

Compilation of derivatives statistics in Chinese Taipei

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1. Introduction

The rapid development of derivatives activities brings new challenges to monetary policymaking. On the one hand, derivatives offer the opportunity to temporarily hedge against price fluctuations in financial markets, which may lengthen the time required for the central bank's monetary policy to take effect. On the other hand, by increasing asset substitutability, derivatives arbitrage may shorten the time necessary for monetary policy transmission through the asset price channel. Moreover, monetary policy is effective only when the financial systems are stable. Thanks to the low cost and high leverage features, derivatives facilitate speculative trading, which can become a source of risk and pose threats to financial stability.

In line with continuing expansion of derivatives activities and more complex derivatives introduced into the market in Chinese Taipei, the central bank compiles data on derivatives to capture current financial conditions, monitor potential risks, and provide useful references to monetary policymaking.

Broadly speaking, derivatives statistics compiled by the central bank can be grouped into three categories. For the first category of statistics, the central bank requires banks to fill out statements on derivatives transactions and positions when trading with local and overseas counterparties. This piece of statistics aims to measure banks' consolidated exposures to derivatives and is compiled by the Department of Financial Inspection of the central bank.

For the second category of statistics, the Department of Foreign Exchange of the central bank collects information on banks engaging in foreign exchange business, including foreign exchange derivatives operations, in the local market. This type of statistics focuses primarily on understanding the size and structure of foreign exchange activities and thereby enhancing surveillance over Chinese Taipei's foreign exchange market.

For the third category of statistics, the central bank compiles flow and stock data on cross-border derivatives activities based on the international transactions reporting system (ITRS) records and various surveys. The flow and stock data are separately reported in the balance of payments (BOP) and the international investment positions (IIP). Both the BOP and IIP statistics are prepared by the Department of Economic Research of the central bank.

To ensure the accuracy of the above-mentioned statistics and conform to the standards of international financial statistics, the central bank publishes instructions on how to fill out the declaration statements on derivatives, and routinely reviews the data submitted by reporting entities. The methodological details and some problems for compiling derivatives statistics are presented in Section 2. Section 3 analyzes the characteristics of Chinese Taipei's derivatives activities based on the release of derivatives statistics. Section 4 gives a brief conclusion.

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2. Methodologies for compiling derivatives statistics

2.1 Statistics on banks' consolidated derivatives exposures

In order to access banks' involvement in derivatives trading and their overall risk profile, supervisors need to collect relevant information with sufficient frequency and timeliness. Since 1998, the Department of Financial Inspection of the central bank² has required the banking sector to file derivatives statements on transactions data and positions data on a monthly basis.

The banking sector comprises all domestic banks (including their offshore banking units, OBUs, located in Chinese Taipei and overseas branches) as well as local branches of foreign banks (including their OBUs located in Chinese Taipei). In December 2007, 40 domestic banks and 32 foreign banks submitted reports to the central bank.

For derivatives statements on transactions data, banks are required to report data on notional amounts turnover, broken down by product, currency and counterparty. The product category is further classified by: (1) risk type – interest rate, foreign exchange, equities-linked, commodity, credit, and others; (2) market type – over-the-counter (OTC) and exchange-trade; and (3) instrument type – forwards, swaps, futures, and options. Within the currency category, a distinction is made between contracts involving the local currency (NT dollar) and those not. The counterparty category is subdivided into local customers, local banks, and overseas counterparties. All classifications are designed to capture the nature of banks' involvement in the derivatives activities.

In addition, concerning potential speculative trading in foreign exchange derivatives, the central bank requires additional information on banks' engaging in non-deliverable forwards (NDFs) involving the NT dollar, NDFs and non-deliverable options (NDO) involving Renminbi, as well as foreign exchange margin trading.

For derivatives statements on positions data, in compliance with the *Common Minimum Information Framework* recommended by Basel Committee on Banking Supervision and the Technical Committee of the International Organization of Securities Commissions (IOSCO), the central bank gathers various types of information important for assessing the impact of derivatives on banks' liquidity risk, market risk, credit risk, and earnings profile. These include notional amounts outstanding, gross positive and negative market values, as well as trading revenues. These three items are further broken down by risk category, with regard to instrument type and/or transaction purpose (trading and non-trading). Furthermore, banks are required to submit additional information on past-due derivatives and credit default swaps (CDS).

