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Editorial

Introduction to international financial markets and banking systems crises

Raouf Boucekkine [a,b,c], Kazuo Nishimura [d], Alain Venditti [a,e,*]

[a] Aix-Marseille University (Aix-Marseille School of Economics)-CNRS-EHESS, France
[b] Institute for Advanced Studies (IMERA), France
[c] Institut Universitaire de France (IUF), France
[d] RIEB, Kobe University, Japan
[e] EDHEC Business School, France

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ABSTRACT

This note introduces to the literature streams explored in the special section on international financial markets and banking systems crises. All topics tackled are related to the Great Recession. A brief overview of the research questions and related literatures is provided.

The Great Recession was initiated by the bursting of the housing bubble in the US in 2007, which was later followed by the financial crisis triggered by the bankruptcy of Lehman Brothers in 2008. While initially concentrated in the US, the recession have spread all over the world through the global financial markets integration. Most countries, in particular in Europe, have been affected, suffering in particular from large asset prices' fluctuations, liquidity crises and more generally from a deep and persistent macroeconomic instability. This special section is devoted to the analysis of a few key aspects of this major episode, some generic and other specific.

A fundamental inherent question is the transmission and amplification mechanisms linking the (international) financial markets and the real economy. Traditional models and methodologies along the line of the standard real business cycles literature can hardly explain extreme volatility spikes (see Kocherlakota, 2000 for an early illuminating empirical study). A new modeling and methodology are under way, and the first paper of this special section, Klimenko et al. (in this issue) presents a kind of minimal setting allowing to generate, via endogenous risk mechanisms, the persistence and volatility outcomes imperfectly replicated by the standard real business cycles methodology. The second paper, Fabbri (in this issue), addresses some specific aspects of international borrowing under capital collateral constraints. In particular, it highlights the fact that investment commitment (induced by capital collateral constraints) is hardly credible in an international context because there is no such thing as an international law court to which lenders can resort in case promised investment does not materialize. Starting with this observation, another financial friction is added (no-commitment) and its implications for macroeconomic instability are studied within a stochastic continuous-time model with some peculiar (and therefore nontrivial) features. The third contribution to the special section, Clain-Chamosset-Yvrard and Kamihigashi (in this issue), focuses on the international transmission of sunspot fluctuations. Although there exists an early literature analyzing the role of globalization and market integration in crisis contagion phenomena, including the spread of waves of pessimistic expectations as in the last Great recession, there is no piece of work shedding light on the consequences of the bursting of an asset bubble in one country on the financial markets in other countries. The latter job is done in the third paper of this special section. The two last contributions tackle, with novel theoretical models, two specific issues arising from the Great Recession: the credit crunch studied in Li and Wigniolle (in this issue) and the twin banking and sovereign debt crisis in Europe analyzed in Cheng et al. (in this issue) respectively.

* Corresponding editor.
E-mail address: alain.venditti@univ-amu.fr (A. Venditti).

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Financial frictions, Endogenous risk and economic crises

The role of financial frictions in the amplification of macroeconomic shocks has been the subject of a highly influential literature in the late 90s, with notably the seminal papers of Kiyotaki and Moore (1997) and Bernanke et al. (1999). A fundamental mechanism works through the net worth of levered agents: because the latter takes time to rebuild, transitory shocks may have a persistent impact on the macroeconomy since they typically affect the financial constraints faced by economic agents. Another critical amplification mechanism works through asset prices: when net worth of levered individuals drops, the prices of assets they hold also go down, which further depresses their net worth. The above mentioned literature has managed to evaluate quantitatively these mechanisms, typically within the discrete time dynamic stochastic general equilibrium frame. In particular, as in the traditional real business cycles methodology, the analysis is restricted to the (local) dynamics generated by (small) shocks to isolated deterministic steady states.

The macrofinance literature has very recently experienced a major methodological switch due to the works of Brunnermeier and Sannikov (2014) and He and Krishnamurthy (2012, 2013). Precisely, the use of stochastic **continuous time** modeling in the recent stream of papers has permitted two advancements. First of all, the scope for at least partial analytical solution is much increased with the latter modeling, especially if some linearity is introduced in addition to the traditional Brownian stochastic specifications.[1] Second and much more importantly, the new methodology departs from the local approach (around deterministic steady states) implemented in the early macrofinance literature (see for example, Bernanke et al., 1999): by construction, it allows to study dynamics outside the neighborhoods of steady states, which ultimately gives the necessary flexibility to characterize crisis times in terms of time length and magnitude of slumps.

