Can Financial Contagion Cause a Financial Crisis?

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Abstract: The main objective of this study is to examine if contagion can cause a financial crisis or make a financial crisis more severe by studying the theoretical literature of contagion. Moreover, the article explains the concept of contagion and elaborates how contagion possibly can spread between different sectors of the economy as well as between countries and regions. Lastly to evaluate the subsequent impact on financial markets both globally and locally.

The problem at hand is to distinguish between contagion and fundamental reasons for a financial crisis including foreign exchange crisis, sovereign debt crisis, systemic banking crisis, and balance of payment crisis.

The study is a meta-study by contrasting and evaluate 20 studies of contagion, 18 confirms that contagion exists and one study states that crisis are always caused by fundamental reasons.

The results are that contagion is real, but hard to measure or assess with quantitative methods but possible to study with qualitative methods and to use as explanatory factor why a crisis can spread like wildfire within a region. Also, a crisis at a financial center or hub is more likely to spread not only regional but globally.

In conclusion, it is difficult to avoid contagion, but if a country has good economical fundamentals and a robust financial sector including the banking sector it is less likely that the contagion will have a severe and devastating impact on the local economy.

The Asian crisis of 1997 is used as a case study to evaluate the impact of possible contagion on a financial crisis.

1. Introduction

The purpose of the article is to assess through a meta-analysis if financial contagion actually can cause a financial crisis.

Contagion in its most general meaning is that an external shock or other adverse event in a foreign market generates a negative price movement in the affected country. [49]

1. What is contagion

Contagion is when an economic mishap, like a banking crisis spread from one market to another. That is an economic shock spread from one sector of the economy to other sectors in the same economy. Contagion also spreads geographical mainly regionally and/or between countries that have a similar economic development and market structure. Financial turbulence spreading between countries or from for example the foreign exchange market to the commercial banking sector is an example of contagion. Contagion means that, market crisis or disruptions spread. In theory, positive contagion does exist, but mainly contagion is found on the downside. Asset prices in one market falls and due to interconnectivity and common economic systems asset prices also fall in other markets and countries.

Contagion was a large explanatory factor in the 1997 Asian crisis, [49] as well as for the subprime mortgage crisis of 2008-2009 [40] and for the European sovereign debt crisis [6] which is still ongoing in a different form to some extent. Recent examples include the debacle of Deutsche Bank which is suffering large losses and a lawsuit for 14 billion dollars from the U.S. ministry of Justice, as of October 2016. The Deutsche bank examples illustrates the contagion from the subprime mortgage crisis. The world’s oldest bank, the Italian, Monte dei Paschi di Siena, is distressed and needs government help again. They received a bail out in 2013 and now they are seriously troubled again (De Groen, & Gros, 2016). The Greek sovereign debt is still not under control [24]. The Greek crisis will unlikely spread since the Greek debt is walled in by, European Financial Stability Facility (EFSF) and not held by commercial banks to any larger extent [8]. The examples show how a crisis in the United States spread to Europe where it changes shape and character.

However, is it contagion if there is also a fundamental economic issue in the commercial banking system? Common reasons for contagion is...
Contagion is the systematic risk in the system [34]. A run at one bank can cause runs at more banks [2]. Banks are affected by defaulting banks. For example, the economy like in between banks. That is also healthy crisis. Contagion can also occur with a sector of the economy. The higher the risk of contagion and the spread of crisis. The higher the interdependence between countries and correlated markets also will be in disequilibrium. The market is thrown off equilibrium it is not unlikely that the contagion risk increases. If one market is thrown of equilibrium it is not unlikely that the correlated markets also will be in disequilibrium.

The higher the correlation between different national markets or countries the higher the contagion risk. That is if stock markets are highly correlated with the foreign exchange market or with interest rates the contagion risk increases. If one market is thrown of equilibrium it is not unlikely that the correlated markets also will be in disequilibrium. The higher the interdependence between countries the higher the risk of contagion and the spread of crisis. Contagion can also occur with a sector of the economy like in between banks. That is also healthy banks are affected by defaulting banks. For example, a run at one bank can cause runs at more banks [2]. Contagion is the systematic risk in the system [34].

2. The causes of contagion

Contagion can have a severe impact on the local economy due to its spread and magnitude enhancing effects of a financial crisis. That is how turbulence, from a financial crisis impacts other economies, domestically as well as in foreign countries. The main trouble is to distinguish if a crisis is caused by fundamental reasons or by contagion. The second difficulty is that if there are fundamental reasons for a crisis in what way contagion made the crisis more severe.

