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Conference Paper

Financial Crisis, Creditor-Debtor Conflict, and Political Extremism

Beiträge zur Jahrestagung des Vereins für Socialpolitik 2018: Digitale Wirtschaft - Session: International Financial Markets II, No. F19-V3

Provided in Cooperation with:

Verein für Socialpolitik / German Economic Association

Suggested Citation: Gyongyosi, Gyoza; Verner, Emil (2018) : Financial Crisis, Creditor-Debtor Conflict, and Political Extremism, Beiträge zur Jahrestagung des Vereins für Socialpolitik 2018: Digitale Wirtschaft - Session: International Financial Markets II, No. F19-V3, ZBW - Leibniz-Informationszentrum Wirtschaft, Kiel, Hamburg

This Version is available at:

<https://hdl.handle.net/10419/181587>

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Financial Crisis, Creditor-Debtor Conflict, and Political Extremism*

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February 2018

Abstract

This paper studies the effect of the 2008 financial crisis on the vote share of the populist far right. We use the foreign currency borrowing of households in Hungary as a natural experiment. During the crisis the unexpected and large depreciation of the domestic currency increased the debt burden of households borrowing in foreign currencies but not of households borrowing in the local currency. We use zip code level variation in the prevalence of foreign currency borrowing of households, and show that the exposure to the depreciation significantly affected political preferences. A 10 percent unanticipated rise in indebtedness increased the vote share of the far right by 2.2 percentage points. This effect explains one third of the increase of their popularity by the 2010 election. Foreign currency debtors' naïveté, persistent extremist attitudes, local labor market shocks, and immigration do not account for this increase. We present evidence that the conflict between creditors and debtors about the resolution of the crisis is an important mechanism in the electoral success of the far right. The far right sided with debtors against creditors by advocating policies to help households with foreign currency loans.

*We are extremely grateful to Gábor Kézdi and Ádám Szeidl for their continuous guidance and support. We thank Alessandro de Chiara, Zsolt Gyöngyösi, Hedvig Horváth, Károly Ignác, Péter Kondor, Miklós Koren, Attila Lindner, Sergey Lychagin, Arieda Muço, Balázs Muraközy, Balázs Reizer, Eyno Rots, László Sándor, Ibolya Schindele, Gábor Simonovits, Álmos Telegdy, Andrea Weber, and conference and seminar participants for comments. We thank László Hubai for sharing his election data, the TÁRKI Institute for sharing their survey data, and MTA-KRTK databank and János Köllő for the T-Star data. The financial support of CEU DRSG is greatly appreciated. The firm location data set is created by researchers at Central European University from original data made available by Wolters Kluwer Kft from funds the European Union provided in the framework of NETWORKS-283484. The views expressed in this paper do not necessarily reflect the official views of the National Bank of Hungary. All errors are ours.

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1 Introduction

In the past decade there has been a surge in the appeal of populist parties (Rodrik, 2017). Understanding the electoral success of these parties is important because their rise might increase political and policy uncertainty, which can have negative effects on real activity.¹ The 2008 financial crisis itself might have contributed to the rise of populism, as financial crises tend to be followed by increased political polarization (Mian et al., 2014) and a rise in the vote share of far-right parties (Funke et al., 2015). However, the underlying mechanisms through which a financial crisis influences political preferences are not yet fully understood.

In this paper, we examine how the 2008 financial crisis affected political preferences. We focus on a household balance sheet crisis, and measure its impact on the vote share of the far right. We use a natural experiment from Hungary where we exploit spatial variation in foreign currency borrowing of households. Before the crisis households could choose between subsidized domestic currency loans and unsubsidized foreign currency loans. The unanticipated and large depreciation of the Hungarian forint that started in 2008 increased the debt burden of households borrowing in foreign currencies but not of households borrowing in local currency. We show using zip code level data that a higher share of foreign currency loans significantly increased the vote share of the far right following the depreciation. The balance sheet shock of households could have influenced political preferences through many channels. We present evidence that the electoral success of the far right is consistent with the *creditor-debtor conflict* explanation that emphasizes the disagreement between creditors and debtors about the resolution of the crisis, and who should bear its costs. The far right advocated debtor-friendly policies to help households with foreign currency loans, which increased their support in zip codes with a greater share of these loans.

Section 2 describes the foreign currency credit expansion and the political landscape in Hungary. The household lending boom started in Hungary in 2000 when the government introduced a mortgage interest rate subsidy program. The program was cut back in 2004 because of its high costs, which coincided with the start of foreign currency lending. By 2008 more than 60 percent of household debt was denominated in Swiss franc. Before the crisis the exchange rate was stable, but between September 2008 and the election held in April 2010, the exchange rate unexpectedly depreciated by 23 percent. This exchange rate shock increased the indebtedness of the households by 4 percent of pre-crisis GDP. Concurrent with

¹For example, higher policy uncertainty reduces investment and employment in policy sensitive sectors (Baker et al., 2016), and firms reduce investment expenditures in election years (Julio and Yook, 2012).

the crisis, the popularity of the far right surged, from 2.6 percent of the votes to 16.7 percent in 2010.

In Section 3 we begin by describing our data. We build a new zip code level panel dataset by combining three data sources: household credit register data, election outcomes, and data on municipality characteristics. We define exposure to the exchange rate shock to be the share of household loans denominated in foreign currencies in September 2008. We document that zip codes with lower income and higher unemployment have higher exposure, the fact that we explicitly take into account in our identification strategy.

To quantify the effect on voting outcomes, in our baseline design we exploit cross-sectional spatial variation in households' exposure to the exchange rate shock, and use a difference-in-differences estimator. Our approach uses variation only in the currency composition of loans and keeps household indebtedness fixed. The key identifying assumption is that exposure to the depreciation is not correlated with time-varying shocks to political preferences. This assumption might be violated if omitted demand side factors are correlated with political preferences. To address this concern we complement our baseline empirical design by using an instrument that isolates variation in foreign currency share that comes from bank credit supply. We exploit variation in the banks' lending policy and market shares across regions, and construct a shift-share instrument for the share of foreign currency loans.

We present the results in Section 4. Our main finding is that exposure to the exchange rate shock significantly increases the vote share of the far right. A 10 percent unanticipated debt shock raised the vote share of the far right by 2.2 percentage points between 2006 and 2010, which explains one third of the increase of the far right vote share. In support of our identification strategy, we show that the vote share of the far right in zip codes with high exposure and in zip codes with low exposure evolved in the same way before the crisis.

Omitted variables that affect both credit demand and political preferences pose a threat to identification. We instrument the share of foreign currency loans with credit supply to identify the causal effect of the exchange rate exposure of households. The instrumental variable estimation gives larger coefficient than the OLS, however, they are not statistically different.

A potential concern using the instrument is that credit supply can also be correlated with unobserved political preferences. We turn to evidence that deals with such potential threats to identification. We begin by showing that it is not unobserved extremist attitudes that drive our results. Extremist attitudes are persistent, and the far right might have been more popular during the recent financial crisis in regions where racism or anti-semitism were more prevalent historically. If they are correlated with exposure to the exchange rate shock then we would wrongly attribute its effect to the financial crisis. To rule out this explanation for

the rise of the far right we also conduct a placebo test. We use the first secret ballot election in 1939 when far-right parties received 25 percent of the votes. We find no relation between the foreign currency share in 2008 and the vote share of the far right in 1939.

Foreign currency debtors' naïveté presents another concern, and we use several proxy variables to control for this possibility. Foreign currency debtors might be more gullible than domestic currency borrowers. They might be more easily convinced to choose foreign currency denomination, and they are also more easily influenced by populists. Using individual level survey we first show that foreign currency debtors and local currency debtors are similar in terms of observable characteristics, which is in line with the literature analyzing foreign currency borrowing. We also use several zip code level proxies for naïveté, and find that the results are robust to the inclusion of these control variables.

Finally, we address remaining concerns related to alternative explanations that are prominent in the literature on the success of populist parties. Labor market conditions, and the presence of minority and immigrant groups might be correlated with exposure to the exchange rate shock, and also influence political preferences. Directly controlling for local labor market shocks and ethnic composition does not change the impact of the exchange rate exposure.

So far we have established that higher exposure to the exchange rate shock significantly increased the appeal of the populist far right. However, this causal relationship does not tell us *why* people voted for an extreme right-wing party.

In Section 5 we study the mechanisms through which exposure to the exchange rate shock affected political preferences. We begin by examining the creditor-debtor conflict channel. This explanation emphasizes the different views of creditors and debtors on how to resolve the crisis. As creditors might find it easier to organize themselves and influence the government, a populist party might choose to represent the debtors' interests. Advocating debtor-friendly policies could increase their popularity.

Consistent with the creditor-debtor conflict explanation, we start by showing that the far right promised debt relief and debt restructuring while other parties either had vague proposals or did not even mention foreign currency debtors in their campaign manifestos.

The creditor-debtor conflict implies that it is the debtors who vote for the far right. In support of this logic, we present evidence that higher fraction of indirectly affected people, who are not necessarily debtors, does not increase the vote share of the far right. Foreign currency debt has a demand externality as the revaluation of the debt decreases aggregate demand, which affects all households by reducing labor demand (Farhi and Werning, 2016). Therefore foreign currency debt exposure increases unemployment, and hence raises the default rate of even the local currency loans. However, these indirect effects of the balance sheet crisis on the appeal of the far right are small. We show that unemployment has only

a mild effect on the vote share of the far-right party, while the default rate of local currency loans has no impact. The instrumental variable result also indicates that the debtors vote for the far right. The instrument solves the ecological inference problem (Spenkuch and Tillmann, 2016), which implies that the instrumental variable estimate can be generalized to the individual level despite using zip code level data for the analysis.

Related to the creditor-debtor conflict explanation, general dissatisfaction and declining trust among the debtors could have also increased the appeal of the far right in more depressed regions. This means that their popularity is not driven by policies they advocate, instead, people vote for them because they do not trust moderate parties. The declining trust channel would imply that other extremist, and new parties should also benefit from the crisis. Contrary to this hypothesis, the newly founded green party did worse, and the far-left increased its vote share only marginally in more affected zip codes. Declining trust is not reflected in turnout, and in the share of invalid votes either. We also find that trust in the National Assembly did not decline in more exposed regions.

We also examine several other explanations for the rise of far right that are prominent in discussions of the political consequences of financial crises. We show several pieces of suggestive evidence that rising inequality, a bail-out of the banking sector, and disproportional campaigning of the far right in depressed regions do not account for the electoral success of the far right.

These results suggest that an important reason for the rise of the populist far right is economic. Hence addressing the problem of rising support for populist parties requires conventional economic policy tools. More redistribution that targets the debtors during a crisis could moderate the electoral success of populist parties.

Our paper is related to the economic voting literature (Fair, 1978), which analyzes how economic conditions affect political preferences. We build on and contribute to a body of work that studies the effect of financial crises on populism, and political extremism. Several papers analyze the effect of financial and ordinary crises on political polarization and vote share of extremist parties by using country level data (Mian et al., 2014; Funke et al., 2015; Bromhead et al., 2012; Brückner and Grüner, 2010). We complement these studies as we use zip code level data, which enables us to control for time-varying country-specific shocks to political preferences, and we also examine the channels through which financial crises affect political preferences. Among studies using regional variation in economic conditions, the closest to our paper is in terms of data is Healy and Lenz (2014). They examine how delinquency and unemployment affected the incumbent Republican Party in the 2008 presidential election using administrative data. We complement their study as we use a pre-determined measure of exposure to the crisis which is not subject to the choice of households. There are other

studies exploiting regional variation as well. [King et al. \(2008\)](#) study the relation between unemployment and the rise of Nazi Party in the 1930s in Germany, and [Eichengreen et al. \(2017\)](#) examines debt-deflation in US and the Populist Party in 1896 election. We complement these studies by exploiting a natural experiment and also by exploring the channels through which a crisis affect political preferences. Papers using survey data ([Guiso et al., 2017](#); [Geishecker and Siedler, 2011](#)) measure how economic or job insecurity affect the popularity of populist and far-right parties. The Hungarian setting allows us to study the effect of a well-defined economic shock, which also helps us show that policies promoted by the far-right make these parties popular.

Several papers examine the success of the far right in Hungary.² Almost all of these papers reject the hypothesis that the financial crisis of 2008 explains at least partly the increasing appeal of the far right. [Grajczjár and Tóth \(2011\)](#) emphasizes the economic insecurity of the far-right voters, but they do not mention the foreign currency debt crisis as a reason for the success of the far right. We contribute to this literature by presenting evidence that foreign currency borrowing of households increased the vote share of the far right.

2 Context

In this section we describe the Hungarian household lending boom in the 2000s and the political landscape.

2.1 Household lending boom

After the transition there was a major inflow of foreign capital into the financial sector in Hungary, however, household lending was negligible before 2000. The lending boom started in 2000 when the government introduced an interest rate subsidy program for mortgage loans.³ The program significantly eased the borrowing constraints of households and lending picked up. However, because of the high costs of the program, the government cut it back in 2004 by tightening the eligibility criteria and also decreasing the subsidy. The cut back of the program coincided with the start of foreign currency credit expansion as initially foreign banks and later domestic banks began to offer foreign currency denominated housing loans.⁴

Figure 1 shows the household debt stock relative to GDP by currency denomination. The household indebtedness increased significantly during the 2000s, from 3 per cent in 2000 to 25 per cent by September 2008. From 2004 onwards, foreign currency share increases

²[Róna \(2015\)](#) gives a comprehensive review of the literature.

³[Farkas et al. \(2004\)](#) gives a review about the first phase of the subsidy program.

⁴Lending in foreign currency to households was not uncommon even before 2004 as banks offered foreign currency auto loans from 2000.

significantly from 5 per cent to 60 per cent by September 2008. The most prevalent foreign currency denomination was Swiss franc (CHF) which accounted for 97 percent of foreign currency debt, the rest was mainly euro and Japanese yen. Because of the interest rate subsidy program the share of foreign currency was smaller in mortgage debt, close to half, while most of the home equity debt was denominated in foreign currency.

Both demand and supply side factors might have contributed to the spread of foreign currency lending. High interest rate difference was important factor in the foreign currency lending (Rosenberg and Tirpák, 2008; Csajbók et al., 2010). Perceived stability of the domestic currency (Brown et al., 2017) and expectation of euro adoption also played a role (Fidrmuc et al., 2013). Moreover, banks trying to match the currency composition of their liabilities (Brown et al., 2014) and foreign monetary policy (Ongena et al., 2016; Gyöngyösi et al., 2017) have also contributed to the foreign currency credit expansion.

Figure 2 shows the log of average monthly HUF/CHF and HUF/EUR exchange rates relative to January 2004. Before the crisis the Hungarian exchange rate regime was a crawling peg to the euro with a ± 15 percent band, but Ilzetzi et al. (2017) classify Hungarian exchange rate regime as a de facto ± 5 percent. This is reflected by the stable exchange rates before the crisis. The exchange rate band was abolished in February 2008. The depreciation started in October 2008, it was more pronounced vis-à-vis the CHF, between September 2008 and April 2010, when election was held, the HUF/CHF exchange rate depreciated by 23 per cent. Because of the decoupling between the euro and the Swiss franc the HUF/CHF depreciated further.

The large depreciation was not anticipated. Forecasts of economists asked by Consensus Economics, an economic survey organization, shows that they expected the Hungarian forint to depreciate slightly vis-à-vis euro before the outbreak of the crisis (Figure 3a). On 12 months and 24 months horizon they expected less than 5 per cent depreciation in 2008 before October, in some months they even forecasted appreciation. This finding is corroborated if we use OECD Economic Outlook projection data. OECD publishes exchange rate projection for the next year. Figure 3b shows that on a one-year horizon HUF/CHF was anticipated to depreciate less than 3 percent before the crisis. These indicate that although the depreciation of the domestic currency was anticipated by experts, its magnitude was higher than expected.

The effect of the significant depreciation was not mitigated by the Swiss monetary easing. Because of the risk premium shock the funding costs of banks increased and interest rates remained at their pre-crisis level or even increased. The depreciation with the interest rate changes quickly translated into rising share of non-performing loans. Figure 5 shows the share of at least 90 days delinquent loans for foreign currency mortgage, subsidized domestic currency mortgage and foreign currency home equity loans. The delinquency rate of domestic

currency loans increased only slightly during this period, however, by 2014 the share of delinquent loans of foreign currency mortgage loans was almost 20 percent and 30 percent for home equity loans. In Hungary the debt was recourse and bankruptcy was not allowed during this period therefore strategic default could not explain the high delinquency rate.

