Credit expansion and socio-economic heterogeneity of debtors in foreclosure: the case of Sweden 2000–2014

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ABSTRACT

Credit expansion is the trend of households gaining access to more credit. It is correlated with increasing socio-economic heterogeneity of indebted homeowners. Increasing heterogeneity implies that a more diverse span of homeowners is put at risk of foreclosure. This empirical study explores socio-economic heterogeneity in the case of Swedish debtors in foreclosure between 2000 and 2014. Employing individual-level data, the study observes variability over time for socio-economic variables within and between three groups of debtors with mortgage, consumer, and tax debt, respectively. The results indicate that there were trends towards increasing socio-economic heterogeneity within these three groups and that these trends were particularly strong among the group with mortgage debt. For the mortgage debt group, a greater number of socio-economically weak debtors entering foreclosure over time drives increasing heterogeneity. The discussion focuses on the role of increasing scope—access to credit for previously excluded households—and increasing scale—more access to credit generally—in explaining these findings.

Introduction

Homeowners have traditionally been regarded as a fairly homogeneous group in terms of their socio-economic resources, with images of middle-class families in their suburban houses coming to mind (Cohen, 1950; compare Chevan, 1989). However, credit expansion has altered this image. As more households gain access to credit to buy housing, homeowners have become increasingly heterogeneous. As a result, the risk of default and foreclosure may spread to more households with varying socio-economic resources. Whereas foreclosure could historically be dismissed as a problem mainly for the home-owning middle class, there is now a new landscape to consider. Although the link between credit expansion and socio-economic heterogeneity among homeowners has been studied before (Edelberg, 2006; Mian & Sufi, 2009), researchers have paid less attention to homeowners in foreclosure. I address this knowledge gap

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by exploring this association among Swedish homeowners in foreclosure from 2000 to 2014 using the following research questions: How did socio-economic heterogeneity vary among these homeowners during this time period? How can the phenomenon of credit expansion contribute to a better understanding of such changes?

Contemporary households in the Western hemisphere depend on credit for all kinds of consumption, including home purchases (Burton, 2008). Accordingly, access to credit is vital in enabling households to live full economic and social lives. This is the promise of the 'democratization of finance' (Erturk *et al.*, 2007). However, access to credit is also a gatekeeper for homeownership. Access is differentiated not only quantitatively, but also qualitatively, since households with different socio-economic profiles are offered different credit terms (Langley, 2008). Additionally, the level of financialization for households is stratified according to socio-economic status (Fligstein & Goldstein, 2015). Some households have no access to credit to finance homeownership, while other households are offered credit at inferior terms such as higher interest rates, variable interest rates, balloon payments, and prepayment penalties (Quercia *et al.*, 2007).

Researchers have discussed the implications of credit expansion for households' access to credit. Trends in credit expansion since the 1980s are well documented in the US context (Den Haan & Sterk, 2011, pp. 713–715; Dynan *et al.*, 2007; Fligstein & Goldstein, 2015, p. 580; Mian & Sufi, 2009). They have also been considered from an international perspective (dos Santos, 2013). Homeowners account for large shares of both households' total indebtedness and increase in indebtedness (Palley, 2013, pp. 22–25). This study defines credit expansion as the observed increase in access to credit for households, as well as access to credit for households that were previously excluded from the credit market. In line with Langley, this conceptualization is attentive to how credit expands in terms of both 'scale and scope' (2008, p. 163; compare Van Gunten & Navot, 2018).

Figure 1 illustrates credit expansion in Sweden from 1998 to 2015 in terms of scale. Total household debt in Sweden increased by about a factor of three. This increase in scale was predominantly driven by the Swedish households taking on more mortgage debt. The figure also shows the increase in household debt-to-income ratio from just under 100% to close to 180% during this time period.

This study descriptively analyses how variability in various observable characteristics, used as indicators of heterogeneity,[1] developed over the 2000–2014 time period for debtors in foreclosure. In Sweden, default on any type of debt may result in foreclosure. The empirical analysis distinguishes between three groups of foreclosure debtors, according to the debt type that has forced them into foreclosure. These debt types are (i) mortgage debt, (ii) consumer debt, and (iii) tax debt.[2] I calculate measures of within-group and between-group variability for the socio-economic variables for yearly cross-sections of debtors subject to foreclosure. The main results indicate increasing socio-economic heterogeneity within the subgroups, but not between them. A separate analysis tracks how the proportions of socio-economically weak and strong mortgage debtors varied over time in an attempt to understand the potential drivers of heterogeneity. The results indicate that an increasing proportion of weak mortgage debtors is driving within-group heterogeneity.
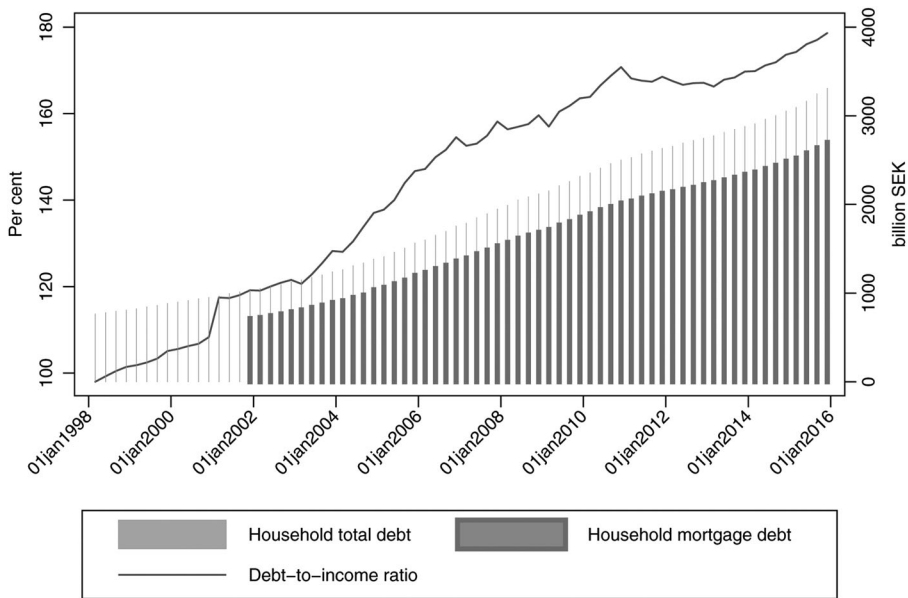
Figure 1. Household debt-to-income ratio, total debt and mortgage debt in Sweden 1998–2015.
Source: Statistics Sweden (aggregate data retrieved at http://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START__ FM__FM0401/MFIM1/?rxid=f45f90b6-7345-4877-ba25-9b43e6c6e299, accessed 22 October 2018) and Sveriges Riksbank (2016) (retrieved at http://archive.riksbank.se/en/Web-archive/Published/Published-from-the-Riksbank/Financial-stability/ Financial-Stability-Report/index.html, accessed 27 July 2020).

The main contribution of this study is an empirical description of how the socio-economic resources of Swedish debtors in foreclosure change over time. I then argue that the concurrent credit expansion may contribute to a better understanding of the changes observed in the data. I draw upon the discussion of scale versus scope with regard to access to credit to understand the implications of my empirical findings in terms of what happens when an inherent risk of default is triggered for an increasingly heterogeneous group of debtors. Furthermore, the individual-level time series data set employed in this study offers unique and detailed insights into who the foreclosed were in Sweden 2000–2014. This helps fill a gap identified in previous empirical studies pointing to the scarcity of research about the socio-economic and demographic characteristics of the foreclosed (Allen, 2011; Niedt & Martin, 2013).[3]

I proceed with a few brief comments about the Swedish context. I then define and discuss the central concept of credit expansion. Following this discussion, I present the data and empirical approach. After that, I present my analysis and main results. In conclusion, I discuss the implications of my empirical finding of increasing socio-economic heterogeneity for foreclosure debtors during a period of credit expansion.

The Swedish case

Contextually, I delineate the Swedish case along three separate trajectories: homeownership policies, banking practices, and foreclosure proceedings. This is necessary for an understanding of the ensuing discussion on credit expansion, and in order to situate the study research design and results.

Homeownership policies

According to Ruonavaara (2012), the period since the 1990s has been characterized by 'retrenchment' in Sweden with regard to housing policy, implying a shift from a highly regulated tenure system to market orientation. Christophers (2013) traces this period as far back as the 1970s and outlines the major changes, including the market-ization of the public rental sector since the 1990s, a continuing expansion of owner-occupation driven by conversions of rental into tenant-owned apartments (see also Wimark *et al.*, 2020), and an abandonment of the principle of tenure neutrality, mainly through the removal of interest subsidies supporting new construction of apartments and taxation-based bias in favour of owner-occupation. Moreover, there has been very little new construction of residential housing units, resulting in housing shortages in the major urban areas (Emanuelsson, 2015). Over the studied time period, 2000–2014, the share of privately owned houses was fairly stable at 38–39 per cent of the total housing stock (Emanuelsson, 2015, p. 58; Ruonavaara, 2012, p. 94). However, the share of tenant-owned apartments rose from 16 per cent to 22 per cent (*ibid.*).

