the index suddenly dropped by 6.75 percent from 6,556.65 to 6,114.08, VaR was able to capture 59.9 percent of the actual loss while the computed ES estimated 78.1 percent of the total loss.

5. Discussion

The examples provided above clearly indicate that VaR, stressed VaR, and ES are not particularly good estimators of market risk during a stressed or crisis scenario. However, it can easily be concluded that among the three tools, ES is the best estimator of risk during stressful scenarios as it considers tail risk. During a normal market scenario, the VaR result is not too far from ES as both metrics estimated at least 58.0 percent and 85.0 percent of the maximum loss, respectively. Meanwhile, stressed VaR overestimates the risk of loss during a normal market scenario yet underestimates losses during a stressful scenario. The measure is seen as highly dependent on a specific stress scenario that already occurred and could only provide a static estimation of risk. In addition, it can be empirically observed that VaR and ES are practicable when used on equity prices as both models are sensitive to the frequently swinging prices of equities.

With the unending arguments and discussions in several literature on the appropriate model for measuring market risk, practitioners and users should be aware of the limitations and weaknesses of the models they are adopting. The paper finds that the prevalent weakness of VaR of being unable to capture tail risk particularly during stressful scenarios persists, and this was likewise true when volatile market conditions were observed in the Philippines. The shift to ES can be considered a reasonable and practical move by BCBS, but given the results of this study, practitioners and supervisors alike may need to reconsider their reliance on ES measures particularly when there is unusual volatility in the market. Moving forward, additional buffers can be considered as ES is still deficient in considering cases of less frequent but high impact losses. In addition, greater supervisory focus is needed in assessing the strength of a bank's model risk management framework which includes (i) governance, (ii) model development/acquisition and implementation, and (iii) model validation mechanisms by implementing initial and periodic independent model review and back-testing.

5 Using the parametric approach, ES was able to capture the entire loss. This is, however, a one-off case since there is only one loss amount higher than the VaR figure.

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Universal and Commercial Banks' Reaction to Monetary Policy in the Philippines

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Reinterpretation of the monetary policy transmission channels is a continuing challenge to central banks (Kamin, et al., 1998) because these channels are neither mutually exclusive nor unchanging over time. The design and implementation of monetary policy must, therefore, consciously take into account the changes in the structure of the economy – including changes in the balance sheet position, in financial sector technology and institutions, or in expectations concerning future policy.

Over time, the importance of the credit channel of monetary policy may have diminished relative to that of the interest rate channel as a result of financial liberalization. But recent crisis experiences (e.g., Tequilla crisis in Mexico in 1994-1995, Asian financial crisis in 1997, Long-Term Capital Management (LTCM) collapse and Russian crisis in 1998, the NASDAQ/Enron crisis in 2001, and the global financial crisis that started in 2007) amid a more liberalized global financial system may have also deepened the fragility of the financial sector, thereby highlighting anew the credit availability channel. These crises were fundamentally triggered by the deterioration in bank balance sheets after the lending boom fueled by huge capital inflows following financial liberalization (Mishkin, 1999). The regulatory and supervisory systems then were ill-prepared to mitigate the moral hazard arising from the government safety net. Thus, the opportunities opened up by financial liberalization led to excessive risk taking by banks that eventually contributed to the deterioration in their balance sheets.

The easing bias of monetary policy in the post-global financial crisis era could create conditions that render debt more attractive than equity (Hannoun, 2014). In this thesis, a protracted period of policy-induced low interest rate has the amplifying effect on the financial cycle. By reducing the price of leverage, it boosts asset prices and potentially blurs risk perception. This could have the adverse effect of damaging the supply side of the economy by worsening the misallocation of credit and inducing policymakers to delay critical growth-enhancing reforms. While an improved regulatory framework may have moderated the risks of overvaluations, it still does not adequately address the amplifying effect of monetary policy on financial leverage.

A number of empirical studies have been conducted to test whether lending responds to a change in monetary policy (e.g., Bernanke & Blinder, 1992; Kashyap & Stein, 1995; Islam & Rajan, 2011; Kishan & Opiela, 2000). The existence of a bank lending channel posits that a restrictive monetary policy leads to a drop in bank deposits. Meanwhile, Mishkin (1996) emphasized that only banks that have large asset sizes and, moreso, a larger share of liquid assets have the ability to protect their loans from monetary policy shocks. Larger banks have better access to external finance; hence, they do not have to reduce their lending as strongly as smaller banks or less liquid banks (Bernanke & Gertler, 1995).

Among countries in Europe, Finland, Luxembourg, and Spain did not appear to show any role for a bank lending channel while weak signs were found in Russia (De Souza, 2006). Engler, Terhi, Merkl, Kaltwaseer, and De Souza, L.V. (2005) also found evidence of

a functioning bank lending channel in Austria via capitalization levels. Golodniuk (2006) also found the existence of a bank lending channel in Ukraine. In the case of Germany, empirical evidence had been inconclusive, regardless of methodology or of type of data used. While Tsatsaronis (1995), Stoss (1996), Guender and Moersch (1997), Favero, Giavazzi, and Flabbi (1999) came to the conclusion that a bank lending channel did not exist in Germany, Worms (1998), De Bondt (1998), Kakes and Sturm (2001), Hülsewig, Winker, and Worms (2001), and Merkl and Stolz (2006) found evidence in favor of the presence of bank lending channel.

