Stigma, Public Disclosure and Bankruptcy

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The bankruptcy stigma hypothesis states that individuals with lower social costs of default (i.e. less embarrassment) will be more likely to default. We introduce and test the related hypothesis that the level of public disclosure accompanying default impacts stigma. We compare whether individual credit card holders choose to default via bankruptcy, where there is a legal requirement for public disclosure, or via credit card charge-off, where there is no legal requirement for public disclosure. We capture stigma using data on all past bankruptcies in the defaulter's neighborhood. We find that lower stigma, as measured by a one standard deviation increase in past bankruptcies in the defaulter's neighborhood, will increase the probability that the defaulter will choose (disclosed) bankruptcy rather than (undisclosed) charge-off by approximately 6%.

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1. INTRODUCTION

The bankruptcy stigma hypothesis states that individuals will be more likely to file for bankruptcy if they face lower social costs (i.e. lower embarrassment) when they default (e.g. Fay, Hurst and White, 2002, Gross and Souleles, 2002, Athreya, 2004, Sullivan, Warren and Westbrook (2006), Dick, Lehnert and Topa, 2008, Cohen-Cole and Duygan-Bump, 2009, Livshits, MacGee and Tertilt, 2010, White, 2011). The importance of the stigma hypothesis is emphasized by Livshits, MacGee and Tertilt, (2010), who argue that declining costs of bankruptcy, e.g. declining stigma are "likely the most commonly cited explanation" (p. 166) for why bankruptcy has recently increased in the US. The issue of stigma is also relevant to public policy. Broadly speaking, pro-creditor lobbyists (e.g. the credit card industry) argue that declining bankruptcy stigma makes bankruptcy more prevalent (supported by evidence from e.g. Fay, Hurst and White, 2002, Gross and Souleles, 2002, and Livshits, MacGee and Tertilt, 2010), thus they argue for increased legal restrictions on the ability of debtors to file for bankruptcy. On the other hand, pro-debtor lobbyists (e.g. consumer rights groups) argue that declining stigma is not an important reason for increased individual bankruptcy filings, using evidence from authors such as Sullivan, Warren and Westbrook (2006). In spite of the obvious importance of bankruptcy stigma, however, empirical evidence on how bankruptcy stigma actually operates still remains limited.

The aim of this paper is to propose and empirically test the new hypothesis that individuals for whom avoiding stigma is important will be more likely to choose a mechanism for default where there will be less public disclosure about their default. Similarly, individuals who are less concerned about stigma will be less constrained about choosing a mechanism for default that may entail public disclosure. Our argument is that the level of stigma felt by an individual will be related to the possibility that others will subsequently become aware of the individual's default, which in turn is related to the extent to which information on the default is publicly disclosed. While there is a vast literature examining the impact of public disclosure in many areas of finance and economics, our paper is the first to examine how public disclosure impacts bankruptcy stigma and the mechanism of default.

Using data from individual credit card accounts, we test our hypothesis by comparing stigma effects between (1) defaults where there is a legal requirement for information about the

default to be publicly disclosed (i.e. bankruptcy), and (2) defaults where there is no legal requirement that information about the default be publicly disclosed (i.e. credit card charge-off). We exploit the legal differences between bankruptcy and charge-off to identify the impact of public disclosure on stigma. This specific choice between default via bankruptcy or default without bankruptcy (e.g. via charge-off) is discussed by White (2011) in her survey of the institutional details surrounding default. She writes that "the main punishments for bankruptcy are making filers' names public ..which...stigmatize the bankruptcy filers". On the other hand, the "punishments for debtors who default but do not file for bankruptcy, include(s) credit collectors calling them, suing them, and garnishing their wages." (White, 2011, p.2).

Defaulters thus face a trade-off when choosing between bankruptcy and charge-off. Bankruptcy entails greater stigma because of the increased public disclosure, but under bankruptcy all outstanding unsecured debts (e.g. credit card debt) can be written off, and all recovery actions by creditors are stayed (stopped). Charge-off entails lower stigma because of reduce public disclosure, but under charge-off creditors are able to continue actions to recover debt through wage garnishment and other actions. Bankruptcy and charge-off are the two legal mechanisms whereby the credit card contract can be terminated with unpaid balances remaining, thus both constitute formal default[1].

Public disclosure of every bankruptcy filing in the US is, by design, provided through the court system, and public disclosure of every bankruptcy filing in Canada (from where the data in this paper are taken) is provided on a single Government of Canada web page. This is not true for credit card charge-offs, where there is no legal requirement that information on this kind of default be publicly disclosed. While information about both bankruptcy and credit-card charge-off appear on the defaulter's credit rating (e.g. FICO score), the distinction we exploit here is concerns the public disclosure of the default to those without access to credit ratings, i.e. the defaulter's broader social network, from where stigma effects are assumed to flow.

Our paper builds on, but is different from, various strands of the literature. We follow Fay, Hurst and White, 2002, Gross and Souleles, 2002, Dick, Lehnert and Topa, 2008 and Cohen-Cole and Duygan-Bump, 2009, in empirically testing for stigma effects in bankruptcy,

[1] A delinquent card user (i.e. with late payments) is still able to use the credit card, whereas a default (e.g. bankruptcy or charge-off) results in the termination of the credit card contract.

but we are the first to specifically hypothesize that the level of stigma is related to the extent of public disclosure, and the first to test this hypothesis by empirically comparing the impact of stigma on publicly disclosed bankruptcy and publicly undisclosed charge-off. Our paper is also somewhat related to the literature examining the strategic interactions of defaulters and creditors in the period after default (e.g. White (1998a), White (1998b), Dawsey and Ausubel (2004), Dawsey, Hynes and Ausubel (2009), Chatterjee, (2011) and Benjamin and Mateos-Planas (2011)). Our paper is related to this literature to the extent that we focus on comparing default with bankruptcy and default without bankruptcy (i.e. credit card charge-off). This literature does not, however, address issues of stigma, which is the central element of our paper. Furthermore, this literature addresses possible strategic interactions between defaulters and creditors in the subsequent periods *after* the initial default, whereas our empirical tests examine whether stigma impacts the choice of the *initial* mechanism for default (bankruptcy or charge-off)[2],[3].

In order to test the stigma-publicity hypotheses we first have to measure stigma effects (i.e. identify individuals who may be more or less embarrassed about defaulting), and then we have to examine the impact of these stigma effects on the choice individual defaulters make between defaulting via bankruptcy or defaulting via credit card charge-off. The methodology we use to capture stigma effects is commonly used in the literature (e.g. Fay, Hurst and White (2002), Gross and Souleles (2002) , Dick, Lehnert and Topa, 2008 and Cohen-Cole and Duygan-Bump, 2009). This approach examines the impact on individual defaults of aggregate bankruptcies in the geographic area the individual lives in. This methodology is based on the assumption that stigma effects can flow to an individual defaulter from other individuals who live in the same geographic area. The justification for such a procedure is provided by Fay, Hurst and White (2002) who argue that "if households live in a district with a higher bankruptcy filing rate, then they are more likely to hear firsthand about bankruptcy from friends or relatives because the latter are more likely to have filed...This information will tend to make households more comfortable with the idea of bankruptcy, so the level of bankruptcy stigma falls" (p. 710). Similarly Gross and Souleles (2002) argue that "social stigma and information about bankruptcy

[2] Examples of such strategic interactions could include threats of wage garnishment by creditors after the default, and the subsequent response of defaulters to file for bankruptcy in order to stop such threats (see section 2.1.below).
[3] The literature on other possible causes of bankruptcy (besides stigma) is very large, including Domowitz and Sartain (1999), Gross and Notowidigdo (2011) and Hankins, Hoekstra and Skiba (2011) among many others.

might change, with the number of people in one's community, appropriately defined, that have already filed for bankruptcy." (p. 339).

Following the discussion of Fay, Hurst and White (2002) and Gross and Souleles (2002), we argue that there are a variety of different "channels" through which stigma effects can operate between past bankruptcies in a geographic area and the choice between defaulting via bankruptcy or charge-off. First, because bankruptcies are publicly disclosed whereas defaults without bankruptcy (e.g. charge-offs) are not, individuals in the area are more likely to hear about past bankruptcies relative to past defaults in the area. The increased knowledge of neighbors' bankruptcies in the past could lower stigma related to bankruptcies (because "everybody else is doing it"), increasing the probability the individual files for bankruptcy rather than default without bankruptcy. Second, it is also possible that an individual defaulter could have learnt about the specific procedural process involved in bankruptcy from previous bankruptcy filers in the neighborhood (i.e. information cascades). It can be argued that such information cascades will be more likely to emanate from previous bankruptcy filers compared to previous charge-offs, if bankrupts are relatively less concerned about maintaining confidentiality about the procedural details of their default, given that knowledge of their default is already public. Third, an individual concerned about avoiding stigma could be more likely to choose non publicized charge-off rather than publicized bankruptcy, in order to avoid others in the area learning about the individual's own default at some stage in the future. All of these mechanisms imply that increased bankruptcies in the area will increase the probability of an individual in that area filing for bankruptcy rather than defaulting without bankruptcy (i.e. charge-off).

