The Growth of Unsecured Credit: Are We Better Off?

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The growth in unsecured credit over the past two decades has, because of current bankruptcy law, reduced the average welfare of the poor. This striking conclusion emerges from a model designed to maximize the benefits of both plentiful unsecured credit and lax bankruptcy law. Even exclusive concern for wealth redistribution does not provide self-evident justification for lax bankruptcy law in the face of the unprecedented expansion in unsecured credit occurring over the past two decades. Specifically, according to the model, the welfare of low-income, low-asset households appears to have fallen in response to the dramatic increase in the availability of unsecured credit that has occurred since the *Marquette* Supreme Court ruling in 1978. The driving forces behind this welfare decrease are, first, the role of lax personal bankruptcy law in thwarting debtors from credibly committing to repay debts, second, the premium that the poor must pay to borrow on unsecured credit markets, and third, the welfare loss from the imposition of deadweight bankruptcy penalties. Before discussing the model in greater detail, I will turn to a brief history of unsecured credit and personal bankruptcy in the United States.

The Supreme Court ruling in 1978 in the case of *Marquette National Bank of Minneapolis v. First of Omaha Service Corporation,* 439 US 299 (1978) was a watershed. This ruling against Marquette National Bank allowed a bank in nearby Nebraska, First of Omaha, to issue loans to residents of Minnesota at rates higher than the ceiling in effect in Minnesota; the maximum rate allowable in Nebraska was higher. Marquette argued that allowing First of Omaha to export loans to Minnesota would undercut Minnesota's usury

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restrictions. The Supreme Court saw otherwise and ruled that First of Omaha was within its rights to issue loans at rates exceeding Minnesota's ceiling. This ruling was critical to the growth of an organized unsecured credit industry in the United States, as it suddenly made a relatively risky form of lending profitable. Within two years, credit card lenders including Citibank and MBNA moved to states with the highest interest rate ceilings, such as Delaware and South Dakota, and began nationwide operations.

Since the 1978 ruling, low-income households in particular have seen their access to uncollateralized credit grow dramatically, principally via credit cards. The growth of this credit market enhanced the ability of U.S. households to deal with individual-specific and economywide risks by *conveniently* allowing them to borrow more when times are bad. The credit card industry, in particular, expanded enormously because lenders were given the opportunity to offer uncollateralized loans and short-term credit to those with little tangible wealth. This expansion of unsecured credit mainly affected borrowers with low tangible wealth. Others could credibly commit to repaying loans via collateral, making usury laws a non-issue. Those who could not credibly commit to repayment were most likely to be deemed unprofitable risks at interest rates below the usury ceiling.

Personal bankruptcy law has a major impact on the ability of unsecured borrowers to commit to repayment of loans. While intended to provide insurance against misfortune, these rules have the perverse effect of preventing borrowers with little collateral from promising to repay a loan. Those who hold collateral can and do avoid the constraints of bankruptcy protection and face lower borrowing costs as a result. Those with collateralizable wealth also obtain all the transactions benefits of credit cards without facing the annual fees and relatively low credit limits typically imposed on low-income credit card users. Therefore, the inability to commit to repayment even affects the distribution of pure transactions cost benefits made possible by recent rapid advances in payment card technology.[1]

The growth in unsecured credit has been accompanied by an unprecedented rise in personal bankruptcy, thereby making bankruptcy law relevant to welfare. The level of recent filings, currently greater than 1 percent of all U.S. households, has led to calls for more stringent law by some, but has been defended by others. The proponents of strict bankruptcy law argue that plentiful unsecured credit and lax bankruptcy law give debtors an easy way out.[2] Opponents argue that bankruptcy and easily available unsecured credit are like insurance and are therefore part of a larger social safety net. Both arguments

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[1] Very recently, the advent of debit cards/check cards has helped high-risk borrowers obtain transactions benefits without paying the fees intended to reveal their risk profile.

[2] See, for example, the contrasting remarks of Senator Charles Grassley (R-Iowa) and Senator Paul Wellstone (D-Minn.) in congressional testimony on the Bankruptcy Reform Act of 2000. The complete discussion is available at www.abiworld.org/debate/127.htm.

contain some truth, and it is therefore certain that the welfare gains from the increased availability of unsecured credit and additional implicit insurance available through bankruptcy are tempered by a default premium.[3]

The question we must ask, then, is the following. What is the net benefit or cost of the rapid expansion in unsecured lending that has taken place following the *Marquette* ruling? This question, first posed over a decade ago in the seminal and prescient work of Sullivan, Warren, and Westbrook (1989), has since gone unanswered.

To the extent that bankruptcy provides additional all-purpose insurance to American households, the rising rate of filings may simply represent a wider group of borrowers cashing in an implicit insurance policy. This policy, in turn, is priced appropriately by increased default premiums in loan rates. From this perspective, the rising level of filings may not be anything to worry about.[4] Those arguing for tighter personal bankruptcy law must show that the very option of easy bankruptcy retards the ability of households to tide over fluctuations in their incomes by making borrowing excessively expensive, or that easy bankruptcy lowers welfare by necessitating the frequent use of socially costly "deadweight" penalties. In what follows, I demonstrate that both of the preceding arguments can be made for U.S. households.

There has been no shortage of opinions on the impact of easy credit and bankruptcy on the poor in recent times.[5] Unfortunately, these views are typically based on anecdotal evidence or static empirical approaches. Such approaches typically cannot quantify the complex interactions between the widespread availability of credit, the bankruptcy system, the behavior of households trying to smooth temporary fluctuations in their income and employment, and the interest rates they pay to borrow. This article presents a simple, unified analysis of how changes in unsecured credit interact with bankruptcy law to affect consumer welfare. The framework provides a preliminary assessment of the net effects of the post-*Marquette* revolution in unsecured credit and the attendant revolution in personal bankruptcy.