The response of loan supply to monetary policy tightening has been found to depend on certain bank characteristics. Fruwirth-Schnatter and Kauffman (2006), in testing for the presence of a lending channel in Austria, classified banks by how similar they react to changes in interest rates. A number of papers that classify banks according to asset size also confirmed that asset size has an effect on the bank's loan portfolio growth. De Bondt (1998) used liquidity as a variable to prove the presence of a lending channel for Germany, Belgium and the Netherlands; Coll, Torres, and Santander (2005) for Venezuela; Hernando and Matrinez-Pages (2011) for Spain; and Kashyap and Stein (1995) for the US. Specifically, they used bank size, liquidity, and capitalization as their bases for investigating the bank lending channel. Lui (2012) used bank size and loans to show the relationship between Australian banks' credit stability and policy-induced movements in their deposits. The results of their studies are consistent with the hypothesis that bank size, liquidity, and capitalization have a significant effect on banks' loan growth as monetary policy tightens.

An earlier work by Bernanke and Blinder (1992) likewise showed the effect of monetary policy shifts on banks' loan supply. Their results indicated a decrease in loans with a lag after an increase in policy rates. However, it could not be determined whether the decrease was from a decline in loan supply or a decline in loan demand. Kashyap and Stein (2000) then pointed out that since market imperfections influence banks' ability to induce marginal sources of financing, the effect on loan supply, therefore, may be more evident in smaller banks. Their empirical tests, using bank level data, yielded results consistent with their hypothesis.

Sources of loanable funds other than demand deposits (e.g., from interbank and financial markets) are available to these larger banks, thus providing them with alternative forms of loan fund supply (Olivero, Li, & Jeon, 2011). Disyatat (2010) argued that the emphasis on policy-induced changes in deposits is misplaced and proposed a reformulation of the bank lending channel that works primarily through the impact of monetary policy on banks' balance sheet strength and risk perception. He reasoned that contrary to conventional wisdom, greater reliance on market-based funding enhances the importance of the bank lending channel. Thus, depending on the strength of their balance sheets, banks could act either as absorbers or amplifiers of shocks originating in the financial system.

With greater access to other sources for their loan supply, bigger banks are less likely to restrain their lending activities as compared to smaller banks (Fruwirth-Schnatter & Kauffman, 2006). Van den Heuvel (2002) established that capital adequacy of banks affects their ability to sustain their lending, as low-capitalized banks have a delayed and

amplified reaction to interest rate shocks compared to banks with ample capital. Aban (2012), quoting the study of Bischel and Perrez (2005), noted that excess liquidity can be a source of loan supply for banks as it can be an alternative to equity or debt. Kashyap and Stein (2000) showed that banks with a higher level of liquidity exhibited an increase in the growth of their loan portfolio despite monetary policy tightening.

Objectives of the study

In the Philippines, there are only few studies that use bank-level data in examining their response to monetary policy. Studies of Aban (2012, 2013) observed that loan growth from small banks is sensitive to movements in monetary policy and emphasized that size of banks can have a substantial influence in the existence of a bank lending channel. Bayangos (2010), using a macroeconometric model, found that the aggregate measure of capital adequacy of banks is a significant factor in banks' ability to sustain their lending activities after monetary policy adjustment. This paper seeks to add to the literature by examining whether Philippine banks' balance sheet indicators of financial condition can help shield their loan portfolios from changes in monetary policy using bank-level data.

II. Stylized Facts: Philippine Financial System

The Philippine financial system remains heavily bank-dominated. As of March 2015, banks account for 81 percent of total resources, with universal and commercial banks comprising the lion's share. The same holds for specific balance sheet indicators (Table 1). However, in terms of physical network of financial intermediaries supervised by the Bangko Sentral ng Pilipinas (BSP), banks are of comparatively smaller number (40%), more than half of which are commercial and universal banks.

Table 1
Selected Indicators on the Structure of the Philippine Financial System

	BANKS	Universal and Commercial Banks	Thrift Banks	Rural Banks/ Cooperative Banks	NON-BANKS
Share to Total Resources of the Financial System [1/]	0.81	0.73	0.07	0.01	0.19
Share to Total Number of Financial Institutions [2/]	0.40	0.22	0.08	0.10	0.60

[1/] As of October 2016 (preliminary) except for rural banks/cooperative banks and non-banks data which are updated as of end-Jun 2016. Meanwhile, in terms of total loans (gross loans) as of Nov 2016, UBs/KBs account for about 82% of total and the remaining 18% accounted for by government banks and FX banks.
[2/] As of September 2016
Source of basic data: Bangko Sentral ng Pilipinas

Given the dominance of universal/commercial banks in terms of total resources of the financial system, it would be reasonable to assume that they are also the primary credit service providers to equally large non-financial corporations (NFCs) and that they can offer a wider range of financial products and services. Similar to large NFCs, universal and

