

Global Nature of the 2008 Crisis: Financial Contagion or Risk Panic?

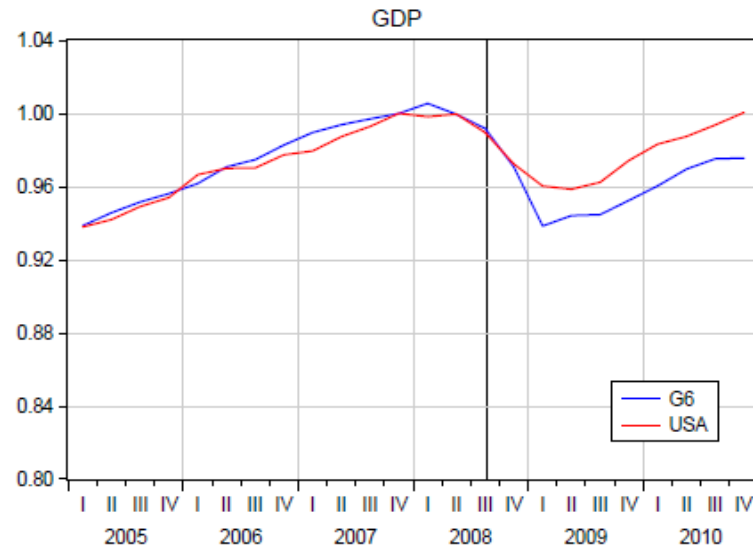
Eric van Wincoop
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The 2008 Crisis Was Global, with Similar Drop in Growth and Asset Prices in ROW as in U.S.

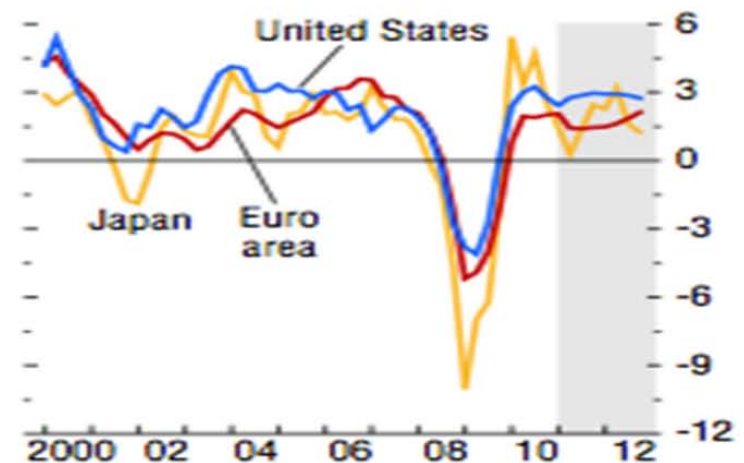
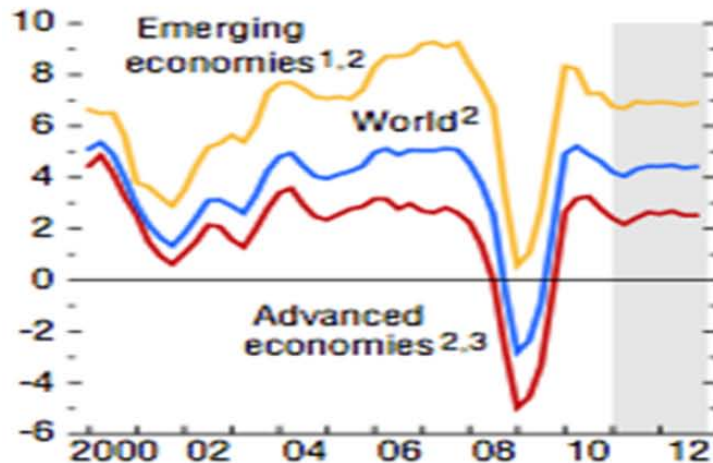


