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GLOBALIZATION, EXCHANGE RATE REGIMES AND FINANCIAL CONTAGION

A profound paradigm shift took place in the global financial system over the past twenty years. From local deposit-funded operations confined within national boundaries, financial institutions transformed into large multinational conglomerates dependent on wholesale funding and interbank loans, often in foreign currency [1]. In Europe, creation of the Euro zone and enlargement of European Union to Central and Eastern Europe facilitated establishment of large pan-European financial networks that incorporate countries both inside and outside of the Euro zone. Financial globalization helped improve quality, scope, and efficiency of financial services in Europe and many other regions of the world. At the same time, past two decades witnessed, also, a dramatic increase in frequency, severity and geographic reach of financial crises [2]. Recent financial and economic crisis exposed serious structural weaknesses of the global financial infrastructure³. Crisis in the Euro zone, in particular, raised serious questions that have important repercussions on European and global financial stability. Among them are what is the proper level of financial integration and what is the optimal size of the Euro zone, or more broadly, what should be the exchange rate arrangements between countries that are part of tightly knit financial networks. To make informed policy decisions in that regard, it is important to better understand how different degrees of financial interconnections and different exchange rate regimes together influence stability of financial networks. This is the subject of our paper.

Our main insight is that the effects of increased financial interconnect-edness and different exchange rate regimes on financial stability should not be studied in isolation from one another [3]. To show that, we address two important inter-related issues: 1) How choice of the exchange rate regime influences the way in which a change in degree of financial interconnected-ness impacts the fragility of a two-currency financial network? and 2) How the degree of financial interconnectedness impacts the way a change in the exchange rate regime affects the fragility of such a network? We show that whether an increase in financial

interconnectedness reduces or increases financial fragility depends, among other factors, on the exchange rate regime between countries. In addition, change in the exchange rate regime in one part of the network has very different repercussions on stability of the network depending on the degree of network interconnectedness. To the best of our knowledge, this is the first theoretical contribution that analyzes joint effects of different degrees of network interconnectedness and exchange rate regimes on stability of multinational financial networks.

To keep the analysis as simple as possible, we base it on two benchmark models of financial stability.

Banks attract deposits and invest them in liquid (short-term) and illiquid (long-term) assets. In order to mitigate exogenous liquidity risk, banks may hold deposits in banks of other regions. The system of interbank deposit links is taken as exogenous. The main finding of their model is that the higher degree of market completeness (higher interconnectedness) is likely to reduce the fragility of the banking system. In their model this is so since a higher number of links between regions provides a better insurance against exogenous liquidity shocks. We study whether their results generalize when one part of the global network has a separate currency.

The second benchmark model that we use is that of Chang and Velasco [4]. They analyze how different exchange rate regimes impact financial fragility of a small open economy and show that the flexible exchange rate regime may completely eliminate the possibility of both currency and banking crises in such an economy. On the other hand, in their model, under fixed exchange rate regime both types of crises are possible [5].

Therefore, a combination of high level of financial interconnectedness coupled with flexible exchange rate regime in part of the network may be particularly dangerous from the global stability point of view. The intuition behind this is that the region with floating exchange rate regime 're-exports' negative shocks to the region(s) of the larger economy via the exchange rate depreciation, rather than absorbs them. In case of a complete set of links, the crisis is exported to all regions at the same time (the same is not the case when the set of links is incomplete). The regions of the large country cannot depreciate their currency, and so they are more likely to suffer from the financial meltdown. Finally, within our model conditions under which global contagion is possible, for either network type, are identical in case of the fear-of-floating and monetary union regimes. For this reason, fear-of-floating regime can also be labeled as quasi-fixed regime.

We find that in the era of close financial ties between countries, their exchange rate policies are important determinant of the global financial stability. In particular, what is good for an individual country (flexible exchange rate policy) may not necessarily be good for the stability of the network as a whole as long as financial links between the regions are strong enough. Our results, thus, rationalize fear-of-floating in emerging markets that in the past twenty years integrated into the world economy, as well as worries about financial stability aspects of potential reshaping of the Euro zone.

