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Behind the scenes of abandoning a fixed exchange rate regime

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ABSTRACT

This paper explores the process of abandoning a fixed exchange rate regime during sudden stops in a small open economy. The Bank of Korea's exchange rate policy reports during the East Asian crisis suggest that its fixed exchange rate regime was forced to collapse due to the depletion of usable foreign reserves, which resulted from the credit policy of the Korean central bank to support domestic banks in need of foreign currency liquidity. To capture the Korean crisis experience, I build a quantitative small open economy model in which, in response to the country risk premium shock, the foreign-currency credit policy of a central bank under fixed regime leads to the exhaustion of international reserves and consequent exchange rate regime shift. This model does well at replicating the observed contraction in Korean aggregate variables.

1. Introduction

Much of the literature that studies the quantitative feature of sudden stops in emerging economies introduces different kinds of financial constraints and tries to generate business cycle patterns similar to those in real aggregate data. While this strand of literature mostly focuses on the sovereign defaults widely observed in the sudden stops of Latin American countries, the notably common but often understudied feature is a collapsing exchange rate regime.

Economic theory offers little policy guidance on the exchange rate regime shift, but there exist the two opposing views on this issue. The conventional one in the spirit of Krugman (1979) and Flood and Garber (1984) is that the fixed exchange rate is abandoned only if the central bank exhausts its foreign exchange reserves. The recent papers, however, argue that the central bank *chooses* to exit from the fixed regime as opposed *being forced* to do. For example, Rebelo and Végh (2008) provide the empirical evidence on this optimizing view. From the official international reserves data, they find out how many reserve assets have been consumed until the collapse of exchange rate regime. In roughly 75% of currency crises episodes from 1970 to 1997 except the East Asian crisis, the reserve losses during the 12 months prior to the crisis were less than 40%. As "*the peg was abandoned with plenty of ammunition left in the central bank's coffers*" (Rebelo and Végh, 2008, p. 930), this evidence can be interpreted to support that the exit from the fixed regime is the result of optimal choice by the central bankers. If we consider the East Asian countries as well, South Korea, Thailand and Indonesia were not an exception. As pointed out by Fig. 1, they consumed less than 40% of initial reserve assets at the point of abandonment.[1]

In this paper, my contribution is twofold. From the Bank of Korea's internal policy reports during the currency crisis in 1997, I find out what really happened in the process of regime shift and whether the Korean central bank optimally chose to abandon or were involuntarily forced to do so. Second, I suggest a quantitative small open economy model to incorporate those findings from the Korean policy papers and replicate the Korean crisis experience.

The Bank of Korea's internal papers reveal the following two facts about the decision-making process during the exchange rate regime shift. First, as stressed by earlier literature on the Korean crisis such as Moon (2000) and Park (1998), the Korean policy reports confirm that there existed a discrepancy between publicly announced official foreign reserves and foreign reserves usable in defending the Korean won. When Korean commercial banks experienced the credit crunch as a reduction in foreign currency liquidity and the transaction in the foreign exchange market was significantly impeded due to strong expectation on the

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[1] The two other Asian crisis countries, Malaysia and Philippines, are included in Rebelo and Végh (2008)'s crisis sample.

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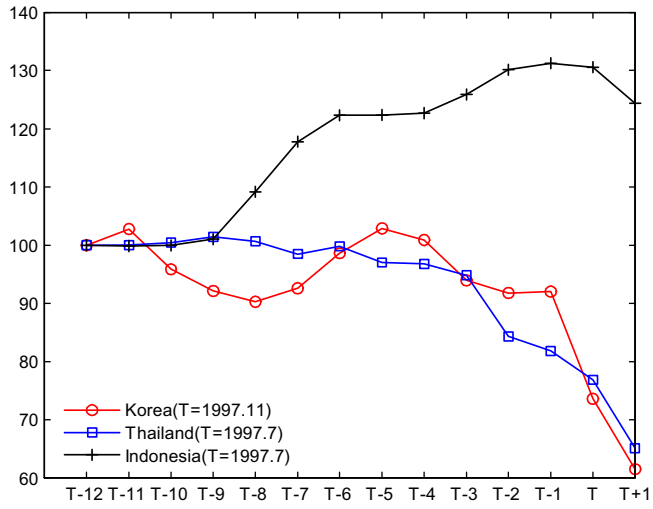

Fig. 1. Monthly changes in international reserves of the East Asian crisis countries.

depreciation of the Korean currency, the Bank of Korea conducted the credit policy to save the banks from insolvency. The Bank of Korea deposited foreign currency in the foreign affiliates of financially distressed domestic banks. While these deposits were included in the official foreign reserves, they were not available for use in the crisis. Second, the fixed exchange rate regime was forced to collapse. At the point of abandonment, the Korean central bank expected usable foreign reserves to be completely depleted in the near future due to the continued demand from domestic banking sector, which could hardly finance their foreign debt.

