

Distance as a Bankruptcy Filing Cost

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ABSTRACT

This paper is the first in the literature to test the hypothesis that distance to bankruptcy professionals will impact bankruptcy filing costs. We test this hypothesis using unique Canadian data containing the location and full balance sheet of every Canadian E-Filer. We also observe the location of the universe of licensed Canadian bankruptcy trustees. We can thus calculate the financial benefits of bankruptcy (unsecured debt discharged minus non-exempt assets forgone), as well as geographic costs of filing. We find, in rural areas, that higher geographic filing costs will increase the financial benefits from bankruptcy required to motivate a bankruptcy filing.

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1. Introduction

A central hypothesis in the bankruptcy literature (as summarized by White, 2007 and many others) is that the various *costs* of bankruptcy impact filing decisions. Social costs such as stigma have been discussed by Gross and Souleles (2002), Fay, Hurst and White (2002) and Scholnick (2012) among others, who argue that declining social costs from stigma will increase bankruptcy filings. Filing costs have also been discussed by Gross, Notowidigdo, and Wang (2012), who argue that these costs could reduce the number of bankruptcies if filers are liquidity constrained and cannot afford the bankruptcy filing fees.

This paper is the first in the literature to examine a new type of cost on the bankruptcy filing process – the costs imposed by geography and distance. We hypothesize that geography matters because bankruptcy filing is an interactive process that requires distressed debtors to interact with bankruptcy professionals (e.g. lawyers, trustees etc.) in order to file. A debtor who lives in an area with a large number of bankruptcy professionals within close proximity will thus face lower geographically imposed filing costs compared to a debtor who lives in areas with few proximate bankruptcy professionals.

A large literature has shown that geographic and distance related costs can impact the interaction between parties to a financial contract, in contexts other than personal bankruptcy filings. Geographic distance has been shown to have an impact on such diverse financial contracts as bank lending (Hauswald and Marquez, 2006) as well as corporate acquisition, commercial real estate trading, and securities investment (Hau, 2001). Other studies have found that banks lend more but at higher costs to borrowers located further away from their physical branches (Degryse and Ongena, 2005), that investors prefer shares of local firms (Coval and Moskowitz, 1999 and 2001), that proximate real estate is traded to decrease asymmetric information (Garmaise and Moskowitz, 2004), and that Initial Public Offerings (IPO) of firms provide different signals to nearby and more distant acquirers (Ragozzino and Reuer, 2011).

Our study adds to this literature on the impact of geography on financial contracts, in showing, for the first time, that geographic distance between the filer and the trustee impacts the personal bankruptcy decision. The new hypothesis proposed in this paper follows a central element of the bankruptcy literature, which states that an individual will choose to file for bankruptcy if the benefits from bankruptcy exceed the costs imposed by the bankruptcy. This paper will examine a specific

element of this cost-benefit trade-off by testing the hypothesis that an increase in the costs of bankruptcy filing imposed by geographic distance will increase the financial benefits required to make a bankruptcy filing worthwhile to the individual. Our specific testable hypothesis is that if the geographic costs of filing are higher (e.g. if the individual lives in an area that is not well served by local bankruptcy trustees), then that individual will require higher financial benefits from bankruptcy (FBB), in order to overcome these geographic costs of filing, and thus to be persuaded to file. The concept of financial benefits of bankruptcy (FBB) is taken from Fay, Hurst and White (2002), and captures the net effect of the amount of unsecured debt that is discharged in bankruptcy (which is a benefit to the filer) *minus* the liquidated nonexempt assets which are used to repay creditors (which the filer loses in bankruptcy).

In order to examine the impact of geography and distance on bankruptcy filings, we use a unique database of essentially every electronically filed bankruptcy filing in Canada provided to us by the Canadian bankruptcy regulator, the Office of the Superintendent of Bankruptcy (OSB). Our data consists of detailed balance sheet and location information, provided by the OSB, for *every* Canadian bankruptcy filing that was filed electronically from 2005 to 2010. In total we observe more than 386,000 bankruptcy filings, each containing the full balance sheet submitted by the filer to the OSB at the time of the bankruptcy. The key reason that we are able to obtain such detailed and extensive data is that Canada has a single bankruptcy regulator (the OSB), and every filing in Canada has to be made to that regulator. This differs from the US, where there is no central bankruptcy regulator, and where bankruptcy filings have to be made to individual bankruptcy court districts. The unique advantage of our Canadian data is that we are able to measure both key elements of our central hypothesis: (1) balance sheet data from individual bankruptcy filings, used to calculate the financial benefits of bankruptcy and (2) location data of filers and trustees, used to calculate geographic costs.

Our study exploits an important element of Canadian bankruptcy law, which is that every bankruptcy has to be filed by a bankruptcy professional specifically licensed by the OSB, which in Canada is called a bankruptcy trustee. The Canadian system of requiring bankruptcy trustees to be licensed is very different from the US bankruptcy system, where essentially any professional can be used to make a bankruptcy filing. Because of this licensing system, our data allows us to identify the specific location of the full universe of *every* licensed bankruptcy trustee operating in Canada. Combining these data with the information on the exact location of each E-filer, we are able to generate a number of different measures of the costs associated with the geographic distance between trustees

and filers. First, we measure the distance between the filer and the geographically closest trustee. Second, we measure how many trustees are located within a predefined radius of each filer (e.g. 10km, 20km etc.). We argue that the closeness of the nearest trustee or, alternatively, the number of trustees within a certain geographic radius of a filer, can be used as measures for the geographic costs imposed on the filer in order to conduct the various transactions required for bankruptcy. We argue that these measures provide very significant exogenous variation, across the different geographic areas in Canada where the individual bankruptcy filers reside. As an example, our data shows that the number of bankruptcy trustees who are located within a 10 km radius of Canadian bankruptcy filers ranges from a minimum of zero trustees within the 10km radius, to a maximum of 94 trustees within the 10km radius.

Our OSB database not only includes the location of filers and trustees it also includes the full balance sheet of every filer, including all assets and all liabilities at the date of bankruptcy. We use these data to calculate financial benefits of bankruptcy for every bankruptcy E-filer in Canada in 2005-2010. The concept of the financial benefits of bankruptcy (benefits from debt discharged minus assets lost) was initially developed by Fay, Hurst and White (2002). These authors developed and tested the hypothesis that increased financial benefits (their independent variable) would predict larger number of bankruptcy filers (their dependent variable). In this paper, however, we test the very different hypothesis that increased geographic costs of filing (our exogenous independent variable) will impact the financial benefits of filers (our endogenous dependent variable).

In this paper we argue that the level of financial benefits accruing to the filer when the individual chooses to file, is endogenous. This endogeneity flows from the fact that the choice and timing of the decision to file for bankruptcy is that of the individual. Our main exogenous independent variable is the geographic costs of filing, as measured by the supply of trustee services in the geographic area proximate to the individual filer.