Although some warned about potential risks of foreign currency lending before the crisis no effective regulatory measures were taken to curb foreign currency lending. The Central Bank's Report on Financial Stability in 2006 (MNB, 2006) discussed the risks and potential negative effects associated with foreign currency lending, however, the foreign currency lending continued. In 2007 the Central Bank of Hungary got the banking sector to stop lending in Japanese yen as it was considered too risky but lending in CHF or EUR was not affected. After the outbreak of the crisis in October 2008 several regulatory measures were initiated (Banai et al., 2011). Most of these measures were to prevent the continuation of foreign currency lending, which culminated in the ban of foreign currency lending to households in 2010.

The continuous depreciation of the forint increased the debt burden of households and the government took measures to aid the households. At the end of 2011 the government launched the Early Repayment Program (ERP) to help households with foreign currency denominated mortgage and home equity loans. Households were allowed to prepay their debt at a preferential exchange rate which was approximately 30 per cent lower than the market rate at that time.⁵ There was no eligibility criteria to participate in the program, however, the whole debt had to be repaid. Because of this feature of the program, affluent people were more likely to participate. Approximately 170,000 loans were prepaid, this constituted approximately 20 percent of foreign currency loans and it amounted to 4.8 per cent of the 2011 GDP.

2.2 Political landscape

Hungary transformed from a one-party system to a multi-party system in 1990. There were two significant far-right parties in Hungary after the transition: Hungarian Justice and Life Party (MIÉP) and Movement for a Better Hungary (Jobbik). Minkenberg (2013) reviews radical right parties in Europe and covers three Hungarian parties: Jobbik, MIÉP and FIDESZ, the latter won the election in 1998, 2010 and 2014. He classifies Jobbik as extremist right and MIÉP as ethnocentrist right while FIDESZ is classified as populist right

⁵The preferential exchange rates were 180HUF/CHF, 250HUF/EUR. The market rates were 237 HUF/CHF and 284 HUF/EUR, respectively in September when the program was announced. The difference between the the value of the loan and the prepaid amount was covered by the bank.

wing party.⁶ We consider a vote as far-right if it is casted on either *Movement for a Better Hungary* (Jobbik) or *Hungarian Justice and Life Party* (MIÉP).⁷

Figure 4 shows the revaluation of the household debt because of the depreciation along with the popularity of the far-right. Before the crisis, when the exchange rate was stable the support for the far-right was not distinguishable from zero. As the exchange rate started to depreciate and increase the debt burden of households, the popularity of the far-right began to increase. In 2006, MIÉP and Jobbik run together in the election and received 2.6 per cent of the votes. In later elections they participated separately. The breakthrough for the far-right happened in June 2009 when Jobbik got 14.77 per cent of the votes in the European Parliamentary election. In the national elections in April 2010, Jobbik received 16.67 per cent of the votes and 20.3 per cent of the votes in 2014. Table 1 shows the vote shares of the other parties, and the turnout in general elections from 1998 to 2014.

3 Data, summary statistics, and empirical strategy

In this section we briefly introduce the main datasets we use for the analysis, the election data, and the credit register data. Then we present summary statistics on foreign currency borrowing, and describe the empirical strategy.

3.1 Data

Election data We use the official election outcome data from the National Election Office from the 1998 to 2014. The parliamentary election system of Hungary is a combination of a proportional and a majoritarian system. The electorate has two votes, they could vote for both a candidate and a party list. To get into the National Assembly parties need 5 percent of party list votes or a certain number of elected candidates.⁸ We use only the votes on party lists.

The data is available at the polling station level which is a very fine constituency data, however the boundaries of the polling stations change over time. To address this problem

⁶Jobbik had a paramilitary organization called Hungarian Guard which was later banned, its politicians openly expressed racist and anti-semitist views, etc. [Bíró-Nagy et al. \(2013\)](#) describes the party and compares it to other European far-right parties.

⁷Votes on Fidesz, Christian Democrats (KDNP), Democratic Forum (MDF) are considered center-right, and Socialist Party, Alliance of Free Democrats (SZDSZ), Together (Együtt) Conversation for Hungary (PM) and Democratic Coalition (DK) are considered as center-left parties. There is a far-left party, Workers' Party, which never got into the National Assembly. The classification of Fidesz is in contrast with the recent literature analyzing populism ([van Kessel, 2015](#); [Rodrik, 2017](#); [Inglehart and Norris, 2016](#); [Mudde and Kaltwasser, 2017](#)). Fidesz was in power between 1998 and 2002 and that government is considered as conservative. [Mudde \(2007\)](#) studying populism in pre-crisis Central Europe does not mention the party.

⁸Smaller parties' candidates rarely win therefore the 5 percent threshold is the relevant one for them.

we aggregate the data to zip code level by assuming the zip code of the polling station is the same zip code as voters' assigned to that polling station.⁹ Because of the address of polling stations does not contain the zip code we geocode the addresses to get the zip codes.

In 2011 the election system changed significantly. This change included redrawing the electoral district borders, it affected the relative importance of the proportional and majoritarian systems and the rules for campaigning changed as well. Because we use votes on party lists and aggregate the results to zip code level, gerrymandering does not affect our results. But some other changes might have had an impact on voters' behavior therefore we exclude 2014 from our baseline sample.

Household Credit Register Data Data on household loans comes from the Household Register of the Central Credit Information System (KHR), which contains the universe of household loans that were outstanding in April 2012, or originated later. The characteristics of loans are detailed: time of origination, maturity, original amount of debt, type of loan, payment scheme, currency denomination and identity of the bank are provided and these are supplemented with monthly data on outstanding debt, amount of payment, and delinquency status. Information on debtors is limited, only the address and year of birth is known.

As the KHR was set up in April 2012 there is no information on the indebtedness of households for the preceding period. As we know the time of origination, currency denomination, type of loan and the lender, we use this information to calculate the outstanding debt for the pre-2012 period at the loan-level. We match the credit register data with bank-month-currency-loan type specific average interest rate data. Assuming annuity structure of loans we calculate the outstanding debt and payment for each loan in each month. For more details see Appendix A.1. Aggregate statistics show that more than 90 per cent of the domestic currency mortgage loans were subsidized. Because of this, for domestic currency mortgage loans we calculate subsidized interest rates. For more details see Appendix A.1.

As the universal KHR database was set up in April 2012 there is no information at all on loans that were paid back or refinanced earlier, which affects loans with shorter maturity. We restrict the sample to mortgage loans and home equity loans because these products have longer maturity therefore this problem is less problematic, and they represent the majority of the household debt.

However, there was an Early Repayment Program (ERP) initiated by the government at

⁹There are municipalities which share the same zip code hence having information on the settlement enables use to have a more detailed partition. In the following for the sake of simplicity we will use the term zip code for municipality-zip code pairs. In larger cities the area covered by a polling stations might split across many zip codes. Since the number of voters assigned to a polling station is small, this is unlikely to affect significantly the results.

the end of 2011 which enabled households with foreign currency mortgage and home equity loans to repay their debts at a preferential exchange rate. Aggregate participation rate in the program was 23 per cent. Because of the design of the program, participation is likely to be correlated with income.

To mitigate this problem of missing loans stemming from ERP, we estimate participation in the program using a loan-level dataset of three large banks, which have a combined market share of 24 percent. The data tracks all loans from origination to termination. We assume that all loans disappearing from this data during the program, between October 2011 and February 2012, were prepaid. Combining the data with bank level participation rate, and the credit register data, we estimate zip code level participation rate using three different approaches. First, we use settlement characteristics and market share of banks to predict participation. Second, we use local market shares of banks and calculate a weighted average of national participation rates. Third, we use the newly originated loans during this period which were mostly used for refinancing and upscale these to match the aggregate level of participation. These three approaches give similar results, details can be found in Appendix [A.1](#).

Detailed address (municipality and zip code) of the debtors is available for loans outstanding in June 2014. Because some loans were paid back by this time we do not have address data for all loans. If the debtor has other loan outstanding in June 2014 we use that address information. For more details see Appendix [A.1](#).

Other data sources To complement these data we use several other sources. T-Star database contains municipality-level yearly data on a wide range of characteristics, such as demographics, unemployment and income. We use Census data from 2001 which contains information on educational attainment. We use the 2011 Census for ethnic composition because the 2001 questionnaire did not allow for secondary affiliation and this might have resulted in underreporting for some minority groups. We use data on crime from the Internal Ministry which is available at the municipality level. Table [2](#) contains descriptive statistics on the main variables from the election data, credit register, and municipality-level control variables.

We also use representative survey data from TÁRKI which is conducted almost in each month with approximately 1000 respondents. The data includes the party preferences of individuals, socio-economic characteristics and various other questions on racism, preferences for redistribution, etc. The data does not contain the settlement of the individual but the county and the settlement type (county capital, town and village), with these two variables the country can be partitioned into 57 county-settlement type „regions”.

We also use the Hungarian Corporate Income Tax Data which covers the universe of double book-keeping firms. It contains information on employment, firms balance-sheet and income statements. We match this database with firm register data which has the address of the firm headquarters. We also merge the firm credit register data to the balance sheet data. This combined dataset allows us to construct local employment by sector, and by foreign currency exposure of firms as well.

3.2 Cross-sectional heterogeneity in the exposure to the depreciation

The currency denomination of the loan determines whether the household is affected by the debt shock as the depreciation does not affect directly the households borrowing in domestic currency. Lack of individual level data on both household debt and political preferences, we rely on zip code level aggregate data. We define the zip code level exposure to be the share of foreign currency loans at the start of the crisis.¹⁰ This shows what fraction of the borrowers experience the balance sheet shock:

$$FCS = \frac{N_{FC}}{N_{LC} + N_{FC}}$$

where N_{FC} is the number of foreign currency loans, and N_{LC} is the number of local currency loans in September 2008.

Figure ?? shows the zip code level choropleth map of the share of foreign currency loans. The coloring correspond to the deciles of FCS . Borrowing in foreign currency was prevalent, close to half of the loans were denominated in foreign currency even in the lower deciles. The map also suggests that there might have been some spatial correlation between neighboring zip codes, and certain regions of Hungary were more more likely to borrow in foreign currency. For example, the share of FC loans is especially high in the North-Eastern part of Hungary, and those are relatively poorer regions. To examine how the foreign currency share is related to zip code characteristics, we run the following bivariate regressions:

$$FCS_i = \alpha + \beta x_i + \varepsilon_i \tag{1}$$

where x_i is a municipality characteristic in 2007, for example unemployment, and FCS_i is the share of foreign currency loans in September 2008. Table 3 shows the results where each line represents the result of one bivariate regression. The estimates are weighted by the number of eligible voters in 2006, and the standard errors are clustered at the subregion-level.

¹⁰Loans were denominated in several currencies like HUF, CHF, EUR and JPY. However, the two most common currencies were HUF and CHF, while EUR and JPY were negligible. Abstracting away from the variation in foreign currencies does not affect our results.

The estimated parameters are significant in most of the cases indicating that there are systematic differences. Zip codes with high share of foreign currency loans tend to have smaller population, lower income, lower share of college educated people and higher unemployment. When we examine political preferences in 2006 we find that those are not related to foreign currency share. Interestingly, the leverage is not related to foreign currency share either. This suggests a catch up in indebtedness of more exposed zip codes in the second phase of the lending boom.

To better understand the variation of the foreign currency share measure we decompose it. Using that borrowing in foreign currencies started only in 2004, we decompose FCS in the following way:¹¹

$$FCS = \frac{\sum_{t=2004}^{2008} N_{FC}^t}{\sum_{t=2004}^{2008} (N_{FC}^t + N_{LC}^t)} \times \frac{\sum_{t=2004}^{2008} (N_{FC}^t + N_{LC}^t)}{\sum_{t=2000}^{2008} (N_{FC}^t + N_{LC}^t)}$$

where N_{FC}^t is the number of foreign currency loans originated in year t , and N_{LC}^t is the number of local currency loans originated in year t .

Foreign currency share can be high for two reasons. The first term shows the currency composition of flow, it shows what fraction of the loans originated between 2004 and 2008 was in foreign currency. For example if banks lent disproportionately in foreign currency then the share of foreign currency is high in the new originations after 2004. The second term is a measure of change in the debt stock. It shows what fraction of loans outstanding in 2008 was originated after the start of foreign currency lending. If there was no lending before the start of foreign currency lending in 2004 then all loans originated when foreign currency lending was prevalent and hence FCS .

We re-estimate the previous regressions with these two terms as the dependent variables. The results are presented in Table B.1 and Table B.2. The estimates show that zip codes where larger fraction of all loans were originated after 2004 have worse characteristics. In the initial period, when only domestic currency loans were available, the lending boom was stronger in regions that have higher income and lower unemployment. During the second phase of the lending boom, relation between foreign currency share and settlement characteristics was not economically significant. The share of foreign currency loans among the new originations is uncorrelated with income, unemployment, and education. This suggests that foreign currency borrowing was as good as random after 2004.

¹¹Foreign currency lending had actually started earlier, around 2000, for auto loans but for mortgages and home equity loans 2004 was the starting date.

3.3 Empirical approach

In this subsection we describe our identification strategy to measure the effect of the exchange rate exposure of households on the vote share of the far right.

Difference-in-differences We estimate the effect of household debt shock on political preferences by comparing the evolution of the vote share of the far right in zip codes with high exposure to the exchange rate shock to zip codes with low exposure. We estimate the following difference-in-differences regression:

$$y_{it} = \alpha_i + \delta_t + \beta FCS_i \times Post_t + \gamma X_{it} + u_{it} \quad (2)$$

where y_{it} is the vote share of the far right in zip code i in election year t , FCS_i is the share of foreign currency loans in September 2008 in zip code i , $Post_t$ is a post-2008 dummy, it is equal to one after 2008 and zero otherwise, α_i and δ_t are zip code and election year fixed effects, respectively. X_{it} contains a set of control variables, which are pre-crisis characteristics of zip codes interacted with election year dummies, u_{it} is the error term. The parameter of interest is β .

The control variables are pre-crisis zip code characteristics, and they are interacted with election year dummy variables. As the crisis can affect some of these controls, for example household balance sheet shock can increase unemployment, we use pre-crisis characteristics. The interaction of the controls with election year dummies allows for different effects of the control variables across election years. For example the educational attainment might have different effect on political preferences across years. The interaction term allows for such possibility. The control variables we include are log population of the municipality, share of population age 18-29 and age 60+, after tax income, unemployment relative to working age population, educational attainment, per capita number of loans, per capita indebtedness.

We use variation only in the currency composition of loans and holds the number of loans and indebtedness of households fixed to identify the effect of the balance sheet shock. The total effect of the balance sheet shock depends on both the share of households exposed to the crisis and the number of borrowers. Our approach has the advantage that we need only the currency choice of households to be as good as random.

The key identifying assumption for consistent estimation is that there are no time-varying shocks to political preferences that are correlated with the zip code level share of foreign currency loans. That is, the vote share of far right in high FCS and low FCS zip codes would have evolved similarly in the absence of the exchange rate shock. As the start of the lending boom is important in determining the exposure to the exchange rate shock, the

identifying assumption requires that shocks to political preferences is not correlated with the start of the lending boom.

Instrumental variable Unobservable demand factors that affect the currency choice of households and are correlated with political preferences pose a threat to identification. We complement our identification strategy by using an instrument for foreign currency share. We use an IV that isolates variation in foreign currency share that comes from credit supply.

We use the shift-share approach to instrument the foreign currency share (Bartik, 1991). We use variation in banks' lending policy: differences in the volume and the currency composition of banks' credit supply. We also rely on that credit markets are local and distance matters in households' bank choice.¹² Therefore people living in a municipality where banks with high market share have aggressive national lending policies are more likely to have a loan. Moreover, if those banks lend disproportionately in foreign currencies then households are more likely to borrow in foreign currencies.

We use the approach proposed by Greenstone et al. (2014) that first isolates the supply component in lending, and then uses only these supply components to construct the instrument. Because the local market structures changed a lot during this period by the entry of foreign banks, we do the decomposition by year and currency denomination. In particular, we first estimate a set of regressions of new originations on municipality and bank dummies separately for domestic and foreign currency loans for each year:

$$Q_{ib}^{c,t} = \beta^{c,t} d_i + \gamma^{c,t} s_b + \epsilon_{ib}^{c,t} \quad \forall c, t$$

The variable $Q_{ib}^{c,t}$ is the per capita number of loans originated by bank b in municipality i in currency c and in year t , d_i is a dummy for municipality i , s_b is a dummy for bank b . The municipality dummy variables, d_i , captures local credit demand, while the bank dummies capture country-wide average lending policies of banks. The estimated parameters of bank fixed effects are then used to construct the predicted share of foreign currency loans in sub-region i :

$$Z_i = \frac{\sum_{t=2004}^{2008} \sum_b \alpha_{ib,t-1} \hat{\gamma}^{FC,t}}{\sum_{t=2004}^{2008} \sum_b \alpha_{ib,t-1} \hat{\gamma}^{FC,t} + \sum_{t=2001}^{2008} \sum_b \alpha_{ib,t-1} \hat{\gamma}^{LC,t}}$$

where $\alpha_{ib,t-1}$ is the market share of bank b in municipality i in year $t - 1$. The market share is measured by new originations. Note, that we use the total market share of banks and not currency-specific market shares. Because our dataset starts in 2000, we do not have

¹²For example Brown and Hoffmann (2013) shows that proximity plays a role in mortgage relations. These relations are held with banks that are located closer to the household than non-mortgage relations.

market share for 1999, this is why the first year is excluded.