To test the stigma-publicity hypothesis we use data derived from the matching of two unique databases, both of which are provided to us confidentially. First, we use individual level monthly credit card account data provided to us by an individual Canadian bank. The data contain information on a large number of individual credit card account holders, a small fraction of whom have either filed for bankruptcy or who have had their credit cards charged-off. These individual credit card account level bankruptcy and/or charge-off data are our dependent variable(s). This credit card data is similar in structure to previous bankruptcy stigma research conducted by Gross and Souleles (2002). However, our data differs from Gross and Souleles

(2002) in two important respects. First, our data flags the two separate kinds of individual default, bankruptcy and credit card-charge-off[4]. Second, the data includes the Canadian six-digit postal code of each individual credit card holder, and we exploit the fact that these Canadian postal codes are very small geographic areas, containing only 50 households on average, and typically extending over only a few city blocks (i.e. our definition of a "neighborhood").

We use these six-digit postal codes to match the credit card data base with our second data base. This contains the counts of every past insolvency filing in every Canadian six-digit postal code (neighborhood) in every year. This second, neighborhood count database, was provided to us uniquely by the Office of the Superintendent of Bankruptcy (OSB), the Canadian bankruptcy regulator, and is a result of special runs of the OSB data extraction system, conducted specifically for this research project. A key advantage of our data is that the geographic area we use to capture stigma effects is aggregate bankruptcies measured at the very small neighborhood level (50 households), compared to aggregate bankruptcies measured at the very large geographic areas used by others in the literature (e.g. US States used by Gross and Souleles (2002) or US bankruptcy court districts used by Fay, Hurst and White (2002),of which there are 94 in the US). We argue that it is more likely that actual interpersonal interactions between individuals, through which stigma effects flow, will occur within 50 household neighborhoods, compared to across US state or US court district levels.

Our main test examines whether neighborhood level stigma (the main independent variable, as measured by all past bankruptcies in the defaulter's neighborhood) impacts the choice of an individual defaulter to default via either bankruptcy or charge-off (the dependent variable(s)). The main finding of this paper is that lagged neighborhood level bankruptcy has a significantly positive impact on the choice by individual's to declare bankruptcy but a significantly negative impact on the choice by the individual to allow credit card charge-off. We find, for example, that a one standard deviation increase in aggregate consumer bankruptcies in a defaulter's neighborhood in the five prior years, will significantly increase the probability that the

[4]Gross and Souleles (2002) do examine both bankruptcy as well as three month credit card delinquency as dependent variables (which is a measure of financial distress that is quite different from credit card charge-off), but, they do not include the lagged geographic bankruptcy rate (US State level data) as an independent variable in their three month delinquency models. Thus, unlike our paper, Gross and Souleles (2002) do not examine the public disclosure issue in their tests of the stigma hypothesis.

defaulter will file for bankruptcy rather than allow their credit card to be charged off by approximately 6%.

Our identification strategy, comparing bankruptcy and charge-off, also has an additional econometric advantage. This relates to the possibility that unobservable neighborhood/area specific factors could cause persistent financial distress in particular neighborhoods or areas (for example, the closure of a dominant employer in the neighborhood, such as a plant). If these unobservable neighborhood/area specific factors are persistent over time, then they could impact both the individual's choice to file for bankruptcy (the dependent variable in Fay, Hurst and White (2002) and Gross and Souleles (2002)) as well as lagged aggregate bankruptcies in the neighborhood/area that that individual lives in (the independent variable that captures stigma effects in Fay, Hurst and White (2002) and Gross and Souleles (2002)). The empirical strategy we adopt in this paper, however, is based on comparing two different manifestations of financial distress - (1) bankruptcy and (2) credit card charge-off. All individuals in our main test (either bankrupts or those having their credit cards charge-off) have defaulted and are thus in financial distress, and we compare the impact of past neighborhood bankruptcies on each type of default. Unlike Fay, Hurst and White (2002) and Gross and Souleles (2002), therefore, we are thus able to control for persistent unobservable neighborhood specific factors that may make some neighborhoods/areas more prone to financial distress than others over time.

2. DATA AND INSTITUTIONAL BACKGROUND

The key element of the data used in this paper is the matching of individual level data on credit card users who either file for bankruptcy or have their credit cards charged-off (the dependent variable), with neighborhood level data on past aggregate bankruptcies in the specific neighborhoods that those individuals live in (the independent variable used to identify stigma effects). Here we provide institutional details as well as details on the different databases we use. Summary statistics for all these databases are provided in Table 1.

2.1. Bank Account Data on Bankruptcies and Charge-Offs (Dependent Variable(s))

The first database we consider is individual monthly credit card account data, provided to us confidentially by an individual Canadian bank. This data is similar in many but not all respects to the credit card data used by Gross and Souleles (2002). The full database contains

credit card account details for approximately 93 000 individuals. In this data we can observe 119 individual bankruptcies and 362 individual credit card charge-offs. These individual bankruptcies and charge-offs are the main binary dependent variables in our logit specifications below. The credit card account level data are measured monthly from Dec 2004 to June 2006. The database contain various bank determined measures of the individual's risk of default including the credit card credit limit, the APR of the credit card and the FICO score of the individual. It also contains details from the monthly credit card statement, including monthly balance outstanding. We divide balance outstanding by the card credit limit to determine the utilization rate.

The structure of this database is similar to the data used by Gross and Souleles (2002) whose monthly data "are followed ...until they *first* default" (italics added p. 326). Similarly, in our data, in the months prior to a bankruptcy/charge-off the data show the individual's monthly credit card activity; in the actual month of the individual's default the data show either a bankruptcy flag or a charge-off flag; and in subsequent months all the credit card data for that individual is empty, because the credit card contract has been terminated. Our dependent variable thus reflects the choice by the defaulter as to which of bankruptcy or charge-off occurred first.

There are a number of important advantages to this individual account level data. First, our individual credit card has separate flags for two kinds of individual credit card default, (1) bankruptcy and (2) charge-off. This data specifically allows us to test our new stigma-publicity hypothesis developed in this paper that stigma is impacted by the extent to which information on the default is publicized or not. Similar credit card account data used by Gross and Souleles (2002) does not have separate flags for both bankruptcy and credit card charge-off.

Second, we argue that the timing convention of our data (i.e. being able to observe the choice of the defaulter as to whether to *initially* default via bankruptcy or charge-off) is advantageous to us, in that it allows us to control for issues that may impact strategic interactions between defaulters and creditors that occur in subsequent periods *after* the initial default. As we describe above, an existing literature (e.g. White (1998a), White (1998b), Dawsey and Ausubel (2004), Dawsey, Hynes and Ausbel (2009), Chatterjee, (2011) and Benjamin and Mateos-Planas (2011) has examined the strategic interaction of defaulters and creditors in the subsequent periods after default. We argue, however, that because our credit card account level data all

reflect the choice of the defaulter as to whether to *initially* default via bankruptcy or charge-off, issues related to possible strategic interactions in the subsequent time periods after default, will not be captured in our data. Our data thus enables us to tests the specific hypothesis that stigma impacts the initial choice of whether to default via bankruptcy or charge-off.

Third, our credit card account level database also contains data on whether mortgage debt is owed by those individuals to that specific bank. This linked credit card account and mortgage account data is particularly valuable to us because it allows us to control for the possibility that issues relating to mortgage debt could be impacting the choice between defaulting via bankruptcy or via credit card charge-off. We are able to run all of our specifications using data which either (1) includes all credit card holders (including both those who do, as well as those who do not, also have a current mortgage), or alternatively (2) we exclude those card holders who also have a current mortgage and only include cardholders without a mortgage. Previewing these results, we find that our results are robust across these alternative specifications, thus we can argue that our main conclusions are not being driven by mortgage debt dynamics.

