

Financial constraints and economic fluctuations

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The idea that the financial structure of firms together with the characteristics of their access to credit could be a major source of economic fluctuations dates back to the time of the Great Depression. Irving Fisher was one of the first contemporary scholars who tried to relate price deflations to reallocations of wealth from debtors to creditors leading to a fall in the overall demand. His work emphasized the high increase in the real burden of borrowers debt in the expansion preceding 1929: “The depression out of which we are now (I trust) emerging is an example of a debt-deflation depression of the most serious sort. The debts of 1929 were the greatest known, both nominally and really, up to that time”¹. Although these intuitions received less and less attention in the next generations of macroeconomic reflections, given the emphasis on the Keynesian-Monetarist controversies, there has been in the last decades a great resurgence of interest for the thesis that a deeper understanding of the nature of capital market imperfections may be significantly helpful in characterizing economic cycles.

Several approaches have been undertaken to support the celebrated Gurley and Shaw (1955) conviction that the way in which entrepreneurs decide to finance their production activities and interact with financial institutions is to be conceived as the main source of economic fluctuations. Despite their articulated and heterogeneous findings, the approaches share in common the reference to the intertemporal equilibrium methodology and the search for rigorous microfoundations.

Their main aim has been clearly stated by Gertler: “Modifying the Brock-Mirman framework - which would eventually become the core for Real Business Cycle theory - to consider financial issues was a formidable task (and remains so today). Modeling imperfections in intertemporal trade obviously requires having an environment where there exists motivation for trade; this necessitates to introduce heterogeneity among agents [...]. The representative agent formulation used in competitive growth models - and subsequently in Real Business Cycle theory - effectively abstracts from trade”².

Generally speaking, we may say that these studies mainly followed the most standard approach in business cycle theories. This corresponds to represent an intrinsically stable economic system which dynamics might become erratic and cyclical because of the impact of exogenous stochastic shocks. These shocks, either monetary or real, may crucially alter firms balance sheets, limiting in this way their access to financial

¹Fisher, (1933) p. 345.

²Gertler, (1988) p. 11.

markets. This is the reference framework of very influential works like Bernanke and Gertler (1988) and Kyiotaki and Moore (1997).

A somehow less popular research direction analyzed deterministic economies where the presence of asymmetric information in financial markets is responsible for the existence of endogenous business fluctuations. In such a perspective, the imperfect working of financial markets is an intrinsic source of instability that prevents economic dynamics from gravitating around its stationary position. In a series of contributions of the late 80s Micheal Woodford, among many others, argued that the explicit consideration of loan market imperfections could alleviate the lack of empirical relevance of the situations where competitive economies do exhibit endogenous fluctuations³. In the most recent years, a *deeper* representation of loan relationships, that is, an analysis of the allocations implemented by financial contracts under asymmetric information in credit markets, has been conceived as a natural reinforcement of this approach. One of the most important works in this direction has been provided by Suarez and Sussman (1997). Given a lender-borrower relationship subject to moral hazard, liquidity effects turn out to be the source of endogenous fluctuations in an economy where financing takes place through both external debt and internal revenues. Since firms' effort to subscribe good projects is a decreasing function of the amount of external financing, cycles may arise because of the dependence of internal liquidity on prices. During booms external financing will be more and more required, with the main consequence of amplifying moral hazard effects. This will prepare recessions.

The effort of integrating incentive problems in the study of economic fluctuations is anyway very recent. My research makes a step forward in such a direction suggesting the existence of a relationship between business cycle fluctuations and modifications in the structure of loan relationships. The aim is to provide a potential departure from the traditional corporate finance theories in showing that the characteristics of firms' capital structure (i.e. their debt-equity ratio) can be affected by macroeconomic conditions. I build on Suarez and Sussman by properly modelling a two-period financial contracting problem. The features of optimal securities issued at equilibrium are influenced by macroeconomic conditions, i.e. by equilibrium prices. In other words, asymmetric information in the market for loans is still responsible for endogenous fluctuations to take place at equilibrium, but we further

³The traditional explanations for the existence of equilibrium endogenous fluctuations were mainly concerned with the limits to intertemporal arbitrage due to agents impatience, short life-span horizons, strong income effects.