These results are striking because they are obtained in a framework ‘most favorable’ to the floating exchange rate regime. Namely, our setup rules out a possibility that a financial crisis originates in the economy with the floating exchange rate regime. In addition, we abstract from other negative effects of the exchange-rate instability present in the ‘real world’ (including the real sector disruptions due to the balance sheet effects, the lack of nominal anchor, etc.) since in our model loans are always made in local currency.¹¹ Furthermore, when the set of links is complete, the run-avoidance under the floating exchange rate regime yields a lower exchange-rate depreciation than under the fear-of-floating regime when an external shock hits the economy. Even under such extreme conditions, however, a switch from the fear-of-floating (or monetary union) to the floating exchange rate regime increases the financial fragility of the system as a whole when the system of interbank links is complete. In addition, we show that in case of a flexible rate regime the conditions for the global run are the same whether or not there exists a lender of last resort in the small country. In other words, it is the introduction of a separate freely floating currency in the small country that drives the main result.

Finally, our paper complements the stream of literature that studies the ‘fear of floating’ phenomenon. It has been argued that many emerging market economies mitigate exchange rate fluctuations, because they lack a developed financial system that would help them cope with the exchange rate variability and its adverse impact on balance sheets of firms and the government. In particular, many agents in developing economies have only limited ability to borrow long-term in their national currency and to hedge their exchange rate risk exposure.

Our paper demonstrates that the effects of different levels of financial interconnectedness and different exchange rate regimes on stability of multinational financial networks should not be considered in isolation from one another. To show this, we analyze network fragility in the context of a two-country four-region model à la Allen and Gale [3] with open-economy monetary features of Chang and Velasco [6]. We assume

that one of the regions in the Allen and Gale framework is a separate country with its own currency and a central bank. In this framework, the major results of Allen and Gale and Chang and Velasco are obtained as special cases. In particular, under incomplete structure of interbank links, a switch from the fear-of-floating or monetary union to the flexible exchange rate regime reduces financial fragility, which is consistent with the Chang and Velasco findings. Also, under the fear-of-floating regime or monetary union regime, a switch from incomplete to complete system of interbank links, which can be interpreted as increased financial globalization, also reduces financial fragility. This is essentially the original Allen and Gale [6] result, as the fear-of-floating regime makes the difference between the currencies immaterial for financial contagion.

However, the combination of a complete set of interbank links and a flexible exchange rate regime yields two novel results. First, in contrast to Allen and Gale [7], we find that a switch from incomplete to complete set of links may, under certain conditions, increase rather than decrease financial fragility if the smaller country maintains a floating exchange rate regime. Also, in contrast to Chang and Velasco [7], when the set of links is complete, a switch from monetary union or fear-of-floating to a floating exchange rate regime in the small country unambiguously decreases financial stability of the global network. Thus, financial links between countries with different exchange rate regimes may be a source of financial fragility, and the importance of this source of risk rises with increased level of financial interconnections between countries.

Our analysis, while simple, has potentially important policy implications. It demonstrates that the stability of multinational financial networks depends on combination of the degree of network interconnectedness and the exchange rate regimes that countries participating in the network pursue. Thus, decisions to increase or decrease financial links between countries (i.e. further integration or ring fencing measures) or decisions to change exchange rate regimes (entering or exiting a monetary union, for example) cannot be made in isolation from one another. Our results rationalize an increase in financial links among European countries, and not only since 1999 (when the Euro zone was established), but in the earlier years when European countries tried to limit exchange rate fluctuations' within the European Monetary system. Under the conditions of a monetary union, or a quasi-fixed (fear of floating) exchange rate regime, increased links may improve stability of the network. Importantly, the model implies, also, that once close interregional ties are established, a country's exit from the monetary union or fear of floating regime may be detrimental to the stability of the network. This provides a

simple additional argument against potential secession of Greece (and other countries with weak fundamentals) from the euro zone. As euro zone countries are financially highly intertwined, network-wide financial contagion would be more likely if one or more regions switch to an independent currency with a floating exchange rate regime.

There are several venues of possible future research. One issue to consider is how our results will be affected if more than one region in the network has independent currency. While this remains a venue for future research, analysis in the paper allows us to conjecture that, first, if another region becomes a separate country with a fear-of-floating exchange rate regime, then its monetary independence is immaterial. If this country has a floating exchange rate regime, then the conditions for global contagion will depend on the region where the crisis starts. The crisis cannot start any longer in the regions with flexible rate regimes. On the other hand, if the crisis originates in one of the remaining regions of the large country, contagion becomes more likely under a complete system of links. This happens because such a region will come under triple pressure: its interbank deposits will lose value in all three other. Thus, qualitative results of our model would likely preserve in that case.

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