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Economics of Personal Bankruptcy and Insolvency

Michelle J. White[1]

Introduction

Personal bankruptcy law is the legal process for resolving the debts of insolvent individuals and married couples – referred to here as "filers." It is a collective procedure that simultaneously resolves all of filers' debts, regardless of their due dates or characteristics. The resolution may involve filers repaying particular debts in full or in part, using either their pre-bankruptcy assets or their future earnings or both. Debt that is not repaid in bankruptcy may be discharged, either immediately or following a period during which filers are obliged to repay from future earnings. Bankruptcy law also specifies how the total repayment amount is divided among creditors. At the time of filing, bankruptcy law requires that creditors terminate all collection efforts, so that all debt repayment comes through the bankruptcy procedure. Bankruptcy laws also specify punishments for filers. Although all countries' bankruptcy procedures follow this general outline, the specifics vary widely and individual countries' laws may favor creditors or debtors.

Insolvency, in contrast, occurs when debtors are unable to make debt payments as they come due and is used here to refer to default outside of bankruptcy. Creditors pursue collection efforts against debtors who default and this often causes debtors to file for bankruptcy.[2]

This article begins by discussing the basic features of debt collection and bankruptcy law for individuals and small business, highlighting contrasts between the US and European countries. It then considers the economic objectives of bankruptcy law.

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[2] In some countries, the term insolvency is used to refer to the bankruptcy procedure.

Debt collection and bankruptcy law

Let us first consider creditors' remedies when debtors have defaulted, but not filed for bankruptcy. Following default, creditors start by mailing, calling and/or visiting debtors at their homes or workplaces to demand repayment. They sometimes threaten debtors and engage in harassment.[3] Additional creditors' remedies vary depending on the type of claim. Unsecured creditors can take debtors' bank accounts or garnish their wages if they are employed, but only after obtaining a court order. Secured creditors such as car lenders can repossess their collateral, without going to court in some cases.[4] Mortgage lenders can force a sale of the mortgaged property, but generally need to obtain a court order to do so. Creditors also may report default to the credit rating agencies, harming debtors' credit scores.[5]

Unsecured lenders have an incentive to race against each other to be first to collect, because debtors' ability to repay is often less than the total amount owed and the first creditor to obtain a court order receives more than other creditors.[6] Secured creditors also have an incentive to act quickly, since collateral assets lose value over time. But races to be first to collect can be inefficient because they severely harm debtors and their families: examples are when debtors cannot pay for rent or health care because creditors have garnished their wages, when debtors lose their jobs because creditors have repossessed their cars or when debtors' businesses shut down because creditors grab essential business assets. To avoid races to be first, bankruptcy law provides for a stay on legal proceedings that starts immediately when debtors file for bankruptcy. This "automatic stay" stops creditors' collection efforts, ends garnishment of wages, and terminates the obligation to pay interest on unse-

[3] US Federal law limits the extent to which creditors can engage in harassment, but the law has many loopholes. See Dawsey, Hynes and Ausubel (2013) for discussion.

[4] In the US, defaulting on an automobile loan often leads to a "repo man" who works for the lender driving the automobile away during the night. But if the automobile is in a garage, the lender must obtain a court order to repossess it.

[5] See Mann (2006) for an international comparison of debt collection procedures for credit card lenders.

[6] In the US, Federal law limits wage garnishment to 25 percent of wages and a few states have higher limits, so that a late creditor may not be able to garnish the debtors' wages if the limit has already been reached. Employers may have the right to fire workers in response to garnishment. See US Department of Labor (2009).

cured loans. Instead, all repayment must come through the bankruptcy procedure.[7]

The legal process of bankruptcy starts by creating a list of filers' debts. Not all debts are dischargeable in bankruptcy – in the US, claims for taxes, child support, alimony, debts incurred by fraud, and student loans cannot be discharged. Dischargeable debts include credit card loans, installment loans, medical debts, business debt, and debts for utilities and rent. After meeting the expenses of bankruptcy, these debts all are repaid at the same fraction of their face values. In most personal bankruptcies, unsecured creditors receive little or nothing. On secured loans such as automobile loans, debtors can choose between keeping the collateral by continuing to make payments on the loan versus giving up the collateral and having the debt discharged.[8]

Bankruptcy law also determines the amount that filers must repay. Filers create a list of their assets, including real and personal assets, financial assets and future earnings. They are generally allowed to keep some or all of both their assets and their future earnings. The amounts that filers can keep are called "exemptions." In the US, there are separate exemptions for different types of assets, including equity in owner-occupied homes, equity in automobiles, personal property, "tools of the trade," and retirement accounts. The asset exemptions differ across US states and the exemption for home equity is usually the largest: seven US states have unlimited exemptions for home equity.[9] Assets that exceed the relevant exemption must be used to repay debt. There is also an exemption for future earnings and US bankruptcy law specifies a formula for computing an earnings exemption for each filer. Exemptions for future earnings vary widely across countries and range from no obligation to repay to no limit on the obligation to repay. In the US only bankruptcy filers with earnings above the median household income level in their states are obliged to repay anything from future earnings, meaning that most filers get a full exemption for their future earnings. For those who are required to repay from future earnings, the period of obligation is five years.[10] In France, all filers are obliged to repay from future earnings for eight to ten years and the exemption level for earnings is lower than in the US; whereas in Germany, the period of obligation to repay is three to five years. Some countries have no limits on the period of time that bankruptcy filers are obliged to repay from future earnings, so that the obligation to repay ends only with the filer's death.[11] Following the obligatory repayment period, filers' remaining debt is usually discharged, although filers in France must convince the bankruptcy judge that they have no reasonable prospect of repaying the remaining debt. The asset and earnings exemptions plus the time limit on the obligation to repay from future earnings together determine how much filers are required to repay.

Insolvency and bankruptcy law also provide for punishments for default and bankruptcy. In the past, default was considered to be a criminal offense and punishments were very harsh: they included the death penalty, maiming, selling defaulters into slavery, forcing them into exile, and holding them in debtors' prisons. In the modern world, default and bankruptcy are no longer criminal offenses, but lighter punishments still exist. In the US, default and bankruptcy both lower debtors' credit ratings, making it more difficult for them to borrow, rent housing, and get jobs. Names of bankruptcy filers are made public and the filing stays on filers' credit records for ten years. In the UK, filers cannot manage firms or hold certain public offices for several years after filing. Longer required repayment periods and lower asset and earnings exemptions also make punishments for bankruptcy harsher. [12]

The US differs from most other countries in that it has two separate personal bankruptcy procedures. One procedure (Chapter 7) requires that filers only repay from their assets and the other (Chapter 13) requires that filers only repay from their future earnings. Prior to 2005, filers were allowed to choose between the two procedures and this led to many instances in which high-income debtors filed for bankruptcy under Chapter 7 and were not obliged to repay anything because they converted all their assets from non-exempt to exempt categories before filing. US bankruptcy law thus encouraged debtors to behave strategically by borrowing as much as possible and using bankruptcy to avoid repayment, even in cases where they had high incomes. Debtors' incentive to behave strategically was reduced by the US bankruptcy reform of 2005 that forced most filers with high incomes

[7] Filers may have to continue payments to secured creditors during the bankruptcy process if they wish to keep the collateral.
[8] If the sale value of the collateral is less than the secured creditor's claim, then the creditor has an unsecured claim for the difference.
[9] Bankruptcy law in the US is Federal law and is uniform all over the country, but the US Bankruptcy Code allows states to adopt their own exemptions for assets. See § 11 US Code 522 for a list of exemptions and Elias (2007), and White (2009) for discussion.
[10] See White (2009) for discussion of the procedure for determining filers' obligation to repay.
[11] France also has low exemptions for assets, while the exemptions in the US, Germany and the United Kingdom are higher. See Knobloch (2012) for a comparison of personal bankruptcy laws in European Union countries.
[12] Sandage (2005) and Mann (2002) discuss attitudes toward debt and default in the US during the 19th century. Efrat (2002) gives multi-country information on punishments for default and bankruptcy.

to use Chapter 13.[13] In other countries, debtors' incentives to behave strategically with respect to bankruptcy are more limited because debtors are nearly always required to repay from future earnings and exemptions for both assets and earnings are lower.[14]

Personal bankruptcy laws also apply to entrepreneurs and small business owners. When small businesses are non-corporate, debts of the business are personal obligations of the business owner. Then if the business fails, business owners typically have high business debts in addition to their personal debts. The same consideration applies to owners of small corporations, since lenders often require that owners personally guarantee loans to their corporations. Should the corporation fail, its owners are personally liable for the corporate debts they guaranteed, as well as for their personal debts. As a result, entrepreneurs have a particularly strong incentive to file for bankruptcy following a business failure if their business debts are dischargeable.

Economic objectives of personal bankruptcy law

Personal bankruptcy law has a number of economic objectives, some of which conflict with each other. In discussing these objectives, bankruptcy law is characterized as "harsh" if it has high repayment requirements and/or high punishments for filing and "lenient" if it has low repayment requirements and/or low punishments. Of course, bankruptcy law can also be in-between.[15]

One important objective of bankruptcy is to protect the availability of credit. Researchers have shown that harsh bankruptcy laws increase the supply of credit by increasing lenders' expected returns, since debtors default less and repay more following default.[16] Harsh bankruptcy laws discourage bankruptcy filings because debtors' gain from debt discharge is more than offset by the harsh punishments and high repayment requirements in bankruptcy (Fay, Hurst and White 2002).

A second objective of bankruptcy law is to discourage creditors from racing to be first to collect when debtors are in financial distress. A harsh bankruptcy law does this more effectively than a lenient bankruptcy law, because total debt repayment is higher under a harsh law. But even a harsh bankruptcy law probably does little to discourage creditors from racing to be first, since the repayment rate in personal bankruptcies is typically very low and individual creditors therefore have a lot to gain from winning the race to be first.

Probably the most important objective of bankruptcy law is to provide debtors with partial consumption insurance. Individuals benefit from borrowing because it allows them to smooth their consumption over time, but they face consumption uncertainty due to the possibility of adverse events such as losing their jobs, becoming ill, having high health care costs, or their businesses failing. These downside risks are made worse by borrowing, since debtors may be obliged to repay when their earnings are low or their consumption needs are high. Bankruptcy provides partial consumption insurance to debtors by discharging some debt when they file for bankruptcy in response to shocks that reduce their ability-to-repay. This partial consumption insurance is particularly valuable to debtors who are risk-averse, making them more willing to borrow and better off when they do borrow. The amount of partial consumption insurance that bankruptcy provides depends on whether bankruptcy law is harsh or lenient: harsh bankruptcy laws do little to insure debtors' consumption, while lenient bankruptcy laws provide additional consumption insurance as asset and earnings exemptions rise and bankruptcy punishments fall. Thus an argument for lenient bankruptcy laws is that they make risk-averse individuals better off by reducing consumption uncertainty.

Providing partial consumption insurance through bankruptcy law also affects debtors' demand for other types of insurance and insurance substitutes. When bankruptcy law is lenient, debtors have more consumption insurance, and therefore reduce their demand for insurance and insurance substitutes. Recent research has shown that in US states with more lenient bankruptcy laws (i.e., higher asset exemptions), demand for health insurance is lower because health insurance and lenient bankruptcy laws both provide partial consumption insurance. Bankruptcy probably has similar effects on demand for other types of insurance, such as homeowners' insurance and automobile insurance, although these relationships have not been tested. Marriage provides another form of partial consumption insurance when both

[13] See White (1998a) and (1998b) for models of how the rules of credit collection versus bankruptcy affect whether debtors default, but avoid bankruptcy versus file for bankruptcy. Dawsey et al. (2013) provide empirical evidence.
[14] In France, judges can give filers an immediate discharge of debt if judges are convinced that filers will never be able to repay any of their debt. The immediate discharge amounts to an informal second bankruptcy procedure. See White (2006) for discussion.
[15] Bankruptcy law is also harsher when court fees and lawyers' fees are higher and when filers must provide additional information to the bankruptcy court or meet additional requirements such as getting credit counselling.
[16] See Gropp, Scholz and White (1997), Berkowitz and White (2004), and Davydenko and Franks (2008) for empirical work that supports this hypothesis.

spouses work, since each spouse's income insures the other spouse's consumption. In states with more lenient bankruptcy laws, research has found that divorce rates are higher because the consumption insurance gains from being married are smaller.[17]

The same type of argument suggests that government taxing and spending are alternate sources of consumption insurance that are valuable to risk-averse debtors when bankruptcy law is harsh. In particular, tax systems with high tax rates reduce the variance of debtors' incomes net of tax and generous social safety net programs guarantee debtors a high minimum consumption level. Both thus provide debtors with additional consumption insurance and are more valuable to debtors in countries where bankruptcy laws are harsh. Harsh versus lenient bankruptcy laws also affect whether private lenders versus governments bear the cost of default and bankruptcy: holding the social safety net and tax rates constant, more lenient bankruptcy laws force private lenders to bear more of the cost of default and bankruptcy, while harsher bankruptcy laws transfer more of the cost to the government. [18]

Another objective of bankruptcy law is to give filers a "fresh start," meaning that their incentive to work after filing for bankruptcy is not undermined by the obligation to repay. Debtors receive a fresh start if they are obliged to repay only from assets when they file for bankruptcy and all of their post-bankruptcy earnings are exempt. If they are required to repay from future earnings, by contrast, then their incentives to work are reduced because there is a "bankruptcy tax" on their future earnings. The problem of filers having little incentive to work following bankruptcy is particularly acute in the US and other countries that use fixed earnings exemptions, since all of filers' earnings above the exemption level must be used to repay following bankruptcy.[19] Overall, maintaining debtors' incentive to work after filing for bankruptcy is an important objective of bankruptcy and one that is sacrificed when bankruptcy law is harsh.

A version of the fresh start argument also applies to the treatment of entrepreneurs in bankruptcy. As discussed above, going into business is particularly risky, but the downside risk faced by entrepreneurs is reduced when bankruptcy law is lenient rather than harsh. In particular, entrepreneurs benefit if bankruptcy law provides for the immediate discharge of old business debt, no obligation to repay from future earnings and/or a high home equity exemption that allows them to keep their homes when their businesses fail. Thus lenient bankruptcy laws both encourage potential entrepreneurs to start businesses and allow entrepreneurs to start new businesses following a prior business failure. Researchers have found support for the hypothesis that lenient bankruptcy laws encourage entrepreneurship.[20]

These considerations suggest that optimal bankruptcy policy involves a number of tradeoffs. A harsh relative to a lenient bankruptcy law has the advantages of increasing the supply of credit, discouraging risk-averse individuals from borrowing too much, and discouraging default. But a harsh bankruptcy law reduces demand for credit by risk-averse individuals, discourages debtors from working after they file for bankruptcy, and discourages entrepreneurs from starting new businesses, especially if they have had a previous business failure. A harsh bankruptcy law also raises demand for other forms of partial consumption insurance, including health insurance, marriage and more generous social safety net programs that are financed with higher tax rates. A lenient bankruptcy law has the opposite effect.

[17] See Traczynski (2011), Mahoney (2015) and the article by Traczynski (2015) in this issue for discussion.
[18] See Posner (1995) for discussion of the effect of bankruptcy on the cost of government safety net programs.
[19] However debtors' incentive to work could alternatively increase rather than decrease following bankruptcy if they were subject to wage garnishment that ends at the time of filing and they are not required to repay from future earnings. See Han and Li (2007).
[20] See Fan and White (2003) and Armour and Cumming (2008) for empirical tests using US and European data.

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Personal Bankruptcy in the US: Effects of the 2005 Reform[1]

Stefania Albanesi[2] and
Jaromir Nosal[3]

Introduction

Personal bankruptcy is a form of social insurance offering relief to individuals who are unable to repay previously contracted debt[4]. It provides insolvent individuals with an orderly procedure to settle their liabilities and is intended to minimize the disruption to other aspects of their life. It immediately halts adverse actions by creditors, such as wage garnishment, collections, and foreclosure proceedings, and may offer debt discharge, if approved (see Box 1). Like most forms of insurance, the debt discharge offered under bankruptcy may generate moral hazard, that is, it may induce some individuals to take on debt with little intention of repaying it. In fact, since the very inception of personal bankruptcy, filing rates have been rising, which has led to a heated discussion on the potential for abuse of this institution, and more generally on its optimal design.

To contribute to the discussion on the role and optimal design of personal bankruptcy, we use the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA), enacted in October 2005, as a laboratory to study the response of individuals to significant changes in the provisions of the bankruptcy law. BAPCPA is the most comprehensive reform of personal bankruptcy in the US since it was first introduced, in its current form, in 1978. The reform overhauled filing requirements and substantially increased the monetary cost of filing for bankruptcy (for details, see Box 2). We use it to assess whether increasing the cost of debt discharge via bankruptcy deters delinquency and reduces financial distress. Our analysis can provide valuable insight into the balance between insurance and moral hazard forces associated with personal bankruptcy.

Using administrative credit file data from a nationally representative panel, we quantify the effects of the reform on bankruptcy and insolvency, and explore the consequences of each of these outcomes on access to credit and credit scores. We find that the reform resulted in a 50 percent permanent drop in Chapter 7 filings and a 25 percent permanent rise in insolvency. Exploiting the cross-district variation in filing costs, we show that these responses are driven by liquidity constraints associated with the higher monetary cost of filing for bankruptcy. We find no effect on Chapter 13 filings, or on the propensity to remain current or repay delinquent debt. We further quantify the effects of the reform on households by exploring the difference in the consequences of a bankruptcy filing versus insolvency. We find that insolvency is associated with worse outcomes than bankruptcy, in terms of access to credit and credit scores, suggesting that BAPCPA may have removed an important form of relief from financial distress.

The effects of BAPCPA over time

Our analysis is based on the Federal Reserve Bank of New York's Consumer Credit Panel/Equifax Data (CCP), an anonymous longitudinal panel of individuals who have a credit report with Equifax, one of the three major credit reporting agencies for individuals in the US. The data is quarterly, and our sample starts in 1999 Q1 and ends in 2013 Q3. We use a one percent sample, which includes information on approximately 2.5 million individuals in each quarter. The data is described in detail in Lee and van der Klaauw (2010).

The data contains over 600 variables, allowing us to track all aspects of individuals' financial liabilities, including bankruptcy and foreclosure, mortgage status, detailed delinquencies, various types of debt, with number of accounts and balances. This data allows us

[1] We are grateful to Matt Ploenzke and Harry Wheeler for excellent research assistance.
[2] The Ohio State University and CEPR.
[3] Boston College.
[4] Some of the common circumstances leading to bankruptcy include loss of income due to unemployment or illness, medical bills, divorce, unplanned children. See Livshits, MacGee and Tertilt (2007) and references therein.

Box 1

Personal Bankruptcy in the US

Personal bankruptcy grants delinquent debtors immediate relief from all collection efforts, including direct communication, lawsuits and wage garnishment orders. Most unsecured debt is dischargeable, excluding taxes, alimony and child support obligations, student loans and debt obtained by fraud. Prior to the 2005 reform, a filer could choose between filing for Chapter 7 or 13 (White 2007).

Chapter 7 is the most commonly used bankruptcy procedure – up to 2005 a remarkably stable 70 percent of bankruptcies were Chapter 7 bankruptcies. Under Chapter 7, filers submit a list of all their assets to the courts. The assets that exceed certain exemption levels, which vary by state, are used to satisfy unsecured creditors. The rest of the debts are discharged, and debtors are not obliged to use future income for debt repayment. Before 2005 Chapter 7 bankrupts were not allowed to re-file another Chapter 7 case for the next six years, and have a bankruptcy flag on their credit report for ten years after filing.

Chapter 13 filers keep all of their assets, but must use their future income to repay part of their unsecured debt. Before the 2005 reform, filers would propose their own repayment plans lasting three to five years, with the restriction that the total proposed repayment could not be lower than the value of their non-exempt assets under Chapter 7. A Chapter 13 bankruptcy is considered discharged after the debt repayment plan has been executed, and the Chapter 13 bankruptcy flag stays on the credit record for seven years after discharge. Prior to BAPCA, there were no limits to filing for Chapter 13 bankruptcy.

to observe the drop in bankruptcies and the changing characteristics of those who file for bankruptcy, as well as the behavior of financially distressed individuals who decide not to file post-2005.

We study the behavior of individuals entering a new spell of financial distress, marked by a *new delinquency* or a *new insolvency*. A new delinquency is a missed payment, less than 90 days late, after at least two years of clean record. A new insolvency is a missed payment that is at least 120 days late, after two years with a clean record, except for possible delinquencies. We are interested in whether newly financially distressed individuals subsequently file for Chapter 7 or Chapter 13 bankruptcy, remain insolvent, or whether they pay off their debts and become current.

Figure 1 displays the estimated time effects for one-quarter-ahead transition probabilities from the start of a new spell of financial distress to various outcomes, controlling for a comprehensive set of court district level economic and regulatory variables. In all panels, the baseline year is 2002, which is set to zero, and the estimates are rescaled by their respective pre-reform means. As shown in panel (a), the transition from new insolvency to Chapter 7 bankruptcy filing drops by about 50 log points (about 40 percent) immediately after the reform, and declines further to over 100 log points (over 60 percent) in 2011-2012. By contrast, there is no response to the reform for the transition to Chapter 13 filing, displayed in panel (b). This difference in the response for the two chapters is important in identifying the mechanism behind the changes. All the filing fees for Chapter 7 have to be paid up-front, while they can be included in the repayment plan for Chapter 13. Since the magnitude of the rise of monetary costs is similar for the two chapters (Box 2), these results are consistent with liquidity constraints driving the filing response.

The remaining panels of Figure 1 present the time effects for transitions to other outcomes. The transition from a new delinquency to insolvency – an indicator of deepening of financial distress – rises by 25 percent between 2005 and 2006 and further rises by 35 percent relative to 2005 in 2010-2012, as shown in panel (c). The persistence of insolvency, captured by the transition from a new insolvency to insolvency, shown in panel (d), also rises, by approximately six percent. We find no evidence of an effect of the reform on the transition from a new insolvency to current or the persistence of the current state (panels (e) and (f)).

These findings suggest that the reform, which made it harder and more expensive to discharge debt, had little impact on debtors' willingness or ability to cure insolvencies or to remain current. Instead, the increased burden of filing for Chapter 7 bankruptcy resulted in more individuals becoming and remaining insolvent. Insolvency itself is a form of informal default, in which

Box 2

The Bankruptcy Abuse Prevention and Consumer Protection BAPCPA was signed by President George W. Bush on April 20, 2005 and applied to bankruptcy cases filed on or after October 17, 2005. It introduced several major changes to bankruptcy procedures, which increased the burden, financial and otherwise, of filing for bankruptcy protection.

BAPCPA's main provisions were to introduce an income test requiring Chapter 7 filers to have income below their state's median, effectively removing the possibility of choosing the filing chapter. It also mandated a fixed five year repayment plan for Chapter 13 filers and increased refiling restrictions for both chapters. The new law also raised the cost of filing in a variety of ways. It raised court filing fees and mandated that filers attend compulsory credit counseling classes at their own expense. It also increased reporting requirements in bankruptcy petitions and introduced a new provision holding attorneys personally liable for inaccuracies in information reported to the court during the filing procedure. These changes led to a sizable rise in attorney fees for bankruptcy cases. The median rise in attorney fees was 33 percent for Chapter 7 filers, from a median value of 663 USD pre-reform to 986 USD post-reform. For Chapter 13 filers, the median rise in attorney fees was 25 percent, from a median value of 1847 USD pre-reform to 2515 USD post-reform (Lupica 2012, White 2007).

The sum of these provisions resulted in a significant rise in the cost of filing for bankruptcy. The total out-of-pocket cost of filing for bankruptcy increased from 600 USD and 1600 USD for Chapters 7 and 13 to 2500 USD and 3500 USD, respectively (White 2007, also consistent with findings in Lupica 2012). In our study, we focus on attorney fees and their increase associated with the reform. Attorney fees comprise 75 percent of the total monetary cost of filing for Chapter 7 bankruptcy and 90 percent of the cost of filing for Chapter 13 (Lupica 2012), and rose by an average 35 percent and 29 percent, respectively after the reform.

individuals do not repay their delinquent debt and do not have access to the benefits of bankruptcy protection.

Exploring the mechanism: the role of rising filing costs

To explore the mechanism through which BAPCPA led to a decline in Chapter 7 bankruptcy filings, we exploit the sizable cross-district variation in attorney fees associated with filing for bankruptcy as well as the cross-district variation in the change in these costs following BAPCPA (see Box 2). In Albanesi and Nosal (2015), we estimate district-level mean effects of the reform on the transition from a new insolvency to Chapter 7 and Chapter 13 bankruptcy filings, controlling for district level business cycle effects and state level judicial controls.

Figure 2 presents a scatter plot of the average post-reform change in the transition from a new insolvency to bankruptcy filings against the percentage change in attorney fees for Chapter 7 (top panel) and Chapter 13 (bottom panel). This figure shows clear negative relation between the Chapter 7 attorney fee changes (horizontal axis) and change in transition to bankruptcy Chapter 7 filings (vertical axis). The estimated effect of the attorney fees, represented by a regression line on the figure, implies that from the 25 percentile to the 75 percentile of the cost change distribution (a 24 percentage point increase), increases the drop in Chapter 7 filings by ten percentage points.

Importantly, there is no such relation for Chapter 13 bankruptcy. Given that the rise in Chapter 13 filing fees was similar to the rise of Chapter 7 filing fees, and that only Chapter 7 fees need to be paid up-front, these results provide strong support for our hypothesis that the response to BAPCPA was driven by the rise in filing costs, through liquidity constraints.

