



Bangko Sentral ng Pilipinas
BSP Working Paper Series

Adjustments in the Face of
Peso Volatility:
Perspective from the Past
and Policy Directions

Agnes M. Yap and Cristeta B. Bagsic

Series No. 2008-02

December 2008

Center for Monetary and Financial Policy
Monetary Policy Sub-Sector



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ABSTRACT

This paper examines the volatility of economy-wide and industry-specific peso exchange rates during the period 1998-2006, and assesses the impact of such volatility on the profitability of a sample of listed Philippine banks and corporate firms. Our regression results provide evidence that volatility in foreign exchange rates affect the profitability of firms. Furthermore, there are gains in explanatory power when industry exchange rates are used instead of aggregate exchange rates as an explanatory variable for stock price return. Our results also show that the operations and risk management systems in place in different firms are sufficiently heterogeneous to the extent that the impact of foreign exchange volatilities in their profitability differs across sectors and even among firms within a sector. These results suggest that there is no one-size-fits-all foreign exchange policy, and a firm or a sector might be negatively affected by foreign exchange developments even as other sectors of the economy benefit. This implies that initiatives from policymakers that encourage the development of risk management mechanisms become necessary conjugates to policies aimed at making the foreign exchange market more efficient.

Key words: exchange rate, volatility, foreign exchange (FX) market, FX policy, FX risk management

JEL Classification: E4, F3, G3, O24

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Adjustments in the Face of Peso Volatility: *Perspective from the Past and Policy Directions**

Agnes M. Yap[†] and Cristeta B. Bagsic[‡]

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1 Introduction

Exchange rate volatility in most countries is currently either slightly below or broadly at its long-term average (see Study Group on Financial Markets Volatility, 2006). Nevertheless, preparations against the negative effects that increases in exchange rate volatility can have on the profitability of firms, and on financial stability have never been more essential to firms and policymakers alike.

Given past experiences, exchange rate risk management has become integral to a firm's decisions about foreign currency exposure (Allayannis, Ihrig, and Weston, 2001). Currency risk hedging strategies entail understanding the ways that exchange rate risk could affect a firm's operations, and identifying and implementing the techniques needed to eliminate or reduce risk (Barton, Shenkir, and Walker, 2002). Selecting an appropriate hedging strategy is often a daunting task due to the complexities involved in the timely measurement of risk exposure and in deciding on the appropriate degree of risk exposure that ought to be covered.

Since the Asian financial crisis in the late 1990s, Philippine monetary and financial authorities have stepped up prudential rules and consumer protection regulations. Financial regulators have also since then increased coordination.¹

*Previous versions of this paper were presented to the participants of and submitted as part of the SEACEN Research Project on "Adjustments of the Financial and Corporate Sector to the Rises in Exchange Rate Volatility and their Policy Implications in the SEACEN Countries". The authors are particularly grateful to Francis Dakila, Jr., and to the participants of the SEACEN Research Project and the project leaders, Dagva Boldbaatar and Yothin Jinjarak, for their insightful comments. The authors likewise thank Haydee Ramon for invaluable research assistance. The views expressed in this paper do not necessarily reflect those of the Bangko Sentral ng Pilipinas or the SEACEN. All the results reported in this study come from publicly-available data.

[†]Department of Economic Research-Bangko Sentral ng Pilipinas. E-mail: agnes.yap@bsp.gov.ph

[‡]Center for Monetary and Financial Policy-Bangko Sentral ng Pilipinas. E-mail: cbagsic@bsp.gov.ph

¹The Financial Sector Forum (FSF), composed of the Bangko Sentral ng Pilipinas (BSP), the Securities and Exchange Commission (SEC), the Insurance Commission (IC), and the Philippine Deposit Insurance Commission (PDIC) was established in July 2004 to provide an overall coordinating framework to facilitate consultation, exchange of information and idea, and coordination of regulatory and supervisory activities in the country's financial system.

This paper examines the volatility of the economy-wide and industry-specific peso exchange rates since 1998 and assesses the impact of such volatility on the profitability (proxied by stock price returns) of a sample of Philippine financial institutions and corporations. The results of the analysis provide evidence that volatility in the foreign exchange market affects firm profitability. This implies that initiatives from policymakers that encourage the development of risk management mechanisms are an important part of the overall policy to enhance the efficiency of the country's foreign exchange market.

The paper is organized as follows: Section 2 considers the current state of the Philippine foreign exchange market. Section 3 examines evidence of significant changes in the volatility of the peso during the period 1980-2006. This section also presents an estimate of selected industry or sector exchange rates, reviews the traditional types of exchange rate risks faced by both Philippine financial institutions and corporates, and examines the foreign exchange exposure of selected banks and corporations using factor analysis. Section 4 provides an examination of the foreign exchange risk management practices adopted by Philippine financial and non-financial firms in relation to their foreign exchange exposure. It also considers the factors that have hampered the development of hedging instruments in the country as well as the significant financial market developments that led to the adjustments of financial and non-financial corporations to increases in foreign exchange volatility. Section 5 discusses the paper's key findings and their policy implications. Section 6 concludes.

2 The Philippine Foreign Exchange Market

Foreign exchange policy in the Philippines has evolved from a pegged system to a floating rate regime over the last 50 years. (See Appendix A for a more detailed history.) The period of pegged exchange rate regime witnessed an extensive use of a myriad of administrative rules that were set to restrict access of Philippine residents and corporations to foreign currency. From 1949 to early 1970, foreign exchange policy was used to promote exports industries, to limit imports, and to try to change the orientation of the Philippine economy from agricultural to agro-industrial. Even after the floating rate system was adopted in 1970, it was not until late 1984 that the central bank stopped announcing a guiding rate and imposing a trading band. Moreover, it was a decade hence yet before the watershed set of reforms was issued. In 1993, the BSP liberalized capital flows and implemented a comprehensive set of foreign exchange market reforms. Today, even as there remains some prudential regulations with respect to foreign currency transactions, market forces determine the exchange rate. Furthermore, mechanisms to allow the economy to absorb shocks that a freely floating currency entails have been the subject of recent economic discussions.

The Philippine foreign exchange market is supported by a modern infrastructure. Inter-bank market transactions are carried out on an electronic trading platform called the Philippine Dealing and Exchange Corp. (PDEX),² through Reuters dealing,³ over-the-counter, or via brokers. The PDEX captures all spot transactions, irrespective of the manner they were carried

²PDEX replaced the Philippine Dealing System (PDS) on 2 October 2006

³Mostly for third currency dealing

Table 1: Philippine Foreign Exchange Policy, 1949-2007

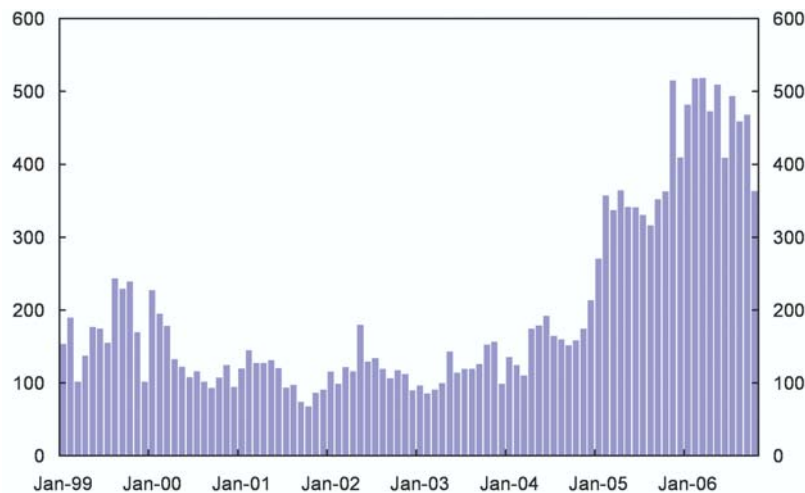
Period	Milestones
3 January 1949	The CBP began operations. It adopted a fixed exchange rate system, pegging the peso to the US dollar at P2.00/US\$1.
December 1949	The CBP imposed a comprehensive system of foreign exchange controls, which included a foreign exchange allocation scheme that gave preference to export industries and the manufacturing and mining sectors, and placed restrictions on buying of foreign exchange for services-related imports. The restraints were an effective instrument in carrying out the “Filipino First” policy of the government.
1959	The Philippines achieved its first ever post-war trade surplus.
25 April 1960	The CBP launched a four-year program to dismantle the complicated system of foreign exchange controls imposed in the 1950s. The most important feature of the decontrol program was the adoption of a multiple exchange rate system which paved the way for a de facto devaluation of the peso.
1962	The Government launched an integrated socio-economic program that almost entirely eliminated restrictions on trade and payments.
January 1962	All restrictions on sales of foreign exchange were eliminated.
22 January 1962	CB Circular No. 133 dated 22 January 1962 sought to establish a free market for foreign exchange and transferred the function of allocating exchange for most categories of payments from the administrative machinery of the CBP to the free market.
5 November 1965	A new parity for the peso-dollar exchange rate was set at P3.90/US\$1
21 February 1970	The CBP abandoned the fixed parity regime and adopted a floating rate system. The competitive rate was applied on all foreign exchange transactions except for 80 percent of export receipts from the country’s major commodities (namely, logs, centrifugal sugar, copra and copper concentrates) which were to be purchased at the rate of P3.90/US\$1.
1972	The CBP started lifting the majority of foreign exchange restrictions, paving the way for partial liberalization in foreign trade and investment. The liberalization efforts focused on the suspension of nationality requirements in establishing industries, relaxation of repatriation policies, simplification of the tariff structure, import liberalization, and granting of various incentives to the export sector particularly on non-traditional commodities, such as textiles, garments and electronics.
April 1972	The foreign exchange trading band was widened to 4½ percent on both sides of the guiding rate.
1982	“Operation Greenback” was launched to curb widespread illegal trading in the black market as the CBP implemented liberal authorization of establishments to operate as foreign exchange dealers.
October 1983	After consultation with the IMF and several foreign banks, Philippine economic managers requested a 90-day moratorium on principal payments of external debt owed to foreign commercial banks. With scarcity of foreign exchange, a system of direct controls was put into effect.

Period	Milestones
4 November 1983	Local commercial banks were required to sell to the CBP all foreign exchange receipts for placement in a pool out of which payments were made on the basis of officially set priorities.
June 1984	The foreign exchange market was reopened. By October 1984, a measure of stability had been restored in the forex market and the CB reopened the foreign exchange trading system. The previous trading day's completed transactions formed the basis for the Bankers Association of the Philippines (BAP) reference rate. With this system, the CBP stopped announcing an inter-bank guiding rate and imposing a trading band.
August 1985	CBP lifted the ceiling in the amount of allowable foreign exchange holdings.
1986	Import controls on a broad range of items were abolished. Likewise, the tariff structure was made more uniform; and discriminatory aspects of the domestic tax structure against imports were eliminated.
April 1992	Currency trading shifted from a short daily trading session to full off-floor interbank foreign exchange trading with the operation of the Philippine Dealing System (PDS).
13 April 1993	CB Circular No. 1389 was issued, setting forth foreign exchange liberalization measures.
July 1993	The CBP was reorganized into the Bangko Sentral ng Pilipinas (BSP) by virtue of the New Central Bank Act (R.A. No. 7653).
September 1995	The Philippines acquired Article VIII status with the IMF with the lifting of all restrictions on current account transactions.
July 1997	Asian currency and financial crisis emerged. The BSP implemented measures to rationalize the rules and regulations governing non-trade related FX transactions to restore stability in the FX market and mitigate the impact of the Asian crisis on the economy.
December 1997	Circular 149 implemented the Currency Rate Risk Protection Program (CRPP).
2 October 2006	A new peso-dollar trading platform was launched, replacing the Philippine Dealing System in providing the main reference rate for dollar-peso conversions.
2 April 2007	Circular 561 s. 2007, dated 8 March 2007, took effect. In the face of strong inflows, the BSP liberalized the foreign exchange regulations to allow greater market access to foreign exchange for outward investment and over-the-counter transactions.
January 2008	The second phase of reforms in the foreign exchange regulatory framework (Circular 590 dated 27 December 2007) was implemented. These reforms focus mainly on promoting greater integration with international capital markets, diversifying risk supportive of an expanding economy with global linkages, and streamlining the documentation and reporting requirements on the sale of FX by banks.

out.⁴ Thirty-two (32) of the 37 member banks are committed marketmakers.⁵

Foreign exchange market activity has expanded significantly in the past three years. Average daily turnover in the spot foreign exchange market has grown from around US\$100-150 million per day in 2004 to around US\$500 million at end-December 2006. However, activity in the foreign exchange forward and swap markets have not expanded as much. Average daily turnovers in foreign exchange forwards and swaps are approximately US\$100 million and US\$150 million, respectively, with varying liquidity.

