Redistributive Taxation and Personal Bankruptcy in U.S. States

Charles Grant *University of Reading*
Winfried Koeniger *Queen Mary University of London*

Abstract

Personal bankruptcy regulation and redistributive taxes and transfers vary considerably across U.S. states and over time. Our hypothesis is that both policies are imperfect substitutes in insuring consumption of risk-averse agents in incomplete markets. Exploiting data variation over time for 18 U.S. states for the period 1980–2003, we find considerable support for this hypothesis: redistributive taxation and bankruptcy exemptions are negatively correlated, and both policies are associated with more equal consumption growth.

1. Introduction

The volume of consumer credit, in part unsecured, has increased substantially in the last decades in the United States, and some borrowers of unsecured debt end up defaulting on their debts. Roughly 1.5 percent of U.S. households have filed for personal bankruptcy in each recent year and defaulted on approximately $120 billion in 2003, or $1,100 per household (see White 2006).[1] At the same time, the average prime-age U.S. household, with a household head between the ages of 30 and 60, received $1,000 in direct transfers per year (see Table 1). Hence, both bankruptcy regulation and redistributive taxes and transfers are important policies that affect U.S. households.

Besides the aggregate importance of both policies, there is substantial variation in the regulation of bankruptcy and redistributive taxes and transfers across U.S. states. For example, bankruptcy exemptions—the assets that may be kept by the debtor when he defaults on his debt—are generous in Texas where housing property is fully exempt regardless of value (although subject to an acreage limit) but redistribution through taxes and transfers is less pronounced. In contrast,

Koeniger is also a Research Fellow at the Institute for the Study of Labor (IZA), Bonn. We thank the editor Sam Peltzman, an anonymous referee, Giuseppe Bertola, Burcu Duygan, Hamish Low, Michelle White, Justin Wolfers, and participants at various conferences and seminars for very helpful comments.

[1] Empirical data on household portfolios show that bankruptcy is financially attractive for many U.S. households. See White (1998).

[*Journal of Law and Economics*, vol. 52 (August 2009)]

Table 1
Levels of Wages and Transfers (in 1984 Dollars) for Prime-Age Households in the Sample

	Average	Average If Received	% Who Receive
Wages	34,696	36,789	94.3
Social security	261	6,601	3.9
Supplementary security income	77	4,161	1.8
Unemployment or workers compensation	353	2,688	13.1
Public assistance or welfare	176	3,712	4.7
Food stamps	128	1,571	8.1
Total transfer	997	4,250	23.4

Source. Authors' calculations using reported responses in the 1980–2003 March supplements of the Current Population Survey (CPS), excluding the self-employed, farmers, and heads of households over age 60 or under age 30.
Note. Total transfer is the sum of social security benefits, supplementary security benefits, unemployment or workers compensation, welfare or other public assistance, and food stamps. The CPS questionnaire conflates social security benefits with railroad retirement income and workers compensation with veterans payments.

New York allows for much smaller bankruptcy exemptions but has a more generous redistribution scheme through taxes and transfers.

This paper argues that there is a simple economic explanation for this negative correlation between the two policies. If markets are incomplete (for empirical evidence, see, for example, Attanasio and Davis 1996; Blundell, Pistaferri, and Preston 2008), both policies help households to insure some of the income fluctuations that they are not otherwise able to insure. Both personal bankruptcy and redistributive taxes are attractive for agents in this second-best world, but the net benefits of each policy are reduced in the presence of the other. This is far from obvious since the bankruptcy exemption is crucially associated with intertemporal consumption smoothing (it is important only if agents save and borrow across time), whereas this is not the case for redistributive tax and transfer schemes. While, in principle, a tax system could be devised that replicates the redistribution implied by a bankruptcy law, this is not practically possible since it would require conditioning taxes and transfers on those who would otherwise default. For this, the government would need to know not only a household's current asset position but also information on consumption and saving, requiring knowledge of discount rates and expected future income.

Bankruptcy provides a fresh start for agents who have been hit by a sufficiently bad shock (see, for example, Rhea 1984; Jackson 2001; Hynes 2002). Bankruptcy provides insurance at a cost, however, since households receiving bad shocks can default, while households without bad shocks repay at higher interest rates. We argue that redistributive taxes and transfers make the fresh start less attractive because they eliminate some of the ex post inequality in gross income. Moreover, redistributive taxation decreases agents' expected differences in income across time and thus their desire to borrow. Besides these intuitive and straightforward mechanisms, even a very simple model points to more subtle interactions, as

both policies affect the bankruptcy decision and thus how banks price lending to households.[2]

The important contribution of this paper is that we provide empirical evidence on our hypothesis using data for 18 U.S. states over a long time period, 1980–2003. We construct new data on bankruptcy exemptions in these states for our sample period. We combine these data with measures for redistributive taxes and transfers and consumption data using the Consumer Expenditure Survey (CEX) and the Current Population Survey (CPS).[3] Since all our data have time variation, we can control for state-specific unobserved heterogeneity.

The empirical evidence supports our hypothesis. We find that the generosity of the bankruptcy exemption and the extent of redistributive taxes and transfers are negatively correlated, which suggests that both policies are substitutes in providing consumption insurance. Indeed, we find that both the bankruptcy exemption and redistributive taxation are associated with less inequality in consumption growth, which directly measures consumption insurance.

Of course, we are not the first to analyze bankruptcy or redistributive taxation in the United States.[4] For example, Gropp, Scholz, and White (1997) and Pavan (2005) investigate the effect of personal bankruptcy procedures on households' assets, Fay, Hurst, and White (2002) provide empirical evidence on the importance of exemptions for bankruptcy decisions, while Zame (1993) shows theoretically how bankruptcy can provide partial insurance against income fluctuations. In the context of the recent bankruptcy reforms, Athreya (1999, 2006), Athreya and Simpson (2006), and Chatterjee et al. (2007) calibrate numerical models to gauge how the benefits of bankruptcy compare with the costs, such as higher interest rates.[5] It is also well known that redistributive taxation provides partial insurance if financial markets are incomplete (see the seminal paper of Varian [1980] and the empirical evidence in Grant et al. [2008] and their references).

To the best of our knowledge, however, this paper is the first to jointly analyze the redistributive tax and transfer system and bankruptcy exemptions empirically. The evidence of Fisher (2005), for instance, focuses only on one interesting part of the policy interaction to show that more generous unemployment insurance is negatively associated with the probability of declaring bankruptcy, using the rather few observations on bankrupt households in the Panel Study of Income

[2] For a stylized model that shows under what conditions both policies are substitutes in providing partial insurance to consumers, see Grant and Koeniger (2008).

[3] We use income information in the Current Population Survey rather than the Consumer Expenditure Survey (CEX) (which is used for consumption) because of the larger survey size, so that state averages are better measured. Moreover, measurement error in income and in consumption will be uncorrelated if information is obtained from different surveys.