Fig.1
Local Currency (LCY) Bonds Outstanding

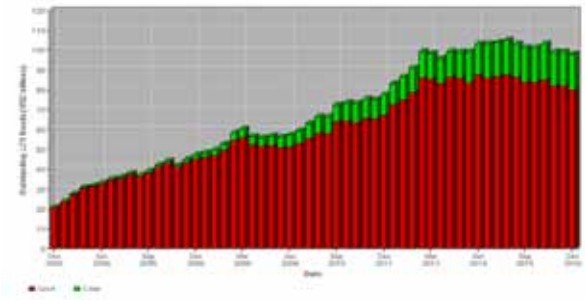


Fig.2
Foreign Currency (FCY) Bonds Outstanding

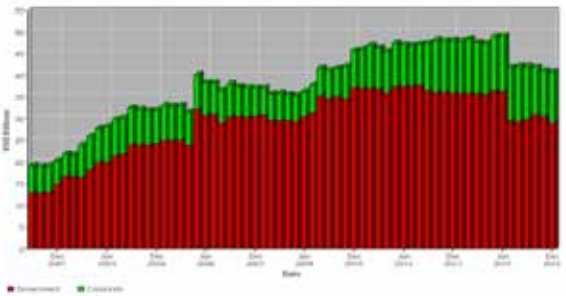
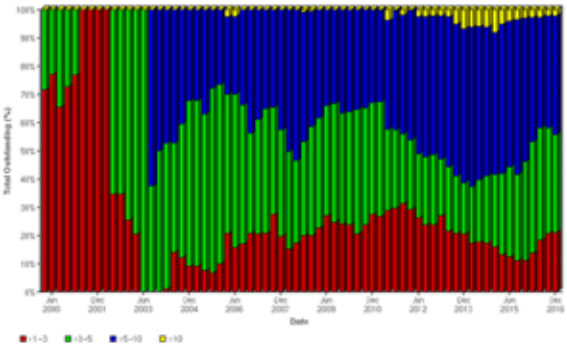


Fig.3
Government Securities Maturity Profile

Fig. 4
Corporate Securities Maturity Profile



Source: https://asianbondsonline.adb.org/philippines/data.php

commercial banks also have access to a number of financing instruments. They can raise equity, issue bonds, or even take out loans from foreign financial institutions, which could diminish the importance of the bank lending channel of monetary policy. While the bond market is still dominated by government issuances, the corporate sector (which includes financial institutions) has also been increasingly tapping the bond market for funding, with maturity profile within the medium- to long-term range.

After the Asian financial crisis, it took longer for the Philippines to unwind non-performing loans (NPLs), which nevertheless declined significantly over time. Asset indicators also remained healthy. Unlike neighboring Asian countries that were able to set up government-funded asset management corporations, the Philippine government did not fund one in the aftermath of the Asian financial crisis. Thus, banks undertook balance sheet consolidation independently.

Table 2

Asset Indicators of the Philippine Banking System (%)

	Jun 2015	Sep 2015	Mar 2016	Jun 2016	Sep 2016	Dec 2016
Past Due Ratio	2.65	2.57	2.47	2.45	2.43	2.14
RL to TLP	0.60	0.58	0.52	0.51	0.52	0.49
Loan Loss Reserves (LLR) to TLP	2.82	2.72	2.52	2.45	2.43	2.27
Gross NPL Ratio (inclusive of Interbank Loans)	2.36	2.32	2.24	2.19	2.14	1.90

Gross NPL Ratio (exclusive of Interbank Loans)	2.41	2.36	2.29	2.24	2.19	1.96
Net NPL Ratio (inclusive of Interbank Loans)	0.61	0.63	0.78	0.79	0.74	0.57
NPL Coverage 1/	119.49	117.59	112.53	111.88	113.46	119.43
NPA to Gross Assets	2.26	2.16	2.08	2.05	2.02	1.85
NPA Coverage 2/	77.16	77.17	75.80	76.36	77.29	80.41
Distressed Assets 3/	4.59	4.42	4.13	4.00	3.92	3.54

Source: Bangko Sentral ng Pilipinas (http://www.bsp.gov.ph/banking/bspsup_pbs.asp)
1/ Ratio of Allowance for Credit Losses (Loans) to Gross Non-Performing Loans
2/ Ratio of Allowance on NPA to NPA
3/ (Distressed Assets) to [(Total Loan Portfolio, Gross) + (ROPA, Gross, inclusive of Performing SCR)]
p/ Preliminary
Definitions:
- Past Due Ratio = Past Due Loans/ Total Loan Portfolio (TLP), gross
- RL to TLP = Restructured Loans (RL), gross/ TLP, gross
- Loan Loss Reserves (LLR) to TLP = Allowance for Credit Losses (ACL) – TLP/ TLP, gross
- Gross NPL Ratio (inclusive of Interbank Loans (IBL))= Gross Non-Performing Loans (NPL)/ TLP, gross
- Gross NPL Ratio (exclusive of IBL)= Gross NPL, net of NP IBL (i.e., Gross NPL + Non-performing IBL)/ TLP, gross net of IBL (i.e., TLP, gross + IBL Receivables)
- NPL Coverage = ACL – TLP/ Gross NPL
- NPA to Gross Assets = Non-Performing Assets (NPA) (i.e., Gross NPL+ ROPA, gross (Real and Other Properties Acquired (ROPA) + Non-Current Assets Held for Sale + Non-Performing Sales Contract Receivables (SCR))/Gross Assets (i.e., Total Assets + Allowance on NPA)
- NPA Coverage = Allowance on NPA/ NPA
- Distressed Assets Ratio= Distressed Assets (i.e., NPA+ RL, Performing)/ TLP, gross+ Total ROPA (i.e., ROPA, gross+ Performing SCR)

III. Data and Methodology

Inconclusive evidence on the existence of the credit channel based on aggregate data may be fraught with identification problems. The money channel works through banks' liabilities (deposits) while the credit channel works through the asset side (loans). Hence, more recent studies use micro data and panel econometric techniques to glean insights from banks' balance sheet information that are related to loan supply and at the same time control for bank-level indicators that are related to loan demand (income and risk).