Banking practices

During the 1980s, Sweden followed the international trend of deregulation of a highly regulated market for mortgage credit, resulting in rapid credit expansion.[4] In the 1990s, the mortgage credit market consolidated following the financial crisis in the early years of the decade. During the first decade of the 2000s, there were some important changes in banking practices related to credit expansion. In Sweden, it has long been a banking tradition that mortgage loans are kept as assets in the bank. Accordingly, in comparison with other national contexts, such as the US, the Swedish banks do not use securitization to any greater extent as a way of financing mortgage lending (Eliasson & Rydén, 2014). Instead, the banks finance mortgage lending primarily by issuing bonds, which are sold to investors. In 2004, a new law required mortgage banks to switch to covered bonds. The banks implemented the law in 2006–2008, which enabled easier access to international capital since covered bonds are collateralized against a dynamic pool of assets on the bank's balance sheet. Furthermore, the Basel II Accord lowered the requirement for capital in relation to mortgage lending for Swedish banks. In 2010, regulatory intervention capped the maximum loan-to-value ratio at 85 per cent for mortgage loans in an attempt to curb household indebtedness. However, house prices and household indebtedness continued to rise, although Andersson *et al.* (2018) observe slowed growth of household debt in conjunction with the implementation of the cap. In conclusion, the changes in Swedish banking practices during the study period enabled credit expansion.

Foreclosure proceedings

Foreclosure as a legal institute constitutes the legal proceedings that aim to sell real estate property for the payment of debt.[5] All foreclosures are handled by the Swedish Enforcement Authority (SEA).[6] The actual sale of the property takes place at a public

Table 1. Summary of the debt types relevant for foreclosure in Sweden.

Debt type	Creditor	Definition	Mortgage lien	Foreclosure initiation
Mortgage	Mortgage banks/creditors	Loan with real estate as collateral	Yes	Court verdict
Consumer	All other private and public creditors	All unsecured credit and loans	No	SEA attachment
Tax	Government	Tax debt and public fees and fines	No	SEA attachment

auction. The time span is relatively short as a first auction should be held within four months. Not all foreclosure cases result in the sale of the real estate due to revocations (the stakeholders reach some form of settlement) or low or no bids at the auctions.

After a homeowner has defaulted, a court or the SEA initiates foreclosure through attachment[7] of the real estate. For homeowners, default on three types of debt may lead to foreclosure: mortgage credit, consumer credit, and tax debt. Mortgage credit is defined as loans with collateral (lien) in real estate. This means that mortgage lenders have an, in principle, incontestable right to foreclosure upon default and the right to payment before other creditors. Mortgage creditors initiate foreclosure at court with a request that the bank's right to payment due to mortgage lien be established in a verdict. Consumer credit compromises all unsecured private or public debt. Firms within the debt-collection industry are the primary creditors for this debt type. Tax debt mainly concerns household debt for nonpayment of taxes, but also includes governmental fees and fines. What these last two debt types have in common is that the creditors do not hold a mortgage lien and thus have a right to payment only after all mortgage credits have been resolved. Unlike mortgage credit, attachment of the real estate property for these debt types is not done at court. Instead, the SEA attaches the real estate if its value exceeds the mortgage credit and sale is projected to result in substantial payment of the debts. Foreclosure may be the result of a homeowner defaulting on more than one type of debt. The main debt types are summarized in Table 1.

Default on mortgage credit is the most common cause of foreclosure and made up about 40 per cent of the cases at the SEA between 2000 and 2014. Consumer credit accounted for close to 10 per cent and tax debt for about 25 per cent. In the remaining 25 per cent, the debtors had defaulted on several different types of debt. From 2000 to 2014, the number of foreclosure cases at the SEA varied between 2000 and 4000 per year.[8] There was an increase in foreclosure cases from close to 3000 cases per year in 2006/2007 to about 4000 cases per year in 2010/2011, but the number of cases then declined. The number of actual sold properties on foreclosure auctions varied between 300 and 1100.[9]

Credit expansion and debtors in foreclosure

In this section, I first briefly review the empirical literature on how the scale and scope of credit expansion is correlated with socio-economic heterogeneity during access to credit. I then discuss how and why credit expansion is relevant for socio-economic heterogeneity for debtors in foreclosure.

One aspect of mortgage credit expansion is to what degree it actually grants access to credit to new consumers or whether it instead mainly entails higher access for already indebted consumers. Proponents of scale, such as Dynan *et al.* (2007; see also Van Gunten & Navot, 2018), claim that credit expansion results in higher indebtedness for households that already have access to the credit market rather than granting excluded households increased access to the credit market. However, research indicates that scope is also relevant. On the one hand, credit expansion entails greater access to credit for households that were previously excluded from the credit market (Barr, 2012; Lyons, 2003). Fligstein and Goldstein (2015) show that American households were generally more financialized in 2007 compared to 1989 in the sense that they had more accounts and more credit cards, used more financial information, and held more assets in stocks and mutual funds. Mian and Sufi (2009) document a historically unprecedented relative expansion in mortgage credit to low socio-economic (subprime) households in the US from 2002 to 2005. Edelberg (2006) finds that American high-risk households' probability of holding a first mortgage increased in the mid-1990s. On the other hand, this expansion of mortgage credit to new borrowers comes at the price of differentiated credit terms according to socio-economic resources. Edelberg's (2006) results show that risk-based pricing of interest rates for consumer loans, including mortgage loans, was increasingly employed by lenders in the mid-1990s.

Thus, the empirical evidence indicates that both types of credit expansion trends are associated with increasing socio-economic heterogeneity of households at the access-to-credit stage. Increasing scale provides a higher number of socio-economically strong households with access to more credit than before. Increasing scope provides an additional number of weak households with access to credit that they did not have previously. This is the case because one key aspect of credit expansion is that the transformation of uncertainty about future payments into risk assessments enables the transfer of risk (Aalbers, 2005; Langley, 2008; Leyshon & Thrift, 1999; Marron, 2007; Wainwright, 2011). Risk assessments are made by quantifying consumer characteristics, both individual and aggregate, into credit scores. From a financial perspective, this is necessary to deal with the inherent information asymmetry of credit (Knoop, 2008). Credit-scoring regulates not only access to credit, but also the price of access through such techniques as risk-based pricing (Langley, 2008; Marron, 2007). Risk-based pricing means that lenders charge differentiated interest rates depending on their calculations of the default risk.[10] Lenders thereby mitigate higher risk levels, while differentiated credit terms have the implication that risk levels for households are also differentiated (Dynan, 2009). However, beyond the primary (consumer) credit market, risk assessments are also necessary to attract investors to the secondary credit market. This is fuelled by advances in information technology and financial innovation, such as the securitization of mortgage loans (e.g. Burton, 2008; Dynan, 2009; Dynan *et al.*, 2006, 2007; Gerardi *et al.*, 2010; Knoop, 2008).

Thus, increasing socio-economic heterogeneity for indebted households is intricately linked with contemporary credit expansion. Banks and investors may mitigate risk, while increasing debt levels entail higher risk for both strong and weak households. Still, to my knowledge, there is scant empirical research on the development of

socio-economic heterogeneity for households, including homeowners, in default. Drawing on the scale/scope debate outlined above, this empirical study attempts to establish whether increasing socio-economic heterogeneity for homeowners in foreclosure is possible to observe in the case of Sweden from 2000 to 2014. If more socio-economically strong households end up in foreclosure under conditions of credit expansion, then this trend should be correlated primarily with scale. If more weak households are forced into foreclosure, then the correlation should be primarily with scope.

Data and methods

The data set in this study consists of individual-level data from the SEA's register on foreclosures and from the registers of Statistics Sweden. This data set is cross-sectional. The SEA register on foreclosures consists of data on all foreclosure cases and debtors in Sweden since 1998. In a foreclosure case, there may be one or several debtors. The SEA register contains some basic demographic variables for the debtors, such as age and sex. There are also case-specific variables that describe how the case was initiated, i.e. the debt type. I utilize a subset of the SEA data consisting of all debtors subject to foreclosure related to real estate property from 2000 to 2014 ($N = 43\ 074$). I exclude all debtors who have defaulted on several debt types ($N = 32\ 744$). The result is that each debtor in a specific case can be connected to a specific debt type. Since foreclosure debtors may be recurrent in the register, the same individual may appear on several rows in the data set.[11] In the event of recurrence for a specific debtor, the analysis utilizes all observations. Statistics Sweden provided the socio-economic variables, except for sex and age, and merged them with the SEA data on the individual level.[12] In the analysis, the sample sizes are smaller for some variables due to missing observations in the data from Statistics Sweden. Table 2 summarizes the properties of the variables in the data set.