[4] Whereas the bankruptcy and credit of firms, taxes, and entrepreneurial risk taking have received attention (for example, Berkowitz and White [2004] and Cullen and Gordon [2007] and their references), there has been less research into the effects of these policies on the risk sharing of households.

[5] See also the analyses of Hansen and Imrohoroglu (1992) and Bertola and Koeniger (2007) on interactions between government redistribution and financial market imperfections.

Dynamics in the 1990s. The most important difference in our empirical work is that we are interested in directly quantifying the association of bankruptcy exemptions and redistributive taxes and transfers with consumption insurance. In order to have a sufficient sample size for U.S. states, we use CEX and CPS data that are repeated cross-sectional but for the 1-year panel component in the CEX. Furthermore, we construct a new measure for bankruptcy exemptions and a comprehensive measure for redistribution in terms of taxes and transfers that vary across both time and U.S. states.

The rest of the paper is structured as follows. In Section 2 we discuss the theoretical background. We describe the data and the consumer bankruptcy law in Section 3. We discuss the econometric specification in Section 4 and present our empirical results in Section 5 before we conclude in Section 6.

2. Theoretical Background

In this section we discuss the theoretical background that is useful to understand the empirical analysis (for a more formal analysis, see Grant and Koeniger 2008).

2.1. Consumption Insurance in a Given Period

Suppose that an agent receives an uncertain endowment and cannot fully insure that risk in markets. Instead, there are two policies that can partially insure the agent: bankruptcy with a level of exempt resources that cannot be touched by banks in case of bankruptcy (the exemption level), or redistributive taxes and transfers.

While it is obvious how taxes and transfers, which redistribute resources from good to bad states, can provide consumption insurance, this deserves some explanation for personal bankruptcy. The possibility of bankruptcy with a positive exemption level implies that agents find it optimal to declare bankruptcy if their endowment falls below a critical threshold. This critical threshold is endogenous and increases as the level of exempt assets rises. Higher exemption levels thus provide insurance for a larger range of endowments below that threshold, as the consumer can afford more consumption when he keeps his exempt resources and does not repay his debt. This insurance comes at a cost if the consumer's endowment is above the critical threshold. In equilibrium, the consumer pays higher interest on debt, as banks must be compensated for the higher default risk ex ante.

With concave utility, one would expect that redistributive taxes and transfers and bankruptcy exemptions are imperfect substitutes in generating insurance in a given period. More consumption in bad states of the world (due to either transfers or bankruptcy exemptions) raises expected utility, but with strictly concave utility the marginal utility gain is lower if more is already redistributed toward these states. The interaction between the two policies, however, is a bit more subtle since redistributive taxes and transfers not only lower the marginal

direct benefit of bankruptcy exemptions but also change the threshold at which agents declare bankruptcy and thus the cost of the bankruptcy exemption in terms of higher interest rates.[6]

2.2. Beyond One Period

Bankruptcy exemptions and redistributive taxation not only interact in terms of providing insurance in a given period. Redistributive taxation can eliminate part of the intertemporal inequality of resources and thus the borrowing motive. Less borrowing obviously makes bankruptcy less important for insurance purposes. Ultimately, it is an empirical question whether redistributive taxes or transfers and bankruptcy exemptions are imperfect substitutes in providing consumption insurance in incomplete markets.[7] We now provide empirical evidence for the following hypotheses:

Hypothesis 1. Redistributive taxes and transfers as well as bankruptcy exemptions provide some consumption insurance.

We test this prediction by estimating the association of changes in both policies with the standard deviation of consumption growth, which is a measure of consumption insurance.

Hypothesis 2. Consumption insurance provided by exemptions is less valuable if redistribution through taxes and transfers is more pronounced.

We test this empirically by investigating whether changes in both policies in U.S. states are negatively correlated.

It is important to note that in our empirical analysis we condition on the initial policies in all U.S. states since we include state fixed effects. Thus, we exploit the time variation of these policies to estimate the coefficients of interest.

3. Data

We have described the interaction between redistributive taxation and the level of bankruptcy exemptions in providing consumption insurance in incomplete markets. We now search for empirical evidence exploiting the variation in the two policies in different U.S. states between 1980 and 2003. We construct a panel of state-year cells using household data from the CEX and from the CPS.[8] As relatively few households are sampled in some states in the CEX, our sample

[6] These interactions are derived more formally in Grant and Koeniger (2008).

[7] Clear qualitative predictions are even harder to make if one considers the persistence of shocks. On the one hand, more persistent shocks increase the benefit from declaring bankruptcy ex post, but on the other hand, the costs of debt ex ante will also increase as banks price this risk. Our data do not allow us to explore the interaction of shock persistence and the insurance provided by both policies.

[8] Data limitations do not allow an analysis of household-level data. Available household panel data from the Panel Study of Income Dynamics (PSID) have too small a sample to investigate differences across states and time.

contains only households in the 18 largest U.S. states, which nevertheless cover the full range of U.S. states in terms of geography, taxes and transfers, and bankruptcy exemptions.[9] The states thus included are California, Colorado, Florida, Georgia, Illinois, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New York, New Jersey, Ohio, Pennsylvania, Texas, Virginia, Washington, and Wisconsin.

For our analysis, we need to summarize taxes and transfers, bankruptcy exemptions, and consumption in each state and year. When constructing these measures, we apply the same sample selection criteria. We restrict the sample to those households with complete state information and a head of household who is between 30 and 60 years old. Farming households are excluded since they have their own bankruptcy regulations. As is frequently done in the literature, we also exclude the self-employed since differences between business and personal income are hard to distinguish for these households. Furthermore, we are interested in consumers' risk and not entrepreneurial risk, and self-employed households have motivations for borrowing other than consumption smoothing.

3.1. Consumption

We use the CEX to construct a measure of nondurable consumption and debt for each household. The survey is constructed as a rotating panel in which households are interviewed five times at quarterly intervals (although no information is reported for the first interview). Each quarter, households that have reached their fifth interview are replaced. The CEX contains extremely detailed information on the individual items of consumer spending as well as demographic and other characteristics, including the state of residence. Consumption growth for the households is calculated as the difference in log nondurable consumption in the second and fifth interviews.

We use the standard deviation of consumption (measured in 1984 dollars) and consumption growth within a state-year cell as measures for consumption insurance. The standard deviation of consumption measures the cross-sectional level of consumption inequality. This is a rather imperfect way to proxy consumption insurance because it does not distinguish between ex ante and ex post inequality. Deaton and Paxson (1994) note, however, that if markets are complete, then the cross-sectional distribution of consumption inequality should not change over time for a fixed-membership group. A useful corollary is that this cross-sectional measure should increase if markets are incomplete, as Deaton and Paxson find for the United States. Moreover, if shocks are the same across groups, the rate at which this inequality changes over time should be larger for those groups in which there is less risk sharing. While Deaton and Paxson look at the change in the cross section of consumption inequality, the same implications arise for the standard deviation of consumption growth: in complete markets, consumption should change for all households by the same amount.