Limitations of the study

This study, thus far, is one of the few micro-based studies on the bank lending channel in the Philippines. Limitations in publicly available data only permit an analysis of the behavior of 24 universal and commercial banks in response to monetary policy. In addition, the analysis used balance-sheet and income-statement data for the period 2008 Q1 – 2013 Q1 only. With a sample size of 504 (where n = 24 and t = 21),[1] reasonable estimates can be obtained from a panel estimation method.

1 With n = 24 banks and t = 21 quarters, the panel data used in the analysis contains 504 observations. However, only 384 observations were effectively used in the estimations as a result of getting the year-on-year change in the dependent variable and specifying an interaction term between the change in monetary policy and the financial condition indicator of banks.

The variation in the reaction to monetary policy across different types of banks (i.e., including rural banks and thrift banks) is not examined due to lack of publicly accessible data. Nonetheless, by focusing on universal and commercial banks, the study expects to shed light on the bank lending behavior of market movers in response to monetary policy.

Data and Empirical Methodology

The study uses publicly available bank-level data on 24 universal and commercial banks for the period 2008 Q1 – 2013 Q1. Banks with incomplete data are excluded. For banks that merged during the coverage period, their respective balance sheet items prior to the merger are summed up. It is recognized at the outset that the time period used for the study coincides with the global financial crisis, which had induced a downward bias in global interest rates and correspondingly affected domestic interest rates.

The banks' balance sheet data are obtained from the BSP website. The data used for analysis are seasonally adjusted quarterly series. The use of seasonally adjusted series is intended to avoid erroneous attribution of any reaction to monetary policy to seasonal factors. Moreover, year-on-year growth rate is used, as quarter-on-quarter growth rate tends to be noisy and volatile.

Fixed-effects regression is employed to control for time-invariant individual characteristics that may potentially influence the predictor variable. It is assumed that there are no substantial differences across the 24 universal and commercial banks that could have an effect on the growth rate of bank loan supply. By controlling for the time-invariant characteristics (α_i) that are unique to each bank in the panel, the pure effect of the predictor variables on the outcome variable can be assessed (Stock and Watson, 2003). Thus, the estimated coefficients cannot be biased because of any omitted time-invariant characteristics. In general form, the fixed-effect regression is specified as follows:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + \mu_{it}$$

where:

Y_{it} = outcome (dependent) variable where subscripts *i* and *t* stand for bank and time, respectively

α_i = unknown intercept for each entity (bank)

β_1 = coefficient of the predictor variable

X_{it} = predictor (independent) variable(s)

μ_{it} = error term

The study tests the responsiveness of the growth rate of bank loans against the policy rate and a measure of bank's financial condition that defines banks' capacity to supply loans (i.e., total assets, liquid assets-to-total assets, or capital-to-asset ratio). The study also controls for predictor variables that capture differential loan demand component, namely, bank income and bank risk indicator (i.e., non-performing loan ratio). Given constraints in the data length, acceptance is set at 10% level of significance.

The basic equations, patterned after Worms' (2010), are as follows:

Equation 1: capital-to-asset ratio as bank financial indicator

$$\Delta \log(loans)_{i,t} = \alpha_i + \sum_{k=1}^{p} \beta_k \Delta \log(loans)_{i,t-k} + \sum_{k=1}^{q} \gamma_k (cap\_asset\_ratio_{i,t-k} * \Delta mp_{,t-k}) + \sum_{k=1}^{q} \delta_k (cap\_asset\_ratio_{i,t-k}) + \sum_{k=1}^{q} \vartheta_k \Delta risk_{i,t-k} + \sum_{k=1}^{q} \sigma_k \Delta \log(y_{i,t-k}) + \varepsilon_{i,t}$$

Equation 2: assets as bank financial indicator

$$\Delta \log(loans)_{i,t} = \alpha_i + \sum_{k=1}^{p} \beta_k \Delta \log(loans)_{i,t-k} + \sum_{k=1}^{q} \gamma_k (\log(assets)_{i,t-k} * \Delta mp_{,t-k}) + \sum_{k=1}^{q} \delta_k (\log(assets)_{i,t-k} + \sum_{k=1}^{q} \vartheta_k \Delta risk_{i,t-k} + \sum_{k=1}^{q} \sigma_k \Delta \log(y_{i,t-k}) + \varepsilon_{i,t}$$

Equation 3: liquid assets-to-asset ratio as bank financial indicator

$$\Delta \log(loans)_{i,t} = \alpha_i + \sum_{k=1}^{p} \beta_k \Delta \log(loans)_{i,t-k} + \sum_{k=1}^{q} \gamma_k (liq\_asset\_ratio_{i,t-k} * \Delta mp_{,t-k}) + \sum_{k=1}^{q} \delta_k (liq\_asset\_ratio_{i,t-k}) + \sum_{k=1}^{q} \vartheta_k \Delta risk_{i,t-k} + \sum_{k=1}^{q} \sigma_k \Delta \log(y_{i,t-k}) + \varepsilon_{i,t}$$

where:

Variables	As reported in the regressions	Description
$\Delta \log(loans)_{i,t}$	dlog_loans	Year-on-year growth rate of bank loans, net of RRP
$cap\_asset\_ratio_{i,t-k}$	cap2assets	Capital-asset ratio
$\log(assets)_{i,t-k}$	log_assets	Log(assets)
$liq\_asset\_ratio_{i,t-k}$	Liqassets	Liquid asset ratio
$\Delta mp_{,t-k}$	d_pol	Change in weighted policy rate
$\Delta risk_{i,t-k}$	dlog_npl	Bank risk (non-performing loan ratio)
$\Delta \log(y_{i,t-k})$	dlog_income	Growth rate of income before tax