An additional element of our study is the recognition that the geographic distance between two points – measured as the shortest distance between those points – may not fully reflect geographic cost, if there are other factors besides simple distance which impact the costs of the filer interacting with a trustee. For example, in densely populated urban areas, traffic congestion and the structure of roads may impact transactions costs in addition to geographic distance. In this paper we propose the argument that, as areas become more rural and less urban, so the impact of issues such as traffic congestion should become less important, and measures of geographic distance between two points should more accurately reflect geographic transactions costs. In order to examine this, we examine a

variety of specifications which interact the actual geographic distances relevant to individual filers, with an index of how rural or urban their location is. In this way we can test the hypothesis that individual geographic costs, as measured by geographic distance, should have greater explanatory power as areas become more rural and less urban.

The main conclusion of our study is that we find empirical support for our predicted relationship in rural but not urban areas. In rural areas, we find that one extra trustee within a 10km radius of the individual filer will reduce the financial benefits of bankruptcy by \$816.94. This result is consistent with our main hypothesis, that as there is an increased supply of proximate bankruptcy trustees within a 10km radius, the transactions costs imposed by geography will decline, thus the required financial benefits needed to persuade the individual to overcome these costs and to proceed to file will be lower. We also find that the magnitude and level of significance of the estimated coefficient for trustees within a 20km radius is smaller than for trustees within a 10km radius. In other words, as predicted, the impact on FBB is much larger if there is an additional trustee within the 10km radius compared to an additional trustee within the 20km radius.

In terms of our measure of the distance to the closest trustee, we find that in rural areas, one extra kilometer to the closest trustee will increase FBB by \$25.69. This finding is also consistent with our main hypothesis that higher transactions costs related to distance (further from the trustee) will increase the FBB required to persuade the individual to file.

While our results are consistent with our hypothesis for rural areas, our estimated coefficients for urban areas have the opposite signs from that predicted, although the magnitudes of the coefficients tend to be smaller than for rural areas. We thus examine the hypothesis that the impact of geographic distance has a greater impact on FBB as the area becomes less urban and more rural, because issues such as traffic congestion are less relevant for more rural areas. We find support for this hypothesis when we interact the individual level geographic transactions costs terms, with an index of the extent to which an area is urban or rural. These results show that the more rural an area, the more explanatory power the individual level geographic distance measures will have on individual FBB.

The outline of the paper is as follows. Section 2 provides details on the Canadian OSB data as well as institutional details on bankruptcy in Canada. Section 2 also describes our main independent variables (geographic transaction costs) as well as our main dependent variable, the financial benefits of bankruptcy. Section 3 describes our econometric methodology and Section 4 provides our results. Section 5 provides some discussion and Section 6 concludes.

2. Data

2.1. Bankruptcy institutional details

The source of our bankruptcy data, the Office of the Superintendent of Bankruptcy (OSB) regulates all bankruptcies in Canada, thus every bankruptcy filing has to be made to the OSB. In 2002 the OSB introduced E-filing, whereby trustees could submit filings electronically rather than in paper form. The OSB provided us with all individual level electronic filing data from Forms 79 and 65 for all Canadian consumer E-Filers from 2005 to 2010, but did not provide us with data from paper filings. The share of E-Filings for individual years was: 2005 - 62.2%, 2006 - 77.4%, 2007 - 97.7%, 2008 - 98.9%, 2009 - 98.6% and 2010 - 99.6%, thus the process of moving to E-Filing was essentially complete by 2007.

Every insolvency case in Canada must be filed by a Bankruptcy Trustee. Trustees are typically professionals who are certified by the OSB to process, prepare, and file bankruptcy petitions and other legal documents related to bankruptcy. Because of this trustee licensing process, our data includes the complete universe of trustees in Canada, as well as their geographic location. The OSB provided us with data on the geographic location of *every* office for every trustee, thus we know the location of every office in multiple office trustee firms.

We are able to link OSB E-Filing data (in particular the postal code of the filer) with postal code data of individual trustees. This allows us to measure the geographic distance between the postal code of the filer and the postal code of the nearest trustee. Canadian postal codes are extremely small geographic units containing just 15 households on average, and can be smaller than city blocks in urban areas. These postal codes cover the whole territory of Canada, and as of 2006 there were 832,163 active postal codes. In this paper, postal codes are used to provide geographic location, and also for matching purposes because a large amount of demographic data (e.g. census data) can be matched to postal code level data (more details below).

Under the Canadian insolvency system, a distressed debtor can choose to file for bankruptcy or file a proposal. A bankruptcy (which is somewhat similar to a Chapter 7 bankruptcy in the US) constitutes the debtor having unsecured debt discharged, but possibly having to liquidate assets (e.g. a house) in order to pay secured creditors. A proposal (which is somewhat similar to Chapter 13 bankruptcy in the US) constitutes the debtor and creditors negotiating a new payment stream (usually

smaller amounts over a longer period), but does not involve the liquidation of assets. Because the main dependent variable in this study is the financial benefits of bankruptcy (i.e. unsecured debt discharged minus non-exempt assets liquidated as defined by Fay, Hurst and White, 2002) the focus of this paper is only on bankruptcies and not on proposals. This is because each proposal is uniquely negotiated between the distressed debtor and creditors, and concerns a new future pattern for the required stream of payments. Thus, while the concept of the financial benefits of bankruptcy (Fay, Hurst, White, 2002) is central to discussions of bankruptcy, it is not an appropriate categorization for discussion of proposals.

The bankruptcy filings in our database are primary filings only and they exclude corollary insolvencies. In most cases, corollary bankruptcies are filings of spouses of bankrupt individuals. In other words, family bankruptcies (i.e. when both husband and wife file for bankruptcy) are recorded twice by the OSB. Therefore, we do not include corollary insolvencies to avoid double-counting of the same files in our data.

An important element of our study is the licensing process used to regulate bankruptcy trustees in Canada. In order to acquire a bankruptcy trustee license, a license seeker needs to undertake a multiple-year education program, pass exams, and complete a number of hours of in-service training. As is common in many regulated professions, the OSB regulates both the licensing of trustees as well as the maximum price a trustee can charge for a bankruptcy filing.

2.2. Balance Sheet Data and the Financial Benefits of Bankruptcy (Dependent variable)

While some studies in the bankruptcy literature have attempted to utilize the balance sheets of bankrupts, such studies have been severely limited by data constraints. Fay, Hurst and White (2002) measure financial benefits from individual bankruptcy (FBB) filers using data from the Panel Study of Income Dynamics (PSID) survey, which captures various elements of individual balance sheets. Their data, however, consist of only 254 bankruptcy balance sheets because only a very small fraction of individuals surveyed for the PSID filed for bankruptcy. Hankins, Hoekstra and Skiba (2011) in their study of the impact of lotteries on bankruptcies hand collect about 250 bankruptcy balance sheets. While they use these balance sheets to examine issues such as total secured and unsecured debt, they do not calculate the net financial benefits of bankruptcy (FBB) for each individual. Similarly, Gross, Notowidigdo and Wang (2012) in their study on liquidity constraints and bankruptcy are able to hand

collect data on the balance sheets of approximately 6500 filers. They also do not examine FBB, but limit their examination to balance sheet data such as total liabilities and total income etc. Our study makes use of balance sheet data from more than 386 000 bankruptcy balance sheets. Our study is thus the first to examine the concept of FBB, as developed by Fay, Hurst and White (2002), using detailed balance sheet data from many hundreds of thousands of bankruptcy filers.

