

Consumer Bankruptcy in Austria
An Empirical Analysis

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Abstract

Private bankruptcy offers over-indebted persons the possibility to obtain a discharge of debts under certain conditions. From 1995 to 2023, a total of about 215,000 private bankruptcy petitions were filed in Austria. The annual number of applications rose steadily until the end of the 2000s. Since then, major jumps in the number of cases have been observed, especially in connection with reforms and changes in the political framework, such as during the COVID-19 crisis. This paper analyses the determinants of personal bankruptcies in Austria since their introduction in 1995. The vast majority of studies on personal bankruptcies refer to the USA, while the situation in Austria has hardly been investigated. We aim to fill this gap by applying time series and panel econometric methods to Austrian consumer bankruptcy data. We examine their relationship with policy, macroeconomic and socio-demographic variables. Our results indicate relatively large effects of bankruptcy rules (i.e., the changing conditions for debt discharge) and private debt levels.

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Stefan Angel*, Philipp Warum†

Tuesday 17th September, 2024

Abstract

Private bankruptcy offers over-indebted persons the possibility to obtain a discharge of debts under certain conditions. From 1995 to 2023, a total of about 215,000 private bankruptcy petitions were filed in Austria. The annual number of applications rose steadily until the end of the 2000s. Since then, major jumps in the number of cases have been observed, especially in connection with reforms and changes in the political framework, such as during the COVID-19 crisis. This paper analyses the determinants of personal bankruptcies in Austria since their introduction in 1995. The vast majority of studies on personal bankruptcies refer to the USA, while the situation in Austria has hardly been investigated. We aim to fill this gap by applying time series and panel econometric methods to Austrian consumer bankruptcy data. We examine their relationship with policy, macroeconomic and socio-demographic variables. Our results indicate relatively large effects of bankruptcy rules (i.e. the changing conditions for debt discharge) and private debt levels.

Keywords: consumer bankruptcy, Austria, debt counseling

JEL codes: D18, G51, K35

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1 Introduction

Private bankruptcy is an important debt relief policy for overindebted borrowers with considerable consequences at the individual as well as the macroeconomic level. From the debtor perspective, personal bankruptcy with partial discharge of debt is essentially a safety net against unexpected (idiosyncratic) financial shocks (on the income and/or expenditure side) that would make it impossible or very difficult to repay debts. From the perspective of creditors, bankruptcy policy affects the likelihood of losing money due to debt discharge and how much of their claims can be retrieved in restructuring. Depending on the design of bankruptcy policy, it may affect outcomes such as labor supply (Dobbie & Song, 2015), credit supply and interest rates (Indarte, 2022), health (Dobbie & Song, 2015), and entrepreneurial activity (Cumming, 2012). Yet, little is known about the determinants of bankruptcy filings and the effects of bankruptcy policies in countries other than the United States.

This paper attempts to address this gap by empirically examining the determinants of bankruptcy filings in Austria. We make use of detailed time series data on bankruptcy filings in Austria that has not been used in prior research. Our data permits analysis at the national and regional level. We study the effects of bankruptcy policy reforms and estimate time series and structural vector autoregressive (SVAR) models to investigate the relationship between filings and important macroeconomic variables at the national level. Furthermore, we use panel regression models to identify correlations with economic and demographic variables at the regional level.

This paper is structured as follows: Section 2 provides a detailed discussion of the main groups of explanatory factors for personal bankruptcies. We review the empirical literature and derive hypotheses for our empirical analysis. Section 3 describes general bankruptcy trends and the main facts about the regulation of personal bankruptcy in Austria. We conclude this section with a brief discussion of (now discontinued) debt-related COVID-19 policy measures. Section 4 contains a description of the different types of data we use and their limitations. This is followed by a description of the estimation methods in section 5. Results are presented along our hypotheses (Section 6). Section 7 discusses results and concludes.

2 Related Literature

Against the background of a strong increase in the number of personal bankruptcies in the US, especially since the mid-1980s (Exler & Tertilt, 2020), a number of determinants have been proposed to account for the development of aggregated personal bankruptcies over time and for its likelihood at the individual level (Exler & Tertilt, 2020; Garrett & Wall, 2014; Livshits, 2015; Livshits et al., 2010).

2.1 Personal costs and benefits of filing for bankruptcy

Personal bankruptcy is a legal procedure which provides individuals who become insolvent with a possibility for debt reorganization or discharge, often in exchange for (partial) repayment from assets, future income or both. From the debtor perspective, personal bankruptcy with discharge of residual debt basically represents an insurance to deal with unexpected (idiosyncratic) financial shocks (on the income and/or expenditure side) that would make the repayment of liabilities impossible or delay it for a very long time. As a legal instrument, the relative attractiveness of the choice to file for bankruptcy is determined to a considerable degree by the legal code which defines the terms to which reorganization can be obtained through this procedure and how it compares to other options of debt relief that may be available, such as delinquency or out-of-court settlement (see e.g. Indarte (2022)). Much of the literature on individual filing decisions is thus concerned with the incentive effects created by policy.

Essential policy parameters are a) whether repayment occurs from assets, future income¹ or both, b) the duration of private bankruptcies (repayment period until the discharge of residual debt for debtors but also efficiency of the bureaucracy), c) the extent to which the consent of creditors is required for certain procedural steps (e.g. for proposed repayment plans or repayment quotas offered), d) costs of the procedure (e.g. attorney's fees, filing costs), e) exemptions from seizure for certain types of assets (residential property, work equipment), f) the thresholds below which assets are exempt from liquidation, g) waiting period for any renewed filing for private bankruptcy, h) exclusion from borrowing and its duration, i) private bankruptcy "flag" in databases of credit protection agencies after a bankruptcy has been completed.

In the literature on policy effects of private bankruptcy regulations, a fundamental distinction can be made between analyses based on survey data from person or household samples in which information on private bankruptcy is collected and analyses based on private bankruptcy registers. Representative survey data on private bankruptcy are not

¹A note on terminology: In the strongly US-based literature, the term garnishment (as defined by wage garnishment laws) is used to refer to income creditors can seize through delinquent debtor's employers until bankruptcy proceedings are opened. Indeed, one advantage of bankruptcy especially for higher income US filers is that it stops garnishment (Miller, 2019) while repayment of debt in regular installments might still continue as part of a repayment plan in a Chapter 13 procedure. Other work especially on non-US bankruptcy systems where income deductions continue in bankruptcy might also refer to this as garnishment (see e.g. Exler (2019)). To avoid confusion and in keeping with the US literature, we will refer to wage garnishment only before bankruptcy proceedings are opened.

collected in Austria and many other European countries. Accordingly, the following review of the literature concentrates primarily on studies relying on private bankruptcy registers (i.e. there is no control group at the individual level).

In general, the vast majority of studies on the policy effects of personal bankruptcy regulations deal with US microdata. The focus is often on Chapters 7 and 13 of the US Bankruptcy Code, where differences in asset exemptions and wage garnishment rules between states are exploited in research designs. For example, in the Panel Study of Income Dynamics (PSID) questions about personal bankruptcy are included on a case-by-case basis, allowing a quantitative analysis of the probability of bankruptcy for a representative sample of US households. These studies often deal with the question to what extent the probability of personal bankruptcy can be traced back to unexpected financial shocks and to what extent strategic cost-benefit considerations and moral hazard among the indebted play a role.

In a widely cited paper Fay et al. (2002) postulate that because of the regulations in Chapter 7 and Chapter 13 bankruptcy proceedings, debtors in the US have a strategic incentive to file for one of these bankruptcy proceedings if the financial benefit (= forgiveness of remaining debt) is greater than the cost (= liquidation of income or assets up to exemption thresholds). The estimated results show a significant positive effect of the individual net benefit, whereas only the divorce variable is marginally significant ($p=0.08$) among the external shocks examined (see also section 2.2). Livshits et al. (2010) use benchmark calibration to investigate why personal bankruptcies increased in the US between 1980 and 2000. Their results suggest that at least three quarters of the increase in the number of applications can be explained by the decrease in transaction costs of borrowing and a decrease in the cost of personal bankruptcy. Unexpected financial shocks, on the other hand, play a minor role in explaining the trend over time.

While confirming that strategic considerations play a role in bankruptcy filing decisions, the more recent literature suggests that it is minor. Indarte (2021) estimates the liquidity and moral hazard effects of changes in dischargeable household debt on bankruptcy filings in a pooled cross section US sample of mortgage data. The moral hazard effect is estimated using a regression kink design that exploits variation in homestead exemptions across states and time. The liquidity effect is estimated through an instrumental variable strategy that utilizes exogenous rate variation in adjustable-rate mortgages on a smaller subset of the sample. Whereas homestead exemptions affect seizable equity only when entering bankruptcy, changes in mortgage payments affect non-seizable cash flows independent of whether a debtor files for bankruptcy. After several adjustments to facilitate the comparison of the estimated effects, the author concludes that the liquidity effect outweighs the moral hazard effect considerably with 83% of the filing response being attributed to the former. By means of a simple stylized model it is demonstrated that a large liquidity effect implies that filing for bankruptcy entails large consumption-smoothing benefits and large non-monetary costs (e.g. through stigma or costly access to liquidity) for the marginal filer. Similarly, Ganong and Noel (2020) study the reasons for mortgage default by applying a causal attribution method to administrative data and conclude that adverse life events are a

necessary condition for 97 percent of defaults whereas exclusively strategic motives can only account for the remaining 3 percent.

Several papers examine the effect of a recent reform of the US Bankruptcy Code, the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA) introduced in 2005. Central components of this legal reform of private bankruptcy were higher monetary costs of filing an application and means testing for the most frequently used bankruptcy procedure (Chapter 7). The econometric analysis by Albanesi and Nosal (2018) shows - after controlling for cyclical variables (such as unemployment) at district level - a significant and lasting decline in private bankruptcy filings, which is largely attributed to the increased procedural costs for applicants. T. Gross et al. (2021) adapt the "excess mass" method from the tax-notch literature (Chetty et al., 2011; Kleven, 2016) to estimate a counterfactual time series for the absence of the 2005 BAPCPA reform. For the period before the reform, they regress the weekly filings on a linear time trend and fixed effects for calendar months. Using the estimated parameters, they then calculate the difference of the actual post-reform filings minus the counterfactual filings. The authors find both an increase just before the reform implementation and a sharp decrease in post-reform filings. Mitman (2016) finds that the 2005 BAPCPA reform significantly reduced the number of personal bankruptcies but at the same time increased foreclosure rates during the financial crisis of 2007/2008 when real estate prices fell.

Allen and Basiri (2016) find a similar negative correlation between an increase in cost and the number of personal bankruptcy filings for a 2009 reform in Canada (which included an increase in the repayment period from 9 to 12 months for high-income applicants). Peterson and Aoki (1984) show - controlling for other contemporaneous policy reforms and labor market variables - that the 1979 US personal bankruptcy reform, which reduced the cost of personal bankruptcy, had a positive effect on the number of filings.

Whether and to what extent assets are exempt from liquidation in US personal bankruptcy proceedings varies between states, thereby introducing substantial variation in the costs and benefits of bankruptcy for filers with assets. An exemption related to home equity, the homestead exemption, accounts for most of the variation in the generosity of bankruptcy across states (Auclert et al., 2019). Gropp et al. (1997) show that more generous exemption limits are positively related to the number of private bankruptcies. Pattison and Hynes (2020) exploit the variation in homestead exemptions and apply a difference-in-difference analysis to estimate the effect of changes in thresholds on the number of bankruptcy filings. The authors find statistically significant positive effects. A 10 percentage point increase in the proportion of households that are subject to a homestead exemption increases the number of Chapter 7 filings by 1.3% in their model. Notably, increases in exemptions lead wealthier but lower income households to file for bankruptcy whose home equity values were previously above the limit. In their econometric analysis, Adkisson and Saucedo (2012) examine various explanations for the variation in personal bankruptcies between states in the US and over the period from 2000 to 2009. Contrary to the other studies, they find a negative correlation between personal bankruptcies and asset exemptions. Athreya (2006) develops and parameterizes an equilibrium model for the US in order to examine

the effect of the introduction of a uniform asset exemption level on the rate of bankruptcy filings. In this model, a higher exemption limit leads to higher filing rates and to higher welfare of households. On the other hand, there is also a lower supply of unsecured loans. This credit supply channel might explain the apparent contradiction in results discussed so far². Indeed, Indarte (2022) shows that the level of homestead exemptions is negatively correlated to bankruptcy filing rates but positively correlated with the level of unsecured credit across US states. The argument is that more generous bankruptcy may lead to higher numbers of bankruptcy filings but that lenders in turn decrease the credit supply to limit their losses. Higher interest rates for unsecured credit thus lead to lower debt levels and - since the amount of debt is also a major determinant of the incidence of bankruptcy (Xiao, 2016) - might therefore account for the lower bankruptcy rates in high exemption states (Indarte, 2022; Mitman, 2016). T. Gross et al. (2021) provide empirical evidence for the interest rate channel by showing that the generosity-decreasing BAPCPA reform lowered credit card interest rates in the US. Building on advances in the theoretical literature, Dávila (2020) develops a theory of optimal bankruptcy exemptions and argues that four variables are sufficient to compute the optimality of bankruptcy regulation for a large class of economies: "1. the composition of households' liabilities, 2. the sensitivity of the credit supply schedule to exemption changes, 3. the probability of filing for bankruptcy with nonexempt assets, and 4. the value given by households to a marginal dollar in different states, which can be mapped to changes in households' consumption." The author applies his approach to the US and concludes that increasing the generosity of bankruptcy again would be welfare enhancing as the gains from consumption-smoothing across households' states outweigh the losses from higher interest rates. It must be noted, however, that this approach assumes that households borrow and default optimally and that deviations from this assumption such as distorted beliefs about the uncertainty of future outcomes could exert independent effects on social welfare that are not considered by Dávila (2020).

In addition to what has been discussed so far, there are other non-political factors that may play a role in the decision to file for bankruptcy, such as the stigma associated with it. Empirical tests of the influence of stigma on the likelihood of personal bankruptcy are scarce, partly because the stigma of personal bankruptcy is difficult to operationalize. While Garrett (2007) argues and D. B. Gross and Souleles (2002) finds suggestive evidence that reduced stigma increases personal bankruptcy rates, Sullivan et al. (2006) and Sousa (2018) show that this is not the case and that the stigmatization of private bankruptcies in the US has even increased over the past few decades. Keys et al. (2020) examine the role of place- and person-based factors for consumer financial distress by conducting a "movers" analysis with US credit report data covering the time span from 2000 to 2016. More specifically, the baseline method corresponds to event study regressions of individual level outcomes of financial distress on the average differences in these outcomes for non-movers between the regions of origin and destination. The authors find that place-based factors account for a sizable fraction of the personal bankruptcy probability while they exert only a limited influence on debt in collections or credit card delinquency. The former

²See also the discussion on this subject in Indarte (2022).

is interpreted to be in line with the strong variation in state level bankruptcy related regulations (e.g. asset exemptions, wage garnishment rates) whereas the latter is taken as evidence for a relatively small role of place- versus person-based determinants of financial distress. Location effects are stronger for moves to places with more rather than less financial distress, and this is particularly the case for Chapter 13 bankruptcy. Keys et al. (2020) therefore conclude that this suggests a relatively small role for local stigma as explanatory factor for bankruptcy decisions in favor of explanations based on informational theory. The reasoning is that people learn about the option of bankruptcy when they move to places with higher bankruptcy rates but do not unlearn this information when they move elsewhere. That this difference in "positive" versus "negative" moves is particularly pronounced for Chapter 13 cases is interpreted as additional support, since stigma might not differ between chapters while it is suggested that informational factors, such as legal traditions and local lawyer networks, play a larger role in filing under Chapter 13. The effect of information on bankruptcy filings is further discussed in section 2.2.