Substitution from Chapter 7 bankruptcy

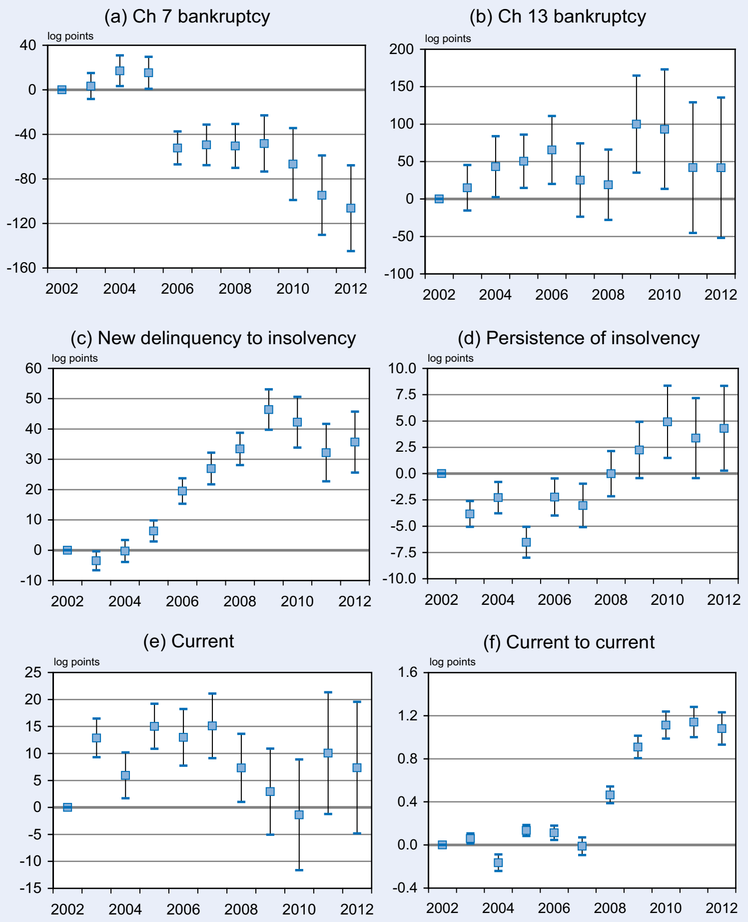
The findings in Figure 1 show that the decline in Chapter 7 filings following BAPCPA is associated with a rise in the incidence and persistence of insolvency. It is then natural to ask if the rise in insolvency was a direct consequence of the reform, through the decline in Chapter 7 filings. Additionally, while there is no change in the average transitions involving the current state or Chapter 13 bankruptcy at the time of the reform, there may still be a relation between the change in Chapter 7 filings and these transitions at the district level.

In Albanesi and Nosal (2015), we explore the substitution patterns between the transitions to Chapter 7 and 13 bankruptcy filing and transitions to insolvency and being current, by estimating the district-level mean effects of the reform. We find a strong substitution pattern from Chapter 7 bankruptcy to insolvency, when starting from a new insolvency, but no impact on the transition to current from a new insolvency. We also find no impact of the change in Chapter 7 filing on Chapter 13 filing, which suggests that the reform did not have the intended effect of channeling individuals from Chapter 7 to 13.

Summarizing these results, Figure 3 displays a scatter plot of the estimated mean change in flows to insolvency (i.e. persistence of insolvency) on the estimated mean change in flows to Chapter 7 filing. There is a clear negative relationship between the two mean flows, implying a substitution from Chapter 7 flows to insolvency flows. The estimated regression, displayed on the graph, implies that a one standard deviation increase in the estimated drop of flows into Chapter 7 bankruptcy can account for 32 percent of the standard deviation of the estimated increase in the persistence of insolvency. This indicates that individuals who are not filing for Chapter 7 bankruptcy protection remain insolvent, and do not repay their delinquent debt. We find no effect of the change in Chapter 13 flows.

Figure 1

Estimated one-quarter-ahead transition frequencies from a new insolvency



Note: Estimated one-quarter-ahead transition frequencies from a new insolvency, except for panel (c), which reports the transition from a new delinquency to a new insolvency, and panel (f), which reports the transition from current to current. Bars denote 90% confidence intervals. States are defined as follows. An individual is "current" if there are no delinquencies of any type in her record for that quarter, and no bankruptcy or foreclosure flags. An individual's state is "delinquent", if she has accounts that are 30, 60 or 90 days delinquent, with no bankruptcy or foreclosure flags. An individual's state is "insolvent" if she has any debt that is 120 days plus delinquent or in charge-off, with no bankruptcy or foreclosure flags. An individual is "bankrupt", if she displays a bankruptcy flag, which is activated by a new bankruptcy filing. The bankruptcy flag for Chapter 7 stays on the record for ten years. The one for Chapter 13 stays on the record for seven years after the payment plan has been completed. The figures plot the time effects $\beta_s(t)$, estimated using the equation: $y_{it} = \sum_{s(t)\neq 0} \beta_{s(t)} I_{s(t)} + \gamma_i + \Phi X_{it} + \varepsilon_t$; where y_{it} is the transition in district i at quarter t, rescaled by its pre-reform mean, $I_{s(t)}$ is an indicator for year s, γ_i denote district effects, and X_{it} denotes a set of economic controls in logs, which include district level personal income, unemployment rate and home price index, as well as the four quarter change in these variables.

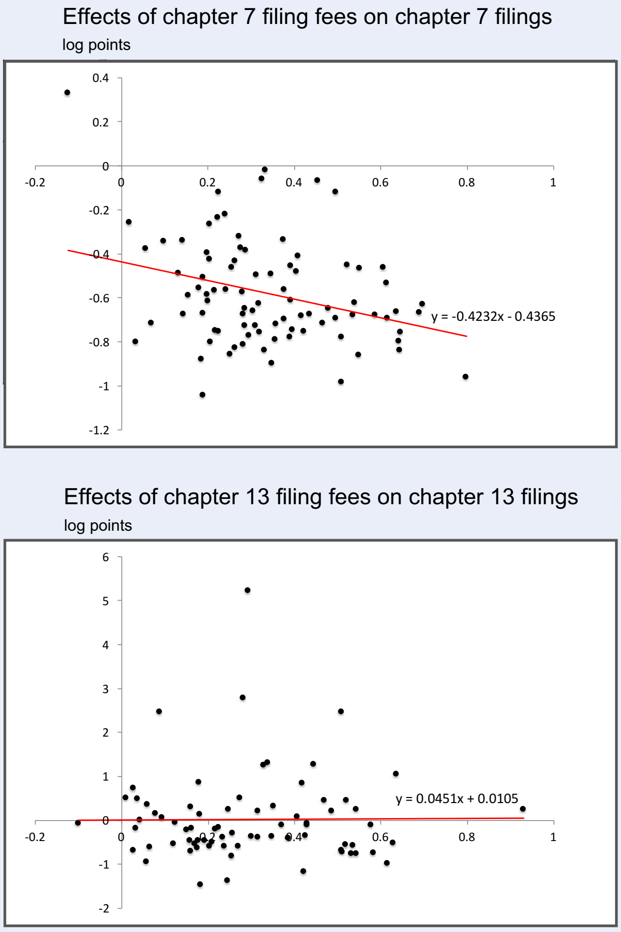
Source: Authors' calculation based on Federal Reserve Bank of New York's Consumer Credit Panel/ Equifax Data.

Bankruptcy versus insolvency

Since our analysis indicates a shift from Chapter 7 bankruptcy to persistent insolvency in response to the reform, it is important to determine whether this change is consequential. To this end, we examine access to credit and credit scores for financially distressed individuals, distinguishing between whether they file for bankruptcy or not. Specifically, we consider cohorts of newly insolvent individuals, and isolate three groups of individuals, depending on their subsequent behavior. Specifically, we consider *Chapter 7 filers* and *Chapter 13 filers*: those who file for Chapter 7 or Chapter 13 bankruptcy within eight quarters after the new insolvency. We also consider *Non-filers*: those who do not file for either chapter in the subsequent eight quarters. We then examine the behavior of several financial indicators for a two year window around the new insolvency for each of the three groups.

Figure 2

Effects of district-specific filing fee change on district-level estimated change of bankruptcy flows



Source: Authors' calculation based on Federal Reserve Bank of New York's Consumer Credit Panel/Equifax Data.

We first examine the differences in access to credit. Figure 4 displays the fraction of individuals with at least one new unsecured line of credit, auto loan or mortgage opened in the prior year, four quarters after the new insolvency for *Non-filers*, or four quarters after filing for bankruptcy for each type of filer[5]. Clearly, Chapter 7 filers are more successful in opening new unsecured lines of credit and obtaining auto loans relative to *Non-filers*. Except at the height of the Great Recession, Chapter 7 filers have an approximately 30 percent higher probability of displaying a new unsecured origination relative to *Non-filers*, and a 60 percent higher probability of obtaining a new auto origination relative to *Non-filers*. In terms of these two items, Chapter 7 filers are also considerably more successful than Chapter 13 filers. Indeed, Chapter 13 filers display a similar fraction of new unsecured and auto originations as *Non-filers*.

For mortgage originations, both Chapter 7 and Chapter 13 filers are more successful in obtaining a new mortgage than *Non-filers*. However, Chapter 13 filers obtain new mortgages at higher rates than Chapter 7 filers, especially after 2005. At the four quarter horizon, prior to 2005, the probability of obtaining a new mortgage for bankruptcy filers of either chapter was approximately 50 percent higher than for individuals who become newly insolvent in the same quarter, but do not file for bankruptcy. After 2005, it is approximately double for Chapter 7 filers, relative to *Non-filers*, and four times as large for Chapter 13 filers relative to *Non-filers*, at the four quarter horizon.

Our findings show major differences in the credit obtained by the three groups of individuals. In order to shed some light on whether this is driven by demand or supply of credit, we use a measure of demand for credit given by the fraction of individuals with inquiries. We interpret inquiries as an indicator of credit demand, as an inquiry is registered in the credit report when an individual initiates a new credit application. The results are reported in panel (d) of Figure 4, where, as before, our measure is taken four quarters after a new insolvency for *Non-filers* or four quarters after filing for those who do file. There is very little difference in the fraction of individuals with inquiries based on filing status, which suggests that the differences in credit seen across the three groups of individuals are not driven by differences in demand for such credit, but in supply.

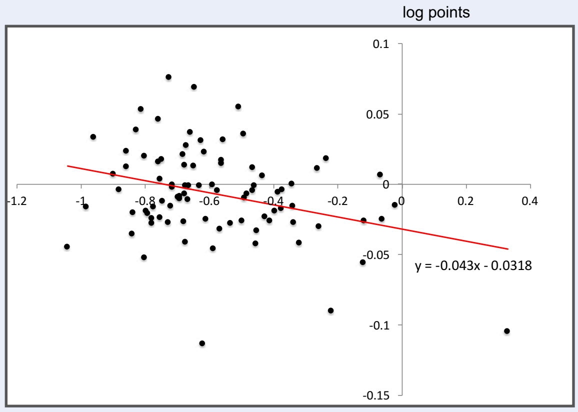
In our last set of results, we examine credit scores, since they are used as a proxy for creditworthiness by most lenders. Figure 5 (left panel) compares credit scores for the three groups of newly insolvent. At insolvency, both Chapter 7 filers and Chapter 13 filers display

[5] The individuals who file for bankruptcy mostly do so two to six quarters after experiencing the new insolvency.

a *lower* credit score than *Non-filers*, which suggests that they are negatively selected. Four quarters after the new insolvency, this ranking still prevails, even if credit scores have increased for all groups. The right panel of Figure 5 compares credit scores after insolvency for *Non-filers* and after filing for each group of filers. The credit score for *Non-filers* recovers with time after insolvency, and is approximately 50 points higher eight quarters after the new insolvency than four quarters after the new insolvency. However, both four quarters and eight quarters after the new insolvency, *Non-filers* display a much *lower* credit score than Chapter 7 filers four quarters after filing, despite the fact that Chapter 7 filers have lower credit scores at the time of the new insolvency. Chapter 13 filers do not enjoy such a benefit, with their score remaining close to that of *Non-filers*. The credit score advantage for Chapter 7 filers over *Non-filers* and Chapter 7 filers rises after BAPCPA, suggesting *positive selection* of bankrupt individuals in the post-reform period compared to bankrupt individuals in the pre-reform period – an effect that is consistent with binding liquidity constraints preventing the newly insolvents from filing for bankruptcy.

Figure 3

Substitution from chapter 7 filings to insolvency



Source: Authors' calculation based on Federal Reserve Bank of New York's Consumer Credit Panel/Equifax Data.

These findings suggest that bankruptcy offers relief from financial distress, not only because it provides debt discharge and automatically stays collections, foreclosures, wage garnishment and other court actions against the filer, but also because it allows filers more access to new lines of credit relative to insolvent *Non-filers*. Additionally, our results show that Chapter 7 offers the most effective relief and is clearly a better outcome than insolvency for most filers. Moreover, the evidence of liquidity constraints restricting access to Chapter 7 bankruptcy for potential filers contradicts the notion in Ausubel and Dawsey (2004) that marginal households would be indifferent between bankruptcy and insolvency.

Conclusion

We show that the main effect of the rise in filing costs associated with the BAPCPA reform was a shift in financially distressed individuals from Chapter 7 bankruptcy to insolvency. We do not find evidence of an increase in the propensity to remain current or to cure debt delinquencies as a result of the reform. We further show that insolvency is associated with a high degree of financial distress in comparison to bankruptcy, suggesting that insolvency would not be the preferred choice for most individuals. This consequence of BAPCPA is potentially welfare-reducing for households. However, since the recovery rates for creditors from insolvent loans should be higher than on bankrupt loans, the reduction in Chapter 7 bankruptcy filings could lead to a potential expansion of supply and to more favorable terms for personal loans. The studies available to date, however, point to increased profits for credit card companies and little evidence that credit conditions for consumers improved (see for example Simkovic (2009)).

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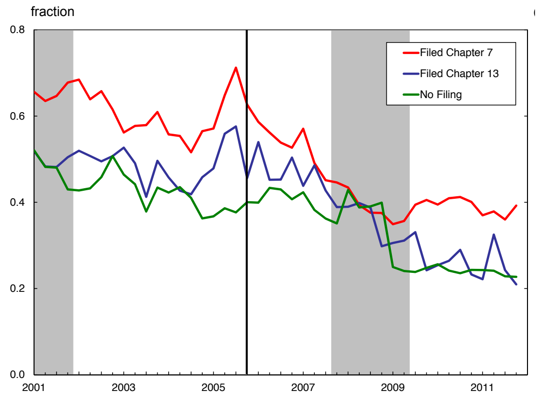
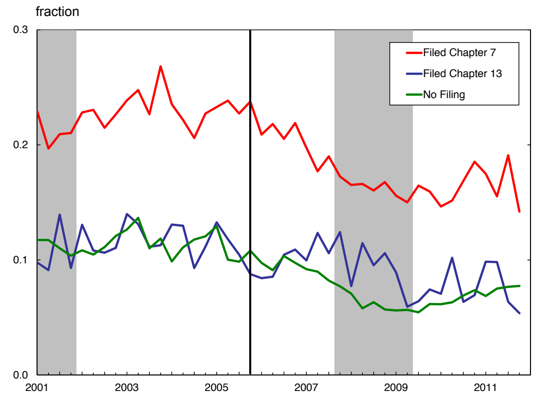
Figure 4: Fraction of individuals who become newly insolvent and

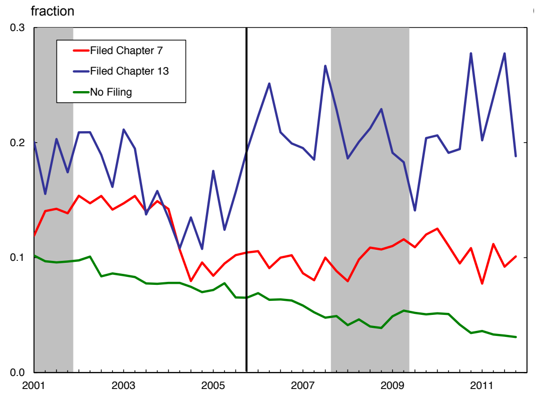
(a) open new unsecured lines of credit



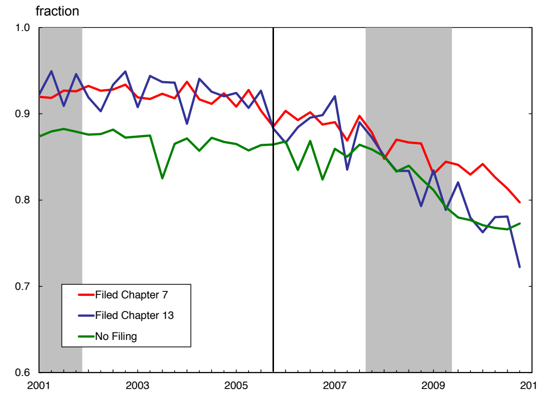
(b) open new auto lines of credit



(c) open a mortgage credit



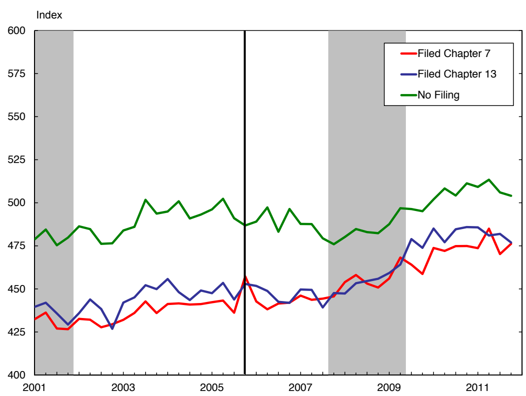
(d) register a new inquiry



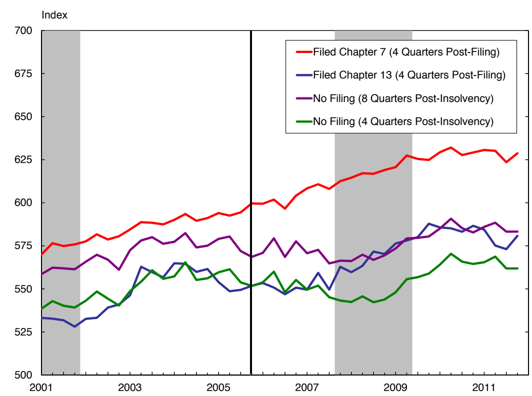
Note: Fraction of individuals who become newly insolvent in each quarter. For *Non-filers*, measured four quarters after the new insolvency. For filers, measured four quarters after filing for bankruptcy. Shaded regions correspond to NBER recessions.
Source: Authors' calculation based on Federal Reserve Bank of New York's Consumer Credit Panel/Equifax Data.

Figure 5: Credit score for individuals who become newly insolvent

(a) at insolvency



(b) four or eight quarters after filing



Note: Credit score for individuals who become newly insolvent in each quarter, if they do not file for bankruptcy in the next eight quarters, and by chapter, if they file.Shaded regions correspond to NBER recessions.
Source: Authors' calculation based on Federal Reserve Bank of New York's Consumer Credit Panel/Equifax Data.

Recourse Structure of Mortgages: A Comparison between the US and Europe

Ron Harris[1] and Asher Meir[2]

Introduction

About a quarter of US states responded to the disastrous epidemic of foreclosures in the Great Depression by limiting mortgage lenders' recourse to borrowers' non-secured assets in the case of foreclosure. A few legislated new limitations in the wake of the post-2007 mortgage crisis. Yet none of the dozens of European countries responded to similar economic conditions by imposing parallel restrictions on these so-called deficiency judgments. We point to a number of deeply rooted differences in legal and social institutions that make such a policy both less acceptable and less essential in Europe. We then suggest that changes in European attitudes towards indebtedness could make such a policy advantageous and acceptable in Europe under certain conditions.

What is a "non-recourse mortgage"

The recourse/non-recourse dimension of a mortgage determines the scope of the ability of lenders to collect upon default of the borrower. In a recourse mortgage the lender can foreclose the secured asset and also has recourse to the borrower himself, which means that the lender can also collect the debt from the borrower's unsecured personal assets and from his future income. In a non-recourse mortgage the lender is confined to the secured asset. He can foreclose, repossess the house, sell and collect the proceeds, but have no recourse, due to legal limitations that will be discussed below, to the personal assets of the borrower, or to the borrower's future income.

The non-recourse feature can be implemented on various legal levels. It can be fixed directly and expressly in the mortgage agreement, or dictated by consumer and mortgage regulation that is intended to protect borrowers. It can result from the procedural rules of debt collection, or constitute the outcome of bankruptcy law.[3] Non-recourse can be a result of collection practices and policies that stop at foreclosure and do not follow defaulting borrowers personally.

In practice, most of the US states that allow only non-recourse loans do so through procedural rules.[4] These rules can be divided into two categories. The most important procedural rules that can create de-facto non-recourse are those that directly restrict the issuing of deficiency judgments, i.e., judgments for the balance between the value of the house and the remaining loan balance.[5] A second realm of procedural rules that provide an element of non-recourse is the one-action rule. In states that legislated the one-action rule, a lender must select one action to take against the borrower if the borrower defaults. If the lender forecloses out of court, the lender has chosen one action and may not bring a lawsuit to recover a deficiency, which would be a second action. The one-action rule appears in stronger and weaker forms in different states (Pence 2006; Kuney 2008).[6, 7]

The above discussion of the laws that can create a non-recourse mortgage demonstrates that the distinc-

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[3] In the US homeowners who meet the means criteria can file post-foreclosure bankruptcy under Chapter 7 of the Federal bankruptcy code, which constitutes a close parallel to a non-recourse mortgage. It enables the borrower to discharge his debt to the mortgage lender through surrendering non-exempt assets – primarily the home.

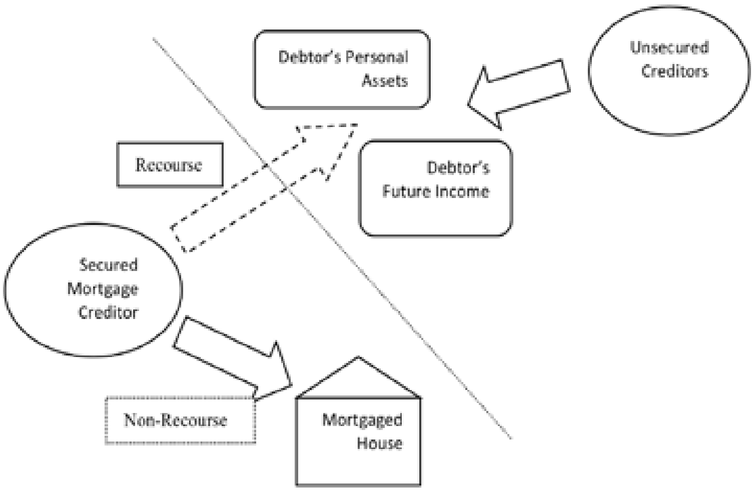
[4] The ten states are Alaska, Arizona, California, Iowa, Minnesota, Montana, North Carolina (purchase mortgages), North Dakota, Oregon, Washington, and Wisconsin. In this classification, see Ghent and Kudlyak (2011).

[5] Anti-deficiency judgment rules appear in a different form in different US states. Differences are with respect to kinds of house ownerships that will be protected by the law, calculation of protected deficiency and whether deficiency judgments were prohibited altogether, or were just procedurally harder to get. For details, see Madison, Dwyer and Bender (2004).

[6] In the strongest form, the lender initially has to choose whether to foreclose or to sue the lender personally, while in weaker forms, he has to exhaust the security before collecting from other assets or he can do both only if he chose judicial foreclosure.

[7] In California, deficiency judgments are not allowed on purchase mortgages. On other residential mortgages, they are allowed only if the lender gives up the shorter and less expensive non-judicial foreclosure and settles for the longer and costlier judicial foreclosure.

Figure 1: The Difference between Recourse and Non-Recourse Mortgage



Note: The dashed arrow above is at the disposal of lenders of recourse mortgages but not of lenders of non-recourse mortgages. The diagonal dotted line that separates the house from the personal assets and future income represents a separation between the pools.

discouraged deficiency judgments. The recent housing crisis led a few legislatures to extend existing non-recourse protection.

Let us now examine some states that are considered non-recourse states and that experienced extensive foreclosures in the recent crisis. In Arizona, lenders are prohibited from obtaining deficiency judgments following foreclosure, where the land size is 2.5 acres or less and where the property was used as a single one-family or two-family dwelling. In California, deficiency judgments are prohibited on purchase mortgages, but not on home equity mortgages and refinancing mortgages. Nevada, another state with very high foreclosure rates, presents a remarkable case. It was considered by most classifiers as a recourse state because its procedural rules on deficiency judgments included only minor impediments. But following the mortgage crisis, the state legislature amended its rule. Loans made after 1 October 2009 by financial institutions to borrowers who continuously occupied the property as a primary residence are non-recourse (Senate Committee on Judiciary 2009).[9]

tion between recourse and non-recourse mortgages do not provide a binary distinction. In most jurisdictions there is no single bright line rule that brings about the non-recourse feature. A variety of obstacles exists on the way to collecting from the borrower personally. There is, in fact, a spectrum between full recourse and full non-recourse mortgage loans.

Comparison of US and European regimes

Ten to fifteen US states, including several with particularly high rates of foreclosure in the post-2007 housing crisis, are considered non-recourse states (HelocBasics 2012; Financial Samurai 2012; LoanSafe 2008; Wiki Answers 2012).[8] Mortgage legislation in most of these states is a fascinating legacy from the 1930s, which received little attention from legal scholars and economists prior to the recent crisis (Hughes 1997). The Great Depression was accompanied by a perfect storm of underwater mortgages from the decline in housing prices, suddenly impoverished homeowners from the economic contraction, and illiquid banks calling in loans that would, under normal circumstances, have been left outstanding. Alongside Federal legislation such as the National Housing Act of 1934, many states drew their own lessons from the crisis and several eliminated or

It is important to keep in mind that ultimately, most US states view mortgages as ordinary loans and make no restrictions on "deficiency judgments", which is pursuing the debtor for the portion of the loan remaining outstanding after foreclosure. Furthermore, most US bankrupts do not obtain a de-facto exemption from deficiency judgments.

Generally speaking mortgage loans in Europe are recourse loans (European Commission 2009; Hellebrandt, Kawar and Waldron 2009; Hatchondo, Martinez and Sanchez 2013; Lucas 2011). Our research disclosed no credit market regulation and no procedural rules that bar lenders from a full recourse to the borrowers' personal assets and future income. Heys et al. (2012, 14) found that: "There currently exists no European country which has a strong application of *datio in solutum* (non-recourse mortgage) enshrined in legislation… The only country where we

[8] Some scholars even assert that all US residential mortgages are in practice non-recourse because of the lenient US bankruptcy regime. See also Jordan and Jain (2009) (explaining circumstances that led to global financial crisis); Feldstein (2008) (discussing inadequacies of existing proposals to disincentivise mortgage defaults); Federal Reserve Bank of Atlanta (2010) (suggesting mortgage's status as recourse or non-recourse does not affect default rate) and Zakaria (2009)(attributing Canada's thriving economy to its refusal to loosen regulations on its financial industry).