We define individual debtor's net financial benefits of filing for bankruptcy (FBB) in the same way as Fay, Hurst, and White (2002):

$$FBB_{it} = \max [D_{it} - \max [W_{it} - E_{it}, 0], 0] \quad (1)$$

D_{it} is unsecured liabilities of filers eliminated in bankruptcy, W_{it} is total wealth of bankruptcy filers minus all secured debts, and E_{it} represents bankruptcy exemptions available to filers in a particular year and province. Equation (1) captures the central idea of bankruptcy which discharges unsecured liabilities of filers in exchange for non-exempt filer's assets. If assets minus secured debts and exemptions are less or equal to zero, then there is nothing to distribute among unsecured creditors and all bankrupt's unsecured debts are discharged. The central advantage of our data is that we can use our detailed balance sheet data from each bankruptcy filing to calculate a dollar value of FBB for each bankruptcy filer.

Our measure of unsecured liabilities (D) is the direct measure of total unsecured debt on the bankruptcy filer's balance sheet (including credit card and all other forms of unsecured debt). Our measure of wealth (W) is also taken directly from the filer's balance sheet and is calculated as total assets minus total secured debt. This is the amount of positive equity that will be liquidated in bankruptcy. Our measure of exemptions (E) is more complex because it entails various province-specific exemptions allowed to bankruptcy filers in different provinces. All bankruptcy exemptions allowed in Canada during our study period are described in Table 1. Most of the exemptions are related to particular assets such principal residence, car, furniture, or pensions accounts. A key advantage of our data is that we can observe all of these different categories of assets in the filer's balance sheet, and can thus calculate the exemptions for each individual. These bankruptcy exemptions apply to either equity in these assets (houses and cars) or assets value determined by the trustee (everything else). For instance, the province of Alberta allows the bankrupt to keep up to \$40,000 of housing equity in bankruptcy. So, if house value net of mortgages secured by this house is lower than \$40,000, the filer

retains the whole house. If house equity is larger than the maximum house exemption, then this maximum value of the exemption is kept by the bankrupt. Hence, the value of house exemption in equation (1) is the lower of \$40,000 or house equity of the debtor.

Exemptions on furniture and personal effects are calculated by comparing the value of these assets with the maximum allowed exemptions on them. If asset value is higher than the maximum exemption, then this maximum amount is used in equation (1). If the opposite is true, then asset value is used in equation (1). Some provinces bundle furniture and personal effects into one category and impose a cap on their joint value exempt in bankruptcy. We also include these in our calculations.

Registered pension accounts are exempt from seizure by creditors in bankruptcy in all provinces but Alberta before October 1, 2009, which we account for in our calculations. Canadian provinces have special exemption rules for farmers and non-farmers. Most of these rules include exemptions for assets which we cannot observe such as livestock, seeds, etc. Hence, we do not use these specific exemptions in our formula. However, Alberta allows up to 160 acres of land to be exempt in bankruptcy if the bankrupt is a farmer. The size of the land is unobserved to us, hence we exempt all land in bankruptcy for filers in rural areas, which is a proxy for farmers.

In 2006 the government of Alberta distributed \$400 to every resident of this province. In order to integrate the 2006 Alberta Income shock into this formula, we utilize the very specific ruling made by the OSB as to how these payments should be dealt with in bankruptcy. The OSB ruled very explicitly that the Alberta 2006 transfer payments were exempt from seizure in bankruptcy, thus we add this to our exemptions.

2.3. Geographic Costs (Independent Variable)

Our key independent variable is the geographic cost of filing for bankruptcy, which we argue is related to the distance between bankruptcy filers and trustees. A unique element of our data, which has not previously been available in the literature, is that it includes the postal code of every filer and every trustee in the database. Canadian postal codes are extremely small areas, containing 15 households on average, and often less than the size of a city block. These Canadian post codes are thus orders of magnitude smaller than US Zip Codes. We use the center point of the post code as our basis of the geographic location of individual addresses in the post code. The distance between the debtor and the

trustee is calculated using the Haversine formula. We use the Geographic Information System (GIS) software ARCVIEW to estimate these distances.

Another unique element of our data is that we are able to identify the post code of the *complete universe* of every bankruptcy filer in Canada. To do this we exploit the fact that the only agents able to file bankruptcy filings with the OSB are bankruptcy trustees that are specifically licensed by the OSB. This system is very different from that in the United States, where it is not necessary for a professional to file a bankruptcy with a court, and indeed a distressed debtor is able to make a bankruptcy filing without any professional assistance (called *pro se* filing).

Our first measure of the geographic cost of filing is the geographic distance between the bankruptcy filer and the licensed trustee that is geographically closest to that filer. This geographic distance will be exogenous because it reflects the geographic area that the individual filer is located, rather than any choices specifically made by the filer. We exploit the large variation of this distance across all filers located in different areas of Canada. This exogenous variation is reflected in the data which shows that across 386,000 observations, the mean distance between the filer and closest trustee is 17.5 km with a standard deviation of 54.4 km.

Our second measure of geographic filing costs is the number of trustees within a 10km (or 20km) radius of each individual filer. This measure allows us to provide data on the geographically proximate supply of trustees for each of the 386 thousand individual bankruptcy filers in our database. We argue that this measure is also exogenous because it only reflects the geographically proximate supply of trustees, rather than any individual choices made by the individual filer. Once again we exploit the large variation in the count of the number of trustees within the 10 km radius of the individual filer, with a mean of 13 trustees, and a standard deviation of 19 trustees across all the filers in our database.

We argue that there are two possible channels by which an increase in the number of trustees within a 10 km (or 20 km) radius can reduce the costs of filing. First, the greater the supply of proximate trustees within the radius, the lower the geographic costs of the individual accessing one of those trustees.

It is also possible that this relationship could operate through the pricing channel. Recall, that in our discussion above we noted that the OSB regulates the maximum price that the trustee can charge for filing a bankruptcy – but it does not regulate the minimum price. Thus it is possible that some price competition could exist between trustees. Based on our discussion with trustees, it would appear that

because of the regulatory environment, little if any price competition actually does exist, and that most trustees charge the regulated maximum rate. However, it is theoretically possible that price competition could occur if trustees charge lower than the regulated rate. In the context of our study, we argue that an increase in the supply of proximate trustees within a radius would be one factor that caused trustees to charge less than the regulated rate. In this case more trustees would lead to lower filing fees. Thus the costs of filing would be lower, whether an increased supply of proximate trustees within a radius lowered (1) the geographic transactions costs or (2) the price charged by the trustee, or (3) both. We can thus test our main hypothesis that lowering the costs of filing (by increasing the supply of proximate trustees) would lead to a lower FBB required in order to persuade the individual to file.

2.4. Control Variables

We use a variety of control variables measured at both the individual level of the filer as well as the geographic area that the filer is located. An important advantage of our OSB data is that it provides us with some important demographic variables about the individual filers. The OSB provided us with a large amount of individual level demographic and economic data including data on: filer's age, car ownership, self-employment status, household size, marital status, total assets, and prior insolvencies. All of these individual level data are included in all our regressions.

In addition to these individual level control variables, we also include a large variety of control variables measuring the characteristics of the geographic area of the filer. Because we know the exact postal code of each individual filer, we are able to match the postal code with Canadian census data. We match individual level and postal code level data from the OSB with Census and other data using Postal Code Conversion File (PCCF) developed by Statistics Canada and Canada Post. Matching of postal code data to Dissemination Area or Census Subdivision Data is common for papers involving Canadian data.