To sum up, personal bankruptcy rules that are very generous to debtors (e.g. through rapid discharge of residual debt or high asset exemptions) increase the likelihood of moral hazard (and the likelihood that creditors will have to write off part of their debts), at least in the short run. (Wang & White, 2000; White, 1998). Traditionally, the literature distinguishes between debtor-friendly Anglo-Saxon political regimes ("fresh start" philosophy) and more creditor-friendly political regimes in continental Europe (Gerhardt, 2009; Hoffmann, 2012). However, political reforms in Austria in recent years have steadily led to more debtor-friendly regulations, as we will see in section 3 (ASB Schuldnerberatungen GmbH, 2018).

Hypothesis 1 *Incentive effects from personal bankruptcy regulations and the stigma of personal bankruptcy. H: The lower the costs of personal bankruptcy and the lower the social stigma of personal bankruptcy, the higher the number of bankruptcy filings or the probability of personal bankruptcy.*

2.2 Contextual factors: shocks, access to information, credit markets

Although strategic considerations matter (see [previous section](#)), the decision to file for bankruptcy may be determined by adverse events as well. The extent to which individuals have to rely on the safety net function of bankruptcy therefore depends on contextual factors that shape the likelihood and types of income or expenditure shocks they face. This category includes studies that focus on macroeconomic variables related to the business cycle, as well as the volume of loans to private households. In addition, access to bankruptcy proceedings may also depend on factors related to the broader institutional environment, such as for instance the availability of information about bankruptcy and whether the legal system operates neutrally or systematically discriminates against certain groups.

In her literature review, White (2007) identifies the rapid growth in credit card debt as the main explanation for the rapid growth in personal bankruptcy figures from 1980 to 2004 in the United States. In our discussion of asset exemptions in the previous section, we have

also seen that rising interest rates may counteract rising bankruptcy filings by stabilizing debt levels (Indarte, 2022). Therefore, bankruptcy filings may not only be driven by macroeconomic factors but the reverse, changes in filings affecting macroeconomic variables such as the interest rate, may also be true (Indarte, 2022; Sims & Zha, 2006). Furthermore, Cohen-Cole (2010) finds that the variance in permanent income explains more than 90% of the variation in the US personal bankruptcy time series over a 30-year period. Estimates for the US from Adkisson and Saucedo (2012) also show a positive and significant effect of the unemployment rate: a 1 percentage point change in the unemployment rate increases the number of personal bankruptcy filings per 1000 inhabitants by 1.3. In addition, there is a weak negative correlation with real GDP per capita. The authors also find a positive correlation between income inequality and the number of private bankruptcies. Garrett and Wall (2014) estimate the dynamics of personal bankruptcies over the business cycle using cross-sectional time series for the US. Their estimated model shows that personal bankruptcy rates are above the long-term trend during a recession and continue to rise as a recession persists.

Similar relationships exist for European countries. Jappelli et al. (2013) find a positive relationship between the ratio of private debt to GDP and private bankruptcies for Germany, England and the US over the period from 1980 to 2012. König (2016) analyzes quarterly time series for Germany and the UK from 2003 to 2014. However, the author does not find an effect of economic declines on the number of private bankruptcies in either Germany or the UK.

This result underlines the need for studies outside of the United States. Welfare state measures in continental Europe could have a strong influence on the connection between economic shocks and personal bankruptcy.

Of particular interest for this paper is what effect the COVID-19 crisis had on the number of private bankruptcies and whether the effect was greater than during the last major economic and financial crisis in 2008/2009.

Another structural factor that affects the decision to file for bankruptcy is the availability and accessibility of information on bankruptcy proceedings. For instance, Grana and Hansen (2019) examine a detailed bankruptcy dataset for the state of Maryland including exact debtor addresses and conclude that interpersonal information exchange most likely explains bankruptcy spillovers among people in close temporal and spatial proximity. Apart from learning about other people's bankruptcies, overindebted individuals in Austria can obtain detailed information about bankruptcy proceedings and specific recommendations for their case free of charge from debt counseling agencies. We thus believe that the local availability of debt counseling agencies also has a positive effect on the number of bankruptcy filings. Furthermore, the involvement of debt counseling agencies in bankruptcy proceedings, as it is practiced in Austria, may also impact the quality of bankruptcy outcomes from the debtor's perspective. Studies for Ireland, Australia and Germany show that debt counseling has a positive effect on certain client characteristics. For example, a positive effect on debt management, financial literacy, health and subjective well-being has been documented

(Ansen et al., 2017; Brackertz, 2014; Stamp, 2012). A cost-benefit analysis for Austria by More-Hollerweger et al. (2013) estimates that the monetized effects of the state-approved debt advice services operating in Austria in 2011 were more than five times higher than the financial investments made.

Using pseudo-panels, Fisher (2019) present suggestive evidence that people tend to get divorced and earn lower incomes in the years before bankruptcy while they marry again and earn more afterwards. Furthermore, Adkisson and Saucedo (2012) and Shepard (1984) find a positive correlation of divorce rates and private bankruptcies.

Hypothesis 2 *revenue and expenditure shocks not anticipated by borrowers (e.g. caused by unemployment, divorce, recessions, etc.). H: The more and the more intense the economic shocks, the more private bankruptcies or the higher the probability of private bankruptcy*

Hypothesis 3 *Access to credit despite above-average credit default risk. H: The cheaper and the broader the access to credit for private households, the more borrowers with a higher risk of default and the more private bankruptcies or the higher the probability of private bankruptcy E.g. Broader credit (card) access also for people with a higher risk of default or less financial knowledge; partly due to better rating technologies that reduce the cost of credit.*

Hypothesis 4 *The more information is available on bankruptcy proceedings and the more accessible this information is to overindebted individuals, the higher the number of bankruptcy filings.*

Hypothesis 4.1 *The local presence of a debt counseling agency increases the number of bankruptcy filings.*

Hypothesis 4.2 *The involvement of a debt counseling agency in bankruptcy proceedings positively affects the quality of these proceedings and the outcomes from the perspective of the debtor.*

2.3 Individual/socio-demographic factors

Beyond the costs and benefits of the bankruptcy decision and the conditions defined by the environment in which this decision takes place, person-based factors can also influence filing probabilities. Such characteristics include individual time preferences (e.g. consumption today or in the future), risk preferences and behavioral factors, such as financial literacy (Keys et al., 2020).

Moreover, Lefgren and McIntyre (2009) focus on the US in 1999 and 2001 and show that demographic aspects play a significant role in explaining private bankruptcies. Personal bankruptcies are significantly more common in districts (ZIP codes) with a majority of middle income earners, and for districts with a high proportion of people between 30 and 49 years of age. Adkisson and Saucedo (2012) show similar results at the state level. The greater the proportion of people aged 25 to 44, the greater the personal bankruptcy rate. Their econometric model estimates a marginal effect of two additional private bankruptcies

per 1000 inhabitants for a change of one percentage point increase in this age group. Education is not significant in their model.

Fisher (2019) provides comprehensive statistics on bankruptcy filers from 72 out of 94 federal bankruptcy districts in the US by linking administrative data from the Public Access to Court Electronic Records (PACER) system to data from the 2000 Decennial Census as well as the 2001-2011 American Community Surveys. Beyond confirming the previous findings of the literature, including that bankruptcy filers are more likely to be black and to have at most attained a high school degree or some college, the author finds that this group is more likely to be employed and more likely to be employed 50-52 weeks than the US as a whole. Furthermore, it is also shown that veterans and disabled people are more and immigrants less likely to file for bankruptcy and that the bankruptcy population in the US is aging faster than the US population.

Hypothesis 5 *Sociodemographic aspects and household composition. H: The higher the proportion of those socio-demographic groups in the total population that exhibit an above-average risk of default - e.g. middle-aged people (ASB Schuldnerberatungen GmbH, 2018; Livshits et al., 2007; Sullivan et al., 2020) - the more personal bankruptcies*

3 Austrian institutional environment

3.1 Private bankruptcies since 1995

Since the introduction of personal bankruptcy in 1995, this procedure has become increasingly important. While just under 1,000 bankruptcy petitions were filed in 1995, this figure had already risen to over 3,000 in 2000 and averaged around 10,000 petitions per year in the period 2010/2020 (Figures 1, 2). After peaks in 2008 and 2012 the number of new cases started to decrease again until 2017. This was followed by a sharp increase from 2017 to 2018 as a result of the more debtor-friendly Insolvency Law Amendment Act 2017³ (see sections 3.3 and 6.1) and has been growing again since 2021.

³Insolvenzrechtsänderungsgesetz, IRÄG

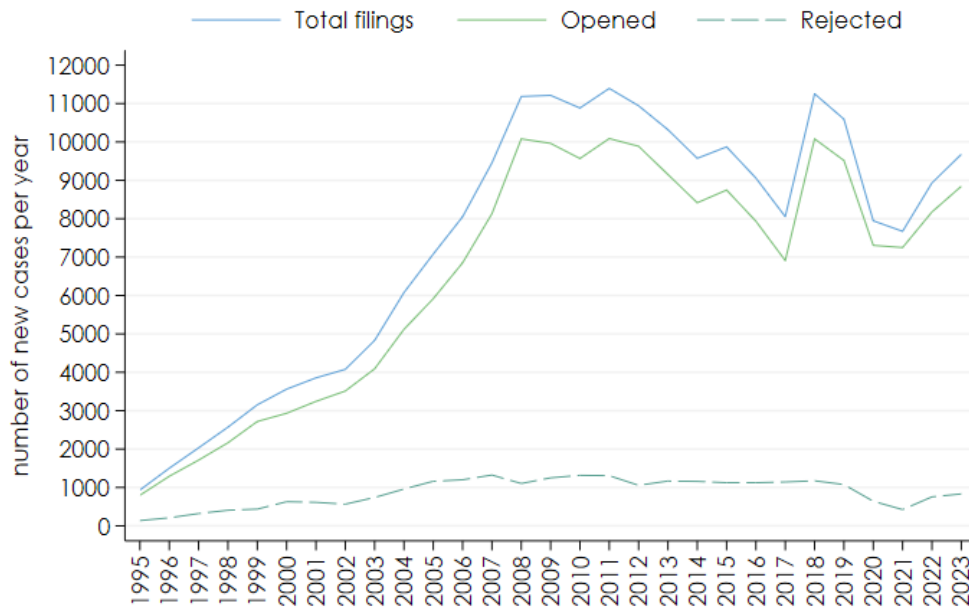


Figure 1: Annual personal bankruptcy filings in Austria, Source: KSV1870, ASB

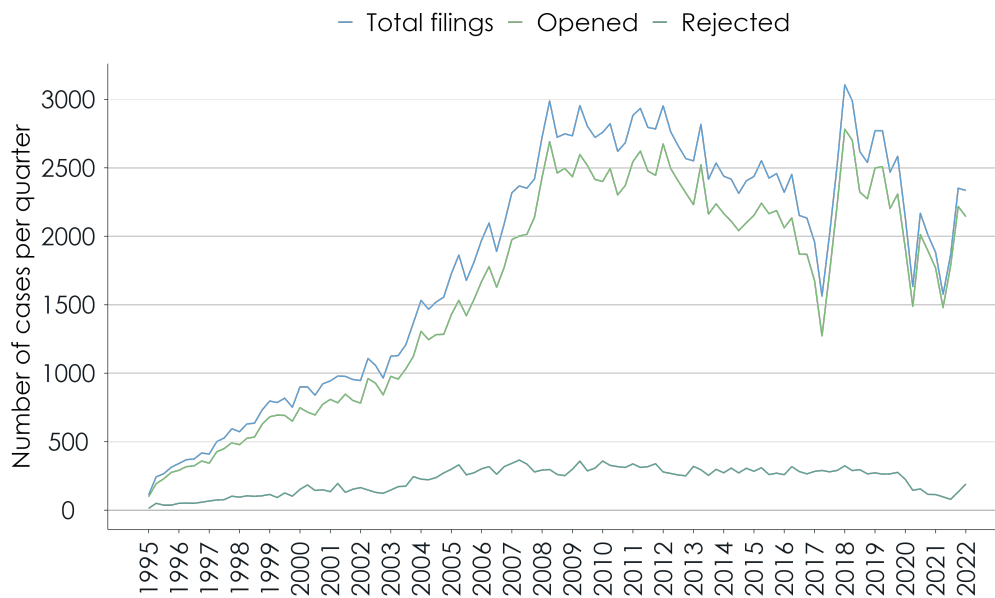


Figure 2: Quarterly personal bankruptcy filings in Austria, Source: ASB

3.2 Current personal bankruptcy regulations since July 2021

Bankruptcy proceedings for private individuals in the Austrian Insolvency Code specifically refer to "Schuldenregulierungsverfahren" (debt settlement proceedings). The debt settlement procedure with payment plan or absorption procedure can be opened via two different routes (BMSGPK Bundesministerium für Soziales & Gesundheit, Pflege und Konsumentenschutz, 2022). Route 1 involves several stages. If debts cannot be collected out of court, creditors usually file a lawsuit with the competent civil court. If the court rules in favor of the creditor, execution proceedings are opened. This gives the creditor at least 30 years to collect the claim (otherwise it may become time-barred) and can also apply to the competent court for attachment of the debtor's assets or salary. If it turns out in execution proceedings that the debtor is "offenkundig zahlungsunfähig" (evidently insolvent) with regard to realizable assets, the execution must be terminated. This means that all execution proceedings on movable assets are temporarily suspended, however, the attachment of earnings up to the individual minimum subsistence level continues.

The next option for creditors to continue debt collection in the event of "offenkundiger Zahlungsunfähigkeit" (evident insolvency) is to apply for continuation in the form of special debt settlement proceedings ("Gesamtvollstreckungsverfahren"), initially without discharge of residual debt ("Ewiger Konkurs"). This is accompanied, among other things, by a freeze on execution and interest that relieves the debtor.

Alternatively (route 2), debt settlement proceedings can be opened directly by both creditors and debtors upon application. This is accompanied, among other things, by a stop to interest settlements and seizures by individual creditors. In principle, anyone who is unable to pay can file for personal bankruptcy. The ultimate goal is the discharge of residual debt if certain conditions are met. Several forms of proceedings are possible (BMSGPK Bundesministerium für Soziales & Gesundheit, Pflege und Konsumentenschutz, 2022): 1) restructuring plan (<1% of all personal bankruptcies, no realization of assets), 2) payment plan (75% of all personal bankruptcies, realization of assets, payment by instalments up to maximal 7 years, consent of creditors required), 3) absorption plan (25% of all personal bankruptcies, realization of assets if creditors do not agree to the payment plan). From a legal perspective, the bankruptcy proceedings end when a reorganization plan or payment plan proposal has been accepted by the majority of creditors or (if rejected by the creditors) the absorption proceedings have been initiated. From this point on, the debtor must make the agreed payments for a given period of time and can finally obtain discharge of residual debt.