[9] This consideration also precludes analyzing finer subgroups of the population within each state.

Hence, if consumption is growing by different amounts for different households so the variance of consumption growth is positive, then we can again reject the hypothesis of full insurance. Moreover, markets provide less insurance if the variance of consumption growth is larger.[10]

3.2. Income

We use the March supplement of the CPS to obtain information on household-level (labor) income and transfers (which include social security and railroad retirement income, supplementary security income, unemployment compensation, workers compensation and veterans payments, public assistance or welfare, and the value of food stamps received). This survey, managed by the Bureau of Labor Statistics, reports extremely detailed information on income as well as the households' other characteristics. Table 1 shows that nearly 95 percent of households in our sample receive some wage income, which averages almost $35,000. On average, households also receive nearly $1,000 in transfers (over $4,000 among the quarter of households who receive at least some transfer).

Using the CPS income data rather than the CEX data to construct measures for redistribution through taxes and transfers has several advantages. The CPS is a larger survey, hence cell averages are measured more precisely and the small-sample bias is reduced. Moreover, if both consumption and income are taken from the same sample, measurement error would affect the dependent variable as well as the regressor in some of the specifications estimated below. This would bias the estimates, with an ambiguous sign of the bias. Constructing the cell averages using different data sets circumvents this problem.

3.3. Redistribution through Taxes and Transfers

To measure the level of income taxes and transfers that each household pays or receives, we use the data from the CPS and exploit the TAXSIM 4.0 program developed by Feenberg (see Feenberg and Coutts 1993) that is available from the National Bureau of Economic Research (NBER).[11] The program TAXSIM uses a variety of household variables, including the husband's and wife's earnings, interest, dividend and other income, and information about the household's characteristics (such as the number of dependent children) and other deductibles (such as property costs) as inputs to calculate both the state and federal tax brackets, tax liability, and marginal tax rate for each household in the sample. It explicitly controls for a variety of allowances to which the household is entitled.

[10] Households in the CEX also report unsecured debt. The last column of Table 3 shows that the median household in all states has unsecured debts (the mean level of unsecured debt that households report is $2,151), which suggests that the bankruptcy exemptions are relevant for most U.S. households.

[11] We concentrate on income taxes that are raised at both the federal and state levels and exclude property and sales taxes in our measures of the tax system since they are largely levied at the county, school board, or city levels, which we cannot identify in our data. Note that the expenditures recorded in the CEX also exclude sales taxes.

Table 2
Income Thresholds for 1998 Federal Tax Brackets

Tax Rate (%)	Tax Bracket ($)			Households (%)
	Single	Married Filing Jointly	Married Filing Separately	
15	0	0	0	58.2
28	26,250	43,850	21,925	34.2
31	63,550	105,950	52,975	5.2
36	132,660	161,450	80,725	1.8
39.6	288,350	288,350	144,175	.3

Source. Authors' compilation using data from Federation of Tax Administrators (444 North Capital Street, N.W., Washington, D.C. 20001).
Note. The amounts for the tax bracket refer to the income at which the tax bracket starts.

Both federal and state taxes vary considerably across time and between households, and states set very different marginal tax rates and allowances. Table 2 displays the federal tax rates for 1 year in our sample, 1998. For example, the federal income tax rate in 1998 was 15 percent for single filers whose income was below $26,250 (the lowest tax bracket and the rate paid by nearly 60 percent of households) but increased in steps to 39.6 percent for those whose income was over $288,350. The brackets nearly doubled for couples filing jointly (each partner halved this allowance if filing separately) and vary substantially from year to year. Prior to 1996, the rate in the bottom bracket was set at zero, which meant that between 15 and 20 percent of low-income households paid no federal income tax.

There is also considerable variation in state income taxes. Eight U.S. states, including Texas and Florida, levy no state income tax. The other states have a variety of income tax brackets of differing progressivity. In most states the marginal tax rate increases with income. This is shown for a subset of states in the first, second, and third columns in Table 3. In California, for example, the tax rate is 1 percent in the lowest tax bracket and 9.3 percent in the highest bracket. Many states have tax allowances (which depend on whether the taxpayer has a spouse or other dependents), which can sometimes be quite large: Minnesota, for example, allows the first $2,900 to be exempt for single filers. Some states set a flat rate tax, however, without allowances: in Pennsylvania this rate is 2.8 percent.

It is possible to construct several alternative measures of the tax and transfer system that account for both federal and state income taxes and (in our preferred measure) for transfers. One measure is the mean marginal tax rate, which is often used to compare different tax systems (for instance, this measure is extensively summarized by Feenberg on the TAXSIM Web site at the NBER).[12] Table 3 shows that tax rates vary across some of the largest U.S. states for our sample (which restricts attention to those cases in which the head of the household is 30–60 years old). Texas and Florida have the lowest mean marginal tax rates, 19 percent, since they levy no state income tax and households pay only

[12] Daniel Feenberg, TAXSIM Related Files at the NBER (http://www.nber.org/~taxsim).

Table 3

Tax Redistribution and Bankruptcy Exemptions by State

	Taxes					Bankruptcy Exemptions ($)					
State	Rate Min Bracket	Rate Max Bracket	Exempt ($)	Marginal Rate	Income Compression	House 1984	Other 1984	House 1998	Other 1998	Fed	Debtors (%)
California	1.0	9.3	72	22.8	34.3	30,000	5,200	50,000	10,900	1984	59.7
Florida[a]				19.2	27.0	No limit	1,000	No limit	2,000	1979	55.5
Maryland	2.0	4.75	1,850	25.1	32.6	2,500	3,500	2,500	3,500	1982	62.9
Minnesota	5.35	7.85	2,900	24.6	34.3	No limit	6,500	200,000	11,050		69.4
New York	4.0	6.85	0	22.1	35.5	10,000	7,400	10,000	7,400	1982	51.9
Pennsylvania	2.8	2.8	0	21.0	29.8	0	300	0	300		62.2
Texas[a]				19.0	26.9	No limit	15,000	No limit	30,000		61.6

Source. Authors' calculation using the Consumer Expenditure Survey (CEX), Current Population Survey (CPS), National Bureau of Economic Research (NBER) TAXSIM, 11 U.S.C.A. sec. 522(d), and annotated state codes. Tax data are constructed using income from the 1980–2003 March supplements of the CPS, for heads of households ages 30–60, using taxes reported from the NBER TAXSIM program.

Note. The tax brackets are those applicable in 1998, while the exemption is the income exempt from taxation for single filers. The California exempt amount refers to a tax credit. Marginal rates and tax brackets are the means across households, and income compression equals 1 minus the ratio of the standard deviation of income after taxes (and transfers) to the standard deviation of income before taxes. The income compression measure accounts for both state and federal taxes. The bankruptcy exemptions are those applicable to single filers on January 1 in 1984 and 1998, and "other" is the cash value of all assets excluding housing and tools of trade. California refers to system I exemptions. "Fed" gives the year in which the federal exemption was not allowed, and "debtors" provides the proportion of households in the state with at least some unsecured debt.