Contagion is not merely an event that occurs internationally but also within countries. Contagion occurs between banks, financial institutions as well as non-financial corporations. The vehicles of contagion are: financial institution, government policy, globalization of financial markets, financial market participants, lenders, debtors, investors and speculators [2].

In the Asian 1997 crisis starting in Thailand, spreading to Malaysia, Philippines, Indonesia, Singapore and South Korea, contagion is likely to have made a substantial difference both in magnitude and in the number of affected countries. One of the main avenues for the spread of the crisis was that foreign investors withdraw their investments and hot money left the affected countries rapidly. The reason was that the investors from abroad suffered from asymmetric information, knowing less about the markets compared to local investors. Since the foreign investors were afraid of being exploited they rather withdraw their investments immediately. The psychology behind is the reasoning, “that is if there is a problem in Thailand, why would not Malaysia have similar issues”. The phenomenon is a pronounced problem if the investors are lacking access to reliable and accurate market data from Malaysia [2].

Psychology is a factor that cannot be ignored when analyzing contagion. The sentiment in the market can change quickly from positive to negative with negative outlook [48].

Obviously real economic linkage is a possible reason for contagion. If two countries trade with each other and one of them has a financial crisis the other may lose a market for its export. That is that the exporting country is losing foreign sales and income. The exporters’ economy therefore slows down, workers lose their jobs, and the economy slows down further. Corporation may go out of business and creditors suffers from bad loans [32]. Also, trade policies can cause contagion, especially if a larger importer raises trade barriers against a smaller country. For example, if a giant like China raises trade barriers against smaller neighboring countries with a large export to China they will be adversely affected and it may even lead to financial crisis [29]. To conclude contagion can spread in several different ways: trade barriers, lack of demand due to domestic crisis, through the exchange rate in the case of a currency crisis, and speculative attacks if triggered by similarity [28].

3. The four forms of contagion

Information problems: If loans have gone bad in one developing country, investors may believe that other developing countries have similar problems. Hence, there is confidence loss in the whole developing world. Loans, finance and credits not being renewed due to lack of confidence may cause great damage with dire consequences.

Asymmetric information or the assumption that the information is asymmetric is when investors think other investors or stakeholders know more and want to take advantage of that. It can include freeriding by copying their behavior or receiving information for free from informed investor’s spending money on analyses. If informed investors need to sell because of liquidity issues, it does not mean that the investment is fundamentally bad, but they need to realize assets to obtain cash [12]. If informed investors face a liquidity problem and for that reason disinvest in a certain market, the less informed investors may erroneously conclude that this disinvestment reflects some bad information on
their part and that they are better off following suit. Furthermore, once they see a drop-in asset prices in one market, uninformed investors may decide to withdraw from other markets too if they think there is a risk of linkage between them. Since information is expensive and difficult to obtain, discriminating is easier, and so contagion may spread [36, and 45].

Major financial centers: When financial linkage is meager, contagion still may occur if a major financial center is experiencing a crisis. For example, a financial crisis in New York can spread to places in the rest of the world hardly having any financial connection to New York.

Even if countries or businesses in different countries are not directly linked through borrowing and lending, by export or import, by foreign direct investments or portfolio investments, they may be linked, for example, by a common lender. An example can be the Russian financial and economic crisis, which spread to Latin American countries even though trade or investment links were insignificant.

The Russian debacle led to the collapse of LTCM (Long Term Capital Management), an investment fund active in derivatives trading. Failure of an investment fund normally does not lead to financial crises. However, the counterparty losses were substantial and the total loss included a bailout which amounted to 4.6 billion dollar [10].

The bankruptcy adversely affected the US debt credit market and a credit crunch occurred. There were links through common lenders, but financial institutions were tightly dependent on each other in chains of credit, counterparty risk, and trust. Contagion means that one distressed financial institution can drag down other otherwise healthy financial institutions. If an affected financial institution has counterparties who suffer losses or if the counterparties just distrust the affected financial institution, it can slow down or disrupt normal trading and lending patterns. In the worst case, there may be a domino effect and more and more institutions are severely affected [2]. Latin America was severely affected by the loss of appetite for risk.

Different financial institutions do not understand; they do not see the bigger picture, or they possibly cannot act to provide common good, so they cut ties to other financial institutions making the situation worse. If they could continue doing business, they might rescue, or at least limit, the loss for the system as a whole. The reason for the behavior is that it is impossible to internalize the positive externality [51].

Real linkage: If the United States experiences a crisis, Mexico will inevitably lose exports to the United States. It will result in falling employment, falling corporate profits, and failing financial institutions in Mexico.