To provide a full picture of banks' undertaking of derivatives activities to the public, the derivatives statistics on monthly turnover and quarter-end notional amounts outstanding, with their main breakdowns, are available with a two-month lag on the central bank website at <http://www.cbc.gov.tw/mp2.html>.

2.2 Statistics on banks' foreign exchange derivatives business

In the past decade, for the purpose of further liberalizing the foreign exchange market and giving banks more flexibility in their operations, the central bank has continued to allow new

² The central bank, following the establishment of the Financial Supervisory Commission of the Executive Yuan in July 2004, has ceased to conduct general examinations of financial institutions. Nevertheless, it retains the right to conduct target examinations relevant to the implementation of monetary policy.

foreign exchange derivatives to be introduced into the market and removed restrictions on banks' foreign exchange derivatives positions. Currently, foreign exchange derivatives traded in the local market include forwards, foreign exchange swaps, cross currency swaps, options and margin trading.

As Chinese Taipei is a small and highly open economy, wild swings in the exchange rate are likely to have adverse influences on foreign trade and financial stability. In view of potential hazards associated with foreign exchange derivatives trading, the Department of Foreign Exchange of the central bank requires all authorized foreign exchange banks and the OBUs located in Chinese Taipei to report daily transactions and positions data of specific foreign exchange derivatives, such as forwards, foreign exchange swaps, and NDFs as well as options involving the NT dollar. In addition, to better understand the use of foreign exchange not involving the NT dollar in the local market, banks are required to fill out monthly reports on foreign exchange spot and derivatives transactions by currency, with further breakdowns by instrument and counterparty.

To increase market transparency and help market participants understand patterns of activities in the local foreign exchange market, the central bank releases monthly statistics on foreign exchange spot and derivatives turnover, with their main breakdowns. Data sources for these statistics are received from banks' statements conducted by the Department of Foreign Exchange and Financial Inspection. The above banks' information collected from the different data sources is partially overlapping, and thus can be used for double-checking.

2.3 Statistics of cross-border derivatives activities

In Chinese Taipei, flow and stock statistics on cross-border derivatives are compiled by the Department of Economic Research of the central bank, and are separately presented in the BOP on a quarterly basis and in the IIP on an annual basis.³ In principle, Chinese Taipei's cross-border derivatives statistics are compiled according to international standards and conventions described in IMF's *Financial Derivatives, A Supplement to the Fifth Edition of the Balance of Payments Manual (2000)*.

In terms of Financial Derivatives in Chinese Taipei's BOP, data are recorded on a net basis, which is acceptable under IMF's guidelines in case gross reporting is impractical. All settlement receipts/payments are recorded as reduction in financial assets/liabilities. In addition, consistent with international standards, derivatives are categorized into four resident sectors, namely monetary authorities, general government, banks, and other sectors.

For the banking sector, data on cross-border derivatives are based on monthly specific reports submitted by local banks. The latter comprise domestic banks, local branches of foreign banks, and their OBUs located in Chinese Taipei. As the existing derivatives forms collected by other departments of the central bank were ill-equipped to capture cross-border derivatives information, together with the incompleteness of the International Transactions Reporting System (ITRS) records on banks,⁴ the compiler developed new forms specifically

³ Beginning in 1997, the BOP has been reported in accordance with the Fifth Edition of the Balance of Payments Manual (BPM5) format, covering the period from the first quarter of 1981 to present. Since 2003, the IIP from 2000 onwards has been released in conformity with the framework of BPM5.