Equation 1 tests for the significance of capital-to-asset ratio. The basic premise is that with higher capital buffer, banks would tend to be less vulnerable to information asymmetry problems in relation to their fund sources. External premium of a well-capitalized bank may be smaller than lower capitalized ones, allowing them greater flexibility not to restrict lending in response to contractionary monetary policy. With no publicly available data on risk-adjusted capital, however, it is recognized at the outset that the capital-asset ratio could be a biased indicator as a higher ratio could also signal higher riskiness of the loan portfolio of banks (Worms, 2014). By controlling for the non-performing loans of each bank, this bias may have been mitigated.

Another predictor variable considered is asset size (Equation 2). The presumption is that a larger asset size allows banks to accommodate contractionary monetary policy as they tend to have a larger client base and more diverse sources of funds such as bond market and equities market.

Liquidity (Equation 3) is also analyzed as a determining factor of the ability of banks to offset the effects of restrictive monetary policy. Just like capitalization, liquidity could also be a potentially biased indicator because maintaining higher liquid assets could also imply higher risk aversion of banks that could eventually limit their lending to the public. The three basic specifications control for the growth rate of bank-level income and non-performing loans (NPL), weighted by the share of bank *n* loans to total loans of the universal and commercial banking system. These are used as control variables to capture the differential loan demand effects. The growth rate of bank income is tied to earnings from loans extended to borrowers while NPL growth embodies the risk associated with loans of borrowers. The expected signs are positive for income and negative for NPL.

The policy rate variable[2] is not used as a separate predictor variable because of endogeneity concerns even with the use of lagged policy variable. The endogeneity may stem from the fixed nature of loan contracts when a policy shock occurs at time *t*. Thus, it is expected that the response of loan growth to the policy shock may come with a lag. However, it is also probable that monetary policy eventually responds to the decline in loan growth following the contraction in loan supply. Thus, the various specifications include only an interaction term between the change in monetary policy and the financial condition indicator of banks.

IV. Empirical Results

Based on the Hausman test, the correlation between unique error terms and the regressors has been established. This confirms that fixed-effects estimates are consistent under the alternative hypothesis. The test for time fixed effects fails to reject the null hypothesis that coefficients for all years are jointly equal to zero. To mitigate the endogeneity problem, lagged values of predictor variables are used. The estimation of the fixed effects model is carried out with robust standard errors in the presence of heteroskedasticity and serial correlation. The regressions fail to reject the null hypothesis that the residuals are not contemporaneously correlated—thus, bias is minimized in the estimation.

The three separate regressions indicate that the selected indicators of banks' financial strength contain important information on banks' ability to shield their loan portfolio from restrictive monetary policy. The interaction term with change in monetary policy is positive across all specifications, although statistically significant only for capitalization. A complete description of the variables reported in the regressions is found in Appendix A.

Regression 1: capital-to-asset ratio

Higher capitalization moderates the effect of contractionary monetary policy as evidenced by the significantly positive interaction term with change in policy rate (Equation 1a). The signs of the other predictor variables conform to expectations although only marginally significant—the growth of bank income (dlog_income) positively affects loan growth while the growth of NPL has a negative coefficient. These marginally significant coefficients for demand indicators may be partly due to access of corporate clients of universal banks and commercial banks to more diverse funding sources.

2 Weighted average of reverse repurchase rate and special deposit account rate, with the weights defined by their respective volume of transactions.

A regression that controls for interbank deposits (ibd) is also carried out. The idea is that in times of contractionary monetary policy, banks may draw from their short-term deposits in other banks to protect their loan portfolio. When the regression controlled for interbank deposits, the double interaction term with capital-to-asset ratio and change in policy rate yields a significant negative coefficient (Equations 1b and 1c). This implies that contractionary monetary policy reduces the capacity of capital to mitigate the impact of a policy shock on loan supply, possibly suggesting higher risk aversion among banks as they become more concerned about capital preservation and liquidity. This finding is consistent with the general conservatism of the Philippine banking system with capital adequacy ratios that exceed both international and domestic benchmarks.

Table 3

Regression results with bank capital-to-asset ratio as financial condition indicator

	Equation 1a	Equation 1b	Equation 1c
dlog_loans(-1)	0.355***	0.343***	0.344***
ibd(-1)		0.496	0.554**
cap2assets(-1)	0.445	0.880**	0.909**
cap2assets(-1)*d_pol(-1)	0.690**	0.955**	0.969**
ibd(-1)*cap2assets(-1)		0.008	
ibd(-1)*cap2assets(-1)*d_pol(-1)		-0.115*	-0.119**
dlog_income(-1)	0.105**	0.098**	0.097**
dlog_npl(-1)	-0.101*	-0.099*	-0.100*
Number of obs	384	384	384
F(.,.)	9.86	10.05	10.39
Prob > F	0.000	0.000	0.000
R-squared	0.344	0.366	0.366

*Significance at 1% ***; 5% **; and 10% **

Regression 2: asset size

The results indicate that asset size is a significant financial indicator (Equation 2a). The coefficient of the interaction of the asset size with change in overnight policy rate is also found to be positive but insignificant. Even after controlling for the impact of the share of interbank deposits to total assets, the interaction term with asset size as well as the double interaction term is negative but insignificant. (Equations 2b and 2c)