[9] For other recent amendments of state foreclosure laws, see NGA Center for Best Practices (2010).

can identify a weak application of *datio in solutum* enshrined in legislation is Spain" (Heys et al. 2012). It is true that, in many jurisdictions, limitations on deficiency judgments are one kind of debt relief available for insolvent debtors (Heys et al. 2012, 143), but this is quite different from the transparent and unconditional right to fulfill the loan obligation through foreclosure, as provided for in US non-recourse jurisdictions. However, steep declines in housing prices in many European jurisdictions, declines that left millions of homeowners with negative equity, moved the possibility of introducing non-recourse mortgages onto the public agenda in some European countries.

The issue of the introduction of non-recourse mortgages has been hotly debated in Europe in recent years in countries like Ireland, Latvia, and particularly in debt ridden Spain. Spain has been the scene of a number of noteworthy developments. On the legislative level, Heys et al. (2012, 138) report that article 140 of the Spanish Mortgage law explicitly allows for non-recourse mortgages; however, they also state that these mortgages are rare in practice. In addition, there is a 2011 amendment to the Spanish Procedural Act that is meant to prevent lenders from foreclosing at an artificially low price, hence pursuing deficiency judgments when better management of foreclosure would save borrowers from these extra payments (Ashurst 2011).

On the judicial level, there was a court decision, upheld on appeal, which denied the lending bank recourse to the borrower's income in cases where the foreclosed property was unsold and thus awarded to the bank at a low assessment, thus rendering it de facto a non-recourse loan (Legal Today 2010).[10]

Public policy justification for non-recourse mortgages

Non-recourse mortgages provide insurance against a unique constellation of circumstances: when the debtor has the ability to pay the debt from non-exempt assets or income but not from the value of the asset. If the borrow cannot pay from other assets, s/he will effectively be judgment proof and a default will occur, even in a recourse mortgage regime; whereas if there is ability to collect from the house then the creditor will be repaid, even if the mortgage is non-recourse.

Such mortgages are common in commercial real-estate, but their character in the homeowner context is different and in some sense opposite. In commercial real-estate, the explicit object of the non-recourse feature is to protect the owner from the downside risk of the asset price; it is effectively a variant of limited liability, but with a fixed lien rather than a floating one. The deal is predicated on the assumption that if the value of the asset is below that of the outstanding loan, the borrower will not hesitate to fulfill her obligation through foreclosure.

In the case of homeowners, the object of the non-recourse feature is to protect borrowers from financial collapse. The deal is predicated on the assumption that borrowers will be very reluctant to give up their primary residence, which means uprooting their family from familiar surroundings, incurring significant moving costs, and in all likelihood having to change neighbourhoods. These factors make lenders confident that the non-recourse feature will be exploited only in cases of severe financial distress.

If this assumption is fulfilled, the expected number of non-recourse foreclosures will be small and, as a result, the cost premium of non-recourse loans will be minimal.

Published research tends to confirm both the assumption and the result. Field data (Chan et al. 2015)[11] and surveys (Guiso, Sapienza and Zingales 2013) both confirm that borrowers in non-recourse states typically give up on their homes not when the home value is slightly below the amount of the outstanding loan ("under water"), but only when the shortfall is quite large. Studies of pricing fail to show meaningful differences in mortgage prices between recourse and non-recourse states (Ghent and Kudlyak 2011).

The advantages of such "financial distress" insurance are evident. Risk is transferred to financial institutions such as banks and insurance companies, which are typically far less risk-averse than individual homeowners; furthermore, their ability to foresee, manage and hedge the risk are greater due to greater financial sophistication and large economies of scale in risk management.

[10] The appeal judges concluded that the bank itself originally assessed the property at a value that covered the loan, and added that to the extent the value declined; this was largely due to the irresponsibility of the banks, thus it would be "morally unsettling" for them to use this decline as a reason to seize additional assets.

[11] Chan et al. (2015) review the literature on the effect of non-recourse on default rates; some studies show very modest effects even when negative equity is large.

What is the justification for public intervention to make non-recourse mortgages mandatory rather than relying on the market to provide them? Economists usually justify public intervention in the presence of either market failure or externalities. Both justifications are relevant in the case of non-recourse legislation.

Market failure

A number of distinct market failures are plausibly involved in the market for non-recourse mortgages.

Adverse selection

A relatively small number of homeowners view their purchase as a financial investment, one which they will readily part with whenever it is financially advantageous. Likewise, a relatively small number of homeowners are financially precarious when they take out a mortgage loan. Thus, if non-recourse mortgages are universal, the cost will be low and the value of the insurance against financial distress large. However, if non-recourse is optional the fraction of such "expedient" and precarious borrowers among non-recourse borrowers will be quite large, as insurance is most attractive for them. The average risk will be high, so the price will be much higher than it would be with a universal pool. As a result, average mortgage holders could be priced out of the non-recourse market and hence underinsured. The justification for universal participation in the non-recourse market is ultimately identical to that for universal participation in other kinds of social insurance such as social security, unemployment insurance, health insurance and so on.

Moral hazard as a result of asymmetric financial sophistication

The traditional moral hazard literature focused exclusively on private knowledge of the borrower/insured. It was taken for granted that the borrower knows a great deal about his likely path of earnings and expenses, or his likelihood of an accident; the lender or insurer knows much less.

In recent years there has been growing recognition that the lender or insurer also has extensive private knowledge, particularly of aggregate risks, and that these also create problems of moral hazard.

In the context of insurance, an insurer may offer insurance that is significantly overpriced compared to the actual miniscule risk of a claim; alternatively, the prospective client may underestimate the risk of a claim and be underinsured. In the context of a loan, the borrower may underestimate his likelihood of missing payments and thus incurring costly extra charges or of experiencing future privation as a result of having to repay consumption loans. In any of these cases there is a potential for regulation to improve the functioning of the market.

In the context of non-recourse loans, there are two avenues for under-insurance. One is that the borrower underestimates the *likelihood* of an adverse event, either a personal setback leading to insolvency or an economy-wide issue leading to negative equity. Another is that the borrower does not fully understand the personal costs involved, for example how wrenching the legal and economic consequences of insolvency are. In either instance, a case can be made for mandatory insurance.

The assumption in each case is that the lender, who has a high degree of financial sophistication and experience with hundreds of thousands of mortgage loans, will be able to adequately evaluate and price the risk of negative equity occurring and of the borrower wanting or needing to take advantage of the non-recourse feature.

We saw another advantage of placing downside risk on the lender in the discussion of Spain: non-recourse lenders are fully incentivized to realize the full foreclosure value of the house, whereas recourse lenders may pursue deficiency judgments, even when more prudently managed foreclosure could have made these judgments unnecessary.

Externalities

We may point to two related, but ultimately distinct types of externalities that can be improved by mandating non-recourse mortgages.

Fresh start for the individual

Financial distress primarily harms the suddenly impoverished household, but may also have significant costs for society as a whole. Many of the costs of householder distress are borne by the public. Economically, over-indebted households may limit their participation in the economy, avail themselves of public support, or opt for relief provided by the bankruptcy system, which may be more expensive. Socially, distressed households may be in danger of dissolving and losing their invaluable social bonds. This justification is parallel in many ways to the provisions in commercial bankruptcy to provide protection from creditors in cases where liquidation would prevent a firm's ability to function as a going concern. A family is also a going concern and the commonwealth has a cardinal interest in enabling its continued functioning.

Fresh start for the community as a whole

There are always individual instances of unfortunate families who are mired in debt. But historically, non-recourse statutes are debated and adopted only at times of simultaneous housing busts and widespread economic distress.[12] When most households are in a healthy economic and social situation, society as a whole can bear the cost of an occasional credit casualty. But in times of widespread distress, the benefits of a fresh start may be far greater.

Drawbacks of non-recourse mortgages

Naturally there are also countervailing considerations – market failures and externalities that are characteristic of a non-recourse regime.

Market failure

Moral hazard of borrower

As a result of protection against severe financial distress, the non-recourse borrower has an incentive to take on a larger mortgage in the first place and to exercise less prudent financial management subsequently.

Externalities

Financial stability

The fact that housing collapses tend to be economy-wide means that putting too much of the risk of a collapse on mortgage lenders can threaten financial stability at the macro level; and this threat of bank failures may be more serious than the threat from numerous families struggling with debts.

Downward spiral of home values

Non-recourse mortgages explicitly incentivize foreclosure, which is the essence of the non-recourse option. However, it has been shown that encouraging foreclosure can trigger a vicious circle of lower home values. Foreclosures tend to lower the values of other houses in the neighborhood, which, in turn, become "submerged" (i.e., loan exceeds value), thus incentivizing further foreclosures and so on (Immergluck and Smith 2006; Moreno 1995; Simons, Quercia and Levin 1998).

Explanation of difference between US and Europe

In the wake of the worldwide depression of the 1930s, about a quarter of the 48 US states placed limits on deficiency judgments, while to the best of our knowledge, none of the approximately 35 sovereign countries of Europe did so. Considering the reason for these different responses is a necessarily speculative exercise, but by no means a futile one. We propose three deeply-rooted differences between the legal systems of the United States and continental European countries that could account for the difference.[13]

Approach to contracts

Continental legal systems take a much more rigid approach to contracts than common law. One salient example is the use of specific performance. Specific performance is much more common in continental European law, which strives to compel parties to fulfill their obligations compared to common law, which is much more inclined to assess damages and generally shuns injunctions (Szladits 1995; Romero 1986). Hence there may be a greater reluctance in Europe to release people from their promise to repay a mortgage.

Approach to insolvency:

US law generally views insolvency as an unavoidable outcome of normal risk-taking behavior, and hence as a problem that needs to be solved. A 1934 decision of

[12] Countries like the Netherlands or Denmark have very high levels of negative equity, but for various structural reasons, this has not been accompanied by high levels of financial distress, and in those jurisdictions there has been little demand for mortgage reform.

[13] Note that in this analysis the United Kingdom is lumped culturally and legally with the United States. In effect, we are trying to explain why in the 49 jurisdictions, including 48 US states and the UK, about a quarter of them limited deficiency judgments, whereas in the approximately 35 jurisdictions on the European continent none did. Another possible basis of comparison is the total extent of negative equity, for which the rankings are similar, although not identical.

the US Supreme Court manifests these views: "One of the primary purposes of the Bankruptcy Act is to relieve the honest debtor from the weight of oppressive indebtedness, and permit him to start afresh free from the obligations and responsibilities consequent upon business misfortunes." (Local Loan Co. vs. Hunt 1934; Williams vs. US Fidelity & Guar Co. 1915; Ziegel 2006; Sullivan, Warren and Westbrook 1989, 2001). By contrast, European law, particularly in the 1930s, generally viewed insolvency as a moral failing that needed to be sanctioned. To this day, many European jurisdictions do not provide for individual discharge, and in those that do, bankrupts often do not enjoy full legal capacity and are barred from some public offices, professions and corporate offices (Reifner et al. 2003; Niemi-Kiesiläinen and Ramsay 2003; Kilborn 2007a, 2007b, 2009).

Approach to social welfare

European countries are often seen as having a stronger commitment to social welfare, compared to the US, which places a higher emphasis on self-reliance. Hence, in Europe it might have been natural to respond to household financial hardship with the existing social safety net, whereas in the US it is more natural to seek ways to eliminate encumbrances that prevent a household from helping itself (Esping-Andersen 1990; Hall and Soskice 2001)

Hence, the European approach would tend towards three statements: you promised to pay back your mortgage loan, hence you should be obliged to do so to the best of your ability; your insolvency is a deficiency that should be punished rather than rewarded; there is no reason for the lender to come to your aid because the social safety net is ready, willing and able to do so.

An American or Anglo-Saxon approach would be much more inclined to say: you promised to pay back your mortgage loan, but insofar as you are unable to do so, there is no reason to compel you to; financial hardship is a common and normal circumstance that needs to be accounted for in public policy; excessive indebtedness is preventing the citizen from contributing to society and hence needs to be controlled.

Obviously there are overlaps between the explanations; to the extent that repaying debts is an absolute moral obligation, insolvency is likely to be viewed as a moral failing; to the extent that the social safety net is able to provide for extraordinary expenses there is less justification for excessive spending (a large share of bankruptcies in the US are due to medical debt or student debt; while medical care and higher education are comparatively inexpensive in Europe).

Has anything changed in the last eighty years in this contrast of the two systems? The main change seems to be in the second rationale. Specific performance continues to be a common remedy in the civil law systems of Europe, and the social democratic governments of Western Europe certainly maintain their commitment to a social safety net. However, the attitude towards indebtedness has changed radically in recent decades. High levels of consumer debt, and the inevitable increased incidence of avoidable insolvency, have made insolvency a common outcome even among normative citizens, and created great pressure for legal systems to accomodate it. While the Anglo Saxon route of personal bankruptcy – a rapid and non-judgmental exemption from payments dependent only on the objective fact of insolvency – has not been adopted in Western Europe, most Western European countries have adopted insolvency systems that enable insolvent debtors to obtain release from their debts through a structured process of limited duration.

The table below shows some leading Western European nations that have adopted policies of full discharge from debts after a statutory period of meeting payments. Some countries also require debt counselling and/or a structured process of negotiation with creditors.

Table 1

European jurisdictions with discharge timetables

Country	Length of time to de facto discharge
Austria	7 years
Belgium	5 years
Germany	6 years
Denmark	5 years
France	8 years; Starting 2016: 7 years
Sweden	5 years

Source: Heye et al. (2012).

How much of a problem is negative equity?

Even if non-recourse legislation is a good solution to the problems created by negative equity, it is unlikely to be considered if the problem itself is small. We were unable to find figures for the 1930s, but regarding the international housing crash from 2007 on, it does not seem that the US experience has been unique internationally. “Negative equity” is not a precisely defined situation (insofar as it is impossible to know the exact selling price of any given house, and in any case, the price depends on the buying and selling decisions of other households), but in broad terms, there are many countries that reported at least ten percent of households with negative mortgage equity at some stage in the recent crisis. These include the US (peak ~13 percent), the Netherlands (peak ~30 percent), and Ireland (peak ~50 percent) (IMF 2015). Other countries with significant rates include Denmark (around eight percent) (Johnson and Flood 2014) and the UK (peak around six percent). The rates within the states of the US are highly variable, but even so, it is not clear that the very high rates are that much different from Ireland or the Netherlands. Thus, we currently have little basis to explain the difference in policy based on differing extent of experience with negative mortgage equity.

Are non-recourse mortgages a constructive policy choice for European countries?

It is impossible to evaluate the wisdom of a non-recourse mortgage policy in a vacuum. It must be considered in the context of a jurisdiction’s comprehensive consumer insolvency regime. If a large fraction of debt is mortgage debt, and in the absence of any other relief measures, non-recourse mortgages may be a very attractive source of insolvency insurance. In many countries the vast majority of households own homes and mortgages are the main source of consumer indebtedness; cutting off the ability to obtain deficiency judgments could protect a large number of families from financial distress.

If, on the other hand, much debt is not from mortgages and the overall regime provides a good measure of insurance, non-recourse mortgages may be considered a very blunt policy instrument. In times of crisis, many stricken households will not have negative equity, either because they are not homeowners, because their mortgages are mostly paid off, or because economic crisis is not accompanied by declining housing prices. Conversely, many households with no particular economic setback may be motivated to take advantage of the non-recourse provision and opportunistically unload their house to the bank simply because the outstanding balance on the mortgage happens to be above the current market price of the home.

Spain is a country that may well have benefited had a non-recourse policy been in place prior to the recent housing collapse. Spain lacks a legal framework for discharge for individuals and hence has a comparatively greater need for an ad hoc solution; the fraction of household debt devoted to mortgages is unusually high in Spain, making mortgage relief a comparatively effective instrument; and the decline in housing prices was one of the steepest (Andritzky 2014), leading to a significant fraction of “underwater” mortgages.

It is, of course, true that if a non-recourse regime had been in place prior to 2007, many people would have been denied mortgages. But in the context of crisis management – the context in which we conceive the motivation for non-recourse mortgage – this outcome would have to be considered an advantage, rather than a drawback. Banks would have been in a better position than households to evaluate the likelihood of a housing collapse, the non-recourse feature would have incentivized them to grant fewer mortgages and demand higher prices, and as a result the rise in housing prices would have been moderated in the first place and the number of insolvent families greatly reduced.

Our entire analysis does not deal with questions of emergency mortgage relief, for example the wisdom of making existing mortgages non-recourse retroactively; such questions relate to current macroeconomic policy. Here we only discuss mortgage reform, i.e., the appropriate long-term regime.

Our judgment is that, for those countries with transparent and functioning debt discharge policies, including those in the table above, compelling non-recourse mortgages will not be a constructive step. Mortgage debt is just one piece of the entire indebtedness puzzle, which those country’s insolvency regimes are well-designed to piece together, and unbundling it is likely to result in a worse outcome.

Non-recourse mortgages could be a constructive step for countries with high levels of home ownership, and insolvency regimes that are currently undeveloped and for which comprehensive reform is, for whatever reason, politically impractical.

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Personal Bankruptcy and Social Insurance

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The IMF defines social insurance schemes as "collectively organized insurance schemes in which employees and/or others are obliged or encouraged to spread risk by taking out insurance against certain social risks. Such schemes require contributions, actual or imputed, to secure entitlement to social benefits." (Pitzer 2003, p. 15). Governments compel individuals to contribute to social insurance plans as a means of spreading out the risk of adverse events across society as broadly as possible; and individuals can collect payments from social insurance if an adverse event strikes them. Classic examples of social insurance schemes include unemployment insurance, government-funded health care systems, public pension plans, income assistance to the poor, and payments to disabled workers.

At first glance, the idea of personal bankruptcy, whereby debtors are allowed to eliminate bad debts without repaying their creditors and eventually re-enter credit markets, seems to have little in common with the idea of social insurance. Research conducted over the past 15 years nevertheless suggests a close connection between the two concepts. Allowing individuals to put bad debts behind them gives them a pathway to address significant adverse events like unemployment or health problems in much the same way as unemployment or health insurance. It may also impact their willingness to take on different risks, such as starting a business or leaving the workforce to obtain more education or training, which have implications for economic growth. The costs of allowing personal bankruptcy are also similar to those of a social insurance scheme, as higher interest rates on loans or increased lender screening of loan applicants affect many people in an economy, often with redistributive effects that may run counter to a policymaker's interests.

This paper provides an overview of the literature on the insurance effects of the personal bankruptcy systems in the US and Europe, with a focus on interactions between personal bankruptcy and alternative forms of social insurance. The paper also covers empirical work estimating the societal costs and benefits of making personal bankruptcy more generous to debtors. The paper concludes with a discussion of the potential impact of personal bankruptcy systems in need of further analysis.

Measuring the insurance offered by personal bankruptcy

One of the first challenges in quantifying the insurance effects of personal bankruptcy is devising a measure of how much insurance the system provides to debtors. The most common measure is the local currency value of exemptions, which represents the amount of assets that a debtor can withhold from creditors throughout the bankruptcy process. This measure has the virtue of being comparable to many of the measures used to assess the generosity of social insurance programs: unemployment, pension, disability and low-income assistance programs can naturally be compared by looking at the cash benefits that each provides. This is the measure most commonly used in studies of the US, where the personal bankruptcy system uses a combination of federal and state laws, which make exemptions the most prominent aspect of bankruptcy law that varies across the country.

Cross-country studies of personal bankruptcy must quantify additional features of the law beyond exemptions that differ across countries. The number of years that an insolvent person must wait to discharge debts, whether a discharge is even possible, restrictions on the economic or civil activities of an insolvent person, or whether bankruptcy is grounds for incarceration may vary from country to country. Armour and Cumming (2008) offer ordinal indices of these features of bankruptcy law across 15 countries in Europe and North America. Their work indicates that personal bankruptcy law in the US is very generous to debtors, especially when compared to most European countries. This makes the US a good test case for the effects of laws that

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loosen restrictions on debtors, which has been the general trend in Europe in the last two decades. However, large differences in the generosity of social insurance programs between the US and European countries limit the conclusions that can be drawn about interactions between the two systems.

Social insurance and personal bankruptcy in the US

The idea of personal bankruptcy serving as a form of insurance can be traced back to Rea (1984). Fisher (2001) was the first paper to offer a formal empirical test of the interaction between social insurance programs and personal bankruptcy. He finds that decreased weekly unemployment benefits or monthly aid to families with dependent children benefits lead to increased personal bankruptcy filings. His simplified model highlights the importance of consumers using bankruptcy as a substitute for payments from social insurance programs, mitigating negative income or asset shocks. Athreya and Simpson (2006) study the same programs in a macroeconomic framework and reach the opposite conclusion, finding that more generous unemployment insurance benefits lead to more consumer defaults. They claim greater unemployment benefits lead to higher guaranteed income streams for consumers, which encourages them to take on additional debts, as they do not fear the removal from credit markets that bankruptcy brings. They also claim that more bankruptcies result from a substitution between job search and debt, as greater unemployment benefits diminish efforts spent on job search, thereby increasing consumer debt levels and leading to a higher number of insolvent households. Athreya and Simpson reconcile these findings by pointing out that bankruptcy is a better substitute for persistent income shocks than transitory ones, as filing for bankruptcy imposes long-term credit market penalties that can prove quite costly. As such, analyses of substitutions between unemployment insurance and personal bankruptcy should account for the expected length of unemployment spells. Keys (2010) shows that an employment separation increases the probability of personal bankruptcy in the context of a dynamic model where individuals do not file for bankruptcy immediately upon losing a job, but tend to wait before invoking bankruptcy to deal with the income shock. Longer average unemployment spells, such as those seen in the US in the wake of the late 2000s financial crisis, might therefore be expected to lead to more personal bankruptcies than the shorter unemployment spells common in the US in the 1980s and 1990s.

Chatterjee et al. (2007) and Livshits, MacGee, and Tertilt (2007) find that the insurance aspects of personal bankruptcy explain part of consumer debt accumulation decisions. Their results suggest that bankruptcy law may affect the severity of financial crises through consumer debt levels, a finding supported by Li, White, and Zhu (2011) who show that a reform in the US that made personal bankruptcy less favorable to borrowers led to more mortgage defaults. Hurd and Rohwedder (2013) show that consumer debt levels depend on the possibility of future unemployment, as individuals adjust their current spending in response to the potential of earning a lower income in the future. Their work highlights the role of social insurance in personal bankruptcy, as they document consumers changing debt levels and thereby their risk of bankruptcy in response to changes in the risk of unemployment.

Research has also explored connections between health insurance and personal bankruptcy rates. Gross and Notowidigdo (2011) find that expansions of state Medicaid programs aimed at covering children caused significant decreases in the personal bankruptcy rate, suggesting that health insurance and personal bankruptcy are substitutes for individuals faced with high medical expenditures. Baicker and Finkelstein (2011), however, find no causal links between Medicaid health insurance and individual bankruptcy probabilities as part of a randomized control trial in Oregon. Mahoney (2015) shows that adults living in states with more generous personal bankruptcy laws are less likely to purchase health insurance. This finding highlights that when individuals are choosing a portfolio of risks, the insurance offered by personal bankruptcy is directly relevant to how they choose to purchase insurance for other risks. As the provision of health care is a social insurance scheme in many countries, these results indicate that some of the insurance benefits of generous terms for personal bankruptcy are already provided through the health care system. Overall, these papers show that the terms of personal bankruptcy affect consumers' ability to respond to negative income and asset shocks, which is the primary focus of social insurance policy.

Social insurance and personal bankruptcy in Europe

There is considerably less research on personal bankruptcy outside the US, largely because of meaningful cross-country differences in the functioning of bankruptcy systems and the high prevalence of bankruptcies in the US. Reforms in Europe throughout the 1980s and 1990s, motivated by greater awareness of the potential economic benefits of making personal bankruptcy more generous to debtors (European Commission 2003), have given rise to interesting work on bankruptcy in countries with different social insurance systems. Armour and Cumming (2008) use international panel data on bankruptcy law generosity across 15 countries and show that self-employment rates increase as bankruptcy becomes more lenient for debtors. They conclude that the increase in entrepreneurship reflects an increased willingness to take on the financial risks of small business ownership when the bankruptcy system offers a reasonable way to recover from business failure. Fossen (2014) studies the German bankruptcy reform of 1999, eliminating the need for cross-country comparisons. He finds that self-employment rates increase among those with less personal wealth relative to the very wealthy. Both studies are consistent with the findings of numerous papers studying the relationship in the US between self-employment and bankruptcy system generosity.

More generally, Anderson et al. (2011) survey the reasons for personal bankruptcy across European nations and find many cross-country similarities. The most common reasons why debtors report filing for bankruptcy in their surveys are unemployment, divorce and illness. These mirror the top three reasons cited by US debtors according to Sullivan, Warren, and Westbrook (1989). Anderson and his co-authors also report on several programs spread across Europe that bundle together debt counseling services with other social welfare programs ranging from job placement assistance and income support to tax advice and mental health services. The prevalence and variety of these programs reflect the close relationship between personal bankruptcy and social insurance schemes, despite the relative lack of formal program evaluations of the substitutability or complementarity of bankruptcy law and social assistance in this policy environment.

Who gets the insurance provided by personal bankruptcy?

When considering bankruptcy law as part of a nation's social insurance programs, it is important to determine which groups in society benefit and pay for this form of insurance to evaluate the social impact of personal bankruptcy policies. In order to take advantage of personal bankruptcy, one must generally have some assets that are worth protecting through formal legal channels. These assets are shielded from seizure by creditors through bankruptcy exemptions as described above. While increases in bankruptcy exemptions are thought to make the bankruptcy process more generous to debtors, it is important to note that only debtors who have more assets than the current exemption limit benefit from such an increase. This implies that the poorest members of society are often not the chief beneficiaries of changes to bankruptcy law, unlike changes to state health insurance or income assistance programs that may better target the indigent. Posner (1995, p. 307) highlights this distinction when he refers to US bankruptcy law as "social insurance for the non-poor."

Entrepreneurs appear to benefit from generous bankruptcy laws, as insurance against the debts that can arise from a failed business is valuable and incentivizes greater risk-taking in the form of business start-ups. To the extent that these businesses are employers and offer products that consumers value, some of the gains from the marginal firm entering the marketplace are spread to the public broadly. However, neither the employees nor the customers of the firm are guaranteed to be the traditional recipients of social insurance, and the entrepreneurs themselves are likely to be wealthy. Fossen (2014) shows that many of the new entrepreneurs created when the bankruptcy system becomes more generous are wealthy, but not extremely so, as the very rich can already self-insure against the risk of business failure.

