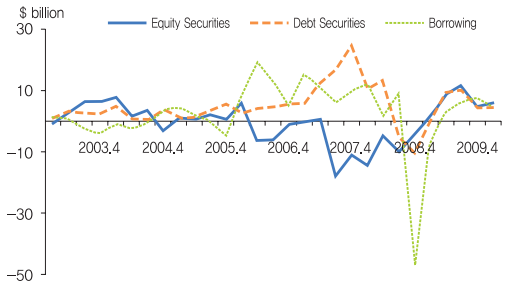
Figure Ⅲ.8 Capital Outflows from Equities, Bonds, and Borrowings



Source: BOK.

Excessive inflows of carry-trade funds bring about currency appreciation and monetary volume increases, so exchange rate policies need to factor in such potential side effects. The growth of the dollar carry-trade is highly likely to further push down the dollar and push up target countries' currencies, cutting into such countries' current account surpluses. Carry-trade fund inflows may also limit the effectiveness of monetary policy by applying downward pressure on market rates.

Funding flows from the dollar carry-trade do improve target countries' foreign currency liquidity, but as the potential for sudden capital flight down the road also exists, such flows are highly likely to act as a financial destabilizing factor. If carry-trade funds rapidly flow out, this will send market and exchange rates soaring and destabilize target country economies, particularly for emerging markets.

Since carry-trade positions take much longer to build than to unwind, this capital flight must be guarded against. More stringent monitoring of changes in global market conditions and capital movements, and greater international coordination are needed to guard against the potential for sudden outflows.

Table Ⅲ.4 Banking Sector External Debt from Borrowings

(Billion US doallar, %)

	2005	2006	2007	2008	2009
External debts	51.2	96.2	135.4	112.6	120.2
Korean banks	28.1 (54.9)	43.3 (45.1)	55.0 (40.7)	42.5 (37.8)	44.5 (37.0)
Foreign bank branches	23.1 (45.1)	52.9 (54.9)	80.3 (59.3)	70.1 (62.2)	75.7 (63.0)

Note: Figures in parentheses are shares.
Source: BOK.

C. FX Financing and the Interconnectedness of Financial Markets

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1. Introduction

The recent global financial crisis has highlighted the critical role of financial markets in the propagation of adverse shocks. Together with the rest of the world, the Korean economy was hit hard in mid-September 2008 following the bankruptcy of Lehman Brothers. Korea experienced massive capital outflows and serious difficulties in refinancing foreign currency denominated

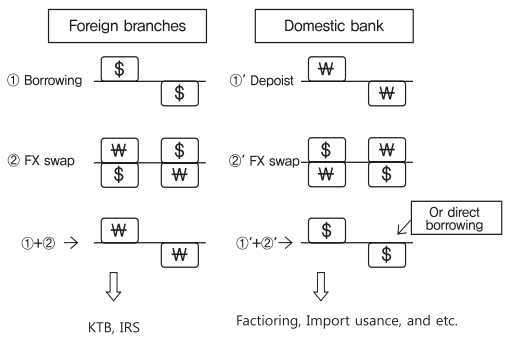
liabilities (Figure Ⅲ.8).

Several reasons are put forward for why the Korean financial system has been so vulnerable to capital outflows and rollover risk on foreign debt. First, the high proportion of short-term foreign debt is usually discussed. Over the past decade, the proportion of short-term foreign debt sharply increased. In particular, foreign bank branches' external debt went up dramatically in 2006 and 2007, and their share of all banking sector external debt soared from 45% in 2005 to 59% in 2007. (Table Ⅲ.4) Yet domestic banks have faced even more severe shortages in the foreign currency liquidity. Thus, the high proportion of short-term foreign debt alone is not satisfactory in explaining Korea's exceptionally vulnerable situation.

Second, the interconnectedness of local banks, foreign branches and other financial markets associated with this external debt has been offered as a new notable characteristic not prevalent in the late 1990's IMF crisis. It is plausible that this interconnectedness amplified the external debt problem, as external debt, FX swaps, foreign branches' domestic bond investment, export bill purchases, and hedging of FX forward contracts all generally rose before the recent crisis.

This article looks at this second culprit by attempting to describe how foreign external funding and domestic financial markets are intertwined with respect to capital flows.