The identifying assumption of this instrument is less demanding than the ones of the traditional Bartik IV because it is purged of local demand conditions, that might be spatially correlated. It only requires that banks with low credit supply in the first phase of the lending boom and banks with high foreign currency supply do not disproportionately focus on regions where the popularity of the far right is high.

4 Results

4.1 Baseline results

Parallel trend for the far right We begin by examining whether political preferences in zip codes with high foreign currency share and in zip codes with low foreign currency share evolved similarly before the crisis. That is, we test the parallel trend assumption for the pre-crisis period (Goldsmith-Pinkham et al., 2017). We estimate a regression where we allow FCS to have different effect on the vote share of the far right across elections:

$$y_{it} = \alpha_i + \delta_t + \sum_{t \neq 2006} \beta_t FCS_i \times Year_t + \gamma X_{it} + \epsilon_{it} \quad (3)$$

Figure 6 plots the estimated β_t parameters, which measure the difference in far right vote share between more exposed and less exposed zip codes in election year t relative to the difference in 2006. The coefficients for the pre-crisis period are close to zero and insignificant. This indicates that there was no difference in the trends of far right vote share between more exposed and less exposed zip codes, that is, the parallel trend assumption holds before 2008. Then the coefficient jumps to almost 0.06 in 2010 and slightly decreases in 2014 but remains significant. The interpretation of the point estimate is that increasing the dollarization of household debt from zero to 100 percent would increase the vote share of the far right by 6 percentage points.

Because general elections are held in every four year, the common trend assumption might not hold on a much higher frequency data. There were several scandals after the 2006 election, and zip codes with higher share of foreign currency might have been more sensitive to these events. This would imply that the popularity of the far right in more and less exposed regions started to diverge even before the crisis. We complement our analysis with monthly poll data on political preferences to corroborate our previous findings on the parallel trend. We match average regional foreign currency share to individuals by the address of the survey respondents.

Figure B.2a shows the effect of FC share on individuals' party preferences. Before the

crisis high and low foreign currency share regions were similar in terms of far right popularity. After the crisis people living in high foreign currency share regions tended to support the far right more, however, because of small sample size these results are not significant.

Parallel trend for other parties The pattern before 2008 suggests that the common trend assumption holds as zip codes with higher and lower foreign currency share casted their votes similarly on the far right. However, this does not imply that high and low foreign currency share zip codes have similar political preferences, particularly in terms of extremist attitudes. Before 2008 the far right was not relevant, and people might have voted for other populist parties because of the lack of suitable far-right party. We also examine how exchange rate exposure is related to the vote share of other populist parties because the comparison of high and low foreign currency share zip codes in terms of far right vote share might not be indicative of differences in political preferences.

We re-estimate regression 3 using other parties' vote share as dependent variable. We focus on the far-left Workers' Party and the populist right-wing Independent Smallholders, Agrarian Workers and Civic Party (FKgP) but we also consider the center-right and center-left as well.¹³ Figure 7 presents the results. The vote share of the Workers' Party is positively related to the foreign currency share, however, the ideology of the Workers' Party is on the other end of the left-right spectrum, and the appeal of this party was declining during this period. Looking at the vote share of the FKgP in 1998, it is weakly negatively related to the foreign currency share. These results suggest that the foreign currency share is only weakly related to vote share of other populist parties hence the naïveté of people living in high FCS zip codes are likely to be similar to those of living in low FCS regions. In case of the center-right and center-left parties, the vote shares are not related to foreign currency share in the recent elections, however, the difference between more exposed and less exposed zip codes in terms of center right and center left vote shares was different in 1998 compared to 2006.

Baseline results The baseline regression results are presented in Table 4, which focuses on election years from 1998 to 2010. The regressions are weighted by the number of eligible voters in 2006, and the standard errors are clustered at the subregion level.¹⁴ The first column shows the point estimate when only zip code and election fixed effects are included. The point estimate is 0.27 and highly significant. It can be interpreted as should we increase the share

¹³The far-left always received less than 5 per cent of the votes and hence never got into the National Assembly while the Smallholders' Party was in the Parliament between 1990-2002.

¹⁴We test whether subregion is the appropriate level for clustering using the test proposed by [Ibragimov and Müller \(2016\)](#) and we cannot reject this at traditional significance level.

of foreign currency loans from zero to 100 percent the far right vote share would increase by 27 percentage point. In column 2 we add control variables and the coefficient drops to 0.06. In column 3 we include county-election year fixed effects as well, and hence this regression uses only within-county variation to identify the effect of the crisis. The county-election year fixed effects control for county level unobserved shocks to political preferences by elections. For example, there could be county level unobserved labor market shocks, and unemployment could influence political preferences. The county-election year fixed effects control for such local labor market shocks, and also for other county level unobservable shocks. The parameter estimate does not change, however, the inclusion of these fixed effects substantially reduces the standard error. We also include subregion-year fixed effects in column 4 to control for unobserved local shocks at a much finer level, and it does not affect our main estimate either. Specification in column 5 includes zip code level linear trend, and it gives similar result as before.

So far we used the „market share” of foreign currency loans for the exposure to the crisis. However, it is not the currency denomination that matters per se, but the financial stress of the households. We proxy the financial difficulty of households by the change in indebtedness. We use only the unexpected component of the change in debt, which is due to the revaluation of the household debt because of the exchange rate shock. Formally, we decompose the change in debt into an expected and an unexpected part in the following way:

$$\begin{aligned}
\Delta D^{LC} &= D_1^{LC} - D_0^{LC} = \\
&= \sum_c D_{1c} \epsilon_{1c} - \sum_c D_{0c} \epsilon_{0c} = \\
&= \sum_c \epsilon_{1c} (D_{1c} - D_{0c}) + \sum_c D_{0c} (\epsilon_{1c} - \epsilon_{0c})
\end{aligned}$$

where D_t^{LC} is the local currency value of debt in period t , D_{tc} is the debt denominated in currency c in period t , ϵ_{tc} is the exchange rate vis-a-vis currency c in period t . The exchange rate for domestic currency loans is 1 in all periods, $\epsilon_{t,HUF} = 1$. The first term captures the „expected” part of the change in debt, which is due to new borrowing and repayment of debt. The unexpected part is the revaluation of the existing debt because of the exchange rate shock. As the debt denominated in domestic currency is not affected by the depreciation, the increase in household indebtedness stems from the revaluation of foreign currency debt.

We normalize the increase in indebtedness by the pre-crisis indebtedness of households, and we differentiate between local currency and Swiss franc only. These imply that the unexpected part of the change of debt is equal to the share of foreign currency debt in

September 2008 multiplied by the depreciation of the domestic currency vis-à-vis the Swiss franc. This is a shift-share measure of exposure, where the change in exchange rates are the „national level trends”, and the share of domestic and foreign currency debt are the market shares. This measure is based on the amount of debt and not on the number of loans.¹⁵

In column 6 of Table 4 we use the debt revaluation as a measure of financial distress. The point estimate is significant, and its interpretation is that a 10 percent unexpected debt shock increases the vote share of the far right by 2.2 percentage points. Between the start of the crisis and April 2010, when the election was held, the exchange rate depreciated by 23 percent. This implies that the household debt shock increased the vote share of the far right by 5 percentage points on average, which amounts to 35 percent of the total increase in far right vote share.

Households could form expectations on the future evolution of the exchange rate. If they had anticipated some depreciation they could have taken some precautionary measures. That would imply that the unexpected change in debt is smaller compared to what the depreciation would imply, and hence we underestimate the true effect of the debt shock on political preferences.

Results from the poll data are in line with these findings (Table B.6) The advantage of the poll data is that we can include individual level control variables, such as employment status or educational attainment. However, we can only use regional exposure to the crisis. Though the point estimates are larger compared to the zip code level data ranging between 0.15 and 0.25 depending on the specification, they are not statistically different from the main result.

Instrumental variable results Next, we turn to the IV results, which are presented in Table 5. We estimate a first-difference regression between 2006 and 2010. The first stage regression results are shown in column 1 and 2, without and with control variables, respectively. The foreign currency share of credit supply strongly correlated with the share of foreign currency loans. The first stage regression with control variables has an F -statistics of 56. Column 3 and 4 contains the reduced form results, which are both significant. The second stage results are reported in column 5 and 6. The point estimates differ significantly between these two specifications, suggesting that credit supply is not random. When we include control variables the coefficient drops to 0.10. This point estimate is larger than the OLS, however, the standard error is also larger and the difference between the OLS and the IV estimates is not statistically different. We also construct the confidence set of

¹⁵Formally,

$$\frac{\sum_c D_{0c}(\epsilon_{1c} - \epsilon_{0c})}{\sum_c D_{0c}\epsilon_{0c}} = \frac{D_{0,CHF}(\epsilon_{1,CHF} - \epsilon_{0,CHF})}{D_0^{LC}} = \frac{D_{0,CHF}\epsilon_{0,CHF}}{D_0^{LC}} \times \frac{\epsilon_{1,CHF} - \epsilon_{0,CHF}}{\epsilon_{0,CHF}} = FCS \times \frac{\epsilon_{1,CHF} - \epsilon_{0,CHF}}{\epsilon_{0,CHF}}$$

the IV estimate, which is based on the reduced form (Chernozhukov and Hansen, 2008). The advantage of this approach is that it is valid under weak identification. We find that confidence set is larger than zero, which corroborates our finding that the exchange rate exposure of households significantly increased the vote share of the far right.

Placebo test A potential concern using credit supply as instrument is that banks’ credit supply might also be correlated with unobserved political preferences. Banks choose the location of their branches purposefully as they prefer locations with higher profitability. These are more likely to be cities, where political preferences might be different. For example zip codes with high FCS might be more likely to vote for far-right parties when there is a general shift in political preferences towards right-wing parties.¹⁶

The pre-trend for more and less affected regions are parallel from 1998 to 2006 shown in Figure 6 but those years were calm years. We therefore conduct a placebo test for which we use the 1939 election when far-right parties received 25 per cent of the total votes. We focus only on the votes casted on party lists. This election was the first secret ballot in Hungary, and the government being afraid of possible far right success tried to prevent the far-right parties from running using various administrative measures.¹⁷ For details on the election and data construction see Appendix A.1. This resulted in the far right not running in many electoral districts. Figure B.1 shows the electoral map vote share of the far-right parties.

We test whether foreign currency share in 2008 is related to the vote share of the far right in 1939. We estimate the following regression:

$$y_i^{1939} = \alpha + \beta FCS_i + \gamma X_i + \epsilon_i$$

where y_i^{1939} is the vote share of the far right in settlement i in 1939, FCS_i is the foreign currency share in settlement i , X_i contains control variables. We consider controls from 1939 such as the number of parties running in the electoral district, log number of voters, county or electoral district fixed effects, and present-day control variables as well.

Table 9 contains the results. Panel A displays the results of regressions that are estimated on the subsample of electoral districts with far-right parties running, that is, where people

¹⁶Studies showing that anti-semitism has medieval origins (Voigtländer and Voth, 2012), right-wing political ideology has persistence (Cantoni et al., 2017), Nazi occupation affects political extremism today (Fontana et al., 2017), Turkish siege on Vienna affects today’s political preferences (Ochsner and Roesel, 2017) or there is intergenerational correlation in extreme right wing party preferences (Avdeenko and Siedler, 2015) could make this hypothesis plausible. D’Acunto et al. (2013) show that in counties where Jewish persecutions were higher present-day households are less likely to get a mortgage and this results is not driven by supply side factors. If this kind of prejudice affect currency choice too then we might worry that our approach picks up this omitted factor.

¹⁷The economic conditions during the previous two elections in 1931 and 1935 were more dismal, however, the far-right parties received less than 2 percents of the votes.

could have voted for a far-right party. The first column of Panel A shows that foreign currency share is uncorrelated with far right vote share without any control variables. Including control variables does not alter the significance of the coefficient. The third and fourth columns show the estimates when county and electoral district fixed effects are added as controls, respectively. The inclusion of these fixed effects does not alter our results, the point estimate is insignificant.

Because far-right parties could choose where to run, they might have run only in regions with higher support, that is, settlements with no far-right party list might not be random. Panel B of Table 9 shows the parameter estimates when the same regressions are estimated on the whole sample. There is slight negative correlation without control variables, and the inclusion of controls from 1939 does not change that. However, this correlation indicates that settlements with high foreign currency share were less likely to cast their votes on far-right parties in 1939, which is just the opposite what the persistence of far-right attitudes would imply. Furthermore, once we include either county or electoral district fixed effects the coefficient becomes insignificant.

These results indicate that foreign currency share in 2008 is not correlated with far right vote share in 1939, that is, regions with high foreign currency share are not systematically more susceptible to far-right extremism.

Proxying foreign currency debtors' naïveté Foreign currency debtors might be different from domestic currency debtors, especially in terms of naïveté. They might be more likely to choose foreign currency loans and at the same time might be easier to influence by populist far-right parties. Therefore the omitted naïveté might drive the results.

We begin by using individual-level data to examine how borrowing in foreign currencies is related to individual characteristics, and see whether individuals with foreign currency (FC) loans are different from individuals with local currency (LC) loans. We use Household Budget Survey data from 2009 and 2010. This is a representative survey focusing on the consumption of households but also contains additional information on household debt. We look at households with mortgage-backed debt that is originated between 2000 and 2008, and compare the FC debtors to LC debtors. We pool the two waves of the survey. Table 7 shows the average characteristics of these two groups, and also for the rest of the households. The last column shows the difference between foreign and domestic currency borrowers. These statistics show that households with foreign currency loans and domestic currency loans are similar, though domestic currency borrowers have slightly better characteristics. The average educational attainment is better for domestic currency borrowers, higher share of them have tertiary education and lower share of them have vocational education compared to foreign

currency borrowers. The income of the two groups is not statistically different. Interestingly, foreign currency borrowers are more likely to have other loans products. Though FC and LC borrowers are similar to each other, they are quite different from the rest of the households which have no housing debt. These results are in line with existing literature on household foreign currency borrowing that finds local currency debtors are similar to foreign currency debtors.¹⁸

We also use several proxies for foreign currency debtors' naïveté. There are several possible explanations why FC debtors might be more naive. First, households borrowing in foreign currency might have lower financial literacy and this might be correlated with how susceptible they are to populist rhetorics.¹⁹ In our baseline specification we control for education, income and unemployment which are likely to be correlated with financial literacy.

Second, lending standards could have decreased over time.²⁰ As later originations were more likely to be denominated in foreign currency, less creditworthy people might have been more likely to borrow in foreign currency and creditworthiness might be correlated with how easily households are persuaded by populists. We include pre-crisis default rate to control for differences in creditworthiness which does not affect the coefficient of FCS (column 2 of Table 8).

Third, there is anecdotal evidence that misselling happened during the crisis. People applying for mortgage loans might have got home equity loans instead, which was beneficial for the banks because of the higher interest rates of these loans. Because home equity loans were not subsidized, almost all of these loans were denominated in foreign currencies. If people wronged by the banks could be influenced by populists easier than local currency borrowers, then that would bias our estimates. The share of home equity loan among FC

¹⁸Pellényi and Bilek (2009) analyze survey data on Hungarian households collected in November 2008, right after the start of the crisis. They find that foreign currency borrowers are not statistically different from domestic currency borrowers with regard to income, age and gender. However, foreign currency borrowers tend to be more risk averse and more aware of currency risks. The study shows that this awareness triggers risk mitigation tools such as insurance against the currency risk. Beer et al. (2010) present evidence using detailed financial wealth survey data on Austrian households that risk-seeking, affluent and married Austrian households are more likely to take housing loans in foreign currency. Beckmann and Stix (2015) shows household understands the exchange rate risk associated with foreign currency loans using survey data from Central and Eastern Europe countries including Hungary. However, this survey was conducted in 2011, years after the start of the crisis, which might have affected whether households understand the exchange rate risks associated with FC loans. Beck and Brown (2015) shows that foreign banks cherry-pick the best customers in retail lending using survey data from Central Eastern Europe.

¹⁹This would be consistent with the financial literacy literature that documents that the financial literacy of borrowers negatively correlate with default (see e.g. Gerardi et al. (2010) for the US), more financially literate borrowers tend to get credit with better terms. Financial literacy might also affect the currency choice of loans as more literate borrowers might understand the exchange rate risks associated with foreign currency loans.