⁴ According to "Regulations Governing the Declaration Reporting of Foreign Exchange Receipts and Disbursements or Transactions", a person within the territory of Chinese Taipei who possesses or needs foreign exchange equivalent to NT 500,000 dollars or above, and engages in its receipts and disbursements or transactions shall make a declaration. In other words, in case receipts/payments of international transactions are placed in an overseas account, no declaration is necessary. As cross-border derivatives transactions undertaken by banks are mostly settled via overseas accounts, the relevant information will be omitted under the ITRS.

for BOP statistics.⁵ Minding banks' reporting burden, derivatives data collected via these forms are confined to the figures of net settlement payments, and no breakdowns by instrument or risk category are requested.

As for other sectors, data on cross-border derivatives transactions are derived from ITRS. To enhance the accuracy, the compiler routinely reviews the data declared by reporting entities. Regarding monetary authorities, data is currently not available. As for general government, no cross-border derivatives transactions are conducted.

In terms of Financial Derivatives in Chinese Taipei's IIP, banks' asset and liability positions are sourced from external balance sheets declared by local banks to the central bank. The positions of financial derivatives are recorded on a gross basis at market value.

For other sectors, in contrast to the transactions, there is no complete information on the derivatives asset positions. Therefore, the compiler uses the existing specific positions data, associated with the flow information recorded in the BOP, to extrapolate stock positions. That is, derivatives asset positions are estimated through year-end asset positions held by residents undertaking overseas futures transactions divided by a certain ratio. The data on year-end asset positions held by residents undertaking overseas futures transactions are obtained from an annual survey of 5 local futures intermediaries engaging in overseas futures brokerage. The ratio is calculated by the net flows on derivatives declared by the above futures intermediaries to those declared by total reporting entities during the reference period. As for derivatives liability positions, the data are directly derived from the positions reported by domestic custodians on behalf of their non-resident customers. The custody positions statements on non-residents' holding of securities and derivatives issued by residents are compiled by the Department of Foreign Exchange of the central bank.

In line with the trend of international financial statistics compilation and to enhance information disclosure, the central bank regularly releases Chinese Taipei's BOP and IIP statistics. Quarterly BOP data are disseminated with a two-month lag, and year-end IIP data are released at the end of the next June. Both data sets are available on the central bank website and in the *Balance of Payments Quarterly*, Chinese Taipei.

2.4 Some problems for compiling derivatives statistics

The rapid growth in derivatives activities across sectors and financial innovation challenges the existing methodologies on compiling Chinese Taipei's derivatives statistics. In this subsection, some problems for compiling cross-border derivatives and potential improvement on existing data sources and reporting frameworks are discussed.

To date, less cross-border derivatives information on the non-bank private sector's activities is available to the central bank than on the banking sector's activities. For other sectors in the IIP statistics, although specific stock data associated with corresponding flow data provide an initial source for estimating derivatives asset positions, the compiler needs to develop a more complete source, namely enterprise surveys, to enhance the quality of statistics. Survey lists may firstly focus on financial institutions with active trading, such as insurance companies and securities firms, and then expand to private enterprises.

In addition, financial innovations such as structured products add ambiguity to the definition and measures of financial derivatives. According to the IMF's guidelines, an embedded

⁵ The contents of the new forms for the BOP statistics not only contain cross-border derivatives but also investment income as well as financial services. From the second quarter of 2007, the compiler began to use the monthly reports submitted by domestic banks and local branches of foreign banks instead of the ITRS records to compile relevant components of the BOP.