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GDP Level →

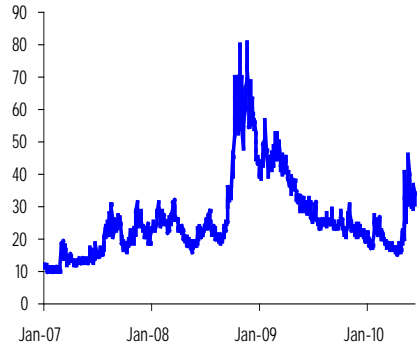


GDP growth rates →

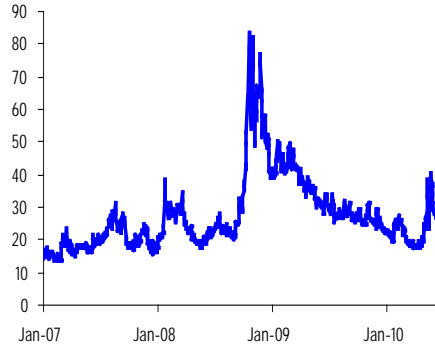


Spike in Risk was Also of Similar Magnitude

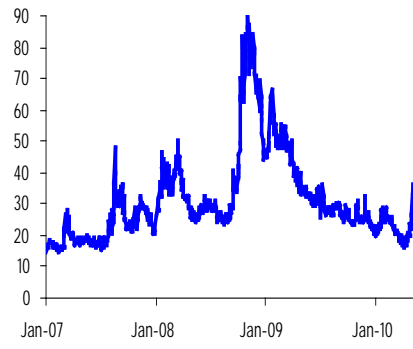
U.S.A.



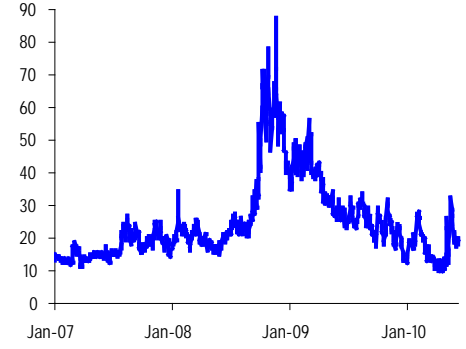
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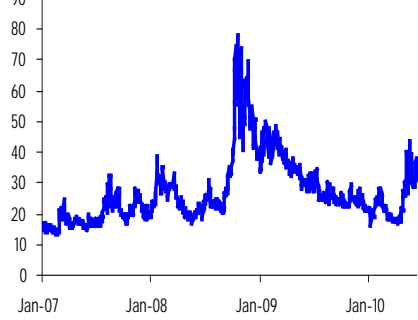
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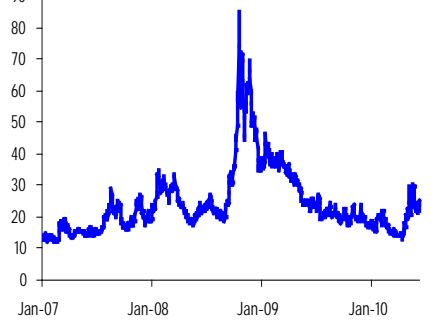
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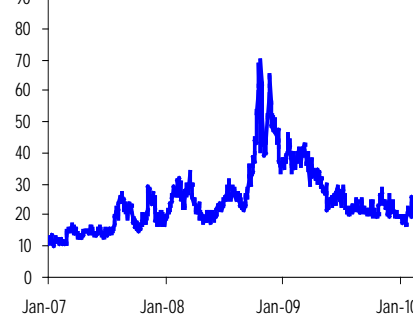
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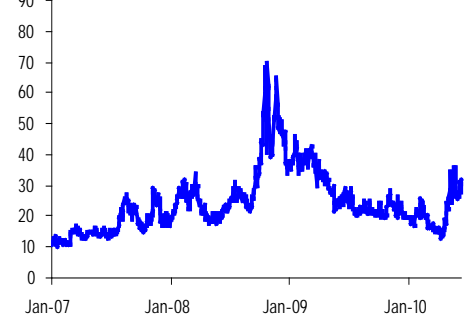
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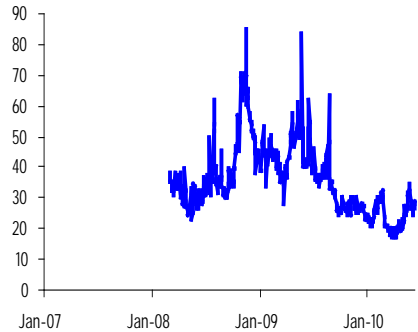
BELGIUM