The expansion of credit to low-income households and bankruptcy protection is most often defended as helping to protect the poor against bad luck and unscrupulous creditors. Therefore, this article stacks the deck in favor of generating a positive role for expanded unsecured credit and lax bankruptcy.

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[3] By "default premium," I am referring to the high interest rates paid by borrowers on the unsecured market relative to those paid by secured borrowers, as with home equity loans.

[4] An analogy can be seen as follows. In general, we do not question the appropriateness of allowing people to purchase hurricane insurance when we see people collecting on their policies after a hurricane. Perhaps the insurance feature embedded in bankruptcy is no different, but if not, why?

[5] See *The Washington Monthly* (March 1997), and, again, the testimony of Senator Charles Grassley (R-Iowa) and Senator Paul Wellstone (D-Minn) at www.abiworld.org.

To this end, I make three assumptions, discussed in detail later, that are designed to maximize the benefits of lax bankruptcy law as a means of wealth redistribution from the rich to the poor.

Surprisingly, despite such assumptions, the existing combination of easily available unsecured credit and current bankruptcy law is found to *reduce* welfare relative to the environment of tighter unsecured credit that prevailed before 1978. The real welfare loss comes from a subset of low-income, low-wealth households being prevented by bankruptcy law from credibly committing to repaying loans. One possible remedy is therefore to allow individuals to pre-commit to debt rescheduling instead of being forced into Chapter 7 liquidation.[6] The model also strongly suggests that U.S. households are actually less inclined to file for bankruptcy, all else equal, since the increase in filings is well accounted for by an increase in credit availability to low-income households. Therefore, contrary to the popular view, the stigma associated with bankruptcy appears to be as strong as ever.[7]

1.   *MARQUETTE* AND UNSECURED CREDIT

By making large-scale uncollateralized lending commercially feasible, at least in principle, the *Marquette* ruling set the stage for overcoming a "chicken-and-egg" problem facing payment cards in general and credit cards in particular. That is, how could an industry establish a large, smoothly functioning payment system when consumers would only hold a card that was widely accepted and merchants would bear the costs of entering the given payment network only if they felt that cardholding would expand sufficiently? As Evans and Schmalensee (1998, p. 72) argue, "less balkanization of state credit restraints set the stage for the marketing of payment cards on a nationwide basis. . . [and] by permitting a national market, *Marquette* probably enabled issuers to realize scale economies in marketing and processing costs, and thus to make payment cards more readily available to consumers across the country."[8] At the same time that the construction of a payments network began, a revolution in credit risk management in the form of "credit scoring" was underway. Credit scoring enabled credit issuers to predict fairly precisely overall losses on a large nationwide portfolio of cardholders while remaining probabilistically uncertain about the repayment behavior of any given cardholder. Credit scoring is an

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[6] Unfortunately, the difficulties associated with credible opt-out are daunting. In particular, Section 362 in the bankruptcy code makes opt-out essentially unenforceable (personal communication with Professor Joseph Pomykala, July 27, 2001).

[7] Bankruptcy stigma is defined as feelings of guilt and shame and dispproval from others.

[8] Although I will maintain the assumption of competitive credit markets throughout, the following caveat is warranted. To the extent that *Marquette* removed the last vestiges of market power by eliminating regional segmentation of credit market, the negative welfare consequences presented here may be somewhat moderated.

instrumental feature of today's credit market, and has allowed better pricing and increased availability of credit for all consumers, including those as seen as "risky."[9]

The interest rate ceilings in place prior to *Marquette* appear to have greatly limited the growth of this credit market. Canner and Fergus (1987) provide a careful empirical analysis of the likely effects of Senate bills S.1603 and S.1922. Each of these bills was aimed at imposing nationwide interest rate ceilings. Canner and Fergus argue that existing interstate variation in interest rate ceilings indicates that consumers in states with low ceilings face greater difficulty in obtaining loans and would suffer if nationwide ceilings were implemented. Their arguments are further buttressed by Villegas (1989), who cites evidence from the 1983 Survey of Consumer Finances that restrictive interest rate caps lower the availability of credit to high-risk borrowers, often those who are poorest.[10] Also suggestive is the dramatic increase in the number of credit cards held by U.S. households beginning in the period immediately following *Marquette*. In 1981, there were 572 million credit cards outstanding, and by 1987, this number had risen to 841 million. Lastly, the detailed empirical analyses of Evans and Schmalensee (1999), Black and Morgan (1999), Moss and Johnson (2000), and Ellis (1998), provide clear accounts of the disproportionately rapid increase in unsecured credit availability among those with low incomes. Given the preceding, a maintained hypothesis of this article is that the increased availability of commercial unsecured consumer credit did not simply displace existing informal credit arrangements, but substantially relaxed the liquidity constraints faced by poor households.

2. BANKRUPTCY FACTS

I will now briefly document the revolution in personal bankruptcy filing rates that has accompanied the revolution in unsecured credit. While business filings remained a negligible and steady fraction of the total number of bankruptcies, non-business filings have increased dramatically. First, as seen in Figure 1, total non-business filing rose from roughly 250,000 filings in 1980, just after the *Marquette* ruling, to roughly 1.3 million in each year from 1997 to 2000.[11] This is an increase in filing rate from roughly 1 in 400 households to more than

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[9] See Evans and Schmalensee (1998, pp. 95–97, 251).

[10] See also *The Economist* (November 1998), which details the stark differences in credit availibility on either side of the border town of Texarkana. On the Texas side, lending and purchases of consumer durables flourishes, while it stagnates on the Arkansas side.

[11] 2001 is already on pace to break all previous records, with the second highest number of filings ever recorded in the first quarter. Source: American Bankruptcy Institute, www.abiworld.org.

1 per 100 households.[12] The volume of debt discharged in these bankruptcies had grown to roughly $40 billion in 1997, 1998, 1999, and 2000.