Based on these findings, the goal of the suggested model in this paper is to capture the foreign-currency credit policy during sudden stops in a small open economy. The model builds on Gertler, Gilchrist and Natalucci (2007) (hereafter, "GGN") which considers the small open economy with financial frictions originally formulated by Bernanke, Gertler and Gilchrist (1999) (hereafter, "BGG"). This paper extends GGN into incorporating the credit policy following Gertler and Karadi (2011) and Gertler and Kiyotaki (2010) into an open economy setting. The central bank is assumed to deposit foreign currency at domestic commercial banks in response to the country risk premium. If international reserves are expected to be depleted as a result of the credit policy, the central bank is forced to switch to a floating regime with inflation targeting. This model does well at capturing the regime switching in the Korean crisis and the observed contraction in aggregate variables in response to the adverse country risk premium shock. In addition, a counterfactual experiment is provided to compare the impulse response of maintaining the fixed exchange rate regime by conservative credit policy with that of benchmark. The result suggests that even though the regime switching was unwanted, it actually brought better outcomes.

This paper is naturally related to the literature that studies the effects of sudden stops on economic activity in emerging economies. Martins and Salles (2010) also study the credit policy in a small open economy, but the primary goal of their paper is to analyze the welfare effects of the credit policies by the Brazilian central bank during the recent financial crisis, while this paper focuses on exchange rate regime switching. As also shown in this paper, Céspedes et al. (2004) and Devereux et al. (2006) highlight the superiority of floating exchange rate regime for emerging economies in response to the negative world interest rate shock. Neumeyer and Perri (2005) and Uribe and Yue (2006) provide an empirical analysis on the effect of change in country risk premium on the business cycles of emerging economies.

In addition, there exist few preceding studies that use the policy papers of the Bank of Korea during the crisis as in this paper. For example, Moon (2000) focuses on identifying the mistakes in a broad range of government policy including foreign exchange policy, financial policy and labor market policy, and points out rigid exchange rate policy as one of the policy mistakes.

The rest of this paper is organized as follows. In the next section, I consider the findings from the Bank of Korea's internal papers on the exchange rate policy during the East Asian crisis. In Section 3, I present a quantitative small open economy model with the foreign-currency credit policy of a central bank. In Section 4, parameter values will be selected. I also suggest the aggregate response when the model economy is hit by the country risk premium shock. I conclude this paper in Section 5.

2. The Bank of Korea's internal policy papers

On January 15, 1999, the National Assembly of Korea launched the 'Special Investigation Commission on the Causes of the Economic and Currency Crisis' which lasted until February 13, 1999. The commission requested the Ministry of Finance and Economy, the Bank of Korea, and even the commercial banks to submit documents related to the currency crisis. Among them, the documents from the Bank of Korea include 49 exchange rate policy reports from January 1996 to December 1997.

2.1. 'Usable' international reserves

Before the currency crisis of 1997, Korea maintained a market average foreign exchange system, under which the Korean won exchange rate against the US dollar was in principle decided by the interplay of market forces while a very narrow daily exchange rate fluctuation band was imposed. [2] Given the low degree of exchange rate variability before the crisis, there was an apparent difference between *de jure* and *de facto* exchange rate regime in Korea.[3]

During the crisis, the Korean sovereign rating quickly deteriorated, mainly due to the consecutive large conglomerate bankruptcies and Southeast Asian crisis.[4] As a result, the country risk premium soared and the foreign borrowing condition of Korean commercial banks worsened (see Table 1). Credit limits from foreign investors were reduced, and the commercial banks were refused when they attempted to renew their existing foreign short-term debts. Thus, in order to save the domestic banks from insolvency, the Bank of Korea deposited foreign currency at their foreign branches, since the Korean government indemnified foreign lenders to Korean banks in August. Domestic banks, which could not finance their foreign debt an hour before the New York market closed, came to ask the Bank of Korea to make deposits through its New York office.

As the size of this deposit increased in early 1997, the Bank of Korea started to distinguish the official reserve assets from the 'usable' reserve assets internally (see Fig. 2). The usable reserve assets are the official reserves minus the foreign currency deposits in the foreign branches of domestic banks, which, the central bank acknowledged, were not available for use in a crisis.[5]

According to Kester (2001), which is the International Monetary Fund (IMF) guideline on the data template for measuring

[2] From December 1995 to November 1997, the daily band was set at ±2.25% of the market average rate of the previous trading day.

[3] See Levy-Yeyati and Sturzenegger (2005).

[4] Moody's lowered the credit rating by 6 notches from A− in September 1997 to Ba1 in December and at the same time Standard & Poors (AA− → B+) and Fitch (AA− → B−) downgraded 10 and 12 notches, respectively.

[5] According to the memorandum from the Frankfurt office in the Bank of Korea on November 3, 1997, the Korean commercial banks' branches in Germany made a request to the central bank not to withdraw the foreign-currency deposits, while the rumors about the shortage of Korean foreign reserves spread.