NETHERLANDS



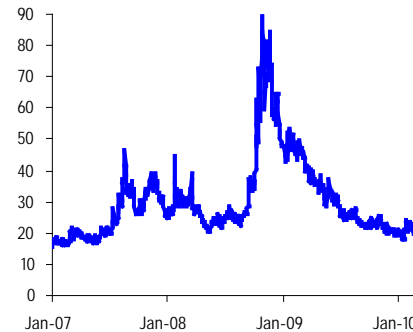
INDIA



MEXICO



SOUTH KOREA



SOUTH AFRICA



Why was the 2008-2009 Crisis Global in Nature?

- a widespread view is that the shock, originating mostly in the U.S., was transmitted through leveraged financial institutions
- seems like a natural storyline given the collapse of the U.S. financial system in the Fall of 2008 and the well known growth in cross-border bank holdings during the past two decades
- but there does not appear to exist any model that convincingly demonstrates how this would happen
- this may be because theory is slow to catch up with the facts
- but it may also be that international transmission mechanisms through banks are simply not strong enough

Why was the 2008-2009 Crisis Global in Nature?

- although I would love to see a model with transmission through banks that is strong enough to account for the global nature of the crisis , I'm going to express some reservations here
- I will argue that a global risk panic is more consistent with the facts
- in this case the close co-movement of asset prices and business cycles is not the result of transmission, but rather of a self-fulfilling spike in perceived risk all around the world that is coordinated around events in the U.S. watched all over the world in real time
- I will not touch on transmission through trade other than to say that strong home bias in trade makes such transmission partial at best

Transmission Through Banks

after the 2008 crisis a literature developed that explicitly introduced leveraged financial institutions into open economy DSGE models:

- Dedola and Lombardo (2010)
- Devereux and Yetman (2010)
- Devereux and Sutherland (2010)
- Kalemli-Ozcan, Papaioannou and Perri (2011)
- Kollmann, Enders and Muller (2010)
- Korinek, Roitman and Vegh (2010)
- Krugman (2008)
- Nguyen (2010)
- Perri and Quadrini (2011)
- Ueda (2010)

Transmission Through Banks

- in this literature leveraged institutions are usually modeled as holding domestic and foreign securities and loans on the asset side of their balance sheet and facing various borrowing constraints on the liability side
- the only difference relative to a standard consumer/investor in DSGE models is that this agent chooses a leveraged portfolio and is subject to a borrowing constraint
- a typical question is what happens when banks in a Home country are hit by a negative balance sheet shock
- you can think of this for example as mortgage defaults or a drop in the valuation of asset backed securities

Transmission Through Banks

2 drawbacks of this literature:

1. often complicated models with many things going on, so hard to understand and hard to teach
2. most of the papers do not explicitly address the topic of transmission or only do so under the assumption that banks across countries are perfectly integrated
 - if banks are perfectly diversified across countries in their portfolio or there exists just one global bank, obviously transmission is one for one
 - but that's not the world we live in

Transmission Through Banks

Frustrated, I wrote a paper on this topic myself, with 3 goals:

1. the model should be extremely simple, so I can teach it to my graduate students
2. it should have all the transmission channels identified in the DSGE literature, but in a more transparent way
3. it should give an answer to the question of how large transmission is under a reasonable calibration of parameters

Five Channels of Transmission

the channels of transmission are in five categories:

1. *direct exposure channel*: banks in the Foreign country have exposure to the Home assets on which defaults take place or ABS that are reduced in value
2. *balance sheet valuation channel*: secondary exposure channel.
 - as net worth of Home banks drops, they shrink their balance sheets, selling assets and reducing loans (this happens even without being subject to borrowing constraints)
 - the resulting drop in Home asset prices reduces the net worth of Foreign banks to the extent that they have exposure to Home assets.