Sullivan et al. (1989) suggest that individuals who suffer adverse events benefit by using bankruptcy to smooth consumption through negative shocks. As the main adverse events they study are job loss, divorce, and health problems, individuals who suffer these events may enjoy a significant overlap with targets for social insurance schemes. There is ongoing research to determine whether these adverse events actually cause individuals to file for bankruptcy, or whether those people more likely to be affected by these shocks are also more likely to file for bankruptcy for other reasons, so that the survey findings reflect only a correlation. Regardless of the direction of causality, this survey finding across the US and Europe supports the idea that beneficiaries of social insurance schemes for these adverse events are also likely beneficiaries of generous bankruptcy law.

Who pays for the insurance provided by personal bankruptcy?

The main costs to consumers of having a generous bankruptcy policy are likely to be generated by the credit market. The key insight is that in cases where bankruptcy is better for debtors, consumers will want to borrow more money but lenders will not want to provide it, particularly in the form of unsecured credit. Both the supply and demand for loanable funds change when bankruptcy laws do, making it difficult to estimate the effect of bankruptcy system generosity on credit markets.

Gropp, Scholz and White (1997) show that in states with high bankruptcy exemptions, lenders redistribute loans towards individuals with more assets, resulting in higher interest rates for those with few assets. This is a critical result for understanding the insurance effects of bankruptcy law, as it suggests that the burden of paying for insurance in the form of higher interest rates and less available capital in credit markets falls heavily on those with assets below the legal exemption limit. Since having some assets is necessary to benefit from the protection offered by formal bankruptcy procedures, this finding suggests that individuals who pay for the insurance provided by personal bankruptcy are not necessarily those who benefit most from it.

Berkowitz and White (2004) show that while entrepreneurs may be more willing to take risks by starting businesses, they are also more likely to be turned down for loans if they live in a state with high exemptions. This finding is supported in the international context by Davydenko and Franks (2008), who find that across France, Germany, and the UK, bankruptcy provisions that are more generous to debtors lead to lower collateral requirements for small business loans. Traczynski (2015) addresses the credit market endogeneity problem by using variation in a form of property ownership that functions similarly to bankruptcy exemptions and finds that firm owners value asset protection, even when the cost of asset protection is limited access to credit.

Lessons for policymakers

The insurance effects of personal bankruptcy and the resulting interactions with social insurance schemes are an active research area. Individuals face many risks in life and the bankruptcy system is one of many ways to mitigate income and asset shocks. It is important to a policymaker to understand how bankruptcy policy affects individual behavior, especially when the change in behavior may stress other parts of the social safety net. It is also important to understand that just as unemployment insurance or income assistance or health care programs must be financed with tax revenues, insurance from the bankruptcy system is financed by less access to credit and higher interest rates, especially for low income households. Like most social insurance programs, the personal bankruptcy system involves transfers of wealth beyond the obvious transfers between creditors and debtors. Policymakers need to consider these effects as part of the overall strategy for lending to and financing small businesses.

Finally, it is clear that much more research needs to be done to understand how best to design a personal bankruptcy system to account for these myriad effects. The literature on unemployment insurance or public pensions is considerably older and more developed in both its theoretical and empirical aspects than the literature on personal bankruptcy. There is not even any consensus among experts to date on seemingly basic questions like what causes individuals to file for bankruptcy. Nonetheless, current work suggests that social insurance schemes play a major role in this puzzle.

Not all types of social insurance have been tested for their interactions with personal bankruptcy, and some research indicates that insurance through bankruptcy laws may affect many areas of society. Traczynski (2011) and Burns and Stoddard (2012) find that one of the persistent, unintended consequences of changes in the generosity of personal bankruptcy is a rise in divorce rates, indicating that marriage also provides a form of insurance against negative shocks similar to that of social insurance or personal bankruptcy. At the same time, going through formal bankruptcy procedures often involves a ban on filing again over a prescribed time period, meaning that the debtor must forego future insurance in order to use it in the present. Han and Li (2007) find minimal changes in debtors' labor supply after bankruptcy, while Han and Li (2009) find that insolvents have poorer access to credit markets for ten years after filing. Their work shows that life after personal bankruptcy has significant restrictions, implying that the decision to use the insurance provided by bankruptcy law is not one that debtors should take lightly and is an important component of the social insurance system. Both the broader societal effects of the insurance value of bankruptcy and the insurance effects of filing for bankruptcy are important considerations when analyzing what drives individuals to file, but both areas are currently understudied.

New research will offer further insights into the myriad effects of social insurance and personal bankruptcy on everyday decisions by consumers.

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Personal Bankruptcy Law and Entrepreneurship[1]

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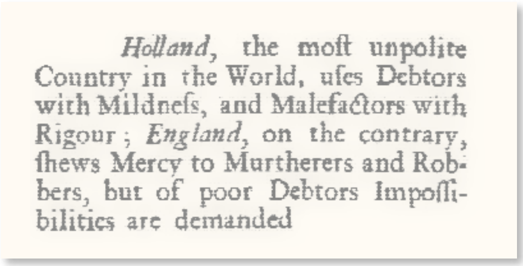
Johannes König[3]



Holland, the moſt unpolite Country in the World, uſes Debtors with Mildneſs, and Malefactors with Rigour; *England*, on the contrary, ſhews Mercy to Murtherers and Robbers, but of poor Debtors Impoſſibilities are demanded

(Samuel Byrom, 1729, 15)

The introduction of the Insolvency Code in Germany in 1999 opened up the possibility for insolvent private persons to file for bankruptcy in order to obtain debt relief. The personal insolvency procedure involves a compliance period, during which debtors partly repay their debts. If debtors comply during this period, their remaining debt is discharged. In a reform of the Insolvency Code in 2014, the duration of the compliance period was reduced if the debtor meets certain conditions, with the intention of putting debtors on a faster track to a fresh start. Personal bankruptcy law is especially relevant for entrepreneurs, because for sole proprietors and partners of unincorporated partnerships, debts are personal liabilities, and because business loans tend to be large in comparison to consumer credits. Before 1999, entrepreneurs whose businesses failed were often left with a large amount of debt that they sometimes could not repay during their lifetime, discouraging them from making any real effort to do so.

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Effects of personal bankruptcy law on entrepreneurship

The option of personal insolvency and debt relief limits the downward risk of entrepreneurship like an insurance policy, because an entrepreneur has the possibility of a fresh start after a failure and can, for example, start up a new venture. In the start-up scene, anecdotes of entrepreneurs who rebounded after initial failures are plentiful. Stephan Uhrenbacher's story is a classic example: his first IT start-up failed, whereas his second venture, Qype, was sold for USD 50 million in 2012 (Heinemann 2012). In this respect, a more debtor-friendly personal bankruptcy law, one with a shorter compliance period before the fresh start, for example, makes entrepreneurship more attractive. However, at the same time, risk is shifted to lenders, who can expect to recover less of their credit in the case of a debtor's insolvency. Banks may react by charging higher interest rates as a risk compensation, demanding more collateral, or flat-out rejecting credit applications. Because entrepreneurs rely on external credit to finance their investments, this negative constraint on credit supply may hamper entrepreneurship. Thus, a priori it is unclear whether the insurance effect or the borrowing cost effect dominates and how personal bankruptcy law affects entrepreneurship on balance.

The theoretical literature studies this trade-off in equilibrium models. Jia (2010) finds that the impact of personal bankruptcy law on entrepreneurship is primarily driven by the insurance effect rather than the borrowing cost effect. Thus, more debtor-friendly bankruptcy laws increase entrepreneurial activity. Mankart and Rodano (2015) similarly conclude from a general equilibrium model that a more generous bankruptcy law would increase entrepreneurship in the US. By contrast, Akyol and Athreya (2011) derive from a partial equilibrium model that bankruptcy rules more lenient than the current rules in the US (which are among the world's most generous already) would not change self-employment rates much, whereas rules leaning more pro creditor would result in an increase in self-employment because of the borrowing cost effect. Mankart and Rodano (2015) emphasize that secured credit mitigates the borrowing cost effect, so the diverging results of Akyol and

Athreya (2011) may be due to the omission of secured credit from their model.

Empirical evidence supports the view that the insurance effect dominates and more debtor-friendly personal insolvency laws increase entrepreneurship rates. Fan and White (2003) relate entrepreneurship rates to differences in homestead exemptions across US states in the period 1993–1998. A homestead exemption makes personal bankruptcy law more generous, because homeowners may keep their home up to a certain threshold value after personal bankruptcy (Chapter 7 of US personal bankruptcy law). The authors find that the probability of owning a business is as much as 35 percent higher in states with unlimited, rather than low homestead exemptions.[4] Armour and Cumming (2008) use aggregated data from 15 countries in Europe and North America in 1990–2005. Their results indicate that entrepreneur-friendly bankruptcy laws increase entrepreneurship rates.

Fossen (2014) analyzes the introduction of the Insolvency Code in Germany in 1999, which allowed personal bankruptcy and a subsequent fresh start for the first time, as a quasi-experiment. In a model, he illustrates that potential entrepreneurs are less affected by personal bankruptcy law if they are wealthier. The insurance effect does not benefit them as much, because they still risk losing all their wealth in case of bankruptcy, and at the same time, the borrowing cost effect does not harm them as much, because they can use their own wealth to finance their business or use it as collateral. A difference-in-difference analysis based on household panel data shows that the individual probability of entry into entrepreneurship increased for less wealthy persons relative to more wealthy persons when the Insolvency Code was introduced. This shows that entrepreneurship became more attractive for less wealthy individuals and indicates that the insurance effect outweighs the borrowing cost effect.

There is also evidence of the reaction by banks to more lenient personal bankruptcy laws. Berkowitz and White (2004), again using homestead exemption variation across US states, report that small firms in states with more generous exemptions face higher interest rates or do not obtain the desired amount of credit.[5] Using firm data, Davydenko and Franks (2008) compare the effects of bankruptcy law in France, Germany, and the UK. The results indicate that banks respond to debtor-friendly codes, with, for example, stricter collateral requirements.

One may expect that more forgiving personal bankruptcy laws also lower the inhibition threshold of debtors to file for bankruptcy. While Agarwal et al. (2005) report that the probability of small business owners filing for bankruptcy is higher in US states with higher homestead exemption levels, Fossen (2014) does not detect any significant effect of the introduction of the German Insolvency Code on the probability of exit out of entrepreneurship.

Dobbie and Song (2015) use half a million bankruptcy filings matched with administrative data to document the impact of debt relief in the US (under Chapter 13 filings). They find that debtor protection has positive effects on earnings and reduces mortality and home foreclosure rates.

The majority of the literature agrees that personal bankruptcy laws are more relevant for entrepreneurship than corporate bankruptcy laws, as emphasized by Cumming (2012); see also White (2006, 2007). Even if entrepreneurs incorporate, creditors often demand personal guarantees from owner-managers of small businesses, which circumvents the limited liability of the corporation and preserves the personal liability of the entrepreneur. Nevertheless, Paik (2013) reports that some entrepreneurs switch the legal form of their businesses in response to changing personal bankruptcy laws. He analyzes a reform of bankruptcy law in the US in 2005, which reduced wealth protection for unincorporated entrepreneurs (White 2006). After the policy change, he observes that potential entrepreneurs became more likely to incorporate in order to seek limited liability.[6] Peng, Yamakawa and Lee (2010) and Lee et al. (2011) are among the few authors who investigate the effect of *corporate* bankruptcy laws on entrepreneurship. Cumming (2012) criticizes these cross-country comparisons for ignoring major reforms in bankruptcy laws in some of the countries featured during the observation

[4] A spatial econometric estimation qualitatively confirms this result (Mathur 2009). Georgellis and Wall (2006) find a nonlinear effect with a positive relationship between homestead exemptions and entrepreneurship rates only in the middle range of exemptions. Primo and Green (2011) report a positive non-monotonic effect of more generous exemptions on self-employment, but with lower levels of innovative entrepreneurship.

[5] Similarly, but not focusing on entrepreneurship, Gropp, Sholtz and White (1997) find that larger exemptions reduce the availability and amount of credit to low-asset households and, at the same time, increase the amount of credit held by high-asset borrowers.

[6] Another adjustment channel might be movement to the informal sector if regulations such as bankruptcy laws become too burdensome for entrepreneurs, especially in developing countries (Van Stel, Storey and Thurik 2007).

period. In Germany, personal bankruptcy law is even more relevant for entrepreneurship relative to corporate bankruptcy law because unincorporated firms are much more important in the German economy compared to the US and most other countries. While the costs of incorporation affect entrepreneurs in general (Klapper, Laeven and Rajan 2006), in Germany, entrepreneurs may be particularly reluctant to change the legal form of their business in response to changes in bankruptcy laws.

In short, a more debtor-friendly personal insolvency law has two opposing effects on entrepreneurship – an encouraging insurance effect and a discouraging borrowing cost effect. The literature on the topic largely supports the view that on balance, the insurance effect dominates, and more forgiving personal bankruptcy laws increase entrepreneurship rates.

This way, more lenient personal bankruptcy laws are also likely to enhance efficiency and social welfare. Forgiving bankruptcy rules encourage experimentation by entrepreneurs: They make it easier to close an unsuccessful business and start a new one (Landier 2005). Moreover, over-optimism on the part of entrepreneurs would lead to under-insurance in the absence of bankruptcy laws that protect the debtors (Parker 2007). Incentives related to effort provision may be even more important. While greater creditor protection increases incentives for entrepreneurs to succeed *before* bankruptcy in order to avoid bankruptcy and thereby reduces moral hazard, more generous bankruptcy laws maintain incentives to exert effort *after* bankruptcy due to limited garnishment of earnings. Ayotte (2007) analyzes this trade-off in a principal-agent model and argues that "fresh start" policies on balance generate social gains by preserving an entrepreneur's post-bankruptcy incentives.

Insolvency proceedings for the self-employed in Germany

Prior to 1999 private individuals in debt, including the self-employed, had no chance of finding debt relief other than by paying all their open liabilities, which was sometimes impossible, especially in many cases of formerly self-employed persons with large amounts of debt. Each individual creditor had the option of seizing assets without regard to other creditors' claims. The 1999 reform of the German Insolvency Code (InsO) remedied this chaotic state of affairs and opened two potential paths to debt relief for the self-employed. Now they can either take part in *regular insolvency* proceedings, which were previously offered only to incorporated businesses, but now, in adapted form, are also available to self-employed persons (regular procedure); or they can file for the newly introduced expedited *consumer insolvency* (simplified procedure). The regular procedure is open to debtors who still operate their business at the start of the proceedings, as well as those with many creditors (more than 19) or liabilities due to wage claims by former employees and outstanding social security contributions. Formerly self-employed individuals, who have given up their business, and who do not meet the above criteria, file under the simplified procedure.

In both procedures the path to debt relief is similar. Before a court can get involved, an attempt must have been made to find an agreement on debt relief by creditors and the debtor. If this attempt fails, the debtor can open the proceedings and apply for debt relief. In case of the simplified procedure, another effort is made to resolve the situation via a debt relief plan under the auspices of the court, which can replace votes of minority creditors on the plan. If this plan is rejected as well, the actual proceedings start and the identity of the debtor is made public.

At this stage, creditors, should they have been absent from the proceedings so far, are now liable to make their claims known to the trustee. In the regular procedure, the trustee can also make a motion to exempt earnings and assets due to current self-employment from the insolvency mass (§ 35 Abs. 2 InsO), which serves to keep the debtor in gainful employment. If the debtor has not violated some fundamental rules of the proceedings (false claims, failure to cooperate), debt relief is announced and the compliance period starts.

During the compliance period, the debtor is required to turn over all of his or her assets to the trustee, who distributes them equally among the creditors. This entails tangible assets as well as income above a certain threshold in line with the German social minimum.[7] The current legislation offers three time scales for the compliance period: The compliance period automatically ends after six years. The debtor can speed this up by paying the court fees[8] and reduce the period by one year. The

[7] As of July 2015, 1,080 EUR of monthly income are protected from garnishment for a single person without dependents. The threshold rises by 400 EUR per month for the first dependent and 300 EUR for the second.

[8] Depending on the case, these could lie between 800 EUR to 1,600 EUR (Schuldnerberatungen Berlin 2015).

time to discharge can be cut to three years if the debtor both pays the court fees and 35 percent of the total debt during the compliance period. The options to reduce the time to discharge were introduced in the reform of 2014. After the compliance period has elapsed, debt relief is granted by the court, unless the debtor has not complied in some sense. The formerly insolvent person is finally debt-free and enjoys a fresh start.

The time to discharge of debt varies significantly across countries and time, from no discharge at all (e.g., in Greece, Italy, Spain and Sweden in 2005), to almost immediate (e.g., Canada with nine months) or immediate discharge (e.g., US). In many countries, the number of years until a fresh start is available was reduced within the last 20 years (Cumming 2012). The UK, for example, reduced the time to discharge from four years to one year in 2004. The European Commission (2014, 2) also advocates a new approach to entrepreneurial failure and insolvency and calls on the Member States of the European Union to give "honest bankrupt entrepreneurs a second chance" by providing a fresh start in their insolvency laws. Thus, Germany is following an international trend, although preconditions such as fixed repayment requirements are unusual.

Is the conditional discharge of debt after three years effective?

The 2014 reform of the Insolvency Code in Germany, which allows discharge from debt after three years if the personal debtor is able to repay 35 percent of debt and the court fees within this period, can increase work incentives for debtors who can realistically aim at meeting these conditions, because they want to avoid garnishment of income in the fourth and fifth years. This is especially relevant for debtors who are still self-employed (in the regular procedure) or who are self-employed again (in the simplified procedure) for two reasons. Firstly, the potential earnings of entrepreneurs are often considerably larger than the non-garnishment threshold, which is the social minimum, so the duration of the compliance period makes a big difference for them in terms of disposable income. Secondly, entrepreneurs are comparably flexible in choosing their working hours and effort and thereby their earnings, but the work ethic of the debtor cannot be effectively monitored and corrected by the trustee. However, if personal debt is so large that the 35 percent threshold of debt repayment is out of reach, even with increased effort, work incentives remain very low because of the earnings garnishment. It is likely that the debt of most insolvent entrepreneurs is too high to give them a realistic chance to achieve discharge of debt after three years. Therefore the 2014 reform is unlikely to have any effect on them. Furthermore, the repayment chances of most entrepreneurs are diminished, since they are likely to have lower earnings during the compliance period due to the increased risk business partners of the insolvent person face in further interactions. The threshold of 35 percent thus appears too high, too rigid and arbitrarily chosen. A flexible threshold that takes into account the specific situation of the debtor could be an option to increase work incentives during the compliance period, especially for insolvent entrepreneurs, which would also be in the interest of the creditors. Lowering or abolishing the threshold should also be considered. Estimating the responsiveness of labor supply given a change in the threshold, especially by entrepreneurs, is a challenge for future empirical research.

Trends in entrepreneurship and bankruptcies

The German Federal Statistical Office provides aggregate statistics originating from the courts about the opening of insolvency proceedings. These inform us of the willingness of individuals to start insolvency proceedings, but not of the outcomes of the proceedings. Most, but not all of the simplified proceedings opened result in a compliance period. Roughly one percent of the proceedings are rejected due to insufficient assets of the debtor. This share remained stable throughout the period considered here.

Figure 1 shows the trends in the numbers of insolvency proceedings opened by consumers and the (formerly) self-employed. Consumer bankruptcies increased strongly between 2002 (the first year with data available on the formerly self-employed) and 2007, presumably due to slow adjustment to the new Insolvency Code in 1999. The (much weaker) increase in the number of personal insolvency proceedings by the self-employed during this time can thus also be explained by slow adjustment. After a dip in 2008, the economic crisis was accompanied by a moderate increase in bankruptcies by consumers in 2009–2010, but only a small increase in bankruptcies by the self-employed in 2009 (this can be seen more clearly in Figure 2 because of the difference in scales). From 2011 onwards, we see a decline in proceedings opened both by consumers and self-employed persons. While the numbers of personal bankruptcy proceedings by the self-employed are far lower

Figure 1

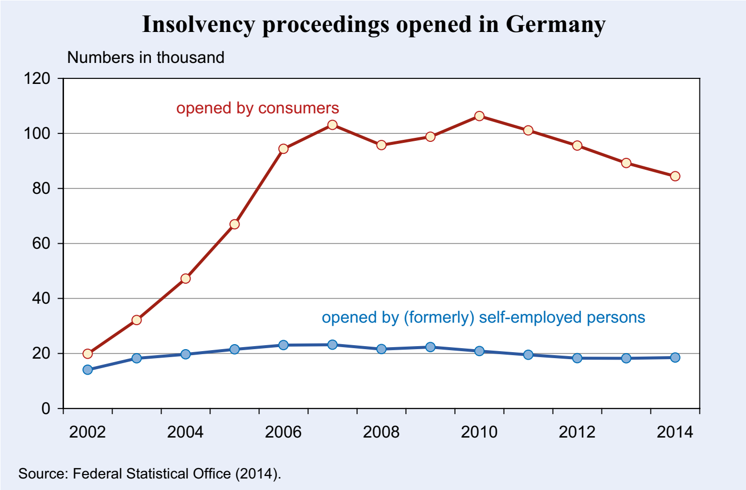


Figure 2

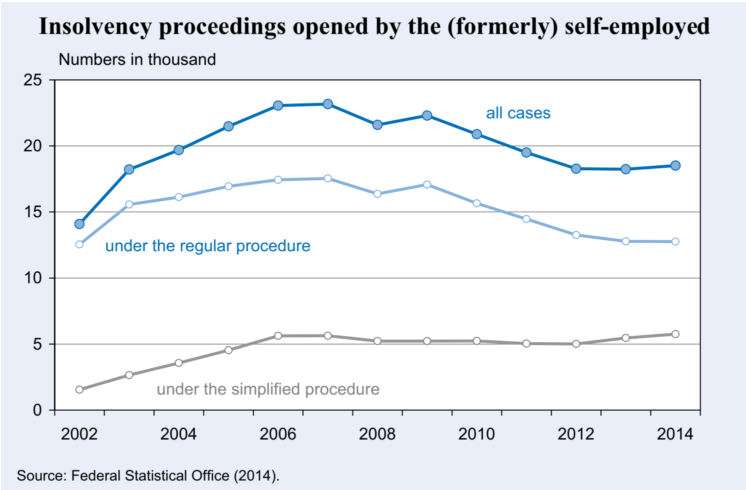
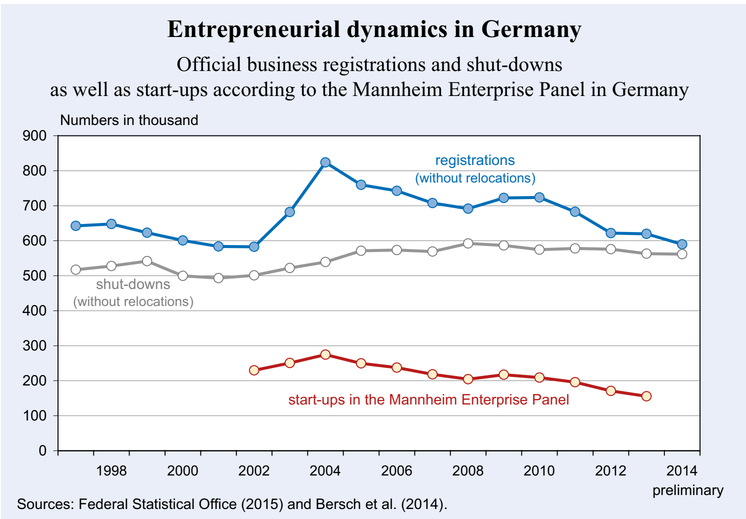


Figure 3



than consumer bankruptcies, they are economically significant, as more debt is often dealt with. It is apparent that the curve for the (formerly) self-employed does not track the massive increases of the consumer curve from 2003 to 2007. The main reason is obviously that there are far less self-employed persons than consumers in Germany, but there may also be behavioral differences. Many consumer insolvencies involve debtors that receive very low incomes, often already at the social minimum, easing the step into personal insolvency proceedings, whereas earnings garnishment during the compliance period is typically more painful for the self-employed.

Figure 2 displays the number of opened insolvency proceedings for the (formerly) self-employed. We observe that the majority of cases falls under the regular procedure, indicating that many self-employed continue operating their business or have a complex structure of liabilities. This highlights that for the self-employed, besides the introduction of consumer bankruptcy proceedings, an important part of the introduction of the Insolvency Code in 1999 was the possibility of using the regular insolvency proceedings that were previously available for corporations only. The upward trend from 2002 to 2007 is more pronounced for the simplified procedure than for the regular procedure, and only the latter exhibits a decreasing trend from 2010 to 2013. Filings for the simplified procedure by the self-employed increase marginally in 2014, which might reflect a slight response to the 2014 reform that conditionally shortened the time to discharge, but this is far from clear, because the upward trend started as early as 2013. It is very likely that the policy change is not going to have a notable effect because most insolvent self-employed persons cannot meet the requirement to repay 35 percent of debt within three years to qualify for an earlier fresh start.

Figure 3 shows the numbers of business formations and shut-downs in Germany according to the German Federal Statistical Office (2015) and business start-ups as reported by Bersch et al. (2014) based on the Mannheim Enterprise Panel (MUP). The numbers of the Federal Statistical Office are based on administrative business registrations and dissolutions, excluding location changes. The MUP is constructed from data provided by Creditreform, Germany's largest credit rating agency. Therefore, it covers companies with sufficient economic activity to be noticed and registered by Creditreform and mostly excludes micro and sideline businesses (Bersch et al. 2014). This explains the much lower level of MUP start-ups as compared to official firm formations. However, the time trends of the two curves look similar, so qualitatively both time series seem to reflect the same underlying entrepreneurial dynamics. MUP data is only available for 2002–2013, so we use the official data to inspect the longer period that includes the reforms of the Insolvency Code in 1999 and 2014.

A marked upward spike in start-ups occurred in 2004, after a public start-up subsidy scheme for the unemployed was introduced in 2003. This start-up subsidy may also account for parts of the upward trend in insolvency procedures by the self-employed around the same time and thereafter. Since 2004 the start-up curve has been declining slowly; in 2006, the start-up subsidy for the unemployed was reformed and generally made less attractive and harder to obtain. The curve of shut-downs exhibits a fairly stable trend. There are no visible effects of the 1999 or 2014 reforms of the Insolvency Code on entrepreneurial activity. However, since other influences are not controlled in these aggregate statistics, they may hide significant effects for sub-groups of entrepreneurs, e.g., those with low personal wealth levels (Fossen 2014).