3.3 Major reforms since 1995

The 1993 amendment to the Bankruptcy Code (BGBl 974/1993, entered into force on January 1, 1995) to the "Kaiserliche Konkursordnung" (Imperial Bankruptcy Code) of 1913 marks the starting point of private bankruptcy in Austria. Prior to this, a discharge of residual debt for private individuals was de facto only possible on the basis of out-of-court settlements with creditors. The judicial bankruptcy proceedings prior to 1995 did offer the

possibility of residual debt discharge, but only under certain - and from today's perspective much more restrictive - conditions. For example, a certain amount of assets was required to cover the costs of the bankruptcy proceedings, as well as a higher minimum repayment rate within short payment periods (Jürgens, 2004). The 1995 amendment opened up the possibility of residual debt discharge to all natural persons in two ways: 1) by making use of a payment plan (creditors' consent required) or 2) by means of a skimming procedure (without creditors' consent - a novelty), even without covering the costs of the bankruptcy proceedings.

Initially, the debt collection procedure provided for 7 years of living at subsistence level (according to wage garnishment regulations) and a minimum repayment rate of 10% of the debt after 7 years. Both are key policy parameters that were adapted in subsequent reforms and successively facilitated the discharge of residual debt. Between 1995 and 2017, there were several smaller reforms, such as the 2002 amendment to insolvency law, which led to easier access for debtors without sufficient assets to cover costs, but also to greater obligations for debtors to cooperate (Fitzka & Niederreiter, 2015; Jürgens, 2004).

An important change came into force on 1 November 2017 with the *Insolvenzrechtsänderungsgesetz* (henceforth IRAG 2017). As part of this legal reform the minimum repayment rate was abolished and the duration of the proceedings in the absorption procedure was shortened to five years. On the other hand, debtors without attachable income now had to provide the court with information about their efforts to find gainful employment once a year. Furthermore, since this reform, the prior attempt at out-of-court settlement is no longer mandatory (ASB Schuldnerberatungen GmbH, 2022). Of all the reforms since 1995, this was probably the biggest turning point, also reflected in the rise of filings around that time (Figure 3).

Two additional amendments have been in force since July 2021. First, the amendment to enforcement law brought the above-mentioned comprehensive enforcement proceedings including an interest freeze. Second, the amendment to insolvency law offers the possibility (initially limited until July 2026) of a further reduction in the debt relief period to 3 years if obvious insolvency has been established by a court and suitable measures to eliminate the insolvency (e.g. debt counseling) are taken by the debtor within 30 days (ASB Schuldnerberatungen GmbH, 2022).

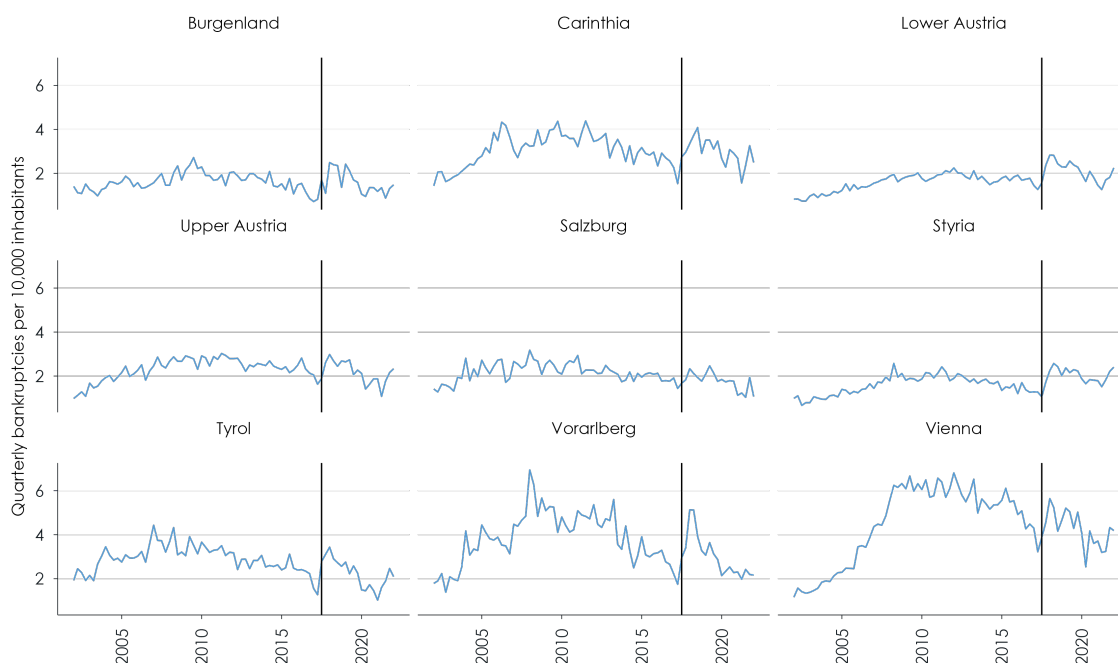


Figure 3: Quarterly bankruptcy rates by federal state & IRAG 2017, Source: ASB

3.4 Austrian personal bankruptcy rules in the European context

Personal bankruptcy proceedings were gradually introduced in Europe from the end of the 1980s, starting with the UK and France, and now exist in almost all European countries (Graziano et al., 2019). However, comparative studies on the legal framework conditions are few and far between.

Based on a comprehensive comparison of regulations in 30 different European countries (as of 2019), Sajadova (2019) show the following results for key parameters of bankruptcy proceedings: 1) that the period for debt relief (debt relief period) varies greatly and varies between 6 months and 14 years, 2) that the minimum repayment rate is 0% in most countries and in some cases amounts to a maximum of 30%, 3) that there is more than one type of procedure in most countries, and 4) that a residual debt discharge is possible at the end of the procedure in all countries with the exception of Switzerland.

Walter and Krenchel (2021) use several dimensions to quantify the extent of "leniency" towards debtors in 25 European countries and the USA in 2020. In general, they refer to how the personal insolvency system deals with payment defaults by private individuals, how easy or difficult (duration and costs until residual debt discharge) it is for debtors to achieve a fresh start and how stigmatized the lives of debtors are after the fresh start. The indicators taken into account include the question of whether residual debt discharge is possible at all (yes/no), the duration until residual debt discharge, minimum debt

repayment rates, access to credit after the end of the procedure. The data collection method used was an analysis of national legal texts and a comparison with 19 country experts. As a result, Austria is ranked 8th out of 25, meaning it is more debtor-friendly than average. According to the authors, countries with the highest degree of leniency towards debtors are Denmark, Sweden and Poland, whereas Latvia, Hungary and Lithuania rank at the other end of the spectrum). The authors also note a strong heterogeneity of the systems. However, there are no systematic regional clusters. As a general pattern, however, there is a strong positive correlation between the degree of leniency and the age of the legislation: the older the legislation, the more lenient it is for debtors. The authors conclude from this that bankruptcy regulations of the countries tend to be formulated more strictly at the beginning and later develop in a more favorable direction for debtors (Walter & Krenchel, 2021).

3.5 COVID-19 and consumer insolvencies in Austria

Although, COVID-19 was cited as the main reason for over-indebtedness by 9.7% (2021) and 14% (2022) of new clients (ASB Schuldnerberatungen GmbH, 2021, 2022, 2023), the number of newly opened personal bankruptcy proceedings in Austria did not increase significantly in the COVID-19 years 2020 and 2021 as compared to previous years (Figure 1). A number of factors are potentially important in explaining this pattern.

First, Austria implemented a broad mix of measures to cushion adverse economic effects of the COVID-19 crisis on private households (Rechnungshof-Österreich, 2021; Scheiblecker et al., 2023). Two measures explicitly aimed at supporting indebted consumers.

1) Credit moratorium effective from April 1, 2020 to January 31, 2021. In April 2020, the Austrian federal government introduced a statutory credit moratorium. This only applied to loan agreements signed before 15 March 2020. It allowed consumers and micro-entrepreneurs to defer their repayment, interest or amortization obligations. Accordingly, any principal, interest or redemption payment due to the lender between 1 April 2020 and 31 January 2021 was deferred for a period of ten months from the due date. No default interest were payable for the duration of the deferral (COVID-19-JuBG). Individuals and businesses with fewer than 10 employees (small businesses) and an annual turnover or balance sheet total of up to EUR 2 million who were unable to meet their loan obligations as a result of the COVID-19 crisis were eligible for the program.

2) Deferral of installments in the payment plan (insolvency proceedings), effective from April 1, 2020 to June 30, 2021. In the event of payment difficulties due to the COVID-19 crisis, the installments agreed in the payment plan (insolvency proceedings, see section 3.2) could be deferred for up to nine months. The application had to be submitted to the court. Deferral was also possible against the creditor's will if it did not result in serious personal or economic disadvantages for the creditor.

Second, during the lockdowns, debt advice was only available by telephone. This made it more difficult to motivate and maintain good contact with clients (particularly those with psychosocial problems) (ASB Schuldnerberatungen GmbH, [2022](#)). In 2020 and 2021, the number of people contacting debt advice fell for the first time in years (figure 7).

Third, consumers must file for bankruptcy at the district court of their place of residence. However, during the first lock-downs district courts were closed in Austria. This is also reflected in the total count of newly opened bankruptcy proceedings which experienced sharp drops during the lockdowns in the second quarter of 2020 and 2021 (Figure 2). After 2021, when support measures phased out and no more lockdowns were imposed, the number of new personal bankruptcies started to rise again.

4 Data

The primary outcome of interest in our analysis are personal bankruptcies. While official statistics on private bankruptcies do not exist for Austria, detailed information on active bankruptcy cases is publicly available from an official website (henceforth *edicts*) maintained by the ministry of justice.⁴ Every case contains the name, date of birth and personal address of the debtor as well as procedural information such as the filing date, outcomes of every court hearing and the type of bankruptcy proceeding adopted. Even though information to be included is mandated by law and the quality and completeness of the records is generally high, whether and how certain characteristics are captured may depend on the judicial officers who administrate the files and the cooperativeness of debtors, as we will see below. In addition, bankruptcy cases are removed from this database after they are closed, so it provides an incomplete coverage of past bankruptcy cases.

However, we were given access to a complete database of anonymized personal bankruptcy cases kindly provided by the umbrella organization of Austrian debt counseling services (ASB Schuldnerberatungen GmbH).⁵ This database forms the basis of our analysis. Since the introduction of private bankruptcies in Austria in 1995, ASB has collected and anonymized information on individual cases in its insolvency database (henceforth *ASB edicts*). Until about 2002 this entailed the manual retrieval of case level data from the official gazette (Wiener Zeitung) which was subsequently automatized when the official edicts moved online. The dataset contains approximately 200,000 entries, capturing the universe of personal bankruptcy filings that occurred in Austria from 1995 until the end of May 2022. Each case contains data on debtor birth year, sex and occupational category as well as the responsible district court, legal representative, date of first public announcement, date of and reason for rejection, date of and outcome of court hearings at their conclusion, whether a debtor retained the right of self-administration of the insolvency estate, and the results for certain types of debt settlement proceedings (particularly with regard to proceedings of income levy). While sex itself is not contained in edicts, ASB uses a matching algorithm prior to anonymization to assign sex based on first names where this is possible. Furthermore, as personal addresses are removed due to anonymization, we infer a debtor's place of residence at the court district level since personal bankruptcies are assigned to the district court of habitual residence of the debtor (Nunner-Krautgasser & Weidinger, 2021). In addition, we note that other characteristics such as occupational category or legal representation also contain non-random missing values. We discuss the completeness of each variable alongside the respective analyses. To address the various hypotheses of this article, we combine bankruptcy information from ASB edicts with various other datasets (e.g. from Statistics Austria).

First, we use a monthly time series dataset at the national level. For this purpose, we

⁴www.edikte.justiz.gv.at

⁵The ASB Schuldnerberatungen GmbH, is a private non-profit making organisation and the umbrella organisation of all officially recognized debt advice services (10, as of 2023) in Austria. The latter receive public subsidies and provide free services for over-indebted clients. Additional information is available at <https://www.schuldenberatung.at/english/>.

aggregate bankruptcy filings per month from ASB edicts. We also include the following other variables that are theoretically relevant (see section 2) and available: 1) the number of divorces, 2) the unemployment rate following the national definition, 3) the level of housing debt in billion Euros, 4) the level of consumer debt in billion Euros, 5) the interest rate on newly issued consumer credit. The resulting dataset covers the period from February 1999 to March 2022. Prior to analysis, we apply the following transformations to our time series variables. Bankruptcies are only declared on days when courts are open for business and courts strictly adhere to public holidays. We thus observe calendar effects with a tendency toward more bankruptcies in months with more workdays. Since our primary interest are determinants of private bankruptcies other than public holidays, we adjust for calendar effects by calculating the average number of bankruptcies per monthly workday. The same adjustment is applied to monthly divorce counts. Next, we adjust time series with strong seasonal fluctuations (bankruptcies, divorces, unemployment rate) by extracting their seasonal component.⁶

Second, we construct a panel dataset with quarterly time series for each state. In addition to personal bankruptcies, it includes 1) the average quarterly unemployment rate, 2) the population of male inhabitants, 3) the population of inhabitants across age groups, 4) the population of inhabitants across levels of educational achievement, 5) the number of divorces, 6) bank loans to private households.⁷ We obtain a balanced panel dataset with 657 observations for 9 states and 73 quarters from Q1 2004 until Q1 2022. After again applying a calendar adjustment as discussed above, we also adjust bankruptcy and divorce counts for different state population sizes and use average bankruptcies (and divorces) per quarterly work week per 100,000 inhabitants.⁸ Other variables are similarly adjusted for population size such that we obtain population shares for demographic variables as well as loans per capita. The time series on bankruptcies, divorces and the unemployment rate are again adjusted for seasonality.

Third, we construct an annual panel dataset at district court level with the purpose of tracing the effects of changes in the presence of debt counseling services. Data on office locations of officially recognized debt counseling services is obtained manually from ASB annual reports and assigned to court districts. While there were many changes in spatial definitions of court districts in the last two decades, our focus is on those districts where changes in debt counseling services occurred and we observe that these districts were not subject to change. We exclude court districts that change in the observation period. Furthermore, we also exclude Vienna which seems to be an outlier with many bankruptcy cases but only one official debt counseling office that does not change over time. We remain

⁶We apply the X-11 method for seasonal adjustment, using multiplicative decomposition for bankruptcies and divorces and additive decomposition for the unemployment rate (`dagum2006seasonal`).

⁷As aggregate bank loans are unavailable at the state level we use as a proxy variable the bank loans issued by banks headquartered in a certain state, which are available from the Austrian central bank. While banks also operate in states other than their home state, of course, this proxy should work well if the amount of loans issued by banks based in a given state correlates with the aggregate level of loans issued in that state.

⁸We choose the scaling to facilitate interpretation and comparisons across states.

with a panel dataset with 100 court districts observed over 16 years from 2006 until 2021. Furthermore, we use 2021 population data to obtain the number of inhabitants per court districts and to calculate comparable bankruptcy rates per 10,000 inhabitants.