The world’s financial centers, banks, companies, and economies are highly interrelated. It is through import and export, through foreign direct investments, through portfolio investments, through multinational companies, through international borrowing and lending, and through international financial markets with real and financial assets. If one financial institution fails and affects an important financial center for the region or, even worse, for the world, there will be a high risk of contagion.

The Asian crisis and its spread is a good example of contagion based on trade connections. Unless there is more to it than this real link contagion risk, decision makers can disregard the contagion. This contagion is business or industry specific and if a business or industry is underperforming, it will shrink and resources will be freed up for more profitable ventures [28].

Businesses or industries in different countries have business links not only through trade but also through financial links, such as financing, borrowing, lending, ownership interests, joint ventures, and strategic alliances. Therefore, the commotion will be much more severe since much more than trade linkage is disrupted and more difficult and time-consuming to replace. In the worst case, fully functional and healthy companies or industries will be dragged down in the general turmoil. The failing business may drag down other otherwise healthy companies through chains of borrowing and lending [35].

Wealth of decision makers: A bank whose capital is depleted by a crisis may become reluctant to give new loans and sell a part of its assets, both of which can result in reduction in the capital of all banks [35]. According to Mendoza, and Quadrini, [44], it applies specifically to financial crises in developing countries, where an internal or external economic shock lowers the value of collateralized assets, such as real estate. With falling asset prices, less capital must be allocated to that sector. Hence, the value of the assets in the sector may deteriorate further. Lorenzoni saw this as a “pecuniary externality” [41]. It means that investors do not understand that investing in good times means divesting in bad times. In other words, investing leads to liquidating assets when the market turns bad, thus making the market perform even worse. A financial, as well as biological, system based on positive feedback is inherently unstable.
4. The market system and contagion

The system interacts through information and change of wealth. In good times, sophisticated investors buy assets on margin, i.e. they borrow money from their stock-broker or investment bank. In good times, the initial margin requirement, as well as the maintenance margin, is low, thus you can buy a lot of assets with little own money or equity. If volatility in asset prices increases, the broker sees higher risk and he will change the margin requirements, which can be easily done since loans on margin are normally callable. Sophisticated investors must sell off some assets, which may lead to even higher volatility, as well as falling asset prices. The broker then requires even more in margin; some sophisticated investors receive a margin call and are forced to sell, and asset prices decline further. Then we have a downward spiral into the abyss. A crash in the asset market is imminent. The reason is not that fundamentals have changed but that liquidity has been removed. However, the lenders cannot see the difference and must react to protect the outstanding value of the loan versus the value of the collateral. Hence, they revoke their funds, and the liquidity suffers further [9].

The first view: the crisis and the contagion were the result of shifts in market expectations and loss of confidence of the market. Even though there were some imbalances and economic fundamentals deteriorated, the main reason of the crisis was investor panic [46, 42, and 14].

As an example, bad credit decisions in a bank can lead to substantial credit losses. A bank crisis is firm-specific. However, if we look at the banking system, we will notice that when one bank has credit losses, many more often follow. In other words, there is a systemic risk, contagion, and spillover from one bank to another. The concept is called bank herding, as all bank-run in the same direction like sheep [1].

Díaz-Alejandro, Krugman, & Sachs, and Izquierdo, Romero-Aguilar, & Talvi, stated [22, and 38]. It is worth considering that far from all currency crises turn into financial crises. An example is the failure of the European Rate Mechanism (ERM) from 1992 to 1994. Most countries’ banking systems managed it well, and the contagion between currencies, the financial sector, and the real economy did not happen. In some countries, particularly in Sweden and Finland, the contagion was severe, and it led to both a systemic banking crisis and a real estate crisis [32]. The concept of great depression means that aggregated supply suffers severely. However, that is not the definition of a financial crisis in its true meaning [37].

5. Case study, the Asian crisis

In 1997 the Asian crisis started in Thailand but spread rapidly. The older explanatory models of generation 1 and 2 did not fit the Asian 1997 crisis. Therefore, the Asian 1997 crisis is a good example as an illustration of contagion. A small local crisis in Thailand due to overinvestments in some sectors of the economy, a classical asset bubble in real-estate as well as in financial securities. The fact that the crisis spread does however not prove contagion. The fact that several countries had a crisis in the same time may be based on similar fundamental economic issues. That is if Thailand did not trigger a crisis the crisis would have started anyway but possibly at a later date. Foreign investors however surely will question neighboring countries if there is a bubble in one country. The soundness of previously made investments will surely be made. Kaminsky and Reinhart, [32], states that there is little proof of contagion in that there are little proof of contagion. The main implication is that Kaminsky and Reinhart discovered that the main reasons for the crisis to spread are fundamental economic links. The links are working through financial markets as well as by trade links.