To capture neighborhood income, we use 2006 Census data on average personal incomes at the level of Census Dissemination Areas (DAs). DAs have between 400 and 700 inhabitants, and 500 persons on average. In addition to average incomes, we also control for shocks to income using changes to annual personal disposable income at the provincial level. Data on personal disposable income are from Statistics Canada. Both local levels of income as well as local income shocks are

possibly important factors in bankruptcies because they capture local effects on bankruptcy filings, for example local plant closures.

We also control for a neighborhood's level of financial literacy using data provided to us by Scott Murray (2011). Financial literacy and, in particular, numerical literacy such as ability to perform calculations required in consumer finance and comparisons of various financial products has been argued to matter in financial decisions and debt management (see eg. Lusardi, 2012). We use numerical literacy measures estimated from the 2003 International Adult Literacy and Skills Survey (IALSS) and the 2006 Census. IALSS collected data on actual numerical literacy scores of a sample of Canadians as well as their demographic attributes. These data are used to estimate the relationship between numerical literacy and demographic variables. After that, coefficients on demographic characteristics from this relationship and 2006 Census demographics for all regions in Canada are used to calculate imputed numerical literacy scores for every DA in the country.

It has been argued by authors such as Fay, Hurst and White (2002), Gross and Souleles (2002) and Scholnick (2012) that past bankruptcies in an individual's proximate geographic area could impact bankruptcies through stigma or information effects. These authors argue that more neighborhood bankruptcies in the past could increase the probability of individual's filing for bankruptcies, either through the lowering of bankruptcy stigma or through the spread of information about the bankruptcy process. We control for past neighborhood bankruptcies using measures of all past bankruptcies in every postal code in our sample. To this end, we take counts of bankruptcies in 2000-2004, i.e. bankruptcies before the start of our sample, and create an indicator variable equal to 1 if a postal code experienced at least one bankruptcy during this period (2000-2004) and equal to 0 otherwise. Note that while our balance sheet data from the OSB is only available for E-filers (and not paper filers), the OSB was able to provide us with full *count* data of bankruptcies per postcode of all filers including both electronic as well as paper filers.

2.5. Rural-Urban Index

In order to distinguish between urban and rural areas in Canada, we use the widely used Statistics Canada definition of Census Metropolitan Areas (CMAs) to define urban areas, and define all non CMA areas as rural areas. Census Metropolitan Areas are defined as geographic centers, primarily cities, with more than 100,000 inhabitants. As an additional measure we also use the concept of

Metropolitan Influence Zone (MIZ) developed by Howatson-Leo et al. (1996) and used by Statistics Canada. This concept separates geographic areas based on the flows of their residents commuting to and from a central city. This is what the “influence” of a zone constitutes. There are 8 categories of MIZ areas: Census Metropolitan Area, Tracted Census Agglomeration, Non-tracted Census Agglomeration, Strongly Influenced Zone, Moderately Influenced Zone, Weakly Influenced Zone, No Influenced Zone, and Territories. Tracted Census agglomerations are smaller units, i.e. towns, with between 50,000 and 100,000 total population. Non-tracted Census agglomerations are even smaller urban centers with more than 10,000 but less than 50,000 residents. A strongly influenced zone has at least 30% of its residents commuting to and employed in a metropolitan center. Areas are defined as moderately influenced if between 5% and 30% of their residents commute to the central city. Weakly influenced are those geographic spaces where the commuter flow is larger than zero but smaller than 5%. No influenced zones have no city commuters. Territories are areas in Yukon, the Northwest Territories, and Nunavut. We identify rural/urban postal codes using these eight categories of geographic areas. As MIZ scale changes from 1 (Census Metropolitan Areas) to 8 (Territories), regions get more rural and less urban.

3. Estimation Strategy

We employ the following econometric specification:

$$FBB_{it} = \delta Geography_{it} + \beta'_1 Income_{it} + \beta'_2 Indcontrols_{it} + \beta'_3 Neighborcontrols_{it} + Province_i + Year_t + \varepsilon_{it}$$

Our endogenous dependent variable FBB is the Financial Benefits of Bankruptcy as developed by Fay, Hurst and White (2002), and as measured from individual balance sheets. As described in detail above, FBB captures the amount of unsecured debt discharged in bankruptcy minus the non-exempt assets lost in bankruptcy.

Our major independent variable of interest is described as *Geography_{it}*. This is captured by one of the two measures of the supply of trustees in the filer’s proximate geographic area. These are (1) the geographic distance between the filer and the filer’s closest trustee, and (2) the number of trustees with a 10 km (or 20 km) radius of the individual filer. We argue that both of these measures are exogenous

in that they reflect the geographic area around the filer, rather than the specific choices made by the filer.

In addition to including the level measures (closest trustee and trustees within a radius) we also define *geography* using interaction terms. We use interaction terms to examine whether issues related to geographic distance (closest trustee and trustees within a radius) become more acute as the area that the individual lives in becomes more rural and less urban. Our interaction term thus interacts the MIZ index with one of the individual level geographic cost measures (closest trustee and trustees within a radius).

We include various variables reflecting measures of income in the geographic area surrounding the filer to reflect idiosyncratic shocks in that geographic area. The variable *Income_{it}* include average DA income and province level percentage changes in personal disposable income.

Individual Controls include the filer's age, number of household members, marital status, presence of a mortgage, self-employment status and prior consumer defaults. *Neighborhood controls* comprise of financial literacy variable and bankruptcy stigma/information effect (neighborhood bankruptcies during 2000-2004). We also include province and year fixed effects to control for any time specific or province specific shocks and differences between provinces in terms of bankruptcy rules. All reported standard errors are clustered at the DA level.

4. Results

We present our results in Tables 4 to 11. Table 4 present our main baseline specifications without interaction terms. Each cell in this table reflects a single regression. We only report the coefficient on the geographic cost term (distance to closest trustee or number of trustees within a certain radius) on a regression on FBB. In the attached web appendix we report the full regressions from this table, including all control variables etc.

The key finding from this table is that the results for rural areas (defined as all areas outside census metropolitan areas) are as predicted by our hypothesis above. In rural areas we find that an increase in the number of trustees within a 10 km or a 20 km radius will lead to a reduction in the FBB of individual filers. In other words, as the number of proximate trustees increase, this will reduce the costs of bankruptcy faced by the individual filer. Our results show that this will result in a lower FBB, which is consistent with our hypothesis that when geographic filing costs are lowered, then individuals

will be persuaded to file even though their financial benefits of filing (debt discharged minus assets lost) are lower. In terms of economic magnitudes, our findings imply that one extra trustee within the 10 km radius will decrease the average financial benefits by 1.867%. If calculated at the mean of rural FBB (\$43,547), this implies that one extra trustee in the 10-km radius of a rural filer will decrease FBB by $0.01876 \times 43547 = \$816.94$. This coefficient is highly significant at 1%.

The coefficient on rural trustees within 20 km is still negative as predicted, but the level of significance is only at 10%, and the magnitude of the coefficient is only a third of the size of the 10 km radius coefficient. This implies that of the relationship between the number of trustees and financial benefits of bankruptcy is much stronger at the 10 km radius compared to the 20 km radius. In other words, the impact on FBB is much larger if there is an additional trustee within the 10 km radius compared to an additional trustee within the 20 km radius.