Fourth, we also make use of the case level bankruptcy microdata contained in ASB edicts. Since we are mainly interested in the effects of involving a debt counseling agency in a bankruptcy case, the legal representation characteristic contained in edicts is of particular importance. However, we observe that the total number of cases for which the involvement of debt counseling agencies is indicated is considerably lower than the number of legal representations ASB reports on an annual basis. Our correspondence with ASB experts confirms that edicts do not reliably capture legal representation and thus also ASB edicts cannot be used to examine the effects of debt counseling agencies on case level outcomes for Austria as a whole. Yet, our analysis of the data reveals that the reliability of legal representation attributes varies considerably across states. In particular, we notice that for the states of Tyrol and Vorarlberg there is a strong correspondence of total annual legal representations by debt counseling services from ASB edicts with the figures on total annual legal representations reported by the debt counseling services. In all other states, legal representation by debt counseling services seems to be severely underrepresented in edicts. We thus base our analysis on the effects of debt counseling services on case level outcomes on a pooled dataset of close to 30,500 bankruptcy cases that occurred in Tyrol and Vorarlberg between 1995 and June 2022. Finally, we also relate the likelihood of being represented by a debt adviser/lawyer in court proceedings to a number of socio-demographic characteristics of the debtor.

5 Methodology

We employ several methods to address the hypotheses outlined in section 2. To address Hypothesis 1 we follow T. Gross et al. (2021) and evaluate the effects of a major Austrian bankruptcy reform in 2017 (Insolvenzrechtsänderungsgesetz (IRÄG) 2017) by adapting the "excess mass" method from the tax-notch literature (Chetty et al., 2011; Kleven, 2016). We use the following equation to regress seasonally adjusted bankruptcy filings per monthly workday y_t on a linear time trend t and monthly fixed effects τ_m for the period before the reform bill was introduced in parliament (2012 until January 2017) and then use the resulting model to predict a counterfactual time series for the absence of the IRAG 2017 reform.

$$y_t = \gamma t + \tau_m + \epsilon_t \tag{1}$$

As discussed in section 2, bankruptcies may also depend on macroeconomic variables such as GDP, unemployment and interest rates. We start by examining these relationships for Austria by means of time series regression models. Utilizing the monthly dataset from February 1999 until March 2022, we use average bankruptcies per monthly workday as dependent variable and control for divorces, the unemployment rate, housing debt

and consumer debt as well as the interest rate on consumer debt (see section 4 for data transformations). To address autocorrelation, we apply variable transformations and include lags of the dependent and other variables. We consider models in year-over-year (YOY) growth rates, monthly growth rates and first differences. Since the lag structure on covariates is not clear a priori, our preferred specification includes the first as well as the 12th lags to allow for effects of shocks in the short- as well as the medium run. Furthermore, we include indicator variables for the 2017 and 2021 bankruptcy reforms as well as for the COVID-19 lockdowns to control for outliers.

The covariates we consider may not only be exogenous predictors that affect bankruptcies. The reverse may also be true as bankruptcy filings could affect macroeconomic variables as well. It is thus appropriate to address Hypothesis 2 and Hypothesis 3 concerning the intertemporal relationship of bankruptcies and the macroeconomy in Austria using vector autoregressive (VAR) methods (Sims & Zha, 2006; Stock & Watson, 2017). We estimate a standard Bayesian VAR (BVAR) model with Minnesota prior and including a constant term (Koop & Korobilis, 2010). Furthermore, using the same data as before, we order the variables from slow to fast moving and include divorces (in logs), bankruptcy filings (in logs), the unemployment rate, housing debt and consumer debt (both in logs) as well as the interest rate on consumer debt. The lag length is selected by optimizing the Deviance Information Criterion (DIC) and corresponds to three lags in the baseline model. Identification of the structural VAR (SVAR) is achieved by Cholesky decomposition and impulse responses are subsequently computed to study the impact of shocks.

The relationship between bankruptcies and macroeconomic variables could also have changed over time, however, and one particular instance of this might have occurred during the COVID-19 pandemic. In the beginning of the pandemic and especially during lockdowns, filings decreased abruptly due to contact restrictions, debt moratoria and subsidies (section 3.5). At the same time, unemployment reached record levels. As such, the pandemic might have been an unusual recession distorting the relationship between unemployment and bankruptcies. To address this concern, we estimate another VAR model for the period before the pandemic and again provide impulse responses.

To further address the challenge of potentially changing relationships within the timeframe we study, e.g. during the COVID-19 pandemic, we also estimate a time varying parameter (TVP) VAR specification. In particular, we make use of a threshold time-varying parameter model proposed and implemented in the software *R* by Huber et al. (2019). We follow the authors' recommendations in parameterizing the model and choose the values of ξ , as well as r_0 and r_1 and the lag length from a forecasting exercise. The baseline specification in log-levels is estimated with 2 lags, $\xi = 0.025$, $r_0 = 0.001$ and $r_1 = 0.001$. As for the BVAR models, we maintain the same variable ordering and use Cholesky decomposition to identify the structural model and compute impulse response functions. As a robustness check, we also estimate all VAR models in year-on-year growth rates instead of log-levels.

So far we have abstracted from structural demographic factors which change only

gradually and on which high frequency data is unavailable, but which may nevertheless influence the number of bankruptcy filings. Furthermore, there are also other important structural factors with limited variation at the national level, such as the availability of information and counseling. We therefore approach Hypothesis 5 and Hypothesis 4.1 at lower levels of aggregation and with lower frequency data, thereby exploiting the regional variation in structural factors. We employ Two-Way Fixed Effects models (TWFE) for our baseline estimations to control for time-constant unobserved factors and calendar effects. Our annual panel dataset at the court district level allows us to examine the correlation between the presence of debt counseling agencies and bankruptcy filings, thereby shedding some light on Hypothesis 4.1. The estimated equation in this case includes the number of filings on the left hand side and a debt counseling agency indicator variable as well as year and court district fixed effects on the right hand side.

We also address Hypotheses 5 and 2 by means of the quarterly state-level panel dataset discussed above and regress seasonally adjusted bankruptcy filings per quarterly work week on the unemployment rate, the population shares of men, different age groups and people with only compulsory education, the number of divorces and loans per capita (see section 4 for data transformations) as well as time and state fixed effects. We obtain robust standard errors addressing cross-sectional and serial correlation (Driscoll & Kraay, 1998).

Finally, we examine how debt counseling agencies affect the quality of bankruptcy proceedings, taking advantage of the good coverage of the legal representation variable in our case-level dataset for Tyrol and Vorarlberg. To address Hypothesis 4.2, we estimate several linear regression models using different procedural characteristics as dependent and the types of legal representatives as independent variables. In addition, we also control for age group, sex and occupation to account for differences in the client base of debt counselors and lawyers. In our baseline specifications, we estimate linear probability models for binary dependent variables to facilitate interpretation.

6 Results

6.1 Personal costs and benefits of filing for bankruptcy

In this section, we evaluate the effects of the Austrian IRAG 2017 reform, which amounted to the most significant change in the bankruptcy code in favor of debtors since the introduction of private bankruptcies in Austria. As discussed further in section 3, IRAG 2017 abolished the minimum repayment rate, thereby enabling even highly indebted individuals to realistically obtain debt discharge in bankruptcy proceedings, and shortened the time to be spent at subsistence income to five years under proceedings of income levy. In Figure 4 below, we compare the time series of monthly bankruptcy filings to our predicted counterfactual time series that extends the time trend in filings from before the introduction of the IRAG reform in parliament.

Our results suggest that the reform had a pronounced positive effect on the number of filings. The drop in filings after the announcement of the reform bill in parliament and the

subsequent hike suggest that over-indebted individuals delayed their filings until after the new law was implemented. Although this is not causal evidence, these results are consistent with Hypothesis 1, whereas a decrease in the cost of filing for bankruptcy leads to an increase in the number of filings. Considering the entire Austrian bankruptcy time series, the period immediately after the reform also seems to correspond to a period of especially high variance (see Figure 2). As such, the Austrian reform had the opposite effects from the US reform (BAPCPA 2005) studied by (T. Gross et al., 2021) that rendered the US bankruptcy code less lenient.

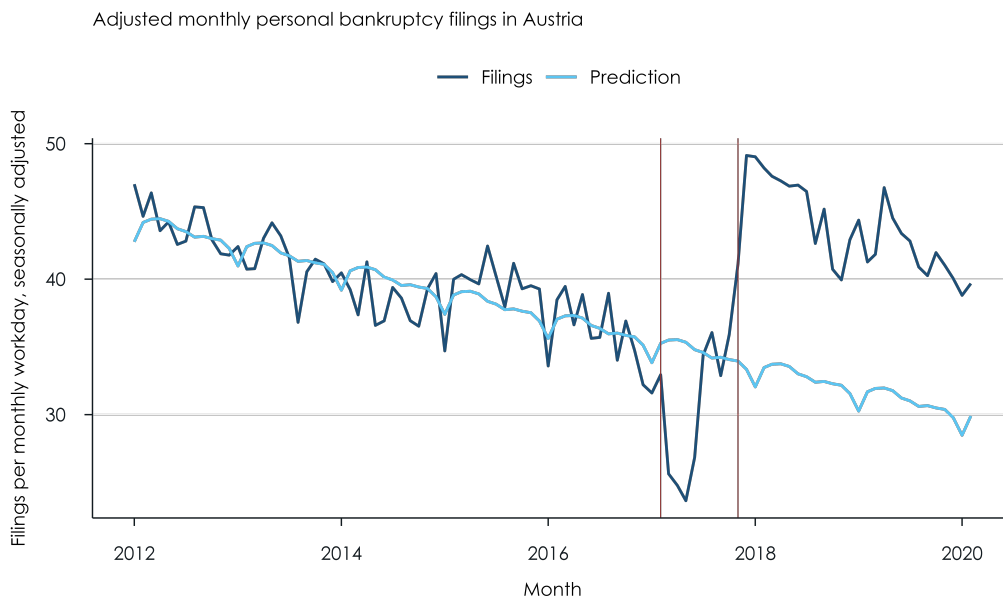


Figure 4: Austrian bankruptcy filings per monthly workday adjusted for seasonality and predicted filings from a linear model. The first vertical line indicates the introduction of the IRAG 2017 reform bill in parliament and the second vertical line refers to the date when IRAG 2017 became effective.

Apart from the costs and benefits of bankruptcy, the context matters for the number of filings. In the next section, we review the available evidence on the influence of structural factors on the number of bankruptcy filings.

6.2 Shocks

Hypothesis 2 states that unanticipated revenue and expenditure shocks increase the number of private bankruptcies. We test this claim by examining the relationship of two macro variables, the unemployment rate and the divorce rate, with bankruptcy filings. Both unemployment and divorce may represent significant shocks for over-indebted individuals.

Table 1 below reports estimates from time series regression models. The results suggest

that divorces are positively associated with bankruptcies in the short run. This is supported by the positive contemporaneous effects across all specifications and the positive effect on the first lag in the monthly growth rate specification. Moreover, the negative lags in the year-over-year growth rate specifications also suggest limited or even negative medium-term effects of higher divorce numbers in the past. Regarding the unemployment rate we observe a negative contemporaneous relationship across all specifications (although not significant for monthly growth rates). Thus, somewhat counterintuitively, if unemployment rates are higher than in the same month of the previous year, bankruptcy filings tend to be lower. On the other hand, the first lag of the unemployment rate is positive while the 12th lag is again negative. Similar to Garrett and Wall (2014), these results may suggest that bankruptcies respond to the business cycle with a lag.

Table 1: Time Series Regression Models for Monthly Bankruptcy Filings in Austria

	YOY growth rate	YOY growth rate	YOY growth rate	Monthly growth rate	First differences
<i>Intercept</i>	-0.044*** (0.017)	-0.033** (0.014)	-0.048*** (0.018)	-0.006 (0.006)	0.035 (0.185)
<i>Bankruptcies_{t-1}</i>	0.653*** (0.044)	0.719*** (0.041)	0.575*** (0.045)	-0.319*** (0.058)	-0.249*** (0.067)
<i>Bankruptcies_{t-12}</i>	-0.187*** (0.044)		-0.219*** (0.047)	-0.036 (0.057)	-0.085 (0.063)
<i>Divorces</i>	0.036** (0.016)	0.046*** (0.013)	0.033* (0.018)	0.074*** (0.008)	0.090** (0.041)
<i>Unemployment</i>	-0.860*** (0.169)	-0.805*** (0.154)	-0.209*** (0.075)	-0.136 (0.265)	-2.512** (1.213)
<i>Housing debt</i>	0.315 (0.409)	0.436 (0.416)	0.556*** (0.190)	0.439 (0.397)	-0.245 (0.262)
<i>Consumer debt</i>	-0.213 (0.303)	-0.052 (0.257)	-0.101 (0.101)	0.134 (0.221)	0.488 (0.328)
<i>Interest rate</i>	0.056 (0.261)	0.000 (0.246)	-0.109 (0.079)	0.156 (0.200)	-0.410 (1.256)
<i>Divorces_{t-1}</i>	-0.057*** (0.014)	-0.068*** (0.013)		0.058*** (0.009)	0.036 (0.030)
<i>Unemployment_{t-1}</i>	0.683*** (0.156)	0.737*** (0.149)		0.293 (0.254)	0.847 (1.060)
<i>Housing debt_{t-1}</i>	0.302 (0.423)	0.122 (0.422)		0.416 (0.395)	0.407 (0.266)
<i>Consumer debt_{t-1}</i>	0.156 (0.291)	0.040 (0.257)		-0.119 (0.205)	-0.583* (0.306)
<i>Interest rate_{t-1}</i>	-0.133 (0.260)	-0.006 (0.245)		0.101 (0.187)	0.038 (1.209)
<i>Divorces_{t-12}</i>	-0.114 (0.085)		-0.191** (0.089)	-0.004 (0.009)	-0.044 (0.031)
<i>Unemployment_{t-12}</i>	-0.249*** (0.083)		-0.273*** (0.082)	0.036 (0.093)	-0.784 (0.482)
<i>Housing debt_{t-12}</i>	0.363* (0.193)		0.574*** (0.199)	0.541 (0.396)	-0.032 (0.251)
<i>Consumer debt_{t-12}</i>	-0.031 (0.075)		-0.022 (0.077)	0.431** (0.212)	0.490* (0.296)
<i>Interest rate_{t-12}</i>	0.017 (0.076)		-0.007 (0.077)	-0.009 (0.194)	-0.147 (1.096)
Observations	254	265	254	265	266

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Source: ASB edicts. Monthly observations from February 1999 to March 2022. Dependent variable: average bankruptcies per monthly workday (seasonally adjusted). Apart from the listed covariates we also include dummy variables to control for outliers related to major bankruptcy reforms in 2017 and 2021 as well as Covid-19 lockdowns. efddata. For a detailed definition of all model variables see section

Figure 5 below shows impulse response functions from our standard Bayesian VAR (BVAR) models. The graph shows the effects of unit shocks to the log divorces and the unemployment rate on the log bankruptcies as they evolve on a monthly basis. The solid black line corresponds to posterior median responses while the dotted lines provide 68% credible intervals. The graphs in the left column display the results for the entire sample while the impulse responses in the right column are only estimated for the Pre-COVID-19 sample.⁹ The results indicate that an increase in divorces tends to raise bankruptcies in the medium run while a shock to the unemployment rate has the opposite effect. A unit increase in log divorces (2.72 divorces per monthly work day) can, for instance, be interpreted as an increase of 0.1 in log bankruptcies, or an increase of 1.1 bankruptcies per monthly work day. The left-hand column highlights that the upheaval during the COVID-19 pandemic (and the large outliers in bankruptcies, divorces and unemployment) has a considerable influence on the estimated effects. Considering the robustness of these results transforming variables into year-on-year growth rates, the positive medium run effects of a divorce shock disappear or become insignificant while a negative medium run effect on the unemployment rate persists in the Pre-COVID-19 sample.¹⁰

⁹Appendix Figures 11 and 12 provide impulse responses for all variables.