The case of no or low contagion is found in the 1987 Wall Street crash of 1987 which had little impact outside the financial sector, while other crises are believed to have led to recession of the whole economy domestically and abroad. In general, if a crisis induces a flight to quality and a flight to liquidity, the amount of risk capital is diminished which in turn means less investment and less investments lead to lower economic activity [5]. Therefore, overall, the output of the economy must fall. There are some well-developed theories around this issue. For example, the Kiotake-Moore model states that minor shocks in the economy can become magnified by limits to credit and, therefore, lead to a large decline of the economy [7].

The other model is the “Third Generation Models of Currency Crisis”. The third-generation model is based not only on the financial theory but also on the behavioral theory. Governments guaranteeing banks will create moral hazard and banks will borrow cheaper abroad and take a currency risk. Now not only the banking system but also the country’s currency is jeopardized [10].

In short if systemically vital financial institutions are distressed, which increases the risk of contagion threatening the whole financial system, both healthy and unhealthy parts [50].

Financial contagion can have worsened an already troublesome situation. The Asian tigers, Thailand,
Malaysia, Singapore, Indonesia, Hong Kong, and South Korea economies had been growing at very high rates up to 9% per annum for a decade. In 1997 it came to an abrupt halt. Currencies fell, stock markets lost up to 70% of their pre-crisis values [30].

Contagion has been questioned both as a concept as well as for the Asian crisis of 1997. Forbes and Rigobon, [25] argues that contagion is a myth. It is the strong interconnectivity and dependence that causes a financial crisis to spread. Similarity and market interdependence creates the correlated movement between markets [25]. However, Baig, and Goldfajn, [4], demonstrated in the IMF staff paper, Financial Market Contagion in the Asian Crisis, that contagion is real. The evidence is based on the fact that they controlled for domestic news in their study of the contagion in the financial markets in Thailand, Malaysia, Indonesia, Philippines and South Korea. The major finding was certain correlation in sovereign interest spreads in addition to currency depreciations. For equity markets the contagion was less perfect and the evidence varied [4].

The External factors (in this case foreign factors) for the Asian 1997-1998 crisis were:

- Foreign investors’ loss of confidence due to the imbalance in neighboring countries with similar economic structures [39].

- It could be a case of contagion, which means that a currency crisis occurred in two or more countries simultaneously. One more example of this can be the ERM crisis in Europe in 1992. It can be explained by the fact that a crisis in one economy will alter the equilibrium in neighboring countries, and the difference between contagion (investor sentiment) and real connection between countries economy must be made [33].

- Real economic linkages would be referred to as a spillover effect showed how contagion alone could make an economy more vulnerable to a currency crisis [44].

The most obvious change of equilibrium is balance between cost and competitiveness. If a neighboring country devaluates its currency, then its exports tend to become cheaper, which in turn affects countries around with the same and similar export products [4].

International investors may shun a region after making losses in one country. If large investment portfolios are being rebalanced at the same time, it will lead to an increased outflow of money. Other reasons for withdrawing hot money may be to cover losses in other countries or to repatriate profits while there still is a profit (flight to safety, flight to liquidity and cash-in effects). One strong source of contagion is interbank lending, also referred to as a credit crunch, where available liquid funds diminish rapidly, sometimes to such an extent that it is not possible to obtain credit for sound and good investments. Cash is unavailable even for sound and good investments [5].

Other out-of-region investors, such as mutual funds, pension funds, insurance funds, etc., may look at a region and its various economies as one. Investors see only “South East Asia”, not Thailand, not Malaysia, not Singapore, not Indonesia as individual economies on their own merits. “If there is a hurricane in Thailand, then there must be at least a storm in Malaysia”. This phenomenon is called the “wake up call” effect. It also possibly shows that investors from far away may have lack of understanding of fundamentally different macroeconomic positions of individual countries. This might be common not only for the developing world but also for the developed world. An American investor sees Europe as one entity and a European investor sees NAFTA as one entity [17]. In conclusion, several different explanations for the loss of foreign investors’ confidence, both real and illusory, can lead to a confidence crisis and rapid capital withdrawals.

6. Contagion a reason of the Asian crisis?

Kaminsky, Lizondo, and Reinhart [31], made the overall conclusion that fundamental issues caused the Asian currency crisis in 1997. However, the following crisis symptoms and spread may very well be due to contagion.