²⁰See Demyanyk and Van Hemert (2009); Dell'Ariccia et al. (2008) for US.

loans is not random, it is higher in zip codes with worse characteristics, for example income is lower on average in zip codes with high share of home equity loans (See Table B.5).²¹ We begin by using the foreign currency share of mortgage loans only (column 1 of Table 8) as this measure is uncorrelated with zip code characteristics (See Table B.3). The point estimate is smaller if we use the mortgage foreign currency share, it is 0.027 and significant, but we disregard home equity loans in this case. In column 3 of Table 8 we proxy naïveté with the share of home equity loans among FC loans. The coefficient of foreign currency share of loans slightly decreases, however, it is still large and significant.

We also examine how controlling for the vote share of the far-left and the Smallholders' Party affects our estimates. The parallel trend does not hold for these parties for the pre-crisis period, and they might be more likely to switch to another populist party, the far-right. Column 4 of Table 8 contains the results. We use the vote share of these parties from 1998. Both of these vote shares predict higher vote share of the far right in the 2010 election, however, the point estimate of the foreign currency share is very similar as before. In column 5 we include all of these control variables at the same time. The coefficient of *FCS* is 0.048 and highly significant.

These results indicates that foreign currency debtors' naïveté does not explain the rise of the far right.

4.2 Alternative hypotheses

In this subsection we examine various alternative hypothesis that might affect our estimates. We focus on local labor market shocks and the presence of minority and immigrant groups.

Local labor market shocks Local labor market shocks could increase job insecurity, induce wage freeze or wage cut and might result in job loss, which could influence the political preferences of people. For example Geishecker and Siedler (2011) documents that job loss fears could foster affinity for parties at the far right. Import competition from China increases job insecurity and affects political preferences (Autor et al., 2016; Colantone and Stanig, 2017; Dippel et al., 2015). Local labor market shocks in Hungary might be correlated with exposure to the exchange rate shock, and confound our estimates.

We define local labor market at the municipality level. Local labor markets can also be defined at broader levels, for example at the subregion level. However, we included commuting subregion-election year fixed effects to control for time-varying local shocks, which include labor market shocks as well, in Table 4.

²¹This evidence can also be consistent with that the introduction of foreign currency home equity loans eased the borrowing constraints of households and they used these loans for consumption smoothing.

We consider four different sources of shocks that influenced the labor market: fall in export, import competition from China, and foreign currency indebtedness of firms. For each shock we calculate the employment share of affected firms using balance sheet data of double book keeping firms in Hungary which we match with firm register data that contains information on the location of the headquarter. We include the employment share in 2007 interacted with year in the regression. Because in many small settlements there are no firms at all, the number of observations drops compared to previous regressions.

First we focus on the export shock and include the employment share of exporter firms in the settlement. Column 1 of Table 10 shows that the parameter estimate of foreign currency share is unchanged. We further investigate this question by including the employment share of manufacturing in 2007 (column 2), which is most affected by the import competition. The coefficient is the same as before. Interestingly, the employment share of exporters and manufacturing firms do not have an effect on the vote share of the far-right despite the large shocks to these firms.

Foreign currency lending was prevalent in the corporate sector as well, and corporate and household foreign currency share might be correlated.²² Therefore the exchange rate shock might work through the corporate balance sheet rather than the household balance sheet. To rule out this explanation we control for the employment share of firms with foreign currency debt (column 3) and also the foreign currency share of corporate debt in the settlement (column 4). Because the foreign currency share of debt is not defined if firms do not have debt, the number of observation drops in column 4. We include these variables jointly in column 5 and 6, and the point estimates are very similar as before, suggesting that these local labor market shocks are not correlated with the exchange rate exposure of households.

Immigration, minorities and crime Immigration also affects political preferences (Halla et al., 2016). In Hungary, immigration is relatively small, however, Roma minority was an important item on the far right’s agenda and attitudes towards the Roma minority might affect political preferences.²³

We include the share of Roma minority in the regression as a control. Also, as there are other minority groups in Hungary, we control for there share. We split the non-Roma

²²Endrész et al. (2012) shows stylized facts on foreign currency debt in the corporate sector using credit register data. Bodnár (2006, 2009) present survey results on the exchange rate exposure of corporate sector. Endrész and Harasztosi (2014) shows that foreign currency debt decreased investment in Hungary.

²³The common theme of the far-right manifestations were that Romani people do not work but shirk, they do not deserve transfers, they are criminals. Before the 2010 election there were a few murders committed by Romani which received significant public attention, for example the lynching of a teacher in 2006 or the murder of a handball player at a bar in early 2009. Karácsony and Róna (2010) attribute the success of the far-right to these events and to the related rhetoric of the far-right as people thought the far-right to be competent to handle this issue.

minorities into two groups. The first group consists of local minorities that have been present in Hungary and immigrants.²⁴ Controlling for these separately and jointly do not affect our results (Column 4-5 of Table 11). The far-right took aim the Roma minority and suggested that inclination to criminality is in the blood of the Roma. As the Roma criminality was an important issue of the far-right, we control for property and violent crime rates in 2008 besides the minority controls (column 6). The inclusion of these variables do not change the coefficient of foreign currency share.

An alternative hypothesis is that we measure the impact of the the refugee crisis. However, as the refugee crisis started in 2013, our baseline results, which excludes the 2014 election, is not affected by it.

4.3 Robustness checks

In this subsection we examine the robustness of the results to alternative specifications. The results are included in Table 6.

The population distribution in Hungary is skewed therefore large settlements might drive the results. So we estimate an unweighted regression (column 1) and the results are still significant indicating that the balance sheet shock increased the popularity of far-right in general. The election system changed in 2011 therefore we excluded the 2014 election from our baseline sample. Column 2 shows the estimate if we include the 2014 election year in the sample, we show the effect of the exchange rate exposure of households separately for the 2010 and 2014 elections. The effect of FCS was smaller in 2014, however, it had still a significant impact on far-right vote share. In Column 3 we estimate the effect of the two terms to which foreign currency share can be decomposed. The point estimates of composition of flow and the change in stock measures are significant, however, the former is significant at the 10 per cent level. In Column 4 we use the Early Repayment Program adjusted foreign currency share as an independent variable. We present only the result for one ERP-adjusted measure, but others give similar results as well. The point estimate is 0.054, very close to the previous estimates. In column 5 we control for commuting zone-election year fixed effects. The commuting zone was determined based on commuting pattern using 2011 Census data.²⁵ This set of fixed effects capture local labor market shocks that could influence political preferences, and also other unobservable shocks. The coefficient of foreign currency share is not changed significantly. In the last column, we include quadratic trends

²⁴Local minorities include Bulgarian, Greek, Croatian, Polish, German, Armenian, Romanian, Rusyn, Serb, Slovakian, Slovenian and Ukrainian minority groups. Immigrants consists of Arabic, Chinese, Russian, Vietnamese and other minorities.

²⁵Pálóczi et al. (2016) define commuting zones based on commuting patterns based on the 2011 Census data which they call functional region.

to account for potential nonlinear trends in political preferences, and this does not affect our results either.

5 Mechanisms

Financial crises can affect political preferences through several channels. [Funke et al. \(2015\)](#) formulates several potential mechanisms.²⁶ We examine these channels in this section.

Creditor-Debtor Conflict The creditor-debtor conflict explanation emphasizes the different views of the creditors and debtors about how to resolve the crisis. Debtors prefer debt relief and debt restructuring while creditors oppose these measures as these can be consequential to them during a recession ([Mian et al., 2014](#); [Frieden, 2015](#)). As there are fewer creditors, they might find it easier than debtors to organize themselves and influence the government and other moderate parties ([Olson, 2009](#)). This might create a niche for populist parties that could win over debtors by advocating debtor-friendly policies. This mechanism is consistent with the model of [Guiso et al. \(2017\)](#). In their model, populist parties promise policies to help workers with uncertain income. The policies might hurt the economy in the long run, therefore people higher economic uncertainty vote for them only. [Acemoglu et al. \(2013\)](#) present a model where politician use populist redistributive policies to signal that they are not captured by the elite.

First, we look at campaign manifestos of major parties in 2010 on what they promised to foreign currency debtors. The far right had explicit promises to the foreign currency debtors: debt relief and debt restructuring.²⁷ The incumbent Socialist Party was very vague about their intentions on how to help foreign currency debtors and these promises might have been regarded non-credible as they were in power until 2010.²⁸ The manifesto of the center-right Fidesz did not contain any reference to foreign currency debtors and the newly founded green party, *Politics Can be Different*, did not mention foreign currency debtors either.

Second, we examine the party preferences of indirectly affected people. The creditor-debtor conflict implies that it is the debtors who vote for the far right, hence higher share of indirectly affected people should not increase the vote share of the far right. The household

²⁶The hypotheses [Funke et al. \(2015\)](#) formulates are rising inequality; unpopular bank bail out; government might be deemed responsible for the crisis as they could have prevented it; conflict between creditors and debtors about how to resolve the crisis and who should bear its costs; or unprecedented policies during the crisis might increase uncertainty.

²⁷The promises were that the payment of foreign currency indebted households would be determined by using the exchange rate at the time of origination of the loan and they would have been allowed to suspend temporarily the payment of their debt for one year without any cost. Moreover, they would have also forbid foreclosures.

²⁸They promised more social housing and defending the rights of foreign currency debtors.

balance sheet shock induced by foreign currency borrowing of households has a demand externality (Farhi and Werning, 2016) and hence influence all households. Foreign currency debt exposure has a negative impact on consumption. The declining aggregate demand decreases labor demand (Mian and Sufi, 2014), which affect all people and not just foreign currency borrowers, as they are more likely to loose their jobs. We show in a companion papers that higher share of foreign currency debt increases local unemployment and increases the default rate of even the local currency loans (Verner and Gyöngyösi, 2017). Therefore the voting of the indirectly affected people, unemployed and domestic currency borrowers, might explain the rise of the fa right.

To examine this hypothesis, We control for local unemployment and default rate of domestic currency loans affect political preferences. Table 12 presents the results. We measure their effects on the vote share of the far right and the opposition center right. Local currency default rate had no significant effect on the vote share of the far right, while it increased the popularity of the center right. The default rate of foreign currency loans had just the opposite effect, it raised the vote share of the far right but had no impact on the vote share of the center right. Unemployment significantly increased the popularity of the far right, however, the effect is economically small, it accounts for half percentage point increase in the vote share of the far right.²⁹

Third, the instrument solves the ecological inference problem (Spenkuch and Tillmann, 2016), which implies that the instrumental variable estimate can be generalized to the individual level despite using zip code level data for the analysis.

Declining trust People might have voted for the far-right to express their discontent with the establishment and the system.³⁰ This would imply that it is not the policies promoted by the far-right that increased their popularity but just dissatisfaction with moderate parties. This hypothesis has several corrolaries. First, other new or extremist parties should have also benefited from the balance sheet crisis. Table 13 presents the effect of the crisis on the vote share of other parties. The far-left in fact did worse in zip codes with higher foreign currency share. If we control for the trend, the effect is small but positive, however, in 2010 they received only 0.1 percent of the total votes. Table 14 presents the results for the newly founded green party. Since the party was newly founded, we identify the effect of the crisis

²⁹These results are consistent with the findings of Kates et al. (2016) who examine how unemployment affected the rise of the far right in Hungary using survey data. They find that settlement level unemployment rate increases the popularity of the far right more than individual unemployment status, which is significant only at the 10 percent level. As foreign currency debt predicts unemployment, their results are suggestive evidence that the exchange rate exposure of households explains the rise of the far right.

³⁰For example Algan et al. (2017) shows that there is a strong correlation between decline in trust and rise in populism.

from cross section. There is a slight negative correlation between exposure and their vote share if we include regional fixed effects beyond the control variables. This result does not change if we control for political preferences in 2006.³¹

Second, the crisis might have influenced the turn out. It could have either increased participation as people might have wanted to express their view, or on the contrary, they might have stayed away from the election.³² Alternatively, people could have casted invalid votes to express their anger. Panel A of Table 15 contains the results on turnout. Higher exposure to the crisis decreases turnout, in our baseline specification in column 3, the effect is significant and large. Full dollarization of household loans would depress turnout by 5 percentage points. However, there is a declining trend in aggregate turnout. If we include zip code level linear trend to control for it then the effect becomes insignificant. Panel B of Table 15 displays the results on invalid votes. Except for one specification, in which we find no significant relation between foreign currency share of loans and invalid votes.

Third, trust could decline in depressed regions if people think that elected representatives would not help them. We use survey data from 2006 to 2010 on trust in the National Assembly to assess this possibility. The results are presented in Table 16. Though regions with higher exposure to the crisis trust less in the Parliament even after controlling for individual characteristics, trust does not decrease in these regions, in fact, the point estimates are positive but insignificant.

These results suggest that general dissatisfaction and declining trust does not explain the rising popularity of the far right.

Inequality and redistribution Economic crises tend to increase inequality (Atkinson and Morelli, 2011), financial crises have redistributive consequences as they affect the poor disproportionately (Halac et al., 2004). Funke et al. (2015) and Mian et al. (2014) suggest that rising inequality might be an important channel in the shift of political preferences following a financial crisis. Populist parties advocating redistributive policies might increase their support. In this subsection we analyze how inequality and redistributive preferences changed during the crisis.

First, we examine overall inequality measured by the Gini coefficient. From 2006 until 2010 there is a declining trend in the Gini coefficient, in 2011 it jumps.³³ As the popularity

³¹We also check the results for the moderate parties. The center right, that was in opposition before the crisis, benefited from the foreign currency exposure of households while the center-left parties lost more votes in more affected zip codes. These results are consistent with the economic voting hypothesis.

³²Charles and Stephens (2013); Burden and Wichowsky (2014) document that unemployment increases turnout. Guiso et al. (2017) emphasizes that preference to vote for a populist candidate is positively correlated with abstention, which makes it less likely for a populist to get elected.

³³There was a tax reform in 2011 when flat tax rate was introduced and tax credit was abolished. High-

of the far-right started to increase in early 2009, this suggests that inequality cannot explain the rise of far right.

We also examine this question using the Household Budget Survey waves from 2009 and 2010. We examine the distribution of disposable income of households, which takes into account the mortgage payment of households. We calculate this measure from the data and also assuming the exchange rate shock away, and compute the Gini coefficient using both measures. We find that the exchange rate shock increased inequality slightly. Although debtor households have higher income, low-income borrowers spend higher fraction of their income on mortgage payment and the exchange rate shock decreases the disposable income of these households.

The importance of inequality should also be reflected in the composition of the supporters of far right. Poorer individuals tend to favor more redistribution (Alesina and Giuliano, 2009), therefore popularity of the far right should be higher among poorer people. Contrary to this hypothesis, supporters of far-right have higher income, and they are more likely to have other assets compared to voters of other parties (Rudas, 2010).

If inequality matters for the households when they vote then redistributive policies should be more popular. We compare policy positions of the far-right to other mainstream parties by using the Manifesto Project data which measures the policy positions of political parties derived from a content analysis of electoral manifestos.³⁴ Data is not available for the far-right in 2006, hence we could only compare the programs in 2010. Table 17 compares the program of the far-right Movement for a Better Hungary, the center-right Fidesz and the center-left Socialist Party. The center-left and center-right parties very generous campaign promises while the far-right was much less generous.

We look at how the preference for redistribution is related to foreign currency share. First, we examine whether foreign currency share is correlated with preference for redistribution before the crisis. We use the results of a referendum from early 2008 to assess preferences for redistribution before the start of the crisis. The referendum was on whether to abolish university/college tuition fee, copayment and daily hospital stay fee. The results are presented in Panel A of Table 18. Without controls, zip codes with higher foreign currency share tended to support the abolishment of these fees, however, including control variables makes the estimates insignificant. We also control for previous political preferences as the referendum was initiated by the opposition and parties might be able to influence the constituency's preferences for redistribution. We control for political preferences by including the vote share of the center-right which initiated the referendum. We find that conditional on previous political

income individuals benefited the most from the tax reform.

³⁴Manifesto project, <http://manifestoproject.wzb.eu/>

preferences there are no differences across zip codes in preferences for redistribution. We also look at turnout in the referendum in Panel B. Participation in the referendum was lower in high foreign currency share zip codes and this result is robust to the inclusion of control variables.

We also examine survey data conducted in February 2010 and compare high foreign currency share regions and low foreign currency share regions on how people view social transfers to specific groups. The questionnaire asks to guess what fraction of the people belonging to a certain group receive social benefit and what fraction should receive the benefit. We take the difference of these, a positive number therefore indicates that more members of that group should receive social transfer. Table 19 summarizes the results for five groups: large families, unemployed people, low-pension pensioners, Roma people and disabled people. People living in high vs low foreign currency share regions guess similarly the share of people belonging to certain groups receiving transfer. However, there are differences between them on what fraction of those people should get transfers. People living in high FCS regions prefer less social transfer to all groups except for the Roma.

