



Financial crisis and a transmission mechanism of external shocks: The signaling role of the Korean Monetary Stabilization Bond

Jinyong Kim^{a,*}, Yong-Cheol Kim^{b,1}

^a Graduate School of Finance and Accounting, KAIST College of Business, 85 Hoegiro Dongdaemoon-gu, Seoul 130-722, Republic of Korea

^b Sheldon B. Lubar School of Business, University of Wisconsin-Milwaukee, PO Box 742, Milwaukee, WI 53201, United States

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ABSTRACT

This paper explores a transmission mechanism of an exogenous shock to domestic financial markets by investigating the potential signaling role of the Monetary Stabilization Bond (MSB) spread together with several financial variables in Korea. The MSB spread widened and became more volatile during the crisis period after the variance change point at the end of 2007, when the causality relationships between the key variables became apparent. The empirical results illustrate that a foreign shock, which directly leads to rapid short-term capital flow and foreign exchange rate fluctuation, is likely to have a significant contagion effect on domestic financial markets in the case where it has a sizable negative impact on national foreign reserve holdings. The MSB is a monetary policy instrument for foreign exchange reserve management, and the daily observable MSB spread is a timelier signal in this transmission channel.

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1. Introduction

Financial crises are likely to happen more frequently and have a worldwide effect as businesses become more globalized and the barriers of capital flows are lowered. Crises—regardless of their origin and underlying causes, and whether caused by internal and fundamental weaknesses of a country's economy and business or exogenous actions—not only occur in a single country but also spread to others. One salient feature of the recent major financial crises is that they involve foreign debt and capital. When real and financial asset prices rise, foreign capital flows into the country, and capital flows reverse and exit rapidly as signs of weakness and probable loss become apparent as asset prices plummet. While large government and sovereign debts affect all countries, including mature and developed economies, as the amount of debt relative to the government budget and the national income increases, such debts are more ominous to small economies that depend on exports

and foreign capital. The 1997 Asian financial crisis is a case in point, where the crises spread to other regional countries, racking national economies with hefty currency depreciation.

The impossible trinity implies that the three ideal conditions of independent monetary policy, free capital flows, and stable exchange rates cannot be obtained at the same time. During the Asian crisis, many affected countries switched from managed exchange rates to floating systems and raised interest rates to stem rapidly depreciating domestic currencies as capital exited en masse. The Asian crisis prompted academics as well as practitioners to understand the causes of the crisis, and most pundits point out that financial systems based on relationship-based banking and poor corporate governance are the fundamental weakness in the countries affected (e.g. Kaminsky and Reinhart, 1999; Mishkin, 1999; Johnson et al., 2000; Chowdhry and Goyal, 2000). However, the Asian crisis was triggered through capital outflows, especially exits of massive short-term capital within a short period.² Furman et al. (1998) provide evidence consistent with the belief that large

* Corresponding author. Tel.: +82 2 958 3425; fax: +82 2 958 3160.

E-mail addresses: jinyongkim@business.kaist.ac.kr (J. Kim), ykim@uwm.edu (Y.-C. Kim).

¹ Tel.: +1 414 229 4997; fax: +1 414 229 5999.

² It is arguable whether the short-term capital outflow triggered the crisis. However, it is a fact that short-term capital exited rapidly and in large volumes at the beginning of the crisis.

short-term debt exposure made East Asian countries vulnerable to a sudden withdrawal of confidence. The global financial crisis that started in 2007 is unique because it even affects countries with strong real economies and banking sectors.³ Furthermore, it is distinguished from the past crises by new developments in financial markets, as is pointed out by White (2008) and Brunnermeier (2009). It is interesting and important to understand the transmission mechanism of external shocks into domestic financial markets during the recent financial crisis in the context of the impossible trinity, namely, how capital flows, monetary policy instruments, and exchange rates interact with each other, since speedy short-term capital outflows are a stylized phenomenon and one of the main events of crises.

The Monetary Stabilization Bond (MSB) is a unique policy tool devised by the Korean government to control excess liquidity to manage export-driven economic growth. While a monetary (base) target or a nominal interest can be chosen as standard monetary policy instruments (Goodhart et al., 2011), the MSB is a fine-tuning instrument in the face of the impossible trinity. The Bank of Korea (BOK) originally issued MSBs in 1961 as one of the major instruments in the central bank's open market operations, especially with respect to external factors that affect domestic liquidity. Typically, if there is a steady increase in market liquidity generated by current account surpluses or foreign capital inflows, the BOK issues MSBs to sterilize the excess liquidity. On the other hand, when there is a lack of liquidity due to current account deficits or capital outflows, the central bank increases the monetary supply in the economy by redeeming MSBs.