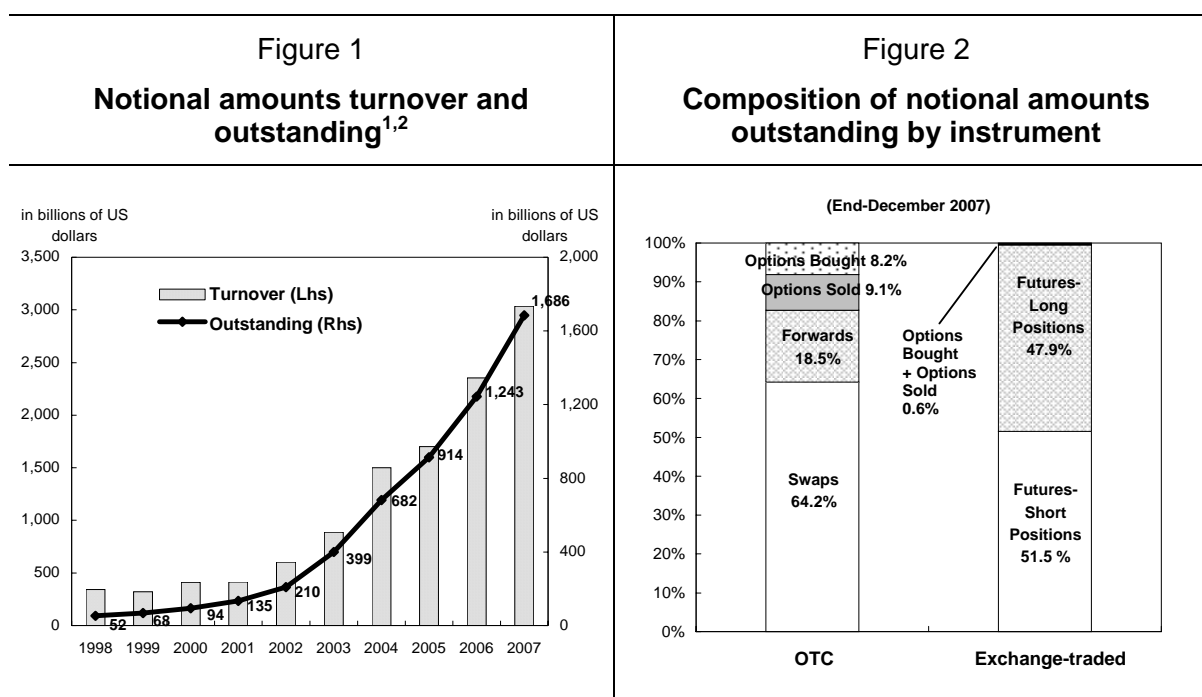
derivative (a derivative feature that is inserted in a standard financial instrument and is inseparable from the instrument) is not considered a financial derivative for BOP purpose. In practice, most declarers other than banks under ITRS are not familiar with the coverage of derivatives recorded in the BOP, and may view an embedded derivative as a derivative. This, in turn, may undermine the accuracy of statistics classifications in the BOP and IIP.

Furthermore, the compilation of existing derivatives statistics by the central bank is owned by three different departments. Concerning reporting entities' burdens, compilers should coordinate with each other and avoid repeatedly requesting similar information from the same group of declarers.

3. The main findings of derivatives statistics

3.1 Analysis of banks' derivatives business

Banks' derivatives business has grown rapidly in the past decade. Notional amounts turnover grew from US\$342 billion in 1998 to US\$3,034 billion in 2007. Positions in derivatives grew at an even faster pace than turnover. Notional amounts outstanding expanded from US\$52 billion at the end of December 1998 to US\$1,686 billion at the end of December 2007 (Figure 1).



¹ Annual turnover. ² Notional amounts outstanding at the end of year.

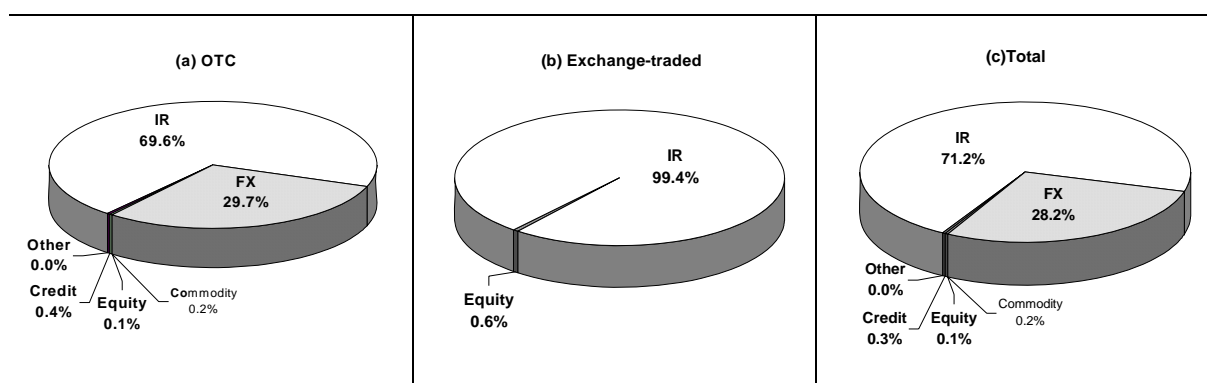
Source: Department of Financial Inspection of the central bank.