The losses above arose primarily from what are known as Chapter 7 bankruptcies. A Chapter 7 filing removes all unsecured debt from the debtor's balance sheet in exchange for all "nonexempt" assets that are held by the household. Of the 1.4 million bankruptcies in 1997, over 70 percent—nearly one million filings—were Chapter 7 filings. The average debtor in a Chapter 7 bankruptcy defaulted on an average of $35,000 in 1997.[13] Chapter 7 filings alone led to losses of $36.4 billion. Although Chapter 13 bankruptcies essentially reschedule secured debts, and therefore result in very low losses of secured debt relative to Chapter 7 bankruptcies, they still result in the discharge of most unsecured debt. For example, in a study by Wharton Econometric Forecasting Associates (WEFA), in 1997, approximately 90 percent of the $6.5 billion in total unsecured debt in Chapter 13 bankruptcy was not repaid. For the purposes of this article, my focus will be on unsecured debt; therefore, I do not distinguish between Chapter 7 and Chapter 13 filings.

With respect to the identity of the filers described above, note first that the income gap between bankruptcy filers and average households reflects a systematic difference in occupational structure as well as education levels. Luckett (1988) finds that bankruptcy occurs most often among low-income individuals working in unskilled occupations.[14] Empirically, the link between low-mean income and high volatility is documented clearly in Kydland (1984) and will be the basis for my parameterization of labor income risk.

A large portion of bankruptcies result from the disruption of labor income due to job loss, sickness, or other factors.[15] In their landmark study, Sullivan, Warren, and Westbrook (1989) find that roughly 80 percent of bankruptcy filers in their 1981 sample reported an income change in the two years previous to filing. Of these, 62 percent had experienced a change in income of greater than 10 percent over the previous year, and of those whose income fell, the mean decline was 37.2 percent![16] Additionally, Sullivan, Warren, and Westbrook find that the median and mean incomes in their sample of bankruptcy filers

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[12] The median state in the United States had almost exactly one filing per 100 households in 2000. Source: American Bankruptcy Institute.

[13] Culhane and White (1999).

[14] Interestingly, Sullivan, Warren, and Westbrook (1989) also find that while the mean incomes of bankrupts are lower than average, the distribution of these workers by industry across the labor force mirrors that of the general population.

[15] See Sullivan, Warren, and Westbrook (1989, pp. 95–101, 187).

[16] To quote Sullivan, Warren, and Westbrook (1989), "these figures portray highly volatile income streams, making a mismatch between debts and income likely."

To be more precise, what is true is that a "mismatch" between debts and income is more likely *conditional* on a level of debt. However, the level of debt taken on by a household depends, among other things, on income volatility and bankruptcy law. Therefore, the *unconditonal* likelihood of a mismatch may or may not be more likely.

were both roughly two-thirds that of the average household. It is clear therefore that unsecured debt and bankruptcy protection together form an all-purpose insurance policy against the hardships caused by volatile and low incomes.[17]

Bankruptcy is not, however, an insurance policy given to households for free. Beyond increased interest rates on unsecured loans, there are four types of costs to the debtor associated with bankruptcy. First, and most importantly, bankruptcy results in at least some exclusion from credit markets. Second, there are costs associated with the surrender of nonexempt assets, and, more rarely, with possible future wage garnishments. Third, stigma appears to play a role (see Fay, Hurst, and White [1996] and Gross and Souleles [2000]). Finally, although they are usually small, there are explicit costs, such as those such as those arising from court dates or lawyer's fees.

In practice, bankruptcy almost never involves the transfer of assets or income from debtor to creditor. Over 95 percent of Chapter 7 bankruptcies are "no-asset" cases.[18] Almost all bankruptcy penalties levied on debtors filing for bankruptcy therefore constitute deadweight losses. Deadweight costs are important for two reasons. First, by construction, bankruptcy is typically used only by those who do not have a great deal of material wealth. Second, even when debtors have wealth at the time of filing, it is often difficult to seize it in the presence of various exemptions. Therefore, the only remaining route to arrange transfers from borrowers to lenders is via wage garnishing, which is rarely used.[19] The inability to seize future income further requires that the vast majority of penalties for bankruptcy be those involving punishment of the borrower *without* wealth transfers to the lender. The reliance on deadweight penalties clearly hinders the ability of bankruptcy to function as a welfare-improving, risk-bearing institution. This is an important part of the arguments for stricter, but finite, penalties for bankruptcy (see Dubey, Geanakoplos, and Shubik [2000]).

I turn now to a description of formal economic environments in order to study the consequences of alternative credit market arrangements, with specific reference to the growth of unsecured credit availability among lower-income households.

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[17] Such volatility may understate the full risk faced by the uninsured, as illness can cause shocks to expenses as well as income.

[18] See Sullivan, Warren, and Westbrook (1989, pp. 201–18).

[19] See again Sullivan, Warren, and Westbrook (1989, pp. 22–24). In particular, bankruptcy also stops garnishments.

3. A MODEL OF UNSECURED CREDIT AND BANKRUPTCY

My model is specifically aimed at understanding the welfare, price, and quantity consequences of the dramatic change in the distribution of unsecured consumer credit over the past two decades.

Preferences

There is a continuum of infinitely-lived agents with constant relative risk-aversion (CRRA) preferences. This standard formulation captures risk aversion, the desire for smooth consumption, and the concern households have for future generations. The parameter $\beta \in (0, 1)$ indicates the rate at which future consumption is discounted, and the parameter α indicates the risk aversion, as well the desire for smooth consumption over time. Expected lifetime utility is given by

$$E_0 \sum_{t=0}^{\infty} \beta^t \frac{C_t^{1-\alpha}}{1 - \alpha},$$

where c_t is consumption at time t.

