THE CONTAGIOUS CURRENCY CRISES

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Abstract
The purpose of this paper is to analyze the contagious currency crisis, which is characterized by regional nature. As the changing of the economic circumstances in one country does affect on the other country's economy, it is important to analyze some direct and indirect effects. The currency crises have a tendency to spread around the country, but the most important thing is to define the instruments by which this transmission takes place. In the article we also analyze the impact of the Russian crisis on Georgian economy.

Key words: *Currency crisis, currency risk, financial shocks, Georgia, trade openness*

JEL Classification: F19, F32, F36, G15

I. INTRODUCTION

As history shows, crisis immediately spread in the region and it does not matter what kind of crisis the original country has. In the last decade of the twentieth century, we had famous examples of financial crises, which spread around the country. In 1997 Thailand crisis was caused by the financial collapse of the Thai baht. The government of Thailand was forced to float its currency because of the lack of foreign currency. At the same time Thailand had acquired foreign debt. The crises strongly infected Thailand, Indonesia, and South Korea, afterwards Malaysia, Philippines, and almost all East Asian countries. This crisis is also known as 'Asian Flu'.

Mexican peso crisis in 1994 is an example of currency crises that was caused by unexpected devaluation of the peso against US dollar. Devaluation caused capital outflow from Mexico and as a response bank raised interest rates, but higher cost of debt hurt the economy. This crisis spread in Brazil and southern cone countries such as Argentina, Chile, and Uruguay.

In 1992-1993 European Monetary System (EMS) was under the crisis. Germany was suffering fiscal deficit originated from unification and as a response the Budeshbank raised interest rate, while European Monetary Union (EMU) required lower interest rate for all EMS countries, in order to come out from the recession. Pressure increased on the Lira, Sterling, Mark and other currencies. Two countries, the UK, and Italy were forced to give up their currency from the Exchange Rate Mechanism of the EMS. Also, three countries, such as Norway, Finland, and Sweden, which were not the members of EMS, were forced to float their currency. Despite the fact that many countries were trying to continue to exist EMS the system were in unsolvable situation.

All of these three examples are characterized by regional phenomena. As one country underwent the crisis - Finland in 1992 (R. Glick, Andrew K. Rose, 1999), Mexico in 1994, and Thailand in 1997 - their competitors or trade partners are likely to be affected. Not all of the competitors and trading partners are equally likely to be attacked. Economists are trying to explain such kinds of movement of crisis country by country.

In this article we are focused on the contagious nature of the currency crises and its transmission among countries.

II. FINANCIAL SPILLOVER

Investors are relying on strong relations between the productivity of entrepreneurs in foreign and domestic economies. When foreign country is facing financial crisis, lending to foreign entrepreneurs becomes riskier; this leads to reduce investments into foreign economy. As a result, foreign country's output declines. However, domestic output and investment declines even further, because domestic enterprises are borrowing in foreign currency, which makes monitoring of domestic enterprises too costly (W. Berger, H. Wagner, 2005). Allen and Gale (2000) suggest another illustration of spillover effect. They are considering situation when the bank is failing for instance in country "A", but this bank also holds assets in country "B". After losing their value in country "A", country "B" will also be affected and its value declines. If spillover effect is sufficiently large, then the result may be even worse and causes insolvency of bank in country "B". If this bank holds assets in country "C", then loses of this bank will be compounded and crush on the country "C" will be greater.

In the paper, "Spillover effects from the US financial crisis: Some time-series evidence from national stock returns", authors are considering interdependence of national stock markets between developed countries during several periods between 1973-2009 years. Their analyses are based on time series, and have used OLS (Ordinary Least Squares), GMM (Generalized Method of Movement), and VAR (Vector Autoregression Model) methods of estimation.

Let's denote log of "i" country's stock price index at period t by p_t^i and $r_t^i = p_t^i - p_{t-1}^i$ be the continuously compounded stock return at period t. In order to determine whether there exists co movement between US stock return and developed countries stock return consider the following regression

$r_t^i = \alpha + \beta r_t^{US} + \varepsilon_t^i$

Where the last term is "i" country's idiosyncratic shock (Apanard P. Angkinand, Jhames R. Barth, Hyeongwo Kim, 2009). If r_t^{US} and ε_t^i are orthogonal to each other then they are integrated of order one and stock return is covariance stationary process. This implies that β coefficients from OLS estimation are consistent. If there exists common factors by which stock return in US and other developed countries are affected then orthogonality condition is less likely to be held and authors in this case have used GMM. To get ride of the serial correlation and heteroskedastisity the error terms are corrected by quadratic spectral kernel with automatic bandwidth selection technique.