[a] No state income tax.

federal income tax. The mean marginal tax rates are higher in Maryland and Minnesota, at around 25 percent, reflecting the higher level of state income tax.

The commonly used mean marginal tax rate, however, is rather unattractive since it does not capture the substantial heterogeneity in marginal tax rates across households in each year even in the same state. For example, a mean marginal tax rate of 20 percent could be due to a uniform marginal tax rate of 20 percent, to the top 20 percent of the population having a rate of 100 percent and the rest of the population having a rate of zero, or to the bottom 20 percent having a 100 percent tax rate and the top 80 percent paying nothing. These three tax schedules have substantially different implications for redistribution. Moreover, the mean marginal tax rate ignores the level of transfers that households receive. Thus, we construct a more direct measure of how much the tax system redistributes income, which we call the income compression measure:

$$1 - \frac{\mathrm{SD}_{st}(\mathrm{income}_{ist} - \mathrm{tax\ liability}_{ist} + \mathrm{transfers}_{ist})}{\mathrm{SD}_{st}(\mathrm{income}_{ist})},$$

where SD denotes the standard deviation, i the household, s the state, and t the year. This income compression measure compares the inequality in net and gross incomes for each state s and year t. If the inequality in net and gross incomes were the same (for example, if all households paid the same lump-sum tax), the measure would take the value of zero. If instead there were no inequality in net income but some inequality in gross income, the measure would take the value of one. Thus, increasing the amount of redistribution through taxes and transfers decreases the inequality in net income compared with gross income and increases the income compression measure of the tax system.[13] Table 3 shows that Texas and Florida again have the lowest level of redistribution using the new measure while the index is now highest in New York, Minnesota, and California. The ordering of states, however, is similar for the income compression measure and for the mean marginal tax rate (the correlation between the two measures is .78). Given the substantial heterogeneity in marginal tax rates and in transfers across households, we prefer the income compression measure.[14]

3.4. *Bankruptcy Exemptions*

Using legislative data, we construct the bankruptcy exemption level for each household in the CEX sample. To understand the variation in the data, we now

[13] If all households faced the same marginal tax rate and there were no allowances, the income compression measure would be equal to the marginal tax rate.

[14] Results for mean marginal tax rates are reported in Grant and Koeniger (2008). We also checked whether our results are robust if we use several other measures. We constructed a measure of income compression using the Gini coefficient rather than the standard deviation. This measure is constructed as $1 - \mathrm{Gini}_{st}(\mathrm{income}_{ist} - \mathrm{tax\ liability}_{ist} + \mathrm{transfers}_{ist})/\mathrm{Gini}_{st}(\mathrm{income}_{ist})$. Moreover, we experimented with an inverse poverty index, which was defined as one minus the proportion of households whose after-tax-and-transfer income is below half the median. Finally, we also experimented with an income compression measure based on standard deviations of the log of net or gross income. The results are similar when using these measures of the tax and transfer system.

give a brief overview of consumer bankruptcy law and the changes in the exemptions over time. Bankruptcy in the United States is regulated by the Federal Bankruptcy Act of 1978, which allows individuals from nonfarming households to file for personal bankruptcy under either Chapter 7 or Chapter 13. Under Chapter 7 of the act, the debtor has all his unsecured debts expunged (except alimony, child support, taxes, and student debts) but must surrender all his assets except those (deemed by the court) necessary for him to make his fresh start. These necessary assets are the exemption, with assets exceeding this value being sold and the excess amount used to satisfy the debt. Under Chapter 13, the debtor agrees to a repayment schedule for part or all of the debt but retains his assets. Crucially, the debtor could choose between Chapter 7 or Chapter 13 and thus could never be made to pay more than could be enforced under Chapter 7. This means that the Chapter 7 exemptions place an upper limit on the amount of unsecured debt that creditors can recover through the courts.[15]

Table 4 shows that the 1978 act allowed the house or homestead to be exempt up to the value of $7,500, while other exempt assets included a car of $1,200, household goods up to $200 for each item, jewelry up to $500, other property up to $400 (and any unused homestead exemption), and tools of trade up to $750.[16] If filing jointly for bankruptcy, federal law allowed the husband and the wife to each claim every exemption. The level of these exemptions has been revised periodically since 1978. The 1984 reform introduced an upper limit on the total value of exempt household goods and reduced the amount of unused homestead exemption that could be claimed for other goods, while the 1994 revision doubled the dollar amounts in each category.[17]

Because bankruptcy had traditionally been regulated by individual states, the 1978 act allowed states to replace the federal exemption levels with their own. All other aspects of the bankruptcy law, however, were uniform across states. Similar to the federal exemptions, most states specify a variety of goods that are exempt from seizure or forced sale, and some explicitly disallow the federal exemptions. Table 5 lists the state laws that define which assets are exempt, where these laws and the changes are taken from each state's annotated state code and from primary legislation.[18] The table shows that bankruptcy exemption levels change over time, albeit less frequently than taxes and transfers.

[15] Around 70 percent of personal bankruptcy cases resulted in a Chapter 7 filing. However, several courts preferred the debtor to file under Chapter 13, often enforcing purely nominal repayment schedules.

[16] This last item refers to work material or assets needed in order to practice professionally (some jurisdictions allowed this category to include transport to and from work). Throughout the analysis, we exclude the tools-of-trade exemption since it applies mostly to self-employed households, which are excluded from our sample. Including that exemption in our analysis does not substantively change the results.

[17] The most recent legislation, passed in 2003, lies outside our sample period and hence is not discussed.

[18] Hynes, Malani, and Posner (2004) show that the different levels of bankruptcy exemptions across U.S. states in the 1970s–1990s are highly correlated with their historic levels in 1920. These permanent differences across states are controlled for by the state fixed effects in our regressions.

Table 4
Chapter 7 Exemptions under the Federal Bankruptcy Act

Exemption	Amount ($)	Comments
1978:		
House	7,500	
Car	1,200	
Household goods		No limit on aggregate amount that can be claimed under this category
Jewelry	500	Personal use only
Other property		Allowed all of unclaimed exemption from the house
Tools of trade	750	Items needed for job
1984 Revision:		
Household goods	4,000	$200 Each item (furnishings, goods, clothes, appliances, books, animals, musical instruments) for personal use only
Other property	400	+$3,750 Of the homestead exemption that is unused
1994 Revision:		
House	15,000	
Car	2,400	
Household goods	8,000	$400 Each item
Jewelry	1,000	
Other property	800	+$7,500 Of the homestead exemption that is unused
Tools of trade	1,500	
1998 Revision:		
House	16,150	
Car	2,575	
Household goods	8,625	$425 Each item
Jewelry	1,075	
Other property	850	+$8,075 Of the homestead exemption that is unused
Tools of trade	1,625	
2001 Revision:		
House	17,425	
Car	2,775	
Household goods	9,300	$450 Each item
Jewelry	1,150	Personal use only
Other property	925	+$8,725 Of the homestead exemption that is unused
Tools of trade	1,750	

Source. Authors' compilation using 11 U.S.C.A. sec. 522(d).
Note. Section 104 of the U.S. Code specifies that the amounts are to be updated with the inflation rate every 3 years, commencing April 1, 1998. While not recorded, the federal legislation also allowed (with some limits) insurance policies, pensions and annuities, social security payments, and awards adjudicated by the courts to be exempted.

