Financial fragility and mean-field interaction as determinants of macroeconomic dynamics: a stochastic model

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Abstract

Behaviour of firms and policy makers in context of uncertainty has been widely addressed in literature while few exceptions focus on how, in a stochastic environment, small idiosyncratic shocks can originate aggregate fluctuations [2, 3]. Even though a well established approach considers the firm as operating in a single isolated market [4], then it completely misses the fact that each of them is different from the others as regards financial structure and size. Therefore, their responses to shocks come out to be different and asymmetric. Moreover, firms are reciprocally linked, and their diverse reactions influence the whole system and, by this way, the behaviour of other agents, at micro, macro and meso level. The uncertainty about the final outcome is amplified by continuous feedback effects from aggregate level to firms. In this work we model an economic system populated by heterogeneous firms that, reacting to stochastic shocks to maximize their profit, modify the ratio among liabilities and equities. These variations influence the financial environment and the demography of firms population by mean-field effects [1]. At macro level this evolving optimization process gives rise to fluctuations of aggregate output level around its long-run path.

Keywords: business cycles, heterogeneity, financial fragility.

JEL classification: E1, E6

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