Concluding remarks

A growing body of theoretical and empirical literature shows that more debtor-friendly personal bankruptcy laws increase entrepreneurial activity. The possibility of a partial discharge of debt and a fresh start after insolvency limits the downside risk of an entrepreneurial venture for business owners with personal liability. This insurance effect of a more lenient personal bankruptcy law seems to outweigh the adverse borrowing cost effect. The latter occurs when lenders charge higher interest rates or demand more collateral when they expect to recover less of their credit in case of a debtor's bankruptcy.

A straightforward way to make personal bankruptcy laws more entrepreneur-friendly is to reduce the time to the discharge of debt. Thus, a reduction of the compliance period from six down to three years is a good idea to stimulate entrepreneurial activity. However, the 2014 reform in Germany only allows a fresh start after three years if the debtor is able to repay 35 percent of the debt within this time and additionally covers the court fees. This requirement seems to be too difficult to meet for most entrepreneurs in trouble. Thus, the 2014 reform did not alter the situation of potential or actual entrepreneurs in a meaningful way. The aggregate trends in opened insolvency procedures by the self-employed or business registrations do not show any notable reactions to the 2014 reform. Dropping or alleviating the rigid preconditions for a quicker fresh start, as in other innovation-driven economies, would encourage more persons in Germany to take a risk and become entrepreneurs.

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Insolvency and its Consequences: A Historical Perspective[1]

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Eva Maria Steiger[3]

Introduction

This paper presents a history of penalties imposed on individuals when they default on their loans. It shows that harsh monetary and non-pecuniary penalties are not mere relics from a bygone era and, at the same time, that debt release and limited liability are far from recent institutions. The paper collects salient facts about the consequences of financial default from Babylonian to modern times. This approach allows the reader to contrast the evolution of penalties over time with the seemingly lesser variation across countries or nations in a given era, and to discuss topics such as monetary vs. non-monetary penalties, liability limits, the reputational costs of default, and debt renegotiation. The first part of the paper focuses on the duty to repay and the incentives to do so. The subsequent section focuses on relief for non-commercial debtors and the final section offers a few conclusions.

A history of the duty to repay

Paying off one's debts is typically viewed as a moral or religious obligation. However, when religious edicts and customs are not the only set of formal rules governing people's lives, or when incentives associated with the afterlife and the social stigma associated with default are not sufficient to elicit proper behaviour, secular legal rules must fill the gaps.

Religion and default

The individual duty to repay one's debts is reflected in the beliefs associated with many religions. On the one hand, creditors are sometimes urged to be lenient. For example, the Jewish Bible provides for forgiveness for debts owed by poor Jews every seven years (Lev 25:35-43, Deut 15:1-2). The New Testament exhorts Christian creditors to forgive debtors who cannot pay (Mt 18:23-35). The Koran likewise asks of creditors that they extend repayment, or even forgive debts, when their debtors are facing dire circumstances (Qur'an II:280; see, e.g., Seniawski 2001). On the other hand, in many sets of religious beliefs the debtor's duty to repay is reinforced by the threat of dire consequences in this world or the next. Early Hindu law, for instance, permitted the killing of a defaulter and the enslavement of his wife (Kilpi 1998). For Hindus, defaulting is also a transgression and failed debtors' prospects in the next life are dim (Chatterjee 1971). In Judaism, despite a stipulation that poor people's debts be periodically forgiven, the moral obligation to repay one's debt remains (Efrat 1998). Christians have the same obligation (Rom 13:7). In Islam, "all agreements must be observed, since God is a witness to any contract entered by individuals" (Efrat 1998; see Qur'an II:282).

In some cases, the legislator gives contracting parties strong incentives to fulfil their obligations. An extreme example is early Roman law: the third of the Twelve Tables (ca. 451 BC) let private creditors seize their debtors unless they made a settlement and, after a sixty-day grace period, put them to death or sell them into slavery "across the Tiber," i.e., abroad. In many other ancient societies, penalties allowed by the legal system were also drastic: while the failed debtor may not always have had to fear death, he still faced involuntary servitude. In Babylonian times, for instance, loans were guaranteed by the person of the debtor or one of his kin (Johns 1910). A similar principle is found in traditional Chinese society.[4] The Jewish law in Moses' time, like its Mesopotamian forebears, allowed for debt bondage. In pre-Solonian Athens, likewise, failure to pay off private debts that had been secured on a free person led to the loss of both freedom and the right to the fruits

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4 The legal tradition and ethical concept of „father's debt to be paid by the sons" prevailed in China until reforms under the Qing dynasty at the beginning of the twentieth century (Zhou 1995).

of one's labor (Kilpi 1998). Even in early Roman practice, the defaulted debtor was often made to work for his creditor until the fruits of his labour had repaid the debt (Vigneron 1998).

The Middle Ages and the Renaissance of Europe saw alternatives to debt bondage. In Venice, for instance, a law enacted in 1195 gave creditors the right to seize not just the debtor's person, but his assets as well as one third of his future income, until all claims were satisfied (Besta and Predelli 1901). Still, in most places, creditors' right to seize their debtors remained. The purpose of this right, however, had changed: seizure did not typically result in bondage to the lender any longer. Instead, it was now principally a prelude to recalcitrant debtors' sojourn in another institution that had become prevalent: the debtors' prison.[5]

A key distinction between bondage and debtors' prison is that remanding a debtor to prison provides no utility to the creditor *per se*.[6] Instead, imprisonment acts principally as a way of prompting payment.[7] By contrast, forced servitude can be viewed not only as a punishment for perceived misconduct but, in addition, as a means of compensating the creditor.

Debt relief and personal bankruptcy

A worldwide consensus now appears to exist to make the most ruthless methods of forcing compliance with the terms of loan contracts illegal. Virtually all countries have committed to various charters and conventions of the United Nations (UN) stating that failed debtors should not be imprisoned or put to death.[8] By contrast, it is only

Debtors' Prisons

London's Fleet Prison, one of the oldest English jails, was a bogy for the English Crown's debtors as early as the middle of the thirteenth century (Pugh 1968). As of 1352, it also held reluctant or unfortunate private debtors. Seizure could take place as soon as the debtor defaulted and release was typically conditional upon settlement of the debt (Brown 1996). In France, the *contrainte par corps* or *prison pour dettes* was turned into a general means to coerce payment by the *Ordonnance* of Moulins in 1673 (t'Kint 1991). Comparable methods were in use throughout Europe by that time. For example, Antwerp lenders to Elizabeth I in the mid-sixteenth century would have been entitled to seize, in the event that she had defaulted, not only the goods, but also the persons of the English merchants who had guaranteed the loans contracted by their queen (Outhwaite 1968; Kohn 1999). In the seventeenth and eighteenth centuries, debtors' prisons flourished. The gaols of Italian states and cities, such as the Malapaga *carcere* in Genoa, detained *debitori insolventi* throughout that period. In 1716, over one percent of the population of England and Wales was in prison for debt (Babington 1971). The institution's reach there was wide-ranging: a list of the Fleet Prison's pensioners at the time would have included not only the perennially downtrodden, but also the fallen mighty (Muldrew 1993). Famous inmates of the Fleet include the founder of the colony of Pennsylvania William Penn in 1708 (Peare 1956) and Lord Nelson's mistress Lady Emma Hamilton in 1812 (Sinoué 2002). British colonies in the Americas, and later the newly independent United States, imitated and sometimes outdid the example set by the home country (Christianson 1996). In the young United States after Independence, debtors' prison even hosted a signee of the constitution, as well as a former delegate to the Continental Congress (US Congress 1999). Debtors' prisons remained a pillar of financial relationships in many countries well into the nineteenth century. London's Fleet was not closed until 1842 and Genoa's Malapaga, did not shut down until 1850. Further confirmation that the practice was still an integral part of life at the time can be found in the literary works of Balzac and Dickens, which are peppered with references to individuals jailed for their unpaid debts. By the mid-1800s, pressures built up to contain the excesses of debtors' prisons and eventually led to their demise in most countries. US states banned them during the depression that followed the Panic of 1837 (Pomykala 1997). England and Wales abolished debtors' prison for private debts in 1869 (Tabb 1995). In states soon to become part of the German Empire, *leibliche Schuldhaftung* was taken off the books in 1868 (Erler, Kaufmann and Stammler 1971). France followed suit in 1871 and Italy, in 1876 (di Martino 2005). This widespread use of debtors' prisons until rather recently illustrates that threatening harsh penalties to coerce the payment of private debts was not solely the purview of ancient legal systems.

[5] Instances of debt bondage could still be found. As late as the seventeenth and the eighteenth centuries, a large fraction of white settlers in Britain's American colonies came as indentured servants or bondsmen - see Smith (1947); Christianson et al. (1996); Grubb (2003). In 1795, a New Jersey act - purporting to provide relief to insolvent debtors - mandated that the latter not be released from jail unless they were willing to "make satisfaction of [their] debts by servitude for up to seven years." That provision was not repealed until 1819.

[6] In England, incarceration could even be costly for the creditor, as he was responsible for the provision of "bread and water" to his jailed debtor. In practice, though, this obligation was consistently ignored (Babington 1971).

[7] The general squalor found in prisons at the time was a strong additional incentive to avoid or get out of jail (Babington 1971; Mann 2003; Pugh 1968). In cases where these threats were deemed insufficient, some lawmakers used even harsher non-monetary punishments. In the US state of Pennsylvania, for example, a 1785 law mandated public flogging and the cutting of an ear for deadbeats (Pomykala 1997).

[8] The UN's 1948 Human Rights Charter prohibits slavery. Its Convention Concerning the Abolition of Forced Labor makes debt bondage illegal: out of 191 member countries, 174 have ratified it since 1957. Moreover, 168 countries have ratified the UN's 1966 International Covenant on Civil and Political Rights, whose eleventh article prohibits imprisonment merely on the ground of a person's inability to fulfil a contractual obligation.

in the last three decades that some convergence has taken place on how long-lasting the legal consequences of default should be.

Historically, most legislators have recognized inherent differences between commercial loans, meant to finance trade or risky investments, and consumer loans. Whereas in many countries there was until recently no way out of debt for delinquent non-commercial borrowers, commercial borrowers have often been treated more leniently.[9]

Legislators have also had to struggle with whether, and how, credit and bankruptcy laws should differentiate between "responsible" borrowers (those viewed as the victims of bad luck) and "culpable" bankrupts (those viewed as recklessly overextended, deficient in their efforts to repay, or plain dishonest). In ancient Babylon, while the Code of Hammurabi (1780 BC) generally called for bondage in case of default, it allowed for debt relief when the inability to pay was due to events beyond the debtor's control.[10] In contrast, the *nexum* contract in republican Rome, whereby the debtor agreed to be seized by the lender in case of default, left no room for ill luck – but was banned in the fourth century BC because of abuses (Vigneron 1998). Roman principles continued to be applied for many centuries in the Byzantine empire under the Justinian code (534 AD). In the Middle Ages of Europe, the Roman view lived on and default was again seen as misdeed, rather than misfortune.[11] Almost all medieval bankruptcy laws applied only to traders; non-traders faced ordinary laws. These laws treated defaulting debtors as quasi-criminals (Tabb 1995). It is only in the eighteenth century that England innovated by rediscovering the possibility of offering some leniency when default could be attributed to ill luck. The 1705 Statutes of Queen Anne instituted the possibility of debt discharge for borrowers whose pre-default behaviour conformed to a list of good-conduct standards (whereas, in theory at least, fraudulent defaulters faced the death penalty).

The idea of debt discharge, however, is much older. The Code of Hammurabi limited debt bondage to three years.[12] Other early examples are the forgiveness of debts owed by poor Jews, mandated every seven years by the Jewish Bible (Lev 25:35-43, Deut 15:1-2), and the Jewish Jubilee (Rosenberg and Weiss 2001).[13] Even in the Middle Ages, at the same time that harsh penalties were being meted out in most locales, the idea of discharge re-emerged in Spain. Specifically, the *Siete Partidas* codification of 1342 limited debt collection to the debtor's assets and prescribed that, once bankruptcy proceedings had ended, old debt could no longer be called (Scheppach 1991).

Nevertheless, until the nineteenth century, insolvency and bankruptcy laws were typically very harsh and only merchants were seen as worthy of any bankruptcy procedure (Tabb 2005). The United States is therefore exceptional in long having had very pro-debtor bankruptcy statutes for all borrowers (White 1996; OECD 1998).

The first US bankruptcy law, introduced in 1800, was lifted straight from contemporary English law. Both applied only to merchants and were creditor-friendly. Debtors could not initiate the bankruptcy proceedings. Since 1898, however, even non-commercial US debtors have been able to file for personal bankruptcy, ask that some or all of their debts be dismissed, see their request granted, and move on with their lives.[14]

An important objective of the debtor-friendliness of these US personal bankruptcy regulations is to avoid distorting the debtor's future economic performance. As the US Supreme Court stressed in an influential ruling (Local Loan Co. v. Hunt 1934), the "bankruptcy discharge gives to the honest but unfortunate debtor (...) a new opportunity in life and a clear field for future effort." Without debt discharge, "from the viewpoint of the wage-earner, there is little difference between not earning at all and earning wholly for a creditor."

[9] For a review of the history of debt default in an entrepreneurial context, see Robe, Steiger and Michel (2006).

[10] See, for example, Article 48: "If anyone owe a debt for a loan, and a storm prostrates the grain, or the harvest fail, or the grain does not grow for lack of water; in that year he need not give his creditor any grain, he washes his debt-tablet in water and pays no rent for this year" (Johns 1910).

[11] In the thirteenth century, sanctions such as banishment or even the death penalty were the norm for defaulting merchants in the Italian cities of Siena and Vercelli (Pontani 2004). The unforgiving legislations that originated in the medieval Italian towns were used in much of Western and Northern Europe. In England, for example, the first bankruptcy laws (1542/43, 1571, 1604 and 1624) codified very harsh penalties for failed borrowers, regardless of their circumstances.

[12] See, for instance, Article 117: "If anyone fail to meet a claim for debt, and sell himself, his wife, his son, and daughter for money or give them away to forced labour: they shall work for three years in the house of the man who bought them, or the proprietor, and in the fourth year they shall be set free" (Johns 1910).

[13] What makes these debt releases unique is that they were economically motivated. Other contemporaneous uses of generalized debt releases were political, often to curry the favour of a constituency at home or to win over parts of the population in recently conquered territories. In such clean slate proclamations, the ruler or the conqueror would decree that "any land sold because of economic distress (be) returned to its original owners, anyone forced into servitude by debts (be) liberated, and back debts (be) cancelled" (Rosenberg and Weiss 2001). In modern times, debt release was again used as a political tool when various US states such as Texas instituted generous homestead exemption laws to attract settlers (Goodman 1993; Hynes, Malani and Posner 2004).

[14] American debtors have enjoyed this right continuously since the US Congress passed the Nelson Act of 1898.

In sharp contrast, it took till the late 1990s for many more countries to move their legal codes away from viewing bankrupts as offenders and to introduce rules for consumer debt discharge. Many countries used to impose *additional* monetary and non-monetary penalties on failed debtors. The latter could lose retirement benefits (e.g., Belgium), lose the right to vote (e.g., Italy), be banned from managing companies or carrying out entrepreneurial activities (e.g., Australia, France, United Kingdom), or incur civil liability and possible criminal penalties (e.g., Germany). Finally, laws traditionally treat fraudulent debtors more harshly than their merely hapless counterparts. Hence, to the extent that many bankruptcy regimes used to effectively classify most bankruptcies as fraudulent, they were harsher than regimes with a narrower interpretation of fraud.

In the case of consumers, most legal systems used to simply rule out any possibility that they might get their debts discharged. In countries where a discharge was possible, consumers who had filed for bankruptcy had to wait several years for the release to take place (two or three years in the United Kingdom, and up to ten years in Japan, for example, Martin 2005) and typically had to surrender some of their post-bankruptcy earnings to their creditors.

Today, however, the majority of industrialised countries have regulations that offer consumers a way out of debt. In the European Union (EU), default rates have risen considerably amidst the recent financial crisis (Domurath, Comparato and Micklitz 2014). While many governments had regulated debt release procedures for non-merchant debtors introduced in the 1990s, such procedures are missing in countries like Bulgaria, Italy and Poland (Micklitz 2012), for instance.[15] So far, the European Union has failed to provide minimum standards for the release of ordinary people in distress (Niemi 2012). These differences in the level of protection entice insolvency tourism, which, of course, is only open to those with sufficient remaining resources (Hoffmann 2012).

The common idea behind these new bankruptcy or insolvency laws, as well as behind the 2005 US reform, has been to allow debt release, while still encouraging a responsible use of credit by placing significant obstacles before a discharge can be granted. Although the specific prerequisites for a release differ across individual countries, two common tools are the seizure of current assets above a certain threshold and the garnishment of future income for a predetermined period.[16] Debt counselling is often mandatory. Of course, apart from these monetary and non-monetary legal penalties, other costs associated with bankruptcy also remain – such as the harm to the future acquisition of credit and the stigma associated with going bankrupt.

Conclusion

This paper documents historical facts about the consequences of financial default in ancient and modern times. The evidence suggests that, while the most severe penalties (such as debt or slavery) have virtually vanished nowadays, a fresh start is still not granted in many places.

While there remains to this day a substantial amount of cross-sectional variation in the extent to which non-commercial debtors can hope for leniency after defaulting, our analysis suggests that a significant amount of legal convergence has taken place in the last two decades. In the United States, where many academics and policy makers had been questioning the personal bankruptcy law's generosity towards debtors (Wang and White 2000), reforms in 1984, 1994 and 2005 have made it considerably harder for individuals to shed debts. In Europe, harsh insolvency regimes were widely seen as having adverse consequences on local economies (OECD 1998). They have been softened and consumer bankruptcy procedures have been introduced in many countries. Other countries, especially in Asia, have followed suit or are likely to adopt middle-of-the-road systems (Martin 2005).

[15] Denmark started the process in 1984 with Finland, Norway and Sweden following suit between 1992 and 1994 (Niemi-Kiesilainen 1997). In France, the „Loi Neiertz" came into effect in 1990 (Kilborn 2005). It served as a model for Belgium in 1999 and Luxembourg in 2001 (Kilborn 2006a). In Austria, legislation providing for consumer debt release was enacted in 1994 (Holzhammer 1996). In England, substantial reforms were carried out in 1990 and again in 2004. Germany started allowing for consumer-debt discharge in 1999, with subsequent reform in 2004 and 2014 (Roethe 2012). Similar regulations were introduced in the Netherlands in 1998 (Kilborn 2006b).

[16] The garnishment period varies widely across countries, adjustment and insolvency relief through a discharge of debt after just one year in some cases (e.g. U.K. and France), but often after a debt repayment plan over a period of three to seven years (Ramsay 2012). In Spain only 50 percent of the debt can be discharged (Micklitz 2012). In the United States, (relatively) better-off bankrupts are now barred from a Chapter 7 discharge and must reorganize under the revised Chapter 13, with a repayment period of five years (Jeweler 2005). In particular, the US bankruptcy reform of 2005 has increased the obstacles put before a fresh start (White 2005). While, prior to the reform, it had sometimes been possible for bankrupt individuals to retain property while discharging their debts (White 1998), the 2005 reform removed such possibilities (Li, Tewari and White 2014), further accelerating foreclosure rates during the mortgage crisis in 2008 (Li, White and Zhou 2011; Posner and Zingales 2009).

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Environmental Regulation and Foreign Direct Investment: The Role of Mode of Entry

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Introduction

Policymakers in many countries have baulked at toughening up environmental requirements for fear of impairing the international competitiveness of their economy and cutting jobs. A recent example was the 2011 decision by the US president to push for a deferral of new environmental standards for air quality given a weak labor market (White House 2011). Fears of the adverse effects of environmental regulation are also substantiated in academic literature. Theoretical literature on the pollution haven hypothesis (PHH) purports that tightening environmental regulation in one country causes the production of dirty goods to relocate to more lenient locations (and firms to leave that country).[3] The watered-down version of the PHH – the so-called pollution haven effect (PHE) – claims that for given levels of trade barriers, weak environmental policy is a source of comparative advantage. Tightening up policy therefore results in reduced net exports or decreased net incoming Foreign Direct Investment (FDI) in the regulated sectors.

As far as the PHH or PHE have empirical relevance, this would not only imply that toughening up environmental policy has negative economic effects like decreased competitiveness, but would also mean that unilateral environmental regulations aimed at global pollutants may be ineffective, as pollution "leaks" from one country to another. Any decrease in CO_2 emissions in a regulating country, for example, would be (partially) offset by increased emissions in another country, as production (and firms) would flee the regulation and relocate to countries with relatively lenient jurisdictions.

Although theoretical literature on this topic tends to support the existence of pollution havens, empirically there is only mixed evidence that environmental regulation drives out FDI.[4] A plethora of studies have investigated inflowing and outflowing FDI at both a micro and a macro level in search of patterns consistent with the pollution havens, but no consensus has been reached. While some studies were able to identify substantial deterrence effects of environmental policy on FDI (see, for instance, List and Co 2000; Wagner and Timmins 2009), many studies found no robust support for PHH (Kellenberg 2009; Manderson and Kneller 2011). Yet other papers claim that stringent regulation actually attracts those firms (and industries) that care about corporate social responsibility and cultivate their green image (Poelhekke and van der Ploeg 2015).

How does entry mode matter in the context of environmental regulation?

A possible explanation for these inconclusive results could be the failure of literature on this topic to account sufficiently for the heterogeneity of investment, which may dilute the effect found. When firms invest abroad, they can do so by using one of two possible modes of entry. The merger and acquisition (M&A) mode implies a cross-border merger or acquisition, but the investment is in existing structures. Conversely, a direct investor may start from scratch by building its own facilities (Greenfield mode of entry). The new trade theory, as well as some empirical evidence, suggests that Greenfield investments tend to be carried out by highly productive firms, whereas less productive firms invest abroad in the form of cross-border acquisitions (Nocke and Yeaple 2008). This mode of entry heterogeneity has been ignored in the empirical literature on FDI and environmental regulation to date.

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[3] Early contributions to this literature are Siebert (1974) and Pethig (1976).

[4] For studies that look at adverse trade effects of environmental regulation see, for example, Aichele and Felbermayer (2012, 2015).

Vintage differentiation

One possible reason why mode of entry may be relevant is that most environmental laws imply vintage differentiation rules (VDR), which may suggest some sort of grandfathering. VDRs make environmental standards conditional on the date when the regulated unit started to operate. This implies that later vintages (younger units) are faced with more stringent standards, while a grandfathering usually applies to production facilities in operation at the time of the enactment of new regulatory requirements. This means that pre-existing plants are exempted from the new requirements or granted generous transition periods. Such differentiation is justified on the grounds that adjusting operations to new standards is very costly and that general investment uncertainty needs to be minimized. Nevertheless, VDRs give a competitive advantage to the industries, firms and regions where pre-existing plants are located. Besides, it has been argued that environmental regulation may even enhance the profits of existing producers by restricting access to common property and thus creating a scarcity rent (Buchanan and Tullock 1975). Some quantification of the associated "new source bias" was provided by Levinson (1999) based on state variation in toxic air pollution regulation in the US and by Ackerman et al. (1999) for coal-burning power plants.

An example of the ubiquity of VDRs comes from the US where, as described by Stavins (2006): "A number of important federal environmental laws make use of VDRs. For example, VDRs appear within the Clean Air Act in its standards for emissions from new versus existing stationary sources, motor vehicle and motor vehicle engines, non-road engines and vehicles, and commercial vehicles; within the Clean Water Act in a wide variety of aspects, including in effluent limits for public treatment plants; within the Safe Drinking Water Act; and within laws affecting the generation and disposal of hazardous and solid waste. State and local environmental laws also make frequent use of VDRs, for stationary and mobile source emissions limits and energy efficiency standards in new construction, among other instances."

One consequence of vintage conditioning is that different firms operating in the same market may face very different regulation, depending on the day when they went into operation. Greenfield projects obey all of the latest environmental requirements. The local firms targeted in M&As, on the other hand, often only need to adhere to milder regulation. In view of these facts one may expect the Greenfield project to be more "exposed" to environmental regulation than cross-border acquisitions. If a firm is looking for a location for its Greenfield investment project, it should be more alert to environmental standards, as the costs of meeting them may be substantial.

Capitalization of policy in the acquisition price

The mode of entry may not only be important because of grandfathering. A second argument for M&As having a lower elasticity with respect to regulatory stringency is that the acquisition price may already be a function of the regulation faced by the company. The purchaser of the existing plant is only willing to pay the present discounted value of future profits. Higher regulation, *ceteris paribus*, implies a lower acquisition price that could, at least partially, offset the disadvantages of the regulation for the company. This is hardly possible in the case of Greenfield investment, as the cost of investment (building materials, allowances etc.) is usually determined by fixed prices that are independent of the project conducted.

This conjecture is in line with taxation literature, which suggests that in a high tax country, a portion of the tax burden may be capitalized, reducing the acquisition price. Hebous, Ruf and Weichenrieder (2011) estimate a conditional logit model, including all new outbound FDI projects for the years 2005–2007, and explicitly distinguish between Greenfield and M&A investments. The evidence indicates that the location decisions of M&A investments are less sensitive to differences in statutory corporate income tax rates than the location decisions of Greenfield investments. In a similar vein Huizinga, Voget and Wagner (2012) jointly consider the takeover premium paid for an international target and acquiring-firm excess stock returns. Their findings suggest that additional international taxation in the form of non-resident dividend withholding taxes and home-country corporate income taxation is fully capitalized into takeover premiums.

How do German investors choose the location of their FDI?

To explore whether the sensitivity of FDI towards environmental stringency depends on the mode of entry, we analyzed data on FDI by German investors around the world during the period of 2005–2009 (Bialek and Weichenrieder 2015). The data was obtained from Microdatabase Direct Investment (MiDi) data collected by the Deutsche Bundesbank based on the provisions of the Foreign Trade and Payments Regulation. MiDi keeps a comprehensive account of all FDI where the balance sheet total of the foreign direct investment exceeds three million EUR and the voting rights obtained are ten percent or higher. We investigated some 6,500 new cross-border projects, of which 37.5 percent took the form of Greenfield investments. Geographically these projects are concentrated in Europe (63 percent) and the Americas (20 percent). The observed location decisions are made by 1,892 different companies. On average, a firm in our sample performs 3.5 different investments.