Table 3 displays some of the differences in exemption levels in the largest states for single filers in 1984 and in 1998. Many states allowed larger exemptions for couples, for older households, and for households with dependents. The table shows that the homestead was fully exempt from seizure in Florida and Texas (subject to an acreage limit). Moreover, in Texas in 1998, $30,000 worth of other assets were exempt, with the amount being doubled for couples filing jointly.

Table 5
Laws and Changes in Bankruptcy Exemptions

State	Annotated State Code	Changes	Fed
Federal	11-522(d)	1984, 1994, 1998, 2001	
California	704.010, 704.020, 704.030, 704.040, 704.060, 704.080, 704.730	1982, 1983, 1986, 1988, 1990, 1995, 1997, 2003	No
Colorado	13-54-102, 13-54-107, 38-41-201	1981, 1985, 1991, 2000	No
Florida	222.05, 222.25, Constitution 10-4		No
Georgia	44-13-1, 44-13-100	1981, 2001	No
Illinois	735-5/12-901, 735-5/12-1001 735-5/12-1201	1982	No
Maryland	11-504	1982, 1983, 1989	No
Massachusetts	188-1, 235-35	1983, 1985, 2000	Yes
Michigan	600.6023		Yes
Minnesota	510.01, 510.02, 550.37	1983, 1986, 1988, 1990, 1992, 1993, 1994, 1996, 1998	Yes
Missouri	513.427, 513.430, 513.440, 513.475	1982, 1993, 2003	No
New Jersey	2A:17-19, 2A:26-4		Yes
New York	CVP-52-5205, CVP-52-5206, DCD-10a-282, DCD-10a-283, DCD-10a-284	1982	No
Ohio	2329.66, 2329.662		No
Pennsylvania	8123, 8124		Yes
Texas	41.001-41.005, 42.001-42.005	1991	Yes
Virginia	34-3.1, 34.3.4, 34-26	1990	No
Washington	6-13-030, 6-13-020, 6-15-010	1983, 1987, 1991, 1999, 2003	Yes
Wisconsin	815.18, 815.20	1986, 1990	Yes

Source. Authors' compilation using 11 U.S.C.A. sec. 522(d) and annotated state codes.
Note. An alternative system that substitutes for federal exemptions is available in California. "Fed" indicates whether the federal bankruptcy code was allowed.

In Florida, in contrast, the corresponding exemption was up to $1,000 worth of personal property and a car worth up to $1,000, and households in Florida were not allowed to claim the federal exemptions. Minnesota allowed the homestead to be fully exempt in 1984 but later changed this to a maximum value of $200,000. The other exemptions increased from $6,500 to $11,050 during the same period (Minnesotan exemptions are adjusted in line with the retail price index every 2 years). Other states, such as Pennsylvania, set the exemption level much lower. In Pennsylvania, only $300 of property was exempt from seizure (although clothing was also exempt), but households could claim the federal exemptions, and obviously households would prefer to do so in this state. Maryland instead set a low bankruptcy exemption (the housing exemption was $2,500, and the other exemptions were $3,500) and did not allow households to claim the federal exemption. Maryland reduced the housing exemption in 1983 from the higher value of $3,500. Unless explicitly prohibited by state law, the debtor could choose between the federal and state exemptions, naturally choosing the larger exemption.

Table 5 shows that, for example, Massachusetts changed the level of the exemptions in 1983, 1985, and 2000, while the exemptions did not change in

Michigan. However, Michigan allowed the more generous federal exemptions to apply to Michigan residents, and these federal exemptions changed in 1984, 1994, 1998, and 2001. Thus, the exemptions that any household could claim changed at some point in almost all states in the sample, and in some states they changed many times (eight changes occurred in California and nine in Minnesota).

The courts, in most cases, have allowed each debtor to rearrange his portfolio of assets prior to default and substitute exempt for nonexempt assets.[19] Since there is considerable scope for substituting between assets when filing for bankruptcy, we added the exemptions together (excluding the tools-of-trade exemption) to construct a total nominal value of the exemption for each household. This value takes account of household characteristics such as marital status and whether the household would be better off claiming the federal exemption, should state law allow this. Since a household is allowed to claim the housing exemption only if it owns its house (either outright or through a mortgage), we added the homestead exemption to the exemption on all other assets only if a household owns its home.[20] Finally, we normalize the exemptions, dividing by the average income in each state-year cell, to measure the generosity of the exemptions in terms of mean income.

Bankruptcy exemptions have been shown to be important for the behavior of U.S. households. The portfolio of many U.S. households includes unsecured debt and positive asset holdings in more or less liquid form. On the basis of the Federal Reserve Board's *1995 Survey of Consumer Finances*, for example, White (1998) computes that 15 percent of households could have increased their net worth in 1995 if they had filed for bankruptcy. In this paper we are interested in quantifying the amount of consumption insurance provided by these exemptions.

Following this discussion of bankruptcy law and of taxes and transfers, we now use the constructed data set that contains consumption, consumption growth, bankruptcy exemption levels, and redistribution through taxes and transfers for households in 18 U.S. states during the period 1980–2003.

4. Econometric Specification

We estimate two different sets of equations. First, we estimate the relationship between bankruptcy exemption levels and our measures for tax and transfer redistribution to see whether these two policies are negatively correlated. We

[19] While there is a "substantially abuse" clause in the regulations, households were able to exploit the provisions of the Bankruptcy Act without regard to whether the household was genuinely unable to pay or to whether repayment would result in substantial hardship.

[20] A more detailed assessment of the household's asset position is not possible because of limited information in the CEX. If no specific upper exemption limit was defined for a category of nonhousing goods (for instance, Pennsylvania allowed "all necessary wearing apparel"), we assigned the maximum exemption level for that good in those jurisdictions that had a limit (see Grant 2008). In contrast, we add a dummy to the regression if the housing exemption had no limit.

then investigate whether this negative correlation can be rationalized by the consumption insurance that both taxes and transfers and the bankruptcy exemptions provide. For these regressions we compute the standard deviations of log consumption and of consumption growth in order to measure consumption insurance for each of the 420 state-year cells in our sample.[21]

We now discuss the econometric specification, using the regressions for consumption insurance that take the form

$$y_{st} = \beta_0 + \beta_1 \tau_{st} + \beta_2 x_{1st} + \beta_3 x_{2st} + f_s + \varepsilon_{st}, \quad (1)$$

where s is the state, t is the year, τ_{st} measures redistribution through the tax and transfer system, x_{1st} is the bankruptcy exemption, x_{2st} is a dummy for the unlimited homestead exemption, and y_{st} denotes the dependent variable. The error is composed of a state fixed effect f_s and an idiosyncratic component ε_{st}.[22] The state fixed effects capture fixed differences over time in within-state consumption inequality: they control for all remaining unobserved heterogeneity across states that is not accounted for by the policy variables. For instance, in the regression using the standard deviation of consumption growth rates, including state fixed effects controls for differences across states in the variance of permanent income shocks. Thus, the coefficients of interest are estimated using changes in states over time rather than differences across states. The state fixed effects are estimated by including state dummies in the regression, so consistent estimation of β_0, β_1, β_2, and β_3 requires a large number of time periods.