Jeff Frankel and George Saravelos developed a model for leading indicators in 2010 [26], in their study they examined evidence from the 2008-09 global crisis. It is one of the several studies on early warning indicators trying to recognize variables that expose the occurrence of the 2008-09 Great Recession s. In November 2008, the IMF was asked by the G20 to conduct a study on early warning indicators to provide early warning on financial risk as well as macroeconomic risk. This increased the popularity of research in the field. Hence, it is of highest importance to see if such an exercise is useful and meaningful in explaining the 2008-2009 period. The Great Recession is a good crisis to evaluate due to its sheer size and data availability. The crisis hit broadly and worldwide in the same time frame. It was a true global crisis, where contagion (spill-over effects) can be evaluated.
Matthieu Bussiere and Marcel Fratzscher [11], developed an early warning systems. The main aim is to prove that their new EWS model is far better than the existing models. A secondary aim is to test economic and financial variables with an emphasis on contagion indicators to assess the level of transmission of financial and real economic impacts between countries. To test for contagion renders this model a generation 3 model.

To conclude, the authors have developed a new Early Warning System (EWS) and compared it to previously used models using data from 32 countries. The model solves the “Post Crises Bias” that binomial discrete models suffer from. The model also tests new significant economic variables, such as variables for contagion (financial interdependence). The model allows for the decision maker to adjust for risk aversion. The largest contribution is the development of the multinomial logit model, which has higher predictability strength than the binomial logit model. EWS models cannot substitute for sound judgment and policymaking [11]. The model falls into the category 3 models since it tests for contagion. Their conclusion is that the real economy is hurt by the contagion from the financial sector. Therefore, being able to forecast bank distress is of high importance for policy makers to help them lessen the impact or even avoid some banking crises.

The Asian crisis has been studied and is still interesting to study due to its issues of contagion between economies. Analogies to the 2007-2010 crisis with regard to contagion and falling asset prices are clear. Stock indices do to some extent include contagion; therefore, it is typical generation 3 model.

The South East Asian or Asian crisis has been studied well, and the conclusion to draw is that there are two views on how the crisis started. The first view, which was developed by Radelet and Sachs, Marshall, and Chang and Velasco [46, 42, and 14], is that the crisis started because of a change in market expectations, but the herd behavior that led to panic was the main culprit. The result was much worse than the underlying macroeconomic factors suggested. The regional contagion also worsened the crisis. In conclusion, market participants overreacted and created the crisis or at least worsened the crisis.

The second opinion is held by Davidson, Dooley, Corsetti, Pesenti, and Roubini, etc. [18, 23, and 16]. It states that weak macroeconomic situation and dysfunctional institutions are to be blamed for the crisis. The authors clearly state that there was a real reason for the crisis. The herding and panic surely made the crisis worse, but the underlying factors were enough to start a well-founded crisis.

The second view is most probably correct given the nepotism and the amount of over-investment in certain sectors of the economy in Thailand and Indonesia. However, South Korea does not fit the overall picture because of it being an industrial powerhouse.

7. Conclusions

It does seem highly likely that contagion played a major role in the United States and globally during the subprime crisis and the following Great Recession. A crisis in one country and in one sector of the economy has triggered a worldwide recession. It is possible that the recession would have taken place anyway. In that case the US subprime mortgage crisis acted like a trigger for the following crises including the European sovereign debt crisis. It is clear that the contagion, due to connectivity between financial market participants worldwide, was amplifying the magnitude and geography of the crisis. The world suffered systemic banking crisis and the aftermath is still not over. A second conclusion is that if different financial systems, like mortgages and the investment banking industry was somewhat more insulated from each other, a housing bubble most probably would have less severe consequences.

Also, it is clear from the studies that contagion did help the Asian crisis to spread and worsen the effects of the crisis even though there are no hard evidence that contagion actually caused the crisis.

8. How to avoid contagion

As a contrast, Slovakia with much less sovereign debt, less than 30% of GDP in 2008, (Ministry of Finance of the Slovak Republic, 2009), and well capitalized banks did not suffer as badly during the crisis of 2008-2009. Slovak banks financed mainly with domestic deposits did not suffer from capital flight. The liquidity in the banking system was sufficiently high. When the crisis peaked in 2009 also banks in Slovakia lost profitability and became more cautious. Slovakia did not experience a systemic banking crisis. The banking system in Slovakia had and have a high solvency ratio and own capital ratio therefore their ability to absorb losses are high [47]. To conclude; prudent banking minimizes the effects of contagion and the impact of external shocks to the banking system. While the banking system is not immune to external shock in the form of recession, well capitalized well managed banks provide strong protection against systemic banking crisis.
9. References


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