Labor Income

There are two types of agents who will receive systematically different incomes over time. These differences are meant to capture the higher average income and lower income risk faced by skilled individuals. I further assume that the type of a household is unobservable to a lender. This assumption is plausible because credit reports do not contain labor income, other than self-reported measures *at the time of application*.[20] The type of household is denoted by $i \in I$, where $i = h$ indicates high average income households and $i = l$ indicates low-income households. The proportion of high-income agents in the population is denoted by ω, and low-income agents represent the remaining fraction $(1 - \omega)$ in the population. Labor income i is denoted by $\widetilde{Y}^i$ and can take on two values, Y_g^i and Y_b^i. The subscripts g and b denote income in the good and bad states respectively, and $Y_g^h > Y_g^l$ and $Y_b^h > Y_b^l$. Let mean income for type-l and type-h households be given by $\overline{Y}^l$ and $\overline{Y}^h$, respectively. Labor income also evolves smoothly over time in the sense that current (annual) income is helpful to an individual for estimating future income. I denote by p_{gg}^i the probability that income next period is good if income this period is

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[20] While it is true that a borrower may reveal some information on his or her type via serious deliquency behavior, this is typically too late for risk managment purposes. See Sullivan, Warren, and Westbrook (1989, p. 187) for more.

good. The probability of staying in the bad income state is given by p_{bb}^i. The forecastability of future income allows agents to plan savings or borrowing to keep consumption smooth.

Consumer Debt, Savings, and Intermediaries

Despite the large levels of default, the market for unsecured credit in the United States does function smoothly, and it is well characterized as a large competitive marketplace where price-taking lenders issue credit through the purchase of securities backed by repayments from those who borrow.[21] These transactions are intermediated principally by credit card issuers. The interest rates charged by credit card issuers are not individually tailored for each account but instead cover the aggregate default rate. The typical credit card contract is described by a fixed interest rate and credit line. Interest rates are typically rather insensitive to changes in individual debt levels, even though the marginal likelihood of default may change.

   Given the preceding, I assume that in order to smooth consumption, agents have access to competitive markets wherein they may borrow or save assets. An agent's financial wealth is denoted a_t, where $a_t > 0$ represents saving and $a_t < 0$ represents borrowing. Agents may borrow at the going interest rate on loans $(1 + r^l)$ or save by holding deposits at the interest rate $(1 + r^d)$. Note that the interest rate on loans does not vary with an agent's type, income, or current wealth level. This invariance reflects an assumption that lenders are unable to differentiate between households. Each agent of type i faces a borrowing limit $\underline{A}^i$.[22] Borrowing limits play a central role in the model, and I will study outcomes arising from a variety of values for them.

Bankruptcy in the Model

Bankruptcy works in the model as follows. When an individual files, his or her debts are removed and he or she is then penalized in two ways. First, an agent is prevented from borrowing (i.e., is borrowing constrained) for an uncertain length of time, although the average length of this period, ρ, is known to the agent. During this period of exile from loan markets, agents may still save to meet contingencies. After this time, they may borrow freely

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[21] A strong case can be made for the appropriateness of this characterization. See Evans and Schmalensee (1999) and the references therein. Lest one think that lax bankruptcy would be obviously desirable if the credit card industry were monopolistic, note that the brunt of high borrowing costs for unsecured credit are borne not by the wealthy, who have cheaper secured borrowing available to them, but by the poor and those with low collateralizable wealth. Therefore, the competitive assumption may actually make lax bankruptcy law easier to defend.

[22] As with incomplete insurance contracts, borrowing limits (the rationing of credit) can be derived from more primitive assumptions on the structure of information possessed by lenders and borrowers. We avoid this complication here and directly assume credit limits.

and are considered solvent. Agents in the borrowing constrained state are probabilistically returned to credit markets, whereby with probability $1/\rho$ they are returned to solvency (i.e., they are free to borrow and default in the following period), and with probability $(1 - 1/\rho)$ they are still restricted from borrowing or defaulting.

The second feature of bankruptcy in the model is that the filer is penalized in the ways discussed earlier. However, given that these penalties do not involve resource transfers, and given that the sum of these various penalties governs behavior, I employ a penalty levied directly on utility. I use λ^i to denote all costs of bankruptcy, in terms of utility, to a type-i household beyond those costs accruing directly from credit market exclusion; this includes legal fees and the psychic costs of stigma.

The combination of easily available unsecured credit and lax personal bankruptcy law is often seen as beneficial for the unlucky poor against the ravages of bad luck and greedy creditors. In order to give this view its best day in court, I proceed as follows.

Assumption 1 *Only low-mean income agents will choose to file for bankruptcy.*

Assumption 1 simply assumes that the cost of bankruptcy to high-mean income households is so high that they never declare bankruptcy. As was argued earlier, this assumption is supported by the evidence that filers have systematically lower paying occupations than non-filers (see again Sullivan, Warren, and Westbrook [1989]). Assumption 1 blunts the argument that we should tighten bankruptcy law to defend the poor from the excesses of the rich; this argument is frequently heard from proponents of tougher law whenever a high-profile case of bankruptcy surfaces.[23]

The Consumer's Choice Problem[24]

The consumer's choice problem is most naturally expressed recursively. Specifically, at a point in time an agent can be solvent (denoted S), bankrupt (denoted B), or borrowing constrained (denoted BC). The value to an agent of having a given level of current income, asset holdings, and credit market status (borrowing constrained or solvent) can be expressed in terms of utility from choices over current consumption/savings and credit market status (if solvent) and the expected future value of those choices. I restrict borrowing according to an agent's credit status as follows. For solvent agents of type

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[23] As in the cases of the actor Burt Reynolds and former Commissioner of Major League Baseball Bowie Kuhn.

[24] This section and the following section defining equilibrium may be skipped by those primarily interested in the results.

i, net assets must be greater than the borrowing limit, $\underline{A}^i_S$, and for borrowing constrained agents, $\underline{A}^i_{BC}$. There are no restrictions on savings.

Each period, given their current income and beginning-of-period assets, agents must choose consumption, c, and asset holdings, denoted a', to carry forward into the next period. Depending on whether they choose to be net borrowers or lenders, they face either the net rate of interest on loans r^l or on deposits r^d, where $r^l > r^d$.

