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The 1998 Russian crisis: could the exchange rate volatility have predicted it?

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Abstract

The purpose of this paper is to examine the exchange rate volatility of the ruble, before the August 1998 crisis, using a macro-economic model of the Russian Federation developed by Basdevant (2000). A main focus of this paper is to use this simulation exercise to find out what was the origin of this financial crisis. This paper will show how expectations of the exchange rate played a crucial role. Nevertheless, this analysis does not seek to only explain the Russian crisis by a specific shock on expectations the objective is also to provide an analysis of the timing of the crisis. A further objective is to demonstrate a new methodology that allows an econometric model to be used to forecast the possibility of financial crises.

Finally this paper demonstrates that a model can be used to assess the likelihood of an unusual event such as the Russian financial crisis by exploiting the information, which is contained in the model's own residual process. Using this technique we demonstrate that the variance of exchange rates produced by the model rose dramatically in anticipation of the full height of crises in 1988.

JEL classification: C3; C5; E17; E62

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1. Introduction

The purpose of this paper is to examine the exchange rate volatility of the ruble, before the August 1998 crisis, using a macro-economic model of the Russian Federation developed by Basdevant (2000).

The main issue is to use this simulation exercise to find out what was the origin of this financial crisis. This paper will show how expectations of the exchange rate played a crucial role. Nevertheless this analysis does not seek to only explain the Russian crisis by a specific shock on expectations. The objective is also to provide an analysis of the timing of the crisis rather than the crisis itself. A further objective is to demonstrate a new methodology, which allows an econometric model to be used to forecast the possibility of financial crises. The origin of the Russian crisis lay in structural problems: mainly capital stock obsolescence and shortage (see Basdevant, 2000 or Hall & Basdevant, 1999) as well as institutional ones. In particular the two main aspects are: the co-operation (or lack of) between industry and the banking system, and the inefficiency of markets (there is no real market clearing, and non-cash transactions are widespread).

Before presenting the model and simulation results, it is necessary to characterise the crisis with some stylised facts, as the model should obviously reflect these.

The crisis began on August 17, 1998, when Prime Minister Kirienko announced that the government would allow the ruble to be devaluated 34% by the end of the year. He also declared a 90-day foreign debt moratorium, and announced a *de-facto* default on the government's domestic bond obligations. On August 26th the Russian Central Bank announced that it would not be able to support the ruble any longer. In less than a month the national currency collapsed by 300%, from 6.2 rubles to the dollar to over 20. Inflation shot up 15% in August compared with 0.2% in July, and has continued to climb.

As stressed by Krugman (1979) financial crises occur when countries tend to finance government expenditures by printing money, which can lead to a currency crisis, as the fixed exchange rate regime becomes unsustainable. It is quite remarkable that in Russia the financial crisis came after the currency crisis. This lead to a total collapse of the banking system. Kaminsky and Reinhart (1999) link currency crises to banking system crises for a number of industrial and developing countries. They emphasise that the peak of a banking crisis most often comes after a currency crisis. Moreover they insist on the fact that most often banking crises have preceded currency crises. In the case of Russia, the crisis came mainly from the inability of the government to raise enough taxes to reduce the public deficit. Hence it became indebted towards international creditors, and thus rendered the Russian Federation dependent on capital inflows. The ruble was kept at a fixed exchange rate because of a fall in reserves. According to most Russians official the question before the 1998 crisis was not whether a crisis was going to happen — as the ruble was obviously over evaluated — but simply when the crisis was going to happen.