2.2. Neighborhood Level Bankruptcy and Proposal Count Data (Independent Variables)

The main independent variable in our tests below is neighborhood level counts of annual insolvencies in each Canadian six-digit postal code provided to us uniquely by the Office of the Superintendent of Bankruptcy Canada (OSB). Under Canadian bankruptcy law an insolvency filing to OSB can either be classified as a "bankruptcy" or a "proposal", both of which are included in our data. Under "bankruptcy", the individual is able to write off debts outstanding to unsecured creditors (such as credit cards). However, all assets of the individual (other than those exempted by law) are sold, and the dividends distributed by claimants according to the priority established by the Bankruptcy and Insolvency Act (BIA). A "proposal", on the other hand, is a legal process where a financially distressed debtor negotiates with creditors to either reduce debt payments owing, or to postpone debt repayments, or both. A proposal is similar in some respects to what is often termed a "haircut" in the finance literature. A proposal differs from bankruptcy in that the debtor retains all assets and still remains liable for all debts remaining after the negotiated "haircut".

Critically for our purposes, however, is that both bankruptcy as well as proposal are legal process that have to be transacted via the OSB. Every Canadian bankruptcy and every Canadian proposal is publicized on the OSB webpage. In other words, both bankruptcy and proposal are *publicized* default. However, the extent of the default under proposal is usually less than default under bankruptcy, because it is limited to the extent of the debt write-off or payment postponement agreed to by the creditors (i.e. the extent of the negotiated haircut). Our data includes annual neighborhood level counts of both bankruptcies as well as proposals, thus we can compare the extent to which stigma effects hold for bankruptcies and proposals by varying the OSB neighborhood level count variable which we include in our regressions.

It has often been argued (e.g. Surowiecki, 2011) that behavioral issues such as stigma are likely to be more relevant for individual consumer, compared to businesses, who, it is argued, are more likely to make bankruptcy decisions based on more standard economic criteria (i.e. maximizing the economic benefit to the firm). For this reason, we deliberately exclude business bankruptcies from our study. Businesses with debts of more than $5 million file for bankruptcy with the OSB under a different legal process, and are not included in our data. Furthermore, the OSB data available to us distinguishes between "consumer" filings (when more than 50% of the debts outstanding are consumer related debts) and "business" filings (when more than 50% of the debts outstanding relate to the individual's business operations). Typically these business debts arise where the individual is the owner of a small business (with debts of less than $5 million) and is liable for the debts of that business. In our OSB data the vast majority of filings are classified as consumer rather than (small) business filings.

There are a number of advantages to this neighborhood level data. First, our data uses the very small Canadian six-digit postal codes as the comparator geographic area (i.e. neighborhood level bankruptcies of approximately 50 households). This can be compared to Gross and Souleles (2002), who use aggregate bankruptcy data from the individual's US state, and Fay, Hurst and White (2002), whose aggregate bankruptcy data from the individual's US bankruptcy court district, both of which contain many millions of individuals. Gross and Souleles (2002) acknowledge this concern about their US state based measure, and comment, that "of course, the relevant community within which stigma operates and information flows might not be one's state, so these results can be considered a lower bound for their effect". (p. 340). Because of this,

Gross and Souleles (2002) conclude that their finding that the probability that an individual files for bankruptcy rises "with the number of people in one's state who have previously filed for bankruptcy, is suggestive of a decline in social stigma or information costs, but is not conclusive" (p. 345).We argue that it is much more likely that individuals who live within a few city blocks of each other (i.e. within a Canadian six-digit postal code) have actually interacted with each other, compared to individuals living in US states or US bankruptcy court districts. Our paper thus provides a much tighter definition of the geographic area " within which stigma operates and information flows" (Gross and Souleles, 2002, p.340).

Second, a related concern with aggregate data from US states (as in Gross and Souleles, 2002) or bankruptcy court districts (as in Fay, Hurst and White, 2002) data is that it is difficult to disentangle differences in legal and/or administrative processes across these jurisdictions from differences in stigma across these jurisdictions. Fay, Hurst and White (2002) acknowledge this issue by arguing that "a significant coefficient on the lagged bankruptcy filing rate in the (US bankruptcy court) district could reflect local differences in the level of bankruptcy stigma *or* local differences in the administration of bankruptcy law... *or* could reflect the influence of information cascades" (italics added p. 710). In our paper we are able to disentangle state or court district legal/administrative procedures from stigma effects because our data are all from a single large Canadian province. We are able to do this because our primary unit of geographic space is the six-digit postal code, of which there are many thousands in this particular province. There are indeed legal differences in the administration of bankruptcy *across* the Canadian provinces, but there are no legal or administrative differences *within* a province. Because our unit of geographic analysis is the six-digit postal code within a single Canadian province, we argue that all individuals in our study face the same legal and administrative environment when filing for bankruptcy.

Third, we are able to observe the exact date of each individual bankruptcy filing (from our credit card account data) as well as the exact year of all aggregate insolvency filings in each postal code (from the OSB data). This is different from the credit report data used by Cohen-Cole and Duygan-Bump (2009) which only show whether an individual has filed for bankruptcy at some stage in the previous 7 years, rather than showing the exact year of the bankruptcy filing.

Fourth, our data provides an exact count of aggregate bankruptcy filings in each postal

code in each year (from our OSB data). The issue of measurement error in neighborhood bankruptcy counts is of particular importance because we are dealing with very small neighborhood areas, where there are typically very few bankruptcy filings in a given year. Because annual bankruptcy totals in each neighborhood are so small, any inaccuracies in this count can have large implications on subsequent empirical models. Our OSB data on aggregate insolvency filings per Canadian six-digit postal code (neighborhood) is a complete count of every insolvency in Canada and is thus not subject to this measurement error. Cohen-Cole and Duygan-Bump (2009), on the other hand, calculate the sum of bankruptcies within a neighborhood by aggregating from the files of a single credit bureau, which holds credit files on approximately one ninth on all individuals with a credit history. Their neighborhood data is thus an imperfect proxy for total bankruptcies in the neighborhood.

Fifth, our OSB data by design only include primary filers rather than secondary estates (for example joint filings by separated spouses or other related individuals who could live in separate postal codes). In other words, each filing is allocated to the postal code of the primary filer, and each filing in the data is only counted once.

2.3. Other Data

We are also able to match our data with Canadian Census data, measured at a geographical area known as the dissemination area (DA). On average the DA is made up of 10 neighboring six-digit postal codes (i.e. each DA includes approximately 500 households, while each six-digit postal code includes approximately 50 households). Matching postal code level and DA level geographic areas is quite common in research using Canadian data, and is undertaken using a conversion file developed by both Statistics Canada and Canada Post. This allows us to include a large variety of DA level census data as control variables in our regressions, including median family income, family income distribution, population without income, average house value, house ownership proportion, and unemployment rate. All this data is derived from the 2006 Canadian census.

Given the importance of issues of financial literacy in many discussions of bankruptcy we are also able to include data from a unique Canada database which provides DA level estimates of financial literacy. This data is based on the International Adult Literacy and Skills

Survey (IALSS), which is conducted by many countries around the world, and was conducted in Canada by Statistics Canada in 2003. This is a very large survey of literacy (including financial literacy), where 40 000 Canadian adults were tested as to their literacy (including financial literacy) skills (see Statistics Canada 2005 for further details). These individual literacy data are coded by a large number of demographic variables (including gender, education level, age, mother tongue, immigration status, aboriginal status, province, municipal area, occupational group and labor force status). Murray (2011) uses this individual literacy data to create average DA level literacy measures for every DA in Canada by matching the demographic characteristics of the individuals in the literacy sample with average DA level measures of these demographic characteristics from Census data. He is thus able to provide an estimate of the average level of financial literacy from each Canadian DA, which we use in this study.

3. UNIVARIATE TESTS

Before conducting formal econometric tests, we explore our data by providing simple univariate tests of comparisons between different neighborhoods[5]. Our stigma-publicity hypothesis implies that the neighborhoods of individuals who file for bankruptcy should have higher levels of aggregate bankruptcy compared to the neighborhoods of the individuals who had their credit cards charged-off. We thus define two types of neighborhood, (1) those neighborhoods where the 119 individual credit card holders who filed for bankruptcy in 2004-2005 live (which we label "bankruptcy neighborhoods"), and (2) those neighborhoods where the 361 individual credit card holders who had their credit cards charged-off in 2004-2005 live (which we label "charge-off neighborhoods"). We test whether there are more aggregate bankruptcies in the bankruptcy neighborhoods, compared to the charge-off neighborhoods, using annual comparisons of means t tests. We run these annual neighborhood comparison tests across the two different kinds of OSB neighborhood level count data - bankruptcy and proposal. We also run all of these tests over OSB neighborhood count data from each of the eight individual years from 2000 to 2007. By running these tests for all individual years in our OSB neighborhood level database (i.e. from 2000 to 2007) we can examine if there are systematic differences in these neighborhoods before, during and after the years where we can observe the individual defaulters (2004 to 2005).