German investment behavior should be a relevant phenomenon, as Germany is one of the largest economies with ten percent of total world exports and a five to eight percent share of worldwide FDI in the years considered, according to UNCTAD (2015) data.

The theoretical framework of our model is derived from the standard location model for firms establishing a new affiliate in a host country. Such firms aim to make an investment in a sector of their choice with the entry mode that best suits them. They select the country for the location of their investment. The only criterion applicable to decision-making is expected profit; and it is assumed that firms will locate their affiliates where they expect profits to be highest. Environmental regulation affects profits but, as argued above, to a possibly different extent for Greenfields and M&As. Moreover, the sensitivity of profits to environmental stringency should depend on how polluting the sector is in which the firm operates.

To make quantitative statements about the influence of environmental regulation on investments, one needs to measure its stringency across countries and years. How to compare and capture the level of regulation has been a contentious issue in literature on this topic. Apart from the pure data collection problem (lack of measures for less developed countries), Brunel and Levinson (2013) point to some fundamental conceptual obstacles related to capturing the stringency (multi-dimensionality of the policy, endogeneity and the issues with capital-vintage). However, since the publication of Kellenberg (2009) there seems to be a consensus on the use of indices from the Executive Opinion Survey published annually by the World Economic Forum (WEF) in the studies comparing different countries as possible locations. Environmental stringency is generated from responses by the Forum's partner institutes (recognized research institutes, universities, business organizations, and in some cases, survey consultancies) to the following questions:

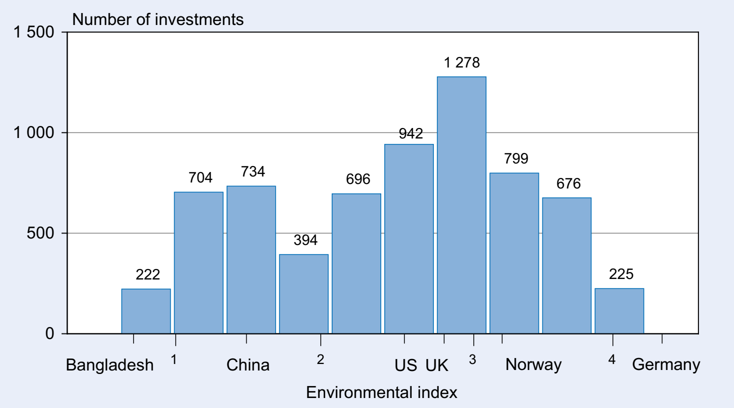
- How would you assess the stringency of your country's environmental regulations?
- How would you assess the enforcement of environmental regulation in your country?

Both questions can be answered on a seven point scale [1=very lax; 7=among the world's most rigorous]. The WEF data captures what is of interest to researchers investigating PHH, namely the perception of managers (who are responsible for the FDI decisions) of the environmental policy pursued by the respective countries.

Figure 1 plots the number of FDIs conducted against the values of WEF environmental index. For reference, the 2009 environmental index of some countries was plotted on the horizontal axis. In all of the years analyzed Germany was among the highest scoring countries, while many of the developing countries (Albania, Algeria, Burundi, Côte d'Ivoire, Kyrgyz Republic, Mongolia etc.) consistently obtained very low scores.

Figure 1

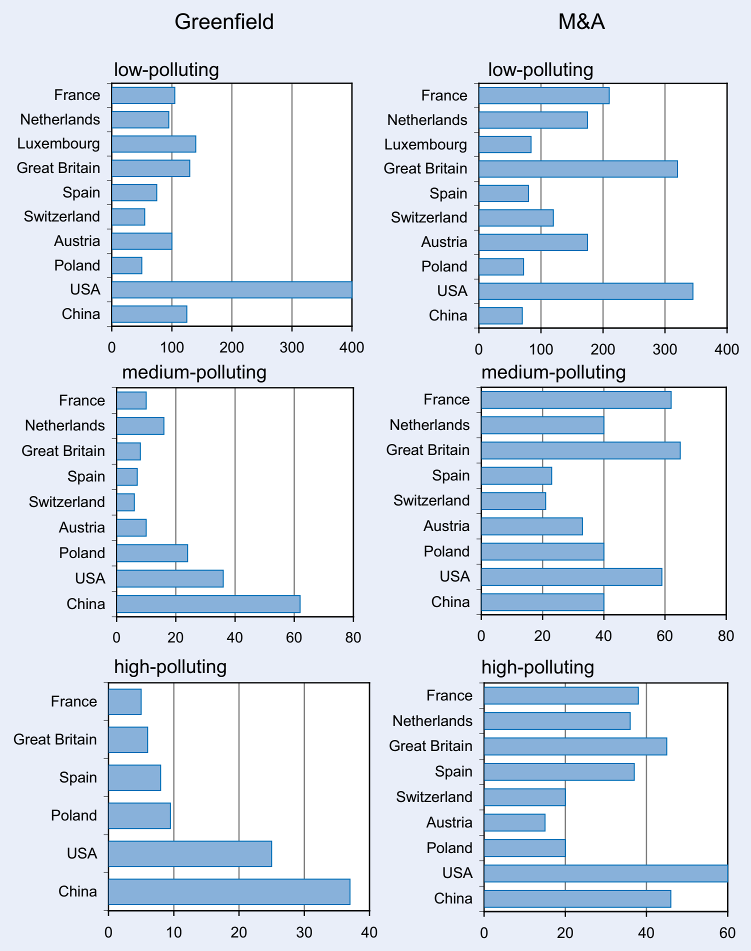
Relationship between the number of investments and firms and environmental stringency of the host countries



Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Direct Investment; authors' calculations for the years 2005 to 2009; World Economic Forum.

Figure 2

Structure of investments flowing into major host economies
Number of investments



Source: Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Direct Investment; authors' calculations for the years 2005 to 2009.

Figure 2 displays the top ten locations for German affiliates abroad in 2005–2009. As we expect that in the context of PHH both mode of entry and the sector should matter, we split the investments accordingly. The visual analysis of the figure already seems to reveal some interesting patterns. For instance, while China receives only a small share of clean projects, it is a major host for dirty investments, especially of the Greenfield variety.

However, the pattern observed may just be a coincidence stemming from a specific distribution of country characteristics. Therefore our analysis controls for other factors that were found to be important for firms' location decisions: GDP per capita, population, distance to Germany, freedom from corruption, flexibility of the labor market, the statutory corporate tax rate and openness measured as ratio of summed imports and exports over the country's GDP. We also use the stock of inward FDI for a given country to capture agglomeration effects.

Pollution havens and green havens

By applying mixed logit regressions, we were able to confirm that the reaction to environmental policy is indeed strongly heterogeneous. It depends on how polluting the sector is, in which the firm invests, but also on the mode of entry. To make our findings more accessible, we computed the individual marginal effects (ME) of environmental policies – the change in the probability that a particular investment will be conducted in a particular country if that country marginally toughens up its environmental regulation. The Average Marginal Effect (AME) was constructed as an average over all marginal effects. We also computed something we call, a bit loosely, "Conditional Marginal Effects" (CME) – an average over ME for individual types of investments. As a result, we obtain CME for Greenfield investments in low polluting sectors, CME for Greenfields in medium polluting sectors etc. CMEs capture the essence of our findings in a neat way.

Evidence of a pollution haven effect was found in the form of a negative CME for Greenfield investments in medium and highly-polluting sectors. For such projects, a unit increase in the environmental index lowers the probability of investment by one percentage point on average. However, the effects for individual countries may be much higher. For example, the probability that a given dirty Greenfield investment will locate in China is 8.7 percent. Should China decide to increase its environmental stringency to match that of the United States, the chances of attracting such an investment would shrink to 3.5 percent according to our predictions.

On the other hand, we found the CME for M&A in clean sectors to be positive, implying that highly regulated locations tend to attract such investments. There are several potential explanations for that finding:

- According to the "green haven effect" reported by Poelhekke et al. (2015), some firms that attach great importance to their sustainable management image and corporate social responsibility may want to avoid settling in poorly regulated regions to prevent potential reputation losses. As their expenses for complying with regulation are probably low (they are in the low polluting sector), this image boosting does not come at a high cost.
- Competition for input factors may also lead to spillover effects across industries. High regulatory standards put polluting industries at a competitive disadvantage and may potentially deter them from the market. This, in turn, implies less competition for inputs, such as land and workers, for low polluting industries.
- In the case of M&As, capital-vintage rules may imply that the relevant degree of stringency may be much lower than that reported by the WEF. Moreover, investors do not have to fear the instantaneous influence of increased environmental requirements on their operating processes. The changed regulation will, however, apply to all those companies freshly entering the market, driving a cost wedge between new units and existing ones. The impact of allurement is especially visible for low polluting industries, as the need for adjustments to comply with the altered regulations in the long run prevails over the advantages for more pollution intensive sectors. Finally, the capitalization of environmental policy into purchase prizes may level off the negative impact of stringent regulation on profits.

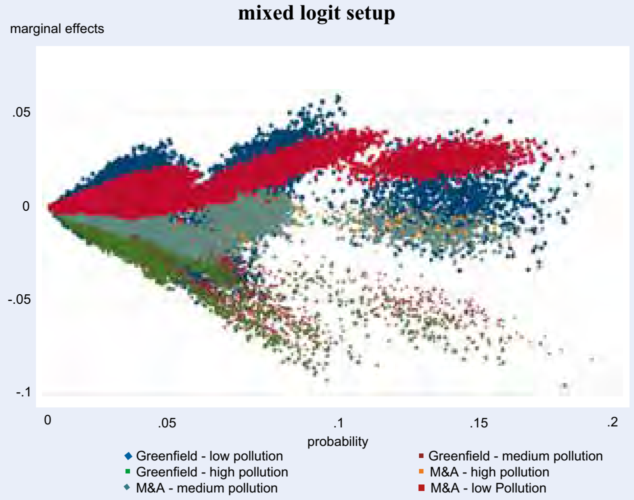
This positive effect of tighter regulation on clean industries is relatively small in magnitude. In the case of China, for example, the increase in the probability of such investments would be 0.9 percent. Yet, it suggests that environmental policy does have a bearing on the composition of inflowing FDI from the perspective of the host country.

The CME for polluting cross-border acquisitions and for Greenfield investments in clean industries were not statistically different from zero, implying that such investments do not respond to environmental regulation. For M&As this could again be due to capital-vintage rules that protect investments from high regulation and capitalization of the policy into the acquisition price. In the case of clean Greenfield investments, the costs of environmental regulation may be too small to significantly affect the location decision for non-polluting sectors compared to other costs. However, it could also be that different clean Greenfields respond very differently to environmental regulation, with some "enjoying" their green status, as documented in Poelhekke et al. (2015) and others seeing themselves as negatively affected by the regulation. The mixed logit model that we estimated enables us to make statements about heterogeneity in the responses of firms. Indeed, considerable variability in tastes can still be observed for the Greenfield projects in clean industries. Some firms are deeply attracted to highly regulated jurisdictions, while environmental requirements constitute a strong deterring factor for others.

The heterogeneity of responses in various groups is illustrated by Figure 3, which plots individual marginal effects versus the probability of investment (for mixed logit model). It is particularly worth noting the wide spread in the marginal effects of regulation for Greenfield projects in low polluting sectors (blue dots), which is consistent with the discussion above. The pos-

Figure 3

Individual marginal effects of environmental stringency in mixed logit setup



Source: Bialek and Weichenrieder (2015), calculations for the years 2005 to 2009 based on Research Data and Service Centre of the Deutsche Bundesbank, Microdatabase Direct Investment.

itive impact of regulation on clean M&A projects (red points) and its negative impact on polluting Greenfields (dark green and dark red colour) is also clearly visible.

Is environmental policy endogenous?

Many have expressed their concern over the endogeneity of environmental policy. It is conceivable that environmental policy does not represent *ex ante* preferences, but responses to the pollution created, among others, by FDI. Therefore, there could be a simultaneity problem and the macro studies that deal with the FDI stock are highly prone to this problem. In the case of our study, which relies on microdata, simultaneity does not seem to pose a major threat to the unbiasedness of the estimates. However, should the environmental regulation be correlated with some factor influencing the decision where to invest that we do not control for, an omitted variable bias would arise.

To deal with potential endogeneity, we developed an instrument using what we consider to be "external pressure on environmental regulation". We construct it as a weighted average of the regulation level in the countries that import the goods produced by a given country (lagged one year). The weights correspond to the shares of the partner countries in total exports. This reflects the supposition that the partner countries exert pressure on exporters if the exporters' environmental regulation is lenient compared to the regulation of the importing partner. The pressure could come from consumer groups, importing companies protecting their "responsible" image or from legislation imposing certain requirements on the imported goods.

When we instrument environmental stringency using a control function approach, the positive effect of regulation on clean cross-border acquisitions becomes insignificant. If it was a result of some endogeneity problems, this would suggest that the unobserved variables conceal some of the negative effects of the regulation, i.e. the true effect of environmental stringency may be more negative than that reported in the previous discussion. Nevertheless, the effect of environmental regulation on clean mergers and acquisitions is never negative and the main object of our interest – the difference between M&A and Greenfield is preserved.

However, the regression results suggest that endogeneity may not be a problem in our study in the first place. Using a control function approach, one may directly test for endogeneity by looking at the significance of the residual from the first stage as a predictor in the second stage. In our study, the residual comes out insignificant, thus corroborating our previous findings.

Conclusions

A review of the empirical literature on how environmental regulation affects the location of FDI yields mixed results. Against this background, we suggest that mode of entry heterogeneity may be a confounding factor. As we have argued, there are several reasons why M&As may be affected much less by strong environmental regulation than Greenfield investment. As M&As usually account for the majority of FDI, this is a potentially important issue. In this contribution we have reported on our recent empirical study that, to our best knowledge, is the first to explicitly differentiate between M&A and Greenfield when looking at the location effects of environmental policies. Our findings, which analyze investment decisions by German multinationals, reveal that tightened environmental stringency is an important deterrent of FDI inflow in the case of polluting Greenfield projects. At the same time, an increased restrictiveness of regulation even seems to have a positive effect on the decision of clean M&As to locate in the respective jurisdiction. This could be due to competitiveness effects associated with vintage differentiated regulation, the "green image" that German firms are trying to keep or other factors. The pollution haven effects seem to be an issue for polluting Greenfield investment, but not for other cross-border projects. As a result, the mixed results in the existing literature on pollution havens could be, at least partly, attributable to the varying composition of the investments in the datasets used. In cases where cross-border acquisitions are prevalent and researchers do not control for mode of entry, we would expect to obtain positive or insignificant estimates of environmental regulation. If Greenfield projects account for a substantial share of observations, by contrast, significant, negative coefficients may result.

Different sensitivities to environmental stringency should imply that regulation has a bearing on the composition of inflowing FDI. This may be a useful message for policymakers, who are concerned that M&As and Greenfield investments differ in terms of the associated know-how spillovers and employment effects.

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Town Twinning and German City Growth[1]

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Abdella Oumer[2]

Abstract

After World War II (WWII), town twinning became popular, notably in Germany. This was mainly a reaction to the war experience, and it was aimed at creating renewed international understanding and co-operation between German cities and cities in other countries. The contacts created by town twinning also resulted in increased international access for the cities involved. This potentially stimulates growth in these cities compared to cities that do not have (as many) twinning partners. In this DICE report article we summarize the findings of Brakman, Garretsen and Oumer (2015) on the effects of town twinning on population growth in German counties and municipalities. Our results show that German counties and municipalities that engage in town twinning often experienced significantly higher population growth than German cities that did not have twinning partners. The number or intensity of twinning relations in particular, as well as town twinning with French cities, and with neighboring countries more generally, turn out to have a positive effect on city growth. We also find that the positive population growth effects of town twinning are confined to the larger German cities.

Introduction

Shocks like the creation or abolition of national borders are associated with a change in market access. The fall of the Berlin Wall in Germany in 1989 is an example of such a shock. This created sudden economic opportunities for cities along the former border between western and eastern Germany. After the reunification, these former border cities experienced higher population growth rates than more centrally located cities within Germany (Redding and Sturm 2008; Ahlfeldt et al. 2014). Other examples of shocks are the expansion of the European Community (EC), later the European Union (EU). The increased economic integration between member countries and between new members increased market access for cities along the borders of the EU. Brakman et al. (2012) show, for instance, that cities and regions along borders that experienced EC/EU economic integration were positively affected by this change in market access, which compensates, to some extent, for the negative effect of a (peripheral) border location.

Here we look at so-called town twinning (hereafter, TT), which is another form of integration that might affect the international economic or market access of a city. TT involves co-operation, in the broadest sense, between towns or cities across national borders. Although TT has a long history, dating back to the 19th century, the heydays of TT began after WWII. The need between countries to reacquaint themselves with their former enemies was mostly felt in the post-war period, and in particularly so in Germany. We show that the increased interaction between cities that became part of TT reduce transaction costs between twinning cities, and as a result could stimulate migration to these cities. Population growth could thus be more pronounced compared to cities that had no or fewer international TT partners. To our knowledge the only empirical attempts to measure effects of TT are De Villiers, de Coning and Smit (2007) and Baycan-Levent, Akgün and Kundak (2010), both based on a survey of municipal officials that were asked whether they considered TT successful. However, a full-fledged econometric analysis is missing. Our study tries to fill this gap. We focus on Germany because Germany is the main actor in TT in post WWII Europe.

Town twinning: History, motives and theory

TT is a relatively old phenomenon. The term was used as early as the 1850s to describe the co-operative ac-

[1] This paper is an abridged version of the paper that was published in Regional Studies (Brakman, Garretsen and Oumer 2015). An online appendix with additional data-information is available on the website of Regional Studies.

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tivities of building transportation and other public infrastructure between, for example, the neighboring cities of Minneapolis and St. Paul, Minnesota, US (Borchert 1961). The world fairs that were initiated in the 19th century also stimulated contacts between cities (Zelinsky 1991). In the wake of these early attempts many others followed in order to enhance co-operation between cities. For example, the foundation of the International Union of Local Authorities (IULA) at Ghent in Belgium in 1913 was specifically aimed at stimulating international co-operation between cities (Zelinsky 1991). Ties between cities were also stimulated by ad hoc initiatives by city councils or private enthusiasts for more co-operations between cities (Clarke 2009).

Figure 1

Geography of town twinning in Europe

Source: Authors' construction, based on Zelinsky (1991) and CCRE (2013).

The concept of TT is rather opaque. It involves all sorts of interactions aimed at fostering mutual understanding between the inhabitants of cities that take part in the initiatives, such as: bilateral visits by officials, musical events, language courses, or exchanges of letters between schoolchildren. However, it also encompasses the sharing of technical expertise, the sharing of knowledge and advice that has more direct economic consequences (Zelinsky 1991). All of these activities can result in a form of TT. The term town twinning is adopted from the relationship that existed between the twin cities of Minneapolis and St. Paul, Minnesota, US, but increasingly was used to describe the relationship between international partner cities. As is clear from the historical overview in Zelinsky (1991), TT is very much a European phenomenon. From Zelinsky (1991, Table 3, p.12), it can be deduced that the top-20 of countries in 1988 that are involved in international twinning is dominated by EU countries (15 out of the 20), and that the leading TT countries are France, the UK and Germany that together have almost 8,500 twinning relations, which is comparable to the other 17 countries combined. Proximity is also important; most TTs take place between towns in neighboring countries (Zelinsky 1991).

The experience of WWII was a stimulus for TT initiatives. As a result, most of the TTs were between towns from countries that were enemies during WWII. Germany became the center of the twinning activities. By 2012, German municipalities had a combined total of over 5,000 international twinning partners, mostly with European partners, especially France. The TT orientation towards France is not surprising in view of the fact that France and Germany were arch-enemies in three main wars between 1870 and 1945, so post-WWII peace policies in Western Europe focused on these two countries. During the cold war an ideological dimension was added to the motives to form partnerships; TT could help to promote understanding for different ideological systems. The latter initiatives often met with distrust from more central governments (Clarke 2010), and it is questionable whether these ideological forms of TT reduced transaction costs in a way that could stimulate population growth. Figure 1 illustrates TT in European countries. The map shows that TT is most popular in Germany and France (the length of the bars is proportional to the number of TTs).

German cities involved in TT are located throughout Germany, implying that we do not focus on border effects per se, but concentrate on those cities or locations that have TT relations with foreign cities.

Town twinning in Germany

We focus our analysis on TT related to German cities. Our sample includes over 5,000 twinning relationships of over 600 German towns, cities and municipalities with locations around the world. The data cover the period from 1976 to 2007. The population data relate to the municipality level or the county level. Whenever

Table 1

German town twinning 1976–2007, partnerships and friendships

	year	All twinnings (partnership + friendship) number	share	Partnership number	share	Friendship number	share
(a) Cumulative twinning towns and cities	1976	366	100%	357	98%	65	18%
	1990	419	100%	410	98%	122	29%
	2007	610	100%	579	95%	239	39%
(b) Cumulative twinning connections	1976	1502	100%	1426	95%	76	5%
	1990	3071	100%	2890	94%	181	6%
	2007	5067	100%	4565	90%	502	10%

Note: The percentages under partnership and friendship do not add up to 100% because of multiple partnerships or friendships per town.

Source: The authors (2015).

data availability permits, we use data for the lowest level of spatial aggregation. We use so called *Kreise* as the smallest spatial unit of observation. Cities within Kreise that are involved in TT are aggregated.

Table 1 shows a few summary statistics. The data for Germany cover two forms of TT relationships: partnerships and friendships. Partnership is a form of twinning in which the partners engage in activities based on contracts, whereas friendships are less far-reaching and are based on agreements with limited formal activities or projects. We therefore expect the effects of partnership TT on population growth to be relatively stronger. Table 1 shows that the number of twinning connections is larger than the number of twinning towns and cities; i.e., cities can and often do have more than one twinning relationships: 366 German towns and municipalities with complete coverage for all years had 1,502 twinning connections by 1976. This increased to 419 German towns having 3,071 twinning connections in 1990 and 610 towns having 5,067 twinning connections in 2007.

Table 2

Top 40 German twinning partners (98 percent), 2012

rank	Partner country	# of twins	%	Cum. %	rank	Partner country	# of twins	%	Cum. %
1	France	2054	36.41	36.41	21	Greece	34	0.60	92.27
2	Britain	440	7.80	44.21	22	Ukraine	32	0.57	92.84
3	Poland	417	7.39	51.60	23	Nicaragua	26	0.46	93.30
4	Italy	364	6.45	58.06	24	Romania	26	0.46	93.76
5	Austria	304	5.39	63.45	25	Lithuania	24	0.43	94.19
6	Hungary	251	4.45	67.90	26	Croatia	23	0.41	94.59
7	Czech Rep.	168	2.98	70.87	27	Latvia	21	0.37	94.97
8	USA	168	2.98	73.85	28	Luxemburg	20	0.35	95.32
9	Netherlands	167	2.96	76.81	29	Portugal	18	0.32	95.64
10	Russia	121	2.15	78.96	30	Slovenia	18	0.32	95.96
11	Belgium	120	2.13	81.08	31	Slovakia Republik	16	0.28	96.24
12	Denmark	89	1.58	82.66	32	Estonia	15	0.27	96.51
13	Israel	79	1.40	84.06	33	Belarus	13	0.23	96.74
14	Turkey	76	1.35	85.41	34	Norway	13	0.23	96.97
15	Switzerland	72	1.28	86.69	35	Ireland	12	0.21	97.18
16	China	63	1.12	87.80	36	Burkina Faso	11	0.20	97.38
17	Finland	61	1.08	88.88	37	Bosnia&Herzegowina	10	0.18	97.55
18	Sweden	57	1.01	89.90	38	Bulgaria	10	0.18	97.73
19	Japan	53	0.94	90.83	39	Ruanda	7	0.12	97.85
20	Spain	47	0.83	91.67	40	Serbia	7	0.12	97.98

Source: Authors' calculation from the data.

Out of over 2,000 German cities and towns, 366 had at least one twinning connection in 1976, and 610 cities and towns had a twinning relationship in 2007 (see table 1). Even after aggregating into the municipalities/counties or Kreise a large number of German Kreise do not have a town twinning connection. We also look at the intensity of twinning, that is, the number of TT relations per city. The number of towns with a higher than average number of TT is approximately 120.

When it comes to the geography of the German TT counterparts, Table 2 shows that 36 percent of all German TTs are with French cities; while over 90 percent of TTs are with European countries, including Russia.

Within Germany, the twinning activities are historically concentrated in the western part of Germany, as Figure 2 illustrates.

Model

We apply a simple regression to determine if TT stimulates population growth:

$$popgrowth_{mt} = \beta\ twinning_{mt} + \gamma(twinning_{mt}\ x\ partners_{mt}) + D_t + D_l + \varepsilon_{mt}$$

where $popgrowth_{mt}$ is annual population growth of German municipality (or county) m at time t; $twinning_{mt}$ indicates whether a twinning relationship between a German municipality with an international partner city exists. It equals 1 if the municipality has one or more international twinning partner(s) and 0 otherwise. We also include the number of partners explicitly assuming that the larger the number of partners, the larger the reduction in transaction costs; the value of $twinning_{mt}$ then equals the number, n, of international partners. The variable $partners_{mt}$ refers to a particular country or group of countries with which TT exists, like for instance, only the sub-sample of French TT partner cities.

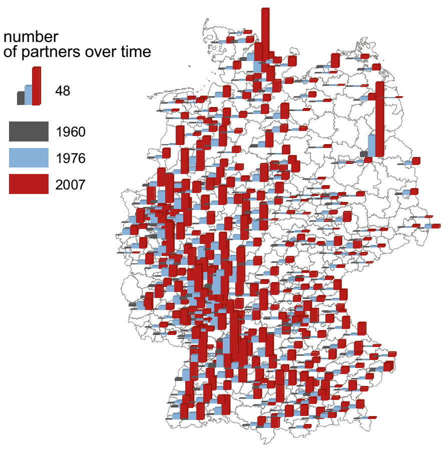
Treating $twinning_{mt}$ as a binary dummy variable refers to what might be called the extensive margin of TT (is there any TT at all?), whereas treating $twinning_{mt}$ as the actual number of TT partners then refers to the intensive margin (how much TT is going on, the "volume" of TT relationships so to say).