As described in the Swedish case section above, default on different types of debt—mortgage, consumer, and tax—may lead to foreclosure. These debt types are relevant for socio-economic heterogeneity because the specific contingencies for credit expansion vary by debt type.[13] With regard to scale, Figure 1 illustrates that mortgage debt is the primary driver of household debt in Sweden. With regard to scope, this is possible to infer by looking at aggregate data from the SEA on the temporal development of household defaults for the different debt types. One example related to mortgage credits is how new banks with a focus on subprime products have emerged in the Swedish mortgage credit market for households. Four major banks, which are local to the Swedish and Scandinavian countries, dominated this market during the studied time period (Svenska Bankföreningen, 2015; Sveriges Riksbank, 2014). By international comparison, there was no market for subprime mortgages (Hullgren & Söderberg, 2013), yet 'niche players' targeting 'consumers having difficulties being approved for mortgages by the major banks' (Swedish Competition Authority, 2013, p. 49; see also Sveriges Riksbank, 2018, pp. 31–34) were emerging.[14] In 2005, there were almost no applications for foreclosure by these new banks. By 2014, they accounted for approximately 15 per cent of the foreclosure cases.[15] An example

Table 2. Code book.

Variable	Description	Source	Coding	N
Debt type	Type of debt that forces the debtor into foreclosure	SEA	1= Mortgage debt 2= Consumer debt 3= Tax debt	32 744
Employment	Debtor is working as of the end of the year before the foreclosure case	SCB	0= No 1= Yes	31 158
Family type (Married)	Debtor is married as of the end of the year before the foreclosure case	SCB	0 = No 1= Yes	31 171
Family type (Minor children)	Debtor has minor children as of the end of the year before the foreclosure case	SCB	0 = No 1 = Yes	31 171
Education	Debtor's educational level as of the end of the year before the foreclosure case	SCB	Years schooling Note: This variable has been recoded from a categorical variable according to the following scheme: 1 = Elementary school, less than 9 years = 7 2 = Elementary school, 9 years = 9 3 = Secondary school, max 2 years = 11 4 = Secondary school, 3 years = 12 5 = Higher education, less than 3 years = 14 6 = Higher education, more than 3 years = 16 7 = Doctoral education = 21	30 485
Sex	Debtor's sex	SEA	0 = male 1 = female	32 744
Age	Debtor's age at the initiation of the foreclosure case	SEA	Age in years	32 744
Birth country	Debtor is born in Sweden	SCB	0 = No 1 = Yes	32 703
Disposable household income	Debtor's household disposable income[a] for the year before the foreclosure case	SCB	tSEK with money value adjusted to year 2014	31 841
Net wealth	Debtor's total assets, including real estates, minus total debts for the year before the foreclosure case.	SCB	tSEK with money value adjusted to year 2014 Note: data available only for period 2000–2008 Note: Values may be negative	19 660

Note: The acronym SCB means Statistics Sweden. 1 tSEK = SEK 1,000 (Swedish crowns) = €94 = $102 (exchange rates according to the Swedish Riksbank (https://www.riksbank.se/en-gb/statistics/, accessed 11 May 2020).
[a]Households are constructed by Statistics Sweden for each debtor. The disposable income is the sum of net income after tax minus paid alimony, repaid student loans, advance maintenance payments, and cost deductions for the entire household.

related to consumer credit is the sudden surge in the number of applications for orders to pay[16] submitted to the SEA due to defaults on short-term loans. In 2006, there were almost no such applications. By 2014, there were close to 60 000 applications annually.[17] In contrast, the total amount of tax debt subject to enforcement at the SEA remained fairly stable.[18]

These findings indicate that the scale and scope of credit expansion varied by debt type in Sweden from 2000 to 2014. One potential driver is variations in the regulatory environment for these debt types. Mortgage credit is subject to quite intense regulatory supervision, at both the European and national levels. An example of EU legislation is the 2014 Mortgage Credit Directive. An example of Swedish regulation is the adoption in 2010 of a mortgage cap at 85 per cent for the loan-to-value ratio. Regulatory activity is less intense with regard to consumer credit, which is mainly subject to consumer protection regulation. An example of regulation aimed at the lenders is that in 2014. all business involving the mediation or sale of credit to consumers, including short-term lending, was made subject to governmental authorization and supervision in Sweden. With regard to tax debt, regulatory changes during the first decade of the 2000s concerned the level and application of taxation. For example, the Swedish government abolished the tax on wealth and reduced income tax for the employed (Lewin, 2009).

In my empirical strategy, I consider these separate trajectories of credit expansion for mortgage debt, consumer debt, and tax debt by analyzing how heterogeneity of the debtors' socio-economic resources develops over time for each debt type separately. This strategy enables me to compare how socio-economic heterogeneity develops both within and between these subgroups of debtors in foreclosure.[19] I then discuss whether a correlation with credit expansion during the studied time period may explain the observed time trends.

The variables employment, family type with regard to whether the debtor is married and the presence of minor children, education, sex, age, birth country, disposable household income, and net wealth operationalize the socio-economic resources of the debtors. Table 1 presents these operationalizations in detail. These variables are consistent with the most common objective individual-level indicators of socio-economic status[20]: education, income, wealth, and occupation (Baker, 2014; Galobardes et al., 2007). I draw upon previous empirical studies of social control to also include family type variables (marriage and minor children) and social status variables (sex, age, and birth country) as socio-economic resources (e.g. Auerhahn, 2012; Avakame et al., 1999; Clay-Warner & McMahon-Howard, 2009; Copes et al., 2001; Felson & Paré, 2005; Holtfreter, 2008; Kuo et al., 2012; Rojek et al., 2012).[21]

In this analysis, I rely on descriptive statistics to compare how variability within and between the different subgroups by debt type develops over time for each socio-economic variable. I interpret increased within-group variability over time as an indication of greater socio-economic heterogeneity for debtors within a specific subgroup. I interpret increased between-group variability over time as an indication of greater socio-economic heterogeneity for the debtor subgroups in relation to each other. Correlations only are observed. Standard deviations, i.e. the dispersion of the observations, measure the within-group variability for continuous variables. For categorical

variables, I rely on the measure for unalikeability suggested by Kader and Perry (2007). This represents 'the proportion of possible comparisons (parings) which are unalike' (p. 12), and thus conceptualizes the variability of categorical variables as an answer to the question 'how often', rather than 'how much'. This means that, since all of my categorical variables are dichotomous, the variability increases as the proportions for the dummies approach 0.5. In equation form,

$$u_2 = 2p_1p_2$$

where u_2 is the coefficient of unalikeability and p_1 and p_2 are the proportions, with value 1 and 0, respectively, for the dummy. The differences in proportions and the differences in mean or median values between all three subgroups measure between-group variability for categorical and continuous variables, respectively. This is equivalent to the range.

Research results

I proceed by analyzing the within-group and between-group variability for the socio-economic variables one by one. I denote subgroups of foreclosure debtors as mortgage, consumer, and tax debtors, respectively. For each socio-economic variable, I

Table 3. Descriptive statistics: Categorical variables.

Variable	Subset	Count	Time period 2000–2014	2000	2014
Employment	Total	31 158	57.90	67.03[a]	52.47[a]
	Mortgage	19 018	59.50	66.94	52.96
	Consumer	3536	52.49	53.55	55.06
	Tax	8604	56.61	70.92	49.73
Sex	Total	32 744	33.02	36.35	34.07
	Mortgage	19 993	36.64	39.63	36.71
	Consumer	3697	36.41	36.02	35.71
	Tax	9054	23.64	21.57	25.00
Birth country	Total	32 703	87.77	91.87[b]	82.21[b]
	Mortgage	19 979	88.94	92.50	83.08
	Consumer	3689	84.77	87.58	80.61
	Tax	9035	86.43	90.08	80.25
Married	Total	31 171	54.38	62.18[c]	48.24[c]
	Mortgage	19 021	57.79	64.30	52.56
	Consumer	3536	51.67	54.84	40.45
	Tax	8614	47.95	54.27	38.61
Minor Children	Total	31 171	43.40	51.30	36.55[d]
	Mortgage	19 021	47.41	54.22	39.79
	Consumer	3536	36.68	43.87	28.65
	Tax	8614	37.30	39.70	30.29

Note: Values are in percentages. See Table 2 (code book) for coding.
[a]The 56.9 per cent of the Swedish population over 16 years of age was employed in 2000. In 2014, it was 58.4 per cent. *Source*: Statistics Sweden.
[b]The 88.7 per cent of the Swedish population had Sweden as birth country in 2000. In 2014, it was 83.5 per cent. *Source*: Statistics Sweden.
[c]The 35.3 per cent of the Swedish population was married in 2000. In 2014, it was 33.5 per cent. *Source*: Statistics Sweden.
[d]The 30 per cent of the Swedish households in 2014 included children aged 0–24 years. Data is not available for 2000. *Source*: Statistics Sweden.