Our results for the distance in kilometers to the filer's closest trustee are also consistent with our predictions for filers in rural areas. The coefficient is highly significant at 1%. Our results show that one extra kilometer between the filer and the closest trustee (i.e. increasing geographic costs) will increase FBB for rural filers by 0.059%. Measured at the mean of rural FBB this implies that one extra kilometer to the closest trustee will increase FBB by $0.00059 \times 43547 = \$25.69$.

While our results for rural areas are all consistent with our hypothesis that increased geographic costs will increase the FBB required to persuade the individual to file, our results for urban areas are of the opposite sign from this prediction, although the magnitudes of the coefficients are substantially smaller. A possible explanation for our urban results is that geographic distances may be more likely to capture geographic costs in rural areas than in urban areas. Because of issues such as traffic congestion and pre-existing road networks, it is possible that the closest distance between two points – which is what we capture using our GIS data on postal codes – may not truly reflect actual geographic costs in urban areas. In more rural areas, however, it can be argued that the closest distance between two points may indeed reflect geographic costs because issues such as traffic congestion etc. may be less relevant.

In order to test the argument that the influence of geographic distance should get stronger as areas get more rural – because geographic cost is more likely to reflect geographic distance where issues such as traffic congestion etc. are less binding – we run tests that interact geographic distance with Metropolitan Influence MIZ zones. Recall that Statistics Canada has categorized each postal code in Canada in 8 MIZ zones where, Census Metropolitan Areas are coded 1, and areas further and further from the Metropolitan area are coded 2 to 8, with the most remote areas being coded 8. Our strategy is

to interact the MIZ code variable with each of the three geographic cost variables (trustees in 10 km and 20 km radius, and distance with the closest trustee). As is standard when using interaction terms, all specifications also include the two components of the interaction term. Furthermore, we argue that both elements of the interaction term (MIZ code as well as geographic location of trustees) are plausibly exogenous, in that neither reflect choices made by the individual filer.

The interaction term captures the impact of both geographic costs as well as urban/rural nature of the area on FBB. In other words, using the interaction term we can test the hypothesis that the impact of the geographic cost (trustees within radius or closest distance to trustee) should be higher the more rural the area. If it is true that the impact of geographic distance get stronger as the location of the filer moved from urban to more and more rural areas, then we would expect the estimated coefficient to be the same sign as that predicted in our main hypothesis – i.e. that more trustees within a 10 km or 20 km radius of the filer would reduce FBB, and increased distance to the nearest trustee would raise FBB.

Our results for the interaction terms are reported in Table 7. The main results in this Table show that when MIZ is interacted with geographic location of trustees, two of the trustee location measures (trustees within 10 km and distance to the closest trustee) are highly significant at 1% and have the predicted sign. Thus based on these results we can confirm the hypothesis that the impact of trustee location on FBB is stronger as the location of the filer becomes more rural and less urban. It is interesting to note that while the interaction term is highly significant for trustees within 10 km, it is insignificant for trustees within 20 km. This finding emphasizes the importance of more proximate trustees in determining the impact on FBB.

In addition to interacting trustee location with MIZ we also interact the trustee location variables with a simple rural urban classification where rural is coded as 1 and urban is coded as 0 (in other words all rural areas are coded 1, whereas under the MIZ code they are coded from 2 to 8). The results from these interaction terms are the same as for the full MIZ interactions – i.e. highly significant coefficients with the predicted sign for trustees within 10 km and distance to closest trustee, but insignificant findings for trustees within 20 km. These results also confirm the hypothesis that the impact of the trustee location on FBB is higher in rural areas.

One possible concern with our specification is that our results may be impacted by the financial crisis of 2008. Recall that our data runs from 2005 to 2010 which includes the period before and after the financial crisis. In order to examine this we rerun all our results for the two periods January 2005 to August 2008 and separately the period September 2008 to December 2010. We run these models for all

our various measures of geographic distance as well as for all the models with interaction terms (Tables 5, 6 and 8). Our results are very robust to changing these time periods, which indicates that the financial crisis did not have a significant impact on our main conclusions.

5. Discussion: Rural and Urban Bankruptcies per Household

The results of the previous sections show that because of the costs related to trustee location and geography, bankruptcy filers in rural areas require higher financial benefits from bankruptcy in order to persuade them to overcome those higher filing costs and proceed to file. The aim of this section is to examine whether there are distinctions between urban and rural bankruptcies that are *distinct* to issues related to distance. We argue that by comparing the simple measure of bankruptcies per household between urban and rural areas we can examine if there are systematic differences between urban and rural areas that are not specifically related to distance and geography.

Table 10 summarizes statistics for the counts of consumer bankruptcies and proposals per household as we examine areas that become less urban and more rural (MIZ indicator going from 1 to 8). This table shows that this number tends to increase as areas become more rural. Taken together, these comparisons of means suggest that rural areas had more consumer bankruptcies per household than urban areas in 2005-2010. However, simple sample averages do not take into account that regions are potentially dissimilar in their other observable characteristics such as income shocks or stigma effect. Therefore, we compare average number of insolvencies in rural and urban geographies controlling for observable attributes of these geographies.

Results of this exercise are summarized in Table 11. In these regressions, we include indicator variables for each of the MIZ categories except for the Census Metropolitan Area category. Coefficients on these indicator variables show the differences in average numbers of bankruptcies in urban or rural areas in the first column. In these regressions we control for average DA income, percentage change in personal disposable income (Provincial level), DA numerical literacy, DA gender and age compositions, proportion of homeownership, stigma/ information effect, proportions of divorced, separated and widowed, and educational attainment. We also include provincial and year fixed effects to account for any time or province specific shocks or conditions.

Results for consumer bankruptcies from Table 11 indicate that as we go from more urban to more rural areas (from MIZ equal 1 to MIZ equal 8), the number of consumer bankruptcies per

household grows. We also test whether average number of bankruptcies in urban cores (MIZ equal 1) is statistically different from average number of defaults in more rural areas. As indicated in Table 11, most averages for more rural regions are statistically different from averages in urban regions.

The main implication from these results is that while filers in rural areas face higher geographic costs of filing, these higher filing costs *do not* seem to have caused a reduction in the number of rural bankruptcies when measured as a fraction of bankruptcies per household.

Taken together these results imply that even though rural filers face higher filing costs, and thus demand higher financial benefits from bankruptcy before they file, these higher filing costs have not served to lower the number of rural filers when measured as number of filers per household.

6. Conclusion

A standard framework for analyzing bankruptcy filings is that individual's will file for bankruptcy when the benefits of filing outweigh the costs. This paper is the first in the literature to examine a new type of bankruptcy filing cost – the costs associated with the geographic distance between the bankruptcy filer and the bankruptcy trustee. Our central argument is that geography matters because a bankruptcy filing typically involves interactions between the filer and the trustee. Thus we hypothesize that a distressed debtor who is located in a geographic area that is not well served with trustees will face higher costs of filing compared to a distressed debtor who is located close to trustees.