When an agent is solvent and qualifies for bankruptcy protection, he or she must first choose whether or not to file and then choose assets subject to the constraints for solvent or borrowing constrained agents, depending on their default decision. I now introduce two pieces of notation. First, the vector (a, y) is an agent's current period state conditional on credit status. With this notation, the value of being solvent V^i_S is given as follows.

$$V^i_S(a, y) = \max[W^i_S(a, y), W^i_B(a, y)], \tag{1}$$

where W^i_S denotes the value of *not* filing for bankruptcy in the current period, and satisfies

$$W^i_S(a, y) = \max\{u(c) + \beta E V^i_S(a', y')\}$$

s.t.

$$c + \frac{a'}{1 + r} \leq y + a \tag{2}$$

$$a' \geq \underline{A}^i_S, \tag{3}$$

where r is understood to be the interest rate on loans r^l if assets are negative and the rate on deposits r^d if assets are positive.

Bankruptcy is relevant to only those with debts, i.e., to households with assets $a < 0$. When the agent files for bankruptcy, he or she has his or her debt removed, pays the cost of bankruptcy, λ^i, and is sent with *probability one* to the borrowing constrained state, where he or she obtains value V^i_{BC}. Therefore, the value of filing for bankruptcy, denoted W^i_B, satisfies

$$W^i_B(a, y) = \max\{u(c) - \lambda^i + \beta E V^i_{BC}(a', y')\}$$

s.t.

$$c + \frac{a'}{1 + r^d} \leq y \tag{4}$$

$$a' \geq 0. \tag{5}$$

To define V_{BC}^i above, note that agents in the borrowing constrained state are probabilistically returned to credit markets, whereby with probability $1/\rho$, they are returned to solvency (i.e., they are free to borrow and default in the following period), and with probability $(1 - 1/\rho)$, they are still restricted from borrowing or defaulting. Let $\psi \equiv 1/\rho$. Thus,

$$V_{BC}^i(a, y) = \max\{u(c) + \psi\beta EV_S^i(a', y') + (1 - \psi)\beta EV_{BC}^i(a', y')\}$$

s.t.

$$c + \frac{a'}{1 + r^d} \leq y^i + a, \tag{6}$$

$$a' \geq \underline{A}_{BC}^i. \tag{7}$$

I turn now to the definition of equilibrium in the model.

Equilibrium

The consumer choice problem above captures the decisions of a very large number of households. However, given the absence of perfect income insurance, households who have received many bad income shocks are likely to find themselves in debt, while those who have been lucky will hold perhaps large levels of savings. Their choices are governed by a *decision rule*, which, for a household of type i, specifies asset holdings as a function of interest rates, income, current assets, and borrowing constraints.

An equilibrium consists of a decision rule for each type of agent and interest rates r^l and r^d such that four requirements are met. First, given these interest rates, decision roles are optimal and feasible. Second, total economywide borrowing by households equals total economywide saving. Third, I restrict attention to steady state equilibria where the bankruptcy rate Π and fraction of agents in the population with a given level of assets are stationary, i.e., the same at every date. Fourth, I require that the spread between loan and deposit rates is such that financial intermediaries exactly cover their costs, given the observed bankruptcy rate.

Parameterization

The assumption of stationarity implies that the analysis here is appropriate as a study of two different long-run situations, one in the pre-*Marquette* era and one currently prevailing. The relatively flat bankruptcy rate over the past four years suggests that at this point in the post-*Marquette* era we may have attained a new steady state. Given the preceding, the overall strategy is as follows. I will first choose a set of parameters such that the equilibrium outcomes match

salient features of the pre-*Marquette* environment. In particular, I will set
the parameters to match bankruptcy filing rates in the pre-*Marquette* era. I
will then choose alternative values for the nonpecuniary costs of bankruptcy,
credit limits, and the parameter governing the average period that bankrupt
borrowers are excluded from the credit market, such that the model matches
outcomes in the post-*Marquette* world.

I am assuming that the post-*Marquette* expansion in bankruptcy rates
resulted from the increased ease with which borrowers who declare bankruptcy
are able to borrow again, along with an increase in borrowing limits and a
reduction in the costs of filing for bankruptcy, notably in terms of stigma.

All other parameters will remain fixed in both the pre- and post-*Marquette*
eras and are set to match certain statistics concerning income risk in the United
States. Specifically, the income processes are set to match observed persis-
tence and volatility by skill level, along with the observed skill-premium, and
are summarized in Table 1. For brevity, I do not give exhaustive details on
these parameters, but rather refer the interested reader to the detailed discus-
sions in Athreya (2000a,b), as well as to Kydland (1984), Heaton and Lucas
(1997), and Autor, Katz, and Kreuger (1998).

The welfare criterion used here measures the percentage change in con-
sumption, at all dates, that would make a household indifferent between the
pre- and post-*Marquette* eras. This increment/decrement to consumption is
denoted by ϕ. A negative value for ϕ implies that households are worse off in
the post-*Marquette* era, and a positive value implies the reverse. With respect
to the policies chosen by a society, if it turns out that the welfare of low-income
agents improves significantly under lax bankruptcy law, even if that of high-
income people worsens significantly, such a law may still be chosen. Given
this, Assumption 2 is the following.

Assumption 2 *Low-mean agents matter at least as much as high-mean agents
in measuring welfare.*

I also assume that even though only low-mean income agents go bankrupt,
creditors are unable to distinguish them from high-mean income borrowers.
That is:

Assumption 3 *Creditors are not able to price-discriminate between high-
and low-mean agents.*

This assumption implies the spreading of default costs not just across the
low-mean, high-volatility group, but across all high-mean agents as well. It is
in exactly this way that bankruptcy can redistribute wealth from rich to poor.[25]

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[25] See Sullivan, Warren, and Westbrook (1989, p. 187) for evidence that this is an appropriate
assumption.