[5] These univariate tests obviously show correlation rather than causation.

The results of these differences in mean tests are provided in Table 2. Each line in Table 2 provides data on the mean OSB bankruptcy counts in the 119 "bankruptcy neighborhoods" and the 361 "charge-off" neighborhoods". For example, the first line of data in Table 2A shows that in the year 2000, there was a mean of 2.722 consumer bankruptcies in each of the 119 bankruptcy neighborhoods and a mean of 1.2493 consumer bankruptcies in each of the 361 charge-off neighborhoods. The t test of the difference in these two means is highly significant. These results are consistent with the stigma-publicity hypothesis because individual defaulters are more likely to choose bankruptcy rather than charge-off if they live in a neighborhood with lower levels of stigma (as measured by higher levels of aggregate bankruptcy in their neighborhood). Indeed, Table 2 indicates that the "bankruptcy neighborhoods" have significantly more bankruptcy/proposal filings than the "charge-off neighborhoods" in the vast majority of cases over multiple individual years and over both bankruptcies and proposals. There is no case where the mean insolvency count is significantly greater in the charge-off neighborhoods compared to the bankruptcy neighborhoods. These t tests thus indicate that the data are consistent with the stigma-publicity hypothesis.

4. ECONOMETRIC SPECIFICATIONS

Our main econometric specification is the logit equation

$$(1) DEFAULT_i = \beta_1' BK_{Neighborhood_p} + \beta_2' Card_{Indiv_{i,t}} + \beta_3' Census_{Ill_p} + \beta_4' FinanceLit_p + \varepsilon$$

The dependent variable $DEFAULT_i$ is either individual bankruptcy (BK_i) in some specifications or individual charge-off (CO_i) in other specifications. Both of these dependent variables are binary variables which takes the value 1 if an individual credit card account holder i has filed for bankruptcy (BK_i) or been charged-off (CO_i) at some stage during the 19 month period of our credit card database, and 0 otherwise. The main independent variable of interest in (1) is $BK_{Neighborhood_p}$ which measures the count of aggregate bankruptcy filings in individual i's postal code p, thus capturing lagged neighborhood filings for each individual in the credit card database. We use two different specifications of $BK_{Neighborhood_p}$ as derived from postal code level count data from the OSB - bankruptcy and proposal. As described above, the stigma-publicity hypothesis predicts a positive coefficient on $BK_{Neighborhood_p}$ in specifications where

the dependent variable is bankruptcy, and a negative coefficient on $BK_{Neighborhood_{it}}$ in specifications where the dependent variable is charge-off.(We discuss the other dependent variables, which are all control variables, below).

An important requirement of this specification, is that it capture the fact that stigma is a slow moving process, that is likely to develop within a neighborhood over multiple years, rather than over few months. It is for this reason that we designate BK_i or CO_i as having occurred at any month in the 19 month period of our credit card account database, and also why we specify that neighborhood defaults $BK_{Neighborhood_{it}}$ to be the total number of defaults in the five year period before the individual defaults.

We run a variety of different specifications based on which individuals we include in the sample. Our main specification only includes individuals who have defaulted on their credit cards (i.e. only those either declaring bankruptcy or being charged-off). The dependent logit variable is taken to be individual bankruptcy[6]. In other words, this main specification examines the probability of choosing bankruptcy rather than charge-off from a sample of individuals who are either bankrupts or charge-offs. The econometric advantage of this specification is that we are comparing individuals who are all in financial distress, thus we are able to control for the possibility that some neighborhoods may be more likely to face financial distress than others because of unobservable neighborhood specific factors.

Our subsidiary specifications widen the groups of individuals included in the sample beyond just bankrupts and charge-offs. Our second specification still includes bankrupts and charged-off individual's in the sample, but in addition also includes individuals who are three month delinquent (abbreviated as DEL) on their credit cards, but who have not yet defaulted. All the individuals in this sample can be considered to be in financial distress. However, individuals who are three months delinquent are not in default, because they have not (yet) had their credit card accounts terminated. Our third specification includes all 93 000 credit card holders (including the defaulters and delinquents discussed above). In all of these cases we examine both bankruptcy as well as charge-off as the dependent logit variable.

[6] Because the sample in this specification only includes individual bankruptcies and charge-offs, we could have used charge-off as our dependent logit variable, where the results would have been equal but with the opposite sign.

Our specifications also include a large number of control variables. Our first group of control variables, contained in [illegible] , are a large group a variables taken from the bank account database. These variables are very similar to the control variables used in previous work using credit card account data, by Gross and Souleles(2002), Agarwal et al (2007) and Aaronson et. al. (2011) etc. These include the monthly credit card utilization rate (credit card balance/credit card credit limit), the APR on the card, the credit limit on the card and the FICO score of the individual. We also include a dummy variable for those individual's also have an outstanding mortgage at that bank (another specification below, removes mortgage holders from the sample). In this paper we follow essentially the same procedure of Gross and Souleles (2002) which is to measure all of these monthly bank account variables only at the first month in the data set[7]. This is to control for possible endogeneity between default (e.g. bankruptcy) and monthly credit card behavior in the months leading up to the default. For example, individuals who are planning to declare bankruptcy may have an incentive to max out their credit card prior to bankruptcy. Because we only include data for these credit card control variables from the first observable month, we do not explore the monthly dynamics of these bank account variables. However, as we describe above, the main focus of this paper is on capturing low frequency stigma effects across neighborhoods, (e.g. using five yearly summations of OSB neighborhood count data).

As argued by Livshits, MacGee and Tertilt (2009)[8] it is possible that three specific credit card account level variables; credit card limit, FICO score and card interest rate, could all reflect the bank's assessment of the risk of the individual, thus all could be correlated with each other. Because these three variables could be correlated we rerun all our specifications including each of these three variables separately. A particular concern with the FICO data (which is also faced by Gross and Souleles, 2002) is that the FICO data is missing for many individuals in the database, in particular those who are in the charge-off sample (The summary statistics in table 1 show that out of 362 charge-offs in our data we only have FICO scores on 203 individuals). We

[7] While Gross and Souleles (2002) only use the first observed month of this data in their baseline specifications, they allow this to change in subsequent specifications.

[8] Livshits, MacGee and Tertilt (2009) argue that increased use of credit scoring models by banks has resulted in high risk individuals (i.e. those with low FICO scores) being awarded credit by banks, but at higher card APRs and with lower credit limits. FICO scores, card APR and card credit limits are thus correlated because they all reflect the bank's assessment of individual risk.

run estimations where the FICO variable is included, but these estimates may be less robust because of the missing FICO data.

Our second group of control variables are dissemination area (DA) level data taken from the Canadian Census (recall that six-digit Canadian postal codes contain approximately 50 households, while DAs contain approximately 500 households).These variables are contained in $Census_p$ in the above equations, and include median family income, standard distribution of family income, the proportion of individuals with no income in the postal code, the average house price, the extent of homeownership in the postal code and the unemployment rate in postal code. Our final control variable is the DA level measures of average financial literacy in the DA, developed by Murray (2011) using individual level data from the IALSS. This data is captured in $FinancialLit_p$ in the equations above.

5. RESULTS

Full results of all of these various specifications are provided in Tables 5A to 5F in the Web Appendix. Table 3 provides a summary of all these results by reporting only the results on the $BKNeighborhood_p$ coefficient, which is our main test of our stigma-publicity hypothesis. Each cell in Table 3 is the result of a separate regression. In order to determine the economic magnitudes of these logit regressions, each cell in Table 3 reports on the percentage change in the probability of the individual choosing the binary dependent variable (e.g. bankruptcy (BK) or charge-off (CO)) following a one standard deviation change in the $BKNeighborhood_p$ variable. For example, the top left cell of Table 3 reports that a one standard deviation increase in the OSB count of consumer bankruptcies in a neighborhood will result in a 5.71% increase in the probability of a defaulter in that neighborhood declaring bankruptcy, rather than having their card charged-off, which is significant at 1%.

