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Assessing bankruptcy reform in a model with temptation and equilibrium default☆

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ABSTRACT

A life-cycle model with equilibrium default in which agents with and without temptation coexist is constructed to evaluate the 2005 bankruptcy law reform. The calibrated model indicates that the 2005 reform reduces bankruptcies, as seen in the data, and improves welfare, as lower default premia allows better consumption smoothing. A counterfactual reform of changing income garnishment rate is also investigated. Interesting contrasting welfare effects between two types of agents emerge. Agents with temptation prefer a lower garnishment rate as tighter borrowing constraint prevents them from over-borrowing, while those without prefer better consumption smoothing enabled by a higher garnishment rate.

1. Introduction

Preferences that exhibit present bias have become widely used in economics. Based on the success of the models with present bias in replicating various dimensions of borrowing behavior, White (2007) argues that present bias is an important feature in constructing a model of bankruptcies for policy evaluation. In this paper, I construct a novel model in which agents with and without temptation coexist, agents optimally choose whether to default or not, and equilibrium default premium for consumer credit reflects default risk. I use the model to study macroeconomic and welfare implications of bankruptcy law reforms, in particular, the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA) enacted in 2005 to make bankruptcy law more creditor friendly and prevent borrowers from abusing the lax law and defaulting easily.

This is the first paper that extends the quantitative macroeconomic model with equilibrium default (Livshits et al., 2007 and Chatterjee et al., 2007) by introducing preferences featuring temptation and self-control (Gul and Pesendorfer, 2001, 2004a). Moreover, unlike papers studying macroeconomic implications of the model in which agents are subject to present bias, agents with and without temptation coexist. Using a calibrated model, I can separately analyze the implications of the BAPCPA and other bankruptcy law reforms, with a focus on heterogeneous effects to agents with and without temptation.

The calibrated model implies that the 2005 bankruptcy reform achieves what it is intended for — a reduction in the number of

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bankruptcy filings. The model also indicates expansion of borrowing because agents default less frequently under the reform, and thus a stronger commitment to repay yields lower default premia. In the U.S. after 2005, although it is difficult to separate the effects of the bankruptcy reform and those of the Great Recession, the number of defaults declined, and the charge-off rate seems to have declined, both of which are consistent with the model's predictions. The model predicts an expansion of credit due to the bankruptcy reform, while the U.S. debt-to-income ratio declined after a brief increase until 2007. The latter is most likely the result of the credit tightening after the Great Recession. Regarding welfare, the model implies that the overall effect on social welfare is positive, at 0.29 % of consumption growth. Agents suffer from higher bankruptcy costs and bankruptcy restriction imposed by the 2005 reform. Moreover, agents with temptation suffer from over-borrowing as a result of cheaper credit. However, the welfare gain associated with better consumption smoothing, thanks to lower default premia, dominates the welfare loss. Both agents with and without temptation gain from the reform, although temptation agents gain more as they tend to borrow and default more often.

Other counterfactual bankruptcy policy reforms that also discourage defaulting are also investigated. I find that usury law, which imposes a ceiling on loan interest rates, also results in fewer bankruptcies but yields a small but negative welfare effect. With a binding interest rate ceiling, the market of unsecured loans with high default risk disappears, which implies less default. However, agents who would benefit from taking such loans suffer from the disappearance. While the welfare effects to agents with and without temptation are similar in both the bankruptcy reform in 2005 and the usury law, I find an interesting contrast regarding the welfare effects of changing the income garnishment rate between the two groups of agents. Agents without temptation prefer a higher income garnishment rate because it implies lower loan interest rates and thus better consumption smoothing through cheaper borrowing. On the other hand, agents with temptation prefer a lower garnishment rate because it implies weaker punishment of default and a more strict borrowing limit, which helps them not to over-borrow. These contrasting welfare effects imply that, although the number of defaults declines at the optimal income garnishment rate of zero, the social welfare is non-monotonic and indicate that policy recommendations might be more subtle if we explicitly consider the possibilities that individuals with varying degrees of self-control against temptation coexist.

