ABSTRACT

Declining economic conditions over the past several years have identified a disturbing trend; more and more households in the US are being pushed to the brink of financial insolvency. Current legal and market protections (including, but not limited to the use of collateral and mortgage insurance, consumer credit counseling and bankruptcy protection) provide relief after financial distress occurs, but do nothing to prevent the likelihood of distress. Recent research argues that the use of preventive measures are superior to ex post measures, but can only be implemented with the help of predictive models to identify at risk households. This paper uses tools drawn from evolutionary game theory, economics and public health to create a simple model of “financial epidemiology”, which illustrates the role that social dynamics play in shaping household financial decisions. The model facilitates the prediction of financial insolvency by constructing phase diagrams which illustrate “tipping points” beyond which households move down an inexorable path towards insolvency.

Keywords: Consumer Credit Counseling, Evolutionary Game Theory, Financial Distress, Financial Epidemiology, Financial Insolvency, Preventive Measures

INTRODUCTION

Recent economic conditions have placed many households in a precarious situation. Throughout the 1990s and early 2000s, households became accustomed to continuous economic growth, expanding job markets (and increased wages) and easy access to secured and unsecured credit markets. Consequently, while average household income grew substantially, so did assets, liabilities and interest payments (White 2007a,b). With the economic downturn that occurred after 2007, many households found themselves facing very different circumstances. Job markets tightened, wages leveled off, and unemployment rose markedly. Asset values, most notably home prices, declined. However, the debt service obligations for these expenditures remain, and in many cases have increased, especially for households who used non-conventional financing to purchase their homes. Thus, household net equity may become increasingly negative over time. As job loss and/or unexpected expenses (such as medical bills) reduce household income, or as increases in variable rate debt service payments rise (notably variable interest rates on mortgages...
and credit cards), many households are pushed to (or past) the brink of insolvency. For collateralized loans such as mortgages, the result is foreclosure and default. For unsecured (i.e., credit card) debt and/or very large outstanding bills (primarily medical bills), many households file for protection under the US Bankruptcy Code (usually under Chapter 7 or Chapter 13 of the Code) (Li, White & Zhu 2010).

In (relatively) competitive markets, such action is largely self-correcting, and the damage to social welfare and economic prosperity is minimized. The risk profiles of strategic defaulters and/or bankrupts increase, and they face reduced access to credit as well as higher interest rates. The bankruptcy process provides a minimum level of social insurance, which allows debtors with extreme insolvency to discharge some or all of their debt and re-establish themselves within a 5-8 year time span (White 2007 a,b). However, several sociological, institutional and policy-specific factors distort financial markets and prevent them from fully (or nearly-fully) self-correcting (Waller 2001; Adkisson & McFerrin 2005; Frank 2010; Starr 2010). One problem is that virtually all policies designed to ensure a minimum level of social insurance are ex post, and focus solely on ability to repay one’s outstanding obligations. This is problematic because the amount of the debt discharged (which ultimately determines the magnitude of the correction) is larger than under an ex ante policy regime. Additionally, it does not distinguish between households who are insolvent through poor financial management and those who simply faced an exogenous shock such as job loss or a health issue. Since social insurance is intended for the latter and not the former, the magnitude of the debt discharged is further exacerbated.

Another problem is that individuals in a market are impacted through insolvency-related externalities (Frank 2010; Li, White & Zhu 2010; Starr 2010). For example, consider a housing market (it is straightforward to extend this logic to other financial markets). When a household encounters financial difficulties and can no longer afford to make mortgage payments, the most common response is to liquidate the asset and pay off the loan. The asset is liquidated at a price dictated in the housing market. However, once a household in the local market defaults, market prices typically drop, and it becomes more difficult for others in the community to liquidate their assets at a price which covers their outstanding debt obligations. This increases the likelihood that these households will also default (Seiler, Lane & Harrison 2011; Agarwal, et al. 2012; Seiler, et al. 2012; Gangel, Seiler & Collins 2013). If this cycle continues, households rationally choose to default without attempting to liquidate the asset in the market, because market prices are sufficiently low as to guarantee that the loan commitment will not be fulfilled.

A third problem is what we refer to as a “social contagion”. Social scientists have argued for decades that people living in local communities measure their well-being, utility and/or self-worth relative to their peers; that is, by their (rank-order) “status” in the community. In a traditional setting, there is a very high (negative) stigma, or a change in (loss of) social status, incurred by defaulting on debt and/or filing for bankruptcy protection (Sullivan, Warren & Westbrook 1997, 2003). As long as only a small number of individuals in society endure this stigma, it continues to have negative consequences, because the majority of households in the community do not have to seek relief from their debt obligations. In other words, default is a stigma because it discriminates between members of the community. However, if enough individuals default and/or file for bankruptcy, it ceases to become a relevant measure of status, since most people bear the stigma, and by extension the stigma does not make those bearing it any different (worse off) than other members in the community. As such, there is a “tipping point” at which a potentially damaging behavior becomes socially acceptable. Since larger, more global communities pay the costs for the contagions in smaller, local communities, preventive measures to avoid reaching such “tipping points” can preserve social welfare and economic prosperity on the whole.

Recently, one manuscript argued that an efficient and efficacious approach to address
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