Table 4. Descriptive statistics: Continuous variables.

Variable	Subset	Count	Mean			Median		
			Time period			Time period		
			2000–2014	2000	2014	2000–2014	2000	2014
Age	Total	32 744	49.0	47.1[a]	50.6[a]	48	46[b]	50[b]
	Mortgage	19 993	47.9	46.3	49.6	47	46	48
	Consumer	3697	51.6	48.6	54.6	51	48	53
	Tax	9054	50.5	50.4	51.9	50	50	52
Education	Total	30 485	11.1	10.6[c]	11.4[c]	11	11[c]	11[c]
	Mortgage	18 701	11.0	10.6	11.4	11	11	11
	Consumer	3427	11.0	10.5	11.3	11	11	11
	Tax	8357	11.2	10.8	11.4	11	11	11
Disposable Household Income	Total	31 841	288.4	266.0[d]	295.1[d]	250.5	254.2[d]	244.7[d]
	Mortgage	19 454	283.0	267.8	300.9	260.7	264.8	249.0
	Consumer	3598	291.4	229.1	261.4	250.6	205.6	240.1
	Tax	8789	299.1	267.6	293.4	227.4	211.3	228.9
			Time period			Time period		
			2000–2008	2000	2008	2000–2008	2000	2008
Net Wealth	Total	19 660	703.2	305.8[e]	967.1[e]	218.7	64.6[e]	320.7[e]
	Mortgage	11 724	455.5	123.6	1071.2	96.1	11.9	194.4
	Consumer	1906	535.3	411.2	540.0	269.8	254.9	215.0
	Tax	6030	1238.1	1107.0	1118.8	539.5	459.8	586.1

Note: Values for Age and Education are in years. Values for Income and Wealth are in tSEK. See Table 2 (code book) for coding.
[a]The mean age for the Swedish population was 40.3 years in 2000 and 41.2 years in 2014. *Source:* Statistics Sweden.
[b]The median age for the Swedish population was 39.5 years in 2000 and 40.9 years in 2014. *Source*: Statistics Sweden.
[c]The 26 per cent of the Swedish population aged 16–74 years had higher education (university or equivalent) in 2000. The 35 per cent of the Swedish population had higher education in 2014. *Source*: Statistics Sweden.
[d]The mean disposable household income for the Swedish population aged 18+ years was tSEK 438.4 in 2014. The median income was tSEK 344.5. According to a yearly study of a selection of Swedish households, the median disposable household income increased from tSEK 218 in 2000 to tSEK 283 in 2013 (values adjusted to 2014). *Source:* Statistics Sweden.
[e]The mean net wealth for the Swedish population was tSEK 406 in 2004 and tSEK 601 in 2007 (values not adjusted). For the subset of the Swedish population who actually had any net wealth, the corresponding values were tSEK 471 and tSEK 675. *Source*: Statistics Sweden.

first briefly present descriptive statistics (Tables 3 and 4)[22] followed by the results for within-group variability and between-group variability, respectively (Tables 5 and 6). In conclusion, I summarize the results. I also track subgroups of mortgage debtors with less and more socio-economic resources over time to analyze what is driving increasing within-group variability for this subgroup.

Employment

This is a dummy variable that indicates whether the debtor was working as of the end of the year before foreclosure. According to the descriptive statistics in Table 3, the rate of employment for all foreclosure debtors was 57.90 per cent during the studied time period. For both mortgage and tax debtors, the employment rate decreased approximately from 70 per cent in 2000 to 50 per cent in 2014. Consumer debtors were employed at a rate of around 50 per cent throughout the time period.

I apply Kader and Perry's (2007) coefficient of unalikeability, u_2, to analyze within-group variability. Unalikeability coefficients for the employment variable by

Table 5. Variability for categorical variables.

A: Employment

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Mortgage	0.44	0.44	0.45	0.45	0.48	0.49	0.49	0.49	0.49	0.49	0.50	0.50	0.50	0.50	0.50
Consumer	0.50	0.50	0.49	0.46	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.49
Tax	0.41	0.41	0.44	0.45	0.46	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Range	17.4	16.7	11.9	2.6	9.8	3.1	8.4	7.8	1.7	11.6	3.8	3.7	1.2	4.5	5.3

B: Sex

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Mortgage	0.48	0.47	0.46	0.46	0.45	0.45	0.44	0.46	0.46	0.47	0.46	0.46	0.46	0.46	0.46
Consumer	0.46	0.42	0.41	0.45	0.47	0.45	0.45	0.46	0.48	0.48	0.46	0.47	0.46	0.48	0.46
Tax	0.34	0.35	0.35	0.36	0.36	0.34	0.34	0.36	0.35	0.35	0.39	0.39	0.39	0.39	0.38
Range	18.1	14.9	13.3	11.7	14.1	12.7	12.4	12.7	17.9	16.5	9.9	10.5	9.2	13.7	11.7

C: Birth country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Mortgage	0.14	0.13	0.15	0.16	0.15	0.14	0.19	0.20	0.21	0.24	0.22	0.27	0.25	0.27	0.28
Consumer	0.22	0.22	0.22	0.18	0.24	0.23	0.25	0.23	0.27	0.23	0.31	0.29	0.25	0.30	0.31
Tax	0.18	0.20	0.18	0.20	0.20	0.20	0.20	0.25	0.29	0.25	0.27	0.31	0.29	0.29	0.32
Range	4.9	5.2	4.5	2.3	5.2	5.9	4.0	3.1	5.9	1.4	6.6	2.7	2.6	2.4	2.8

D: Family type
D1: Married

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Mortgage	0.46	0.47	0.47	0.49	0.48	0.50	0.49	0.49	0.49	0.48	0.49	0.50	0.50	0.50	0.50
Consumer	0.50	0.49	0.49	0.50	0.50	0.49	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.48
Tax	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.49	0.46	0.49	0.48	0.49	0.48	0.47
Range	10.0	8.2	8.4	7.5	5.8	4.7	7.0	10.9	14.0	25.4	16.0	11.6	9.9	11.0	14.0

D2: Minor children

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Mortgage	0.50	0.50	0.50	0.50	0.50	0.49	0.50	0.49	0.50	0.50	0.50	0.49	0.48	0.48	0.48
Consumer	0.49	0.50	0.40	0.47	0.45	0.47	0.47	0.47	0.49	0.46	0.45	0.47	0.45	0.44	0.41
Tax	0.48	0.49	0.48	0.48	0.48	0.49	0.48	0.47	0.45	0.41	0.45	0.42	0.47	0.41	0.42
Range	14.5	13.3	23.6	10.1	14.1	6.6	6.9	7.1	10.3	21.0	14.0	12.3	5.9	10.0	11.1

Note: Values for the mortgage, consumer, and tax subgroups express Kader and Perry's (2007) measure of unlikeability, u_2. Values for Range express the range across percentages for all subgroups in percentage points.

Table 6. Variability for continuous variables.

A: Age

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Mortgage	10.4	10.5	11.0	11.1	11.8	11.6	12.3	11.4	11.8	11.7	12.2	12.0	12.6	12.1	12.8
Consumer	12.4	13.8	12.8	12.3	13.4	12.3	11.3	12.9	12.6	12.4	13.0	12.1	12.5	12.1	13.1
Tax	10.8	10.4	10.9	11.5	11.8	11.0	11.2	11.2	10.9	11.4	11.1	11.6	10.8	10.7	11.9
Range	4.1	3.6	4.7	2.1	4.6	3.1	2.6	2.2	2.7	4.5	4.9	4.7	2.6	3.2	5.0

B: Education

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Mortgage	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.2	2.2	2.1	2.0	2.1	2.2	2.2	2.2
Consumer	2.4	2.4	2.5	2.8	2.5	2.5	2.2	2.3	2.3	2.2	2.4	2.2	2.5	2.3	2.4
Tax	2.7	2.6	2.5	2.6	2.6	2.4	2.3	2.4	2.4	2.5	2.3	2.5	2.3	2.4	2.3
Range	0.32	0.32	0.44	0.30	0.48	0.28	0.51	0.15	0.52	0.37	0.27	0.27	0.36	0.34	0.12

C: Disposable Household Income

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Mortgage	142	143	384	186	185	196	156	177	207	202	200	209	212	224	319
Consumer	183	346	305	270	2281	202	197	226	221	189	174	184	231	210	196
Tax	302	299	1125	197	255	287	516	1085	507	1538	325	259	253	522	281
Range	59	35	48	37	16	16	18	55	58	80	54	60	51	18	20

D: Net Wealth

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Mortgage	1037	1013	1635	1700	2800	2186	5464	2440	2676			*No*	*Data*		
Consumer	1606	1527	1215	2187	1890	2756	3512	2029	1430						
Tax	3573	1936	4897	4903	1624	1830	6055	2687	1931						
Range	448	326	459	425	473	312	437	268	392						

Note: Values for mortgage, consumer, and tax subgroups express standard deviations in years for the age and education variables and in tSEK for the income and wealth variables. Values for Range express the range across all subgroups for mean values for the age and education variables, and for median values for the income and wealth variables.

year and debtor subgroups are located in Panel A in Table 5. Both mortgage and tax debtors have more within-group variability over time as u_2 increased. In contrast, for consumer debtors, u_2 was stable at approximately 0.50 over time, indicating little variation within-group variability.