These results suggest that inequality is not an important channel for the rise of the populist far right.

Bank bail out Financial crises usually involve some sort of bank bail outs, which tend to be unpopular. Populist parties can exploit this by blaming the banking sector for the crisis, and the government for aiding the banking sector using the taxpayers' money.

The Hungarian banking sector is mostly owned by foreigners therefore the government did not need to inject capital into foreign banks. Though the government passed a new law in Decemembr 2008 which allowed for using the IMF rescue package money for recapitalizing domestic banks, this did not happen. Instead, two domestic banks, OTP and FHB, received EUR 1.4 billion and 0.4 billion loans with market conditions (though these were cheaper loans as they did not have to pay for the country risk), respectively, because of liquidity problems. OTP prepaid the loan in two installments in November 2009, and in March 2010, before the 2010 election. As banks were not bailed out using Hungarian taxpayers' money, the bail out explanation of changing political preferences is unlikely.

Campaign expenditures Campaigning of parties could influence political preferences. The far right might have campaigned disproportionately in regions exposed to the crisis, and that might explain their success. Though the data is not available to the public and political parties, campaigning and foreign currency exposure could be correlated as foreign currency debt exposure increased unemployment. Therefore the far right by focusing its campaign on

depressed regions might explain their relative success in regions with high share of foreign currency loans.

We begin by controlling for electoral district-election year fixed effects. These are slightly smaller units than subregions. Party organizations usually follow this partition as majoritarian part of the election system is more important for winning the election. Hence the intensity of campaign could vary across electoral districts. We first include electoral district-year fixed effects as control variables (column 1 of Table 20). This subsumes campaigning activity for all parties, and it does not affect our parameter estimate.

Second, we use data on campaigning. NGOs collected data on campaign spending in 2010 and 2014.³⁵ Advertisements or campaign events of parties reported by the national news agency, *Daily Bulletin* (MTI), or spotted by activists are collected. Spending is calculated by assuming a price. They also give the location of the spending when appropriate.

We control for the per capita spending of the far right, center right and center left parties. Because the inclusion of electoral district fixed effects does not affect the estimates we calculate these measures at the municipality level. We do not have spending for the 2006 election hence we use the change in vote share between 2006 and 2010 as our dependent variable:

$$\Delta_{06-10}y_i = \alpha + \beta FCS_i + \sum_j \gamma_j Campaign_{ij} + \delta X_i + \epsilon_i$$

where $Campaign_{ij}$ is the per capita campaign spending of party j in municipality i .

Column 2 of Table 20 presents the estimate. The effect of the exposure is not affected by controlling for campaign spending of the parties. In column 3 we include the electoral district fixed effects and the campaign spendings jointly, but the point estimate is robust to these controls. These results indicates that disproportional campaigning of the far-right in more exposed regions do not explain their rise in 2010.

6 Conclusion

In this paper we studied the effect of the recent financial crisis on voters' political preferences using Hungarian zip code level data. We used a natural experiment from Hungary, where we exploited the prevalence of foreign currency loans. The vote share of the populist far-right increased significantly more in zip codes with higher exposure to the exchange rate

³⁵The NGOs are Transparency International, K-Monitor, Atlatszo and Political Capital. They made their data available on <http://kepmutatas.hu/kampanymonitor/>

depreciation. This result is consistent with the creditor-debtor conflict and we have presented evidence that other potential channels prominent in the literature do not explain our estimates.

This paper shows that debt deflation shock not only affects the real economy (Fisher, 1933; King, 1994) but it can influence political preferences as well. Though extremist parties rarely part of the government, they still can shape policy making indirectly by setting the agenda (Minkenberg, 2001) and exerting influence on the strategy of moderate parties (Guiso et al., 2017). Therefore even a moderate electoral success of populist parties can have a profound effect.

The importance of creditor-debtor channel in the rise of the far-right suggests that the electoral success of populists is partly economic. Hence addressing the problem of increasing appeal for populist parties requires conventional economic policy measures. Redistributive policies that target indebted households could moderate the electoral success of populist parties.

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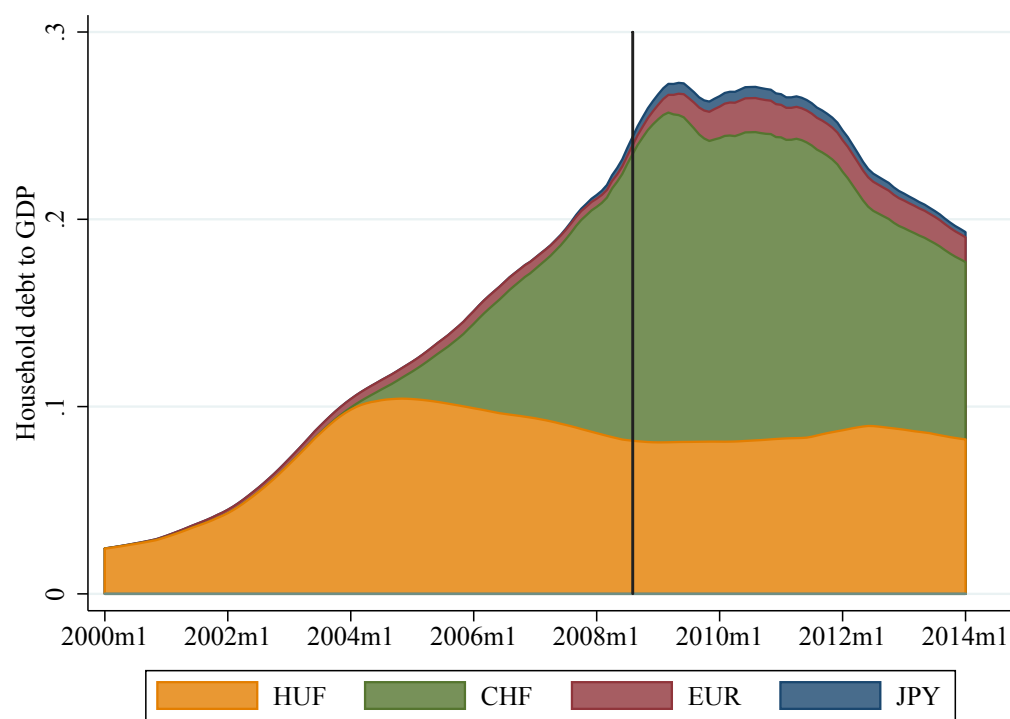
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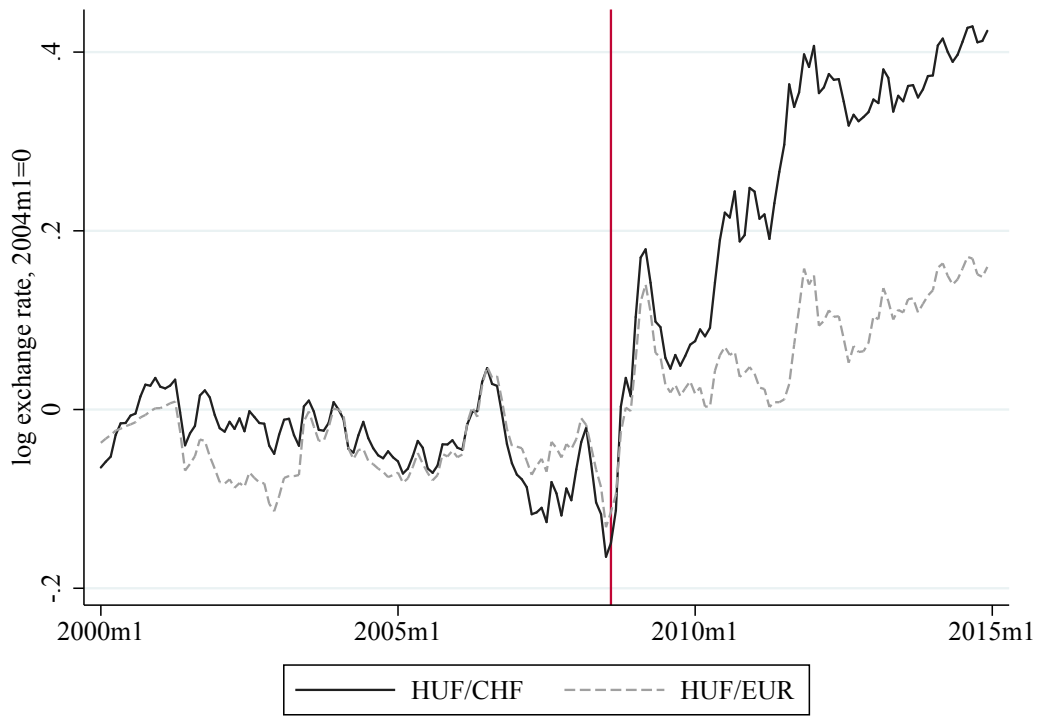
Figures

Figure 1: Household debt to GDP by currency



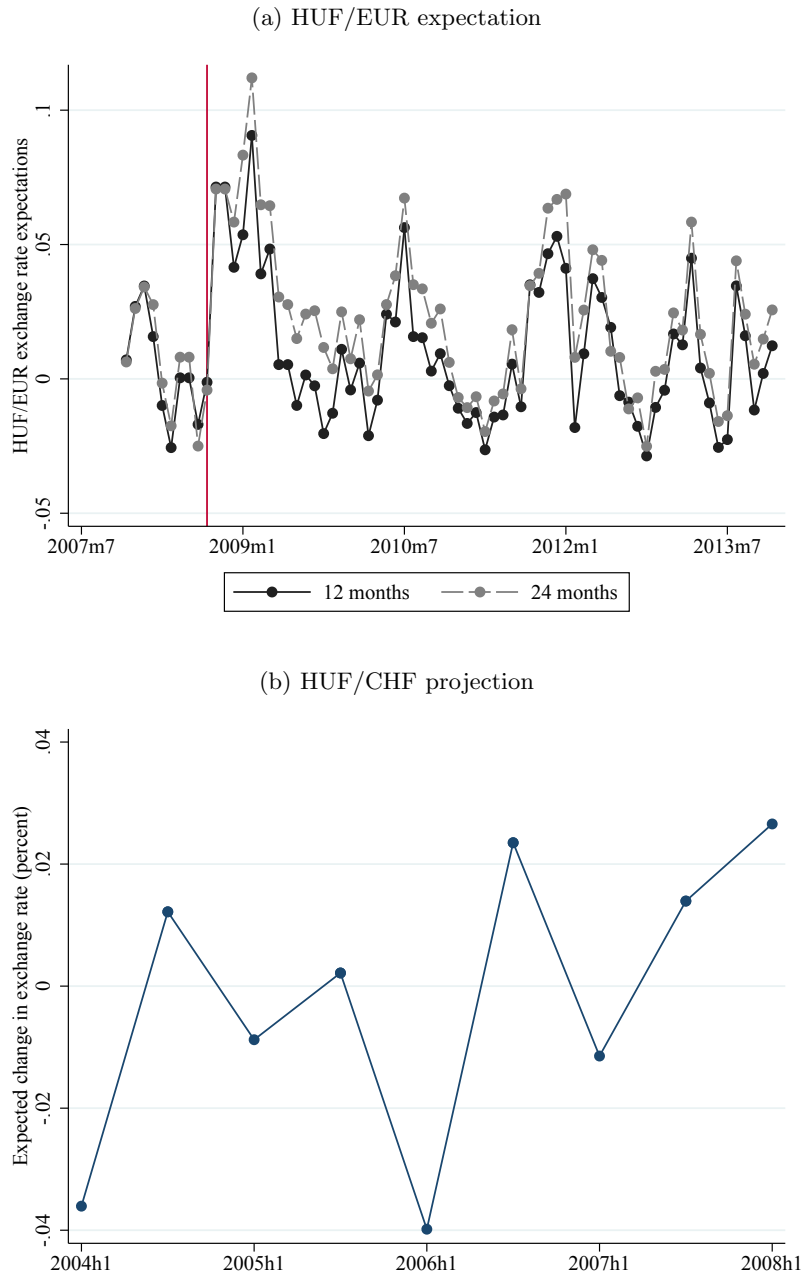
Note: This figure shows the household debt relative to GDP by currency denomination. The vertical line represents September 2008.

Figure 2: Evolution of exchange rates



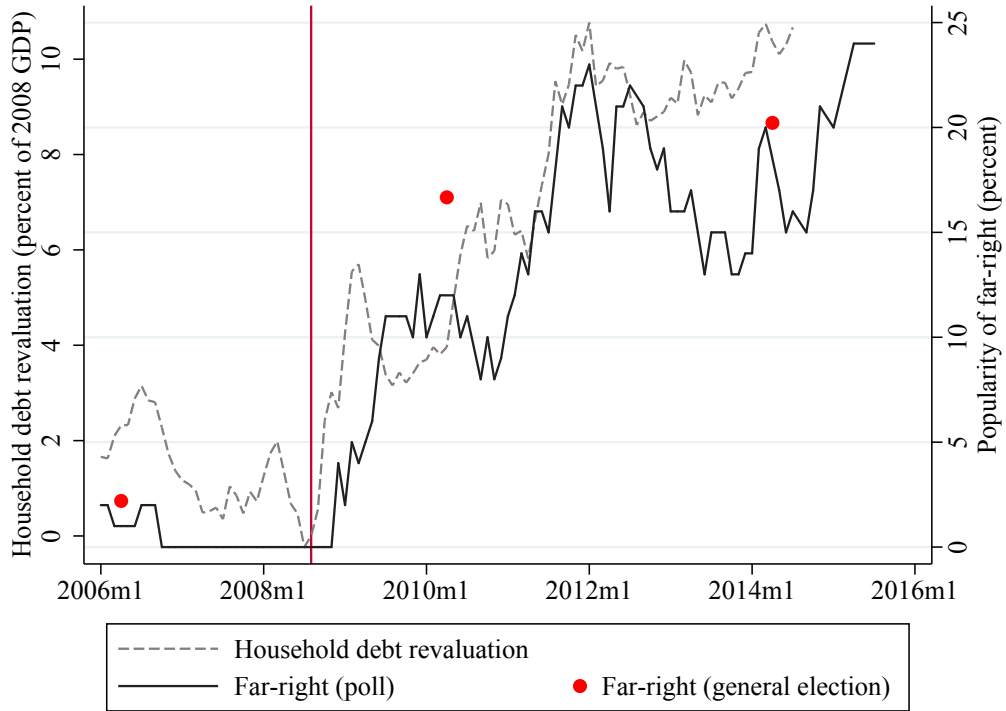
Note: This figure plots the HUF/CHF (solid line) and HUF/EUR (dashed line) log exchange rates relative to January 2004. A positive number indicates depreciation of domestic currency relative to January 2004. The vertical line represents September 2008.

Figure 3: Exchange rate expectations



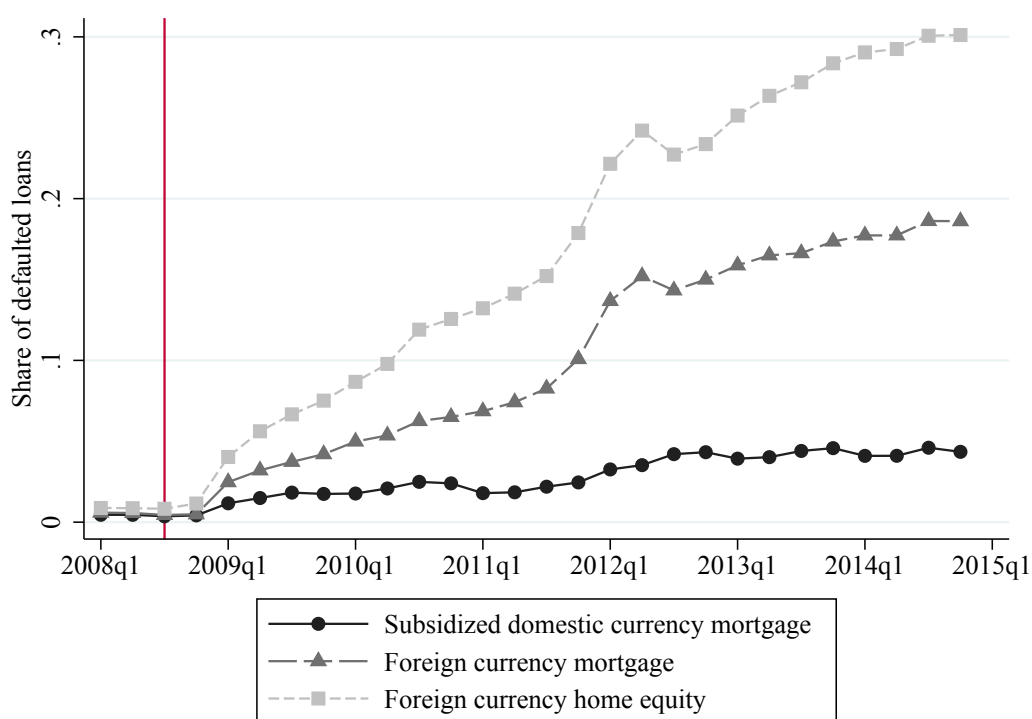
Notes: Figure a) shows the HUF/EUR exchange rate expectations of experts from Consensus Economics survey. The solid line represents the expectations on 1-year, the dashed line on 2-years horizon in the given month. Positive values represent depreciation of HUF. The vertical line represents September 2008. Figure b) shows the HUF/CHF exchange rate expectation from OECD Economic Outlook Projections. The values represent the expected change in exchange rate in percent relative to the exchange rate at the time of publication of the Economic Outlook. Positive numbers mean projected depreciation.