Figure 1: Average Daily Market Turnover, January 1999-October 2006; (Monthly data, in US\$ million); Source: Philippine Dealing System (PDS)



*The Philippine peso forward markets consist of an onshore deliverable and non-deliverable forward (NDF) market, as well as an offshore non-deliverable market. Bid/offer spreads are slightly wider in the offshore NDF market compared to the onshore deliverable market. However, the average transaction sizes in the onshore and offshore forward markets are about the same (US\$3-5 million). In the offshore NDF market, contracts based on the future spot price of the peso are settled in US dollars; thus, avoiding the need to obtain pesos onshore. The estimated daily turnover in the offshore and onshore peso NDF market of US\$250 million is small compared with most Asian countries.*⁶

In addition to the offshore NDF market, the BSP has the Currency Rate Risk Protection Program (CRPP) facility. The CRPP is a non-deliverable forward contract facility that eligible corporations can use to hedge foreign currency obligations. Only the net difference between

⁴Spot transactions conducted by brokers outside the PDEX are required to be mapped in the system in connection with the transaction.

⁵However, market feedback indicates that a group of ten (10) banks constitutes the most active marketmakers.

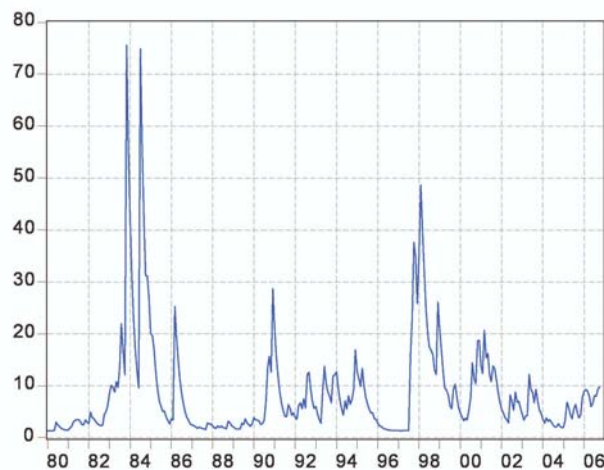
⁶Debelle, G., J. Gyntelberg, M. Plumb, Forward currency markets in Asia: lessons from the Australian experience, BIS Quarterly Review, September 2006

the contracted forward rate and the prevailing spot rate is settled in pesos at maturity of the contract. The CRPP facility is aimed at alleviating the strain on the spot market arising from demand pressure from business entities wanting to cover their unhedged future foreign exchange requirements when there are concerns of peso exchange rate changes in the future. By reducing the risk of sharp movements in the prices of foreign currencies, foreign exchange hedging reduces cash flow uncertainties, improves financial decision-making and facilitates cash conservation and planning for capital needs.

The interbank deposit market is shallow and the secondary market for money market instruments is limited. In this environment, foreign exchange swaps have emerged as a proxy for money market indices and become an important funding tool. Due to limited liquidity in the secondary market for money and bond instruments, market participants use a variety of instruments to build a yield curve for pricing financial derivatives. For example, the overnight rate provides the benchmark for pricing overnight and tomorrow/next day forwards. A three-month floating benchmark is generated out of the forward market and used for pricing interest rate swaps (IRS). Benchmark yields of active bonds are calculated and published on a daily basis by Bloomberg on behalf of the Money Market Association of the Philippines (MART). These provide a benchmark yield curve from 3 months up to 25 years.

3 Foreign Exchange Volatility

Figure 2: Conditional Standard Deviation of the Peso (in USD) (Annualized, in %; 1980.01-2006.10); Sources: BSP for basic data; Authors' estimates



The Generalized Autoregressive Conditional Heteroskedasticity (GARCH) (see Bollerslev, 1986) process is a popular model for modeling volatility of financial time series. A GARCH (p,q) process is specified as:

$$h_t = \alpha_0 + \sum_{j=1}^p \beta_j h_{t-j} + \sum_{i=1}^q \alpha_i a_{t-i}^2 \quad (1)$$

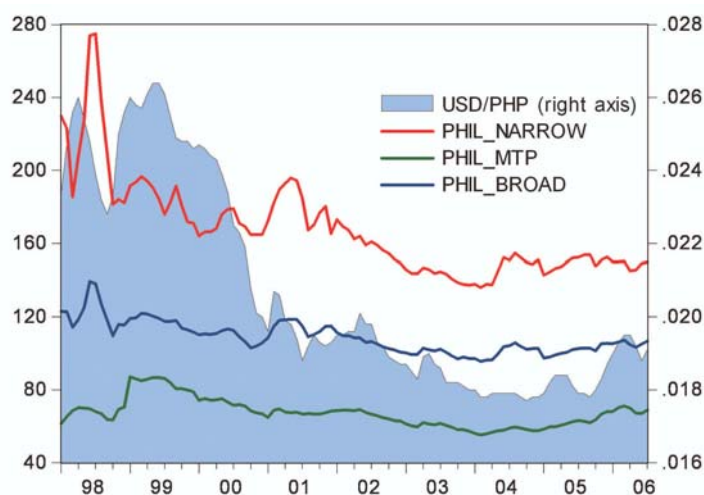
where h is the conditional variance, and a^2 is the ARCH term or the error terms. The number of lags of the ARCH and the GARCH terms are represented by p and q . The lagged values of h in the right hand side is the GARCH term.

We estimated as GARCH (1,1)⁷ processes the time-varying volatilities of the peso's value in US dollar (PHPUSD) shown in Figure 2, and of the real effective exchange rate (REER) measures using three baskets of currencies. (See Appendix D.) These baskets are:

- the basket of major trading partners (Phil.MTP), which contains the US dollar, Yen, Euro and UK Pound;
- the broad basket of competitor currencies (Phils.Broad) consisting of the Singaporean dollar, South Korean won, New Taiwan dollar, Malaysian ringgit, Thai baht, Indonesian rupiah, and Hong Kong dollar; and
- the narrow basket of competitor currencies (Phils.Narrow), which includes the Malaysian ringgit, Thai baht, and Indonesian rupiah.

We find the volatilities of these economy-wide exchange rates to be highly correlated (Table 2). The conditional standard deviations of these series are used to distinguish between low and high volatility regimes. In general, the early 1980s and the late 1990s are high volatility periods.

Figure 3: Real Effective Exchange Rates and Philippine Peso-US Dollar Rate; Sources: Bangko Sentral ng Pilipinas, Philippine Dealing System



⁷GARCH (1,1) uses both the first and second moments of the series to measure conditional volatility (which is a function of past values of log differences of the peso exchange rate).

Table 2: Correlation Matrix of Volatilities of Various Exchange Rate Estimates

VOLATILITY of ...	Phil_Broad	Phil_MTP	Peso	Phil_Narrow
Phil_Broad	1.000	0.820	0.852	0.844
Phil_MTP	0.820	1.000	0.774	0.668
Peso	0.852	0.774	1.00	0.626
Phil_Narrow	0.844	0.668	0.626	1.000

Table 3: Descriptive Statistics of the Volatilities of Various Economy-wide Exchange Rate Estimates (January 1980 - October 2006)

1980-2006	VOLATILITY of...			
	Phil_Broad	Phil_MTP	PHPUSD	Phil_Narrow
Mean	8.425	10.138	8.736	11.272
Median	6.925	8.382	5.523	8.378
Maximum	33.405	33.658	75.544	47.143
Minimum	5.278	6.135	1.328	5.398
Std. Dev.	4.193	4.670	10.189	7.882
Skewness	2.763	2.409	3.283	2.654
Kurtosis	11.621	9.484	17.257	10.330
No. of Observations	321	321	321	321

We find PHPUSD to be the most volatile, and Phils_Broad to be the least volatile on average (Figure 3). Table 3, which shows the descriptive statistics of the different measures of aggregate exchange rate for the Philippine peso, tells the same story.

Significant volatilities across all economy-wide measures were seen during the mid-1980s when the Philippines experienced balance of payments (BOP) problems, during the first half of the 1990s when an energy crisis hit the economy, and in the late 1990s and early 2000s as a result of the Asian crisis and its aftermath. The high levels of volatility in the 1980s and 1990s might be associated with the global deregulation and liberalization of financial markets and capital flows, together with the rapid advances in information technology. In general, however, annualized volatilities in the past two years had come down compared to the late 1990s and early 2000s. The standard deviations of volatilities in Table 4 are significantly lower across all measures of aggregate exchange rates relative to the standard deviations in Table 3, which are for the period January 1980 - October 2006. Moreover, the volatilities themselves are likewise lower.

Table 4: Descriptive Statistics of the Volatilities of Various Economy-wide Exchange Rate Estimates (January 2005 - October 2006; in percent)

2005-2006	VOLATILITY of...			
	Phil_Broad	Phil_MTP	PHPUSD	Phil_Narrow
Mean	7.129	7.965	6.450	8.479
Median	6.911	7.863	6.475	8.225
Maximum	10.284	9.904	9.720	12.594
Minimum	5.777	6.620	2.043	6.434
Std. Dev.	1.061	1.230	2.240	1.423
Skewness	1.424	0.211	-0.212	1.251
Kurtosis	4.917	1.395	1.929	4.625
No. of Observations	22	22	22	22

3.1 Industry-specific exchange rates

Industry exchange rates reflect better the peculiarities of a sector. Unlike economy-wide REERs which implicitly assume that all sectors of the domestic economy have similar trade patterns with the foreign economies in the currency basket, sector REERs allow us to use actual trade patterns of commodities used in the business operations of firms in the sector. With industry REERs, the weight of bilateral exchange rates depend on trade flows of major inputs in firms' operations. Since currencies in a basket could move in different directions and various magnitudes, weights that reflect better how important each price is for the industry would help us get a better reading of the actual prevailing foreign exchange rate in the sector. We can then use this more accurate rate to investigate whether changes in currency rates will tend to affect profitability of firms.

We estimated real effective exchange rates for selected sectors using three baskets of currencies. These baskets contain the same currencies included in the three currency baskets that the BSP constructs for the aggregate economy.

In defining what makes a sector, the Harmonized System (HS) of merchandise classification was followed. We refer to the various REERs as *MTP*, *Broad* or *Narrow* and append these as prefixes and identifiers for the sector to which such REER pertains. For example, FBT_MTP refers to the REER for the food, beverage and tobacco (FBT) manufacturing sector that we estimated using a basket composed of the currencies of the major trading partners (MTP) of the Philippines.

For the level of disaggregation, we used the Section level, as indicated in Table 5. For instance, in calculating the sector exchange rates used in the analysis of the food, beverage and tobacco (FBT) manufacturing corporations, data recorded under Section 4 in Table 5 were used.