Changes over time in the range of percentages across the subgroups measure between-group variability for categorical variables. Regarding employment, there is a trend towards less between-group variability over time. The range of percentages in 2000 across the three subgroups was 17.4 percentage points, as compared with 5.3 percentage points in 2014. Except in year 2009, the ranges for the last seven years were even lower.

Family type

This socio-economic resource is operationalized by two dummy variables. The first dummy variable measures whether the debtor is married or not.[23] The second dummy variable measures whether the debtor has minor children or not. On average, 54.38 per cent of all foreclosure debtors were married and 43.40 per cent had minor children during the time period. Mortgage debtors were married and had minor children to a higher extent than consumer and tax debtors. All subgroups experienced trends towards fewer marriages and fewer minor children.

The u_2 coefficients for the minor children variable demonstrate a general trend towards less within-group variability over time for all subgroups. The same trend applies for tax debtors and for married debtors. However, for mortgage debtors, u_2 coefficients for the married variable increased from 0.46 at the beginning of the time period to 0.50 at the end, indicating more within-group variability. For consumer debtors, u_2 coefficients for this variable were quite stable, ranging from 0.48 to 0.50.

With regard to between-group variability, there is less such variability over time for the minor children dummy and more variability for the married dummy. The range for the percentages of debtors with minor children across all subgroups decreased from 14.5 percentage points in 2000 to 11.1 percentage points in 2014. The ranges for the first three years were higher than for the last four years. By contrast, the range for the percentage of married debtors increased from 10.0 percentage points to 14.0 percentage points. With the exception of 2012, the ranges for the last eight years were all higher than the ranges for the first seven years.

Education

Debtor educational level is measured by a continuous variable indicating the number of years spent in education. The mean years of education for all foreclosure debtors were 11.1 years (Table 4). The mean values were approximately the same for the various subgroups. The mean values increased for all subgroups.

For continuous variables, I employ standard deviations to measure within-group variability. Panel B in Table 6 presents the results for the education variable. The standard deviations for both mortgage and consumer debtors remained substantially unchanged over time. For tax debtors, there was less within-group variability over

time, with a decrease in standard deviation from 2.5 to 2.7 years during the first five years of the time period to 2.3 to 2.4 years during the last three years.

For continuous variables, changes over time in the range of mean or median values across the subgroups measure between-group variability. With regard to education, I focus on the range of mean values for years of education. Findings show that there is some variation in the ranges over the time period, ranging from low values of 0.12 years in 2014 and 0.15 years in 2007 to high values of 0.51 and 0.52 in 2006 and 2008, respectively. However, there is no definite trend over time. The mean range for the first six years was 0.36 years, as compared to 0.29 years for the last six years. My interpretation of the data is that there is little variation in between-group variability.

Sex

This is a dummy variable indicating that the debtor is female. Female foreclosure debtors were a minority during the studied time period since they made up only 33.02 per cent of all foreclosure debtors. The tax subgroup had the lowest proportion of female debtors and the mortgage subgroup had the highest. There were more female tax debtors over time, but fewer female mortgage debtors.

Since this is a categorical variable, I once again turn to the unalikeability coefficient, u_2, to measure within-group variability. According to Panel B in Table 5, there was more within-group variability for consumer debtors and tax debtors over time. For consumer debtors, the mean u_2 value for the first six years was 0.44, compared to 0.47 for the last six years. For tax debtors, u_2 increased from 0.34 to 0.36 during the first 10 years to 0.38 to 0.39 during the last five years. For mortgage debtors, there was a slight decrease in u_2 from 0.48 to 0.47 during the first two years to 0.46 during the last five years.

With regard to between-group variability for the sex variable, the range of percentages across the subgroups was smaller at the end of the time period than at the beginning. Except for 2013, the ranges for the last five years were smaller or equal to the ranges for the first ten years. I conclude that there is less between-group variability over time.

Age

Foreclosure debtors in Sweden were 49 years of age at the mean and 48 years of age at the median. Mortgage debtors were slightly younger than the two other subgroups. Both mean and median values increased over time for all three subgroups.

There is more within-group variability over time for mortgage debtors. According to Panel A in Table 6, the standard deviations for this subgroup were lower or equal to 11 for the first three years, while they were higher than 12 for the last five years. For the two other subgroups, there are no distinct trends over time. For consumer debtors, the standard deviations ranged from 12.3 to 13.8 years during the first six years and from 12.1 to 13.1 years during the last six years, respectively. There was a similar pattern for tax debtors, only with slightly lower standard deviations.

I focus on ranges for mean values in the analysis of between-group variability. There is a weak trend towards more between-group variability over time. During the first nine years, there were six values for ranges below 4, while there were only two values below 4 during the last six years. The mean value for the ranges during the first five years was 3.8 years compared to 4.1 years for the last five years.

Birth country

The birth country variable is a dummy variable that indicates whether the debtor was born in Sweden. Accordingly, it represents the proportion of Swedish debtors for each subgroup. The majority of the foreclosure debtors – 87.77 per cent for the entire time period – were born in Sweden. Over time, the proportion of Swedish debtors decreased in all three subgroups.

There is more within-group variability over time for all subgroups. Coefficients for u_2 ranged from 0.14 to 0.22 in 2000 and from 0.28 to 0.32 in 2014. This development indicates a quite substantial trend towards more unalikeability, i.e. that all subgroups are less alike over time.

For between-group variability, there is an opposite trend towards less variability over time. The ranges exceeded or were equal to four percentage points during the first seven years of the studied time period, except for 2003. By contrast, the ranges fell short of four percentage points during the last four years.

Disposable household income

This variable measures the disposable household income in tSEK with values adjusted to 2014. The total mean value was tSEK 288.4 and the total median value was tSEK 250.5. As measured by median values, disposable household incomes increased among both consumer and tax debtors during the studied time period, while there as a minor decline for mortgage debtors.

The within-group variability is greater over time for mortgage debtors, while there are no distinct time trends for consumer and tax debtors. According to Panel C in Table 6, the standard deviations for mortgage debtors were below tSEK 200 during the first eight years, disregarding 2002, and above tSEK 200 for the last seven years. Turning to consumer debtors, all standard deviations, except for years 2001–2004, fell within the approximate range span of tSEK 200 +/– 30 without trending up or down. For tax debtors, the data vary substantially, with a low value for standard deviations at tSEK 197 and a high value at tSEK 1538. There was a spike from 2006 to 2009 when the standard deviations exceeded tSEK 500. But for the first two years and the last four out of five years, all standard deviations fell within the approximate range span of tSEK 300 +/– 50. Just as for consumer debtors, this indicates no distinct time trend.

With regard to between-group variability for disposable household income, there are sequences of years with higher and lower values for the ranges for median values.[24] From 2000–2003 and 2007–2012, the ranges were substantially higher, with values exceeding tSEK 35, than from 2004–2006 and 2013–2014, with values at approximately tSEK 20. Due to these lower values for the last two years compared to

Table 7. Summary of results.

Variable	Within-group variability			Between-group variability
	Mortgage	Consumer	Tax	
Employment	+	0	+	−
Married	+	0	−	+
Minor children	−	−	−	−
Education	0	0	−	0
Sex	−	+	+	−
Age	+	0	0	+
Birth country	+	+	+	−
Household income	+	0	0	−
Net wealth	+	+	−	−

Note: More/less variability over time is indicated by +/−. Little variation or no trend over time is indicated by 0.

the first four years, my interpretation of the data is that there is less between-group variability over time. This is also supported by the fact that the mean value for the first four years was tSEK 45 as compared to tSEK 37 for the last four years.

Net wealth

This variable measures the net wealth of each foreclosure debtor. Data is available for years 2000–2008 only. According to the descriptive statistics, total mean net wealth for the time period was tSEK 703.2 and total median net wealth was tSEK 218.7. When comparing the subgroups, tax debtors had the most net wealth as measured by both mean and median values. However, mortgage debtors increased their net wealth substantially over time in relation to the two other subgroups.

There is more within-group variability for mortgage debtors and consumer debtors over time. For mortgage debtors, the standard deviations for the first four years fell short of tSEK 2000, while they exceeded tSEK 2000 for the last five years. There was a similar trend for consumer debtors, with standard deviations below tSEK 2000 during the first five years, except for 2003, and standard deviations above tSEK 2000 for the last four years, except for 2008. For tax debtors, there is an opposite trend towards less within-group variability. This is indicated by standard deviations higher than tSEK 3500 during the first four years, with the exception of 2001, and standard deviations lower than tSEK 3000 during the last five years, disregarding 2006.