Estimation Results

The Baseline Results

Table 3 presents some of the key results (Brakman, Garretsen and Oumer 2015, provides an array of sensitivity analyses). The columns indicated by dummy=1 capture whether TT exists at all (extensive margin), columns with intensity = n capture the intensity of TT and use 'n', the number of TT relationships, explicitly. We also differentiate between partnerships and friendships, as the ties between cities in a partnership are thought to be stronger.

Figure 2a and 2b **Geographical distribution of German twinning and time trends**



Source: Authors' calculation from the data.

Table 3

Twinning with France, IV estimates[1]

Variables	partnership + friendship (dummy=1) (1)	partnership + friendship (intensity=n) (2)	partnership + friendship (dummy = 1) (3)	partnership + friendship (intensity = n) (4)	partnership + friendship (dummy = 1) (5)	partnership + friendship (intensity = n) (6)
$Twinning_{mt}$	-0.720***	-0.0734***	-0.737***	-0.153***	-0.745***	-0.154***
	(0.106)	(0.0163)	(0.108)	(0.0261)	(0.109)	(0.0262)
$Twinning_{mt} \times France_{mt}$	1.997***	0.163***	2.049***	0.324***	2.076***	0.326***
	(0.280)	(0.0327)	(0.287)	(0.0526)	(0.290)	(0.0529)
Year effects	yes	yes	yes	yes	yes	yes
Location fixed effects	yes	yes	yes	yes	yes	yes
Observations	11,191	11,191	11,191	11,191	11,191	11,191
R-Squared	0.074	0.071	0.072	---	0.072	---

Note: Standard errors in parentheses; ***P < 0.01; **P < 0.05; *P < 0.1

Source: The authors (2015).

[1] We also address the issue of reverse causality, namely, whether TT stimulates population growth, or whether stronger economic performance and hence population growth are formalized in TT activities. We use data on the WWII destruction of German cities as instruments. Specifically, the level of destruction of residential houses, number of people killed, tax revenue loss and tons of rubble resulting from bombing of the German towns and cities during WWII are used as instruments. In columns (1)–(2) we use all instruments, subsequently we drop "number of people killed" in columns (3)–(4), and also drop "tons of rubble" in columns (5)–(6). This also applies to Table 4. The motivation for these instruments is that cities that experienced WWII destruction directly or more intensively in particular, are more motivated to strengthen ties between former enemies in order to increase mutual understanding and prevent future wars. The data for the instruments are obtained from Brakman, Garretsen and Schramm (2004).

As France is by far the most important twinning partner of Germany, we show France separately in Table 3; $partners_{mt}$ in equation (1) is represented by $France_{mt}$, which stands for the (share of) TT partners between Germany and France.

Table 3 shows that the combination of TT with France has a positive effect; that is, the sum of $twinning_{mt}$ and $twinning_{mt}$ x $France_{mt}$ is positive.[4]

The literature suggests that large urban locations are not only more efficient than smaller ones, but that they also have an advantage in innovation, and their economies can grow faster than smaller locations, see also Ludema and Wooton (1999) who show that trade liberalization initially benefits larger agglomerations. We therefore define German municipalities that are smaller than the median population size as small, and those that are larger than the median population size as large. Differentiating between large and small municipalities reveals that the results especially work for large cities (please note that instead of France, we now include neighboring countries), see Table 4. Only the results for large cities are significant from a statistical point of view.

[4] Please note that care is required in interpreting the coefficients. We discuss in the text whether the net effect of TT and TT with France is positive, that is $d(popgrowth)/d(twinning) = \beta + \gamma\ x\ partners > 0$, where *partners* (France) is measured as a share. We would like to thank Eckhardt Bode for pointing this out.

Conclusions

Although TT has been around for a long time, it really took off after WWII. In the post-WWII period, TT was aimed at political reconciliation and enhancing mutual understanding between former enemies, particularly in the case of Germany. If successful, TT could be looked upon as reducing the economic distance between the cities involved in such initiatives, which can be seen as a way of stimulating the growth of the cities involved in TT. Existing research on TT is largely descriptive and we add to this literature by explicitly focusing on the quantitative consequences of TT. In the case of Germany, in other words, we estimate whether TT stimulates population growth in the cities that are involved in TT.

We focus on Germany because it became the main actor in TT after WWII. Applying a difference-in-differences approach, and distinguishing between the extensive margin of TT (whether TT exists at all for a given city) and the intensive margin (the number of TT relations), our results show that German counties and municipalities that engage in town twinning often experienced

Table 4

Twinning with neighboring countries, IV estimates (small vs. large German cities)

Variables	partnership + friendship (dummy=1) (1)	partnership + friendship (intensity=n) (2)	partnership + friendship (dummy = 1) (3)	partnership + friendship (intensity = n) (4)	partnership + friendship (dummy = 1) (5)	partnership + friendship (intensity = n) (6)
	Small municipalities					
$Twinning_{mt}$	-0.0420 (0.351)	-0.0641 (0.0752)	-0.0418 (0.351)	-0.0683 (0.0770)	-0.0221 (0.359)	-0.0570 (0.0789)
$Twinning_{mt}$ × $Neighbor_{mt}$	0.595 (0.482)	0.0885 (0.0935)	0.595 (0.482)	0.0938 (0.0957)	0.565 (0.495)	0.0797 (0.0980)
Year effects	Yes	yes	yes	yes	yes	yes
Location fixed effects	Yes	yes	yes	yes	yes	yes
Observations	4,588	4,588	4,588	4,588	4,588	4,588
R-Squared	0.055	0.053	0.055	0.052	0.055	0.055
	Large municipalities					
$Twinning_{mt}$	-0.856*** (0.0632)	-0.0992*** (0.00832)	-0.908*** (0.0655)	-0.145*** (0.0112)	-0.911*** (0.0655)	-0.148*** (0.0114)
$Twinning_{mt}$ × $Neighbor_{mt}$	1.465*** (0.0804)	0.167*** (0.0122)	1.549*** (0.0849)	0.235*** (0.0166)	1.554*** (0.0851)	0.240*** (0.0168)
Year effects	yes	yes	yes	yes	yes	yes
Location fixed effects	yes	yes	yes	yes	yes	yes
Observations	4,526	4,526	4,526	4,526	4,526	4,526
R-Squared	0.306	0.376	0.192	0.376	0.182	0.181

Note: Standard errors in parentheses; ***P < 0.01; **P < 0.05; *P < 0.1

Source: The authors (2015).

significantly higher population growth than those that did not have twinning partners. The number or intensity of twinning relations in particular, as well as town twinning with French cities, and with neighboring countries more generally, turn out to have a positive effect on city growth. We also find that the positive population growth effects of town twinning are confined to the larger German cities. Town twinning can facilitate the relocation or migration of workers and firms to more optimal locations. As cities get more productive, they are likely to grow faster.

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Asylum in Europe

The European Union is currently confronted with a huge influx of people seeking asylum. But not all countries are affected in the same way. Data is only available for January to September 2015,[1] as not all EU countries have reported more recent data. Germany (288,740), Hungary (175,960) and Sweden (72,985) have the highest numbers of asylum seekers. Italy, Austria and France also had over 50,000 asylum seekers in 2015, whereas Slovakia only had 135. However, there are not only significant differences in the absolute numbers; the number of asylum seekers relative to the population of a country also varies. Hungary leads the pack with 17.9 asylum seekers per 1,000 inhabitants, followed by Sweden at 7.5. On the other hand, over half of the EU member states have less than one asylum seeker per 1,000 inhabitants (see Table 1). Most studies imply that factors like the existence of diaspora networks (Robinson and Segrott 2002; Neumayer 2004), and a permanent residence possibility (Nordlund and Pelling 2012) are of central importance to asylum seekers when choosing a country to apply for asylum.

[1] Updated information is available at: DICE < Migration < Asylum; http://www.cesifo-group.de/w/Qq36c8K.

In response to the current situation, some countries have made legislative changes in their asylum laws to make their country less attractive to asylum seekers. The logic behind the changes in asylum law is as follows: Clearly most asylum seekers primarily search for protection from prosecution. However, as it can be assumed that most of those persons granted asylum will remain in their host country for a long time, it seems efficient for them to choose a host country where it is possible to make a living. From a long-term perspective, the institutional setting in a host country seems essential. Previous research shows that host country decisions by asylum seekers change if national regulations in a main destination country improve or worsen relative to regulations in other main destination countries (Scholz 2013).

Table 1

Asylum applications, 2015 (January - September)

	Total	per 1,000 inhabitants [a)]
Austria	56,675	6.602
Belgium	27,700	2.460
Bulgaria	12,720	1.766
Croatia	145	0.034
Cyprus	1,560	1.842
Czech Republic	1,110	0.105
Denmark	9,605	1.697
Estonia	190	0.145
Finland	17,795	3.252
France	50,840	0.766
Germany	288,740	3.557
Greece	9,680	0.895
Hungary	175,960	17.866
Ireland	2,505	0.542
Italy	59,165	0.973
Latvia	250	0.126
Lithuania	230	0.079
Luxembourg	1,255	2.229
Malta	1,260	2.935
Netherlands	25,020	1.480
Poland	8,340	0.219
Portugal	645	0.062
Romania	1,015	0.051
Slovak Republic	135	0.025
Slovenia	170	0.082
Spain	10,295	0.222
Sweden	72,985	7.488
United Kingdom	26,995	0.417

Source: Eurostat (2015); [a)] Relative to population as of 1st of January 2015.

To reduce the impact of national asylum laws, the European Union started to coordinate asylum legislation within Europe in the 1990s. To understand the unequal distribution of asylum seekers, it is therefore necessary to discuss the two different institutional levels: On the one hand, there are European regulations like the Dublin regulation and directives regarding asylum; and on the other hand, there are national asylum laws, which are described in greater detail below. This article focuses on two institutional aspects that can influence the long-term perspective of refugees: the duration of their residence permits and their access to the labour market.

European regulations

The so-called *Dublin Regulation* (Regulation (EU) No 604/2013) states that the EU country an asylum seeker[2] first enters is responsible for processing his/her asylum application. As most asylum seekers enter the European Union overland or via the Mediterranean Sea, the countries in the south and southeast of Europe (Greece, Italy, Malta and Spain) are responsible for most of the asylum applications in Europe. Countries in the Community with no external frontier should therefore have relatively low numbers of asylum applicants, as they can return asylum seekers to the country where they first entered the EU. Serious concerns regarding the Dublin procedure emerged especially at the point when the European Court of Justice ruled that a refugee should not be expelled to Greece due to inhuman living conditions for refugees there (ECtHR 2011). As of that point most European countries stopped expelling refugees to Greece. The relatively low number of asylum applications in Greece in 2015 (see Table 1) may also indicate that most migrants transit through Greece without applying for asylum and without being held by the Greek authorities. As a result, the EU's de facto external frontier in the southeast of Europe is now in Hungary, where the number of asylum applicants per inhabitant is by far the highest in Europe.

Table 2

Types of international protection according to the Qualification Directive

Refugee status	Subsidiary protection status
Refugee refers to a third-country national who, owing to a well-founded fear of persecution for reasons of race, religion, nationality, political opinion or membership of a particular social group, is outside his/her country of nationality and is unable or, owing to such fear, is unwilling to avail himself or herself of its protection or a stateless person, who, being outside his/her country of former habitual residence for the reasons cited above, is unable or, owing to such fear, unwilling to return to it, and to whom Article 12 (exclusions due to having committed crimes against peace, war crimes or other serious crimes) does not apply.	Person eligible for subsidiary protection refers to a third-country national or a stateless person who does not qualify as a refugee, but in respect of whom substantial grounds have been shown for believing that the person concerned, if returned to his or her country of origin, or in the case of a stateless person, to his or her country of former habitual residence, would face a real risk of suffering serious harm as defined in Article 15 (death penalty, torture, individual threat due to armed conflicts), and to whom Article 17(1) and (2) (reasons for exclusion, similar to those for refugee status) does not apply, and is unable, or, owing to such risk, unwilling to avail himself or herself of the protection of that country.

Source: Directive 2011/95/EU.

In addition to the Dublin regulation, there are European regulations like the *Qualification Directive* (Directive 2011/95/EU) and the *Asylum Procedures Directive* (Directive 2013/32/EU) regarding asylum procedures and the rights of refugees. The directives were designed to enforce a minimum standard that can be claimed by all refugees, no matter which European country they find themselves in.[3] These regulations are mainly based on the *Convention relating to the Status of Refugees* and the *Universal Declaration of Human Rights* and are implemented in all member countries into national law. Some countries have asylum regulations that go beyond these EU directives and are more in favour of asylum applicants. Denmark, Ireland and the United Kingdom have opted out of the directives and are not bound by its minimum standards.

The *Qualification Directive* distinguishes between two types of international protection: refugee status and subsidiary protection status. Asylum seekers who do not qualify for refugee status, but would risk serious harm if they returned to their country of origin, can obtain subsidiary protection (see Table 2).

The legal consequences of both statuses are almost the same. Some important differences with respect to residence permits will be discussed in the context of national asylum law.

National asylum law

National asylum law regulates all aspects that are not determined by European directives; or where the implementation of directives allows for flexibility. It is also possible to deviate from the above EU directives as long as standards are established that are more favourable for asylum seekers than the conditions stipulated by the directives.

The *Qualification Directive* states that refugees granted asylum are to receive a residence permit that is valid for at least three years and is renewable. Persons granted subsidiary protection must receive a residence permit

[2] Definitions: An asylum seeker is a person who applies for asylum and whose asylum procedure has not yet been decided. A refugee is a person whose asylum procedure is finished and who receives asylum.
[3] For example, the directives state that the asylum procedure shall not last longer than six months and specify the reasons for which a person can claim to need international protection.

Table 3

Labour market access for asylum seekers

	Does legislation allow asylum seekers access to the labour market?	If applicable	Are there restrictions to access employment in practice?
Austria	Yes	3 months	Yes
Belgium	Yes	6 months	Yes
Bulgaria	Yes	1 year as of registration as asylum seeker	No
Croatia	Yes	1 year	Yes
Cyprus	Yes	6 months	Yes
France	Yes	1 year	Yes
Germany	Yes	3 months	Yes
Greece	Yes	Immediate	Yes
Hungary	Yes	9 months after having submitted an asylum application	Yes
Ireland	No	Not available	No
Italy	Yes	6 months as of asylum request	Yes
Malta	Yes	12 months	Yes
Netherlands	Yes	6 months after submission of an asylum application	Yes
Poland	Yes	6 months	Yes
Sweden	Yes	The day after applying for asylum	Yes
United Kingdom	Yes	1 year	Yes
Switzerland	Yes	3-6 months	Yes
Turkey	Yes	6 months	Yes

Source: DICE Database (2015).

that is valid for at least one year and is renewable for two years (Art. 24 Directive 2011/95/EU). Most countries, like Germany for instance, satisfy this minimum requirement, but go no further. Only a few countries grant resident permits that are valid for a longer period of time. France grants refugees a 10-year residential permit, while Sweden tends to issue an unlimited residence permit, regardless of whether a person is granted the status of refugee or subsidiary protection. Recently, however, the Swedish government declared, among other things, that it intends to reduce the validity of residence permits for refugees to the minimum determined in the *Qualification Directive*.[4]

The *Qualification Directive* stipulates that a refugee has the right to participate in the labour market as soon as s/he is granted asylum (Art. 26 Directive 2011/95/EU). As asylum procedures take some time, however, a crucial point is the right to work already during the time of being an asylum seeker. As the European directives do not cover this topic, it is only dealt with by national regulations. As shown in Table 3, Greece and Sweden are the most favourable countries for asylum seekers, as they grant the latter access to the labour market from the moment that they apply for asylum. Only Ireland prohibits asylum seekers from working at all. In all other countries there are waiting times of up to one year for asylum seekers seeking work.

However, labour market access for asylum seekers is not only restricted in terms of waiting-times. All EU countries, with the exception of Bulgaria, have additional formal restrictions to varying degrees. In Sweden an asylum seeker only has to have valid documents establishing his/her identity in order to obtain the right to work. In Germany or France, for example, an asylum seeker has to prove that s/he has a concrete job offer in order to obtain a work permit. In Germany asylum seekers must complete a second step, the so-called additional "priority review". Before the asylum seeker can get the job, the competent authority (job center/ Arbeitsagentur) has to check if there is another person with a better residence status who fits the job description, and can only grant the asylum seeker a permit if this is not the case (Country reports AIDA 2015).

[4] See for example: http://www.theguardian.com/world/2015/nov/24/sweden-asylum-seekers-refugees-policy-reversal.

Conclusion

Asylum regulations in European countries still differ significantly. There is a minimum standard set by the European Union that all countries have to reach. This ensures that an asylum seeker has the same chance of gaining protection regardless of the country in which s/he applies for asylum. However, regulations that determine the long-term perspective for refugees differ and therefore influence host country decisions. The more national regulations are harmonized, the less influential they will be in the host country decisions made by asylum seekers.

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Workplace Representation in Europe: Works Councils and Their Economic Effects on Firms

Workplace representation in Europe at a national level

Employee workplace representation in Europe takes place through local union bodies and/or through bodies separately elected by the whole workforce – the employee representatives or works councils[1]. Table 1 gives an overview of workplace representation systems in European countries and the thresholds that apply.

Works councils in Europe - evolution and thresholds

Works councils in Germany and Austria have the longest history in Europe; in Germany the first works council legislation dates back to 1919/1920 (Hans-Böckler-Stiftung 2015)[2] and in Austria to 1919 (Arbeiterkammer Österreich 2015). Most other Western-Continental European countries introduced legislation to establish works councils after the Second World War, with legislation taking effect in Spain in 1947 and in the Netherlands in 1950, for example (Streeck 1995). One exception is Sweden where workplace representation only takes place through unions and there is no separately elected structure resembling works councils. In several Eastern European countries like Estonia, Latvia, Lithuania and the Slovak Republic, but also in Ireland, where the right to establish both bodies of employee representation is now effective, there was no legislation to elect works councils until the beginning of the 2000s; and workplace representation was granted only through unions. New legislation was introduced with the so called "European Directive on Information and Consultation" by the European Commission in 2002 (European Commission 2002)[3]. According to this EU directive, countries shall offer all workers the opportunity to obtain information via workplace representatives, and not only via union bodies. The directive stipulates minimum requirements regarding the principles, definitions and arrangements for informing and consulting employees at firm level. The provisions of the directive apply to firms employing at least 50 or 20 employees, according to the choice made by the Member State. As stated by the European Commission itself in 2008: "The EU directive was published to establish a general framework for informing and consulting employees in the European Community and wants to fill a number of gaps in national laws and practices (European Commission 2008)." Apart from in formal legislation, however, works councils only rarely exist in practice (in Croatia, Czech Republic, Greece and Portugal) because they usually are not mandatory or because legislation concerning works councils is fairly new. In Germany, for example, only ten percent of all eligible workplaces in West Germany had a works council in 2011 (nine percent in East Germany), but these bodies covered 44 percent of all employees in the West and 36 percent in the East (European Worker Participation Competence Centre 2014), as works councils are more common in larger companies. Other countries (Finland, Lithuania and Romania) only allow employee representatives if there are no union representatives, so works councils are also relatively rare.

The threshold number of employees required to set up a works council differs from country to country. In Austria, Germany and Latvia the threshold is five employees, while other countries do not have a threshold at all (Czech Republic, Estonia, Portugal) or have a relatively high threshold of 100/101 employees (Norway, Belgium). In Italy, Luxembourg and Spain the threshold is between 10 and 20 employees, hence the majority of countries have set the threshold at 20/21 or 50/51 employees (see Table 1), which is also recommended by the EU directive. The size of works councils rises in line with the number of employees that a firm has; and the thresholds that apply also differ from country to country. Another distinction can be seen in the design of legislation on works councils and whether the establishment of a works council

[1] In view of the fact that works councils are more or less a European institution, this article looks at the EU 28 countries (without Malta and Cyprus) plus Norway and Switzerland. In Australia, Canada, Japan, Mexico, the United States and the Russian Federation, for example, there are no provisions in law for works councils (Baker & McKenzie, 2014). Brazil and South Korea are exceptions outside Europe, as works councils are obligatory in both countries.

[2] During the Nazi regime in Germany works councils were abolished and re-allowed in 1946 by the Allies (Hans-Böckler-Stiftung 2015).

[3] In the area of employment and social policy three EU directives concerning the information and consultation of workers at national/company level were established: 1. Directive 98/59/EC on collective redundancies in 1998; 2. Directive 2001/23/EC on transfers of undertakings in 2001; 3. Directive 2002/14/EC on establishing a general framework relating to information and consultation of workers in the EC in 2002.

Table 1

Workplace representation in Europe, 2014

	Workplace representation through employees representatives		Workplace representation through union bodies	
	Works council or employee representative	Threshold	Union delegation or union representative	Threshold [a]
Austria	x	From 5 employees.	There is no direct trade union representation in the workplace. But in most cases the unions play a crucial part in the works councils' effective operation.	
Belgium	x	From 101 employees.	x	Depends on union agreement.
Bulgaria	x	No threshold / From 20 or 50 employees. [b]	x	Depends on union agreement.
Croatia	x	From 20 employees.	x	Depends on union agreement.
Czech Republic	x	No threshold.	x	Depends on union agreement.
Denmark	x [c]	From 35 employees.	x	In most agreements the right to elect a trade union representative starts once there are more than five employees in the workplace.
Estonia	x	No threshold.	x	Depends on union agreement.
Finland	x (If there are no union representatives.)	From 20 employees.	x	Each workplace has a trade union representative.
France	x (Two bodies: Employee delegates / Works council)	From 11 employees / From 50 employees (obligatory).	x	From 50 employees.
Germany	x	From 5 employees.	There is no direct trade union representation in the workplace. But the unions have a major influence on the works councils' operation.	
Greece	x	From 50 employees (From 20 employees if there is no union body).	x	Depends on union agreement.
Hungary	x	From 51 employees.	x	Depends on union agreement.
Ireland	x [d]	From 50 employees.	x	Depends on union agreement.
Italy	x	From 16 employees.	The elected employee representatives are essentially union bodies.	
Latvia	x	From 5 employees.	x	Depends on union agreement.
Lithuania	x (If there are no union representatives.)	No threshold.	x	Depends on union agreement.
Luxembourg	x	From 15 employees.	Unions have important rights in this structure and the majority of employee representatives are union members.	
Netherlands	x	From 50 employees.	In many organisations collective agreements give trade unions at work specific rights.	
Poland	x	From 50 employees.	x	Depends on union agreement.
Portugal	x	No threshold.	x	Depends on union agreement.
Romania	x (If there are no union representatives.)	From 21 employees.	x	Depends on union agreement.
Slovak Republic	x	From 50 employees.	x	Depends on union agreement.
Slovenia	x	From 21 employees.	x	Depends on union agreement.
Spain	x	From 11 employees.	x	From 250 employees.
Sweden	No works council.		x	Depends on union agreement.
United Kingdom	x [e]	From 50 employees.	x	Depends on union agreement.
Norway	x	From 100 employees (obligatory).	x	The number of union representatives is linked directly to the number of union members in the company who belong to each union confederation.
Switzerland	x	From 50 employees.	At least some of the employee representatives are members of a trade union and/or advised by trade unions.	

Notes:
[a] Often there is no threshold by law for union representatives, the number then depends on the rules of the union. However, there are often legal limits on the number of union representatives who can benefit from specific legal rights and job protections.
[b] There are no specific rules on the numbers or thresholds for employee representatives elected to represent employees' social and economic interests. However, the legislation is more precise where employee representatives are elected for the purposes of information and consultation. These representatives should be elected in companies employing 50 or more employees, or in workplaces employing 20 or more.
[c] The Danish equivalent of the works council is the cooperation committee.
[d] The legislation (passed in 2006 as a result of the EU directive on information and consultation) does not require all companies covered by it to establish employee bodies for information and consultation. The process only begins if 10% of employees, with a lower limit of 15 and an upper limit of 100, ask for information and consultation rights or the employer takes the initiative. Negotiations then start between the employer and employee representatives, who automatically include union representatives if the employer recognises unions and they represent at least 10% of the workforce.
[e] The Information and Consultation of Employees Regulations 2004 give employees in businesses with 50 or more employees the right to require the employer to set up an employee information and consultation forum, which has the right to be informed and consulted on a regular basis about issues in the business for which they work. Consultative bodies established under these Regulations are typically called information and consultation bodies, or employee consultation forums, and have some similarities to continental European style National Works Councils, but are considerably less onerous from an employer's perspective.

Source: DICE Database (2015a).

is mandatory or not. Like in most other countries, legislation in Germany states that works councils "can be elected" after a specific threshold number of employees has been reached. In France and Norway, by contrast, the election of employee representatives is obligatory.[4]

Differing influence of works councils and unions

As both unions and works councils are involved in employee representation in many countries, detecting the dominant representation body for each country is fairly complex. The European Commission has published a categorisation of national workplace representation in the different European countries based on a European Company Survey (and supplemented by national reports). Following this scheme, countries can be divided into four categories to describe which form of employee representation institution is more widespread in a country (European Commission 2013):

1. Single channel of representation, with works councils being the sole representational structure for employees;
2. Single channel of representation, with trade unions being the sole employee representation body;
3. Dual channel of representation featuring both types of employee representation, but with works councils playing a stronger role and
4. Dual channel of representation with trade union shop stewards playing a prominent role.

As far as the single channel of representation is concerned, Austria, Germany, Luxembourg and the Netherlands fall into category one, as works councils are the sole form of institutional employee representation, and Sweden falls into category two, as only union

[4] For more details on workplace representation in France, Germany, Italy, Poland, Spain and Sweden see DICE Database (2015b).