Table 4
Regression results with total bank's asset as financial condition indicator

	Equation 2a	Equation 2b	Equation 2c
dlog_loans(-1)	0.319***	0.327***	0.330***
ibd(-1)		4.294	0.320
log_assets (-1)	0.177***	0.145**	0.143**
log_assets(-1)*d_pol(-1)	0.158	0.262	0.261
ibd(-1)*log_assets(-1)		-0.172	
ibd(-1)*log_assets(-1)*d_pol(-1)		-0.028	-0.030
dlog_income(-1)	0.068*	0.075*	0.069*
dlog_npl(-1)	-0.098*	-0.105*	-0.104*
Number of obs	384	384	384
F(.,.)	10.20	9.83	10.13
Prob > F	0.000	0.000	0.000
R-squared	0.365	0.366	0.365

*Significance at 1% ***, 5% **, and 10% **

Regression 3: liquid assets-to-asset ratio

Liquidity has also been found to be a significant financial indicator influencing growth of loan supply. Similar to asset size, the ability of liquidity to shield loan supply from contractionary monetary policy is positive but insignificant. Since interbank deposits form part of liquid assets, controlling for interbank deposits is no longer necessary for this specification (Equation 3a).

Table 5
Regression results with total bank's liquidity ratio as financial condition indicator

	Equation 3a
dlog_loans(-1)	0.386***
liqassets(-1)	0.356**
liqassets(-1)*d_pol(-1)	0.089
dlog_income(-1)	0.084**
dlog_npl(-1)	-0.098*
Number of obs	384
F(.,.)	10.50
Prob > F	0.000
R-squared	0.350

*Significance at 1% ***, 5% **, and 10% **

V. Conclusion

The study examines which among various indicators of banks' financial condition such as asset size, capital-to-asset ratio, and liquid assets-to-asset ratio affect the growth rate of loans. The estimation controls for differential loan demand effects by including growth rates of bank loan income and non-performing loans as predictor variables. The bank data used are seasonally adjusted to account for individual seasonal patterns.

The study finds that the three indicators of banks' financial strength are important determinants of bank loan supply. While all the interaction terms with change in policy rate are positive for all specifications, statistical significance is obtained only for capital-to-asset ratio. After controlling for interbank deposits, a significantly negative double interaction term among capital-to-asset ratio, change in monetary policy, and interbank deposits is found. This could possibly indicate higher risk aversion and greater concern for preserving capital and meeting liquidity requirements in times of contractionary monetary policy. The results are in line with the thrust of Basel III towards strengthening of core capital to facilitate a smooth transmission of monetary policy.

The next research area is the differential response to monetary policy shock of universal and commercial banks, thrift banks, rural banks, and non-banks with quasi-banking functions after the compilation of larger datasets is completed. The use of risk-weighted capital would be an ideal improvement.

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Appendix A. Description of Variables

Variable Name	Description
loans_netrrp	total loans, net of banks' RRP placements
assets	total assets
liq_asset_ratio	bank's liquid assets, as a percentage of total assets *(liquid assets = cash and cash items + due from BSP + due from other banks + financial assets)*
cap_asset_ratio	bank's stockholder's equity, as a percentage of total assets
policy_wtd	weighted RRP and SDA rate
npl	bank's gross non-performing loans, scaled by the share of bank's loans to total loans of U/KBs
ibd	interbank deposits (due from other banks), as a percentage of total assets
income	bank's operating income, scaled by the share of bank's loans to total loans of U/KBs
gdp	gross domestic product at constant 2000 prices
log_assets	natural logarithm of bank's total assets
dlog_loans	$100*(\log(\text{loans\_netrrp}_t) - \log(\text{loans\_netrrp}_{t-4}))$
d_pol	$\text{policy\_wtd}_t - \text{policy\_wtd}_{t-1}$
dlog_income	$100*(\log(\text{bankincome}_t) - \text{loag}(\text{bankincome}_{t-4}))$
dlog_gdp	$100*(\log(\text{gdp}_t) - \log(\text{gdp}_{t-4}))$
assets_pol	*log_assets * d_pol*
liqassets_pol	*liq_asset_ratio * d_pol*
cap2assets_pol	*cap_asset_ratio * d_pol*
ibd_assets_pol	*ibd*log_assets * d_pol*
ibd_liqassets_pol	*= ibd* liqassets * d_pol*
ibd_cap2assets_pol	*= ibd* cap_asset_ratio * d_pol*

IMF Quota and Governance Reforms: Improving the Voice and Participation of Emerging Market Economies and Developing Countries in the Fund

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After more than five years since December 2010, when the International Monetary Fund's (IMF's) Board of Governors, the Fund's highest decision-making body, completed the 14th General Review of Quotas and approved the proposed amendment to the reform of the IMF's Executive Board, this package of reforms of the Fund's quotas and governance finally became effective in January 2016, after approval by the United States. This reform package significantly increased the IMF's resources through a doubling in total quotas and improved the IMF's governance through a major realignment of quota shares to better reflect the relative importance of IMF member countries in the global economy.

The reform package builds on earlier reforms from 2008, which became effective in March 2011 and involved ad hoc increases in quota shares for 54 member countries, most of which are emerging market economies. They also enhanced the voice and participation of low-income countries through a substantial increase in the number of basic votes.