Between-group variability for net wealth, as indicated by the ranges for median values,[25] trended towards less variability over time. The ranges exceeded tSEK 400 during four of the first five years, while they were below tSEK 400 during three of the last four years.

Summary of results

This section discusses key findings from the results, as reported in Table 7. First, the results indicate that there was a general trend towards more within-group variability for mortgage and consumer debtors' socio-economic resources in Sweden from 2000 to 2014. Mortgage debtors experienced more within-group variability over time with regard to six out of the nine socio-economic variables. For consumer debtors, there was more within-group variability for three variables and little variation for the rest
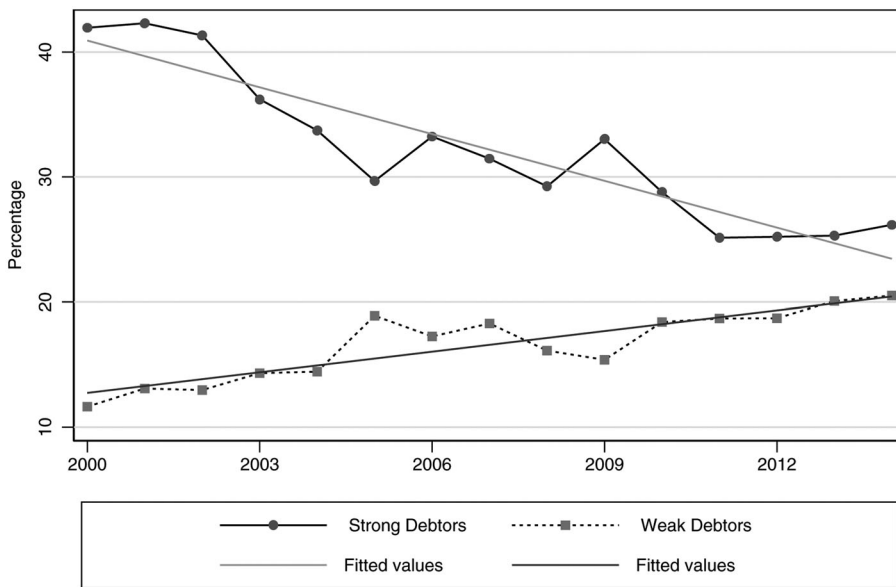
Figure 2. Share of socio-economically strong and weak mortgage debtors over time.

of the variables. Second, the results for tax debtors suggest that there is no general trend towards more within-group variability for this subgroup. The reason for this conclusion is that the results for the individual variables go both ways, with an approximately equal number of variables showing both more and less within-group variability. Third, the results do not indicate more between-group variability over time as there is less between-group variability for six of nine variables.

Tracking mortgage debtors over time

The main research results indicate that mortgage debtors are subject to stronger trends towards more within-group variability than the other two subgroups. For this reason, I supplement the analysis of mortgage debtors with an attempt at analyzing whether these trends are driven by mortgage debtors with either less or more socio-economic resources entering foreclosure over time. This is relevant to whether within-group variability is correlated with the scale or scope of credit expansion, which will be discussed later. Furthermore, this analysis also illustrates the size of the effect of more within-group variability for mortgage debtors.

In this analysis, I divide mortgage debtors into socio-economically weak and strong subgroups based on selected socio-economic resources. In the strong subgroup, the mortgage debtors are employed, married, and Swedish. In the weak subgroup, the mortgage debtors are unemployed and single without higher education. Figure 2 plots the percentages of socio-economically strong and weak mortgage debtors over time as proportions of all mortgage debtors, together with fitted OLS regression lines. According to the figure, the proportion of strong debtors is lower over time, while the proportion of weak debtors is higher. This analysis indicates that more mortgage debtors with less socio-economic resources entering foreclosure is a

driver for increasing within-group heterogeneity. It also demonstrates that this effect is substantial, as the percentage of weak mortgage debtors increased by a factor of nearly two. However, this result should be interpreted with caution. In contrast to the main analysis of variability, which focuses only on relative changes for foreclosure debtors, this ancillary analysis draws upon absolute variations in socio-economic resources over time without the possibility of isolating these variations from socio-economic and demographic trends for the Swedish population at large.

Discussion

In this article, I empirically assess whether there was increasing socio-economic heterogeneity for different subgroups of debtors in foreclosure in Sweden between 2000 and 2014. The main results indicate trends towards increasing socio-economic heterogeneity within the subgroups, but not between, and suggest that this trend was the strongest for mortgage debtors. Additionally, increasing socio-economic heterogeneity for mortgage debtors seems to be driven by more weak debtors entering foreclosure over time. This development happened during a time period in Sweden characterized by credit expansion. Under conditions of credit expansion, increasing socio-economic heterogeneity during foreclosure is expected and confirmed by the results of this study. That the results indicate stronger trends towards increasing heterogeneity for mortgage and consumer debtors, in comparison with tax debtors, is also expected, since tax debt is less likely to be subject to credit expansion. In this final section, I discuss the implications of these empirical findings for homeowners and how they may inform policy.

Increasing socio-economic heterogeneity for debtors in foreclosure implies that households across a wider range of the socio-economic scale are defaulting. For investors in the secondary market for credit, this heterogeneity translates into variations in risk, which are one of the fundamental characteristics of modern credit expansion in conjunction with financial innovation (Langley, 2008; Leyshon & Thrift, 1999; Marron, 2007). Since investors have different 'appetites for risk' (Langley, 2008, pp. 159 & 181–182; see also Marron, 2007, pp. 118–119), socio-economic heterogeneity on the borrower side is necessary for the influx of new capital. While it is true that increasing scale lowers the cost of credit and thus attracts new borrower households, it is also true that credit expansion relies on increasing scope to attract new capital. This implies that an understanding of the relationship between credit expansion and socio-economic heterogeneity among indebted households is not simply a matter of scale leading to scope in the sense that new households are able to enjoy access to credit due to increased general access to credit. Rather, this understanding should be more attentive to the complexities and interdependence of this relationship, i.e. how higher risk levels for weak households are necessary in order for strong households to enjoy greater access to credit.

But while banks and investors may hedge risk, home-owning borrowers and consumers are exposed to the risk of losing their homes and have few alternatives since most household wealth is normally concentrated in owner-occupation of a house. It should also be kept in mind that house price appreciation characterized this time period in Sweden, despite the ongoing global financial crisis (Turk, 2015). This

implies that defaults are not happening due to widespread market conditions, but rather due to households' weak economic position to withstand individual trigger events, such as unemployment or divorce. This further accentuates the concentration of risk to the home, since public economic rescue or recovery schemes for such defaults are not probable.

Furthermore, the results indicate that heterogeneity is driven by more weak mortgage debtors entering foreclosure over time. This is an important finding since it addresses the implications of credit expansion as a driver of socio-economic heterogeneity along the separate but interconnected axes of scale and scope, with regard to access to credit. If more weak debtors are forced into foreclosure, then this indicates that credit expansion in terms of scope is negatively affecting households to a higher degree than scale. Strong home-owning households seem to be coping with their increasing mortgage debt burden, while the risk of default is triggered for weak households. Given that new households with less socio-economic resources gain access to mortgage credit on worse terms due to risk-based pricing, this is not surprising (e.g. Edelberg, 2006; Langley, 2008; Quercia et al., 2007).

Finally, a few words about potential directions for policy in light of these results. Much of the discussion in this article focuses on the role of risk and credit scoring in relation to credit expansion and socio-economic heterogeneity for debtors. The results indicate that socio-economically weak debtors are taking on too much risk. But if risk is transferable on the lender side, then this should also be possible on the borrower side. With regard to mortgage credit, some commentators have argued that this is possible through the use of housing derivatives (Belsky et al., 2008; Smith, 2009).[26] Essentially, a functioning market for housing derivatives would enable homeowners to sell the investment risk of housing (i.e. the risk that house prices will not appreciate adequately). A derivatives contract means that if house prices appreciate then the investor gets part of the gain, and if house prices depreciate then the investor covers part of the loss. The selling of investment risk results in lower indebtedness, which also reduces the credit risk of housing (i.e. the risk of default). Furthermore, it enables a dynamic approach to risk levels over a household's life cycle since investment risk may be bought or sold at any time. It also enables nonhomeowners to buy into investment risk. It would, to my mind, put an entirely new meaning to sustainable homeownership by separating 'the investment and use dimensions of housing' (Smith, 2009, p. 252). However, as Smith (2009) outlines, there are considerable obstacles in the way of a functioning market for housing derivatives, primarily the construction of reliable house prices indices, and policy interventions would probably be necessary for its realization. Furthermore, it is perhaps questionable that households should rely even more on financial institutions, markets, and innovations in attempts to mitigate the risks of homeownership. These are the very same things that exposed them to risk in the first place. Still, policy makers should consider whether homeowners are indeed willing and capable of harnessing this role as 'risk managers' (Langley, 2009; see also Smith et al., 2009).