Figure Ⅲ.9 Flows of Borrowed Foreign Funds between Foreign Bank Branches and Korean Banks



2. Foreign Currency Financing and FX Swaps

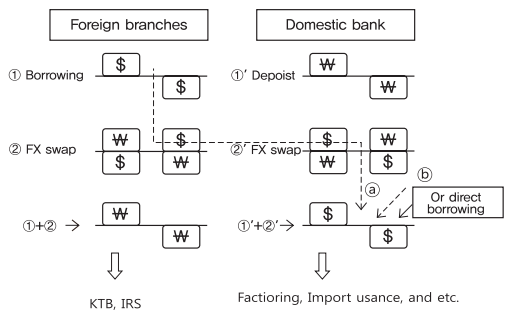
A domestic Korean bank can raise foreign currency funds in two ways: borrowing directly in the foreign currency money markets or borrowing domestic currency and converting the proceeds into foreign currency through an FX swap (foreign exchange swap). When a Korean bank raises U.S. dollars via an FX swap, it exchanges Korean won for dollars at the foreign exchange spot rate while agreeing to exchange in

the reverse direction on the maturity date at the forward rate. Since Korean banks' counterparties in FX swaps are typically foreign bank branches, they are interconnected.

Figure Ⅲ.2 exhibits how foreign bank branches and Korean banks are interconnected through FX swaps. It shows the position changes of foreign bank branches (left panel) and Korean banks (right panel) in three steps. In each step, the left rectangle represents a transaction at time t and the right rectangle represents a transaction at t+s, the date of maturity of borrowing or FX swap. The rectangle above the horizontal axis denotes capital inflows while a rectangle below the axis denotes capital outflows. Currency units of transactions are marked inside the rectangles.

The first step, or top, of the left panel shows that foreign bank branches borrow in U.S. dollars (inflows) and repay the principal and interest in the future (outflows). Likewise, the first step of the right panel exhibits Korean banks' financing (for instance, deposits) and repayment in Korean won. In the second step (middle of the panels), foreign bank branches (Korean banks) convert U.S. dollars (Korean won) into Korean won (U.S. dollars) via an FX swap for a short-term contract. Similarly, foreign bank branches and Korean banks can enter into currency swap agreements for a long-term contract. Foreign bank branches (Korean banks) end up with Korean won denominated funds (U.S. dollar denominated funds), as depicted in the third step (bottom of the each panel). The third steps without the first and the second steps indicate cases where the foreign bank branches directly raise funds in Korean won and where Korean banks directly borrow money in U.S. dollars.

Figure Ⅲ.10 Channels of Transmitting Foreign Liquidity Shocks



Finally, foreign bank branches invest the proceeds in Korean won-denominated domestic bonds or in interest rate swaps, while Korean banks use the funds to extend loans to importers and for factoring for exporters etc.

This article mentioned that external debt, FX swaps, foreign branches' domestic bond investment, export

bill purchases, and hedging of FX forward contracts all generally rose before the recent crisis. This synchronization of market movements is explained by the financing mechanism and capital flows in Figure Ⅲ.9.

3. Impact of Foreign Capital Outflows on the Domestic Financial System

An FX swap can be viewed as a simple lending and borrowing transaction between financial institutions, with the only difference being that there are currencies involved. That is, an FX swap is equivalent to a transaction in which a foreign bank branch lends foreign currency to Korean banks, while borrowing Korean won from Korean banks. During the crisis, foreign banks in advanced countries hit by an adverse liquidity shock reduced cross-border lending and also reduced funding to foreign branches to bolster head office balance sheets. The retreat of foreign banks' lending led to a severe dislocation from the FX swap market and caused funding difficulties for Korean banks. Therefore, when liquidity conditions tightened in foreign countries, Korean banks suffered from foreign currency liquidity problems, not only in direct borrowings but also in indirect funding through FX swaps.

Moreover, the decrease in FX swaps brought about a decline in foreign branch investment in the Korean bond market and early termination of interest rate swaps through the shrinking of their won operations.

Figure Ⅲ.10 illustrates the two channels through which external shocks were transmitted to Korean banks. Indeed, as Ceterolli and Goldberg (2010) point out, international banking linkages are viewed as having spread the profound difficulties from the financial crisis that began in advanced counties to emerging economies, including Korea[1].

1) Cetorelli, N. and L.Goldberg (2010), "Global Banks and International Shock Transmission: Evidence from the Crisis," NBER Working Paper 15974.

4. Concluding Remarks

The extent of international financial integration became painfully evident to Korea during the recent global crisis, with the insecurity of international financial markets spreading foreign currency funding pressure to the domestic banking system. High short-term external debt, which had built up from banks' excessive short-term borrowings, facilitated the immediate and the powerful transmission of external shocks into the domestic economy and raised concerns over another potential currency crisis in Korea.

To reduce the vulnerability of the foreign exchange market to external shocks, the Korean government adopted a key measure in June 2010 to directly regulate the total size of FX swap transactions by imposing a limit on forward positions according to bank capital. This new regulation is expected to decrease the level of risk exposure in the banking system, but may have serious adverse effects on trade financing and some FX hedging transactions.