Since MSBs are issued on BOK credit, they bear a credit risk comparable to that of the Korean Treasury Bond (KTB), which is guaranteed by the Korean government. The new issuance of one-year KTBs has never occurred in Korea, so the yield on the 364-day MSB is often used as the on-the-run one-year benchmark rate. While the issuing institutions, procedures, and market liquidity are not exactly identical for the MSB and KTB, the value of the 364-day MSB is not expected to significantly differ from that of the one-year KTB,⁴ because MSBs and KTBs with the same maturity should bear comparable exposure to duration and credit risks. The yields on the two securities are in fact reliably similar, at least until the third quarter of 2007, when the yield on the MSB began to rise significantly over that of the KTB. The spread between the two yields, the MSB spread, illustrates an unprecedented level of volatility beginning in the fourth quarter of 2007. These observations are especially interesting, since the timing of the MSB spread movement coincides with the global financial crisis. As the yield of the MSB increases, the yield on the KTB should rise, since the two instruments are supposedly identical in credit risk. The widening MSB spread appears to be an abnormal movement, possibly related to market conditions around the beginning of a period of financial turmoil.

We analyze a potential role of the MSB spread in the transmission channel of the global financial crisis into the Korean domestic financial markets, using the data for the sample period of 2002–2009. A study of the MSB would shed valuable insights into the way exogenous shocks affect local financial markets in the form of unexpected capital outflows, both short-term and long-term. A

global financial crisis raises significant risk factors, such as diminishing export demand leading to trade account deficits or capital outflows triggered by a lack of risk appetite, for countries with small, open economies. This paper investigates whether movement in the MSB spread includes information regarding the transmission of an overseas shock to domestic financial markets. We hypothesize that the MSB spread is a signal of the transmission of a significant negative shock to national foreign exchange reserves, especially when it is triggered by abnormal short-term capital outflows, as the MSB and KTB have their own clientele investors; that is, short-term investors use MSBs, while long-term investors use KTBs due to market liquidity and other factors. Details of institutional differences are explained in Section 4.

Consistent with our conjecture, the econometric analysis supports the role of the MSB as a uniquely important signal in the transmission of foreign shocks into the Korean domestic market during the recent financial crisis. The results of vector autoregressions (VARs) demonstrate that a foreign shock is likely to have a significant impact on domestic markets when the shock has a sizable negative impact on national foreign reserve holdings. In addition, we find that the impact of the short-term portfolio investment of the balance of payments becomes conspicuous on the FX rate and foreign reserves as we enter the crisis period, which, in turn, has a significant impact on the MSB spread. However, since the information on foreign reserves is available on a monthly basis, the daily observable MSB spread is a timelier signal for a financial crisis.

This paper proceeds as follows. The next section briefly describes the literature on contagion of a financial crisis and explains how the MSB works. Section 3 provides observations during the recent crisis period that motivate the investigation of the patterns in the MSB spread's co-movement with the other financial variables. Section 4 first considers a possible regime shift in terms of a change of variance in the MSB spread. This is the case, since a particular type of relationship can hold in one regime, such as a crisis period, but not in another regime, such as a non-crisis period. Then we apply the Granger causality test (Granger, 1969; Sims, 1972) to key financial market variables to statistically investigate the existence of lead and lag relationships and, accordingly, the potential order of signaling. This section also performs VARs by employing a set of macroeconomic variables to provide an economic rationale underlying the signaling relationships. The final section concludes the paper.

2. Contagion of crisis and the role of MSB

Recent literature on a financial contagion provides various possible mechanisms for propagation of shocks. One line of the literature including Kiyotaki and Moore (2002) and Kaminsky et al. (2003) suggests that a shock to one market indicates new information about economic factors that is relevant to another market, and this correlated information is transmitted across markets from more informed to less informed investors, leading to sequential price effects. Longstaff (2010) shows that the explanation based on correlated information is not consistent with the results of the tests for contagion between the asset-backed collateralized debt obligation (CDO) market and other, more liquid, markets, while the liquidity-based contagion mechanism by Allen and Gale (2000), Kodres and Pritsker (2002), and Brunnermeier and Pederson (2009), where losses in one market lead to tight funding liquidity in overall markets, is able to explain the contagion effects in the subprime crisis. Dungey et al. (2005) provide a unifying framework to compare various methodologies of empirical modeling of contagion, which can be outlined on the basis of two

³ Kaminsky and Reinhart (1999) analyze the linkages of twin crises, namely, banking crises and currency, or balance of payments, crises. They show that even an exogenous shock creates a domestic crisis for strong real economies when the domestic banking sector is weak.

⁴ The rate on the one-year KTB is the average, excluding the maximum and minimum, of yields on KTBs with remaining maturity from ten months to one year, as reported by 15 reporting companies to the Korea Financial Investment Association.

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