Notes

1. Socio-economic heterogeneity refers to nonuniform (diverse) qualities of a specific group. If a group is characterized as socio-economically heterogeneous, then there is large variability for specific indicators, such as education or income.

2. In this study, I consistently refer to the study object as *debtors*, rather than the narrower term *borrower*.
3. There is, to my knowledge, little previous empirical work on how socio-economic resources trend over time for debtors. Molloy & Shan (2013) use panel data to examine the post-foreclosure experience of US households, including what happens to household size, tenure choice, and neighbourhood characteristics after foreclosure. During the last 10 years, empirical research on foreclosure outcomes, including the relevance of socio-economic resources, has flourished (e.g. Been *et al.*, 2013; Chan *et al.*, 2014; Voicu *et al.*, 2012). In these study designs, however, data on debtor socio-economic resources are tracked only within the span of a single foreclosure case and not, as in this study, over several yearly cohorts of foreclosure cases.
4. See Sveriges Riksbank (2014) and Sandström *et al.* (2013) (both in Swedish) regarding this section.
5. Foreclosures are regulated in the Enforcement Code (*Swe.* Utsökningsbalken, SFS 1981:774). With regard to the legal proceedings, this section draws upon my own extensive operative experience of handling foreclosure cases at the Swedish Enforcement Authority.
6. The SEA (*Swe.* Kronofogdemyndigheten) is the governmental authority that handles debt enforcement regarding any type of debt in Sweden. There is also commercial debt collection, but only the SEA has access to coercive measures of debt collection.
7. Attachment is a legal title that establishes the right to payment for the creditor through foreclosure of the debtor's property (*Swe.* Utmätning).
8. To illustrate this magnitude, the total number of debtors subject to debt enforcement at the SEA during this time period varied between about 479 000 and 566 000. *Source*: SEA.
9. These numbers include tenant-owned apartments. *Source*: SEA.
10. Other differentiating practices include revolving credits (Langley, 2008); reframing of mortgage credit as home equity loans (Hyman, 2013); segmented marketing with products described as 'prime', 'mixed', 'near-prime' and 'subprime' (Burton, 2008; Langley, 2014); more operators on the credit market, including alternative credit providers (Burton, 2008); reverse redlining practices (Burton, 2008); profit scoring (Marron, 2007); and extended possibilities for creditization and securitization (Davis & Kim, 2015; Langley, 2008; Leyshon & Thrift, 2007).
11. There are 24 300 unique debtors in the utilized data set.
12. Data merging with perfect match rate is possible since all individuals in both registers are identified by their personal identity numbers. After merging, Statistics Sweden has unidentified all data before making it available to me. This study has been subject to ethical vetting.
13. These debt types are relevant for credit expansion in the Swedish context for the time period I have studied. In other localities in time and space, other debt types may be more appropriate.
14. Newspaper articles provide additional anecdotal evidence indicating that some new banks have emerged during the last 10 years offering mortgage credit products tailored for debtors with subprime characteristics, but that their share of the mortgage credit market is quite small (see in Swedish https://www.svd.se/storbanker-saljer-ratade-kunder-vidare, https://www.svd.se/smabanker-bli-snabbt-rika-pa-utsatta-kunder, and http://www.di.se/nyheter/bluestep-blir-bank/, both accessed 12 June 2017).
15. *Source:* SEA. New banks were identified by reviewing their websites with regard to what types of mortgage credit products they offer and which customers they target.
16. An order to pay (*Swe.* Betalningsföreläggande) corresponds to a court verdict granted to the creditor following summary proceedings if the debtor after formal service of the claim does not object. The SEA administers orders to pay.
17. *Source*: SEA. The SEA defines short-term loans as having a principal amount in the range of SEK 500–15 000 and a credit term of maximum 12 months.
18. *Source*: SEA

19. In the empirical data, debt type is not equivalent to the foreclosure debtor's total indebtedness. Such debt data has not been available to me.
20. I prefer to use 'resources' to denote that socio-economic status is made up of several different indicators, rather than 'status' or 'position', which are seemingly used interchangeably in academic literature, mainly depending on which field the researcher is active in (Lynch & Kaplan, 2000).
21. The common denominator in these studies is that they are empirical applications or tests of American sociologist Donald Black's theories of social control (Black, 1976, 1984, 1993).
22. To enable comparisons, this table also provides descriptive statistics for the Swedish population.
23. The married category includes informal partnerships and registered partnerships.
24. Median values are used because the distribution is skewed to the right.
25. Median values are used because the distribution is skewed to the right.
26. Other commentators discuss the possibility of risk sharing between the lender and the borrower through participation mortgages (Wojakowski et al., 2016) and shared-responsibility mortgages (Mian & Sufi, 2015).

Disclosure statement

The author is employed by the Swedish Enforcement Authority.

Notes on contributor

Mikael Lundholm is a PhD student at Lund University's Sociology of Law Department. His PhD project is oriented towards understanding economic hardship in relation to overindebtedness and housing by exploring conflict management and compensation during foreclosure. His academic background is within law. He also works as a Senior Enforcement Officer at the Swedish Enforcement Authority specializing in the compulsory sale of real estate properties and tenant-owned apartments.

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References

Aalbers, M. B. (2005) "The quantified customer", or how financial institutions value risk, in: P. Boelhouwer, J. Doling, & M. Elsinga (Eds) *Home Ownership Getting in, Getting from, Getting out*, pp. 33–57 (Amsterdam: DUP Science).

Allen, R. (2011) Who experiences foreclosures? The characteristics of households experiencing a foreclosure in Minneapolis, Minnesota, *Housing Studies*, 26, pp. 845–866.

Andersson, M., Aranki, T., Gjirja, M. & Olsén Ingefeldt, N. (2018) *Mortgage cap slowed growth of household debt*. FI-Analys Nr. 12, Finansinspektionen.

Auerhahn, K. (2012) Social control of the self' and pleading guilty in criminal court, *International Review of Sociology*, 22, pp. 95–122.

Avakame, E.F., Fyfe, J.J. & Mccoy, C. (1999) Did you call the police? What did they do?" An empirical assessment of black's theory of mobilization of law, *Justice Quarterly*, 16, pp. 765–792.

Baker, E. H. (2014) Socioeconomic status, definition, in: W. C. Cockerham, R. Dingwall, & S. Quah (Eds) *The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society (electronic edition)* (Chichester: John Wiley & Sons, Ltd).

Barr, M. S. (2012) *No Slack: The Financial Lives of Low-Income Americans* (Washington: Brookings Institution Press).

Been, V., Weselcouch, M., Voicu, I. & Murff, S. (2013) Determinants of the Incidence of US Mortgage Loan Modifications, *Journal of Banking & Finance*, 37, pp. 3951–3973.

Belsky, E. S., Case, K. E. & Smith, S. J. (2008) *Identifying, Managing and Mitigating Risks to Borrowers in Changing Mortgage and Consumer Credit Markets*. Working Paper No. UCC08-14 (Massachusetts: Joint Center for Housing Studies of Harvard University).

Black, D. (1976) *The Behavior of Law*, Special edition 2010 (Bingley: Emerald).

Black, D. (1984) Social control as a dependent variable, in D. Black (Ed) *Toward a General Theory of Social Control*, Volume 1, pp. 1–36 (New York: Academic Press).

Black, D. (1993) *The Social Structure of Right and Wrong* (San Diego: Academic Press).

Burton, D. (2008) *Credit and Consumer Society* (London: Routledge).

Chan, S., Sharygin, C., Been, V. & Haughwout, A. (2014) Pathways after default: What happens to distressed mortgage borrowers and their homes? *The Journal of Real Estate Finance and Economics*, 48, pp. 342–379.

Chevan, A. (1989) The growth of home ownership: 1940–1980, *Demography*, 26, pp. 249–266.

Christophers, B. (2013) A monstrous hybrid: The political economy of housing in early twenty-first century Sweden, *New Political Economy*, 18, pp. 885–911.

Clay-Warner, J. & McMahon-Howard, J. (2009) Rape reporting: "Classic Rape" and the behavior of law, *Violence and Victims*, 24, pp. 723–743.

Cohen, L. (1950) Family characteristics of homeowners, *American Journal of Sociology*, 55, pp. 565–571.

Copes, H., Kerley, K. R., Mason, K. A. & Wyk, J. V. (2001) Reporting behavior of fraud victims and Black's theory of law: An empirical assessment, *Justice Quarterly*, 18, pp. 343–363.

Davis, G. F. & Kim, S. (2015) Financialization of the economy, *Annual Review of Sociology*, 41, pp. 203–221.