Including state fixed effects in the regression implies that β_3, the coefficient of the dummy for an unlimited homestead exemption, is identified only from states where this variable changed. In the data this happened only once, when Minnesota abolished the unlimited homestead exemption in 1993 and replaced it with a homestead exemption of $200,000. Hence, including this variable in the regressions is equivalent to inserting a dummy for pre-1993 Minnesota, so the coefficient on the unlimited homestead exemption dummy is not well identified. Thus, we do not place much emphasis on interpreting the estimate of β_3.

5. Results

In Table 6 and Table 7 we display the main results of interest in this paper. Table 6 investigates the correlation between the bankruptcy exemptions and the tax and transfer system, while Table 7 shows how both redistribution through taxes and transfers and the bankruptcy exemptions are associated with the standard deviation of consumption and consumption growth. These results shed

[21] As mentioned above, limited data availability does not allow an analysis at the household level. For additional results that show that the bankruptcy exemptions are positively associated with a household's unsecured debts, see Grant and Koeniger (2008). Redistributive taxes and transfers instead have no significant effect. Since the results are similar to those reported by Gropp, Scholz, and White (1997), they are omitted here for brevity.

[22] Note that the between-state variation affects the mean level of consumption and hence is removed when constructing the standard deviation of consumption (or consumption growth) in each cell.

light on whether both policies are imperfect substitutes in providing some consumption insurance.

5.1. Redistributive Taxes and Bankruptcy Exemptions

Table 6 displays estimates for the association between bankruptcy exemptions and redistributive taxes and transfers. In column 1, we regress the exemption level on the income compression measure including a set of state dummies and a dummy for unlimited homestead exemptions.[23] We find that the coefficient of the income compression measure is negative and significant at the 1 percent level. The coefficient in column 1 implies that a change in income compression from the least to the most generous level would be associated with a lower exemption level of roughly $10,000 in 1984 prices.

One concern with the ordinary least squares (OLS) regressions is that redistribution through taxes and transfers, measured by the income compression measure, may be endogenous. Thus, we check the robustness of our results if we instrument that measure. We experiment with two possible instrument sets. First, we use the 2-period lag of the income compression measure. Second, we use a set of six instruments containing political variables (the political affiliation of the state governor and the state legislature and the proportion of voters in a state voting Democratic rather than Republican in presidential elections), per capita gross domestic produce in each state, and two measures of how effective the state is at raising tax revenue (the tax fiscal capacity and the tax intensity or effort in each period). For the years up to 1991, data on these last two variables are available from the Advisory Commission on Intergovernmental Relations ([ACIR] 1993), while subsequent data are taken from Tannenwald (2002) and Tannenwald and Turner (2004), although it was necessary to linearly interpolate the two series for some years. Unfortunately, however, these data are not available for the last 3 years in our sample. (See Tannenwald [2002] and Tannenwald and Turner [2004] for a full discussion of the variables.)

The political variables make useful instruments because they reflect tastes for taxes and redistribution. The ACIR measures are an even more natural instrument, as they measure how efficient the state is at raising tax revenue. The ACIR index is higher if a given marginal tax rate raises more income from households (accounting for the cost of raising the revenue and the amount of revenue that is raised). Alternatively, it takes less effort to raise a fixed proportion of income. A state that is less efficient at raising tax revenue may resort to a generous bankruptcy exemption rather than attempt to increase redistribution through the tax and benefit system. Thus, the instruments predict the extent of redistribution through taxes and transfers but may not affect current exemptions directly. The latter is plausible for two reasons: exemptions do not directly affect the state budget constraint, and changes in the exemptions take longer to im-

[23] As we state above, in our regressions with state fixed effects, this is equivalent to including a dummy for Minnesota before 1993 (which limited the housing exemption in that year).

Table 6
Relationship between Taxes or Transfers and Bankruptcy Exemptions

	(1)	(2)	(3)	(4)
Income compression	−.049**	−.316**	−.269**	−.234**
	(.016)	(.119)	(.071)	(.034)
Constant	.069**	.161**	.139**	.128**
	(.007)	(.040)	(.024)	(.012)
Instrumental variables	. . .	Lag	Pol1	Pol2
Rank test	. . .	5.45	4.98	6.94
	. . .	[.000]	[.000]	[.000]
Sargan	. . .	. . .	2.965	42.78
	. . .	. . .	[.085]	[.000]
N	420	384	358	358
R^2	.746	. . .	. . .	. . .

Note. The dependent variable is bankruptcy exemptions. Standard errors are in parentheses and allow for clustering by state. Values in square brackets are probabilities. "Lag" denotes the regression in which we instrument by the 2-period lag, "Pol1" denotes the regression in which we use only the political affiliation of the state legislature and the tax efficiency index as instruments, and "Pol2" denotes the regression in which the full set of instruments is used. All regressions included a set of state dummies and a dummy for unlimited homestead exemptions.

** $p < .01$.

plement than do taxes or transfers, which depend on the state budget that is decided every year.[24]

Columns 2, 3, and 4 of Table 6 display the results when we instrument the income compression measure with its 2-period lag or with the political variables. The results are qualitatively similar to the OLS estimates in column 1, as the coefficient of the income compression measure remains negative and significant at the 1 percent level. Quantitatively, the estimated coefficient is larger when we instrument. Note that in column 2 we use only a restricted set of political instruments (including a measure for whether the state legislature was Republican or Democrat and the tax efficiency measure), whereas we use the full set of political variables as instruments in column 4. The restricted set of instruments is a natural subset since state legislatures must explicitly pass the state budget and the tax efficiency measure captures the cost of raising a particular amount of taxes. As displayed in Table 6, the rank test for the significance of the instruments in the first-stage regression is passed for both the restricted and full instrument sets. The Sargan test rejects the overidentifying restrictions for the full instrument set but not for the restricted set of instruments, where the relevant critical values are obtained from the $\chi^2(5)$ and $\chi^2(1)$ distributions, respectively.

Overall, the association between bankruptcy exemptions and redistribution through taxes and transfers is negative and robust. The implied elasticity (calculated at the mean) is −.09 when we use the estimates in column 2. We now investigate whether this negative correlation can be rationalized by the consumption insurance that both policies provide.