Results from our main specification (where the sample is restricted to only bankrupts and charge-offs) are reported Column 1 of Table 3. Columns 2 to 5 in Table 3 expand the sample sizes, as described above, to include either defaulters plus delinquents (columns 2 and 4) or all credit card holders (columns 3 and 5). The two panels of Table 3 show results where the main independent variable is either neighborhood counts of consumer bankruptcies from 2000 to 2004 (Panel 1), or neighborhood counts of consumer proposals from 2000 to 2004 (Panel 2). The

various rows of Table 3 within each Panel show different specifications with only one of the different card risk measures (either APR or FICO score or Credit Limit) included. As described above. these three variables are included one at a time, because of possible colinearity between them (they all reflect bank perceptions of individual risk).

We first discuss Panel 1 of Table 3 - i.e. bankruptcy (rather than proposal) filings. Across the five columns in the Table, this coefficient is positive whenever the dependent binary variable is choice of bankruptcy (columns 1, 2, 3) and is negative whenever the dependent binary variable is choice of charge-off (columns 4, 5). In other words, increased bankruptcies in a neighborhood will increase the probability of an individual bankruptcy filing and will decrease the probability of an individual credit card charge-off. This is the central finding of this paper, which is consistent with the main prediction of the stigma-publicity hypothesis.

The magnitudes and significance levels of these findings differ across the different specifications. Generally speaking, as the number of individuals in the specifications increases from defaulters (column 1) to defaulters plus delinquents (columns 2 and 4) to all credit card holders (3 and 5) so the magnitude of these effects declines. This implies that a change in neighborhood bankruptcies will have a very much larger effect when examining the choice of defaulters between bankruptcy and charge-off, compared to the choice of all credit card holders as to whether to file for bankruptcy (column 3) or charge-off (column 5).

It is also possible to compare across the three specifications which include various bank determined measures of risk (one of either APR or FICO, or Credit Limit). While the FICO results all have the expected signs the significance levels are lower than for the APR and Credit Limit coefficients. An important possible reason for this is that there are substantially fewer observations where FICO data is available, because as individuals get deeper into financial distress, FICO scores are sometimes not available (Numbers of observations are provided in Table 1). These FICO results should thus be treated with some caution.

We can also compare results across Panel 1 (neighborhood bankruptcies) and Panel 2 (neighborhood proposals) of Figure 3. Recall that both bankruptcy and proposal are publicized on the OSB webpage, thus we predict that stigma effects could flow from each. The results in Table 3 indicate that the stigma effects are indeed significant for both neighborhood bankruptcy

as well as neighborhood proposals. However the magnitudes and significance of the coefficients are generally higher for the bankruptcy models than the proposal models. This could reflect the fact that the size of the delinquency in bankruptcy (i.e. writing off all unsecured debt) is generally higher than the size of the delinquency in proposal (which is limited to the size of the negotiated payment reduction or delay, i.e. "haircut", between the delinquent debtor and creditors).

We also run robustness tests to control for the possibility that outstanding mortgage debt could impact the choice between defaulting with or without bankruptcy. To do this we remove from our sample any current mortgage holders at the bank. These robustness tests, in other words, include only individuals who have a credit card account at the bank, but exclude individuals who have both a credit card as well as a mortgage at the bank[9]. In our main specification which only includes defaulters (i.e. either bankrupts or charge-offs reported in Column 1 of Tables 3 and 4), approximately 14% of the individuals hold both a credit card as well as a mortgage, while the others hold only a credit card but no mortgage. By removing defaulters who hold both a credit card and a mortgage, we can focus on the key choice in this paper which is between defaulting via bankruptcy or defaulting via credit card charge-off, while excluding the possibility that this choice may be influenced by a mortgage debt outstanding.

Our results for these robustness tests are reported in Table 4 (whose format is identical to Table 3). Our key result from Table 4 is that the results from the robustness tests in column 1 (i.e. where the sample is limited to defaulters) are very similar to the results in Table 3, column 1, (which includes individuals with both credit card as well as mortgage accounts). In other words, we can conclude that our main results in Table 3 are not being driven by issues related to outstanding mortgage debts in bankruptcy.

6. CONCLUSION

[9]It is possible that the credit card holders in our sample have a mortgage at another bank. However, the Canadian retail banking system is dominated by five very large banks who act as "universal banks" (Ratnovski & Huang, 2009). This implies that a single bank will tend to provide a consumer with a large number of different financial products. Evidence on the universal nature of Canadian retail banking can be seen from Boston Consulting Group, (2009) which indicates that the average Canadian household has only 2 credit cards (i.e. one per adult in a two adult household), compared to the 6 credit cards held by the average US consumer.

The issue of bankruptcy stigma (i.e. individual's being more likely to default because they are less embarrassed about their default) has been examined in a large and growing literature(e.g. Fay, Hurst and White, 2002, Gross and Souleles, 2002, Athreya, 2004, Dick, Lehnert and Topa, 2008, Cohen-Cole and Duygan-Bump, 2009, Livshits, MacGee and Tertilt, 2010). The issue of stigma in bankruptcy also has important policy implications, with pro-creditor lobby groups (e.g. the credit card industry) arguing that declining stigma is an important factor in increasing bankruptcies, while pro-debtor lobby groups (e.g. consumer rights groups) arguing that declining stigma is not important. However, our understanding of how and why bankruptcy stigma operates remains limited, largely because of difficulties with data and measurement.

This paper introduces and tests a new hypothesis which links stigma to publicity. Our stigma-publicity hypothesis states that individuals for whom avoiding stigma is important (i.e. who are more embarrassed by their default) will be more likely to choose a mechanism for default where there will be less publicly available information about their default. Similarly, individuals who are less concerned about stigma (i.e. who are less embarrassed by their default) will be more likely to choose a mechanism for default where there is more publicly available information about their default. In order to test this hypothesis we exploit the legal differences between default via bankruptcy (which is legally a publicized default), and default via credit card charge-off (for which there is no legal requirement for publicity).

Our main finding is that a one standard deviation increase in past aggregate consumer bankruptcies in a neighborhood (which is our measure of bankruptcy stigma of individuals living in that neighborhood) will increase the probability that a subsequent defaulter in that neighborhood will choose publicized bankruptcy rather than unpublicized credit card charge-off by approximately 6%. This finding is consistent with our stigma-publicity hypothesis.

Our main finding that the public disclosure of default impacts the choice of the mechanism of default, could lead to other testable hypotheses. For example, it may be possible that the stigma cost of public disclosure differs across different professions (e.g. politicians vs. blue-collar workers) resulting in different choices of the mechanism of default. It may also be possible that the way in which the information on default is publicly disclosed (e.g. via a single web site or via a court information system) could impact the choice of how to default. The issue of how the public disclosure of information impacts individual choices has played an important

role in many areas of finance and economics. This paper has shown, for the first time, that public disclosure is of importance for understanding bankruptcy stigma.

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TABLE 1: SUMMARY STATISTICS									
	Bankruptcies			Credit Card Charge-Offs			All Credit Card Accounts		
	Obs	Mean	Std. Dev	Obs	Mean	Std. Dev	Obs	Mean	Std. Dev
Bankruptcy (Pcode 2000-04)	119	12.13	20.35	361	6.77	11.56	93130	8.18	14.17
Proposal (Pcode 2000-04)	119	1.42	2.60	361	0.76	1.77	93130	0.89	1.86
Utilization Rate (Balance/Limit)	119	81.41	29.94	362	87.70	28.69	93195	41.68	43.12
Card APR	119	15.99	3.93	362	16.70	3.14	93194	15.74	4.14
FICO Score	100	622.98	86.66	203	593.17	87.04	75466	729.67	72.19
Credit Line ($)	119	4360	3843	362	3900	4242	93195	5764	6162
Mortgage Balance (Dummy)	119	0.17	0.38	362	0.13	0.33	93195	0.22	0.42
Family Median Income (DA)	115	67899	23123	344	70428	24259	87152	73159	25895
Family Income Dist (DA)	115	7979	7028	344	8840	8242	87152	8788	8545
Pop Without Income (DA)	115	25.57	33.69	344	25.48	27.96	87152	27.76	37.96
Financial Literacy	115	0.30	0.03	344	0.30	0.03	87152	0.30	0.03
House Value (DA)	115	219575	95448	344	231781	125466	87152	236724	124867
House Ownership (DA)	115	264	332	344	233	278	87152	257	366
Unemployment Rate (DA)	115	4.57	3.58	344	4.59	5.08	87152	4.03	3.69

TABLE: 2A NEIGHBORHOOD COMPARISONS
OSB Neighborhood Measure: Annual Consumer Bankruptcies per six-digit Post Code

Bankruptcy Neighborhoods are where 119 Individual Credit Card Bankrupts Live
Charge-Off Neighborhoods are where 361 Individual Credit Card Charge-Offs Live