Den Haan, W. J. & Sterk, V. (2011) The Myth of financial innovation and the great moderation, *The Economic Journal*, 121, pp. 707–739.

dos Santos, P.L. (2013) A cause for policy concern: The expansion of household credit in middle-income economies, *International Review of Applied Economics*, 27, pp. 316–338.

Dynan, K. E. (2009) Changing household financial opportunities and economic security, *Journal of Economic Perspectives*, 23, pp. 49–68.

Dynan, K. E., Elmendorf, D. W. & Sichel, D. E. (2006) Can financial innovation help to explain the reduced volatility of economic activity? *Journal of Monetary Economics*, 53, pp. 123–150.

Dynan, K. E. & Kohn, D. L., Reserve Bank of Australia. (2007) The rise in US household indebtedness: Causes and consequences, in: C. Kent & J. Lawson (Eds) *The Structure and Resilience of the Financial System. Proceedings of a Conference held at the H.C. Coombs Centre for Financial Studies, August 20–21, 2007, Kirribilli,* pp. 84–113. (

Edelberg, W. (2006) Risk-based pricing of interest rates for consumer loans, *Journal of Monetary Economics*, 53, pp. 2283–2298.

Eliasson, E. & Rydén, A. (2014) *Securitisation—Background, new initiatives and possible implications*. Economic Commentaries No. 10. (Stockholm: Sveriges Riksbank).

Emanuelsson, R. (2015) Supply of housing in Sweden. *Sveriges Riksbank Economic Review*, 2015:2, pp. 47–75.

Erturk, I., Froud, J., Johal, S., Leaver, A. & Williams, K. (2007) The democratization of finance? Promises, outcomes and conditions, *Review of International Political Economy*, 14, pp. 553–575.

Felson, R. B. & Paré, P. (2005) The reporting of domestic violence and sexual assault by non-strangers to the police, *Journal of Marriage and Family*, 67, pp. 597–610.

Fligstein, N. & Goldstein, A. (2015) The emergence of a finance culture in American households, 1989–2007, *Socio-Economic Review*, 13, pp. 575–601.

Galobardes, B., Lynch, J. & Smith, G. D. (2007) Measuring socioeconomic position in health research, *British Medical Bulletin*, 81–82, pp. 21–37.

Gerardi, K. S., Rosen, H. S. & Willen, P. S. (2010) The impact of deregulation and financial innovation on consumers: The case of the Mortgage market, *The Journal of Finance*, 65, pp. 333–360.

Holtfreter, K. (2008) The effects of legal and extra-legal characteristics on organizational victim decision-making, *Crime, Law and Social Change*, 50, pp. 307–330.

Hullgren, M. & Söderberg, I. (2013) The relationship between consumer characteristics and mortgage preferences: A case study from Sweden, *International Journal of Housing Markets and Analysis*, 6, pp. 209–230.

Hyman, L. (2013) *Debtor Nation: The History of America in Red Iink* (Princeton: Princeton University Press).

Kader, G. D. & Perry, M. (2007) Variability for categorical variables, *Journal of Statistics Education*, 15(2).

Knoop, T. A. (2008) *Modern Financial Macroeconomics: Panics, Crashes, and Crises* (Malden: Blackwell).

Kuo, S., Cuvelier, S. J., Sheu, C. & Chang, K. (2012) Crime reporting behavior and black's behavior of law, *International Sociology*, 27, pp. 51–71.

Langley, P. (2008) *The everyday life of global finance* (Oxford: Oxford University Press).

Langley, P. (2009) Consumer credit, self-discipline, and risk management, in: G. L. Clark, A. D. Dixon & A. H. B. Monk (Eds) *Managing Financial Risks: From Global to Local*, pp. 280–300 (Oxford: Oxford University Press).

Langley, P. (2014) Consuming credit, *Consumption Markets & Culture*, 17, pp. 417–428.

Lewin, B. (2009) *Efter Skattereformen—En Genomgång av Svensk Skattepolitik 1992–2009* Underlagsrapport, Riksrevisionen.

Leyshon, A. & Thrift, N. (1999) Lists come alive: Electronic systems of knowledge and the rise of credit-scoring in retail banking, *Economy and Society*, 28, pp. 434–466.

Leyshon, A. & Thrift, N. (2007) The capitalization of almost everything: The future of finance and capitalism, *Theory, Culture & Society*, 24, pp. 97–115.

Lynch, J. & Kaplan, G. (2000) Socioeconomic position, in: L. F. Berkman & I. Kawachi (Eds) *Social epidemiology*, pp. 13–35 (New York: Oxford University Press).

Lyons, A. C. (2003) How credit access has changed over time for U.S. households, *Journal of Consumer Affairs*, 37, pp. 231–255.

Marron, D. (2007) Lending by numbers": Credit scoring and the constitution of risk within American consumer credit, *Economy and Society*, 36, pp. 103–133.

Mian, A. & Sufi, A. (2009) The consequences of mortgage credit expansion: Evidence from the U.S. mortgage default crisis, *The* Quarterly Journal of Economics, 124, pp. 1449–1496.

Mian, A. & Sufi, A. (2015) *House of Debt: How They (and you) Caused the Great Recession, and How We Can Prevent it From Happening Again: With a New Afterword* (Chicago: University of Chicago Press).

Molloy, R. & Shan, H. (2013) The postforeclosure experience of US households, *Real Estate Economics*, 41, pp. 225–254.

Niedt, C. & Martin, I. W. (2013) Who are the foreclosed? A statistical portrait of America in crisis, *Housing Policy Debate*, 23, pp. 159–176.

Palley, T. I. (2013) *Financialization: The Economics of Finance Capital Domination* (Basingstoke: Palgrave Macmillan).

Quercia, R. G., Stegman, M. A. & Davis, W. R. (2007) The impact of predatory loan terms on subprime foreclosures: The special case of prepayment penalties and balloon payments, *Housing Policy Debate*, 18, pp. 311–346.

Rojek, J., Rosenfeld, R. & Decker, S. (2012) Policing race: The racial stratification of searches in police traffic stops, *Criminology*, 50, pp. 993–1024.

Ruonavaara, H. (2012) Home ownership and Nordic housing policies in "Retrenchment", in: R. Ronald & M. Elsinga (Eds) *Beyond Home Ownership: Housing, Welfare and Society*, pp. 91–107 (London: Routledge).

Sandström, M., Forsman, D., Stenkula von Rosen, J. & Fager Wettergren, J. (2013) Marknaden För Svenska Säkerställda Obligationer Och Kopplingar till Den Finansiella Stabiliteten, *Penning-Och Valutapolitik*, 2013:2, pp. 22–49.

Smith, S. J. (2009) Managing financial risks: The strange case of housing, in: G. L. Clark, A. D. Dixon & A. H. B. Monk (Eds) *Managing financial risks: from global to local*, pp. 233–257 (Oxford: Oxford University Press).

Smith, S. J., Searle, B. A. & Cook, N. (2009) Rethinking the risks of home ownership, *Journal of Social Policy*, 38, pp. 83–102.

Svenska Bankföreningen (2015) *Banks in Sweden.* (Stockholm, Sweden: Svenska Bankföreningen).

Sveriges Riksbank (2014) *Från ax till limpa—Den svenska bolånemarknaden och dess roll i det finansiella systemet Riksbanksstudier* (Sweden: Sveriges Riksbank).

Sveriges Riksbank (2016) *Financial Stability Report 2016*:1 (Sweden: Sveriges Riksbank)

Sveriges Riksbank (2018) *Financial Stability Report 2016*:1 (Sweden: Sveriges Riksbank)

Swedish Competition Authority (2013) *Competition on the Financial Services Market— Deposits, Mortgages and Funds* Report 2013:4. (Sweden: Swedish Competition Authority).

Turk, R. (2015) *Housing Price and Household Debt Interactions in Sweden.* IMF Working Paper WP/15/276, (Washington, D.C.: International Monetary Fund).

Van Gunten, T. & Navot, E. (2018) Varieties of indebtedness: Financialization and mortgage market institutions in Europe, *Social Science Research*, 70, pp. 90–106.

Voicu, I., Jacob, M., Rengert, K. & Fang, I. (2012) Subprime loan default resolutions: Do they vary across mortgage products and borrower demographic groups? *The Journal of Real Estate Finance and Economics*, 45, pp. 939–964.

Wainwright, T. (2011) Elite knowledges: Framing risk and the geographies of credit, *Environment and Planning A: Economy and Space*, 43, pp. 650–665.

Wimark, T., Andersson, E. K. & Malmberg, B. (2020) Tenure type landscapes and housing market change: A geographical perspective on neo-liberalization in Sweden, *Housing Studies*, 35, pp. 214–237.

Wojakowski, R.M., Ebrahim, M.S. & Shackleton, M.B. (2016) Reducing the impact of real estate foreclosures with amortizing participation mortgages, *Journal of Banking & Finance*, 71, pp. 62–74.