[24] An exception is the automatic update of exemptions due to inflation that the federal government and some states implement at regular intervals.

Table 7
Effect of Taxes and Bankruptcy Exemptions on Consumption Insurance

	SD(c_{it})	SD(Δc_{it})			
	(1)	(2)	(3)	(4)	(5)
Income compression	−.076	−.254**	−.961+	−.743**	−.211
	(.050)	(.083)	(.495)	(.229)	(.247)
Exemption	−.047**	−.066**	−.093**	−.055	−.039
	(.014)	(.024)	(.033)	(.034)	(.033)
Unlimited homestead dummy	−.148**	−.108	−.118	−.014	.006
	(.051)	(.084)	(.096)	(.127)	(.083)
Constant	.856**	.719**	.945**	.729**	.448**
	(.067)	(.113)	(.218)	(.179)	(.122)
Time dummies	No	No	No	No	Yes
Instrumental variables	. . .	. . .	Lag	Pol	. . .
Rank test	. . .	. . .	5.45	6.94	. . .
	. . .	. . .	[.000]	[.000]	. . .
Sargan	. . .	. . .	. . .	10.77	. . .
	. . .	. . .	. . .	[.056]	. . .
N	420	412	384	358	412
R^2	.143	.091	. . .	. . .	. . .

Note. Standard errors are in parentheses and allow for clustering by state. Values in square brackets are probabilities. All regressions included a full set of state dummies. "Lag" denotes the regression in which we instrument by the 2-period lag, and "Pol" denotes the regression that uses a set of political instruments.
+ Significance levels are denoted by $p < .10$.
** Significance levels are denoted by $p < .01$.

5.2. Consumption Insurance

First we estimate how redistribution through bankruptcy exemptions or taxes and transfers is related to consumption inequality. In the second step, we relate both policies to the inequality of consumption growth, our preferred measure of consumption insurance since it is purged of cross-sectional heterogeneity.

5.2.1. Consumption Inequality

Table 7, column 1, reports the estimation results for consumption inequality (the standard deviation of log consumption is the dependent variable), where the estimates rely on changes within states since the specification includes state dummies. Recall that market completeness would imply that neither the tax and transfer system nor bankruptcy exemptions should be significant in these regressions. Instead, we find that both the income compression measure and bankruptcy exemptions enter negatively (as predicted if both policies provide consumption insurance in incomplete markets), where the coefficient of bankruptcy exemptions is significant at the 1 percent level and the coefficient of the income compression measure is not significant. The coefficient of the unlimited homestead exemption is negative and significant (although it is identified only by the 1993 Minnesota reform).

The estimates in column 1 suggest that a change from having the least to the most income compression in our sample would explain one-tenth of the dif-

ferences in within-state consumption inequality of the states in our sample. (Our estimates say nothing about between-state inequality, which would be reflected in differences in the mean of consumption across states.) Instead, a change from the smallest to the largest exemption level could explain about one-quarter of the differences in within-state consumption inequality. In terms of elasticities (calculated at the mean), the estimates imply that the standard deviation of log consumption would fall by .3 percent or .6 percent if the income compression measure or bankruptcy exemptions increased by 10 percent, respectively.

The coefficient estimate is sizeable but not implausible, even though currently only 1.5 percent of U.S. households formally file for bankruptcy each year. First, we have deliberately chosen rather homogeneous groups to construct our sample (we have removed the self-employed, farmers, heads of households over age 60 and under age 30, for example), and for the selected sample the cross-sectional variation in consumption is likely to be smaller than in the general population. That is, the fraction of explained variation is larger since we remove much of the variation due to differences in the underlying populations in the various states from the denominator. Second, although only 1.5 percent of households file for bankruptcy, substantially more households default on their debts—and bankruptcy legislation is relevant for these households since it sets the punishment they would receive if they were pursued. Moreover, around 23 percent of households in our sample receive public transfers. This means that many households directly benefit from the redistribution that results from the two policies. Third, people who do not receive transfers and do not default are still affected by the legislation since they pay higher taxes and more interest. Last, if precautionary motives matter, then the consumption behavior of all households is affected by the insurance that the two policies provide.

5.2.2. Consumption Growth Inequality

As mentioned above, the inequality in consumption growth better measures the pure insurance effect of both policies, and this insurance effect is fundamentally what is of interest to us. In particular, differences in consumption growth are not affected by ex ante heterogeneity in consumption. Columns 2–5 of Table 7 thus report results for regressions with the standard deviation of consumption growth as dependent variable. In the OLS regression in column 2, the coefficients for the income compression measure and bankruptcy exemptions are negative and significant at the 1 percent level. The coefficient for the unlimited homestead exemption, while no longer significant, remains negative. In terms of elasticities (calculated at the mean), the estimates imply that the standard deviation of consumption growth would fall by 1.6 percent or 1.2 percent if the income compression measure or bankruptcy exemptions increased by 10 percent, respectively.

The results reported in column 5 show that the coefficient estimates of the income compression measure and the exemptions are robust and remain eco-

nomically significant if we add time dummies. Not surprisingly, the significance of the estimates decreases in this case because of the smaller remaining data variation.[25]

Another concern with the OLS regressions is that taxes or transfers and income or consumption shocks may be codetermined. For example, a state productivity shock is likely to affect the state's budget (and hence tax requirements). Given that the budget and thus taxes and transfers are decided regularly, they might respond to year-to-year changes in business conditions in the state. We thus instrument the income compression measure but treat bankruptcy exemptions as predetermined since they change less frequently and do not directly affect the state budget.

Columns 3 and 4 of Table 7 report results when the income compression measure is instrumented with its 2-period lag and the full set of political variables, respectively. In all cases the rank test for the significance of the instruments in the first regression stage is passed at conventional significance levels. Moreover, we cannot reject the overidentifying restrictions for the set of political variables as the Sargan test is passed (where the critical value is obtained from the $\chi^2(5)$ distribution).

In column 3, the coefficients of the income compression measure and the bankruptcy exemption are significant, and both are negatively associated with the standard deviation of consumption growth, as predicted by our hypothesis. The same holds for the estimation results in column 4 except that the coefficient of bankruptcy exemptions is less significant.

The point estimates imply that both policies have an effect of similar size (that is, exemptions no longer have a larger effect as in the regressions with the standard deviation of consumption levels in column 1), with changes from the least to most generous U.S. state implying a reduction of around a quarter of a standard deviation in the inequality of consumption growth rates in each case. This effect is sizeable but plausible for the reasons mentioned above. The estimates imply that a 1 percent increase in the income compression measure has the same effect as an increase of exemptions of about $6,500 in 1984 prices.

6. Conclusion

We have argued that both bankruptcy exemptions and redistributive taxes and transfers provide some consumption insurance in incomplete markets. We have searched for empirical support using data on U.S. states in the period 1980–2003. Consistent with our hypothesis, we have found (1) that the extent of redistributive taxes or transfers and the size of the bankruptcy exemption level are negatively correlated and (2) that both redistributive taxation and bankruptcy exemptions are negatively associated with the inequality of consumption and of consumption growth.