¹⁰Appendix Figures 13 and 14 show the respective results for both samples.

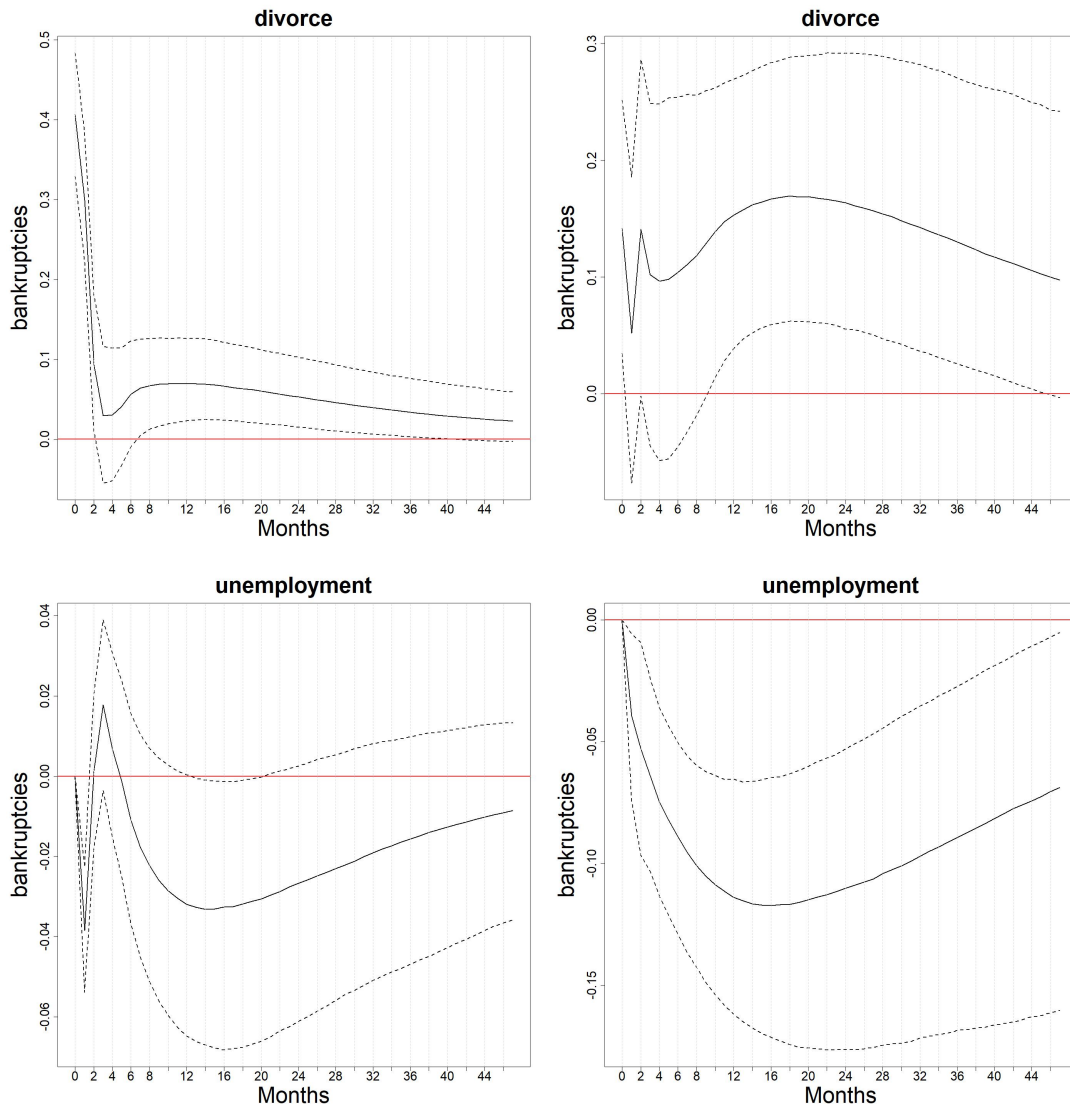


Figure 5: Impulse responses obtained from a Bayesian VAR model with Minnesota prior using Cholesky decomposition. The model is estimated for the time period February 1999 - March 2022.

In addition to the BVAR results discussed here, we further consider the possibility of changing relationships with particular focus on the COVID-19 pandemic and provide impulse responses from threshold time-varying parameter (TTVP) models in Appendix sections [A.2.1](#) and [A.2.2](#). This method provides posterior densities for each model parameter in each time period and can thus be used to compute impulse response functions for each draw and month to examine how they evolve throughout the sample. Following [Huber et al. \(2019\)](#), we compare median posterior responses for two time periods in our sample, i.e. until

February 2020 and after. For each sample period, median impulse responses evolve from yellow to red and dotted lines provide 68% credible sets. While impulse responses change considerably for certain variables they tend to be similar for bankruptcies before and after the pandemic. This could suggest that the upheaval during the COVID-19 pandemic was short lived and did not fundamentally change the relationships we study.

We furthermore examine the relationship of bankruptcies, divorces and unemployment at the regional level with the quarterly state panel dataset. Table 2 below shows the results of Two-Way Fixed Effects regressions using bankruptcy filings per quarterly work week per 100,000 inhabitants as a dependent variable. Models 1-3 are estimated on the full sample while Model 4 is estimated for the Pre-COVID-19 period only (until Q4 2019). The results indicate that the unemployment rate as well as the divorce rate are negatively associated with the bankruptcy rate. Including time lags shows that the first lags on both variables are insignificantly positive.

Table 2: Two-Way Fixed Effects Regression for quarterly bankruptcy filings across federal states

	Model 1	Model 2	Model 3	Model 4
unemployment	-0.145** (0.061)	-0.142*** (0.044)	-0.140*** (0.048)	-0.051 (0.057)
male	78.305 (73.510)	75.080 (73.876)	78.910 (72.974)	38.335 (71.592)
< 15 years	148.899*** (27.546)	150.443*** (27.458)	145.479*** (24.970)	149.469*** (25.366)
15-29	11.291 (12.861)	13.965 (12.727)	8.767 (12.901)	19.858 (12.138)
30-44	-109.476*** (16.011)	-107.448*** (15.194)	-102.724*** (13.062)	-110.467*** (15.891)
mandatory schooling	7.822 (5.001)	8.207* (4.950)	8.824* (4.836)	4.447 (4.440)
divorce	0.019 (0.026)	-0.004 (0.027)	-0.003 (0.029)	-0.047* (0.026)
loans	89.021*** (34.386)	86.742*** (32.766)	50.425 (30.816)	112.697** (45.593)
unemployment_t-1		0.052 (0.045)	0.056 (0.044)	0.012 (0.072)
unemployment_t-2		-0.062 (0.057)	-0.045 (0.054)	-0.067 (0.061)
divorce_t-1		0.040 (0.037)	0.040 (0.038)	0.002 (0.040)
divorce_t-2		0.039 (0.039)	0.041 (0.035)	0.010 (0.044)
home loans			50.106** (21.123)	
Observations	657	657	657	576

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Source: ASB edicts. Observations are federal state quarters. Q1 2004-Q1 2022(Q4 2019) in M1-M3(M4). Dependent variable is average bankruptcies per quarterly work week per 100,000 inhabitants. State and quarter fixed effects not displayed. Driscoll-Kraay (1998) standard errors. For a detailed definition of all model variables see section efddata.

6.3 Availability of credit

We next review the available evidence on Hypothesis 3 regarding the positive effect of access to credit for bankruptcy filings. Since detailed data on credit accessibility is not available in Austria, we rely on the aggregate levels of consumer debt, housing debt and the interest rate on consumer credit as proxy variables. We hypothesize that higher levels of debt and a lower interest rate are associated with higher numbers of bankruptcies.

The results in Table 1 suggest only marginally significant effects for credit related variables. In our preferred specification with year-over-year growth rates and all lags, only the 12th lag of housing debt is significantly larger than zero. However, this could to some extent be related to the limited available sample size. When the first lag is removed from the model (column three), the positive effect of housing debt is strongly significant both contemporaneously and in the 12th lag. On the other hand, the monthly growth rate and first differences specifications suggest a marginally significant positive effect on the 12th lag for consumer debt while the first lag for first differences shows a marginally significant negative effect. The interest rate effect is not significantly different from zero in all specifications.

Figure 6 again shows impulse responses from our BVAR models for the main and Pre-COVID-19 samples. Here, we focus on the effects of shocks to housing and consumer debt as well as the interest rate on bankruptcies. The graphs indicate that there are pronounced positive effects of both increases in housing and consumer debt on bankruptcies. The results for the interest rate are less clear, but negative for the Pre-COVID-19 sample. The strong positive effect of housing debt also holds up in growth rates, while the results for consumer debt are insignificant in this specification.¹¹ For interest rates, there is also a slight negative dent in the medium run in the Pre-COVID-19 growth rate model. In the TTVP models, only the positive effect of housing debt remains significant while there are again no large differences between Pre- and Post-COVID-19 impulse responses.

Loans (per capita) are also included in the TWFE regressions in Table 2. Note that these are not aggregate state level quarterly loan levels but the outstanding loans to private individuals of banks headquartered in a given state. Nevertheless, there is a positive and significant relationship between bank loans and bankruptcy filings. Furthermore, including an indicator on home loans (the same state level qualification applies) in model 3 shows that this sub category of loans is strongly correlated with filings as well.

¹¹See Appendix Figures 13 and 14.

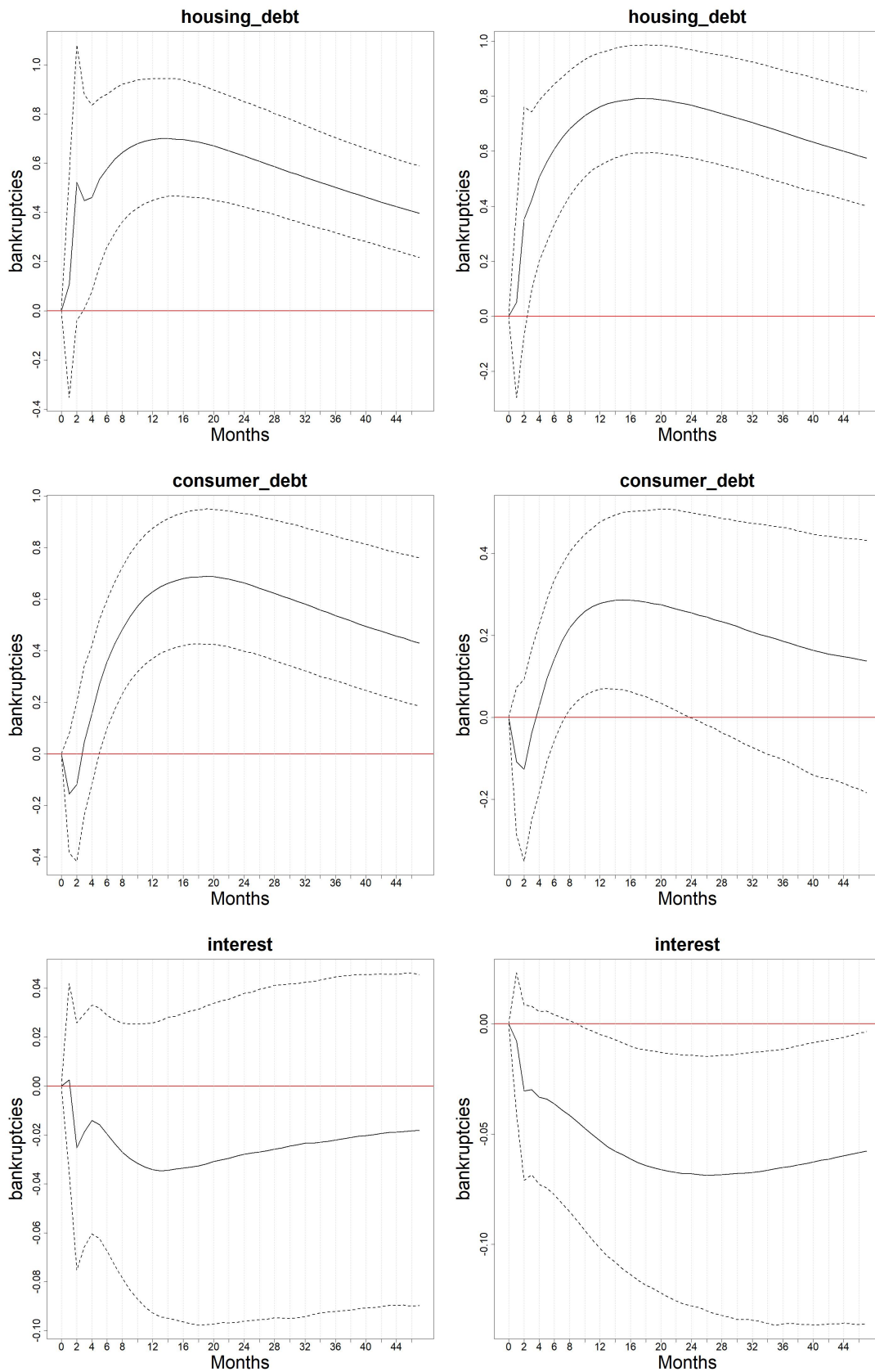


Figure 6: Impulse responses obtained from a Bayesian VAR model with Minnesota prior using Cholesky decomposition. The model is estimated for the time period February 1999 - March 2022.

6.4 Access to information: the role of debt counseling

Another factor that determines whether over-indebted individuals opt for bankruptcy is whether they are sufficiently aware about this option and how it applies to their case. Hypothesis 4 states that more information about private bankruptcies increases the number of filings. In Austria, officially recognized debt counseling agencies provide high quality, accessible and case specific information to over-indebted individuals. Figures 7 to 10 show an increasing annual stock of clients of debt counselling agencies, counseling centers and that the number of debt advisers (FTE) has risen by roughly 50% from 2005 to 2022.¹² In this section, we thus examine whether the local presence of debt counseling agencies increases the number of filings (Hypothesis 4.1) and whether the involvement of debt counseling agencies in a court proceedings improves the quality of outcomes from a debtor's perspective (Hypothesis 4.2).

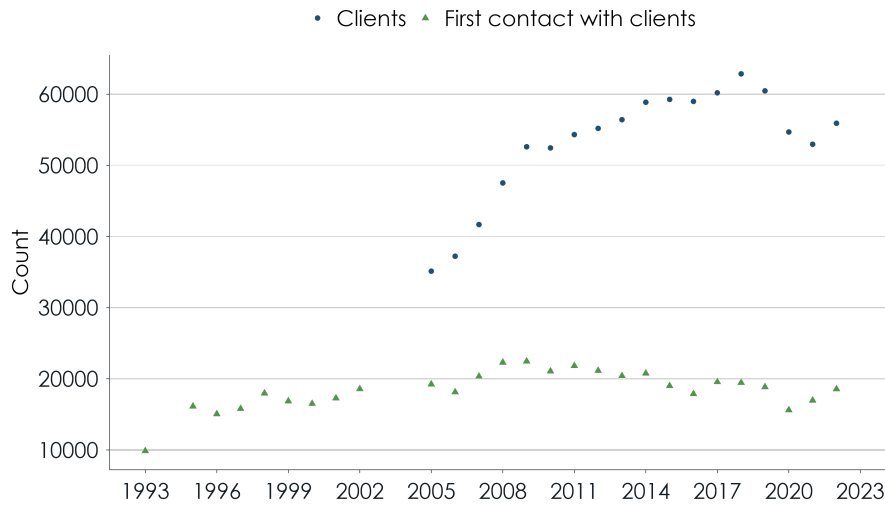


Figure 7: No. of clients at debt counselling agencies. Data from ASB annual reports and from journal "das budget" published by ASB.