Table 2

Main employee representation at workplace, 2014

Austria	Works council
Belgium	Union and works council – but union dominates
Bulgaria	Union – but law also provides for the election of other representatives
Croatia	Union and works council – but where no works council union can take over its rights and duties
Czech Republic	Union – but works council can be set up as well
Denmark	Union – but employee groups from outside the union can be represented in the structure
Estonia	Union – but since 2007 employee representatives can be elected as well
Finland	Union
France	Union and works council/employee delegates – but union normally dominates if present
Germany	Works council
Greece	Union – works councils exist in theory but not often in practice
Hungary	Union and works council
Ireland	Union – but other structures are possible and since 2006 these can be triggered by employees
Italy	Union – although largely elected by all employees
Latvia	Union – although possible to elect other representatives
Lithuania	Union – or works council if there is no union
Luxembourg	Employee delegates
Netherlands	Works council
Poland	Union and works council – but most works councils are in unionised workplaces
Portugal	Union – works councils exist in theory but less frequently in practice
Romania	Union – other employee representation possible but rare
Slovak Republic	Union and works council
Slovenia	Union and works council
Spain	Works council – although dominated by unions which are also present directly
Sweden	Union
United Kingdom	Union – but other structures are possible and since 2005 these can be triggered by employees
Norway	Union – "works councils" exist in some companies but their role is to improve competitiveness

Source: DICE Database (2015a).

representatives exist there. When it comes to categories three and four of the dual channel of representation things gets more complicated. The European Commission (European Commission 2013, p. 42) sees works councils as the prominent body of representation in Belgium, Estonia, France, Hungary, Poland and the Slovak Republic. The European Worker Participation Competence Centre of the European Trade Union Institute, on the other hand, sees the unions as the main body in workplace representation for these countries (European Worker Participation Competence Centre 2014). The discrepancies are partly due to differences in workplace representation between firms within one country. Forms of workplace representation can vary when looking at different firms in one country, making it impossible to obtain a clear picture. Moreover, the European Commission's categorisation is based on a survey and interviews with representatives of social partners and public administration and seems to focus more on the legal framework of workplace representation. The classification by the European Worker Participation Competence Centre seems to detect the body with the greatest influence (see Table 2). Hence, all in all, it can be said that unions play a major role in workplace representation in the majority of the European countries, either through separately elected union delegates, or thanks to their influence in works councils exerted by employee representatives who are union members.

Workplace representation at a transnational level

The European Commission fosters workplace representation through elected employee representatives not only at a national, but also at a transnational level (European Commission 2015a). In 1994 the European Commission passed a directive on the establishment of a European works council or similar structures with the aim of informing and consulting employees in companies that operate at an EU level (European Commission 1994). At this level the directive applies to EU-scale firms or groups with at least 1,000 employees and at least 150 employees in each of two Member States. The directive seeks to ensure direct communication and an information flow to and from the top management for workers in big multinational companies in all European countries. A database on European works councils agreements maintained by the European Trade Union Institute contains the details and texts of such agreements and established European works councils. To date the database features 1,076 effective European works council agreements (European Trade Union Institute 2015), each effective for a different company or one company's independent entity. Moreover the EU promotes so called "Transnational company agreements". Transnational company agreements first evolved in the early 2000s, when they were voluntarily introduced by firms across Europe. They cover working and employment conditions and/or relations between employers and workers or their representatives. The EU sees these agreements as new forms of social dialogue in multinational companies, which provide for voluntary, innovative and socially-agreed solutions in companies across Europe (European Commission 2012). The database on transnational company agreements maintained by the International Labour Organisation (ILO) and the European Commission currently identifies 282 transnational company agreements and texts (European Commission 2015b).

The economic effects of works councils on firms

Economic theory and empirical research distinguish between the effects of unions and the effects of works councils on variables like firm productivity, firm output, firm growth and wages. For the United States research focuses on the effects of unions due to the absence of (non-unionised) works councils. DiNardo and Lee (2004) and Lee and Mas (2012), for example, investigate the effects of unions on productivity and wages for firms in the United States, but all in all studies could only find small, and not significant effects on the mentioned variables.

As far as the impact of works councils is concerned, economic theory suggests that works councils have positive economic effects on firms (Fairris and Askenazy 2010). Freeman and Lazear (1995), for example, see a possible improvement for firms through works councils due to improved information exchange, consultation and participation rights. They derive the following results from their theoretical model: Councils with rights to information reduce economic inefficiencies by moderating worker demands during tough times; councils with consultation rights can produce new solutions to the problems facing the firm; co-determination rights that increase job security should encourage workers to take a longer-run perspective on firm decisions and thus invest more in firm-specific skills and give workplace concessions that enhance enterprise investment in capital. Hence Freeman and Lazear argue that limits should be set to the bargaining power of works councils, as exemplified by the German institutional framework on works councils.

Empirical research on the impact of works councils on firm performance exists only for a handful of countries, namely for France, Germany and South Korea.[5] The dependent variable is firm productivity in these studies. Fairris and Askenazy (2010) analyse the effects of works councils on French firms' productivity, but cannot find a positive or a true negative effect. But the authors find that worker voice and information sharing as human resource practices, regardless of the works council status, have a positive and statistically significant impact on firms' productivity. As far as research using German data is concerned, Addison, Schnabel and Wagner (2004) and Addison (2010) divide research on the impact of works councils on firm performance into three stages, defined by differences in the type of data sets investigated, the explanatory variables used and the econometric methods. The first phase dating from the mid-1980s until the mid-1990s highlighted mixed effects, with a slightly negative effect prevailing; and some authors have rejected any positive correlation between works councils and firm performance. In the second phase from the mid-1990s to the beginning of the 2000s the results were also mixed, although works councils appeared in a more positive light. The third phase of research, which started at the beginning of the 2000s, is based on much more comprehensive (panel) data supplied by the German Institute for Labour Market Research (Institut für Arbeitsmarkt- und Berufsforschung/IAB) of the German Federal Labour Office (Bundesagentur für Arbeit). Its results suggest that works councils positively impact firm performance (Addison, Schnabel and Wagner 2004; Addison 2010). But overall, the picture still remains mixed and the positive/negative effects cited seem small in terms of their overall influence on firm productivity.

Other researchers examine the effects of legal provisions to establish works councils – including regulations that come into force once firms reach a certain firm size – on firm growth as measured by a firm's number of employees. These size-dependent regulations can consist of legislation concerning the implementation of works councils, and may also involve higher taxes or social regulations like lay-off conditions. In France and Spain, for instance, firms with 50 or more employees face significantly more regulations than firms with less than 50 employees. Gourio and Roys (2014) and Garicano, LeLarge and Van Reenen (2013) analyse the effects of these thresholds for firms in France, and come to the conclusion that the sum of all regulations that take effect after a firm has reached the 50 employee threshold prevents firms from growing beyond that threshold, as firms try to avoid the additional costs.[6] It is important to note that the establishment of works councils is only one regulation among many others that are imposed on firms, and that the effect of works councils alone on firm growth is not reported in these studies.

[5] For the study using data on South Korea, please see Kleiner and Lee (1997). The study concludes that works councils positively impact productivity.

[6] For how firm size regulations hinder firm growth in Spain see The Economist (2015).

Conclusion

Workplace representation in Europe is mixed and ranges from representation by either union bodies or works councils to both bodies co-existing at the same time; although unions generally tend to dominate workplace representation. Differences between countries also exist in terms of thresholds; this means that the number of employees that is required for the formation of a works council varies across countries. The EU has established several directives to foster workplace representation and to ensure that workplace representation takes place at both a national and a transnational level. Economic theory suggests that works councils have a positive effect on firms, whereas neither a positive nor a negative effect on firm productivity can be found in empirical research. However, the research conducted to date is limited to a few countries and mostly draws on data on German works councils and firms.

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Worldwide Water Scarcity

Worldwide water scarcity and its constant increase represent a recurring topic in the debate over climate change, intensified agriculture and potential water conflicts. In the context of its Decade for Action "Water – Source of Life", which runs from 2005–2015, the UN is picking up on further aspects concerning water. Clean water was recently recognised by the United Nations as a human right (Auswärtiges Amt 2014). In Germany and Europe, the recent droughts of 2003 and 2006 have brought water scarcity into the public spotlight. Such droughts are also a recurring problem in the United States, which would seem to imply that water is a scarce resource, even in developed countries.

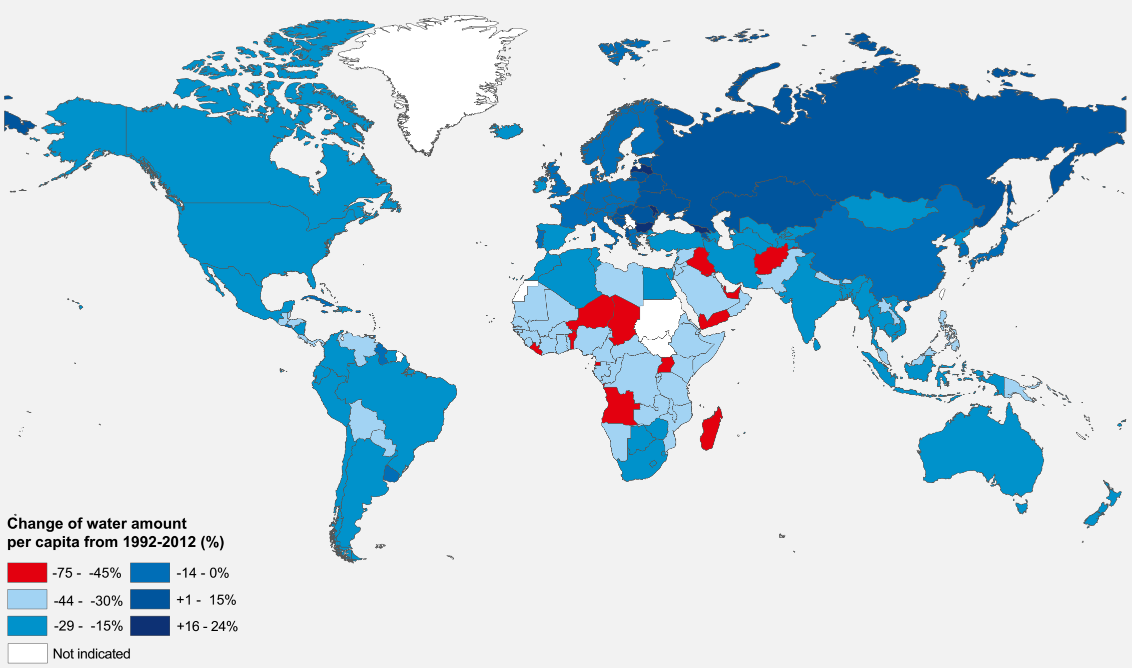
At three percent, global fresh water resources only represent a small fraction of the world´s water quantities. These amounts include those stored in ice caps and glaciers (69 percent), groundwater (30 percent) and the surface water of land mass, which only comprises 0.3 percent of fresh water (United States Geological Survey 2014). The principal factors affecting the availability of fresh water are physical conditions on the one hand and the intensity of use, on the other hand. The physical conditions mainly include the number of rivers, lakes and wetlands in a country, as well as the occurrence of drought periods due to natural climatic variation and, in the future, possibly also due to climate change. Factors concerning the intensity of use specifically include water consumption due to global population growth, changing living habits and nutrition, as well as increasing urbanisation (UN-Water & FAO 2007). Furthermore, the state of urban infrastructures (e.g., pipelines, treatment plants), the diversion of rivers, the destruction of natural wetlands, as well as the salinisation of districts due to incorrect irrigation and rising sea levels are of particular importance. In many regions groundwater levels have already sunk below a critical level due to the overconsumption of private and commercial consumers. This permanently affects groundwater recharge and can promote the salinisation of coastal areas due to penetrating seawater (Handelsblatt 2013). In industrialised countries, additional factors like soil sealing and pollutants may reduce groundwater recharge and affect their quality (Umweltbundesamt 2014).

What does water scarcity mean exactly? In general, this term is divided into three categories: Annual water availability below 1,700 m^3 per capita is called water stress. If this value drops under 1,000 m^3 per year it is already called water scarcity and a level below 500 m^3 is related to absolute water scarcity (UN-Water 2014). Worldwide, about 700 million people are affected by water scarcity, this figure is likely to increase to about 1.8 billion people by 2025. Furthermore, two-thirds of the world´s population may live in areas with acute water stress (UN-Water 2014). Most of the affected countries are located in Sub-Saharan regions. In the face of this lack of water, global water consumption is currently 1,200 m^3 per person and year (Frankfurter Rundschau 2014). Apart from physical water scarcity, there is also economic water scarcity, which is related to the possibility of water supply, especially in terms of infrastructure, water management and policy. For example, people living in slums often have to pay five to ten times more for bottled water than people with access to water pipes (UN-Water & FAO 2007). A growing problem that is further intensifying the general shortage of water is related to the progressive privatisation of water stocks. This is influenced by large corporations in the food and beverage industry, which are taking advantage of poor water quality in many places and providing clean water at inflated prices (Tagesschau 2013).

Figure 1 shows the long-term change in global renewable water resources available per capita over the last 20 years (1992–2012). The renewable amounts of fresh water are those stemming from rainfall, recharged groundwater and surface influx from neighbouring countries. Worldwide a clear pattern emerges. As expected, African countries have the lowest amount of water available, however, in the same period, the available amounts decreased by up to 50 percent in countries like Niger, Uganda and Liberia. Another example of a region affected by water scarcity is the Arabic peninsula: Here the renewable water resources have decreased by up to 75 percent (United Arab Emirates, Qatar, Bahrain), while Afghanistan has seen a decline of water amounts of over 50 percent during the same period. Globally, the Emirates are among those countries with the highest water consumption. Here, besides the extraction of groundwater, the desalinisation of seawater is accessed to meet water requirements (United Arab Emirates – Ministry of Environment and Water 2011).

Also the Americas, Europe and Australia have recorded significant reductions of water amounts. In Eurasia and most parts of Eastern Europe, however, there has been a reverse trend. Within the last 20 years there has been an increase of the available water amounts of up to 24 percent (e.g., Moldova and Georgia). These coun-

Figure 1: Development of total renewable water resources



Source: FAO-Aquastat Database (2014).

tries have experienced a significant decline in population over the same period. This was mainly caused by decreasing birth rates and higher emigration rates after the collapse of the Eastern Bloc as well as taking advantage of freedom of movement and residence within the EU since the accession of Eastern European countries (Bundeszentrale für politische Bildung 2013; BMFSFJ 2004). The data shown above only represent mean values. That is because larger countries in addition to dry areas often consist of water-rich regions with regular flooding events and consequently are less or not at all affected by water shortages. From the data it becomes apparent that the demographic development (see also FAO Aquastat Database) has a significant impact on the development of water availability.

Although more and more people are consuming much more water, domestic water consumption is not the biggest problem. Regarding the different consumer sectors, agriculture is globally responsible for the bulk of water consumption. An average of more than 70 percent of the available freshwater is used in this sector (UN-Water & FAO 2007). Due to the annual increase of food demand, water demand is expected to double within the next 50 years. According to the International Energy Agency (IEA 2014), worldwide energy supply is responsible for 15 percent of the global water consumption and is ranked in second place along with the rest of industry (both a total of 20 percent). Consumption is expected to rise by another 20 percent by 2035. Ways of overcoming this problem may be the increased use and treatment of rainwater, wastewater and the desalination of seawater. The latter, however, is a financially and energetically very complex procedure. Far simpler solutions may generally be seen in the field of saving water, raising public awareness for this precious commodity and in political framework concerning management and distribution of water.

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Female Representation in Politics and the Effect of Quotas

When asked why it is so important to him to have a gender-balanced cabinet, newly-elected Canadian prime minister Justin Trudeau's curt reply was: "Because it's 2015" (Kolb 2015). He had already previously stated on several occasions that he wanted to appoint a cabinet that "looks like Canada" and hence reflects the composition of the Canadian society. Trudeau's reaction clearly shows that, for him, having a gender-balanced cabinet is a natural condition that does not require any further explanation.

Data from around the world indicates that having a similar share of men and women in political positions, which would represent the composition of most societies, is an exception rather than the rule. This means that debates and policies in fields of special interest to women tend to be neglected while topics more important to men dominate. Chen (2010) argues that there are traditional differences in the preferences of women and men and shows that increasing the representation of female legislators leads to higher government spending on education, health and social welfare.

The following essay presents some figures on female representation and explores the effects of quotas for women in the European Union (EU).

Female representation in politics

Women's representation in politics worldwide has grown slowly but steadily over the past few decades (see Figure 1). It still remains, however, far below parity.

As of January 1st 2015 only five countries in the world had 50 percent or more women in ministerial positions (Finland, Cape Verde, Sweden, France, Liechtenstein). In the EU the average at that time was 28 percent, while it was 35 percent in the EU-15 (Inter-Parliamentary Union 2015). A similar picture emerges for women in other important political positions: in 2013 women constituted around 26 percent of all members of parliament in the EU and seven percent of prime ministers. Table 1 features several figures on women's representation in political positions in the EU in 2013.

Gender quotas in the European Union

Quotas are deemed to be an effective way of quickly increasing women's political representation and a widespread measure in the EU (Quota Project 2015). Within the EU three countries implemented such quotas in their constitutions (Croatia, France, Greece), while nine others added them to their electoral laws. In 19 countries major political parties introduced voluntary quotas,[1] sometimes in addition to legislated quotas. Only five countries did not introduce gender quotas of any kind.

Figure 2 displays the share of women in parliament in every EU country at two different moments in time.

[1] Voluntary party quotas are a powerful measure, because parties have the power over nominations. This makes them the gatekeepers for increased women's representation since voters in most European countries are left to decide between different lists of pre-determined gender proportions (EU Directorate-general for internal policies, 2013).

Table 1

Overview of women in political positions in the EU

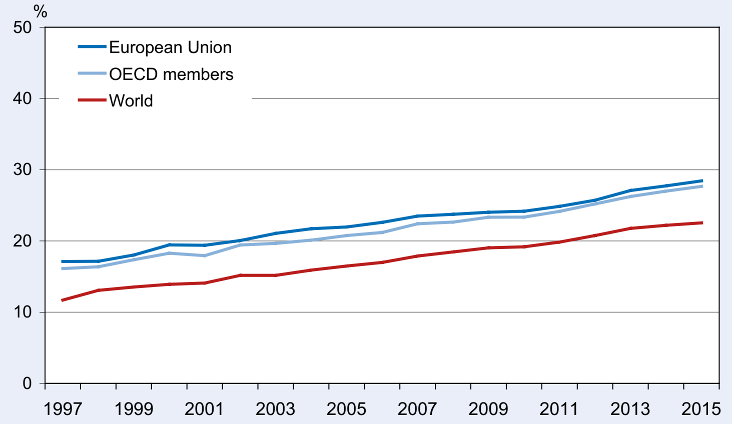
Women in political positions (2013)	EU-28	EU-15	Northern Europe	Western Europe	Eastern Europe	Southern Europe
Ministerial positions	28%	35%	35%	35%	16%	24%
National Parliament Members	26%	31%	30%	31%	18%	24%
Regional Assembly Members	32%	34%	23%	27%	23%	17%
National Prime Ministers	7%	13%	25%	17%	0%	13%
Major party leaders	10%	12%	11%	19%	3%	6%

Note: Northern Europe: Denmark, Estonia, Finland, Ireland, Latvia, Lithuania, Sweden, United Kingdom;
Western Europe: Austria, Belgium, France, Germany, Luxembourg, Netherlands;
Eastern Europe: Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic;
Southern Europe: Croatia, Cyprus, Greece, Italy, Malta, Portugal, Slovenia, Spain.

Source: DICE Database (2015); allocation of countries following UN Statistical Commission.

Figure 1

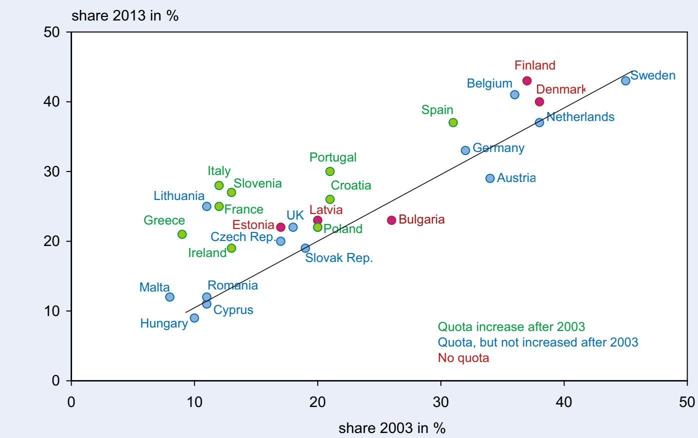
Proportion of seats held by women in national parliaments



Source: Inter-Parliamentary Union (2015); World Bank (2015).

Figure 2

Women's representation in 2003 and 2013 in the EU



Source: DICE Database (2015); Quota Project (2015); Inter-parliamentary Union (2015).

The X-coordinate of any point describes women's representation in 2003, while its Y-coordinate displays the same information for 2013. A point located on the black diagonal indicates that women's representation in the corresponding country's parliament was the same in 2003 and 2013. All countries lying below the diagonal experienced a decrease, while all lying above it experienced an increase in their share of women in parliament.

The figure also contains information about the implementation of quotas in the corresponding country. A blue dot indicates that a country already had a quota installed in 2003. Countries represented by a green dot introduced or increased[2] quotas between 2003 and 2013; and a red dot means that the country does not use any quotas at all.

There seem to be two groups of countries: one group had over 30 percent of women in their parliaments in 2003. It consists of less than one third of all countries and most of them experienced a moderate increase or decrease in women's representation of five percent or less. The remaining countries had a share of less than 30 percent of female members of parliament in 2003 and nearly all of them increased their share of women until 2013, by more than five percent in several cases. All countries that introduced or increased a quota in the time frame under consideration increased their share of women in parliament.

The figure suggests that there is a correlation between the introduction or increase of a quota and women's representation in the EU. Most countries increased their share of women until 2013, but those countries with new or increased gender quotas saw the greatest increase (see Table 2). They were those countries with the lowest female representation on average in 2003, and therefore those with the highest potential for increase, but by 2013 they had overtaken the group of countries that already had quotas in place. Average female representation in the five countries with no quotas remains highest in both 2003 and 2013 due to Denmark and Finland, which have a long tradition of high female representation and never implemented quotas.

An analysis of Figure 2 gives a rough overview of the relation between quotas and women's share in parliaments, but leaves several aspects of quotas untreated, which should be addressed in a comprehensive study. The data only shows whether a quota was implemented or not, and does not account for its magnitude or for the penalties for non-compliance with it. But these aspects certainly influence women's representation. In some countries non-compliance of an electoral list with

[2] To increase a quota in this context means switching from voluntary party quotas to legislated quotas or making a quota significantly more strict and binding.

Table 2

Women's representation distinguished by the use of quotas

	Average 2003	Average 2013	Average increase
No quota	27.6%	30.2%	2.6%
Quota, but not increased since 2003	22.1%	23.9%	1.8%
Quota increase since 2003	16.9%	26.1%	9.2%

Source: DICE Database (2015); Quota Project (2015); Inter-parliamentary Union (2015).

gender quotas leads to its rejection, which usually has a powerful disciplinary effect on political parties, since the rejection of their list usually suspends them from an election. In other countries there is a monetary penalty for non-compliance. France uses fines at a national level, but rejection of the list at a local level. The evidence shows that representation of women is remarkably higher at the local level than at the national level, although the quota is 50 percent in both cases. The big parties prefer to pay the penalties instead of complying with quota regulations at national level. This leads to the conclusion that rejection of the list is the more effective tool, if there is an independent electoral authority that is given the legal competence to reject lists and also actually makes use of this power (EU Directorate-general for internal policies 2013).

Conclusion

In most countries around the world women's representation in politics is far lower than their share in the population. In 2013 only 26 percent of members of the EU national parliaments were women. Most European countries have implemented quotas on female representation in politics, which vary in design and scope. This short analysis suggests that countries that implemented or increased quotas within the last ten years experienced an above-average increase in the share of women in their parliaments. The magnitude of this increase depends largely on the scope and the accompanying sanctions for non-compliance with the quota.

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New at DICE Database

Recent entries to the DICE Database

In the fourth quarter of 2015, the DICE Database received a number of new entries, consisting partly of updates and partly of new topics. Some topics are mentioned below.

- Asylum applicants
- First instance decisions on asylum applications
- Asylum: Procedures
- Asylum: Reception
- Educational systems: Recent policy measures
- The structure of the European education systems
- Policies and approaches to school evaluation in Europe
- Grade retention during compulsory education in Europe
- National student fee and support systems
- Strategies and recent policy measures to tackle early leaving from education and training
- Workplace representation in Europe
- Insider trading laws and regulations

The interactive graphics application Visual Storytelling has been further expanded.

Forthcoming Conferences

CESifo Area Conference on Macro, Money and International Finance

26–27 February 2016, Munich

The annual Area Conference brings together CESifo Network members working in the areas of macroeconomics and money to present and discuss their ongoing research.

Scientific organiser: Prof. Paul De Grauwe, Ph.D.

6th Ifo Dresden Workshop on Labor Economics and Social Policy

10–11 March 2016, Dresden

The workshop aims to facilitate the networking of young scientists and to promote the exchange of their latest research across the range of labor economics, social policy, education economics, demography and migration. Policy relevant contributions, either theoretical or applied, are highly welcome. We particularly encourage PhD students to submit their latest research.

Scientific organisers: Michael Weber, Antje Schubert, Sabine Gralka

CESifo Area Conference on Applied Microeconomics

18–19 March 2016, Munich

The purpose of the conference is to bring together CESifo members to present and discuss their ongoing research, and to stimulate interaction and co-operation between them. All CESifo research network members are invited to submit their papers, which may deal with any topic within the broad domain of Applied Microeconomics (industrial organisation, experimental and behavioural economics, market regulation, banking and finance, auctions). The keynote lecture will be delivered by Johannes Horner (Yale University).

Scientific organiser: Prof. Christian Gollier, Ph.D.

CESifo Area Conference on Employment and Social Protection

8–9 April 2016, Munich

The conference topics “Employment” and “Social Protection” are broadly defined. The former including, in particular, issues of the organisation of labour. The latter domain, in turn, includes not only governmental institutions of the welfare state, but also other non-governmental institutions of the welfare society such as family, or charities and informal networks, social norms and altruistic behaviour. The keynote Lecture will be deliverd by Bertil Tungodden (Norwegian School of Economics).

Scientific organiser: Prof. Dr. Kai A. Konrad

New Books on Institutions

Intergovernmental Relations in Federal Systems
Johanne Poirier, Cheryl Saunders and John Kincaid
Oxford University Press, 2015

Antitrust Institutions and Policies in the Globalising Economy
Eleonora Poli
Palgrave Macmillan, 2015

Parliaments and Government Formation
Unpacking Investiture Rules
Edited by Bjørn Erik Rasch, Shane Martin, and José Antonio Cheibub
Oxford University Press, 2015