By combining Assumptions 2 and 3 with Assumption 1, I effectively allow
for the most generous possible redistribution from high-mean income people
to low-mean income people.

Credit Market Exclusion

An important parameter in the model with respect to bankruptcy is the period of
credit market exclusion, ρ. While ρ is not easily observable, an upper bound is
ten years—the length of time for which bankruptcy remains on a credit record.
In current times (the post-*Marquette* era), the restriction on future borrowing,
denoted ρ_{post}, is certainly less than ten years, as evidenced by the growth of
sub-prime lending. Lenders in this market, while typically more expensive
than credit card lenders, still allow agents access to loan markets following
default or bankruptcy within a year or two. I err on the side of strictness in the
penalty and set ρ_{post} such that the average period of exile from credit markets
is four years. However, in the pre-*Marquette* era, exile for a period of ten
years may have been a reasonable estimate for the restriction on borrowing. I
therefore fix the pre-*Marquette* exile parameter ρ_{pre} to imply an average exile
period of ten years.

Nonpecuniary Costs and the Bankruptcy Rate

The parameters λ^i will be inferred by the level that it must take in order to
match observed bankruptcy filing rates in the pre- and post-*Marquette* eras,
given the applicable credit market penalties and credit limits. Assumption 1
simply requires that λ^h be set such that no high-mean income households files
for bankruptcy. The cost for low-mean income households, λ^l, is set to match
pre-*Marquette* filing rates and is then used in the post-*Marquette* era, where
it will be denoted λ^l_{fixed}. When λ^l is reestimated in order to match the filing
rate in the post-*Marquette* era, it will be denoted λ^l_{endog}.

In terms of bankruptcy rates, in 1978, the year of the *Marquette* ruling,
roughly 300,000 filings occurred in a 76 million household economy, which
implies a national filing rate of 0.4 percent.[26] In contrast, in 1998, total non-
business bankruptcy filings hit 1.4 million. Thus, of the roughly 100 million
households in America, 1.4 percent filed for bankruptcy, a nearly four-fold
increase since *Marquette*.

Credit Limits

Credit limits, while at the heart of this article, are not easily observed, and tests
for the presence of binding credit constraints are rarely definitive. For example,

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[26] Source: www.census.gov and abiworld.org.

observed credit lines do not tell us how much additional credit lenders may be willing to extend to households. We also observe true limits only for those who are denied further credit, a group that may not represent the majority of borrowers. However, that credit limits do bind for a subset of households is well established (see Jappelli [1989]). I therefore study outcomes under a variety of credit limits. Mean amounts discharged in personal bankruptcy in recent years have remained close to twice annual income, which motivates setting $\underline{A}^l_{s-post} = -2\overline{Y}^l$. With respect to high-income households, the model here assumes that they do not file for bankruptcy, so their credit limits are less important. For simplicity, I set $\underline{A}^h_{s-post} \approx -2\overline{Y}^h$.

To be consistent with the evidence discussed earlier, credit limits in the pre-*Marquette* era will be kept at least as strict as those in the post-*Marquette* era. Mean amounts discharged in bankruptcy were much smaller in the period immediately following *Marquette,* at close to annual income, than in current times. However, as hard data on credit limits is not available, I explore three levels, ranging from one-half of annual income in the benchmark case ($\underline{A}^l_{s-pre} = -0.5\overline{Y}^l$), to three-fourths annual income ($\underline{A}^l_{s-pre} = -0.75\overline{Y}^l$), and lastly to annual income ($\underline{A}^l_{s-pre} = -\overline{Y}^l$). The pre-*Marquette* limit for high-mean income households is also smaller than in the post-*Marquette* era, and is set such that $\underline{A}^h_{s-pre}$ is roughly one-and-a-half times (high) annual mean income. By setting $\underline{A}^l_{s-pre} = -0.5\overline{Y}^l$, the benchmark case considers the most generous increase in credit availability to low-mean income households. The set of fixed parameters is given in Table 1.

Results

The two main results of this article are as follows.

Result 1 *The stigma-related costs of bankruptcy have risen over the post-Marquette period, not fallen, as has often been suggested.*

Result 2 *The post-Marquette expansion in unsecured credit and current bankruptcy law have together actually lowered the welfare of low-mean income households.*

I begin by providing intuition for the first result. It has by all accounts become distinctly easier to borrow following a bankruptcy in the past decade, as seen in the growth of sub-prime lending, i.e., average credit market exclusion times have fallen. Given the fall in credit exclusion, the model may or may not be able to capture observed filing rates. Subsequently, I relax this assumption and compare welfare under states in a setting that allows for time-varying levels of these difficult-to-observe costs. When λ^l is reestimated in the post-*Marquette* period, it will be set to reproduce observed filing rates, given

Table 1 Fixed Parameters

Parameter	Value	Source
β	0.96	Aiyagari (1994)
α	2.00	
p_{gg}^{i}	0.74	Heaton and Lucas (1997)
p_{bb}^{l}	0.74	
Y_{g}^{h}	1.76	Kydland (1984); Aiyagari (1994)
Y_{b}^{h}	1.44	
Y_{g}^{l}	1.32	
Y_{b}^{l}	0.68	
$\overline{Y}^{h}/\overline{Y}^{l}$	1.60	
$\underline{A}_{s-post}^{l}$	$-2\overline{Y}^{l}$	Huggett (1993); Sullivan et al.
$\underline{A}_{s-post}^{h}$	$-2\overline{Y}^{h}$	(1989); Culhane and White (1999)
ω	0.386	Autor, Katz, and Kreuger (1998)
r^{d}	0.035	

the post-*Marquette* term of exclusion from credit markets. This reestimation will allow for the possibility that stigma effects may have changed in recent years, as recent work by Gross and Souleles (1998) suggests. In particular, the assertion that stigma has fallen over time can and will be directly tested by the reestimation of λ^{l} in the post-*Marquette* era. It turns out that even under the assumption that credit market exclusion continues for ten years, the estimated nonpecuniary cost for the pre-*Marquette* period implies substantially higher bankruptcy rates than have been observed. This result is displayed in Table 2 and is obtained by recomputing the implied penalties, beyond credit market exclusion, that are required to generate the observed filing rate in the post-*Marquette* period. I find that these penalties, when estimated in the pre-*Marquette* era and applied to the post-*Marquette* era, produce far too many filings given the current availability of unsecured credit.