¹²Due to a data adjustment in individual federal states, the value from 2023 is no longer comparable with previous years.

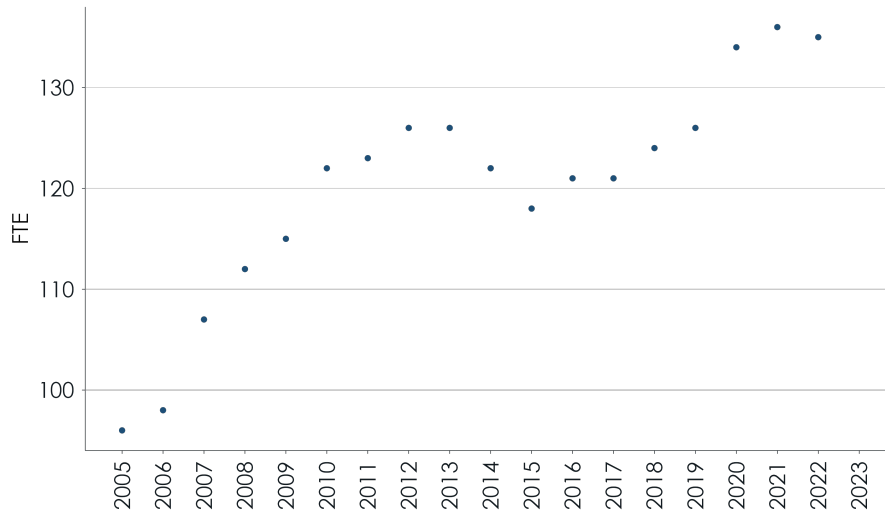


Figure 8: Staff full time equivalents (FTE) at debt counselling agencies. Data from ASB annual reports and from journal "das budget" published by ASB.

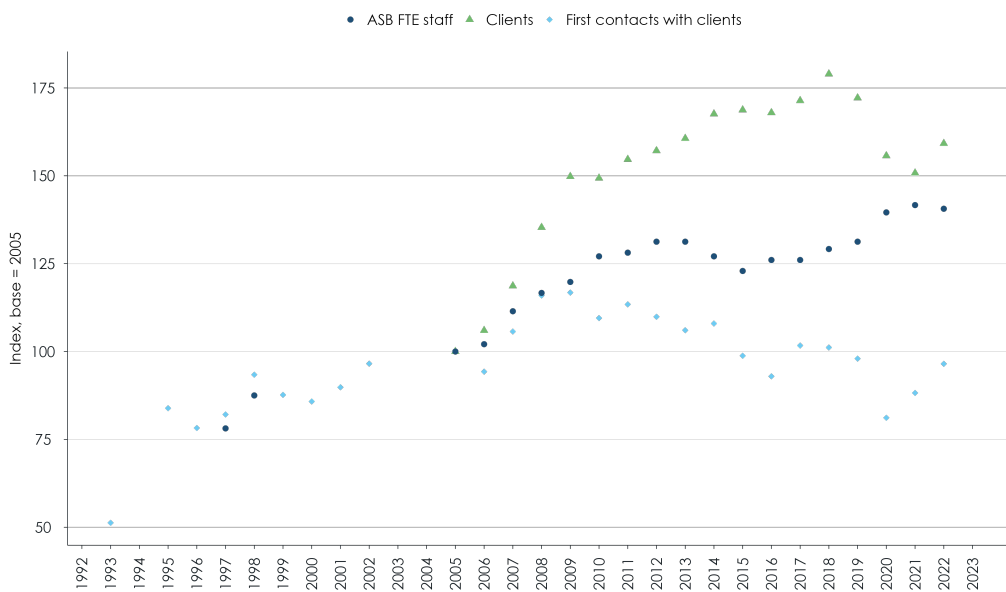


Figure 9: Debt counselling agency clients and staff index (FTE = full time equivalents). Data from ASB annual reports and from journal "das budget" published by ASB.

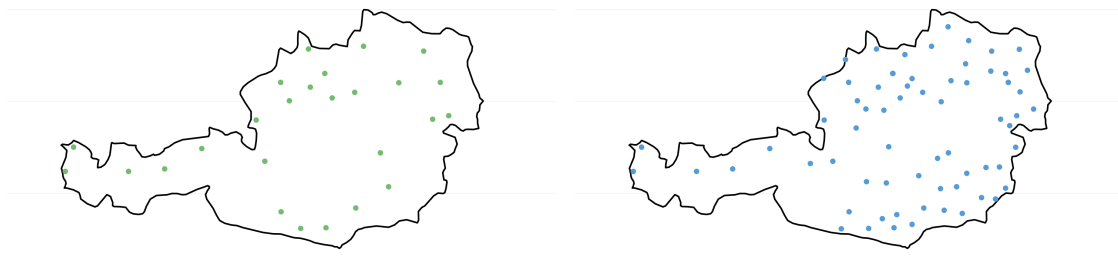


Figure 10: Debt counseling centers. Data from ASB annual reports.

Debt counseling agencies and the number of filings We assess the impact of debt counseling agencies on filings by means of Two-Way Fixed Effects regressions and our annual court district panel dataset. An important limitation is that we do not consider court districts that were abolished or newly created in our dataset. Nonetheless, we observe 100 court districts over 16 years. Table 3 shows the regression results. The equation only includes annual bankruptcy filing rates per 10,000 inhabitants per court district and an indicator variable for the presence or absence of a debt counseling agency as well as time and court district fixed effects. The result suggests that a local debt counseling agency on average adds 2 additional bankruptcies per 10,000 inhabitants, court district and year and is marginally significant.

Table 3: The presence of debt counselling agencies and bankruptcy filings in court districts.

	Bankruptcies
Debt counselling agency	1.904* (1.009)
Observations	1600

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Two-Way Fixed Effects Regression of annual bankruptcy rates per 10,000 inhabitants per court district on an indicator variable for the presence of a debt counselling agency. Year and court district fixed effects not displayed. Observations: 100 court districts from 2006-2021. Population data from 2021 is used to obtain the number of inhabitants per court district.

Debt counseling agencies and the quality of bankruptcies Beyond the number of filings, the information debt counseling agencies provide to their clients may also have an impact on the outcomes of the proceedings they are involved in. Given the relatively good coverage of the legal representation field in the edicts database for Tyrol and Vorarlberg, we are able to shed some light on this hypothesis based on the case level microdata for these states. About half (54%) of the cases in the sample are represented by debt counselors,

lawyers represent 7 %, another 2 % have other representatives while the rest is represented by custodians (<1%) or has unknown (37%) representatives.

Table 4 displays the results of regressing several case level outcomes on the binary indicators of being represented by a debt counselor or a lawyer during bankruptcy proceedings. The group with unknown/other representatives forms the reference category. The results show that both debt counselors and lawyers strongly reduce the likelihood of cases being rejected, presumably because of better preparation of the necessary documents. Furthermore, only debt counselors significantly reduce the likelihood of losing the right to self-administration of the bankruptcy estate. Next, we turn to court hearings that have ended in a certain type of bankruptcy proceeding. Lawyers are more likely to represent their clients in payment plans and less likely to do so in proceedings of income levy, while the opposite is true for debt counselors. Among those cases where results are known¹³ we observe that the likelihood of receiving residual debt discharge is rather evenly distributed across groups if not slightly lower among the group with lawyers. Furthermore, the total duration for proceedings of income levy (in days) is significantly shorter for those with debt counselors by about four months. The duration of court hearings is also significantly shorter for the group with debt counselors while it is significantly longer for those with lawyers.

We next examine the types of clients that select themselves into legal representation by debt counselors and lawyers. To this end and for the sake of illustration, Table 5 shows the results of linear probability models regressing indicator variables of representation by debt counselors and lawyers on socio-demographic characteristics reported in edicts. The baseline consists of male 21-44-year-old white collar workers. We caution that there is some uncertainty in the quality of the entries on these characteristics in edicts. The results indicate that women, on average, are less likely to be represented by lawyers and more likely to be represented by debt counselors. Age furthermore seems to be negatively associated with debt counseling while the opposite is true for lawyers (there are very few, i.e. only 60, observations for below 21-year-olds). We also observe that among occupational types and compared to white collar workers, the self-employed are significantly less likely to have debt counselors, while for the remaining groups we observe a positive effect. This is reflected in opposite signs for the effect on the likelihood being represented by a lawyer. Interestingly, the self-employed also have a lower probability than white collar workers to use lawyers.

¹³Results are mostly available for cases under proceedings of income levy only while results for the bulk of cases under payment plans are not recorded in edicts.

Table 4: Bankruptcy outcomes and legal representation in the states of Tyrol and Vorarlberg.

	Case rejected	Self- administration denied	Payment plan	Proceedings of income levy	Debt discharge for proceedings of income levy	Total duration for proceedings of income levy	Duration court hearings
Constant	0.265*** (0.006)	0.166*** (0.005)	0.729*** (0.011)	0.219*** (0.011)	0.569*** (0.021)	2387.326*** (39.637)	237.114*** (5.310)
Debt counselor	-0.318*** (0.004)	-0.096*** (0.003)	-0.036*** (0.007)	0.071*** (0.007)	-0.020 (0.013)	-124.441*** (23.820)	-48.510*** (3.340)
Lawyer	-0.324*** (0.007)	-0.009 (0.006)	0.075*** (0.012)	-0.068*** (0.012)	-0.042 (0.026)	-22.347 (48.538)	22.477*** (5.751)
Num. obs.	30102	30102	24204	24204	7526	7526	24197

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Unit of observation = bankruptcy case that occurred in Tyrol and Vorarlberg between 1995 and June 2022. OLS. We additionally control for sex, age group and occupation.

Table 5: Legal representation and debtor characteristics in the states of Tyrol and Vorarlberg.

	(1) Debt Counselor	(2) Lawyer
Constant	0.374*** (0.010)	0.136*** (0.005)
Female	0.102*** (0.006)	-0.031*** (0.003)
Age below 21	-0.197*** (0.063)	-0.035 (0.033)
Age 45-65	-0.023*** (0.006)	0.010*** (0.003)
Age above 65	-0.080*** (0.020)	0.041*** (0.011)
employment status unknown	0.182*** (0.010)	-0.045*** (0.005)
Blue collar worker	0.181*** (0.011)	-0.078*** (0.006)
Unemployed	0.161*** (0.015)	-0.089*** (0.008)
Public official	0.113** (0.055)	0.007 (0.029)
Domestic work	0.087*** (0.030)	-0.060*** (0.016)
Pensioner	0.215*** (0.016)	-0.092*** (0.009)
Self-employed	-0.343*** (0.018)	-0.108*** (0.010)
Other	0.057*** (0.018)	-0.082*** (0.010)
Num. obs.	30102	30102

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Unit of observation = bankruptcy case that occurred in Tyrol and Vorarlberg between 1995 and June 2022. OLS (linear probability model). Ref. cat.: male, age 21-44, white collar worker. Dependent variable originally has four categories and is dichotomized as follows in model 1: 1 if debt counselor, 0 if lawyer or custodian or other; analogue for model 2.

6.5 Socio-demographic characteristics

Finally, we turn to Hypothesis 5 which states that bankruptcy filings should be higher if there is a higher number of at-risk-groups in the population. Among these groups are the middle aged, parents with young children, males and the less educated.

We again refer to Table 2 to examine this hypothesis. The results indicate that from the groups we identify, only the share of under 15-year-olds seems to have a significant positive relationship with bankruptcy filings. The population share of males may further point into the right direction, although only marginally significant in model 3. However, the share of the middle aged population (the 30-44-year-olds) is negatively associated with filings while there is no relationship with the share of people with only mandatory schooling as their highest educational attainment.

7 Discussion and Conclusion

Based on an extensive literature review we formulated several hypotheses on explanatory factors of consumer bankruptcies.

- **H1:** The lower the costs of personal bankruptcy, the higher the number of bankruptcy filings.
- **H2:** The more and the more severe the economic shocks, the more bankruptcies.
- **H3:** The cheaper and the broader the access to credit for private households, the more borrowers with a higher default risk and the more bankruptcies.
- **H4:** The more information is available about bankruptcy proceedings and the more accessible this information is for over-indebted persons, the higher the number of bankruptcy filings.
- **H5:** The higher the proportion of socio-demographic groups in the overall population that have an above-average risk of over-indebtedness - e.g. middle-aged people - the more bankruptcies.

We consider the effects of a major bankruptcy reform in 2017 (Insolvenzrechtsänderungsgesetz (IRÄG)), which abolished the minimum repayment rate, thus allowing even highly indebted individuals to realistically obtain a debt discharge in bankruptcy proceedings, and shortened the time to subsistence income to five years in income seizure proceedings. Adapting the "excess mass" method from the tax notch literature (Chetty et al., 2011; Kleven, 2016), we compare (counterfactual) predicted with realized bankruptcy numbers in our observation period. Consistent with H1, we observe a decrease in bankruptcy filings after the announcement of the reform bill and a subsequent increase. This suggests that over-indebted individuals delayed filing until after the new law was implemented.

Regarding H2, the results of the BVAR models indicate that an increase in divorces tends to increase bankruptcies in the medium run, while a shock to the unemployment rate

has the opposite effect. The panel regression results indicate that both the unemployment rate and the divorce rate are negatively associated with the bankruptcy rate. When time lags for these variables are included, the first lags of these variables are insignificantly positive for the full sample. Overall, we do not find robust support for H2.

Consistent with our expectations in H3, debt (including housing debt) shows robust positive effects in our different model specifications. Access to credit thus appears to be an important factor.

According to H4, a factor that determines whether overindebted individuals opt for bankruptcy is whether they are sufficiently aware about this option and how it applies to their case. We operationalize this hypothesis by looking at debt counseling agencies. These provide high quality, accessible and case specific information to overindebted individuals. Our results suggest a marginally statistically significant positive correlation between the number of local debt counseling agencies and the number of bankruptcies.

Finally, our regression analysis provides no support for hypothesis 5.

Overall, the results thus show a relatively high relevance of bankruptcy regulations (i.e. the changing conditions for debt relief) and household debt ratios at the regional and national level in explaining personal bankruptcies. In contrast, evidence on correlations of bankruptcies with unemployment, divorce rates and some demographic variables is mixed in our study. On the one hand, this may be indicative of the Austrian welfare state's efficacy in mitigating the risk of severe debt problems and bankruptcy following economic shocks for a significant proportion of the population. On the other hand, this suggests that the analysis of individual-level panel data covering longer employment status and marital status trajectories could be more appropriate. Areas for further research based on such individual data e.g. are the selection mechanism of over-indebted persons into debt counseling services, the effect of private bankruptcy on self-employment in Austria and income and employment trajectories before and after declaring bankruptcy. The latter could also provide more evidence on the relevant effect lag of economic shocks.