There is a long history of studies on preferences with present bias, but application to macroeconomics is a recent phenomenon. Building on pioneer studies of Strotz (1956) and Pollak (1968), Laibson (1996, 1997) introduces the hyperbolic-discounting preferences into standard macroeconomic models to investigate the role of present bias. Furthermore, Laibson et al. (2003) show that the hyperbolic-discounting model can explain why the majority of households with credit cards pay interest on the cards even if they have assets as well. On the other hand, Barro (1999) finds the observational equivalence between the neoclassical growth model with hyperbolic-discounting preferences and log utility and the same model with the standard exponential-discounting preferences. Krusell et al. (2010) investigate the optimal long-run capital income taxation in a neoclassical growth model with Gul-Pesendorfer preferences and find that it is negative, to incentivize agents with temptation to save more. İmrohoroğlu et al. (2003) find that unfunded Social Security could be welfare improving in an overlapping-generations model with hyperbolic discounting, by mitigating undersaving. By the same logic, compulsory savings floors can be welfare improving as in Malin (2008). In Nakajima (2012), a relaxed borrowing constraint could imply lower welfare if agents with temptation over-borrow. Akerlof (1991) and O'Donoghue and Rabin (1999, 2001) study cases in which sophisticated agents, who are aware of the time-inconsistent nature of their preferences, and naive agents, who are not, behave differently.

There is a recent development in the literature on the quantitative analysis of default. Athreya (2002) and Chatterjee et al. (2007) study the effects of a means-testing requirement for bankruptcy. Livshits et al. (2007) compare the economy with "fresh start" bankruptcy, which provides a better consumption smoothing across states, and the economy without bankruptcy, which provides a better consumption smoothing over the life cycle. Livshits et al. (2010) explore the causes of the rise in bankruptcies and debt since the 1980s. Narajabad (2012) and Athreya et al. (2012) study the role of the improved information technology used by lenders in explaining the rise in bankruptcies. Li and Sarte (2006) construct a model with bankruptcy under both Chapters 7 and 13. In a recent paper, Benjamin and Mateos-Planas (2013) explicitly analyze the choice between informal default (to stop repaying debt) and formal default (to file for bankruptcy). Mitman (2016) studies the interaction between bankruptcy of unsecured credit and foreclosure of secured credit. Li and White (2009) empirically show that there are interesting interactions between the two. Athreya et al. (2015) investigate the interaction between the 2005 bankruptcy reform and the Great Recession. Compared with the existing literature, the model developed in this paper does not include imperfect information, general equilibrium, multiple assets, choice of default options, or informal default, but none of the existing work investigates the implications of present bias to debt and default.

The remainder of the paper is organized as follows. Section 2 gives an overview of the environment surrounding consumer bankruptcy in the U.S. before bankruptcy reform. Section 3 sets up the model. Section 4 describes calibration. Section 5 comments on the solution method. Section 6 presents the main results, studying various policy reforms that affect borrowing and bankruptcy. Section 7 conducts sensitivity analysis. Section 8 concludes. Appendix A contains detailed information on the data on U.S. credit and default. Appendix B provides more details about calibration, while Appendix C describes the computational algorithm. Appendix D describes the calibration of the alternative models used for sensitivity analysis.

2. Consumer bankruptcy in the U.S.

This section provides an overview of consumer bankruptcy in the U.S. mainly before the BAPCPA was enacted in 2005. When a borrower of unsecured debt fails to repay his debt on schedule, creditors take various measures, such as garnishing labor income, to recover the unrepaid amount.[1] When the borrower files for bankruptcy, these attempts to recover debt are suspended. There are two major types of consumer bankruptcy: Chapter 7 and Chapter 13. Chapter 7, which is also called liquidation, allows debtors to clean up the debt after paying back a part of the existing debt using assets that are non-exempt. A debtor filing for Chapter 7 bankruptcy obtains a "fresh start" in the sense that once the Chapter 7 bankruptcy is in place, there is no future obligation to pay back the written-off debt. Chapter 13 realizes partial reduction of debt and rescheduling of its repayment schedule while allowing the bankrupt to keep their assets. Under Chapter 13, before the 2005 bankruptcy reform, the bankrupt could draw their own repayment plan over three to five years and, upon approval by the judge, reschedule the repayment plan according to the proposed schedule. However, under the BAPCPA, the bankrupt no longer draw the repayment plan themselves. See Section 6.2. The assets at the time of bankruptcy filing

[1] If a borrower stops repaying but does not formally file for bankruptcy, it is called informal default. Although Ausubel and Dawsey (2004) show that it is prevalent, for simplicity, I abstract from informal default in this paper.