While our paper is the first in the literature to show that geographic distance matters in the context of personal bankruptcy filings, it forms part of a much larger literature showing that distance matters in a large variety of other financial contracts that involve relationships between parties located some distance apart. Distance has been shown to matter in financial contracts as different as bank lending (Hauswald and Marquez, 2006), investment in local firms (Coval and Moskowitz, 1999 and 2001), and the purchase of Initial Public Offerings (Ragozzino and Reuer, 2011) amongst many others.

We test our hypothesis using Canadian bankruptcy data, and we exploit several unique elements of the Canadian bankruptcy system to develop our empirical strategy. Bankruptcy in Canada is federally regulated (unlike the US), thus every bankruptcy filing must be made to the regulator (the Office of the Superintendent of Bankruptcy or OSB). Furthermore, only bankruptcy professionals licensed by the OSB (called bankruptcy trustees) are allowed to make a bankruptcy filing. Our data is

provided by the OSB, thus we are able to observe the exact geographic location of the full universe of bankruptcy trustees in Canada, as well as the location of every bankruptcy E-filer. We use these data to measure geographic distances, which we use as proxies for the geographic cost of filings. These are our main independent variables.

Our main dependent variable is the concept of the Financial Benefit of Bankruptcy (FBB) as developed by Fay, Hurst and White (2002). FBB is simply the amount that the individual filer gains from bankruptcy (through the discharge of unsecured debt) *minus* the amount the filer loses (from the loss of non-exempt assets). Our data from the OSB includes the full balance sheet of every bankruptcy e-filer in Canada, thus we are able to calculate the FBB for every filer in the database. The specific hypothesis we test is that as the geographic costs of filing increase (i.e. as it becomes more costly to interact with a more distant trustee) so the individual will have to have higher levels of benefits (FBB) in order to compensate for these increased geographic costs, and thus to be persuaded to file.

Our main result, based on a regression with almost four hundred thousand individual filings, shows that our main hypothesis is accepted in rural but not urban areas. One possible interpretation of this result is that geographic distance between two points may not reflect transactions costs in urban areas, because it does not reflect urban issues such as traffic congestion etc. Geographic distance may better reflect geographic costs in rural areas, where issues such as traffic congestion may be less prevalent. We examine this final argument empirically, by interacting the individual geographic distance term with an index of the extent to which a geographic area is rural or urban. As predicted we find that geographic distance has a greater impact on the financial benefits of bankruptcy the more rural the location of the filer.

For rural bankruptcy filers, therefore, we find that increased costs of filing, caused by greater geographic distances to trustees, will result in higher required levels of financial benefit from filing (debt discharged minus assets lost in bankruptcy) in order to compensate for these increased geographic costs.

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Figure 1. Financial Benefits of Bankruptcy (Bankruptcy Filers, 2005-2010, n=386k)

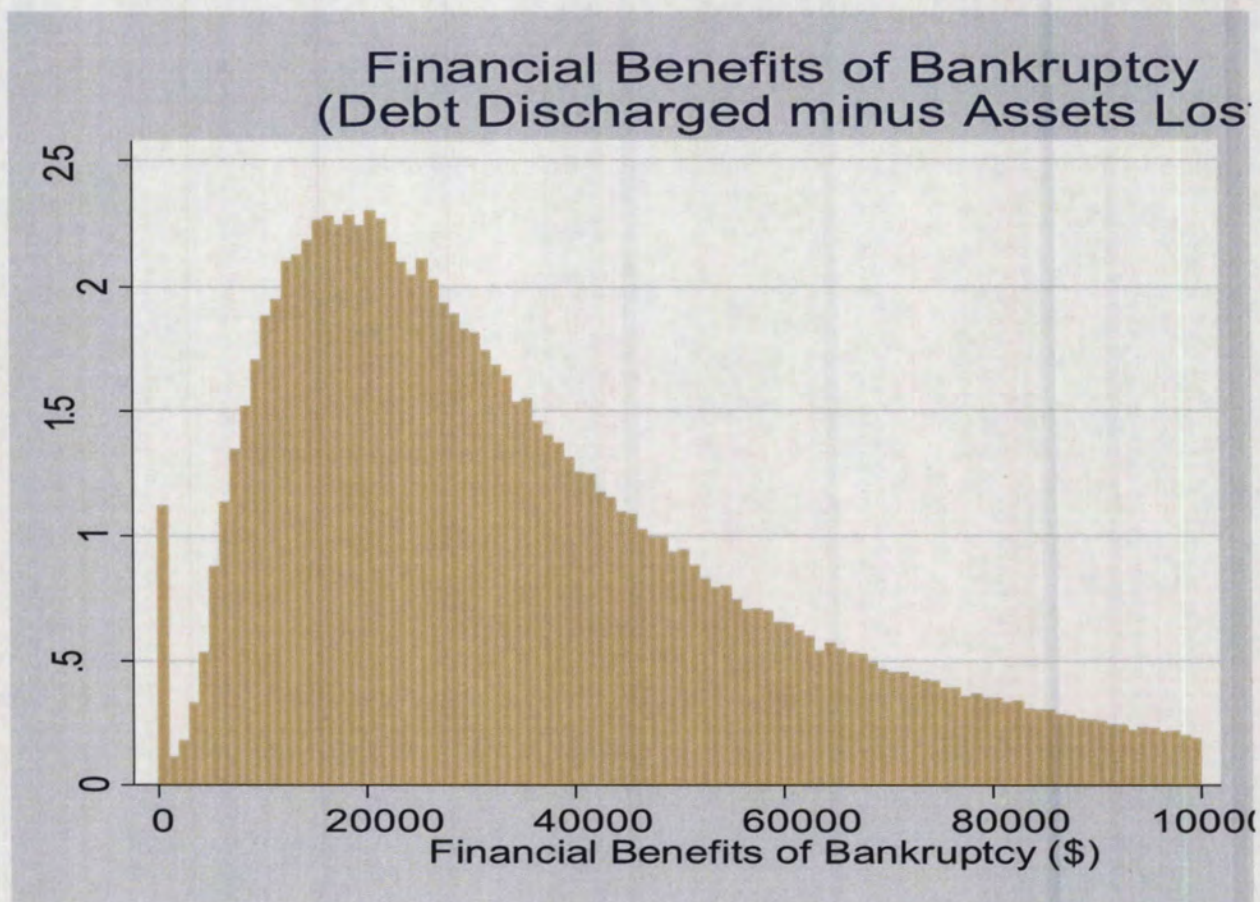


Table 1. Bankruptcy exemptions by Canadian provinces

Provinces	Exemptions					
	House	Car	Pension	Personal Effects	Furniture	Land
Alberta	40000	5000	No*	4000	4000	all if rural
British Columbia	12000	5000	All	up to 4000 together		No
Manitoba	2500	3000	all	all	4500	No
New Brunswick	No	6500	all	No	5000	No
Newfoundland and Labrador	10000	2000	All	4000	4000	No
Nova Scotia	No	6500	All	All	All	No
Ontario	No	5650	All	5600	11300	No
Prince Edward Island	No	3000	All	All	2000	No
Quebec	No	No	All	up to 6000 together		No
Saskatchewan	50000	10000	All	7500	All	No

Notes: Bankruptcy exemptions are from <http://www.bankruptcycanada.com/bankruptcyexemptions.htm>

All amounts are in Canadian dollars and apply to equity in the asset. These amounts represent maximum values of assets protected from seizure by creditors in bankruptcy.