The end-December 2007 data on notional amounts outstanding highlights several important features of banks engaging in derivatives activities. First, the scale of transactions in the OTC market was very large, accounting for 94.7 percent of the total amount, while that of the exchange-traded market represented 5.3 percent. Among OTC contracts, swaps occupied the largest share with 64.2 percent, followed by forwards with 18.5 percent, options sold (9.1 percent), and options bought (8.2 percent) (Figure 2).

Second, a risk breakdown on notional amounts outstanding shows that single currency interest rate (IR) is the most important risk traded, accounting for 71.2 percent of total contracts. Foreign exchange (FX) made up 28.2 percent. The share of credit, commodity, equity and other contracts taken together was 0.6 percent (Figure 3(c)).

Third, growth accelerated in all instruments and all risk categories, when compared with the end of last year. While most of the growth in the amounts outstanding was driven by increases in IR and FX derivatives, there has been a proliferation of credit derivatives. Notional amounts outstanding of IR derivatives rose by 43.7 percent to US\$1,199 billion, those of FX derivatives by 18.7 percent to US\$475 billion. Growth in notional amounts outstanding of credit derivatives was at 40.9 percent, taking the positions to \$5.6 billion.

Figure 3
Composition of notional amounts outstanding by risk
 (End-December 2007)



Source: Department of Financial Inspection of the central bank.

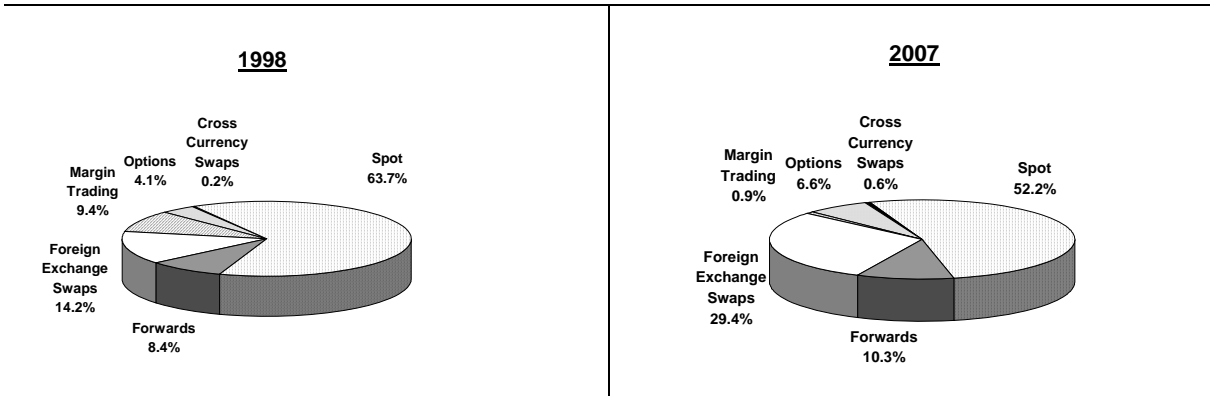
3.2 Development of the foreign exchange derivatives market

Against the background of increased exchange rate volatility, together with the expansion of international trade and intensive cross-border investment activities, foreign exchange derivatives have become increasingly common in Chinese Taipei's foreign exchange market, and thereby broadened the scale of the market. After deducting double counting on the part of inter-bank transactions, total net foreign exchange trading volume grew from US\$1,172 billion in 1998 to US\$4,634 billion in 2007. Among them, total net trading volume of foreign exchange derivatives expanded from US\$426 billion in 1998 to US\$2,215 billion in 2007.