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A Appendix

A.1 VAR

A.1.1 VAR, main sample, log-levels

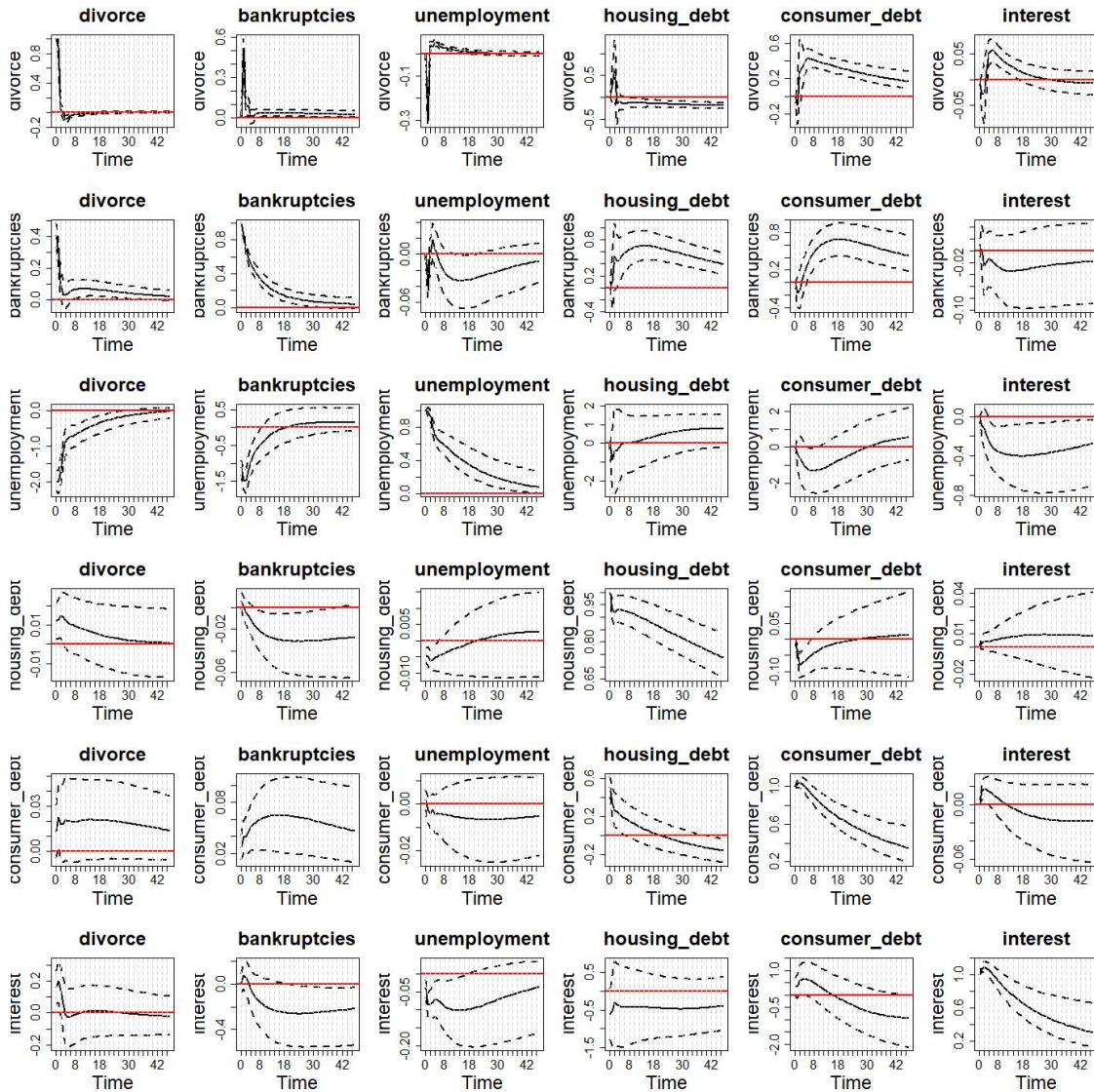


Figure 11: Impulse responses obtained from a Bayesian VARX model with Minnesota prior using Cholesky decomposition. The model is estimated for the time period February 1999 - March 2022.

A.1.2 VAR, short sample, log-levels

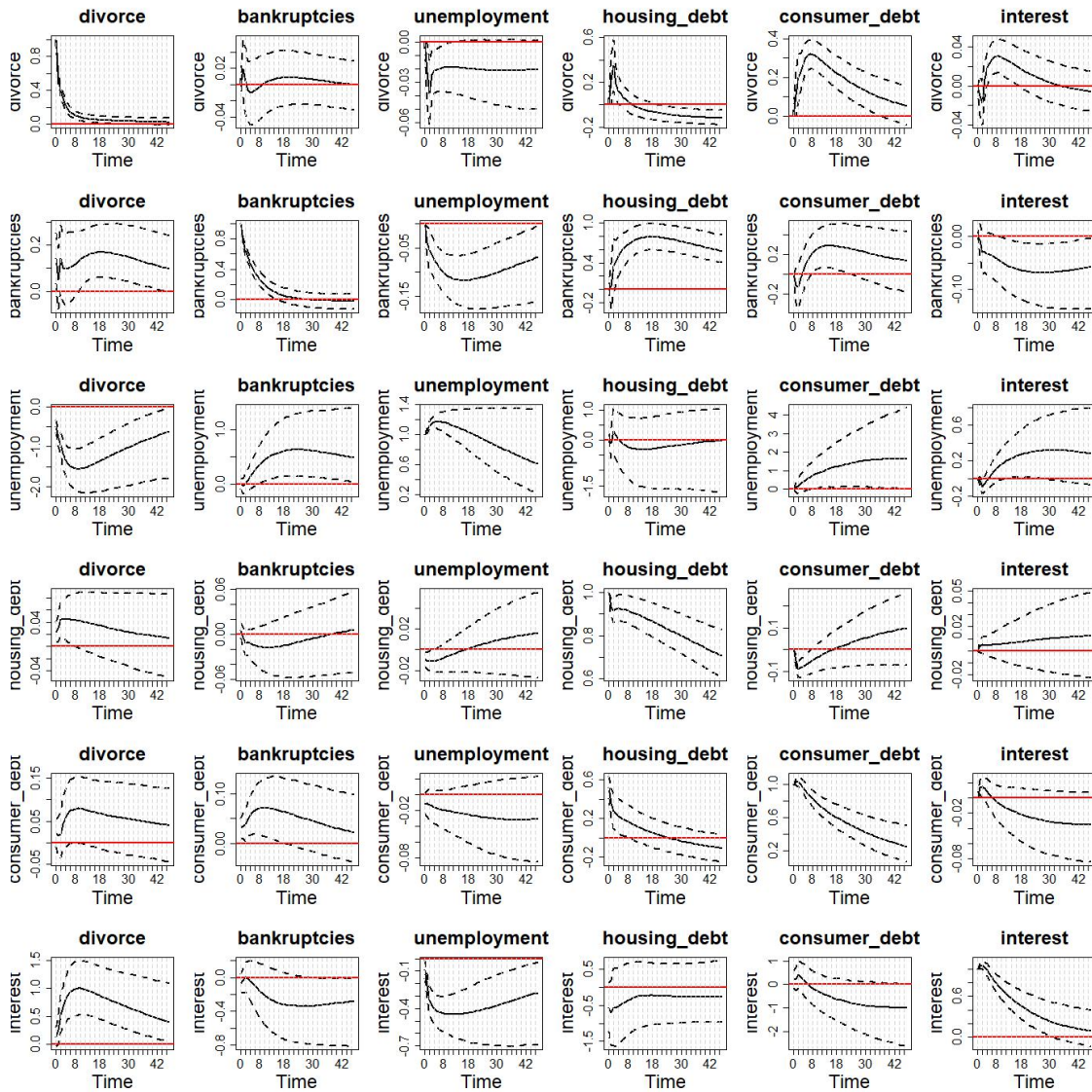


Figure 12: Impulse responses obtained from a Bayesian VARX model with Minnesota prior using Cholesky decomposition. The model is estimated for the time period February 1999 - January 2020.

A.1.3 VAR, main sample, growth rates

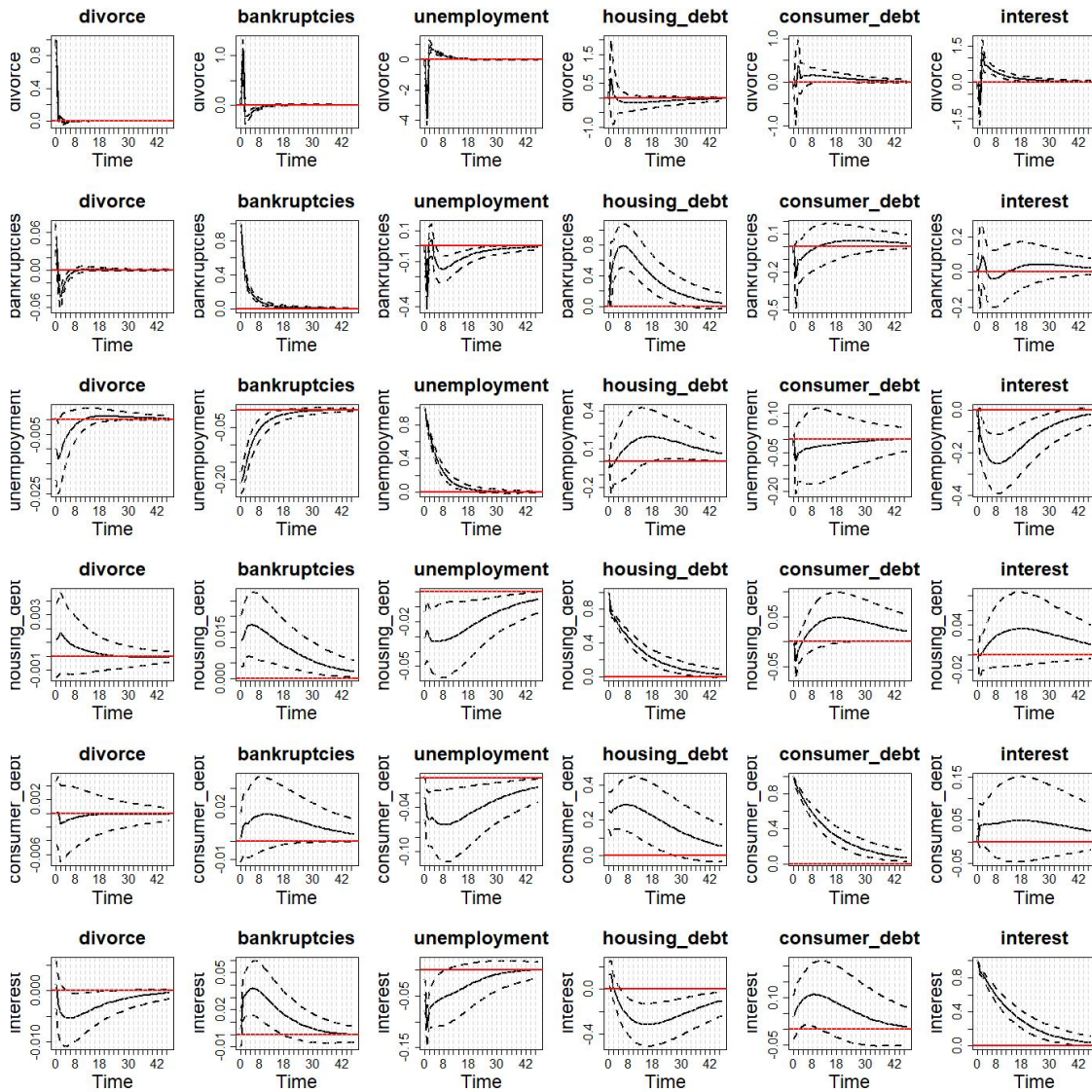


Figure 13: Impulse responses obtained from a Bayesian VARX model with Minnesota prior using Cholesky decomposition. The model is estimated for the time period February 1999 - March 2022.

A.1.4 VAR, short sample, growth rates

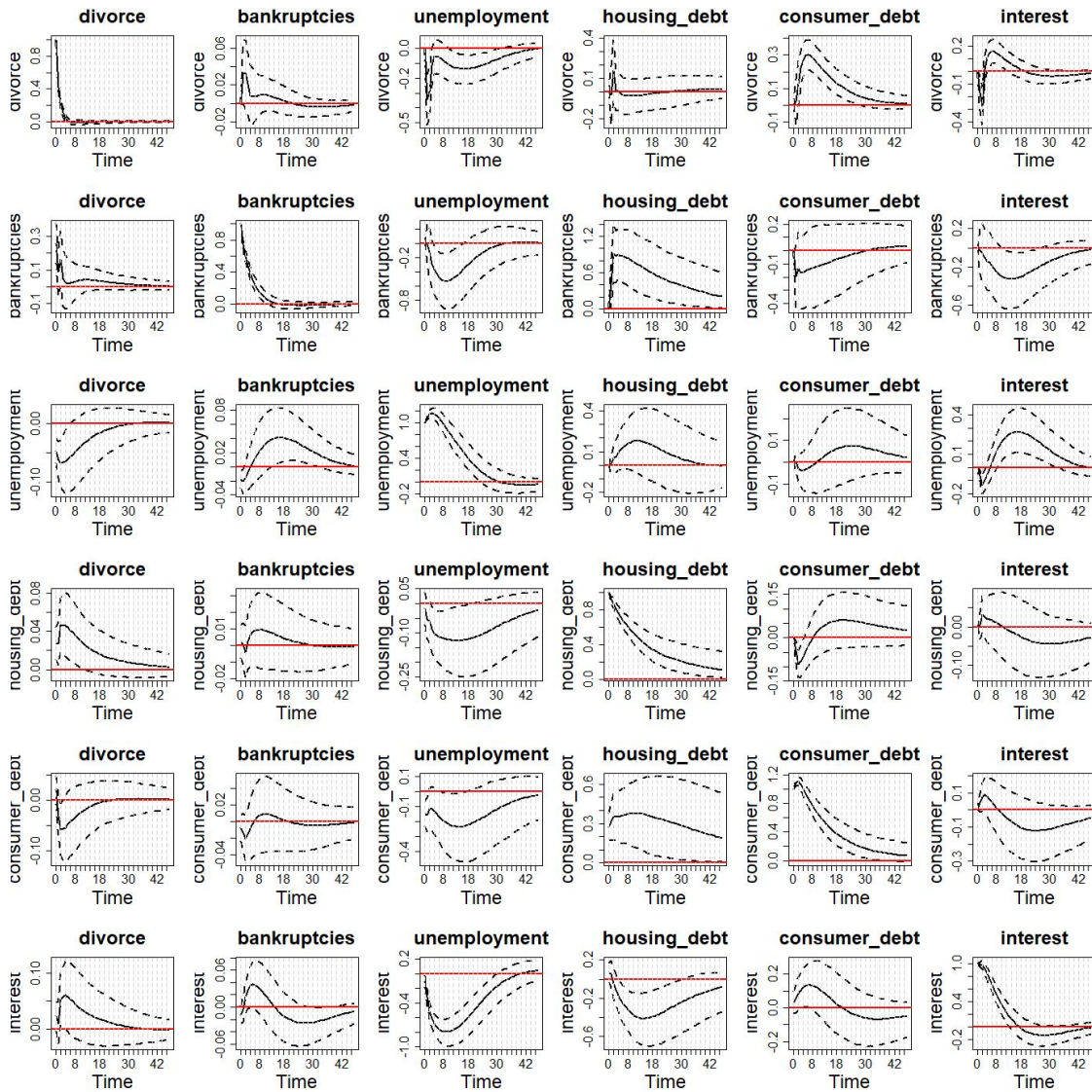


Figure 14: Impulse responses obtained from a Bayesian VARX model with Minnesota prior using Cholesky decomposition. The model is estimated for the time period February 1999 - January 2020.