To present the dynamic of shock in US stock return, when shock happens in other developed countries' stock returns consider the following Structural Vector Autoregresion model (SVAR):

$A_0 y_t = A_1 y_{t-1} + A_2 y_{t-2} + \dots + A_p y_{t-p} + u_t$

Where y_t is covariance stationary vector of stock returns in US and other developed countries, $[r_t^{US}\ r_t^i]'$, and u_t is a vector of corresponding countries structural shocks, for which variance equals to 1 (Apanard P. Angkinand, Jhames R. Barth, Hyeongwo Kim, 2009). If we multiply both sides of the last equation by A_0^{-1} from left we get VAR that has the following form:

$y_t = B_1 y_{t-1} + B_2 y_{t-2} + \dots + B_p y_{t-p} + \varepsilon_t$

It is clear that $B_i = A_0^{-1} A_i$ and $\varepsilon_t = A_0^{-1} u_t$, where i=1,2, … , p (Apanard P. Angkinand, Jhames R. Barth, Hyeongwo Kim, 2009). For moving average form we get:

$y = B(L)^{-1} \varepsilon_t = B(L)^{-1} A_0^{-1} u_t$

To examine if there exists interdependence of stock returns and spillover effects between US and various developed countries, authors take data for monthly and weekly returns of stocks for 14 developed countries in 1973-2009 years. These countries are chosen so that each of them has highly developed stock markets and it is not obligatory that they were from the same region. Results from the simple OLS regression suggests that US markets stock returns and other countries stock returns are correlated positively and this correlation is significantly different from zero in all cases at 1 percent significance level. The coefficients do not fluctuate overtime and across countries, though in GMM estimation not all coefficients are significant, they become significant mostly in the last decade of twentieth century.

III. THE ROLE OF TRADE OPENNESS

Currency crisis is characterized by regional nature. Countries are trying to trade around their location in order to minimize transportation costs. Whenever domestic country is suffered by crisis than international trade may play a key role in its transmission. The same idea is expressed in the paper "Contagion and Trade: Why Are Currency Crisis Regional" written by Glick and Rose (1999). The objective of the paper is to exhibit that trade is crucial while considering financial crisis contagion effect. The authors are not considering the reasons that cause crises in initial countries. Instead they take initial countries situation as a given and observe how the crisis spread out of the country. They assume that there exists contagion and trying to find the channels by which contagion occurs.

The study is based on the five famous crises such as the failure of the Bretton Woods System in 1971, the breakdown of Smithsonian Agreement in 1973, EMS crisis in 1992-93, Mexican peso crisis in 1994-95, and the "Asian Flu" in 1997 (R. Glick, Andrew K. Rose, 1999). First of all, the authors define the country that was the source of the crisis transmission. For such kind of countries they give indices 0, as "zero ground country". In the 1994 and 1997 crisis, as "ground zero" countries are considered Mexico and Thailand correspondingly. In case of the 1971 and 1973 crises Germany is considered as "zero ground country". Situation is much complicated in case of 1992 EMS crisis. Glick and Rose suppose that Finnish flotation was the first important occurrence and also claim that the results are not depended much on the exact choice of 'zero ground' country.

Authors present the following binary probit regression:

$Crisis_i = \varphi Trade_i + \lambda M_i + \varepsilon_i$

With null hypothesis H_0: $\varphi = 0$

In the regression, $Crisis_i$ is the dummy variable, which equals to 1 when crisis takes place in country "i"; and equals to "0" if the country was not affected. M_i is a vector of macroeconomic control regressor with λ

coefficients; ε_i is normally distributed disturbance that includes all other omitted influences. It's clear that it has an effect on the probability of a currency crisis.

Trade linkage is measured with the following equation:

$$Trade_i = \sum_k \frac{x_{0k}+x_{ik}}{x_{0.}+x_{i.}}\left[1 - \left|\frac{x_{ik}-x_{i0}}{x_{ik}+x_{i0}}\right|\right]$$

Here x_i is aggregate bilateral export form country "i"; $x_{ik}(i\neq k)$ is aggregate bilateral export from country "i"to "k". The last formula is weighted average of importance of exports to country "k" for countries "i" and "0" (R. Glick, Andrew K. Rose, 1999).

Export channel works differently depending on whether the crisis is originated in domestic country or it is transmitted from the foreign country (F. Gulcin Ozkan, D. Filiz Unsal, 2012). If the crisis is originated in domestic country, then depreciation of the domestic currency stimulates country's net export. This increment partly compensates the losses that country has in output. On the contrary, if the crisis is originated in the foreign economy, then the export channel works in the opposite direction. Overall output worsens and this happens because, global financial crisis affects net worth, investment and capital. As a result, domestic countries export decreases that are negatively reflected on the home country's output.