Five Channels of Transmission

3. *portfolio growth or lending channel*

- reduction in net worth of Home banks leads to a drop in their demand for Foreign assets and lending to Foreign institutions
- this includes also a drop in lending through foreign affiliates

4. *balance sheet constraints channel*

- captures additional transmission as a result of borrowing constraints (consider both leverage and margin constraints)
- higher expected return on Home assets leads to an increase in desired leverage for Foreign banks, which tightens their borrowing constraints

Five Channels of Transmission

5. *portfolio reallocation channel* (not specific to banks)
 - lower Home asset prices (or higher Home lending rates) implies higher expected returns on Home assets
 - this reduces demand for Foreign assets, reduces lending to Foreign institutions

Transmission is Limited for Two Reasons

1. portfolio home bias

- all the transmission channels depend on the extent of cross-border asset holdings
- including foreign subsidiaries, about 85% of assets of U.S. banks are domestic
- in terms of direct exposure, Beltran, Pounder and Thomas (2008) report that 19% of U.S. ABS was held by foreign institutions in June 2007; similarly, Greenlaw et.al. (2008) report that 16% of U.S. subprime mortgage exposure was held by foreign leveraged institutions

2. leveraged financial institutions account for only about 15% of total financial asset holdings

- based on 2007 U.S. Flow of Funds data
- includes commercial banks, saving institutions, credit unions, finance companies, brokers/hedge funds, GSEs

Transmission

- I find that transmission is well below that seen in the data (30-50% at the very most)
- if we treat U.S./Europe jointly as the Home country (as most of the foreign exposure to U.S. ABS was in Europe), then transmission is even much smaller, even though the rest of the world was affected at least as much (stock prices, growth)
- also consistent with evidence by Rose and Spiegel (2010) and Kamin and Pounder (2010) that there is little relationship between financial linkages of countries with the U.S. and the decline in their growth and asset prices

Other Transmission Channels

- there may be important transmission channels that have been omitted from the recent literature of open economy DSGE models with leveraged institutions
- one limitation of the literature is that leveraged institutions in the models do not default (owned by agents that can always cut back on their consumption; there's no limited liability)
- once you allow for default, then there may be additional transmission channels associated with unsecured lending
- default of one bank can lead to default of other banks that lend to it, etc.
- Allen and Gale (2000) have a very stylized model of this type, where a bank run starting in one region or country can lead to a domino effect

Other Transmission Channels

- unsecured lending and the possibility of default can lead to additional transmission effects when introducing information issues
- with collateralized borrowing the extent to which a bank can borrow depends on the quality of the collateral that it can offer and therefore on its actual exposure to toxic assets
- with unsecured interbank lending this is not the case
- even if a bank does not hold any toxic assets, there is a “lemons” problem as potential lenders do not know what’s on the books; this can cause interbank lending to freeze up around the world
- there may be a further transmission channel when lenders start to have doubts about ABS in general, not just U.S. ABS

Other Transmission Channels

- it remains to be seen if these, and other, transmission mechanisms can explain the global nature of the crisis
- it is not obvious though by any means
- for example, why was Japan even more affected than the U.S., even if it had very little exposure to U.S. ABS?
- why did the extent of cross border linkages with the U.S. have so little effect on the extent to which asset prices and business cycles of countries were affected?
- why did the VIX spike so much and equally around the world?
- also, Hebling, Huiddrom, Kose and Otrok (2010) find that the decline in global credit can account for only about 10% of the decline in global GDP

Firms and the Credit Channel

- related to the last point, it is not clear that even for the U.S. itself a credit channel was key to the contraction
- this point has been made for example by Kahle and Stulz (2011)
- if a drop in bank credit were key to the sharp contraction that started in the Fall of 2008, we would have expected to see
 1. a very sharp drop in debt finance by firms
 2. an increase in net equity issuance
 3. a decrease in cash holdings
 4. more bank dependent firms to experience a larger drop in debt finance, investment and cash and a larger increase in equity issuance