Year	Bankruptcy Neighborhoods			Charge-Off Neighborhoods			T test	signif
	obs	Mean	Std Error	obs	Mean	Std Error		
2000	119	2.72268	0.561415	361	1.249307	0.122918	3.8125	***
2001	119	2.11764	0.341786	361	1.257618	0.122714	2.9658	***
2002	119	2.05042	0.315495	361	1.216066	0.126606	2.925	***
2003	119	2.71428	0.414133	361	1.448753	0.155025	3.5194	***
2004	119	2.52100	0.387978	361	1.595568	0.148992	2.7073	***
2005	119	2.47058	0.334552	361	1.393352	0.143392	3.4202	***
2006	119	1.81512	0.320893	361	0.980609	0.101499	3.2708	***
2007	119	1.38655	0.225212	361	0.839335	0.087044	2.7476	***

TABLE: 2B NEIGHBORHOOD COMPARISONS
OSB Neighborhood Measure: Annual Consumer Proposals per six-digit Post Code

Bankruptcy Neighborhoods are where 119 Individual Credit Card Bankrupts Live
Charge-Off Neighborhoods are where 361 Individual Credit Card Charge-Offs Live

Year	Bankruptcy Neighborhoods			Charge-Off Neighborhoods			T test	signif
	obs	Mean	Std Error	obs	Mean	Std Error		
2000	119	0.19327	0.049607	361	0.105263	0.021125	1.8922	*
2001	119	0.26050	0.055289	361	0.146814	0.027630	1.9723	**
2002	119	0.22689	0.049835	361	0.152355	0.024595	1.4471	
2003	119	0.36134	0.085837	361	0.152355	0.026406	3.1028	***
2004	119	0.37815	0.086053	361	0.207756	0.033219	2.2407	**
2005	119	0.37815	0.071598	361	0.202216	0.028859	2.7106	***
2006	119	0.36974	0.06412	361	0.166205	0.025123	3.5611	***
2007	119	0.36974	0.084275	361	0.174515	0.029876	2.7492	***

TABLE 3: ESTIMATED STIGMA IMPACTS
Percentage Impact of One Standard Deviation Change in Neighborhood Bankruptcy (or Proposal) on Individual Choice of Default
Full Sample (Including Mortgage Holders)

MODEL	1	2	3	4	5
Logit Variable	BK	BK	BK	CO	CO
Sample	BK & CO Only	BK & CO & DEL	All	BK & CO & DEL	All
PANEL 1: INDEP VAR: NEIGHBOURHOOD COUNTS OF CONSUMER BANKRUPTCY (2000-2004)					
Bank Credit Risk IndepVar					
APR	5.71***	0.82**	0.02**	-2.35***	-0.05**
FICO	5.24*	0.49	0.01	-1.7**	-0.01**
Cred Limit	6.00***	0.82**	0.02**	-2.36***	-0.05**
PANEL 2: INDEP VAR: NEIGHBOURHOOD COUNTS OF CONSUMER PROPOSAL (2000-2004)					
Bank Credit Risk IndepVar					
APR	4.82**	0.77**	0.02**	-1.5*	-0.03
FICO	3.85	0.64	0.01	-0.54	-0.01
Cred Limit	5.00***	0.78**	0.02**	-1.47*	-0.03

Notes:
Each Cell Represents one logit model.
Only the Coefficient on Lagged Neighborhood OSB Count variable presented here.
Full Versions of each logit model are presented in Tables 5A to 5F in Web Appendix
Logit Variable; BK = Bankruptcy or CO = Charge-Off
Sample: "BK & CO Only" = Only Defaulters (bankrupts and charge-offs ; "BK & CO & DEL" = Defaulters + 3 month credit card delinquents; "All" = All Credit Card Holders.
Estimated Impacts of One Standard Deviation Change in Neighborhood OSB Measures taken from PRCHANGE program in STATA. (Effects measured at half standard deviation below mean and half standard deviation above mean.)

TABLE 4: ESTIMATED STIGMA IMPACTS
Percentage Impact of One Standard Deviation Change in Neighborhood Bankruptcy (or Proposal) on Individual Choice of Default
Mortgage Holders Removed From Sample

MODEL	1	2	3	4	5
Logit Variable	BK	BK	BK	CO	CO
Sample	BK & CO Only	BK & CO &DEL	All	BK & CO &DEL	All
PANEL 1: INDEP VAR: NEIGHBOURHOOD COUNTS OF CONSUMER BANKRUPTCY (2000-2004)					
Bank Credit Risk IndepVar					
APR	5.15***	0.65	0.02*	-3.01***	-0.07**
FICO	2.99	-0.04	0	-1.93**	-0.01*
Cred Limit	5.32***	0.66	0.02*	-3.02***	-0.06**
PANEL 2: INDEP VAR: NEIGHBOURHOOD COUNTS OF CONSUMER PROPOSAL (2000-2004)					
Bank Credit Risk IndepVar					
APR	4.29**	0.63	0.02	-1.77*	-0.04
FICO	2.22	0.17	0	-0.56	-0.01
Cred Limit	4.41**	0.63	0.01	-1.78*	-0.04

Notes:
Each Cell Represents one logit model.
Only the Coefficient on Lagged Neighborhood OSB Count variable presented here.
Logit Variable; BK = Bankruptcy or CO = Charge-Off
Sample: "BK & CO Only" = Only Defaulters (bankrupts and charge-offs ; "BK & CO & DEL" = Defaulters + 3 month credit card delinquents; "All" = All Credit Card Holders.
Estimated Impacts of One Standard Deviation Change in Neighborhood OSB Measures taken from PRCHANGE program in STATA. (Effects measured at half standard deviation below mean and half standard deviation above mean.)

WEB APPENDIX

To Accompany:

Stigma, Public Disclosure and Bankruptcy

TABLE 5A: LOGIT MODELS:
OSB NEIGHBORHOOD MEASURE: CONSUMER BANKRUPTCIES
INDIVIDUAL CREDIT CARD RISK MEASURE: CARD APR

MODEL	1	2	3	4	5
Logit Variable	**BK**	**BK**	**BK**	**CO**	**CO**
Sample	**BK & CO Only**	**BK & CO & DEL**	**All**	**BK & CO & DEL**	**All**
Bankruptcies Neighborhood(00-04)	0.0214***	0.0112**	0.0131**	-0.0134***	-0.0108**
	(0.00719)	(0.00514)	(0.00530)	(0.00493)	(0.00472)
Card Utilization (%)	-0.00699*	0.0122***	0.00360***	0.0246***	0.00522***
	(0.00367)	(0.00342)	(0.000510)	(0.00248)	(0.000478)
Card APR	-0.0453	0.0304	0.0133	0.0918***	0.0616***
	(0.0311)	(0.0255)	(0.0241)	(0.0185)	(0.0167)
MortgagePayer - Dum	0.152	-0.270	-0.275	-0.580***	-0.537***
	(0.310)	(0.257)	(0.251)	(0.175)	(0.162)
Family Median Income (PCode)	-2.10e-06	-2.42e-06	-7.08e-06	6.95e-07	-4.44e-06
	(6.82e-06)	(5.57e-06)	(5.12e-06)	(3.37e-06)	(2.76e-06)
Family Income Dist (Pcode)	-7.89e-06	-2.74e-06	1.49e-06	2.64e-06	5.49e-06
	(1.73e-05)	(1.39e-05)	(1.40e-05)	(7.71e-06)	(6.79e-06)
Pop Without Income (Pcode)	-0.00485	-0.00518	-0.00576	-0.00119	-0.00121
	(0.00564)	(0.00442)	(0.00424)	(0.00263)	(0.00228)
Financial Literacy	1.730	0.964	2.918	-0.985	1.786
	(3.588)	(3.204)	(3.148)	(2.036)	(1.821)
House Value (Pcode)	-1.24e-07	-1.40e-07	1.62e-07	-5.16e-08	2.28e-07
	(1.35e-06)	(1.12e-06)	(1.01e-06)	(6.82e-07)	(5.45e-07)
House Ownership (Pcode)	0.000880	0.000777*	0.000749*	7.00e-05	5.62e-06
	(0.000549)	(0.000422)	(0.000408)	(0.000286)	(0.000254)
Unemployment Rate (Pcode)	0.00672	0.0156	0.0242	0.0206	0.0282***
	(0.0242)	(0.0228)	(0.0187)	(0.0149)	(0.0106)
Constant	-0.386	-4.514***	-7.673***	-4.657***	-7.033***
	(1.358)	(1.184)	(1.122)	(0.770)	(0.666)
Observations	459	2,084	87,151	2,084	87,151
R2	0.0404	0.0293	0.0240	0.101	0.0343
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