The preceding is a surprising implication of the model, and it suggests that stigma effects haven't fallen in the manner often suggested. For an example of such a suggestion, see Senator Charles Grassley, who states in a May 17, 1997, PBS interview, "There is no shame anymore with bankruptcy" (in "Going for Broke," *A News Hour with Jim Lehrer transcript*, May 17, 1999). For a contrasting view, note the remarks of U.S. Bankruptcy Judge Joe Lee, who states, "I don't see many people cavalier about bankruptcy. The reason for so many bankruptcies is because consumer credit is so overwhelming" ("No More Stigma in Being Broke?" July 25, 2001, *Cincinnati Enquirer*). Anecdotal evidence suggesting that credit market exclusion may not be that

severe can be seen in the explosion of "no credit, bad credit, ... no problem" advertising populating late-night television.

To understand the second result, I now turn to the results of a quantitative exercise. The benchmark case evaluates the effects of increasing unsecured credit availability when the pre-*Marquette* credit limit for low-mean income agents is set at $\underline{A}^l_{s-pre} = -0.5$. The results are presented in Table 2. In the first column of Table 2, I report outcomes for bankruptcy rates, interest rates, consumption, and asset volatility for the pre-*Marquette* era. In the second column, I present the outcomes obtained from the post-*Marquette* environment, when the nonpecuniary costs of bankruptcy are held at their calibrated value from the pre-*Marquette* era. The third column also presents the results after the move to a post-*Marquette* environment; however, in this case the nonpecuniary costs are recalibrated such that the model matches the post-*Marquette* bankruptcy rate of 1.4 percent.[27]

I find that the interest rate on unsecured loans is 9.0 percent, close to its true value in 1980 (see Evans and Schmalensee [1999], p. 239). The coefficient of variation in consumption, denoted $cv(c_l)$ and $cv(c_h)$ for low- and high-mean income households respectively, is roughly one-third that of income for both high- and low-income households. The relatively low ratio of consumption-to-income volatility suggests that even with low bankruptcy rates, households do a good job of smoothing their consumption using asset markets, such as savings accounts and credit cards.

Turning to specifics, note first that as we move from the pre-*Marquette* era to the present, holding λ fixed, bankruptcy rates skyrocket, along with interest rates on unsecured loans. The bankruptcy rate reaches a counterfactually high level of 4.8 percent. The interest rate on unsecured loans is 18.6 percent, also higher than the observed rate of approximately 12.5 percent. The volatility of consumption rises for two reasons. First, as the loan rate rises, borrowing becomes less useful in smoothing. Second, and perhaps more important, is the discrete jump upward of consumption in the periods following a bankruptcy. That is, bankruptcy is an immediate discharge of debts, and thus net wealth rises sharply when a household files for bankruptcy, thereby inducing a concurrent rise in consumption.

The immediate impact on welfare is large. Under a welfare criterion where only low-mean income households matter, denoted ϕ_{low}, the welfare of the poor agent is reduced by an amount equivalent to taking away 3.51 percent of the household's consumption at all dates, regardless of income. Alternatively, the median household would experience a loss equal to an income reduction

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[27] Note that I model high-income households as having seen their access to unsecured credit grow. However, given the reliance of this group on secured debt, and the low incidence of bankruptcy in this group, it is not important that its ability to borrow in the unsecured market change across the pre– and post-*Marquette* eras.

Table 2 Results

	pre-*Marquette*	post-*Marquette* λ^l_{fixed}	$\lambda^l_{endog.}$
ρ	10.00	4.00	4.00
λ^i	0.60	0.60	1.48
$\underline{A}^l_s$	$-0.5\overline{Y}^l$	$-2\overline{Y}^l$	$-2\overline{Y}^l$
$\underline{A}^h_s$	$-1.5\overline{Y}^h$	$-2\overline{Y}^h$	$-2\overline{Y}^h$
Π	0.40%	4.80%	1.40%
r^l	9.00%	18.60%	11.60%
r^d	3.50%	3.50%	3.50%
$cv(c_l)$	0.125	0.212	0.118
$cv(c_h)$	0.051	0.051	0.051
ϕ_{low}	n.a.	-3.51%	-2.83%
ϕ_{equal}	n.a.	-2.52%	-2.02%

of roughly \$900. When the welfare criterion weights all households equally, welfare losses still fall, but by less, as seen in the row headed by ϕ_{equal}.

Consumption is much less smooth than before, and interest rates are far higher than the 9.0 percent level of the pre-*Marquette* era. Additionally, each of the large number of filings induces the imposition of nonpecuniary penalties, which, ex-post, imply substantial deadweight loss for society. When nonpecuniary costs are recalibrated, however, these welfare losses shrink somewhat, to -2.83 percent when the welfare of only low-mean income households is taken into account. Thus, although the recalibrated cost λ^l_{endog} is larger, at 1.48 relative to 0.60, the reduction in bankruptcy rates from 4.8 percent to 1.4 percent reduces deadweight loss substantially. In turn, interest rates on loans fall, from 18.6 percent under the pre-*Marquette* nonpecuniary cost of 0.60 to 11.6 percent. The consumption of high-mean income agents is much smoother in all cases, at 0.051.