[25] The estimates for the specification in column 1 are also robust to the inclusion of time dummies.

These results relate to Fisher (2005), which finds that the generosity of unemployment insurance is negatively correlated with the incidence of bankruptcy and argues that this may occur since both policies provide insurance to households. We have provided evidence that supports this hypothesis, where we relate a more general measure for redistribution through taxes and transfers and bankruptcy exemptions to the extent of consumption smoothing in U.S. states.

Our results suggest that the negative correlation of redistributive taxation and personal bankruptcy regulation in the U.S. states can be explained by a simple economic mechanism. Clearly, redistributive taxation also depends on other determinants that are not related to consumption smoothing and insurance. In this respect, it is surprising and interesting to find that the negative correlation between both policies is borne out in the data. Although normative conclusions cannot be drawn with the currently available data, the results of the regressions with instrumental variables suggest that there might be an interesting policy trade-off in that bankruptcy exemptions are less effective in increasing consumer welfare if redistribution through taxes and transfers is more generous. Such a trade-off is relevant not only for U.S. states but also for many other developed countries. As surveyed by Tabb (2005), many European countries with substantial public welfare programs, such as France and Germany, have recently introduced legislation that allows consumers to declare bankruptcy. Given the trade-off we investigate, the additional insurance provided by these reforms may not be important since welfare spending is already substantial in these European countries.

References

Advisory Commission on Intergovernmental Relations. 1993. *State Fiscal Capacity and Tax Effort—1991.* Washington, D.C.: U.S. Government Printing Office.

Athreya, Kartik B. 1999. Welfare Implications of the Bankruptcy Reform Act of 1999. *Journal of Monetary Economics* 49:1567–95.

———. 2006. Fresh Start or Head Start? Uniform Bankruptcy Exemptions and Welfare. *Journal of Economic Dynamics and Control* 30:2051–79.

Athreya, Kartik B., and Nicole B. Simpson. 2006. Unsecured Debt with Public Insurance: From Bad to Worse. *Journal of Monetary Economics* 53:797–825.

Attanasio, Orazio, and Steven J. Davis. 1996. Relative Wage Movements and the Distribution of Consumption. *Journal of Political Economy* 104:1227–62.

Berkowitz, Jeremy, and Michelle J. White. 2004. Bankruptcy and Small Firms' Access to Credit. *RAND Journal of Economics* 35:69–84.

Bertola, Giuseppe, and Winfried Koeniger. 2007. Consumption Smoothing and Income Redistribution. *European Economic Review* 51:1941–58.

Blundell, Richard, Luigi Pistaferri, and Ian Preston. 2008. Consumption Inequality and Partial Insurance. *American Economic Review* 98:1887–1921.

Chatterjee, Satyajit, Dean Corbae, Makoto Nakajima, and José-Víctor Ríos-Rull. 2007. A Quantitative Theory of Unsecured Credit with Risk of Default. *Econometrica* 75: 1525–89.

Cullen, Julie Berry, and Roger Gordon. 2007. Taxes and Entrepreneurial Risk-Taking: Theory and Evidence for the U.S. *Journal of Public Economics* 91:1479–1505.

Deaton, Angus, and Christina Paxson. 1994. Intertemporal Choice and Inequality. *Journal of Political Economy* 102:437–67.

Fay, Scott, Erik Hurst, and Michelle J. White. 2002. The Household Bankruptcy Decision. *American Economic Review* 92:706–18.

Feenberg, Daniel, and Elisabeth Coutts. 1993. An Introduction to the TAXSIM Model. *Journal of Policy Analysis and Management* 12:189–94.

Fisher, Jonathan D. 2005. The Effect of Unemployment Benefits, Welfare Benefits and Other Income on Personal Bankruptcy. *Contemporary Economic Policy* 23:483–92.

Grant, Charles. 2008. Consumer Bankruptcy Law, Credit Constraints and Insurance: Some Empirics. Unpublished manuscript. University of Reading, Department of Economics, Reading.

Grant, Charles, and Winfried Koeniger. 2008. Web Appendix for "Redistributive Taxation and Personal Bankruptcy in US States." May 1. http://webspace.qmul.ac.uk/wkoeniger/gk_webapp.pdf.

Grant, Charles, Christos Koulovatianos, Alexander Michaelides, and Mario Padula. 2008. Evidence on the Insurance Effect of Marginal Income Taxes. Discussion Paper No. 6710. Centre for Economic Policy Research, London.

Gropp, Reint, John K. Scholz, and Michelle J. White. 1997. Personal Bankruptcy and Credit Supply and Demand. *Quarterly Journal of Economics* 112:217–51.

Hansen, Gary D., and Ayse Imrohoroglu. 1992. The Role of Unemployment Insurance in an Economy with Liquidity Constraints and Moral Hazard. *Journal of Political Economy* 100:118–42.

Hynes, Richard M. 2002. Optimal Bankruptcy in a Non-optimal World. *Boston College Law Review* 44:1–78.

Hynes, Richard M., Anup Malani, and Eric A. Posner. 2004. The Political Economy of Property Exemption Laws. *Journal of Law and Economics* 47:19–43.

Jackson, Thomas H. 2001. *The Logic and Limits of Bankruptcy Law.* Cambridge, Mass.: Harvard University Press, 1986. Reprint, Washington, D.C.: Beard Books.

Pavan, Marina. 2005. Consumer Durables and Risky Borrowing: The Effect of Bankruptcy Protection. Unpublished manuscript. Boston College, Department of Economics, Boston.

Rhea, Samuel A., Jr. 1984. Arm-Breaking, Consumer Credit and Personal Bankruptcy. *Economic Inquiry* 22:188–208.

Tabb, Charles J. 2005. Lessons from the Globalization of Consumer Bankruptcy. Illinois Law and Economics Working Paper Series No. LE05-013. University of Illinois, College of Law, Champaign.

Tannenwald, Robert. 2002. Interstate Fiscal Disparity in 1997. *New England Economic Review* 3:17–33.

Tannenwald, Robert, and Nicholas Turner. 2004. Interstate Fiscal Disparity in State Fiscal Year 1999. Public Policy Discussion Papers No. 04-9. Federal Reserve Bank of Boston.

Varian, Hal. 1980. Redistributive Taxation as Social Insurance. *Journal of Public Economics* 14:49–68.

White, Michelle. 1998. Why Don't More Households File for Bankruptcy? *Journal of Law, Economics, and Organization* 14:205–31.

White, Michelle. 2006. Bankruptcy and Consumer Behavior: Theory and US Evidence.

Pp. 239–74 in *The Economics of Consumer Credit,* edited by Giuseppe Bertola, Richard Disney, and Charles Grant. Cambridge, Mass.: MIT Press.

Zame, William R. 1993. Efficiency and the Role of Default When Security Markets Are Incomplete. *American Economic Review* 83:1142–64.