With respect to types of transactions, in 2007, the share of spot transactions in total foreign exchange transaction volume declined to 52.2 percent from 63.7 percent in 1998, while foreign exchange swaps transactions accounted for 29.4 percent, followed by forwards (10.3 percent), options (6.6 percent), margin trading (0.9 percent), and cross currency swaps (0.6 percent) (Figure 4).

Figure 4

Composition of foreign exchange transactions by instrument



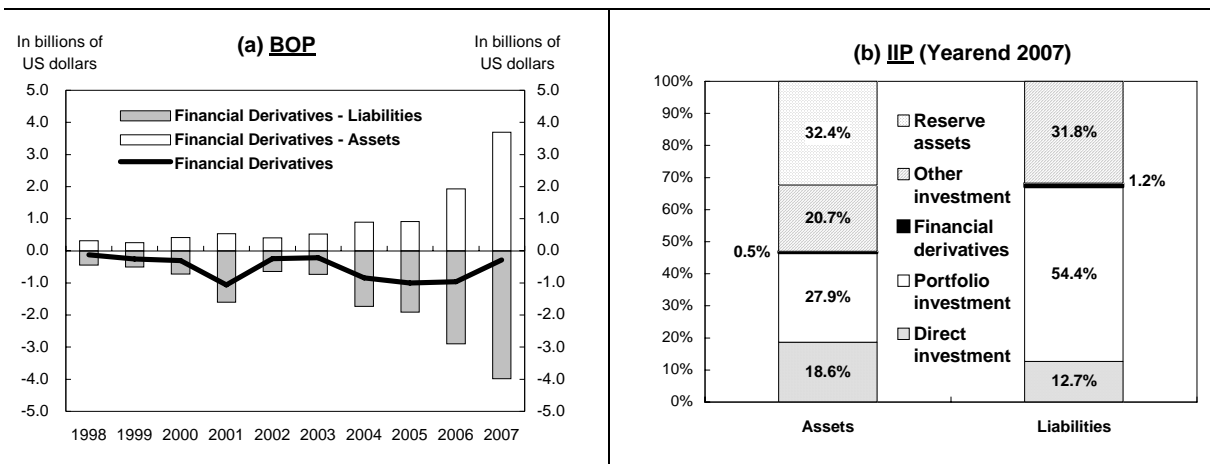
Source: Department of Foreign Exchange of the central bank.

3.3 Cross-border derivatives activities

In the past decade, cross-border derivatives transactions reported in the BOP varied substantially and all posted net outflows, reflecting the gains from derivatives deals by non-residents surpassing those by residents. For 2007, derivatives net settlements amounted to outflows of US\$0.3 billion, or 0.7 percent of the 38.7 billion in total financial outflows represented in the BOP (Figure 5 (a)). The gross positions in derivatives merely occupied a small share of Chinese Taipei's external financial positions, when compared with those of other financial instruments. At year-end 2007, the asset positions of derivatives amounted to US\$4.1 billion, or 0.5 percent of the 850.0 billion in total external assets reported in the IIP, while the liability positions in derivatives amounted to US\$4.6 billion, or 1.2 percent of the 383.3 billion in total external liability (Figure 5 (b)).

Figure 5

Cross-border derivatives activities



Source: Department of Economic Research of the central bank.

4. Conclusion

This paper has introduced methodologies on compiling derivatives statistics at the central bank. Derivatives statistics include measurements on banks' consolidated derivatives exposures, their foreign exchange derivatives business, and cross-border derivatives activities. These statistics are compiled for supervisory purposes and in line with the trend of international financial statistics. Derivatives statistics are essential to increase market transparency as they provide a full picture of the development of derivatives in the local and cross-border market to the public. Furthermore, derivatives statistics are important for the central bank to assess financial situations, monitor potential risks, and are utilized as effective references to monetary policymaking. Nevertheless, the rapid growth in derivatives activities and financial innovation challenges the existing methodologies on compiling Chinese Taipei's derivatives statistics, and therefore improvements on existing data sources and reporting frameworks should be considered.

References

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