Starting with the monthly trade data generated by the Philippine National Statistics Office, series for exports and imports per month and per Section were generated separately. Exports

Table 5: Merchandise Classification

Section	Coverage
1	Live Animals; Animal Products
2	Vegetable Products
3	Animal or Vegetable Fats and Oils and Their Cleavage Products; Prepared Edible Fats; Animal or Vegetable Waxes
4	Prepared Foodstuffs; Beverages, Spirits, and Vinegar; Tobacco and Manufactured Tobacco Substitutes
5	Mineral Products
6	Products of the Chemical or Allied Industries
7	Plastics and Articles Thereof; Rubber and Articles Thereof
8	Raw Hides and Skins, Leather, Furskins and Articles Thereof; Saddlery and Harness; Travel Goods, Handbags, and Similar Containers; Articles of Animal Gut (Other Than Silkworm Gut)
9	Wood and Articles of Wood; Wood Charcoal; Cork and Articles of Cork; Manufactures of Straw, of Esparto or of Other Plaiting Materials; Basketware and Wickerwork
10	Pulp of Wood or of other Fibrous Cellulosic Material; Waste and Scrap of Paper or Paperboard; Paper and Paperboard and Articles Thereof
11	Textiles and Textile Articles
12	Footwear, Headgear, Umbrellas, Sun Umbrellas, Walking-Sticks, Seat-Sticks, Whips, Riding-Crops and Parts Thereof; Prepared Feathers and Articles Made Therewith; Artificial Flowers; Articles of Human Hair
13	Articles of Stone, Plaster, Cement, Asbestos, Mica or Similar Materials; Ceramic Products; Glass and Glassware
14	Natural or Cultured Pearls, Precious or Semiprecious Stones, Precious Metals, Metals Clad with Precious Metal, and Articles Thereof; Imitation Jewellery; Coin
15	Base Metals and Articles of Base Metal
16	Machinery and Mechanical Appliances; Electrical Equipment; Parts Thereof; Sound Recorders and Reproducers, Television Image and Sound Recorders and Reproducers, and Parts and Accessories of Such Articles
17	Vehicles, Aircraft, Vessels and Associated Transport Equipment
18	Optical, Photographic, Cinematographic, Measuring, Checking, Precision, Medical or Surgical Instruments and Apparatus; Clocks and Watches; Musical Instruments; Parts and Accessories Thereof
19	Arms and Ammunition; Parts and Accessories Thereof
20	Miscellaneous Manufactured Articles
21	Works of Art, Collectors' Pieces and Antiques

Source: National Statistics Office, www.census.gov.ph

and imports for each Section and for each month are then composed of data for the trading partners. These formed the basis for the estimation of the monthly trade weights.

The trade weights used in calculating the industry REERs are the simple averages of the exports and imports trade weights for a particular Section of the merchandise classification table.

The trade weights, for exports and imports, were estimated using the following formula:

$$x_{j,t} = \sum x_{j,t}^c \quad (2)$$

$$w_{j,t} = \frac{x_{j,t}}{\sum x_{j,t}} \quad (3)$$

where $x_{j,t}$ is the sum of exported (imported) commodities, c , classified in the Section to (from) country j at time t . To arrive at the country weight, $w_{j,t}$, these sums were then divided by the total exports (imports) of commodities classified in that particular section. Then, depending on whether we were computing for the major trading partner REER, or the broad basket or narrow basket competitor currencies REERs, we summed the trade weights of the countries we were interested in in order to construct a new basket, and get the final weight, $\hat{w}_{j,t}$.

Given the weights $\hat{w}_{j,t}$ estimated, the nominal effective exchange rate series for a given sector and basket were estimated using the following formula.

$$SECTOR_NEER_Basket_t = \sum_{i=1}^j SECTOR_w_{j,t}(\text{value of the peso in foreign currency})_t \quad (4)$$

where the exchange rates had been indexed to the value of the first observation of the estimation period.

To compute for the REER, we multiplied each term in the NEER formula above by the ratio of the CPI of the Philippines to the CPI of the foreign country. The price indices had also been re-indexed to one common period. In our paper, we re-based the price indices to the first period in our estimation, January 1998.

The final REER was estimated by getting the simple average of the REER estimated from exports and imports data. As with the BSP estimated REERs, an increase (decrease) in the industry-specific REERs denote an appreciation (depreciation).

3.2 Exchange rate volatility transmission

A common definition of exchange rate risk relates to the effect of unexpected exchange rate changes on the value of the firm (Madura, 1989). In particular, it is defined as the possible direct loss (as a result of an unhedged exposure) or indirect loss in the firm's cash flows, assets and liabilities, net profit and, in turn, its stock market value from an exchange rate move. To

manage the exchange rate risk inherent in a firm's operations, a firm needs to determine the specific type of currency risk exposure, the hedging strategy and the available instruments to deal with these currency risks.

To measure the impact of exchange rate movements on a firm that is engaged in foreign-currency denominated transactions, i.e., the implied value-at-risk (VaR) from exchange rate moves, we need to identify the type of risks that the firm is exposed to and the amount of risk encountered (Hakala and Wystup, 2002). The three main types of exchange rate risk that we consider in this paper are (Shapiro, 1996; Madura, 1989):

- Transaction risk which is basically cash flow risk and deals with the effect of exchange rate movements on transactional account exposure related to receivables (export contracts), payables (import contracts) or repatriation of dividends. An exchange rate change in the currency of denomination of any such contract will result in a direct transaction exchange rate risk to the firm;
- Translation risk, which is basically balance sheet exchange rate risk and relates exchange rate movements to the valuation of a foreign subsidiary and, in turn, to the consolidation of a foreign subsidiary to the parent company's balance sheet. Translation risk for a foreign subsidiary is usually measured by the exposure of net assets (assets less liabilities) to potential exchange rate moves. In consolidating financial statements, the translation could be done either at the end-of-the-period exchange rate or at the average exchange rate of the period. Thus, while income statements are usually translated at the average exchange rate over the period, balance sheet exposures of foreign subsidiaries are often translated at the prevailing current exchange rate at the time of consolidation; and
- Economic risk, which reflects basically the risk to the firm's present value of future operating cash flows from exchange rate movements. In essence, economic risk concerns the effect of exchange rate changes on revenues (domestic sales and exports) and operating expenses (cost of domestic inputs and imports). Economic risk is usually applied to the present value of future cash flow operations of a firm's parent company and foreign subsidiaries.

Identification of the various types of currency risk, along with their measurement, is essential to develop a strategy for managing currency risk.

3.3 Exchange rate volatility exposure

The foreign exchange exposure of a particular firm or industrial sector can be assessed approximately using factor analysis, as explained in Jorion (1990). The method consists of regressing the stock price return of the particular industry or firm on exchange rate changes while controlling for overall stock market movements. The standard econometric specification is given by:

$$\Delta \log(\text{Price})_{i,t} = a_0 + a_1 \Delta \log(\text{ER})_{s,t} + a_2 \Delta \log(\text{PSEi})_t + e_t \quad (5)$$

where $\Delta \log(\text{Price})_{i,t}$ is the stock market return of firm or industry i in period t , $\Delta \log(\text{ER})_{s,t}$ is the change in a Philippine peso exchange rate relative to s currency or basket of currencies; $\Delta \log(\text{PSE})_t$ is the log-return of the Philippine stock market; and e_t is an independent and identically distributed error.

Monthly data from January 1998 to July 2006 were used in the regressions. Estimates of the parameters were obtained using the Newey-West autocorrelation consistent covariance estimator. We used this option to account for heteroskedasticity of an unknown form. In the presence of heteroskedasticity, the t-statistics and F-statistics resulting from an OLS estimation will not be reliable. We show only regression results where the changes in the exchange rates and the market returns are both significant. The residuals of the regressions shown have passed White's heteroskedasticity test, and the Ljung-Box test and Breusch-Godfrey LM test on serial correlation, as well as the Augmented Dickey-Fuller unit root test. A low p -value means rejection of the null hypothesis that the parameter is not significantly different from zero. For example, a p -value of 0.10 means that the parameter is statistically significant at 90 percent confidence interval.

In interpreting the results of the regressions, a statistically insignificant coefficient for the change in the exchange rate does not necessarily mean that that firm or industry has no foreign exchange exposure. It could be that the firm is naturally hedged (i.e., foreign exchange liabilities are intentionally matched with assets in the same foreign currency), or the firm successfully uses financial market instruments to cover its exposure.

In this paper, we investigated the foreign exchange exposure of selected listed firms in the Philippine Stock Exchange. These firms are generally market leaders in their sectors. They are classified in the banking and finance sector, food and beverage manufacturing sector, and property sector. Those companies that are included in the Holding companies group are involved in real estate, banking and finance, utilities, construction, communication, and manufacturing. In general, the sectors that we covered represent and directly affect more than 50 percent of the Philippine economy, as shown in Table 6. We can also see that the aggregate contribution to the overall economy of our covered sectors has not changed significantly over the last 25 years.

3.3.1 Foreign exchange exposures in the banking system

We investigated the overall performance of the Banking and Financial Services (BFS) sub-index of the Philippine Stock Exchange using Equation 5 for monthly data during the period 1998-2006 (Table 8). The real effective exchange rates used in these regressions are the economy-wide rates published by the BSP. Regression (1) uses the major trading partners REER, while Regressions 2, 3 and 4, use the peso-dollar nominal exchange rate, the broad competitors REER and the narrow competitors REER, respectively.

The BFS sub-sector appears to be affected by changes in the various measures of exchange rate changes. Changes in the Peso-US dollar exchange rate and in the value of the peso vis--vis the MTP basket both have positive and contemporaneous impacts on the sector.

Table 6: Components of Real Gross Domestic Product

	1970-2005	1999-2005
Agriculture, Forestry and Fishery Sector	22%	20%
Industry Sector	36%	34%
Mining and Quarrying	1%	1%
Manufacturing	26%	24%
Construction	6%	5%
Electricity, Gas, and Water	3%	3%
Services Sector	42%	46%
Transportation, Communications, and Storage	6%	8%
Trade	15%	16%
Finance	4%	5%
Ownership of Dwelling and Real Estate	5%	5%
Private Services	7%	8%
Government Services	5%	5%

Source: NSCB for basic data

The magnitudes of the impacts likewise do not differ much. Meanwhile, changes in the value of the peso relative to the two competitors' currency baskets affect the performance of the BFS index with lags of two months for the broad basket and one month for the narrow basket.

Additionally, analysis was performed using the log-returns of the stock prices of selected listed Philippine banks against the logarithmic changes of the Philippine Composite Index (PSEi) and the logarithmic changes of exchange rates. The combined assets of the banks included in our study comprised about 40 percent of the total assets of the banking sector (measured on consolidated basis) as of end-December 2006.

Our results indicate that the equity prices of publicly listed Philippine banks have been affected by the foreign exchange rate for the period 1998 - 2006 (Table 9). In this table, *No* means that the foreign exchange rate is not significant, and *Y* means that it is significant. The figures inside the parentheses, (...), are the number of lags. The sign of the coefficient of the log-change of the exchange rate is indicated in the square brackets.

The impact of the various measures of aggregate exchange rate on changes in stock prices of the five banks included in our study is mixed. However, each of them is affected by at least two measures. Peso appreciations relative to the US dollar either have no impact, or tend to lower the stock price.

3.3.2 Foreign exchange exposures in the non-financial corporate sector

Conglomerates

The logarithmic changes of end-month stock prices of five Philippine conglomerates are included in our study.