* Pension accounts are exempt in bankruptcy from October 1, 2009.

Table 2. Summary statistics for individual bankruptcy filing data

Variable	Obs	Mean	Std. Dev.	Min	Max
Number of trustees within 10 km	386770	13.032	19.427	0	94
Number of trustees within 20 km	386770	29.516	41.186	0	147
Closest trustee-debtor distance	386768	17.537	54.398	0	1896.05
Financial benefits of bankruptcy	386430	48636	60337.63	0	1000000
Log of financial benefits	386770	10.208	2.160	-9.210	13.816
Age	386770	43.559	13.293	18	90
Car	386770	0.628	0.483	0	1
Self-employment	386770	0.058	0.234	0	1
Numerical literacy	386770	265.5	12.813	213.83	323.1
Bankruptcy stigma	386770	0.638	0.481	0	1
Household size	386770	2.062	1.326	1	12
Average income	386770	31872	11492	9273	601418
Change in income	386770	4.461	2.883	-6.738	25.40
Divorce	386770	0.130	0.337	0	1
Total assets	386770	43741	90489	0	1876194
Prior defaults	386770	0.181	0.385	0	1
MIZ scale	386770	1.967006	1.616582	1	8

Table 3. Summary statistics for urban and rural bankruptcy filers

Variable	Urban			Rural		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Number of trustees within 10 km	262860	18.648	21.336	123910	1.118	1.851
Number of trustees within 20 km	262860	42.572	44.280	123910	1.819	2.594
Closest trustee-debtor distance	262858	3.355	4.603	123910	47.620	88.657
Financial benefits of bankruptcy	262860	51028	62857.6	123570	43547	54242
Log of financial benefits	262860	10.289	1.998	123910	10.039	2.460
Age	262860	43.738	13.251	123910	43.180	13.374
Car	262860	0.591	0.492	123910	0.706	0.456
Self-employment	262860	0.064	0.245	123910	0.046	0.209
Numerical literacy	262860	267	12.856	123910	262.747	12.284
Bankruptcy stigma	262860	0.611	0.487	123910	0.693	0.461
Household size	262860	2.015	1.309	123910	2.163	1.355
Average income	262860	32860	12742.8	123910	29776	7831
Change in income	262860	4.412	2.650	123910	4.565	3.321
Divorce	262860	0.137	0.344	123910	0.116	0.320
Total assets	262860	42892	94888.4	123910	45542	80335
Prior defaults	262860	0.185	0.388	123910	0.171	0.377
MIZ scale	262860	1	0	123910	4.018	1.402

Table 4. Impact of bankruptcy trustees on financial benefits of bankruptcy

These tests examine the hypothesis that debtor-trustee distance has a positive impact on financial benefits of bankruptcy. Debtors with higher costs of filing as measured by the distance to a trustee will require a compensation in terms of bankruptcy benefits. This hypothesis predicts a negative coefficient for the number of trustees within 10 or 20 km from the debtor and a positive coefficient for the closest debtor-trustee distance.

Sample	Trustees within 10 km	Trustees Within 20 km	Closest distance
Whole sample	0.00477*** (0.00019)	0.00298*** (0.00010)	-0.00010 (0.00010)
Rural	-0.01876*** (0.00390)	-0.00555* (0.00317)	0.00059*** (0.00013)
Urban	0.00415*** (0.00022)	0.00312*** (0.00012)	-0.00301** (0.00130)

Notes: Each cell reports coefficients on the number of trustees within 10 km, number of trustees within 20 km or closest debtor-trustee distance with standard errors from a regression with the financial benefits of bankruptcy as a dependent variable. We estimate these regressions on samples of bankruptcy filers describes in the first column of the Table. Control variables as described in the text are included, but not reported. Full results for these regressions are presented in an on-line appendix. Standard errors are clustered at the DA level. *** denotes significance at 1%, ** - significance at 5%, * - significance at 10%.

Table 5. Impact of bankruptcy trustees on financial benefits of bankruptcy before the financial crisis (January 2005 – August 2008)

These tests examine the hypothesis that debtor-trustee distance has a positive impact on financial benefits of bankruptcy. Debtors with higher costs of filing as measured by the distance to a trustee will require a compensation in terms of bankruptcy benefits. This hypothesis predicts a negative coefficient for the number of trustees within 10 or 20 km from the debtor and a positive coefficient for the closest debtor-trustee distance.

Sample	Trustees within 10 km	Trustees Within 20 km	Closest distance
Whole sample	0.00479*** (0.00026)	0.00295*** (0.00013)	0.00001 (0.00014)
Rural	-0.02016*** (0.00519)	-0.00676* (0.00403)	0.00068*** (0.00018)
Urban	0.00428*** (0.00032)	0.00316*** (0.00017)	-0.00293 (0.00191)

Notes: Each cell reports coefficients on the number of trustees within 10 km, number of trustees within 20 km or closest debtor-trustee distance with standard errors from a regression with the financial benefits of bankruptcy as a dependent variable. We estimate these regressions on samples of bankruptcy filers describes in the first column of the Table. Control variables as described in the text are included, but not reported. Full results for these regressions are presented in an on-line appendix. Standard errors are clustered at the DA level. *** denotes significance at 1%, ** - significance at 5%, * - significance at 10%.

Table 6. Impact of bankruptcy trustees on financial benefits of bankruptcy after the financial crisis (September 2008 – December 2010)

These tests examine the hypothesis that debtor-trustee distance has a positive impact on financial benefits of bankruptcy. Debtors with higher costs of filing as measured by the distance to a trustee will require a compensation in terms of bankruptcy benefits. This hypothesis predicts a negative coefficient for the number of trustees within 10 or 20 km from the debtor and a positive coefficient for the closest debtor-trustee distance.

Sample	Trustees within 10 km	Trustees within 20 km	Closest distance
Whole sample	0.00472*** (0.00023)	0.00297*** (0.00012)	-0.00023* (0.00014)
Rural	-0.01829*** (0.00515)	-0.00501 (0.00420)	0.00056*** (0.00019)
Urban	0.00394*** (0.00027)	0.00301*** (0.00015)	-0.00320** (0.00144)

Notes: Each cell reports coefficients on the number of trustees within 10 km, number of trustees within 20 km or closest debtor-trustee distance with standard errors from a regression with the financial benefits of bankruptcy as a dependent variable. We estimate these regressions on samples of bankruptcy filers describes in the first column of the Table. Control variables as described in the text are included, but not reported. Full results for these regressions are presented in an on-line appendix. Standard errors are clustered at the DA level. *** denotes significance at 1%, ** - significance at 5%, * - significance at 10%.

**Table 7. Impact of bankruptcy trustees on financial benefits of bankruptcy
Interactions of rural indicators and trustee-debtor distance**

These tests examine the hypothesis that debtor-trustee distance has a positive impact on financial benefits of bankruptcy. Debtors with higher costs of filing as measured by the distance to a trustee will require a compensation in terms of bankruptcy benefits. This hypothesis predicts a negative coefficient for the number of trustees within 10 or 20 km from the debtor and a positive coefficient for the closest debtor-trustee distance.