Firms and the Credit Channel

- but the exact opposite was the case. We saw:
 1. a decrease in net debt issuance, but not to levels that are extreme outliers in a longer sample
 2. a drop in net equity issuance (instead of an increase)
 3. an increase in cash holdings of firms (instead of a decrease)
 4. these results are similar for bank dependent as for firms that rely less on bank finance
 5. the drop in investment of firms also depends little on bank dependence
- Kahle and Stulz argue that these facts are more consistent with a dominant role of a negative demand shock or spike in risk

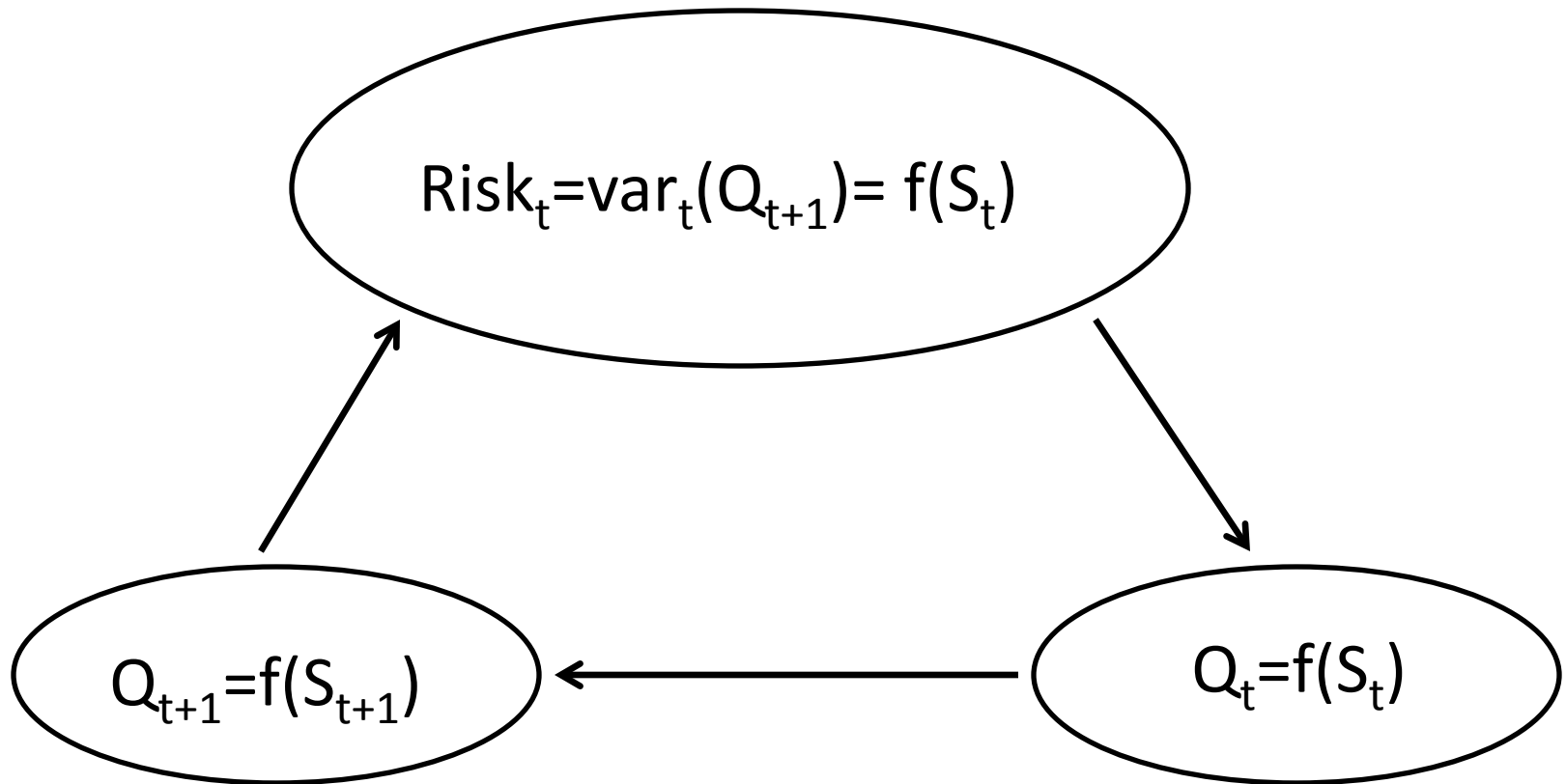
Risk

- with or without banks, there currently do not exist macro models that can account for the spike in risk of a magnitude that we saw during recent crises (quadrupling during the 2008 panic and tripling in May 2010 and August 2011 during the ongoing European debt crisis)
- in addition we need to understand why this spike in risk was similar across the globe
- there is by now a large literature, starting with Bloom (2009), which shows that uncertainty shocks can have a big impact on business cycles

Risk

- this is not surprising as higher risk lowers asset prices, reduces liquidity, raises precautionary saving and reduces investment
- the literature though focuses on exogenous changes in risk
- in recent work with Philippe Bacchetta and Cedric Tille we have developed a theory for self-fulfilling shifts in beliefs about risk
- to the extent that these are large we refer to them as risk panics, which involve a large spike in risk and sharp drop of asset prices

Self-Fulfilling Beliefs about Risk Caused by a Circular Relationship Between Stochastic Process of Asset Price Risk and Asset Price



Nature of Risk Panics

- there can be self-fulfilling shifts in risk coordinated around a sunspot or a macro fundamental
- in the latter case the macro fundamental takes on a role completely separate from its regular fundamental role by becoming a variable around which agents coordinate their perceptions of risk
- possible to have equilibria where a trigger event (Lehman Brothers failure) leads to a switch from regular fundamental equilibrium to equilibrium where a macro fundamental (net worth financial institutions or Greek debt) becomes a self-fulfilling barometer of fear

Nature of Risk Panics

- the trigger event leads to a sharp spike in risk that is bigger the weaker is the fundamental that becomes a gauge of fear
- after the panic the market becomes very sensitive to news about this fundamental