Quota and Governance Reforms

Building on the 2008 reforms, the key elements of the 14th General Review of Quotas were the following:

Quota increase. The quotas of the IMF's 188 member countries[1], the Fund's principal source of financial resources, doubled from approximately SDR 238.5 billion (about US$321 billion at end-December 2016 exchange rate) to approximately SDR 477 billion (about US$641 billion), as agreed under the 2008 quota and voice reforms. The increase in quotas also involved a corresponding rollback in the resources under the New Arrangements to Borrow (NAB), a credit arrangement between the IMF and a group of IMF member countries (including the Philippines) to provide additional lending resources to the Fund.

Shift in quota shares. More than 6 percent of quota shares were shifted from over-represented to under-represented member countries, and more than 6 percent of quota shares were shifted to dynamic emerging market and developing countries. Four emerging market economies (Brazil, China, India, and Russia) are now among the 10 largest shareholders in the IMF, which includes the United States, Japan, France, Germany, Italy, and the United Kingdom.

Preserved the quota and voting share of the poorest member countries. Voting shares have been preserved for the poorest countries, defined as those eligible for the Poverty Reduction and Growth Trust (PRGT) and whose per capita income is below US$1,135 in 2008 (the threshold set by the International Development Association[2]) or twice that amount for small countries.

1 At the time that the 2010 quota and governance reforms became effective in January 2016, there were 188 IMF member countries. Nauru became the IMF's 189th member in April 2016.
2 The International Development Association or IDA is the part of the World Bank that provides concessional loans, grants and debt relief to the poorest countries.

All-elected IMF's Executive Board. The accompanying amendment to the IMF's Articles of Agreement has enabled, for the first time, the IMF's Board to be consisted entirely of elected Executive Directors, ending the category of appointed Executive Directors. Previously, the members with the five largest quotas appointed an Executive Director for each constituency.

Enhanced representation in multi-country constituencies. The scope for appointing a second Alternate Executive Director in multi-country constituencies with seven or more member countries has been increased to enhance these constituencies' representation in the Executive Board. As a result, 13 constituencies, including the two African constituencies, became eligible to appoint a second Alternate Executive Director.

Commitment to reduced Board representation by advanced European countries. Advanced European countries have committed to reduce their combined Board representation by two chairs after the quota and governance reforms take effect. However, the European chairs have yet to fully deliver on this commitment.

Changes in Quota and Voting Shares In Percent of Total Shares

Group/Country	Quota Shares		Voting Shares	
	2008	2010	2008	2010
Advanced economies	60.5	57.7	57.9	55.3
United States	17.67	17.407	16.727	16.479
Emerging Market and Developing Countries	39.5	42.3	42.1	44.7
Asia	12.6	16.1	12.8	16.1
South East Asia Voting Group				
Indonesia	0.872	0.975	0.854	0.951
Malaysia	0.744	0.762	0.733	0.75
Singapore	0.591	0.816	0.588	0.801
Thailand	0.604	0.674	0.6	0.666
Philippines	0.428	0.428	0.433	0.434

Source: IMF

Financial Transactions Plan

While most of the resources for IMF loans are provided by member countries, mainly through their payment of quotas, the IMF can temporarily supplement these resources through multilateral and bilateral borrowing if it believes that its capacity to lend might fall short of the borrowing requirements of its membership. Table 2 summarizes the Philippines' commitments and financial position at the Fund.

Table 2
Summary of the Philippines' Financial Position at the IMF IMF-Related Finances, as of December 31, 2016 (SDR millions)

	Allocated Contribution	Amount Drawn
Current quota	2,042.9	269.50
New Arrangements to Borrow Commitment	340.0	58.92
Bilateral Borrowing commitment	662.6	0.0

Source: IMF

At end-2015, the Philippines' contribution to the IMF's total quota was SDR 1,019.3 million, representing 0.43 percent of the total. The Philippines' quota increased to SDR 2,042.9 million (about US$2,746.3 million at end-December 2016 exchange rate of 1 SDR = US$1.344330) following the entry into force of the 2010 quota and governance reforms in January 2016. The Philippines' share to total Fund quota remains the same at 0.43 percent.

It is important to note that not all of the IMF's resources are available for lending. This is because the IMF is not able to draw from the quota resources of member countries that are under IMF programs, or from member countries that are not deemed to have a strong balance of payments position. Only a subset of financially strong member countries that can provide loanable resources to the Fund can participate in the Financial Transactions Plan (FTP), a mechanism through which the IMF manages its lending of quota resources. Through the FTP, the IMF chooses the members whose currencies can be used in IMF lending transactions and allocates the financing of those lending transactions among members included in the FTP.

Member countries are selected for inclusion in the FTP based on a periodic finding by the Executive Board, in consultation with member countries, that the member country's external position (i.e., balance of payments and reserve position of members and developments in the foreign exchange markets) is sufficiently strong. The Philippines became a participant in the FTP in August 2010, and since then has continued to be one of the 51 member countries that had sufficiently strong external positions to provide currencies. As of end-December 2016, the IMF has made a total of SDR 269.5 million (about US$362.0 million) in drawdowns from the Philippines' quota resources to finance program lending. These claims earn interest based on the SDR interest rate and are considered part of the Philippines' international reserve assets.