Figure 4: Household debt revaluation and support for the far-right



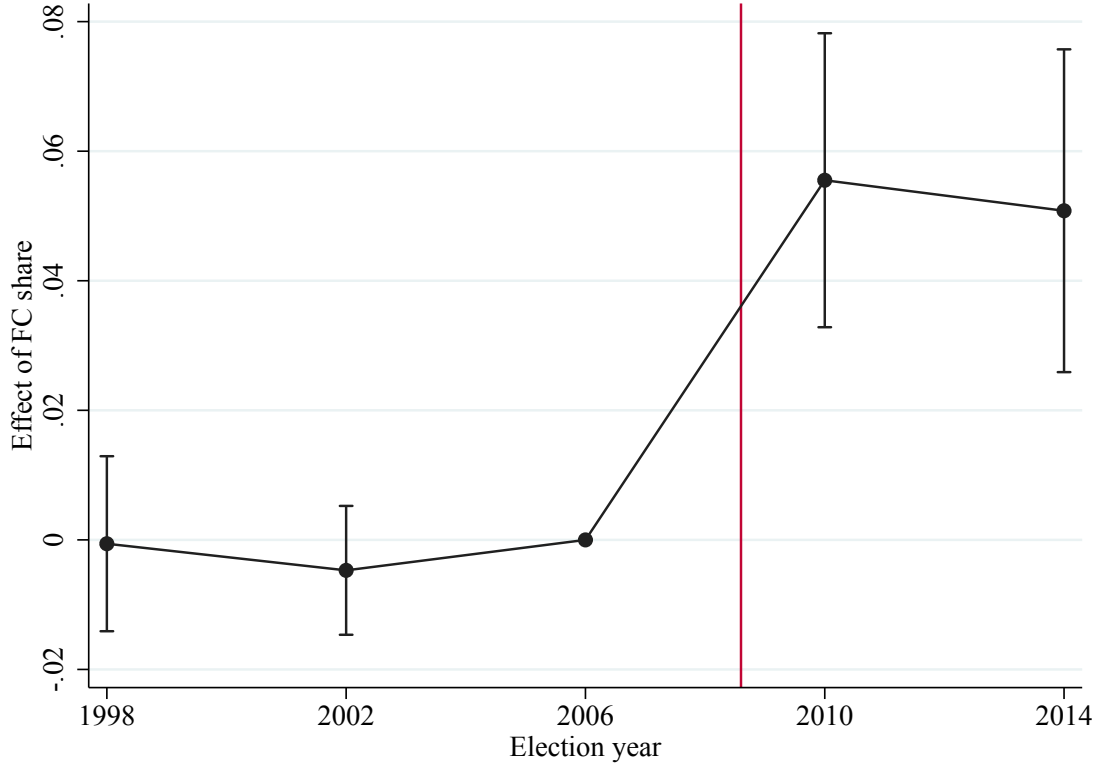
Note: This figure shows the household debt revaluation (dashed line) and the popularity of far-right based on poll data (solid line) and Parliamentary election data (dots). The household debt revaluation is calculated as the household debt in September 2008 relative to the GDP in 2008, multiplied by the exchange rate change. Far-right parties are Movement for a Better Hungary and Hungarian Justice and Life Party. The popularity of far-right in the poll is calculated based on the answers of individuals who have intention to vote. The vertical line represents September 2008.

Figure 5: Share of defaulted loans by loan type and currency



Note: This figure shows the share of defaulted debt by loan type and currency. The vertical line represents 3rd quarter of 2008.

Figure 6: Effect of foreign currency share of loans on far-right vote share

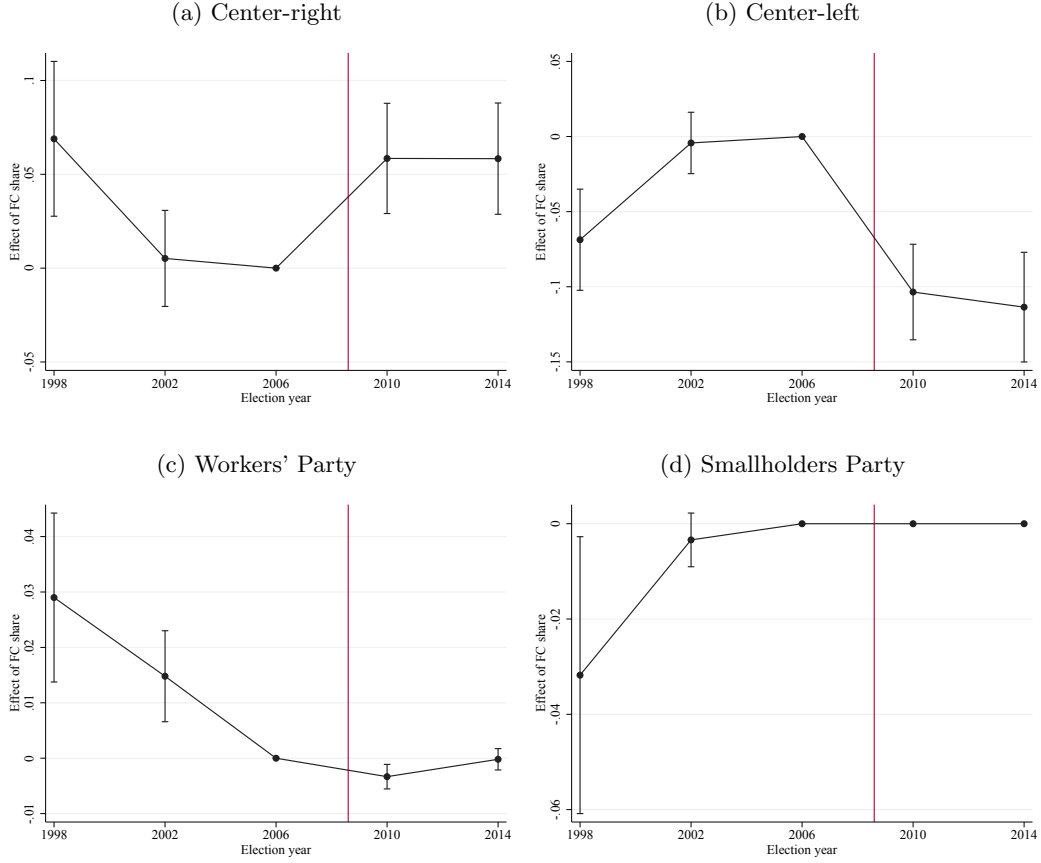


Notes: This figure shows whether zip codes with high foreign currency share and low foreign currency share casted their vote differently on the far-right relative to 2006. The figure plots the coefficients of the following regression of foreign currency share on the vote share of various parties:

$$y_{it} = \alpha_i + \delta_t + \sum_{t \neq 2006} \beta_t FCS_i \times Year_t + X_{it} + \varepsilon_{it}$$

Controls are time-invariant pre-crisis zip code characteristics interacted with election year dummies. The controls include log population size in the settlement, share of population age 18-29 and age 60+, after tax income, unemployment relative to working age population, educational attainment, per capita number of loans, per capita indebtedness. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level. The vertical line represents September 2008.

Figure 7: Foreign currency share and vote share of other parties



Notes: This figure shows whether zip codes with high foreign currency share and low foreign currency share casted their vote differently on the various parties relative to 2006. The figure plots the coefficients of the following regression of foreign currency share on far-right vote share:

$$y_{it} = \alpha_i + \delta_t + \sum_{t \neq 2006} \beta_t FCS_i \times Year_t + X_{it} + \varepsilon_{it}$$

Controls are time-invariant pre-crisis zip code characteristics interacted with election year dummies. The controls include log population size in the settlement, share of population age 18-29 and age 60+, after tax income, unemployment relative to working age population, educational attainment, per capita number of loans, per capita indebtedness. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level. The vertical line represents September 2008.

Tables

Table 1: Election results and turnout

	Far-right	Center-right	Center-left	Far-left	Turnout
Election 1998	5.55	31.30	40.12	4.08	55.61
Election 2002	4.37	41.07	47.63	2.16	69.68
Election 2006	2.18	46.67	49.28	0.40	67.80
Election 2010	16.57	54.99	19.16	0.11	64.35
Election 2014	20.77	43.72	26.32	0.58	60.88

Notes: This table shows vote shares received on party lists in percent. Far-right parties are Movement for a Better Hungary (Jobbik) and Hungarian Justice and Life Party (MIÉP), center-right parties include Fidesz, KDNP, MDF, center-left parties include MSZP, SZDSZ, DK, Együtt-PM, the far-left is the Workers' Party. The center-right parties win the election in 1998, 2010 and 2014, the center-left parties win in 2002 and 2006.

Table 2: Descriptive statistics on main variables

	count	mean	sd	p10	p90
Main variables					
FC share	3454	.65	.14	.5	.81
FC share, debt	3454	.66	.16	.47	.86
Δ default	3454	.034	.042	0	.08
Δ debt	3454	.28	.18	.12	.41
Control variables					
per capita number of loans, 2008	3454	.078	.04	.037	.12
log per capita indebtedness, 2008	3454	12	.78	11	13
Share of college educated, age 25+	3454	5.9	5.4	1.2	12
Log disposable income per capita, 2008	3454	6.8	1.5	6	7.9
Log number of eligible voters, 2006	3454	7	1.8	5.1	9.7
Unemployment rate, 2008	3454	.12	.087	.033	.25
Share of population age 18-29, 2008	3454	.079	.015	.062	.095
Share of population age 60+, 2008	3454	.23	.063	.17	.3
Dependent variables					
Vote share, far-right, 2006	3454	.019	.014	.0042	.036
Vote share, centre-right, 2006	3454	.51	.13	.34	.68
Vote share, centre-left, 2006	3454	.43	.12	.27	.59
Vote share, far-left, 2006	3454	.0037	.0071	0	.011
Turnout, 2006	3454	.66	.078	.56	.76

Notes: This table presents descriptive statistics.

Table 3: Balance test of foreign currency share of loans

	Coefficient	Standard error	N	R^2
# of unemployed relative to pop 18-59	.42**	.067	3455	.075
log after tax income per cap	-.011**	.0019	3455	.062
Share of college educated, age 25+	-.56**	.036	3455	.2
per capita number of loans, 2008	-.23	.23	3455	.0061
log per capita indebtedness, 2008	-.054**	.0064	3455	.11
share of 18-29 year old pop	.42	.58	3455	.0012
Share of population age 60+, 2007	.16	.21	3455	.0035
share of Roma population	.34**	.068	3455	.044
Crime rate	-.38*	.19	3455	.019
log eligible voters, 2006	-.011**	.0022	3455	.031
Vote share, far-right, 2006	-.61	.56	3455	.0056
Vote share, centre-right, 2006	-.038	.035	3455	.0029
Vote share, centre-left, 2006	.067 ⁺	.04	3455	.0089
Employment share of exporters, 2007	-.067**	.015	3455	.024
Employment share of manufacturing, 2007	.013	.021	3455	.00085
Employment share of firms with FC debt, 2007	.01	.014	3455	.00037
Corporate foreign currency share of debt	-.056**	.018	2850	.023

Notes: This table shows the results of bivariate regressions where the dependent variable is foreign currency share of loans in September 2008. The regressions are weighted by the number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 4: Effect of foreign currency share on far-right vote share

	(1)	(2)	(3)	(4)	(5)	(6)
FC share×Post	0.272** (0.0663)	0.0539+ (0.0283)	0.0568** (0.0121)	0.0555** (0.0105)	0.0560** (0.0141)	
Debt revaluation×Post						0.222** (0.0513)
Election FE	✓	✓	✓	✓	✓	✓
Zip code FE	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓	✓	✓
County-election FE			✓		✓	✓
Subregion-election FE				✓		
Linear trend					✓	
R^2	0.772	0.865	0.921	0.945	0.970	0.921
Observations	13900	13820	13820	13820	13820	13820

Notes: This table shows the results of zip code level regression where the dependent variable is the share of far-right votes. Controls include number of loans in 2008 per eligible number of voters, log debt in 2008 per eligible number of voters, per capita income in 2008, share of college educated among the 25+ year-old, log population of the municipality. Controls are interacted with years. June 2009 represents a European Parliamentary election and October 2010 represents a local election. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 5: Instrumental variable estimate

	First stage		Reduced form		IV	
	(1)	(2)	(3)	(4)	(5)	(6)
FC share					0.439** (0.132)	0.105** (0.0361)
Predicted FCS	0.550** (0.0861)	0.355** (0.0444)	0.241* (0.0990)	0.0281* (0.0136)		
Controls		✓		✓		✓
F statistics	40.85	64.00				
Observations	3436	3436	3436	3436	3436	3436

Notes: This table shows the instrumental variable estimates. The dependent variable is the change in vote share between 2006 and 2010. Controls include number of loans in 2008 per eligible number of voters, log debt in 2008 per eligible number of voters, per capita income in 2008, share of college educated among the 25+ year-old, log population of the municipality. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 6: Robustness check

	(1)	(2)	(3)	(4)	(5)	(6)
FC share \times Post	0.0219* (0.0101)				0.0451** (0.0115)	0.0531** (0.0168)
FC share \times 2010		0.0551** (0.0117)				
FC share \times 2014		0.0500** (0.0128)				
Composition of flow \times Post			0.0211 ⁺ (0.0126)			
Change in stock \times Post			0.0911** (0.0166)			
FCS (ERP augmented) \times Post				0.0541** (0.0157)		
Weighted		✓	✓	✓	✓	✓
Election year FE	✓	✓	✓	✓	✓	✓
Zip code FE	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓
County-election FE	✓	✓	✓			✓
Commuting zone-election FE				✓	✓	
Zip code quadratic trend						✓
R^2	0.851	0.937	0.921	0.921	0.934	0.980
Observations	13820	17275	13800	13804	13820	13820

Notes: Table shows the results of zip code level regression where the dependent variable is the share of far-right votes. Controls include number of loans in 2008 per eligible number of voters, log debt in 2008 per eligible number of voters, per capita income in 2008, share of college educated among the 25+ year-old, log population of the municipality. Controls are interacted with years. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 7: Average characteristics of foreign and local borrowers

	FC debtors	LC debtors	Difference (FC-LC)	t-statistics
Primary school	0.139 (0.34)	0.143 (0.35)	-0.00443	-0.31
Vocational school	0.420 (0.49)	0.366 (0.48)	0.0536*	2.69
Secondary school	0.288 (0.45)	0.282 (0.45)	0.00554	0.29
At least college	0.154 (0.36)	0.208 (0.4)	-0.0548**	-3.52
Net income	2935.6 (1421)	3007.1 (1668)	-71.55	-1.12
Net income, winsorized	2831.9 (1125)	2851.9 (1149)	-20.00	-0.43
Have other loan	0.411 (0.49)	0.309 (0.46)	0.102**	5.22
Age, head of household	44.08 (11.27)	44.40 (11.38)	-0.319	-0.67
Observations	1657	1346		

Notes: This table shows average characteristics of foreign and local currency borrowers using Household Budget Survey data from 2009 and 2010. Foreign currency and local currency debtors are defined as households that have mortgage-backed loan originated between 2000 and 2008. The averages are weighted.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 8: Robustness check: naïveté

	(1)	(2)	(3)	(4)	(5)
Share of foreign currency loans, mortgage×Post	0.0270* (0.0115)				
FC share×Post		0.0577** (0.0121)	0.0487** (0.0128)	0.0552** (0.0118)	0.0475** (0.0126)
Pre-crisis default rate×Post		0.166* (0.0733)			0.171* (0.0768)
Share of home equity, FC loans×Post			0.0480** (0.0147)		0.0465** (0.0140)
Far-left vote share, 1998×Post				0.183** (0.0486)	0.188** (0.0490)
Smallholders Party vote share, 1998×Post				0.0564+ (0.0294)	0.0517+ (0.0285)
Controls	✓	✓	✓	✓	✓
County-election FE	✓	✓	✓	✓	✓
R^2	0.921	0.921	0.922	0.922	0.923
Observations	13656	13820	13684	13820	13684