Table 7: Activities of the Selected Listed Philippine Firms

Economics Activities	
Banks	
Bank A	commercial banking, investment banking, private banking, asset management, corporate finance, credit card operations, insurance, securities brokerage and realty management
Bank B	commercial banking, investment banking, private banking, asset management, corporate finance, credit card operation, securities distribution and insurance services
Bank C	commercial banking, investment banking, private banking, asset management, corporate finance, credit card operation, leasing
Bank D	commercial banking, investment banking, private banking, asset management, corporate finance, credit card operation, treasury
Bank E	commercial banking, investment banking, private banking, asset management, corporate finance, credit card operation, treasury
Conglomerates	
Conglomerate A	real estate and hotels, electronic and information technology, water utilities, automotive, investments in properties overseas, air charter services and food and agribusiness
Conglomerate B	electricity generation and distribution, banking and financial services, food manufacturing and transportation
Conglomerate C	broadcasting and cable TV, telecommunications, power generation and distribution, property development, information technology, health care delivery, and water distribution
Conglomerate D	coal mining, general construction, infrastructure and real estate development, cement manufacturing, and real estate sales and development
Conglomerate E	food manufacturing (snacks, coffee, noodles, ice cream), telecommunications, air transportation, real estate and hotels, petrochemicals, textile, thrift banking operations, foreign exchange, securities dealing
Property Firms	
Property A	residential developments, development and leasing or sales of office buildings, development and leasing of malls, development and sales of large-scale, mixed-use, masterplanned communities
Property B	real estate development for residential, leisure and recreation
Property C	development of residential subdivisions and construction of housing units
Property D	large-scale residential and office developments
Property E	development and operation of shopping centers

Economics Activities	
Food and Beverage Firms	
Food and Beverage A	manufacture, distribution and sale of milk products
Food and Beverage B	manufacture and sale of alcoholic beverages, fruit juices and snack foods, operation of water bottling plant, production of cassava-starch milk, an alternative raw material for the production of alcohol
Food and Beverage C	development, operation and franchising of fast food stores; food manufacturing; and property leasing
Food and Beverage D	manufacture and marketing of flour based mixes, pasta, canned, and processed meat, milk, juices, ice cream, and similar food products; development and sale of industrial estates, middle income horizontal residential projects and condominium projects; insurance, financing, and cargo handling
Food and Beverage E	food and beverage manufacturing; breeding, hatching, processing and marketing of chicken; production and marketing of metal closures, two-piece aluminum cans, plastic crates, pallets, corrugated cartons, composites, glass containers, glass molds and polyethelene terephthalate (PET) plastic bottles. "Food and Beverage E" operates in the Philippines, China, Australia, Indonesia, Vietnam and Thailand.
Food and Beverage F	production and sale of poultry products, live and dressed/processed chicken; production of broiler-hatching eggs
Food and Beverage G	manufacture and distribution of snack foods, beverage, noodles, and pasta and tomato-based products; manufacture of polypropylene films for packaging companies; manufacture and distribution of animal feeds, glucose and soya products; production and distribution of animal health products; sugar refining; and flour milling

Table 8: Regression Results for Banks and Financial Services Returns Against Various Economy-wide Exchange Rates

1998.01-2006.07	Banks and Financial Services			
Variable	$\Delta \log(BFS_index)$			
	Regression (1)	Regression (2)	Regression (3)	Regression (4)
constant (<i>p-value</i>)	0.001 <i>0.71</i>	0.003 <i>0.465</i>	0.002 <i>0.655</i>	0.002 <i>0.567</i>
RET_PSEI (<i>p-value</i>)	0.943 <i>0</i>	0.925 <i>0</i>	0.984 <i>0</i>	0.976 <i>0</i>
DLPHIL_MTP (<i>p-value</i>)	0.436 <i>0.001</i>			
DLPHPUUSD (<i>p-value</i>)		0.482 <i>0.029</i>		
DLPHIL_BROAD(-2) (<i>p-value</i>)			0.396 <i>0.003</i>	
DLPHIL_NARROW(-1) (<i>p-value</i>)				0.169 <i>0.025</i>
Adjusted R-squared	0.814	0.805	0.809	0.802
Durbin-Watson stat	2.015	1.998	1.991	1.99

Sources: CEIC and BSP for basic data; Authors estimates.

Table 9: Foreign Exchange Exposure of Selected Listed Philippine Firms

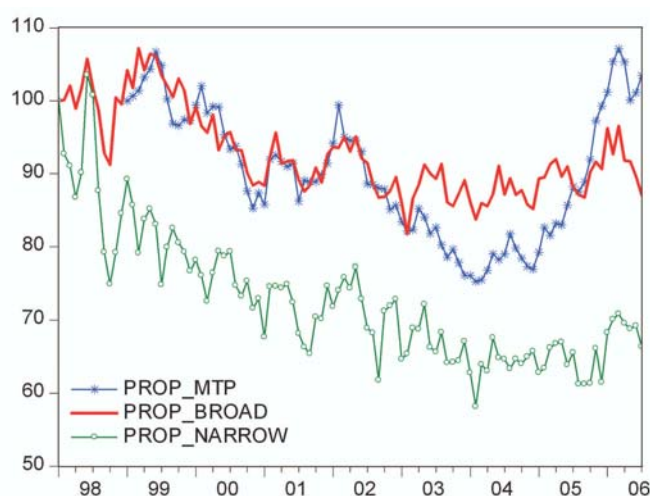
Sample period (1998-2006)	Economy-wide Exchange Rates				Industry Exchange Rates		
	PHPUSD	MTP	BROAD	NARROW	MTP	BROAD	NARROW
Banks							
Bank A	No	No	Y(5)[+]	Y(5)[+]			
Bank B	No	Y[+]	Y[+]	Y(2)[+]			
Bank C	Y[-]	Y[+]	No	Y(1)[-]			
Bank D	Y[-]	Y[+]	No	No			
Bank E	Y(3)[-]	Y[-]	Y(4)[+]	Y[-]			
Conglomerates							
Conglomerate A	No	Y[-]	Y(2)[-]	Y(2)[-]			
Conglomerate B	Y[-]	No	Y[-]	Y[-]			
Conglomerate C	Y(3)[-]	No	Y(5)[+]	Y(3)[-]			
Conglomerate D	No	No	No	No			
Conglomerate E	Y[-]	Y[+]	No	No			
Property Firms							
Property A	No	No	No	Y[+]	Y(2)[+]	Y[+]	No
Property B	No	Y[+]	Y(5)[+]	Y[-]	No	No	Y(1)[-]
Property C	No	Y[+]	No	No	Y[+]	No	Y(2)[+]
Property D	No	Y(4)[+]	Y[-]	No	No	Y[+]	Y(3)[-]
Property E	Y[+]	Y(3)[-]	No	No	Y[-]	Y[-]	Y[-]
Food and Beverage Firms							
Food and Beverage A	No	No	Y(5)[-]	Y(1)[-]	Y[-]	No	Y[+]
Food and Beverage B	No	No	Y(2)[-]	Y[-]	Y(1)[-]	Y(2)[-]	Y(1)[-]
Food and Beverage C	No	No	Y(1)[+]	Y(1)[+]	Y(3)[-]	No	Y[+]
Food and Beverage D	No	No	Y[+]	Y(2)[+]	Y(4)[+]	Y(4)[-]	Y[+]
Food and Beverage E	No	No	Y(2)[-]	Y(2)[-]	Y(1)[-]	Y[-]	Y[-]
Food and Beverage F	No	Y(1)[+]	No	No	No	No	Y[-]
Food and Beverage G	Y[+]	Y[+]	Y[+]	No	Y[+]	Y(4)[+]	Y(5)[+]

Sources: Authors estimates.

As implied by the negative sign of the coefficients of the change in exchange rates, an appreciation, holding other factors constant, tend to lower equity values of majority of the conglomerates in Table 9. Probably reflecting its overseas holdings, appreciations of the peso relative to the three baskets of currencies affect “Conglomerate A”’s equity value negatively.

Property Sector

Figure 4: Industry-Specific Real Effective Exchange Rates; Articles of Stone, Plaster, Cement, Asbestos, Mica or Similar Materials; Ceramic Products; Glass and Glassware; Source: Authors’ Estimates



The stock price returns of five property firms were investigated using their monthly price data. The industry exchange rates were estimated using the trade weights from Section 13 of the Harmonized System of classification, which included cement, stones, and other construction materials. Figure 4 shows that PROP_Narrow and PROP_Broad had both been depreciating in early 2006, while PROP_MTP had started appreciating.

The REERs had been able to explain movements in prices better than the Peso-dollar rate. The observed positive relationship between a strong peso and the equity value of the selected property firms might be traced to the income effect and balance sheet effects of such an appreciation (e.g., lower interest payments in peso terms, lower debt stock in peso terms, lower costs of construction materials, higher margins). On the other hand, for businesses that rely on market segments dominated by clients dependent on overseas foreign exchange remittances, the positive effect on a stronger peso on the cost side would tend to be diluted or offset by a possible negative impact on sales turnover.

Food and Beverage Manufacturing Sector

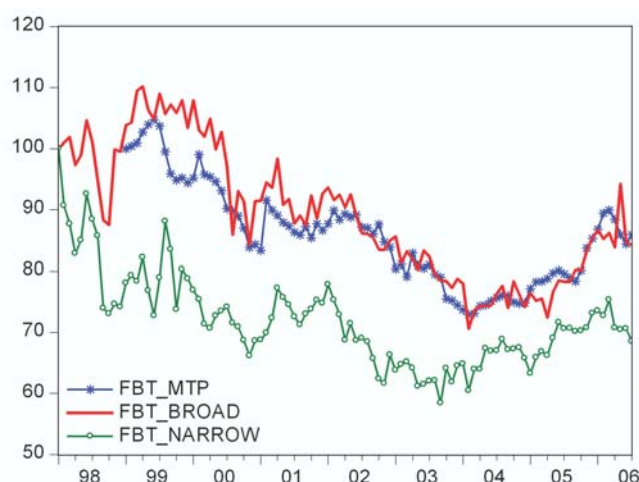
Equation (5) was used to investigate the effects of the exchange rate calculated for the Food, Beverage and Tobacco category (Section 4) of the Harmonized System of classification).

Figure 5 shows the movements in the sector REERs of FBT. Although the MTP and Broad measures were closer in values, all three measures exhibited almost similar behaviors.

The stock returns of seven (7) listed Food and Beverage Manufacturing companies were regressed against the logarithmic changes of the Philippine composite index (PSEi) and sectoral exchange rate measures and the Philippine peso to US dollar rate.

Our results show us that the PHPUSD affects the returns of one (“Food and Beverage G”) of the seven firms, while changes in the sectoral real exchange rates affect all of them. Table 9 shows that the FBT sector Narrow REER is significant in the equations for all of the food and beverage firms we selected.

Figure 5: Industry-Specific Real Effective Exchange Rates: Prepared Foodstuffs; Beverages, Spirits, and Vinegar; Tobacco and Manufactured Tobacco Substitutes



The REERs performed better than the peso-dollar nominal rate in explaining the movements in the equity prices of the selected FBT firms. However, the adjusted R^2 's obtained are not high, hinting that other factors not considered in our regressions for the selected food and beverage listed stocks affect their equity values.

Pooled Regressions

We also investigated the impact of foreign exchange changes using pooled regressions, to see whether volatilities would have definitive effects on each sector. We found that it was only for BFS, and only for Phil.MTP and PHPUSD, that foreign exchange volatility measures were significant (Table 10).

We might infer from our regression results that the operations and/or risk management systems in the other sectors, except for BFS, are sufficiently heterogenous to the extent that the impact of foreign exchange volatilities in their profitability are not the same. These differences are not only true across sectors, but also within sectors, providing evidence, yet again, against

Table 10: Results of Pooled Regressions for the Banking and Finance Services Sector

$\Delta (\log(\text{BFS}_{t}))$	=	0.0004	+	0.002	+	0.440 $\Delta \log(\text{PHIL_MTP}_t)$	+	0.956 $\Delta \log(\text{PSEi}_t)$
				(1.165)		(3.583)		(20.640)
$\Delta (\log(\text{BFS}_{t}))$	=	0.002	+	0.002	+	0.495 $\Delta \log(\text{PHPUSD}_t)$	+	0.937 $\Delta \log(\text{PSEi}_t)$
				(1.355)		(2.261)		(18.460)

the use of foreign exchange policy in favoring one sector of the economy. Efficient allocation of resources dictates that policies that promote an environment where risk are priced accurately should be pursued. However, since there is no one-size-fits-all foreign exchange policy, and a firm or a sector might be negatively affected by foreign exchange developments even as other sectors of the economy benefit, initiatives from policymakers that encourage the development of hedging mechanisms become necessary conjugates to policies aimed at making the foreign exchange market more efficient.

4 Adjustments to Exposure: Hedging strategies and instruments

The series of financial crises in the 1990s heightened investors' interest for hedging instruments. In Asia, policy reforms partly included measures designed to facilitate the development of hedging instruments. In the Philippines, the entry of risk-mitigating financial instruments in the market has been affected by a number of factors that include:

- *Evolving capital market.* The current state of the local capital market needs to be further improved to promote the use of hedging instruments. The underlying complexities surrounding the use of such instruments require higher investment skills, sophisticated analytical tools and the presence of market infrastructure and systems necessary to support their use in the market.
- *Risk appetite of investors.* Lessons learned from the Asian financial crisis of 1997 and the resulting slow recovery of the corporate sector have compelled many local banks to remain risk averse, with investment/credit exposures limited mostly to risk-free liquid instruments (e.g., government securities) as well as conventional hedging instruments (e.g., foreign exchange swaps and non-deliverable forwards) to cover foreign exchange rate risks.

4.1 Foreign exchange risk management in banks

The above cited factors may have ultimately increased the overall risk exposure of Philippine banks despite the recent reduction in foreign exchange volatility. Moreover, there are some limitations in the risk management practices of some banks.