We can conclude that as trade connection between countries is strong, probability of crisis will be transmitted from one to another, increases sufficiently fasters when these countries are close to each other. This means that trade connection is more sensitive toward crisis than geographical location. The same is true for macroeconomic control variables.

IV. THE CASE OF GEORGIA

As we analyze above, the crisis started from one country infects not only the region countries, but also the countries that are related to infected country by financial linkage. In this section we analyze the impact of the Russian crisis on Georgian economy. The crisis in Russia began in the second half of 2014 with the fall of the Russian ruble and it continues even at this moment. The main reasons for currency depreciation were decrease in oil prices, and the economic sanctions that were put on Russia by the West. Because of the inconsistent situation and low confidence level in Russian economy, investors were forced to give up Russian assets. As a result, Russian ruble depreciated even farther. After devaluation of Russian ruble, all of the neighboring countries' currency depreciated.

Export from Georgia to Russia

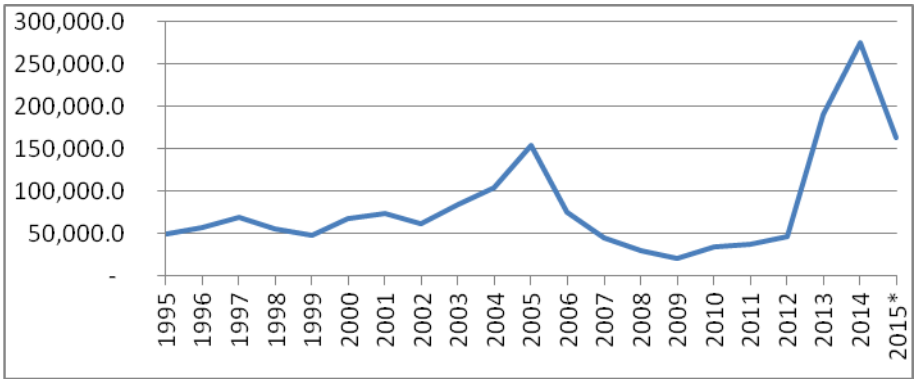

Figure 1 - Export from Georgia to Russia (1995-2015)

Source: https://www.geostat.ge/en/modules/categories/35/external-trade

Import from Russian to Georgia

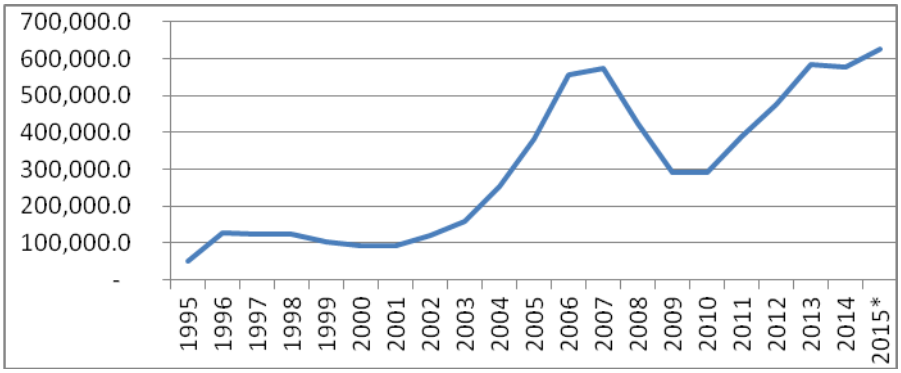

Figure 2 - Import from Russian to Georgia (1995-2015)

Source: https://www.geostat.ge/en/modules/categories/35/external-trade

The Russian crisis spreads into the whole region such as Ukraine, Turkey, Azerbaijan, Armenia, and other Soviet Union countries. As Georgia has small economy that is integrated into the region, the Russian crisis affects it directly. As the figure 1 shows, after 2014 the exports from Georgia to Russia decreased, but imports from Georgia has not declined (see figure 2).

V. CONCLUSION

The main objective of the article was to examine the effects of crises on countries. We can conclude that the crisis originated in one country is sending negative signals to the neighborhood countries. Glick and Rose (1999) emphasized that trade is the main channel by which the crisis was transmitted in 1971, 1973, 1994 and 1997 years. When two countries are in a close financial relationship, the crisis in one country spreads in the other country quickly. We saw that in order to estimate the scale of the contagion for the country, it's important if the country's economy is open or not. For the country that has an open economy, the probability of the crisis contagion effect is even higher.

Overall, the openness of the economy is crucial for spreading the crisis. As country's economy is open, it is more integrated as in international trade and as in financial markets. The recent crisis that covered the whole region is the ongoing crisis in Russia. The crisis has affected numerous countries and one of them was Georgia.

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