Notes: Table shows the results of zip code level regression where the dependent variable is the share of far-right votes. Controls include number of loans in 2008 per eligible number of voters, log debt in 2008 per eligible number of voters, per capita income in 2008, share of college educated among the 25+ year-old, log population of the municipality. Controls are interacted with years. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 9: Placebo test: Effect on far-right vote share in 1939

	(1)	(2)	(3)	(4)	(5)
Panel A: Settlements with far-right party list					
Share of FC loans	-0.0445 (0.104)	-0.116 (0.0976)	0.00893 (0.106)	0.0589 (0.0649)	-0.00466 (0.0539)
Controls 1939		✓		✓	✓
Controls 2008			✓		
County FE				✓	
Electoral District FE					✓
R^2	0.000497	0.0657	0.113	0.396	0.571
Observations	1675	1675	1595	1675	1675
Panel B: All settlements					
Share of FC loans	-0.242 ⁺ (0.136)	-0.149 ⁺ (0.0877)	-0.00696 (0.0934)	0.0153 (0.0394)	-0.00156 (0.0309)
Controls 1939		✓		✓	✓
Controls 2008			✓		
County FE				✓	
Electoral District FE					✓
R^2	0.0110	0.184	0.190	0.723	0.810
Observations	2875	2875	2671	2875	2875

Notes: This table shows the results of regressions where the dependent variable is the vote share of the far-right in 1939. The control variables include log number of eligible voters, number of parties running in the electoral district.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 10: Robustness checks: local labor market shocks

	(1)	(2)	(3)	(4)	(5)	(6)
FC share \times Post	0.0571** (0.0121)	0.0568** (0.0120)	0.0564** (0.0120)	0.0593** (0.0134)	0.0565** (0.0120)	0.0590** (0.0133)
Employment share of exporters, 2007 \times Post	0.00364 (0.00533)				0.0000949 (0.00695)	0.00121 (0.00692)
Employment share of manufacturing, 2007 \times Post		0.00504 (0.00512)			0.00375 (0.00638)	0.00214 (0.00657)
Employment share of firms with FC debt, 2007 \times Post			0.00603 (0.00586)		0.00483 (0.00626)	0.00702 (0.00667)
Corporate foreign currency share of debt \times Post				-0.00973* (0.00489)		-0.0118* (0.00522)
Controls	✓	✓	✓	✓	✓	✓
County-election FE	✓	✓	✓	✓	✓	✓
R^2	0.921	0.921	0.921	0.925	0.921	0.926
Observations	13820	13820	13820	11400	13820	11400

Notes: Table shows the results of zip code level regression where the dependent variable is the share of far-right votes. Controls include number of loans in 2008 per eligible number of voters, log debt in 2008 per eligible number of voters, per capita income in 2008, share of college educated among the 25+ year-old, log population of the municipality. Controls are interacted with years. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 11: Robustness check: minorities and immigration

	(1)	(2)	(3)	(4)	(5)
FC share \times Post	0.0576** (0.0119)	0.0546** (0.0118)	0.0603** (0.0120)	0.0578** (0.0119)	0.0576** (0.0119)
Share of Roma \times Post	-0.0314 (0.0397)			-0.0256 (0.0396)	-0.0265 (0.0392)
Share of other minorities \times Post		-0.0719** (0.0170)		-0.0717** (0.0169)	-0.0714** (0.0169)
Share of immigrants \times Post			-0.643** (0.157)	-0.634** (0.160)	-0.627** (0.167)
Controls	✓	✓	✓	✓	✓
County-election FE	✓	✓	✓	✓	✓
Crime rate					✓
R^2	0.921	0.921	0.921	0.922	0.922
Observations	13820	13820	13820	13820	13820

Notes: Table shows the results of zip code level regression where the dependent variable is the share of far-right votes. Controls include number of loans in 2008 per eligible number of voters, log debt in 2008 per eligible number of voters, per capita income in 2008, share of college educated among the 25+ year-old, log population of the municipality. Controls are interacted with years. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 12: Effect of default by currency and unemployment on change in far-right vote shares between 2006 and 2010

	(1)	(2)	(3)	(4)	(5)
Δ default rate, LC	0.0474 (0.0314)		0.0379 (0.0310)		0.0330 (0.0310)
Δ default rate, FC		0.103** (0.0334)	0.100** (0.0330)		0.0897** (0.0342)
Δ Unemployment				0.154* (0.0727)	0.140+ (0.0732)
Controls	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓
R^2	0.673	0.675	0.675	0.675	0.677
Observations	3453	3453	3453	3448	3448

Notes: This table shows the effect of change in currency-specific default rate and unemployment on the change of vote share of far-right between 2006 and 2010. Controls include number of loans in 2008 per eligible number of voters, log debt in 2008 per eligible number of voters, per capita income in 2008, share of college educated among the 25+ year-old, log population of the municipality. Controls are interacted with years. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 13: Effect of foreign currency share on party preferences

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Center-right						
FC share×Post	0.0624** (0.0211)	0.0309 (0.0203)	0.0337** (0.0111)	0.0353** (0.00937)	0.105** (0.0286)	
Debt revaluation×Post						0.146** (0.0447)
Observations	13900	13820	13820	13820	13820	13820
	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: Center-left						
FC share×Post	-0.0985** (0.0312)	-0.0798** (0.0216)	-0.0795** (0.0125)	-0.0742** (0.0104)	-0.149** (0.0275)	
Debt revaluation×Post						-0.299** (0.0472)
Observations	13900	13820	13820	13820	13820	13820
	(1)	(2)	(3)	(4)	(5)	(6)
Panel C: Far-left						
FC share×Post	-0.0434** (0.00805)	-0.0348** (0.00715)	-0.0183** (0.00420)	-0.0103** (0.00279)	0.0114* (0.00472)	
Debt revaluation×Post						-0.0734** (0.0160)
Election FE	✓	✓	✓	✓	✓	✓
Zip code FE	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓	✓	✓
County-election FE			✓		✓	✓
Subregion-election FE				✓		
Linear trend					✓	
R^2	0.679	0.708	0.763	0.822	0.939	0.764
Observations	13900	13820	13820	13820	13820	13820

Notes: Table shows the results of zip code level regression where the dependent variable is the vote share of various political parties. Controls include number of loans in 2008 per eligible number of voters, log debt in 2008 per eligible number of voters, per capita income in 2008, share of college educated among the 25+ year-old, log population of the municipality. Controls are interacted with years. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 14: Effect of foreign currency share on the vote share of the newly founded green party

	(1)	(2)	(3)	(4)	(5)
FC share	-0.129** (0.0320)	0.0205* (0.00972)	-0.00906 (0.00640)	-0.0198** (0.00460)	-0.0206** (0.00516)
Controls		✓	✓	✓	✓
County FE			✓		✓
Subregion FE				✓	
Political preferences in 2006					✓
R^2	0.0966	0.748	0.815	0.875	0.838
Observations	3474	3455	3455	3455	3455

Notes: Table shows the results of zip code level regression where the dependent variable is the vote share of the green, *Politics can be Different*. Controls include number of loans in 2008 per eligible number of voters, log debt in 2008 per eligible number of voters, per capita income in 2008, share of college educated among the 25+ year-old, log population of the municipality. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 15: Effect on turnout, and invalid votes

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Turnout						
FC share×Post	-0.0119 (0.0198)	-0.0734** (0.0169)	-0.0516** (0.00944)	-0.0376** (0.0101)	-0.0202 (0.0187)	
Debt revaluation×Post						-0.168** (0.0349)
Election FE	✓	✓	✓	✓	✓	✓
Zip code FE	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓	✓	✓
County-election FE			✓		✓	✓
Subregion-election FE				✓		
Linear trend					✓	
R^2	0.829	0.857	0.889	0.909	0.952	0.889
Observations	13872	13806	13806	13806	13806	13806
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Invalid votes						
FC share×Post	0.000783 (0.00242)	0.00777** (0.00197)	0.00127 (0.00135)	0.00108 (0.00146)	-0.000943 (0.00260)	
Debt revaluation×Post						0.00389 (0.00501)
Election FE	✓	✓	✓	✓	✓	✓
Zip code FE	✓	✓	✓	✓	✓	✓
Controls		✓	✓	✓	✓	✓
County-election FE			✓		✓	✓
Subregion-election FE				✓		
Linear trend					✓	
R^2	0.489	0.550	0.638	0.668	0.724	0.638
Observations	13872	13806	13806	13806	13806	13806

Notes: Table shows the results of zip code level regression where the dependent variable is turnout in Panel A and on the far-right votes relative to eligible voters in Panel B.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 16: Trust in the National Assembly

Foreign currency share	-1.108** (0.24)	-1.041** (0.28)	-1.083** (0.31)
Post	-0.746** (0.25)	-0.644* (0.27)	-0.642* (0.27)
Foreign currency share×Post	0.828* (0.41)	0.682 (0.44)	0.678 (0.44)
Individual controls		✓	✓
Indebtedness controls			✓
R^2	0.0562	0.0755	0.0756
Observations	3076	2446	2446

Notes: This table shows the results of the effect of regional foreign currency share on the trust in the National Assembly using individual level data. Individual controls are education, employment status, gender, size of the household, income. Indebtedness controls are regional per capita number of loans and regional per capita indebtedness. +, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 17: Policy position of parties based on their campaign manifestos, 2010

	Far-right mean	Center-right mean	Center-left mean
right-left ideological index	14.328	-4.462	-15.2
planned economic index	4.666	11.93	5.133
market economic index	1.58	.776	2.267
party policy positioning on welfare	8.45	24.054	22.4
international peace index	.22	0	.2
protectionism +	.551	0	.533
national way of life +	8.523	1.067	1.8
traditional morality +	5.107	2.813	.333
law and order +	6.466	12.706	2.733
political corruption	2.755	3.589	.6
constitution +	.367	.679	.467

Notes: This table presents the policy positions of various parties based on their 2010 campaign manifesto.

Table 18: Preferences for redistribution in June 2008

	(1)	(2)	(3)	(4)
Panel A: Tuition				
FC share	0.141* (0.0573)	-0.0880** (0.0235)	-0.0243 ⁺ (0.0132)	-0.00130 (0.0110)
R^2	0.037	0.700	0.784	0.839
Controls		✓	✓	✓
County FE			✓	✓
Political preferences, 2006				✓
Observations	3474	3455	3455	3455
Panel B: Copayment				
FC share	0.128* (0.0550)	-0.0894** (0.0233)	-0.0227 ⁺ (0.0128)	0.000623 (0.0106)
R^2	0.034	0.669	0.755	0.819
Controls		✓	✓	✓
County FE			✓	✓
Political preferences, 2006				✓
Observations	3474	3455	3455	3455
Panel C: Hospital day care fee				
FC share	0.115* (0.0549)	-0.0861** (0.0223)	-0.0225 ⁺ (0.0123)	-0.000687 (0.0105)
R^2	0.032	0.667	0.756	0.819
Controls		✓	✓	✓
County FE			✓	✓
Political preferences, 2006				✓
Observations	3474	3455	3455	3455

Notes: This table shows the zip code level results of the June 2008 referendum. Citizens voted on whether to abolish tuition, copayment and hospital day care fee. The dependent variable is the share of yes (abolish) votes. Controls include number of loans in 2008 per eligible number of voters, log debt in 2008 per eligible number of voters, per capita income in 2008, share of college educated among the 25+ year-old, log population of the municipality. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 19: Opinion about transfers to various groups, February 2010

	What fraction receives?			What fraction should receive?			Difference		
Panel A: Big families									
FC share	35.46 ⁺ (19.9)	41.75 ⁺ (25.2)	22.99 (29.4)	-38.73 ⁺ (21.9)	-70.40* (28.0)	-65.69* (32.2)	-80.17** (25.5)	-118.1** (32.8)	-71.77 ⁺ (38.1)
Individual controls		✓	✓		✓	✓		✓	✓
Indebtedness controls			✓			✓			✓
R ²	0.00381	0.0979	0.101	0.00360	0.0796	0.0810	0.0122	0.0841	0.0947
Observations	834	574	574	866	606	606	799	555	555
	What fraction receives?			What fraction should receive?			Difference		
Panel B: Unemployed									
FC share	67.02** (18.9)	48.47* (24.2)	73.54** (28.1)	18.65 (22.3)	-19.73 (28.0)	-43.73 (32.0)	-40.34 (26.1)	-58.09 ⁺ (32.1)	-78.69* (37.2)
Individual controls		✓	✓		✓	✓		✓	✓
Indebtedness controls			✓			✓			✓
R ²	0.0148	0.0922	0.101	0.000819	0.105	0.119	0.00300	0.145	0.150
Observations	840	576	576	856	598	598	797	551	551
	What fraction receives?			What fraction should receive?			Difference		
Panel C: Pensioners									
FC share	10.67 (15.8)	-16.70 (20.3)	21.99 (23.8)	-43.38* (21.5)	-79.60** (27.5)	-122.7** (31.6)	-62.54** (22.5)	-65.45* (28.2)	-118.8** (32.8)
Individual controls		✓	✓		✓	✓		✓	✓
Indebtedness controls			✓			✓			✓
R ²	0.000557	0.0863	0.105	0.00473	0.0731	0.0861	0.00976	0.0903	0.117
Observations	819	558	558	858	598	598	787	539	539
	What fraction receives?			What fraction should receive?			Difference		
Panel D: Roma									
FC share	-22.71 (17.5)	-12.21 (22.6)	-2.093 (26.3)	86.62** (19.3)	99.21** (24.1)	120.0** (28.0)	112.4** (27.9)	116.3** (34.7)	136.9** (40.4)
Individual controls		✓	✓		✓	✓		✓	✓
Indebtedness controls			✓			✓			✓
R ²	0.00194	0.0909	0.102	0.0226	0.148	0.154	0.0193	0.155	0.168
Observations	867	596	596	871	608	608	828	571	571
	What fraction receives?			What fraction should receive?			Difference		
Panel F: Disabled									
FC share	-18.08 (20.6)	-38.32 (25.8)	-78.31** (30.0)	-69.25** (20.9)	-92.49** (27.2)	-128.7** (31.2)	-64.72** (21.7)	-66.28* (28.6)	-47.44 (33.2)
Individual controls		✓	✓		✓	✓		✓	✓
Indebtedness controls			✓			✓			✓
R ²	0.000933	0.100	0.112	0.0125	0.0704	0.0846	0.0109	0.0874	0.100
Observations	828	566	566	873	607	607	804	554	554

Notes: This table shows the results of individual-level regression where the dependent variable is what fraction of the various groups receive social benefit, what fraction should receive social benefit and the difference between the two. Individual controls include educational attainment, size of household, log income and employment status. Indebtedness controls include per capita number of loans and log per capita indebtedness. Standard error are clustered at county-settlement type level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 20: Robustness: Campaign spending

	Far-right	Δ Far-right	
	(1)	(2)	(3)
FC share \times Post	0.0680** (0.0104)		
FC share		0.0566** (0.0119)	0.0618** (0.00959)
Controls	✓	✓	✓
County FE		✓	
Electoral district-election FE	✓		✓
Campaign spending		✓	✓
R^2	0.944	0.678	0.776
Observations	13807	3453	3453

Notes: Table shows the results of zip code level regression where the dependent variable is the share of far-right votes and the change in far-right vote share between 2006 and 2010. Controls include number of loans in 2008 per eligible number of voters, log debt in 2008 per eligible number of voters, per capita income in 2008, share of college educated among the 25+ year-old, log population of the municipality. Controls are interacted with years. Regressions are weighted by number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

A Data construction

A.1 Credit Register data

Outstanding amount and monthly payment

The credit register database was set up in Spring 2012 and data collection started in April 2012 therefore data on outstanding debt is available only from April 2012 onwards. For the preceding period we construct it by assuming that the amortization schedule of mortgage and home equity loans in our sample follows an annuity. For ease of computation we allow for monthly changes in the interest rate. Because of large number of delinquent loans during the crisis, we calculate the annuities from origination until 2012 instead of calculating them backwards to avoid dealing with the arrears. The default rate was close to zero before the crisis therefore this approximation is plausible. We calculate the payment according to the following formula:

$$P_t^{HUF} = \frac{r(PV_t)}{1 - (1 + r_t)^{-N_t}} \times E_t$$

where P_t is the payment in month t , PV_t is the present value of the debt in month t , r_t is the interest rate, N is the remaining months until expiration and E_t is the monthly average exchange rate which is 1 for domestic currency loans. Given the payment in t we determine the outstanding debt in t :

$$D_t^{HUF} = (1 + r_t)(D_{t-1}^{HUF} - P_t^{HUF})$$

This way we reconstruct the whole outstanding debt for the entire period at the loan level.