*Banks use diverse risk management technologies. However, foreign banks have access to better risk management techniques to deal with foreign exchange risk and other sources of market risk. Access to better risk management techniques through their links with head offices outside Philippines may explain partly why foreign banks have been more successful than local banks in obtaining expanded derivatives licenses.*⁸

*Meanwhile, risk management systems in some banks may not capture well market risk, including foreign exchange risk. The use of parametric Value-at-Risk (VaR) techniques for measuring market risk in their trading portfolios leads to too frequent breaches of internal VaR limits. In the case of foreign exchange risk, parametric VaR may not be adequate since the distribution of the peso exchange rate exhibit fat tails.*⁹

The limitations of risk management systems in some banks raise concerns on whether they could manage the risks associated to complex financial instruments such as structured products.¹⁰ Banks are authorized by the BSP to invest, for their own account, in foreign currency-denominated structured products issued by banks and special purpose vehicles (SPVs) of high credit quality.¹¹ The notes have maximum tenor of five years with embedded optionality which can only be linked to interest rate indices and/or foreign exchange rates other than those that involve the Philippine peso. The notes are booked under the Investments in Bonds and Debt Securities account except for instruments with put options which are booked under the Available for Sale Securities account. These notes have high coupon payments since the buyer of the note is also selling optionality, or volatility, to the issuer of the note. The lack of secondary markets for these notes, however, makes marking-to-market the notes difficult. Most local banks investing in these structured notes should perform, at regular interval, stress tests in order to be able to better assess the risks of these notes.

⁸The BSP revised the regulations on derivatives activities undertaken by banks through Circular No. 594 dated 8 January 2008. This issuance superseded previous issuances on derivatives (e.g. Circular Nos. 102 and 297). The revised regulations seek to strengthen the supervisory framework over derivatives activities by adopting a risk-based approach on supervision and strengthening the risk management guidelines for derivatives activities. The Circular also aims to provide additional products available in the market to promote liquidity in the market. In particular, universal banks and commercial banks are allowed, among others, to offer FX forwards, FX swaps and currency swaps with tenor of three years or less without need for prior BSP approval. Previously, only FX forwards and FX swaps with tenor of one year or less were allowed without prior BSP approval; for dealings in other types of derivatives such as options, banks need derivatives license.

⁹VaR “deals with the maximum loss under extreme market conditions, which occur in the left tail of the distribution function of the future market value. [...] Usually, as allowed by the Basel Committee, a normal or lognormal distribution is assumed for the market return. [However,] it is claimed that the normal distribution underestimates the probability in the tail, and hence, the VaR”. (Bams and Wielhouwer, 1999, p. 30)

¹⁰A structured product refers to a financial instrument where the return is a function of one or more underlying indices, such as interest rates, equities and exchange rates. There may also be embedded derivatives such as swaps, forwards, options, caps, and floors that reshape the risk-return pattern (Cir. No. 469 dated 13 January 2005).

¹¹Under BSP Circular No. 466 dated 5 January 2005, universal and commercial banks without expanded derivatives authority may invest in certain specified structured products without need of prior Monetary Board approval.

4.2 Evolution of financial structure

Despite existing impediments in the development of the local capital market, recent financial and capital market reforms, including the modernization of the country's payments and settlement system, have facilitated the adjustments of the financial and non-financial corporations to increases in foreign exchange volatility.

Capital Market Reforms

Developing the capital market is necessary to increase the menu of financial services and financial assets in a country. Several measures have already been undertaken to develop the Philippine capital market.

Specifically, the passage of the Securitization Act of 2004 (Republic Act No. 9627) essentially sets the legal and regulatory framework for the sale of assets like loans, mortgages, receivables and other debt instruments as new securities to raise capital. The law also provided fiscal incentives to create a favorable market environment toward the development of the secondary market for these securitized assets. The law is expected to expand the menu of existing instruments available to investors and provide an avenue for portfolio diversification.¹² Moreover, it is foreseen to generate more funds for both the private and government sectors, which can then be used for productive endeavors. Similarly, the law is expected to facilitate the development of hedging instruments in the market.

Improvement in the payment and settlement system

In December 2002, the Philippine RTGS or Philippine Payments and Settlement System (PhilPASS) has been launched, covering wholesale interbank loan transactions among banks and non-banks, the purchase/sale of government securities under repurchase agreements between and among banks and the BSP, customer electronic fund transfer transactions and net check clearing results processed by the Philippine Clearing House Corporation. The system has improved the efficiency of the Multi-transaction Inter-bank Payment System (MIPS 2 Plus)¹³ by allowing the banks to interface directly to the automated accounting and settlement system of the BSP. The processing and final settlement of electronic fund transfer instructions take place continuously and individually, thereby achieving real time, final and irrevocable gross settlement of high value electronic fund transfers of banks and participating non-banks. The system is intended to eventually cover all transactions in the equities, fixed income, and money and foreign exchange markets.

In July 2003, the request of Megalink, Inc. to do intra-network settlements through PhilPASS was approved by the Monetary Board.

¹²The law is expected to usher the development of a wide range of structured financial instruments in the market including the issuance of asset-back securities (ABS). These instruments are expected to play a greater role in the market, given their role in ameliorating assumed credit risk of banks and in lowering cost of credit for borrowers.

¹³MIPS is an electronic multilateral net clearing system that handles large amount inter-bank call loans and bank transfers. This has been partially replaced in July 2001 by the RTGS-based MIPS2 for payments of inter-bank call loans between banks and non-bank financial intermediaries performing quasi-banking functions. In November 2001, the RTGS-based MIPS2 Plus has been installed for payments of foreign exchange transactions and other bank operations.

In November 2003, the real-time gross settlement for peso-dollar foreign exchange transactions was launched. The BSP, the Bankers Association of the Philippines (BAP), Citigroup Manila, and the Philippine Depository and Trust Corporation (PDTC) have formally launched a *Payment-versus-Payment* (PvP) electronic system for the local inter-bank spot and forward foreign exchange market. Under the PvP, final transfer in one currency takes place only if a final transfer in the other currency occurs¹⁴. Thus, the mechanism is expected to eliminate settlement risks inherent to peso-dollar foreign exchange transactions, spur trading activities and enhance market liquidity, leading to stronger growth of the financial sector. The PvP links two real-time gross settlement systems- the BSP's PhilPASS for peso transactions of commercial banks and Citigroup's Philippine Domestic Dollar Transfer System for dollar transactions of commercial banks- with PDTC as designated clearing entity for peso-dollar transactions of commercial banks under the BAP.

Beginning 23 August 2004, GS traded through the Philippine Dealing Exchange (PDEX) Trading System can now be settled under the PhilPaSS Delivery Versus Payment system (DvP). The Philippine Stock Exchange (PSE) is also expected to be connected to PhilPaSS.

In February 2008, the interconnection of the PDS Settlement Highway and the BSP PhilPaSS, which aims to further increase efficiency in the delivery of banking services, was implemented.

Establishment of a fixed income exchange

On 28 March 2005, the first phase of centralized electronic marketplace for Philippine fixed income, which cater initially to an interbank market, was launched by the Philippine Dealing and Exchange Corporation (PDEX). The establishment of the Fixed Income Exchange (FIE) is expected to improve the efficiency, regulation and risk management in the debt market.

In 2006, the PDEX completed all the necessary interconnection for the trading of government securities through the straight through processing (STP) system. This contributed to the efficiency in the trading platform as buyers and sellers are able to exchange cash and securities ownership simultaneously (and eliminated the need to encode separately the instructions to the Registry of Scripless Securities (RoSS) and trade transactions). Furthermore, increased investor demand for safe investment instruments led to the surge in the local debt market. In addition, PDEX launched the peso-dollar trading platform to centralize foreign exchange trading with the FIE. The new foreign exchange trading platform replaced the Philippine Dealing System in providing the main reference rate for the US dollar-Philippine peso transactions used for foreign exchange conversions to local currency.

Development of hedging and financing instruments for dealers

The Monetary Board has approved on 1 August 2003 the revised Memorandum of Agreement (MOA) for Cash Settled Securities Swap Transactions (CSSST) among the BSP, the

¹⁴Before, banks place pesos first before receiving equivalent dollars later in the day. If the amount requested is insufficient, however, buying dollars from a new source expose banks to the risk of transacting under a different foreign exchange rate.

Bureau of the Treasury (BTr), the Bankers Association of the Philippines (BAP), the Money Market Association of the Philippines (MART), and the Investment Houses Association of the Philippines (IHAP). CSSST is an agreement between financial institutions to simultaneously buy or sell government securities spot, and sell or buy comparable securities at a predetermined future date and price with the same counterparty. The CSSST takes advantage of the established settlement procedures of the Registry of Scripless Securities (RoSS) of the BTr. The CSSST effectively paves the way for the introduction of domestic securities lending in the Philippine market. In more developed financial markets, securities lending type activities are essential to the proper functioning and deepening of secondary market for securities.

In addition to developing hedging and financing instruments, the BSP has approved the application of a preferential reserve requirement of 2 percent on repo transactions of banks. This move will help reduce transaction costs and is expected to spur activity in the secondary market for government securities. On the other hand, the BSP has also allowed banks to engage in repos involving foreign currency denominated government securities booked as Trading Account Securities as the underlying security.

Developments in risk management techniques

To strengthen risk management practices of banks with respect to derivatives, the BSP issued regulations prescribing the minimum standards for risk management of derivatives. The regulation defined the basic risks inherent in derivatives and the basic elements of a sound risk management. This was intended to ensure that proper safeguards are in place to ensure the protection of market participants engaged in derivatives activities.

Tax reform

On 17 February 2004, R.A. 9243, entitled "An act rationalizing the provisions of the documentary stamp tax of the National Internal Revenue Code of 1997, as amended," was signed into law. Among the measures approved under the statute include the following: (1) waived the DST on secondary trading of debt and equity issues for a 5-year period; (2) raised DST on primary government or private debt issuances to ₱1 for every ₱100 worth of security from 30 centavos under the present system; (3) reduced DST on equity issues to ₱1 from the current ₱2; (4) shifted the basis for computing taxes from the amount of the policy to premium payments in the case of pre-need and insurance products. The law seeks to eliminate DST on secondary trading of financial instruments and lower transactions cost, consequently increasing the volume of financial transactions in the secondary market.

5 Policy Implications

The results of our regression show that the direction of the impact of foreign exchange changes differs across sectors and even among the firms within a sector. This implies that a well-functioning derivatives markets has to be more actively pursued, alongside market-determined foreign exchange rate. The derivatives market will allow firms to hedge their foreign exchange risks on their own and without need of direct interventions from the government

or the central bank. Also, since currency risks tend to affect each firm differently, a well-intentioned policy by the authorities could have unintended effects on some firms or sectors.

The opportunity for each firm to manage effectively and efficiently their currency risks become more important in the face of our findings that the effects of foreign exchange volatilities are generally dispersed among firms, and even among firms in the same sector. The operations and risk management systems in place in different firms are sufficiently heterogeneous to the extent that the impact of foreign exchange volatilities in their profitability cannot be expected to be the same. These differences are not only true across sectors, but also within sectors.

With these differences, policies are most relevant when they are geared towards promoting efficient environments rather than dictating through general policies which sector should thrive. Since there is no one-size-fits-all foreign exchange policy, and a firm or a sector might be negatively affected by foreign exchange developments even as other sectors of the economy benefit, initiatives from policymakers that encourage the development of hedging mechanisms become necessary conjugates to policies aimed at making the foreign exchange market more efficient.

The BSP can play a key role in promoting the development of the foreign exchange market by instituting further reforms in the country's foreign exchange regulatory regime. Improving macroeconomic fundamentals, ongoing banking and capital market reforms, and recent developments in the region provide a favorable setting for these reforms. The restructuring of the foreign exchange regulatory framework will make it more responsive to the needs of an expanding, more dynamic economy that is increasingly integrated with global markets.

However, harnessing gains from liberalization requires a measured and multi-phase process that is consistent with the overall macroeconomic framework and the state of financial sector development.