A.2 TTVP VAR

A.2.1 TTVP VAR, log-levels

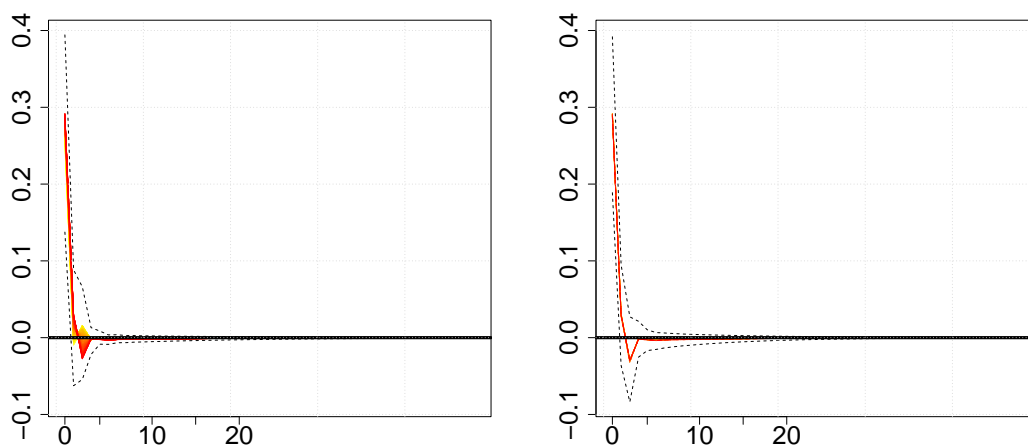


Figure 15: divorce

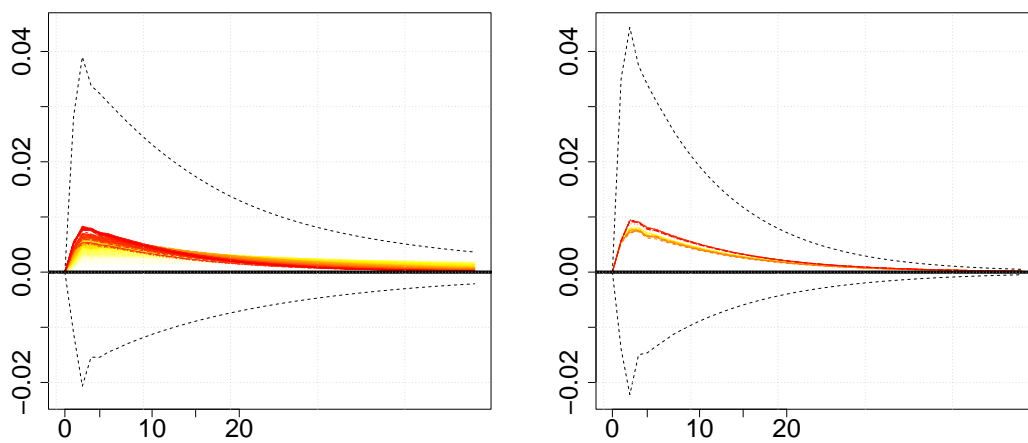


Figure 16: unemployment

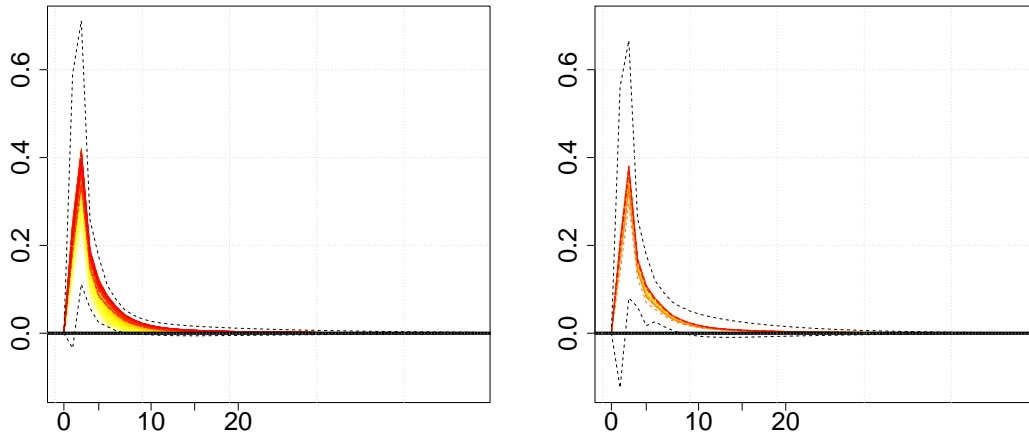


Figure 17: housing debt

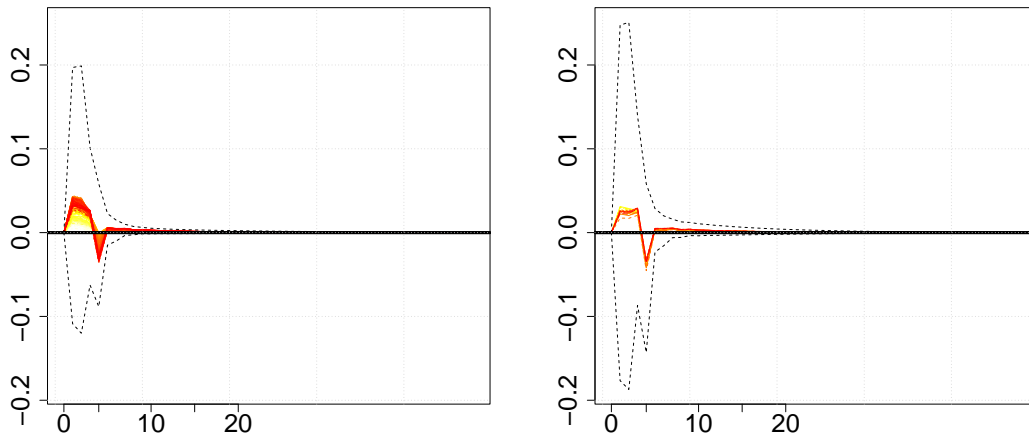


Figure 18: consumer debt

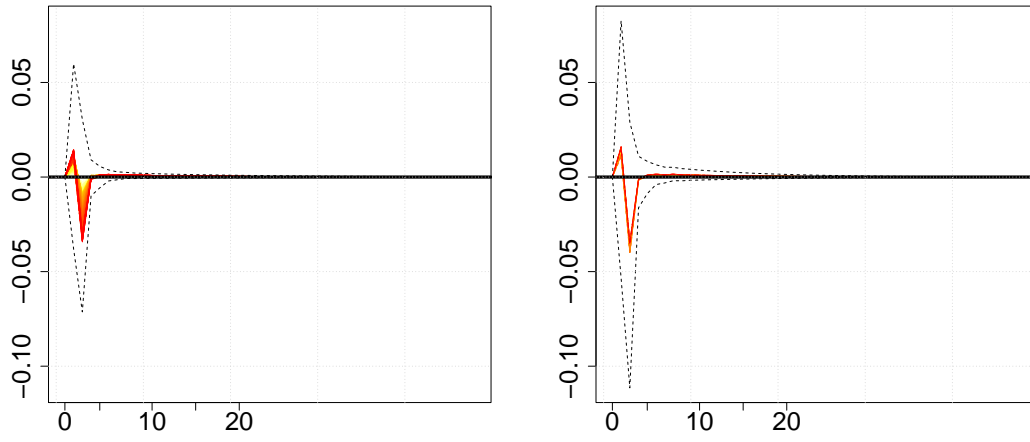


Figure 19: interest rate

A.2.2 TTVP VAR, growth rates

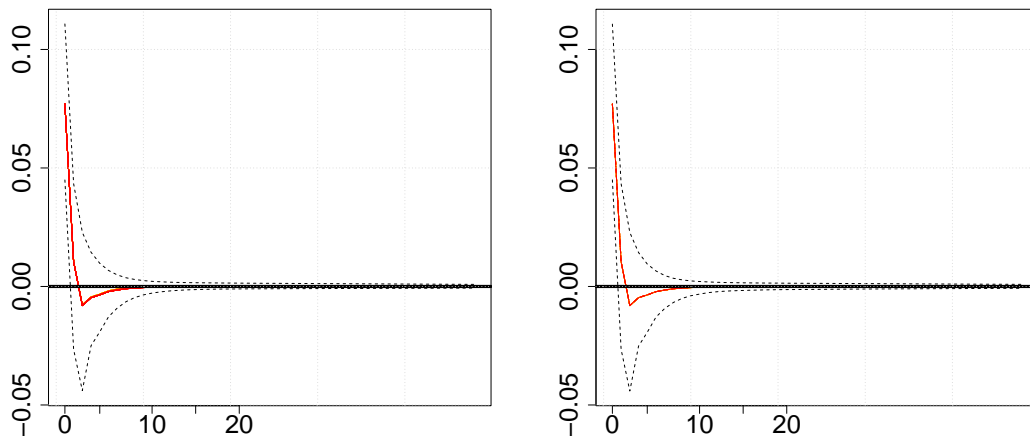


Figure 20: divorce

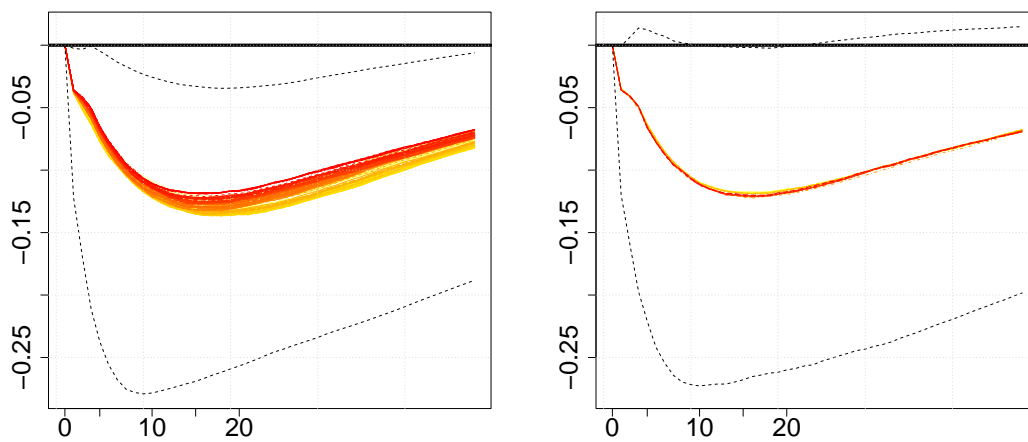


Figure 21: unemployment

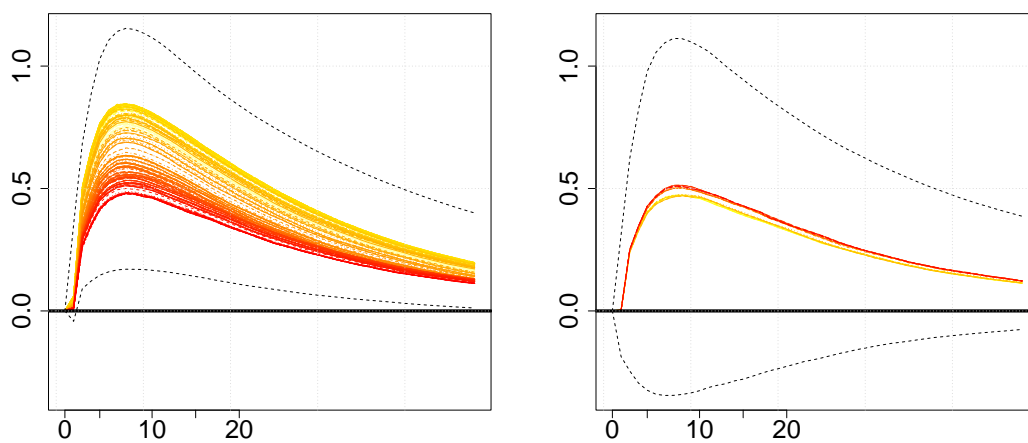


Figure 22: housing debt

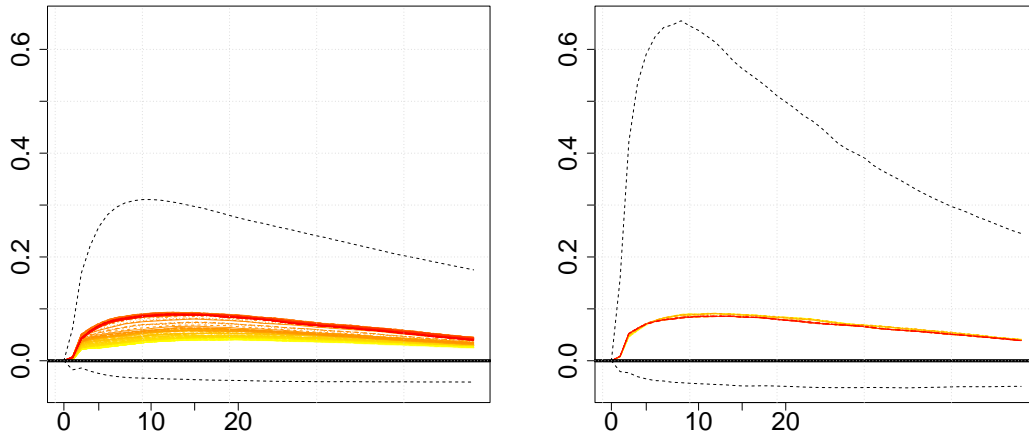


Figure 23: consumer debt

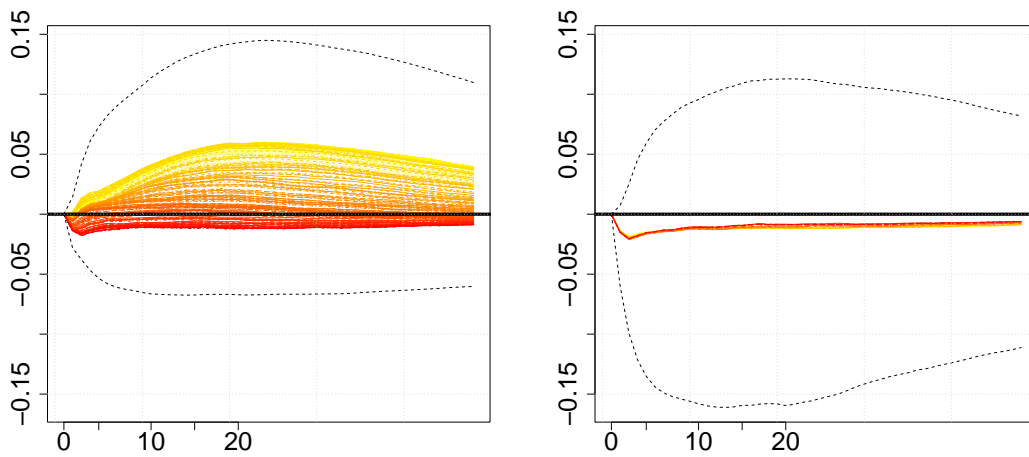


Figure 24: interest rate