Klimenko et al. (in this issue) is a contribution to this new trend in the macrofinance literature. The model proposed can be indeed viewed as a kind of **minimal** model within this literature. It is minimal for two reasons. First, it includes extreme financial frictions: no access to financial markets and no insurance against shocks. Second, in contrast to Brunnermeier and Sannikov (2014), there are no assets sales. Indeed, much in the spirit of Kiyotaki and Moore, Klimenko et al. consider two classes of agents, risk-neutral landlords and risk-averse farmers; farmers do not own land (and henceforth they cannot sell it) but they rent it from landlords. As a result, the minimal model is free of the mechanism playing through the downward pressure on asset prices outlined above. Indeed, the transmission mechanism in Klimenko et al.'s model is quite different from Brunnermeier and Sannikov's: because (in particular) farmers cannot borrow and have no collateral, the unique way for them to avoid defaulting is to adjust their activity to the level of their reserves (savings). Hence, macrodynamics do not arise as a result of shocks to notably the financial constraints faced by firms as in Brunnermeier and Sannikov (2014) but as mere responses to productivity shocks in the absence of collateral and even to access to financial markets.

This very simple structure (in addition to other appropriate specifications) allows Klimenko et al. (in this issue) to derive in closed-form the whole equilibrium dynamics while Brunnermeier and Sannikov only obtain a few partial analytical results and resort to numerical simulation. Moreover and more importantly, one of the nice results of the paper is that despite extreme frictions and the resulting elementary transmission mechanisms compared to Brunnermeier and Sannikov, the minimal model is still able to deliver the key generic dynamics outcomes that arise in the latter seminal work, in particular the paradox of volatility and the persistence of exogenous shocks. This is made possible because in both a specific endogenous risk engine is at work. This explains why in this class of models a lower exogenous risk can lead to the more extreme volatility spikes, the so-called paradox of volatility outlined by Kocherlakota (2000). Klimenko et al. (in this issue) make clear in their contribution why and how endogenous risk is working in their model and in which respects it differs from those isolated by Brunnermeier and Sannikov (2014) and He and Krishnamurthy (2012, 2013). Interestingly enough, they also show that the property of persistence of exogenous shocks may show up into the form of poverty traps in their model (low levels of savings and rental prices).

International borrowing without commitment and instability

Modeling borrowing constraints at the international level is tricky: in particular, the issues of collateral definition, seizability and commitment are noticeable (see Cohen and Sachs, 1986 for an early appraisal[2]). In particular, the commitment problem is quite subtle. Consider the case of capital collateral. If the collateral constraint is binding, one gets by mere time differentiation of the constraint that the only way to borrow more is to invest more, or in other words, additional borrowing should be backed by planned investment, which in turn involves a commitment assumption. While such an assumption seems reasonable as a benchmark in a closed economy, it seems most doubtful when the debt contract is decided upon by foreign lender. Following Boucekkine and Pintus (2012), a more realistic picture would be to assume that while borrowers cannot borrow against the promise to invest, they can borrow, however, if they document that they have invested in the past. This observation leads them to consider lagged capital as the collateral, the informational delay induced being inversely related to the borrowers reputation. International creditors then have to rely on limited information to choose how much to lend, and past investment is arguably a very relevant piece of information. When inserted into an otherwise standard AK model of a small open economy, Boucekkine and Pintus show that this departure from commitment has some dramatic consequences on macrodynamics[3]: Unstable growth regimes may set in mainly into the form of growth reversals and growth breaks, leapfrogging may arise as well. Instability occurs because of the interaction between the so-called *history effect* generated by the informational lag in the collateral constraint and the growth effect inherent in any AK structure. Such an unstable growth may occur even for small delays.

Fabbri (in this issue) extends the deterministic framework described just above adding uncertainty on net capital (domestic capital net of foreign debt). The main question is to which extent the history effect highlighted by Boucekkine and Pintus (2012) is affected by the exogenous volatility of net capital.[4] In other words, how do exogenous shocks interact with the endogenous fluctuation engine inherent in the history effect? This is a quite challenging question especially from the technical point of view. The analytical cost paid to address this question is the solution of an optimal control problem of a neutral stochastic differential equation, which is in itself an authentic *tour de force*. Fabbri (in this issue) is then able to show two important results. First of all, the total strength of the history effect (that is the impact of the whole historical data, as determined by the informational lag given, on the optimal path for net capital at any date) is not reduced

[1] For example, Brunnermeier and Sannikov (2014) use AK production functions.

[2] An earlier seminal paper is due to Eaton and Gersovitz (1981).

[3] Under commitment, one gets the typical picture for AK models: no transitional dynamics!

[4] Boucekkine et al. (2014) is an earlier stochastic extension of Boucekkine and Pintus (2012) but it assumes commitment, thus zero delay.

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