Notes:
Logit Variable; BK = Bankruptcy (Eqn 1 in text); CO = Charge-Off (Eqn 2 in text)
Sample: "BK & CO Only" - Only Defaulters (bankrupts and charge-offs ; "BK & CO & DEL" - Defaulters + 3 month credit card delinquents; "All" - All Credit Card Holders

TABLE 5B: LOGIT MODELS:
OSB NEIGHBORHOOD MEASURE: CONSUMER BANKRUPTCIES
INDIVIDUAL CREDIT CARD RISK MEASURE: FICO SCORE

MODEL	**1**	**2**	**3**	**4**	**5**
Logit Variable	**BK**	**BK**	**BK**	**CO**	**CO**
Sample	**BK & CO Only**	**BK & CO & DEL**	**All**	**BK & CO & DEL**	**All**
Bankruptcies Neighborhood(00-04)	0.0173*	0.00607	0.00695	-0.0153**	-0.0132**
	(0.00941)	(0.00662)	(0.00648)	(0.00681)	(0.00647)
Card Utilization (%)	-0.0101**	0.00746*	0.00478***	0.0261***	0.00613***
	(0.00486)	(0.00403)	(0.00109)	(0.00412)	(0.000861)
FICO	0.00261	-0.00308**	-0.0136***	-0.00686***	-0.0172***
	(0.00160)	(0.00135)	(0.00111)	(0.00106)	(0.000815)
MortgagePayer - Dum	0.244	-0.339	-0.378	5.59e-07	-1.87e-06
	(0.367)	(0.277)	(0.271)	(4.48e-06)	(3.71e-06)
Family Median Income (PCode)	-1.88e-06	-2.14e-06	-4.32e-06	2.19e-06	7.91e-06
	(7.83e-06)	(6.08e-06)	(5.60e-06)	(9.51e-06)	(8.66e-06)
Family Income Dist (Pcode)	-9.05e-06	-9.08e-06	-3.09e-06	0.000599	0.000463
	(1.97e-05)	(1.62e-05)	(1.63e-05)	(0.00349)	(0.00289)
Pop Without Income (Pcode)	-0.00476	-0.00277	-0.00327	0.644	2.336
	(0.00661)	(0.00473)	(0.00446)	(2.695)	(2.400)
Financial Literacy	-0.410	0.369	1.685	4.18e-07	8.42e-07
	(4.205)	(3.491)	(3.391)	(8.73e-07)	(7.43e-07)
House Value (Pcode)	-5.11e-07	-6.99e-08	2.68e-07	7.32e-05	1.65e-05
	(1.53e-06)	(1.18e-06)	(1.15e-06)	(0.000359)	(0.000306)
House Ownership (Pcode)	0.000634	0.000449	0.000426	0.0363*	0.0289*
	(0.000689)	(0.000463)	(0.000441)	(0.0218)	(0.0174)
Unemployment Rate (Pcode)	-0.00326	0.0205	0.0216	-0.643***	-0.624***
	(0.0348)	(0.0275)	(0.0239)	(0.228)	(0.213)
Constant	-1.125	-1.304	2.060	-0.158	4.383***
	(1.854)	(1.526)	(1.313)	(1.217)	(0.925)
Observations	292	1,525	70,512	1,525	70,512
R2	0.0511	0.0282	0.126	0.151	0.217
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

Notes:
Logit Variable; BK = Bankruptcy (Eqn 1 in text); CO = Charge-Off (Eqn 2 in text)
Sample: "BK & CO Only" - Only Defaulters (bankrupts and charge-offs ; "BK & CO & DEL" - Defaulters + 3 month credit card delinquents; "All" - All Credit Card Holders

TABLE 5C: LOGIT MODELS:
OSB NEIGHBORHOOD MEASURE: CONSUMER BANKRUPTCIES
INDIVIDUAL CREDIT CARD RISK MEASURE: CARD CREDIT LIMIT

MODEL	**1**	**2**	**3**	**4**	**5**
Logit Variable	**BK**	**BK**	**BK**	**CO**	**CO**
Sample	**BK & CO Only**	**BK & CO & DEL**	**All**	**BK & CO & DEL**	**All**
Bankruptcies Neighborhood(00-04)	0.0225***	0.0112**	0.0132**	-0.0132***	-0.0105**
	(0.00719)	(0.00513)	(0.00529)	(0.00486)	(0.00471)
Card Utilization (%)	-0.00704*	0.0119***	0.00347***	0.0240***	0.00483***
	(0.00366)	(0.00343)	(0.000516)	(0.00250)	(0.000478)
Credit Limit	2.35e-05	-1.85e-05	-3.38e-05*	-4.01e-05***	-4.97e-05***
	(2.60e-05)	(2.13e-05)	(1.99e-05)	(1.46e-05)	(1.26e-05)
MortgagePayer - Dum	0.146	-0.280	-0.238	-0.628***	-0.539***
	(0.312)	(0.258)	(0.250)	(0.175)	(0.162)
Family Median Income (PCode)	-2.11e-06	-2.31e-06	-6.80e-06	7.84e-07	-4.10e-06
	(6.84e-06)	(5.56e-06)	(5.16e-06)	(3.33e-06)	(2.79e-06)
Family Income Dist (Pcode)	-5.50e-06	-3.53e-06	1.80e-06	1.35e-06	5.96e-06
	(1.70e-05)	(1.40e-05)	(1.40e-05)	(7.68e-06)	(6.75e-06)
Pop Without Income (Pcode)	-0.00455	-0.00495	-0.00572	-0.000627	-0.00119
	(0.00564)	(0.00441)	(0.00424)	(0.00261)	(0.00228)
Financial Literacy	1.860	0.940	2.927	-0.848	1.901
	(3.575)	(3.200)	(3.142)	(2.022)	(1.818)
House Value (Pcode)	-1.53e-07	-1.07e-07	1.77e-07	5.72e-08	2.73e-07
	(1.35e-06)	(1.11e-06)	(1.03e-06)	(6.74e-07)	(5.53e-07)
House Ownership (Pcode)	0.000871	0.000741*	0.000741*	8.36e-07	-8.30e-06
	(0.000547)	(0.000420)	(0.000406)	(0.000281)	(0.000253)
Unemployment Rate (Pcode)	0.00541	0.0155	0.0242	0.0212	0.0278***
	(0.0243)	(0.0228)	(0.0186)	(0.0148)	(0.0106)
Constant	-1.284	-3.919***	-7.323***	-3.012***	-5.848***
	(1.242)	(1.106)	(1.050)	(0.706)	(0.603)
Observations	459	2,084	87,152	2,084	87,152
R2	0.0379	0.0285	0.0257	0.0903	0.0349
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

Notes:
Logit Variable; BK = Bankruptcy (Eqn 1 in text); CO = Charge-Off (Eqn 2 in text)
Sample: "BK & CO Only" - Only Defaulters (bankrupts and charge-offs ; "BK & CO & DEL" - Defaulters + 3 month credit card delinquents; "All" - All Credit Card Holders