Multilateral Borrowing

While quota resources are the IMF's main source of financing, the IMF can supplement these resources through multilateral borrowing under the NAB if it believes that its capacity to lend might fall short of member countries' requirements. The NAB are credit arrangements between the IMF and 38 member countries and institutions to provide additional resources of up to SDR 182 billion (about US$245 billion) for lending purposes. Table 3 lists the major participants to the NAB as well as NAB participants among the ASEAN member countries. The General Agreements to Borrow (GAB) allows further IMF

borrowing from a more limited number of countries. The NAB and the GAB supplement quota resources, ensuring that the IMF has enough resources to lend, especially in the event of a major economic or financial crisis.

The NAB entered into effect in November 1998 for a five-year period and has been renewed regularly. In April 2010, the IMF Executive Board approved the expansion of the size of the NAB to SDR 367.5 billion (about US$494 billion) from SDR 34 billion (about US$46 billion) and adopted a multilateral activation mechanism to make the NAB a more effective tool for crisis management. Table 3 lists the major country participants to the NAB, as well as the NAB commitments of the ASEAN-4 member countries.

In May 2010, the IMF invited the Philippines to participate in the NAB. NAB participation is a significant step in strengthening international cooperation and demonstrates the Philippines' strong commitment to international efforts to help address risks to the stability of the international monetary system. The lending commitment of the Bangko Sentral ng Pilipinas (BSP) under the NAB is for a maximum amount of SDR 340 million (about US$457 million). Since October 2011, the Philippines has participated in the NAB with total IMF drawdowns amounting to SDR 58.92 million (about US$79.2 million) as of end-December 2016.

In the context of the international agreement in December 2010 to substantially increase the IMF's quota resources under the 14th General Review of Quotas, it was agreed that this would be accompanied by a corresponding reduction in NAB resources. The reduction in NAB resources was effected in February 2016. For NAB participants with lending commitments above the minimum NAB commitment of SDR 340 million, this rollback became effective on the same day as the payment of the respective member country's quota increase. As a result, NAB resources went down from SDR 367.5 billion to SDR 182 billion (about US$245 billion).

In November 2016, the IMF Executive Board approved the renewal of the NAB for another five-year period starting November 17, 2017. The renewal of the NAB will help maintain the IMF's lending capacity and provide confidence that the IMF will continue to address the needs of its membership.

Table 3
New Arrangements to Borrow: Selected Participants and Amounts of Lending Commitment (SDR millions)

Current Country NAB Participants	Prior to NAB Reduction (2016)	Current
Top 10 NAB Participants		
United States	69,074.27	28,202.47
Japan	65,953.20	33,508.50
China	31,217.22	15,860.38
Germany	25,370.81	12,890.02
France	18,657.38	9,479.16
United Kingdom	18,657.38	9,479.16

Italy	13,578.03	6,898.52
Saudi Arabia	11,126.03	5,652.74
Switzerland	10,905.42	5,540.66
Netherlands	9,043.72	4,594.80
ASEAN NAB Participants		
Singapore	1,276.52	648.55
Malaysia	340	340
Philippines	340	340
Thailand	340	340

Source: IMF

Bilateral Borrowing

In addition to multilateral borrowing such as through NAB, the IMF has also resorted to bilateral borrowing to temporarily supplement its quota and NAB resources and ensure that the IMF could meet the borrowing needs of its member countries, especially in the aftermath of the 2008 Global Financial Crisis. When the euro area crisis deepened in 2012, the IMF and several member countries (including the Philippines) agreed on a bilateral borrowing arrangement totaling SDR 282 billion (about US$379 billion) to provide additional resources available for IMF lending. Table 4 lists the major country participants to the bilateral borrowing agreements, as well as bilateral pledges of the ASEAN-4 member countries. In 2016, in view of continued uncertainty in the global economic environment, the IMF membership committed a total of SDR 243 billion (about US$327 billion) in bilateral borrowed resources until 2020 to maintain the IMF's lending capacity. In August 2016, the IMF Executive Board adopted a new multilateral voting structure among creditors.

The commitment of the Philippines, through the BSP, under the bilateral agreement with the Fund is for a maximum amount of US$1 billion. The bilateral borrowing agreement between the BSP and the IMF was signed on September 13, 2013, which implemented the BSP commitment to provide resources under this arrangement. As of end-December 2016, the IMF has made no calls under the bilateral borrowing agreements.

Table 4

2012 Bilateral Borrowing (BB) Pledges

Current Participants	Pledge/Currency (billions)	Pledge in US$ billions
Top 10 BB Participants		
Japan	US$ 60.0	60
China	US$ 43.0	43
Germany	EUR 41.5	54.7
France	EUR 31.4	41.4

Italy	EUR 23.48	31
Spain	EUR 14.86	19.6
Netherlands	EUR 13.61	18
Korea	US$ 15.0	15
Saudi Arabia	US$ 15.0	15
United Kingdom	US$ 15.0	15
ASEAN BB Participants		
Singapore	US$ 4.0	4
Malaysia	US$ 1.0	1
Philippines	US$ 1.0	1
Thailand	US$ 1.0	1

Source: IMF

To help strengthen global economic and financial stability and meet the financing needs of member countries, the IMF significantly bolstered its lending capacity. Recognizing the need for an adequately-resourced IMF, the IMF membership and the Executive Board supported the substantial increase in quota resources, the IMF's main source of financing. The IMF also expanded the NAB and secured substantial bilateral borrowing agreements from member countries to supplement quota resources. However, the Fund needs to clearly recognize that access to bilateral borrowed resources is only temporary, and as a quota-based institution, the IMF should reinforce its efforts and continue to show meaningful progress towards completing the 15th General Review of Quotas and a new quota formula to better reflect the relative importance of member countries in the global economy.

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