- in another paper Philippe and I have shown that such panics can be global as well
- in that case there is no transmission, but the weak fundamental becomes a focal point for fear all around the world, leading to strong asset price co-movement as the same events are observed everywhere in the world at the same time

Nature of Risk Panics

- this story has the advantage that it does not rely on financial linkages or trade linkages to explain the strong co-movement across countries
- it is hard to explain for example why the VIX in the U.S. moves almost perfectly with that in Europe during the current European debt crisis
- even recognizing linkages between U.S. and European banks, surely European banks are far more exposed to sovereign European debt than U.S. banks
- what appears to be going on is that sharp shifts in the VIX in the U.S. based on any information about Greek debt or bailout packages is driven by fear rather than the fundamental role of such variables

Other Self-Fulfilling Risk Story

- such self-fulfilling changes in beliefs about risk can occur in other ways as well
- one example, which is more closely related to business cycles than asset prices, goes as follows
- assume that some trigger event makes people scared and they believe that the future is more uncertain: more uncertainty about future wages and employment
- it is then optimal to increase precautionary saving
- this may be good for the individual household, but is bad for the aggregate economy
- it leads to a drop in output and lower profits

Other Self-Fulfilling Risk Stories

- firms then become more vulnerable (e.g. in response to liquidity shocks)
- this increases the risk of bankruptcies and associated declines in labor demand
- the increase in beliefs about risk then becomes self-fulfilling
- all that is needed is some trigger event to set this off
- the events in the Fall of 2008 offered plenty of ammunition
- such spikes in risk can account for the sharp drop in consumption and drop in investment (independent of the bank dependence of firms)
- it is consistent with the behavior of firms documented by Kahle and Stulz

Conclusion

- I want to emphasize that I'm not dogmatic about anything that I've said
- I'd be happy if someone convinces me that the 2008 crisis was global because of financial linkages
- right now such a model does not exist and I'm not convinced (yet) that it is possible to develop such a model
- the evidence appears more consistent with a global spike in risk coordinated around events in the U.S. in 2008 and more recently around events in Europe