Sample	Trustees within 10 km	Trustees Within 20 km	Closest distance
Rural	-0.01961*** (0.00383)	0.00007 (0.00300)	0.00439*** (0.00126)
MIZ scale	-0.01026*** (0.00258)	0.00105 (0.00110)	0.00018*** (0.00004)

Notes: Each cell reports coefficients on the interaction of the number of trustees within 10 km, number of trustees within 20 km, or closest debtor-trustee distance with the rural indicator or MIZ scale. In addition to the interaction term each regression includes number of trustees or distance and a rural indicator. Standard errors are reported in parentheses. The dependent variable is the financial benefits of bankruptcy. Control variables as described in the text are included, but not reported. Full results for these regressions are presented in an on-line appendix. Standard errors are clustered at the DA level. *** denotes significance at 1%, ** - significance at 5%, * - significance at 10%.

**Table 8. Impact of bankruptcy trustees on financial benefits of bankruptcy
Interactions of rural indicators and trustee-debtor distance before the
2008 economic crisis and after the crisis**

These tests examine the hypothesis that debtor-trustee distance has a positive impact on financial benefits of bankruptcy. Debtors with higher costs of filing as measured by the distance to a trustee will require a compensation in terms of bankruptcy benefits. This hypothesis predicts a negative coefficient for the number of trustees within 10 or 20 km from the debtor and a positive coefficient for the closest debtor-trustee distance.

Sample	Trustees within 10 km	Trustees Within 20 km	Closest distance
Before the crisis (January 2005 – August 2008)			
Rural	-0.02070*** (0.00503)	-0.00092 (0.00377)	0.00445** (0.00186)
MIZ scale	-0.01083*** (0.00280)	0.00091 (0.00131)	0.00016*** (0.00005)
After the crisis (September 2008 – December 2010)			
Rural	-0.01892*** (0.00495)	0.00060 (0.00391)	0.00442*** (0.00142)
MIZ scale	-0.01031*** (0.00313)	0.00086 (0.00146)	0.00020*** (0.00005)

Notes: Each cell reports coefficients on the interaction of the number of trustees within 10 km, number of trustees within 20 km, or closest debtor-trustee distance with the rural indicator or MIZ scale. In addition to the interaction term each regression includes number of trustees or distance and a rural indicator. Standard errors are reported in parentheses. The dependent variable is the financial benefits of bankruptcy. Control variables as described in the text are included, but not reported. Full results for these regressions are presented in an on-line appendix. Standard errors are clustered at the DA level. *** denotes significance at 1%, ** - significance at 5%, * - significance at 10%.

Table 9. Summary statistics for count insolvency data

Variable	Obs	Mean	Std. Dev.	Min	Max
Bankruptcy per HH	3861246	0.007	0.039	0	1
Proposal per HH	3861246	0.002	0.017	0	1
Insolvency per HH	3861246	0.009	0.044	0	1
MIZ scale	3861246	1.793	1.432	1	8
Rural (Canada Post)	3861246	0.006	0.077	0	1
Rural (MIZ > 3)	3861246	0.110	0.313	0	1
Average income	3861246	36845	19739	9108	601418
Change in income	3861246	4.907	2.876	-6.74	25.4
Bankruptcy stigma	3861246	0.211	0.408	0	1
Numerical literacy	3861246	269	14	213.8	323.1
Male	3861246	0.488	0.031	0.219	0.795
Age 20-40	3861246	0.262	0.082	0	0.875
Age 40-64	3861246	0.360	0.060	0.029	0.607
Age over 65	3861246	0.145	0.089	0	0.952
Homeownership	3861246	0.732	0.243	0	1.000
Divorced	3861246	0.081	0.035	0	0.317
Separated	3861246	0.032	0.018	0	0.149
Widowed	3861246	0.063	0.046	0	0.564
High school	3861246	0.236	0.076	0	0.595
Apprenticeship	3861246	0.116	0.065	0	0.500
College	3861246	0.188	0.070	0	0.581
University	3861246	0.176	0.105	0	0.786
Graduate	3861246	0.077	0.079	0	0.744

Table 10. Consumer bankruptcies and proposals in urban and rural areas

We compare average numbers of consumer bankruptcies and proposals in urban and rural areas in Canada in 2005-2010. Urban and rural regions are defined using the MIZ classification employed by Statistics Canada. Discrepancies in mean values do not necessarily mean differences in levels of bankruptcies as sample means do not take any factors behind bankruptcy into account

Area type	Observations	Mean	Std. Dev.	Min	Max
Consumer bankruptcies per household					
Census metropolitan area	2711011	0.0063775	0.0328	0	1
Tracted census agglomeration	214866	0.0079157	0.0424	0	1
Non-tracted census agglomeration	509208	0.0079419	0.0448	0	1
Strongly influenced zone	73913	0.0124817	0.0654	0	1
Moderately influenced zone	165316	0.0105889	0.0606	0	1
Weakly influenced zone	177738	0.0083647	0.0519	0	1
No influenced zone	8829	0.0094474	0.0609	0	1
Territories	365	0.0062136	0.0444	0	0.667
Consumer proposals per household					
Census metropolitan area	2711011	0.0019565	0.017064	0	1
Tracted census agglomeration	214866	0.0013477	0.0164698	0	1
Non-tracted census agglomeration	509208	0.0013433	0.0171855	0	1
Strongly influenced zone	73913	0.0027293	0.0258098	0	1
Moderately influenced zone	165316	0.0015867	0.0210358	0	1
Weakly influenced zone	177738	0.0011131	0.0169902	0	1
No influenced zone	8829	0.0010704	0.0158844	0	0.508
Territories	365	0.000369	0.0040702	0	0.063

Table 11. Higher number of consumer bankruptcies in rural areas

We test the hypothesis that rural regions have on average more bankruptcy and proposal filings. A finding of a positive coefficient indicates that postal codes of a certain rural type have more defaults than postal codes in Metropolitan Areas. We use Negative Binomial Model with the count of defaults per postal code per year as the dependent variable.

Variable	bankruptcy	s.e.	proposal	s.e.	insolvency	s.e.
Tracted census agglomeration	-0.006***	(0.001)	-0.031***	(0.002)	-0.011***	(0.001)
Non-tracted census agglomeration	-0.015***	(0.001)	-0.035***	(0.001)	-0.020***	(0.001)
Strongly influenced zone	0.051***	(0.003)	0.057***	(0.003)	0.047***	(0.003)
Moderately influenced zone	0.028***	(0.002)	0.018***	(0.003)	0.021***	(0.002)
Weakly influenced zone	0.001	(0.002)	-0.007***	(0.003)	-0.005***	(0.002)
No influenced zone	0.069***	(0.007)	0.056***	(0.010)	0.060***	(0.007)
Territories	0.106***	(0.032)	0.012	(0.041)	0.096***	(0.031)

Notes: The first panel reports results from one regression with 7 MIZ categories included as dummy variables. Coefficients on these variables may be interpreted as differences between average counts of bankruptcies in a respective category and Metropolitan Areas. Controls are described in the text, their coefficients are not reported. Standard errors are clustered at the postal code level. *** denotes significance at 1%, ** - significance at 5%, * - significance at 10%.

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Distance as a bankruptcy filing cost

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