TABLE 5D: LOGIT MODELS:
OSB NEIGHBORHOOD MEASURE: CONSUMER PROPOSALS
INDIVIDUAL CREDIT CARD RISK MEASURE: CARD APR

MODEL	**1**	**2**	**3**	**4**	**5**
Logit Variable	**BK**	**BK**	**BK**	**CO**	**CO**
Sample	**BK & CO Only**	**BK & CO & DEL**	**All**	**BK & CO & DEL**	**All**
Proposals Neighborhood (00-04)	0.129**	0.0822**	0.0838**	-0.0667*	-0.0524
	(0.0509)	(0.0403)	(0.0401)	(0.0353)	(0.0334)
Card Utilization (%)	-0.00732**	0.0122***	0.00361***	0.0245***	0.00519***
	(0.00366)	(0.00342)	(0.000513)	(0.00248)	(0.000475)
Card APR	-0.0509*	0.0287	0.0136	0.0928***	0.0615***
	(0.0307)	(0.0254)	(0.0241)	(0.0184)	(0.0167)
MortgagePayer - Dum	0.181	-0.278	-0.280	-0.574***	-0.536***
	(0.308)	(0.257)	(0.251)	(0.175)	(0.162)
Family Median Income (PCode)	-2.53e-06	-2.30e-06	-7.24e-06	1.06e-06	-4.13e-06
	(6.77e-06)	(5.51e-06)	(5.01e-06)	(3.39e-06)	(2.78e-06)
Family Income Dist (Pcode)	-8.88e-06	-3.42e-06	1.15e-06	3.20e-06	5.59e-06
	(1.74e-05)	(1.39e-05)	(1.40e-05)	(7.71e-06)	(6.80e-06)
Pop Without Income (Pcode)	-0.00537	-0.00518	-0.00581	-0.00129	-0.00132
	(0.00565)	(0.00443)	(0.00426)	(0.00263)	(0.00228)
Financial Literacy	2.534	1.570	3.715	-1.582	1.260
	(3.559)	(3.192)	(3.142)	(2.014)	(1.791)
House Value (Pcode)	6.17e-08	-7.09e-08	2.14e-07	-5.79e-08	2.50e-07
	(1.34e-06)	(1.11e-06)	(1.01e-06)	(6.82e-07)	(5.46e-07)
House Ownership (Pcode)	0.000902	0.000768*	0.000746*	8.65e-05	1.86e-05
	(0.000550)	(0.000422)	(0.000409)	(0.000286)	(0.000254)
Unemployment Rate (Pcode)	0.00309	0.0128	0.0226	0.0231	0.0288***
	(0.0243)	(0.0227)	(0.0195)	(0.0149)	(0.0103)
Constant	-0.435	-4.649***	-7.870***	-4.577***	-6.939***
	(1.356)	(1.188)	(1.128)	(0.769)	(0.663)
Observations	459	2,084	87,151	2,084	87,151
R2	0.0355	0.0289	0.0232	0.0989	0.0336
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

Notes:
Logit Variable; BK = Bankruptcy (Eqn 1 in text); CO = Charge-Off (Eqn 2 in text)
Sample: "BK & CO Only" - Only Defaulters (bankrupts and charge-offs ; "BK & CO & DEL" - Defaulters + 3 month credit card delinquents; "All" - All Credit Card Holders

TABLE 5E: LOGIT MODELS:
OSB NEIGHBORHOOD MEASURE: CONSUMER PROPOSALS
INDIVIDUAL CREDIT CARD RISK MEASURE: FICO SCORE

MODEL	**1**	**2**	**3**	**4**	**5**
Logit Variable	**BK**	**BK**	**BK**	**CO**	**CO**
Sample	**BK & CO Only**	**BK & CO & DEL**	**All**	**BK & CO & DEL**	**All**
Proposals Neighborhood (00-04)	0.0839	0.0604	0.0528	-0.0370	-0.0412
	(0.0612)	(0.0470)	(0.0456)	(0.0447)	(0.0423)
Card Utilization (%)	-0.0106**	0.00743*	0.00479***	0.0261***	0.00614***
	(0.00485)	(0.00404)	(0.00109)	(0.00411)	(0.000858)
FICO	0.00258	-0.00309**	-0.0136***	-0.00686***	-0.0171***
	(0.00160)	(0.00134)	(0.00111)	(0.00106)	(0.000815)
MortgagePayer - Dum	0.269	-0.341	-0.378	-0.634***	-0.626***
	(0.365)	(0.277)	(0.271)	(0.228)	(0.213)
Family Median Income (PCode)	-2.65e-06	-1.90e-06	-4.34e-06	1.17e-06	-1.41e-06
	(7.79e-06)	(6.07e-06)	(5.54e-06)	(4.50e-06)	(3.74e-06)
Family Income Dist (Pcode)	-1.00e-05	-8.98e-06	-3.09e-06	2.59e-06	7.87e-06
	(1.99e-05)	(1.62e-05)	(1.63e-05)	(9.51e-06)	(8.67e-06)
Pop Without Income (Pcode)	-0.00550	-0.00265	-0.00320	0.000643	0.000321
	(0.00659)	(0.00473)	(0.00445)	(0.00349)	(0.00290)
Financial Literacy	-0.0757	0.639	1.990	-0.0236	1.621
	(4.188)	(3.469)	(3.370)	(2.661)	(2.358)
House Value (Pcode)	-4.15e-07	-8.00e-08	2.92e-07	4.76e-07	8.93e-07
	(1.53e-06)	(1.19e-06)	(1.14e-06)	(8.73e-07)	(7.44e-07)
House Ownership (Pcode)	0.000671	0.000444	0.000421	9.35e-05	3.69e-05
	(0.000689)	(0.000463)	(0.000441)	(0.000359)	(0.000307)
Unemployment Rate (Pcode)	-0.00609	0.0177	0.0204	0.0387*	0.0301*
	(0.0347)	(0.0274)	(0.0242)	(0.0218)	(0.0172)
Constant	-1.050	-1.388	1.970	-0.118	4.479***
	(1.852)	(1.526)	(1.316)	(1.210)	(0.921)
Observations	292	1,525	70,512	1,525	70,512
R2	0.0469	0.0292	0.126	0.147	0.215
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

Notes:
Logit Variable; BK = Bankruptcy (Eqn 1 in text); CO = Charge-Off (Eqn 2 in text)
Sample: "BK & CO Only" - Only Defaulters (bankrupts and charge-offs ; "BK & CO & DEL" - Defaulters + 3 month credit card delinquents; "All" - All Credit Card Holders

TABLE 5F: LOGIT MODELS:
OSB NEIGHBORHOOD MEASURE: CONSUMER PROPOSALS
INDIVIDUAL CREDIT CARD RISK MEASURE: CARD CREDIT LIMIT

MODEL	**1**	**2**	**3**	**4**	**5**
Logit Variable	**BK**	**BK**	**BK**	**CO**	**CO**
Sample	**BK & CO Only**	**BK & CO & DEL**	**All**	**BK & CO & DEL**	**All**
Proposals Neighborhood (00-04)	0.134***	0.0831**	0.0852**	-0.0638*	-0.0510
	(0.0510)	(0.0402)	(0.0400)	(0.0350)	(0.0333)
Card Utilization (%)	-0.00738**	0.0119***	0.00348***	0.0239***	0.00480***
	(0.00366)	(0.00344)	(0.000518)	(0.00249)	(0.000475)
Credit Limit	2.51e-05	-1.73e-05	-3.39e-05*	-4.11e-05***	-4.98e-05***
	(2.59e-05)	(2.11e-05)	(1.99e-05)	(1.46e-05)	(1.26e-05)
MortgagePayer - Dum	0.179	-0.286	-0.243	-0.623***	-0.538***
	(0.309)	(0.259)	(0.250)	(0.175)	(0.162)
Family Median Income (PCode)	-2.58e-06	-2.18e-06	-6.96e-06	1.16e-06	-3.79e-06
	(6.78e-06)	(5.50e-06)	(5.05e-06)	(3.35e-06)	(2.80e-06)
Family Income Dist (Pcode)	-6.31e-06	-4.15e-06	1.48e-06	1.81e-06	6.04e-06
	(1.72e-05)	(1.40e-05)	(1.39e-05)	(7.67e-06)	(6.76e-06)
Pop Without Income (Pcode)	-0.00508	-0.00497	-0.00577	-0.000696	-0.00129
	(0.00566)	(0.00443)	(0.00426)	(0.00261)	(0.00228)
Financial Literacy	2.735	1.547	3.739	-1.452	1.378
	(3.544)	(3.186)	(3.135)	(2.000)	(1.787)
House Value (Pcode)	4.02e-08	-4.50e-08	2.34e-07	5.94e-08	2.94e-07
	(1.33e-06)	(1.11e-06)	(1.02e-06)	(6.74e-07)	(5.54e-07)
House Ownership (Pcode)	0.000892	0.000736*	0.000737*	1.56e-05	3.90e-06
	(0.000548)	(0.000420)	(0.000408)	(0.000281)	(0.000253)
Unemployment Rate (Pcode)	0.00117	0.0126	0.0227	0.0236	0.0284***
	(0.0244)	(0.0227)	(0.0194)	(0.0148)	(0.0104)
Constant	-1.443	-4.091***	-7.520***	-2.907***	-5.756***
	(1.242)	(1.108)	(1.056)	(0.705)	(0.600)
Observations	459	2,084	87,152	2,084	87,152
R2	0.0321	0.0282	0.0249	0.0878	0.0343
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

Notes:
Logit Variable; BK = Bankruptcy (Eqn 1 in text); CO = Charge-Off (Eqn 2 in text)
Sample: "BK & CO Only" - Only Defaulters (bankrupts and charge-offs ; "BK & CO & DEL" - Defaulters + 3 month credit card delinquents; "All" - All Credit Card Holders