Along this line, the BSP announced a package of reforms in the foreign exchange regulatory framework. The first phase of reforms (which took effect on 2 April 2007), involves changes pertaining to current account and capital account transactions as well as to prudential regulations which were in place for almost 10 years. Specifically, the limit on allowable foreign exchange purchases by residents from banks to cover payments to foreign beneficiaries for non-trade purposes (excluding those related to foreign loans/foreign currency loans and foreign investments) without supporting documents was increased from US\$5,000 to US\$10,000. Furthermore, the "no-splitting" restriction and notarization requirement for applications to purchase foreign exchange were also lifted. On capital account transactions, the allowable outward investments by residents without prior BSP approval and registration was increased from US\$6 million per investor per year to US\$12 million. On prudential regulations, a symmetrical limit of 20 percent of unimpaired capital with an absolute limit of US\$50 million will be imposed on both the overbought (OB) and oversold (OS) positions of banks.

The second phase of reforms in the foreign exchange regulatory framework was approved on 20 December 2007. The second phase focuses largely on two objectives: first, to promote

greater integration with international capital markets and risk diversification supportive of an expanding economy with global linkages; and second, to streamline the documentation and reporting requirements on the sale of foreign exchange by banks. Clarifications on certain existing regulations were also made in new policy issuances. The policy reforms under the second phase involve the following: (1) increasing the allowed foreign exchange purchases from banks by residents for non-trade current account transactions (without the need for supporting documentation) to US\$30,000 from US\$10,000 and outward investments (without the need for BSP approval) to US\$30 million per investor per year from the previous US\$12 million per investor per year; (2) expanding the authority of foreign currency deposit units (FCDUs) of thrift banks and rural/cooperative banks to deposit and borrow; (3) expanding the use of foreign exchange swaps involving the Philippine peso; and (4) enhancing other rules concerning both the current and capital accounts to improve the efficiency of the foreign exchange market.

The liberalization of the foreign exchange regulatory framework is part of the continuing efforts by the BSP to improve the overall economic and financial regulatory environment. In the medium term, the BSP expects the confidence-boosting effects of these measures to result in more foreign exchange flows, including and importantly foreign direct investments. The freer flow of capital confers direct benefits in terms of providing additional resources to the domestic economy and allowing portfolio diversification by Philippine entities. In particular, it will allow individuals and businesses with legitimate transactions to have greater access to foreign exchange.

At the same time, liberalization is expected to result in a number of important collateral benefits, including greater financial depth, technological transfer, and institutional development through better transparency and governance practices. It also promotes disciplined macroeconomic policies as increased exposure to global markets and players encourages prudent and responsible economic stewardship. The liberalization measures are also expected to lead to a shift in foreign exchange transactions from the unsupervised foreign exchange market to the banking sector. This will improve data capture and result in better statistics on foreign exchange transactions, which are critical for informed policy assessments and formulation.

With the liberalization of foreign exchange rules, banks are expected to continue to adopt safe and sound practices in undertaking their foreign exchange transactions as well as to manage their foreign exchange risk. In this regard, the BSP issued Circular No. 544 (dated 15 September 2006) providing guidelines on market risk management to ensure that financial institutions have sufficient knowledge and skills necessary to understand and effectively manage market risk (i.e., interest rate risk, foreign exchange risk, equity risk and commodity risk)¹⁵. The guidelines set forth the expectations of the BSP with respect to the management of market risk and are intended to provide more consistency in how a full risk-based approach to supervision and examination is applied to this risk. This would involve, among others, the conduct by the BSP of an assessment of banks' foreign exchange risk exposures and the quality of banks' FX risk management. Financial institutions are, therefore, expected to have

¹⁵Market risk is the risk to earnings or capital arising from adverse movements in factors that affect the market value of instruments, products and transactions in an institution's overall portfolio, both on or off-balance sheet. Market risk arises from market making, dealing and position taking in interest rate, foreign exchange, equity and commodities markets.

an integrated approach to risk management to identify, measure, monitor and control risks. Market risk should be reviewed together with other risks to determine overall risk profile.

Consequently, the development of hedging instruments in the effective management of foreign exchange risk has taken on greater importance. The BSP can play a significant part in this regard by making foreign exchange risks transparent. The BSP operates in the foreign exchange market with an aim to smooth volatility and to accumulate foreign exchange reserves. While the primary goal of such operation is to implement the BSP's policy objective, a secondary objective should be to ensure that the strategies and techniques are conducive to the further development of the market and building its capacity to eventually manage risk on its own. The use by the BSP of a set of indicators in its market intelligence activities should help the BSP assess the development of prices, volatility and sentiment of the aggregated foreign exchange market.¹⁶

The BSP has also revised the guidelines for derivatives activities of banks. The revised regulations seek to strengthen the supervisory framework over derivative activities by adopting a risk-based approach on supervisions and strengthening the risk management guidelines for derivative activities. This regulation is also expected to help develop the derivatives markets in the Philippines and allow banks to offer more hedging instruments to their clients.

The BSP can also play an important role in the development of complementary markets to assist the development of the foreign exchange hedging instruments, specifically by supporting the following initiatives:

Development of an active money market. Liquidity in foreign exchange forwards and swaps would be enhanced by the development of an active money market. Short-term money markets have the closest link to foreign exchange markets. The interest rates established in the money market are vital for developing the foreign exchange market, especially for forward and swap transactions. A liquid and efficient inter-bank market in loans and deposits is essential to allow interest rate parity to function. The development of a reliable yield curve, derived from active secondary money and bond markets, would significantly enhance the ability to price forward and swap instruments.

Promotion of a well-developed government bond market. A well-developed government bond market also plays a key role in the development of hedging instruments. A liquid government bond market, in addition to its important role in government finance and monetary operations, provides a benchmark to other markets. Absence of a well-developed liquid securities market undermines the market's ability to price swaps, forwards and other hedging instruments. The functioning of the foreign exchange market could be improved by measures that address the functioning of the bond market. These include the introduction of a repo market, the establishment of a securities borrowing and lending facility and allowing for short selling, as well as the introduction of a non-deliverable bond futures contract.

¹⁶This set of indicators could include volatility based indicators (historical and implied volatility; the term structure of volatility, risk reversals) liquidity indicators (turnover, bid-offer spreads, average ticket size), and broad market indicators (carry indicators, risk appetite, regional, and emerging market barometers). The BSP can also utilize flow data by means of customer surveys and sectoral analysis. The BSP can develop market intelligence by maintaining routine and transparent dialogues with market participants.

The establishment of a credit registry and the introduction of credit ratings. The establishment of a credit registry and the introduction of credit ratings would support the demand for hedging instruments. There are signs that the slow development of the forward and swap market may also be associated with concerns in the financial system about creditworthiness. Developing tools to better assess credit and counterparty risk would remove such concerns from the foreign exchange transaction process. Regulators can play an important role in promoting a favorable environment for rating agencies by promoting high standards of practices through (1) the accreditation process, (2) the development of standards, and (3) capacity building program for the industry.¹⁷ For example, regulators may require recognized rating agencies to comply with specified performance and training standards for their ratings output and rating analysts, respectively, and regularly monitor compliance with those standards. In addition, regulators may help in sponsoring programs for training rating analysts, especially in terms of aligning their skills and practices with international standards.

Meanwhile, a legislative initiative, the Credit Information System Act ("CISA"), has been put forward to address the lack of a comprehensive and credible credit-related information database.¹⁸ CISA is expected to yield the following benefits to the financial system: (1) provide ability of lenders to more accurately identify good borrowers; (2) create better risk management; (3) increase volume of lending; (4) extend credit to underserved sectors such as micro, small and medium enterprises (MicSMEs); and (5) strengthen credit discipline leading to the overall lowering of default rates.

6 Conclusion

This paper shows that exchange rate volatilities in the Philippines in the past two years have declined compared to the late 1990s and early 2000s. This reflects to a considerable extent the improvements in the functioning and structure of the domestic financial markets arising from policy reforms implemented by the central bank.

This development likewise reflects the improvement in risk management practices in recent years, which have made the financial and corporate sectors better equipped now to mitigate the undesirable effects of large foreign exchange volatility.

However, the results of our regressions show that changes in the foreign exchange rates affect firm value. Furthermore, the gain in explanatory power of using industry exchange rates can shed light on the foreign exchange risk exposure of a firm and allow firm managers to assess the vulnerabilities of their operations to macroeconomic variables.

Our results also show that the operations and risk management systems in place in different firms are sufficiently heterogenous to the extent that the impact of foreign exchange

¹⁷The BSP issued Circular No. 404 (dated 19 September 2003) containing the guidelines for the recognition and derecognition process of rating agencies.

¹⁸The Credit Information System Act (CISA) has been approved through a bicameral conference by both houses of Congress on 12 August 2008. The legislative measure has been submitted to the Office of the President for signature of the President.

volatilities in their profitability cannot be expected to be the same. These differences are not only true across sectors, but also within sectors. Given these differences, there is no one-size-fits-all foreign exchange policy, and a firm or a sector might be negatively affected by foreign exchange developments even as other sectors of the economy benefit.

These results put into relief the importance of appropriate risk management systems and of policies to enhance efficiency of financial markets in the Philippines, especially its foreign exchange market.

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Appendix

A *Foreign Exchange Policy: A Historical Perspective*

Under the Central Bank Act (Republic Act, R.A. No. 265 dated 15 June 1948), the principal objectives of the Central Bank of the Philippines (CBP) were to maintain monetary stability, preserve the stability of the international value of the peso and its convertibility into other freely convertible currencies, and promote growth in production, employment and real income. To achieve these goals, the CBP was vested with, among other functions, the administration of operations involving gold and foreign exchange as well as the control of receipts and disbursement of foreign exchange.

The primary objective of the Bangko Sentral Pilipinas (BSP) pursuant to the New Central Bank Act of 1993 (R.A. No. 7653 dated 3 July 1993) is to “maintain price stability conducive to a balanced and sustainable growth of the economy, and promote and maintain monetary stability and the convertibility of the peso”.

The law requires the BSP to maintain a level of international reserves that is sufficient to meet any foreseeable net demand for foreign currencies. The BSP Charter made price stability, which was implied from the objectives of the CBP, an explicit and primary objective of monetary policy. To carry out this mandate, the BSP adopted inflation targeting as the framework for monetary policy starting 2002.

The BSP shall provide policy directions in the areas of money, banking and credit. It has also been given the responsibility of supervising the operations of banks and exercising regulatory powers over quasi-banks, as well as institutions performing similar functions. To achieve its objectives the BSP has been given greater fiscal and administrative autonomy from the National Government.

A.1 Pegged exchange rate system (1949-1969)

Period of reconstruction (1946-1949)

In the late 1940s, the Philippines was faced with four major interrelated economic and financial problems:

1. slow recovery in production of several important agricultural products;
2. unfavorable balance of payments(BOP) position due primarily to the heavy importation of non-essential consumption items;
3. inflationary pressures brought about by high money incomes and inadequate domestic production; and
4. budgetary deficit as a result of higher expenditures to finance the rehabilitation of the economy.

These prompted the Central Bank of the Philippines (CBP) to adopt a fixed exchange rate system when it began operations on 3 January 1949. From 1949 through the 1950s, the peso was pegged¹⁹ to the US dollar at P2.00/US\$1.

Period of controls (1950-1961)

The CBP imposed a comprehensive system of foreign exchange controls in December 1949. The system of foreign exchange controls was meant to conserve the country's international reserves and preserve the stability and convertibility of the peso. It was also supposed to promote economic development by channeling foreign exchange to sectors that were identified as essential in pursuing the Government's import substitution industrialization (ISI) policy. Foreign exchange restrictions were also used to implement the government's "Filipino First" policy.

Overall, the controls helped reshape the country's import patterns and served the Government's efforts to move from a purely agricultural to an agro-industrial economy. This system of foreign exchange controls featured a foreign exchange allocation scheme that gave preference to export industries and the manufacturing and mining sectors. While not limited quantitatively, exports had to be licensed/registered to ensure the surrender of export proceeds.

At the same time, the government drastically curtailed imports of consumer goods, particularly those with close domestic substitutes and those classified as non-essentials. Purchases of foreign exchange for services-related imports were likewise restricted. However, to attract foreign investments, the Central Bank relaxed its restrictions on the remittance of earnings from capital investments. Importations of producer goods were also permitted.

Boosted by high export earnings, the country's external position strengthened considerably. The Philippines achieved its first ever post-war trade surplus in 1959. Prices were stable and national income was higher.