Thus, with respect to the question of whether households are better off with the increased credit available today, even if it has brought with it more bankruptcy, the answer is "no." This result obtains even though three strong assumptions were made in an attempt to enhance the role of easily available unsecured credit and easy bankruptcy. Even when lenders are forced to price loans according to average behavior in the population as a whole, when only low-mean income households file for bankruptcy, I find that bankruptcy lowers welfare. Furthermore, this result holds even when all welfare weight is placed

on the poor. The first reason for the fall in welfare is that households appear to smooth consumption fairly well without bankruptcy, so forcing them to buy the option to file is wasteful. Secondly, easy bankruptcy implies frequent use of deadweight penalties such as credit market exclusion and stigma. Such penalties reduce welfare when imposed after the fact. A third reason is that interest rates on loans rise dramatically, and when credit limits are increased, each bankruptcy discharges more debt than before. Therefore, similar bankruptcy rates may imply a substantially higher interest rate on loans.

The results above are quite robust to credit limits for the poor in the pre-*Marquette* period. As credit limits are relaxed, consumption becomes only slightly smoother, suggesting that even small amounts of credit are sufficient for patient consumers to effectively smooth temporary shocks. For conciseness, these results are not presented in detail here.

Stigma, Individual Debts, and Welfare

Interestingly, because it is hard to argue that credit limits are stricter now than in the pre-*Marquette* era, and equally hard to argue that exclusion from credit markets is greater now than before, we arrive at a somewhat contrarian position. The United States is far from being a country where stigma and personal shame have fallen and where everyone is out to exploit the bankruptcy system; instead, I find that *increased* nonpecuniary penalties, unrelated to statutory or creditor-imposed penalties, are necessary in order to explain observed bankruptcy rates. In particular, given the slow growth rate of real income among the unskilled, the rapid income growth of the skilled, and the rapid increase in unsecured credit, it is puzzling why more households, especially high-income ones, did not file over the past two decades. This strongly suggests that rumors of the demise of stigma and conscience are greatly exaggerated.[28]

A final point concerns mapping from individual circumstances at the time of a bankruptcy filing to inferences about the desirability of a bankruptcy system as a whole. In all of the cases considered in this article, households only filed for bankruptcy when they held the maximum allowable debt and were then hit by the low income shock. Despite the fact the only the "desperate" filed for bankruptcy in this model, bankruptcy protection was still found to be a welfare-reducing insurance system. Consider then the debate between Senators Charles Grassley and Paul Wellstone referenced in footnote 2. In their debate, much was made of the attitudes and circumstances of individuals in bankruptcy, as if these considerations immediately made clear the desirability or lack thereof, of bankruptcy. To the extent that the inability to opt out

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[28] As noted earlier, this result survives even if the credit market exclusion period is fixed in both eras at ten years.

of bankruptcy protection lowers welfare, seeing people in dire straits at the time of filing may simply suggest that deadweight and nonpecuniary costs of bankruptcy are so large that the institution of bankruptcy may well reduce aggregate welfare.

4.   CONCLUSIONS

The results presented here should be interpreted as a first estimate of the welfare consequences of the post-*Marquette* expansion in unsecured credit. The results demonstrate that the interaction of the post-*Marquette* expansion in unsecured credit with current bankruptcy law has led to a decrease in aggregate welfare. That is, expanded unsecured credit, when combined with lax bankruptcy law, helps some poor people at the expense of other poor people in a manner that reduces overall welfare. Strikingly, the results presented here may even understate the welfare costs of bankruptcy.

Perhaps a more subtle point is that in each of the experiments considered here, the households that filed had hit their borrowing constraint. However, while households are almost always in desperate straits at the time of bankruptcy, which might suggest that bankruptcy is being used wisely, this circumstance in no way implies that the system overall is welfare-improving. The penalties for bankruptcy are not definitively connected with the level of debt defaulted on. Therefore, rational households have incentives to carry large debts, although these incentives are balanced here by the possibility of having to service them. That is, the position of households at the time of filing may say precious little about overall desirability of the bankruptcy system. The latter has been a point of confusion in recent public debate.

The model developed here also strongly suggests that U.S. households are actually less inclined to file for bankruptcy, all else equal, than they were in the pre-*Marquette* era. That is, the increase in filing rates is well accounted for by an increase in credit available to low-income households. This result echoes the work of Ellis (1998) and Moss and Johnson (2000).

The results presented here are perhaps a lower bound on the welfare loss from easy unsecured credit and lax bankruptcy. Of the three assumptions used above, Assumption 1, that high-income households do not file for bankruptcy, is particularly important. While the assumption can be rationalized by supposing that high-income agents face large nonpecuniary penalties for filing, it is not statutorily accurate. High-income people can, if anything, file more easily than low-income people. The rich have smoother incomes, making exclusion from credit markets less painful for them. At present, the rich can get more credit, which will allow them to consume more prior to default. Therefore, there is something very intangible keeping bankruptcy rates from being much higher than they are.

In terms of the desirability of returning to a pre-*Marquette* world, the present-day environment is advantageous in that a large efficient payments network exists alongside substantially better credit risk management. The latter allows lending to a group that found borrowing difficult before *Marquette*. The downside of the current environment is that the mean level of consumption volatility is still higher than it would be in a world where individuals could credibly commit to repaying loans. Thus, the real welfare loss comes from a subset of low-income, low-wealth households being prevented by bankruptcy law from credibly committing to repaying loans. Additionally, the inability to impose penalties that transfer resources from borrower to lender necessitates high interest rates on unsecured credit and the frequent use of socially costly bankruptcy penalties. These latter penalties appear to render bankruptcy a fundamentally inefficient system for risk bearing. One possible remedy here is to allow individuals to *pre-commit* to debt rescheduling, rather than to let them be forced into Chapter 7 liquidation.[29] If pre-commitment to debt rescheduling in lieu of outright liquidation were allowed, those who wanted to retain the option to file for a Chapter 7 bankruptcy could be charged a higher price for the option, while others could opt out of Chapter 7 bankruptcy rather than being forced to pay for it as they are now.

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[29] However, see Jackson (1985) for an argument in defense of disallowing pre-commitment.

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