argue that business fluctuations affect the nature of firms' financing over time. As a by-product, the debt-equity ratio in the overall economy will vary according to the dynamics of aggregate variables. This argument contrasts pecking-order based theories of financing (Myers, 1984) that explain the composition of firms' external financing by looking at the agency costs faced by entrepreneurs-borrowers under asymmetric information. The idea that macroeconomic conditions are an important component of the debt-equity choice is receiving an increasing support, both in applied and theoretical studies (see Levy, 2001, for a survey). I consider a competitive economy populated by an infinite sequence of overlapping generations of borrowers-firms who live for three periods and produce only in the last two periods of their life. Borrowers hold a stochastic production technology but they do not have the resources to carry out their investment projects. The amount of external financing issued is determined by a financial contract signed by every generation of borrowers with a representative consumer-lender. If an optimal dynamic contract exists, then at equilibrium young firms will issue repayments that resemble equity, while old firms will have an incentive to finance through debt arrangements. These alternative securities will coexist in every period: the presence of a dynamic contracting issue is responsible for such a co-existence, while the emergence of standard debt as an optimal arrangement comes from the introduction of a CSV problem. The main feature of our economy turns out to be the interaction between the dynamic contracting problem and the existence of finitely-lived firms. Such an interaction is the key to understand the role of liquidity and the potential alternance between debt and equity financing in our economy.

The next step of the thesis develops a more radical departure from the standard characterization of cycles: we try to contribute to a view that puts financial constraints at the root of out-of-equilibrium fluctuations arising from the incapability of the price system to coordinate the economy towards Pareto optima Walrasian equilibria. This way of thinking is closer in several respects to the first generation of non-linear endogenous fluctuations schemes as they were developed by Hicks, Kaldor and Goodwin. That is, it departs from the assumption that business fluctuations should be analyzed as an equilibrium phenomenon, thereby denying the traditional perspective that assesses them as a form of coordination failure. This conviction is actually shared by the Real Business Cycle as well as the recent endogenous cycle theories: "To a modern business cycle economist, the economy remains in continuous equilibrium along the adjustment path towards

the steady-growth time path. Any trajectory is called intertemporal equilibrium. On the contrary, earlier economists (and, for that matter, temporary equilibrium theorists as well) would have reserved the intertemporal equilibrium term for the single time path acting as an attractor for the other trajectories” (De Vroey, 2002, p.18). In other words, the domain of equilibrium analysis and welfare theorems has been extended to economies exhibiting persisting oscillations in output, employment, capital accumulation. The approach developed here represents fluctuations as an irreversible phenomenon arising in economies with a persistent lack of coordination over time: the role of credit becomes then crucial in guaranteeing that the economy could remain viable. The distinguishing feature of the approach is the development of a logical structure that allows for disequilibria to transmit from one period to the others, given the focus on a time-articulated representation of production. As a consequence, our work tries to investigate how the interaction between these variables may be at the root of the distribution of financial resources between construction and utilization of productive capacity.

The the thesis is organized in three chapters. The first one presents the basic schemes of endogenous fluctuations with imperfect financial markets and discusses the implications of asymmetric information in lender-borrower relationships on firms’ financing decisions. Emphasis has been given to the recent literature that defines financial arrangements as the equilibria of a *mechanism design* problem. The chapter aims at showing how the standard view adopted by macroeconomic models with imperfect financial markets is to consider the *form* of relevant financial security (debt, equity) as given. In other words, the design of an optimal incentive scheme under asymmetric information and the aggregate consequences of imperfect financial markets have up to now been treated as separated issues. The second chapter, “Financial contracting along the business cycle”, provides the original contribution mentioned before. Finally, the third chapter, “Credit cycles in a Neo-Austrian economy”, studies the role of financial constraints in a sequential economy. We build on the Amendola and Gaffard (1998) out-of-equilibrium scheme in modeling a form of external financing in the construction of new productive capacity. An important issue we tackled is to check whether the working of a market for loans, absent in the Amendola and Gaffard construction, might sustain the viability of the economy. In other words, we try to clarify the conditions ensuring that existence of external finance favors the balancement between

constructing new productive capacity and sustaining the existing one along an off-equilibrium economic evolution.

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