Meanwhile, serious concerns were raised over the difficulty of determining the appropriate level and magnitude of the daily or monthly adjustments in the exchange rate and on the reliability of the country's stock of reserves to credibly defend the exchange rate. The fixed exchange rate and the associated control measures fomented the development of a black market for foreign exchange.

In light of these considerations, the then CBP launched a four-year program on 25 April 1960 to dismantle the complicated system of foreign exchange controls imposed in the 1950s. The most important feature of the decontrol program was the adoption of a multiple exchange rate system which paved the way for a *de facto* devaluation of the peso. Under this system, multiple exchange rates based on an official rate and a free market rate existed for imports

¹⁹Under the pegged exchange rate system, the supply of money was determined by the monetary authorities based on their assessment on the requirements of the economy; the level of the country's international reserves depended upon what monetary authorities considered as adequate to meet any foreseeable demand for foreign currencies. This contrasted with the pre-1949 system of a 100 percent currency reserve where the supply of money increased or decreased automatically depending on the country's balance of payments position.

and invisible payments, and exports and invisible receipts. Exporters were at first required to surrender 75 percent of their foreign exchange receipts at the official rate, while the remaining 25 percent was valued at the free market rate. Then, in November 1960, the share of all foreign exchange receipts to be valued at the official rate was decreased to 50 percent. Meanwhile, for importations, the official rate was used when the foreign currency would be for purchases of imports classified as essential. Foreign exchange that will be used to pay for non-essential imports was sold at market rate.

Period of decontrol (1962-1969)

In 1962, the new Government launched an integrated socio-economic program that almost entirely eliminated restrictions on trade and payments. In January 1962, all restrictions on sales of foreign exchange were eliminated. CB Circular No. 133 dated 22 January 1962 established a free market for foreign exchange and transferred the function of allocating exchange for most categories of payments from the administrative machinery of the CB to the free market.

Foreign obligations were paid at rates dictated by the supply and demand for foreign exchange. The new rates increased the demand for pesos to finance business operations, producing banks to increase lending. The amount of credit issued by commercial banks reached an unprecedented high, resulting to an increasing money supply. For the first time, inflation emerged as a serious problem in the country.

During the period 1962-65, the CBP utilized a wider variety of instruments to address inflation concerns. These instruments included, among others: raising the rediscount rate; increasing the reserve requirement against peso demand, savings and time deposits; imposition of special time deposits against import letters of credit; re-establishment of the rediscount quota system; and raising of interest rates payable on savings and time deposits. These contractionary measures proved successful in siphoning excess liquidity.

On 5 November 1965, a new parity for the peso-dollar exchange rate was set at P3.90/US\$1. The devaluation abated speculative attacks on the peso. By 1966, the international reserves had increased on the back of the increased confidence in the currency, and a favorable balance of trade. This encouraged the monetary authorities to ease their grip on money supply.

Not long after, however, the CBP's expansionary measures yielded increases in commercial bank lending. Once again, the bulk of these loans financed imports. The growing fiscal deficit, combined with increasing import payments, brought pressure to bear on the foreign exchange reserves. Before the end of the decade, the CBP had again in place regulations restricting credit and certain foreign exchange transactions to control the level and composition of merchandise imports and regulate invisible foreign exchange disbursements.

With the benefit of hindsight, we see that the devaluation failed to work because the economy was heavily import-dependent. A cheaper peso could not have reduced imports but only make it more expensive. While the weakened peso stimulated traditional exports, the import-dependent manufacturing sector bore its adverse impact. In addition, exports dependent on imports were rendered less competitive in the world market.

A.2 Floating rate system (1970-1992)

Even with the complicated exchange controls in effect, the fixed exchange rate could not withstand the deteriorating external payments position. Not only had the system of controls been ineffective, but it had also distorted the structure of relative prices. Thus, on 21 February 1970, the CBP abandoned the fixed parity regime.

Rather than a complete free float, the exchange rate system operative during 1970-1992 was one of managed float. In accordance with the IMF Articles of Agreement, the CBP was officially committed to intervene only when needed to maintain orderly conditions in the exchange market and to reduce short-term volatility.

The CBP observed bands or margins around a guiding rate and within which the peso was permitted to float. The guiding rate was the rate posted at the start of each transaction day representing the weighted average exchange rates for all the sales made in the Foreign Exchange Trading Center the previous day. Before April 1972, the margin was $\frac{3}{4}$ percent above and one (1) percent below the guiding rate. Thereafter, the band was widened to $4\frac{1}{2}$ percent on both sides of the guiding rate. This relaxation took into account the trade imbalance, the two-digit inflation rates, the low international reserves, and the growing curb markets for foreign exchange.

Market rate was applied on all foreign exchange transactions except for 80 percent of export receipts from the country's major commodities (namely, logs, centrifugal sugar, copra and copper concentrates) which were to be purchased at the rate of P3.90/US\$1. Over time, the surrender requirement gave way to an export tax.

By 1972, the CBP started lifting the majority of foreign exchange restrictions, paving the way for partial liberalization in foreign trade and investment. The liberalization efforts focused on the suspension of nationality requirements in establishing industries, relaxation of repatriation policies, simplification of the tariff structure, import liberalization, and granting of various incentives to the export sector particularly on non-traditional commodities, such as textiles, garments and electronics.

External debt and financial crisis (1981-1985)

The response of the Central Bank to the challenges in foreign exchange management in the early 1980s was to institute measures to increase efficiency in the use of resources and to improve the country's international competitiveness. These measures focused on three main areas: trade, debt management and regulatory measures to facilitate the flow of foreign exchange into the banking system.

To promote exports and check imports, the CBP allowed the peso to depreciate further. It put limits on capital-intensive projects that required large foreign exchange financing.

On debt management, the debt structure was regulated so that a larger portion of the outstanding debt would be at fixed rates and with longer maturities, and foreign borrowings would be used to undertakings that would bring in foreign exchange.

To stimulate the flow of foreign exchange into the banking system, a special credit window was made available to commercial banks that sell or deposit their US dollar holdings and other acceptable foreign exchange with the CBP.

In 1982, "Operation Greenback" was launched to curb widespread illegal trading in the black market. The CBP implemented more liberal rules for establishments to operate as foreign exchange dealers. Local banks were allowed to establish correspondent banking and foreign exchange arrangements in major cities of the world with a large concentration of overseas Filipinos. Offshore Banking Units (OBUs) were allowed to open and maintain peso deposit accounts with domestic banks to service inward remittances of Filipino overseas workers.

A turning point in the development of the Philippine foreign exchange system emerged with the economic, financial and political crisis in the second half of 1983. A series of adverse external developments including two major oil shocks and an interest rate shock compounded by inadequate policy adjustments especially in the fiscal area and in the exchange rate amidst a background of political and social unrest found the country with low reserves, maturing external loans, and high external and fiscal imbalances. In October 1983, after consultations with the IMF and several foreign banks, Philippine economic managers requested a 90-day moratorium on principal payments of external debt owed to foreign commercial banks.

With scarce foreign exchange, a system of direct controls was implemented. Further, the CBP committed to provide forward cover for servicing certain matured or maturing foreign debts which could not be settled due to foreign exchange scarcity.

Beginning 4 November 1983, local commercial banks were required to sell to the CBP all foreign exchange receipts, which were then placed in a pool. Payments were made from this pool on the basis of officially set priorities.

With the imposition of the foreign exchange surrender requirement, trading in the foreign exchange market was suspended with the nominal exchange rate fixed *de facto* at P14.00/US\$1. The peso was subsequently allowed to depreciate by 28.6 percent in nominal terms during the reopening of the foreign exchange market in June 1984. However, due to the tightness in the foreign exchange position of banks, trading remained lean. At the same time, new taxes and surcharges were imposed on specific foreign exchange transactions, resulting in a multiple exchange rate system with effective rates of P16.80/US\$1 for exports, P18.00/US\$1 for imports and P19.80/US\$1 for service payments.

By October 1984, a measure of stability had been re-established. The Central Bank reopened the foreign exchange trading system. With the restoration of the foreign exchange market, the CBP allowed commercial banks to keep their foreign exchange receipts and trade among themselves – constituting a process of exchange rate determination. The CBP stopped announcing inter-bank guiding rates and imposing a trading band. Banks quoted their inter-bank buying and selling rates and established a market clearing rate, albeit within relatively restricted trading rules. The previous trading day's completed transactions formed the basis for the Bankers Association of the Philippines (BAP) reference rate.

As the seriousness of the crisis gradually wore off, the Central Bank lifted most of the restrictions on foreign exchange transactions. They were replaced by initiatives to further liberalize import and service payments, and to enhance the effectiveness of operational procedures in directing greater foreign exchange into the banking system. The authorities continued the gradual lifting of the foreign exchange retention limit by further expansion of allowable deductions from the net spot and net forward exchange positions. By August 1985, the CBP had lifted the ceiling in the amount of allowable foreign exchange holdings.

Lessons learned from this period can be summarized in two points:

1. market-determined adjustments in the exchange rate would have been less detrimental to competitiveness, inflation, and social welfare in general, especially since a small, open, economy would be highly vulnerable to global economic shocks and political events; and
2. controls in the past had been largely counter-productive, contributing to the proliferation of the black market for foreign exchange as adverse economic and political developments fueled speculative tendencies against the peso.

Restoration of democratic institutions (1986-1992)

After the period of political turbulence in the late 1980s, the Central Bank's role under the period of restoration of democratic institutions focused on restoring the viability of the country's external payments position and on improving the debt structure. In managing the external debt, Philippine authorities maintained a "negotiated approach" to keep international confidence in the country as a reliable trading partner, borrower and investment area. This approach involved negotiations in a cooperative framework where the international financial institutions, the creditor governments, and the private creditors played major roles. The agreements with commercial banks involved restructuring of specific maturities, infusion of new money, maintenance of a revolving trade facility, and some debt reductions. The agreements with the Paris Club involved principal and interest restructuring. These efforts transformed the country's creditor profile, lengthened the maturity structure of outstanding debt, improved the debt service ratio, and reduced external debt relative to the country's financing capacity.

In 1986, the government pursued structural reforms, including trade liberalization. Trade reforms pursued in the past was resumed in 1986 under the Import Liberalization Program, which eliminated import controls on 1,762 items. Indirect tax reforms were introduced to eliminate most of the discriminatory aspects of the domestic tax structure against imports. In addition, the scope of tax-exempt imports was narrowed significantly.

Notwithstanding these trade liberalization moves, the foreign exchange and payments systems remained regulated and subject to a host of quantitative or licensing requirements. It was not until much later, in April 1992, that currency trading shifted from a short daily trading session to full off-floor interbank foreign exchange trading with the operation of the Philippine Dealing System (PDS).

A.3 Independent floating rate system with liberalization measures (1993-Present)

Liberalization of the foreign exchange system (1993-1996)

Positive developments in the political and economic environment in early 1990s prepared the economy for further liberalization and provided an opportunity for the implementation of wide-ranging foreign exchange reforms. The issuance of CB Circular No. 1389 on 13 April 1993 would always be viewed as a watershed in Philippine economic history. Some of the major changes contained in CB Circular No. 1389 included:

1. removal of foreign exchange surrender requirements;
2. liberalization of access to foreign currency deposits liabilities;
3. lifting of quantitative restrictions on current account transactions; and
4. removal of restrictions on the repatriation of foreign investments, including profit remittances.

With respect to the capital account, registration of loans by the private sector and foreign direct investments with the *Bangko Sentral ng Pilipinas (BSP)*²⁰ was required only if the foreign exchange needed for future debt service, repatriation of capital, and remittances of dividends and profits would be sourced from the banking system. In addition to the need for registration with the central bank, outward investments of residents in excess of US\$6 million per investor per year would require prior approval from the BSP if funds were to be sourced from the banking system. All foreign borrowings by the public sector must be referred to the BSP for prior approval.

On 8 September 1995, the Philippines acquired Article VIII status with the International Monetary Fund (IMF) as a result of the lifting of all restrictions on current account transactions. Under Article VIII, the country committed neither to impose restrictions on payments and transfers for current international transactions nor to engage in discriminatory currency arrangements or multiple currency practices without the approval of the IMF. In addition, the Philippines was also required to furnish the IMF necessary information on the country's activities.

The liberalization effort in the early 1990s was similar to previous efforts in some aspects. Like previous initiatives, measures were instituted to lift quantitative restrictions on foreign exchange demand. This was clearly the case with the liberalization of service payments and foreign investment remittances. However, the main body of reforms – and this was what distinguished the liberalization episode in the early 1990s from previous efforts – were directed at enhancing the supply of foreign exchange, through the reduction of transaction and financing costs, broadening of financing options and promoting opportunities for portfolio diversification.

However, several restrictions on capital inflows and on capital outflows remained (e.g., limits on over-the-counter purchases of foreign exchange by residents and limits on allowable

²⁰The CBP was reorganized in July 1993 into the *Bangko Sentral ng Pilipinas (BSP)* by virtue of the New Central Bank Act (R.A. No. 7653).

outward investment by residents). Notwithstanding these remaining restrictions though, the liberalization efforts in the 1990s were much bolder and more encompassing than past efforts.

The Asian currency and financial crisis to the present

On 11 July 1997, the BSP allowed the peso to float within a wider range. The value of the peso declined by 51.4 percent against the US dollar, from P26.4/US\$1 as of 10 July 1997 to P39.98/US\$1 as of 31 December 1997.

The BSP's initial response to the peso's depreciation was to intensify its sales of dollars in the market and implement a series of upward adjustments in its key overnight policy interest rates. Afterwards, to ensure that the conduct of banks' foreign exchange transactions were consistent with the efforts of the BSP to restore stability in the foreign exchange market, the BSP implemented the following measures to rationalize foreign exchange transactions:

1. Required prior clearance on the sale of non-deliverable forward (NDF) contracts to non-residents, including offshore banking units (Circular 135);
2. Adjusted the allowable overbought foreign exchange position of banks from not more than 20 percent to 10 percent, and further to 5 percent of their unimpaired capital or US\$10 million, whichever is lower, and raised the oversold position from not more than 10 percent to 20 percent of unimpaired capital (Circular 137). Subsequently, under Circular 171, the BSP lifted the 20 percent limit of unimpaired capital on short or oversold foreign exchange position of commercial banks;
3. Lowered the ceiling on the allowable over-the-counter (OTC) dollar sales of banks without need for documentation from US\$100,000 to US\$25,000, then US\$10,000 to moderate the demand for dollars (OTC sales in excess of this amount are required to be supported by documentary proof/s on the nature of the dollar requirement (Circular Nos. 138 and 162);
4. Required the consolidation of banks' accounts with their subsidiaries and affiliates in the computation of banks' foreign exchange positions (Circular Letters dated 05 and 07 September 1997 and 02 October 1997); and
5. Required banks to submit reports of all forward sales contracts entered into with residents and non-residents and to submit reports of all cancellations or non-delivery of outstanding forward sales contracts (Circular 149).

To rein in liquidity in the system and limit the ability of banks to take foreign exchange positions, liquidity reserves were gradually raised from July to August 1997 while keeping statutory reserves intact (Circular Nos. 136, 139 and 140). However, as this policy tightened liquidity and increased overall interest rates, the BSP gradually reduced liquidity reserves from September to November 1997 (Circular Nos. 141 and 144).

To help calm the foreign exchange market, the BSP also introduced the Currency Rate Risk Protection Program (CRPP)(Circular 149) in December 1997. It aims to temper panic

buying of dollars by unhedged borrowers in foreign-denominated currency. Under the scheme, the parties agree that on the maturity of the forward contract, only the net difference between the contracted forward rate and the market rate would be settled and paid in pesos.

In addition, the BSP, together with the Bankers Association of the Philippines, established a foreign exchange pool to provide dollar liquidity for legitimate corporate requirements.

At present, the Philippines maintains an exchange rate policy that supports a freely floating exchange rate system whereby the BSP leaves to market forces the determination of the exchange rate, with some scope for occasional BSP action to dampen sharp fluctuations in the exchange rate. Consistent with the inflation targeting framework for monetary policy, the BSP closely monitors developments in the foreign exchange market. When extreme movements in the peso threaten the inflation target, it participates directly in the market or adjusts policy instruments (e.g., policy interest rates, reserve requirements).

The BSP's response to exchange rate volatility is fully consistent with price stabilization since fluctuations in the exchange rate tend to feed directly into domestic prices of imported goods and services, and indirectly, through the prices of goods and services that use imported inputs. The increase in prices of both imported and import-intensive goods, in turn, feed into clamor for adjustments in wages and transport fares. Through this channel, exchange rate movements affect both actual inflation and inflation expectations.

Among other things, the timely adoption of measures to curb possible demand pressures on the peso underlies the observed overall stability of the foreign exchange market and the reduced volatility of the exchange rate in recent years. Moreover, the BSP has maintained sufficient international reserves, enhancing the credibility of its ability to contain any excessive exchange rate volatility that may threaten inflation objectives.

B *Turnover and Liquidity of Asian NDF Markets*

	Contract tenures	Asian inter-dealer market daily trading volume (US\$M)	Trade size (US\$M)	Bid-ask spread (basis points)
China	Liquid to 12 months, limited liquidity 3-5 years	700	10	3-5
India	Liquid to 12 months, limited liquidity up to 5 years	500	5-10	3-5
Indonesia	Moderate liquidity up to 12 months, illiquid beyond	250	3-5	10-20
Korea	Liquid to 2years, limited liquidity up to 5 years	2,000	10	2
Malaysia	Moderate liquidity up to 12 months, illiquid beyond	450	5	10-12
Philippines	Moderate liquidity up to 12 months, limited liquidity 3-5 years	250	3-5	7-9
Taiwan	Liquid to 12 months, limited liquidity up to 5 years	1,000	5-10	2-4

Source: BIS estimates, 2006 Q2, based on discussions with Citigroup, Deutsche Bank and JP Morgan Chase (Debelle G., J. Gyntelberg, M. Plumb, Forward currency markets in Asia: lessons from the Australian experience)

C *Data Description*

Data Sources:

Bangko Sentral ng Pilipinas: economy-wide REERs, and exchange rates for Japan, Euro Area, UK, Singapore, South Korea, Taiwan, Malaysia, Thailand, Indonesia, and Hong Kong.

Bloomberg: historical stock prices

CEIC Database: Consumer Price Indices for the US, Japan, Euro Area, UK, Singapore, South Korea, Taiwan, Malaysia, Thailand, Indonesia, and Hong Kong.

National Statistics Office: trade data

Philippine Dealing System: peso-dollar rates

D Figures

Figure 6: Conditional Standard Deviation of REER (Broad) (Annualized, in %; 1980-2006
Sources: BSP for basic data; Authors' estimates

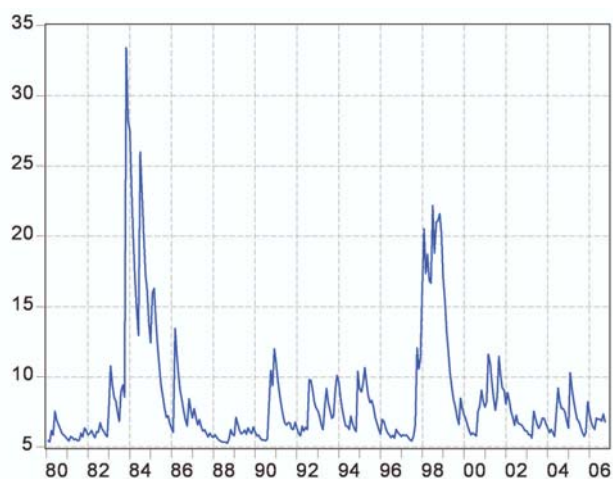
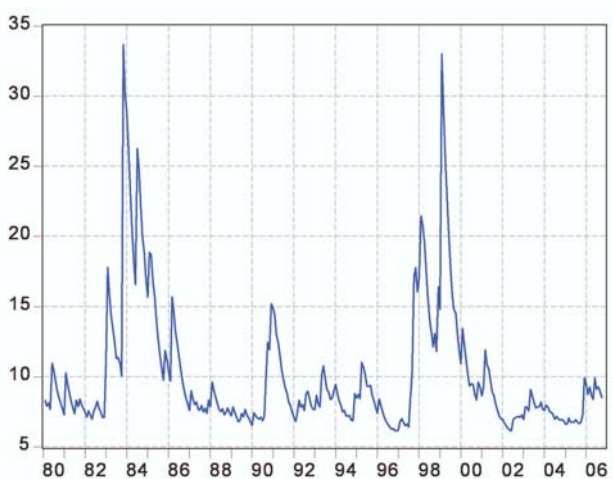


Figure 7: Conditional Standard Deviation of REER (Major Trading Partners) (Annualized, in %; 1980-2006
Sources: BSP for basic data; Authors' estimates



Indices	Symbol
Philippine Stock Index	PSEi
Banking and Financial Services Index	BFS
Industry Sector Index	IND
Mining and Oil Sector Index	MO
Property Sector Index	PROP
Pesos aggregate value relative to the:	
US dollar (US\$/Philippine peso)	PHPUSD
Major Trading Partners	Phil_MTP
Broad basket of competitors	Phil_Broad
Narrow Basket of Competitors	Phil_Narrow
Industry exchange rate relative to the basket of:	
Major trading partners	Prop_MTP FBT_MTP
Broad basket of competitors	Prop_Broad FBT_Broad
Narrow basket of competitors	Prop_Narrow FBT_Narrow

Figure 8: Conditional Standard Deviation of REER (Narrow) (Annualized, in %; 1980-2006
 Sources: BSP for basic data; Authors' estimates

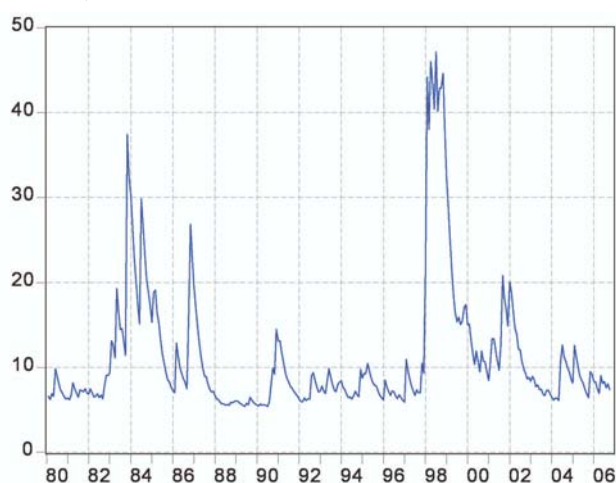


Figure 9: Conditional Standard Deviation of REERs: Articles of Stone, Plaster, Cement, Asbestos, Mica or Similar Materials; Ceramic Products; Glass and Glassware Sources: CEIC, NSO and BSP for basic data; Authors' estimates

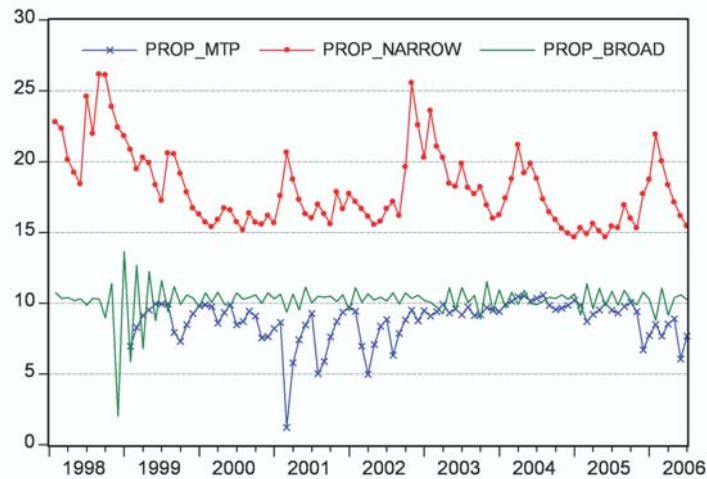


Figure 10: Conditional Standard Deviation of REERs: Prepared Foodstuffs; Beverages, Spirits, and Vinegar; Tobacco and Manufactured Tobacco Substitutes Sources: CEIC, NSO and BSP for basic data; Authors' estimates