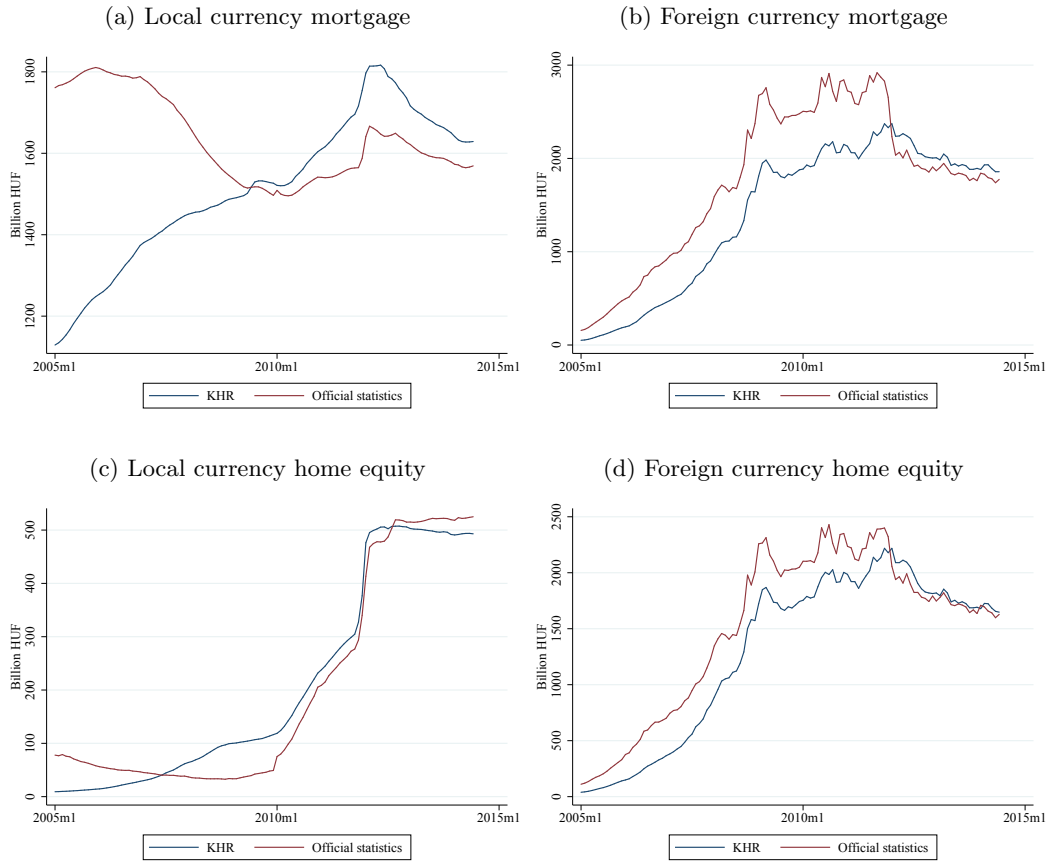
Interest rate data We use detailed interest rate data for calculating outstanding debt. The National Bank of Hungary collects monthly average interest rate data at bank-month-currency-period of interest rate fixing-product-level from banks. Smaller banks or saving cooperatives might not provide interest rate data in each cell if they do not lend much in that particular segment of the market, in these cases the average interest rate across banks is used. The credit register does not contain information on the interest rate fixing therefore we use the less-than-1-year fixing interest rate, which is the most common one in Hungary.

The collection of interest rate data started around 2005 depending on the currency. For the preceding period we use out of sample prediction. We estimate a regression of average interest rate on a set of macro variables which are available for the 2000-2005 period as well and then do out-of-sample forecast given these variables.

Banks report only the market interest rates for the domestic currency loans and not the subsidized interest rates. As approximately 90 per cent of domestic currency mortgages were subsidized in 2008, we need to determine the amount of subsidy. The subsidy program distinguished asset and liability side subsidies (description of the subsidy program for the early period can be found in [Farkas et al. \(2004\)](#)). Asset side subsidy were given to all banks while liability side subsidy was tied to mortgage bond financing. During this period only a few banks could issue mortgage bonds. The subsidy was initially linked to the mortgage bond interest rates then to government bond interest rate.

Figure A.1 compares the official aggregate debt to the aggregate calculated based on the reconstructed data by currency denomination and loan type. The two matches quite well for domestic currency loans, but are different for foreign currency loans. This is because of the Early Repayment Program. The loans participating in the program are missing from our dataset. Therefore we estimate participation in the program as a next step.

Figure A.1: Comparing KHR to official aggregate debt statistics by loan type and currency



Early repayment program In September 2011 the government initiated a program to aid households with foreign currency mortgage and home equity loans. The Early Repayment Program (ERP) allowed households to prepay their debt between October 2011 and February 2012 at a preferential exchange rate, which was considerably cheaper than the market exchange rate at that time. However, the program required the total prepayment of the loans. The ERP was a few months before the set up of the universal credit register therefore loans that were prepaid are missing from our dataset.

We estimate the zip code level participation rate in the program by using a loan-level monthly panel database of three large banks with market share of approximately 25 percent. The database follows loans from origination, and contains detailed characteristics of the loans and the individuals. We identify loans as being prepaid in the program if they disappear from the dataset during the program, between October 2011 and February 2012. We complement this data with aggregate statistics on participation rate collected by the National Bank. We use three different approaches to estimate the participation in the program: a parametric, a non-parametric and a refinancing approach.

The first approach estimates the participation rate as a function of zip code characteristics and after-program market share of the three banks:

$$P_{ib} = \alpha + \beta_1 X_{ib} + \varepsilon_{ib}$$

where P_{ib} is the program participation rate of borrowers in zip code i of bank b , X_{ib} is a set of variables that determines participation. These covariates are settlement income, debt originated by bank b in settlement i , total debt in settlement i , subregion fixed effect, and market share of bank b in settlement i , and their interaction terms.

Using the estimated coefficients we predict the participation rate at the zip code level for the customers of other banks. To check the validity of this approach we compare the predicted and official participation in the program at the bank level for all banks. Figure ?? shows the predicted and official participation rate.

The second approach estimate the participation using a shift-share approach:

$$P_i = \sum_b \alpha_b TP_b$$

where α_b is the market share of bank b , TP_b is the aggregate participation rate of bank b .

The third approach uses that approximately a third of the loans prepaid by refinancing the loan. Because the credit register starts in May 2012 these new loans can be observed. We assume that all of the loans originated between October 2011 and February 2012 are used for refinancing the FC loans.

All these approaches give the participation rate, and hence the outstanding debt at the time of the program, by assuming annuity, we can calculate the outstanding debt at the start of the crisis.

Delinquency before 2010

KHR contains all loans from May 2012 and contains delinquent loans from January 2010. Information on the start date of the delinquency is available in both cases. This implies that we can only observe the last delinquency status before 2010, i.e. we cannot observe those delinquencies that started and ended before 2010 if they were followed by another delinquency spell that started before 2010. This nature of data implies that from January 2010 onwards we observe all delinquent status, however, as moving backwards in time information on delinquent status might not be known for some loans.

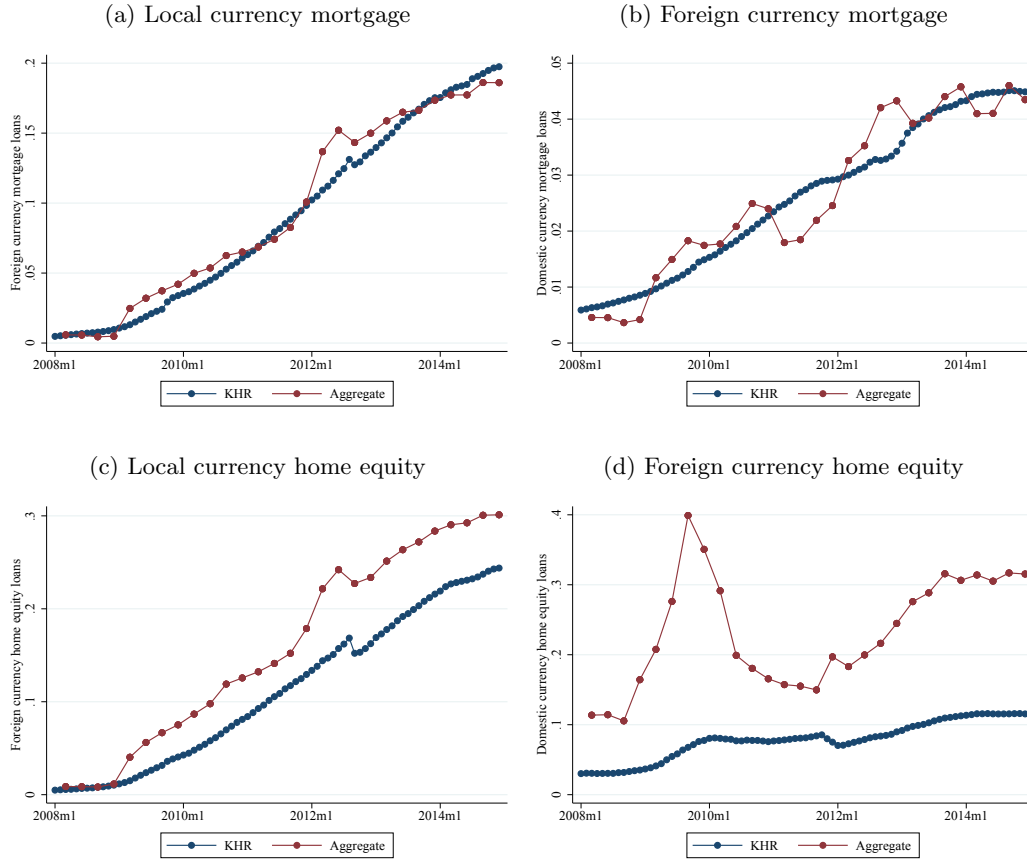
That implies that the observed share of delinquent loans is a lower bound of the true delinquency rate. As the share of non-performing loans was steadily increasing from October 2008, the difference between the observed and true delinquency rate is likely to be small after October 2008 while it could be larger before October 2008. If delinquency status during this period is an absorbing state, that is, if a loan become delinquent then it will not become current then the data would give the true delinquency status. Because of the significant depreciation this is a plausible assumption.

To minimize the problem stemming from this nature of the data I construct backwards delinquency status only until August 2008 which was the last month before the start of the crisis in Hungary. Aggregate statistics show that before this period the delinquency rate was almost flat implying that

In Spring 2012 when the switch to the universal credit register happened, the method of constructing the (within-individual) loan id changed, however, the method of constructing the individual identifier remained the same. To match the two datasets we use individual id along with loan characteristics such as type of loan, date of origination, date of expiry, currency, amount, start date of delinquency.

Figure [A.2](#) compares the delinquency rate calculated from the KHR data to aggregate statistics for domestic currency mortgage and home equity, and foreign currency mortgage and home equity loans. There are differences in the definitions. First, 90-days delinquency in the KHR is defined as the loan is overdue with at least the minimum wage for at least 90 days. Second, delinquency rate in KHR is based on the number of delinquent loans while in the aggregate statistics the amount in default. The correlation of the time-series are quite good except for the domestic currency home equity loans, however, the debt stock of these loans is small because of the lack of subsidy.

Figure A.2: Comparing KHR to official aggregate 90-day delinquency statistics by loan type and currency



Notes: In KHR data the definition of 90-day delinquency is that the debtor is in arrear with the amount at least the minimum wage for at least 90 days. Therefore loans with smaller payments is likely to have lower default rate in KHR.

Address

Detailed address (settlement and zip code) is available for loans outstanding in June 2014 and this address is that is reported by banks, therefore these are not the addresses at the time of origination. The detailed address data is provided at the loan-level and not the individual-level. Therefore one individual may have different addresses stated for different loans.

We determine the address of the individuals in the following way. At the time of the origination the creditor asks the address of the debtor therefore at the time of the origination the address is precise. However, after origination individuals may move and might have not reported their move to the bank hence their address is not updated in the database. We assume that none of the moves are reported to the banks hence all addresses correspond to the true address at the time of origination.

1939 election data

Data on the 1939 election comes from Hubai (2001) who collected settlement level election results. Between 1939 and 2010 the settlement structure changed a lot, many settlements were either merged or splitted. We use Hungarian Statistical Office's gazetteer³⁶ to find the successors and predecessors of settlements. We define inclusive settlements which are artificial settlements which enable us to match the current settlement structure to the old one. If two settlements cohered in any of the two election year then we merge those in the other election year as well. This method gives a balanced panel for the two years.

The 1939 election system was similar to today's as most of the voters had two votes, they could vote for a candidate in their electoral district and a party list. Voters living in large cities could only vote for party lists. We focus on the votes casted on party lists.

The election law changed in 1938 which introduced secret ballot. There was not universal suffrage at this time, and the government, being afraid of the popularity of the far-right, used various measures to prevent the winning of the far-right. For example, the election law decreased the number of eligible voters, there was gerrymandering weeks before the election, a certain number of nomination were required for candidates and party lists, deposit was required for running a party list or candidate, etc. (for more details, see Pintér (2010)). This implied that in many electoral districts there were no far-right party list to vote for, and the number of party lists varied across electoral districts. The Communist Party did not participate the 1939 election because it was banned.

The second Jew law passed before the election in 1939. This curbed the voting rights of

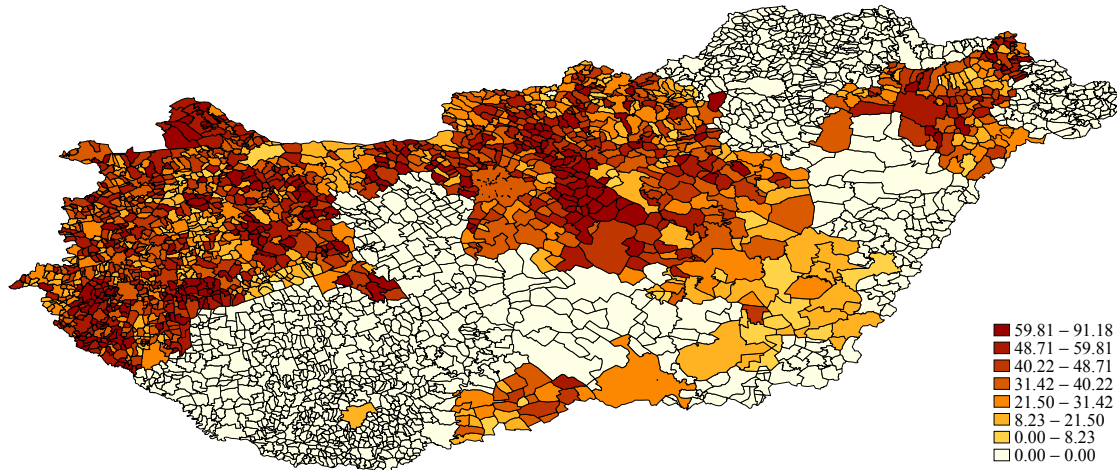
³⁶http://www.ksh.hu/apps/hntr.main?p_lang=EN

the Jews as they were required to demonstrate with official documents that they and their ancestors had lived in Hungary since 1867. For example [Pintér \(2010\)](#) writes that a third of the Jews might have been unable to vote as a consequence, but that significantly varied across regions.

There were six far-right parties participating in the 1939 election. These were the Arrow Cross Party, National Front, United Hungarian National Socialist Party, Christian National Socialist Party, Hungarian National Socialist Agricultural Labourers' and Workers' Party and the candidates without party. Historians add the votes of these parties because they coordinated before the election by running one candidate and one party list in most electoral districts to prevent the division of their support.

B Additional results

Figure B.1: Vote share of far-right parties in 1939



Note: This figure is the settlement level choropleth map showing combined vote share of six far-right parties in 1939. The shading shows the per cent of votes casted on far-right party lists. The far-right parties are Arrow Cross Party, National Front, United Hungarian National Socialist Party, Christian National Socialist Party, Hungarian National Socialist Agricultural Labourers' and Workers' Party and the candidates without party.

Table B.1: Balance test of currency composition of flow

	Coefficient	Standard error	N	R^2
# of unemployed relative to pop 18-59	.039	.053	3450	.00084
log after tax income per cap	-.001	.00085	3450	.00072
Share of college educated, age 25+	-.063	.041	3450	.0033
per capita number of loans, 2008	-.26*	.11	3450	.01
log per capita indebtedness, 2008	-.016*	.007	3450	.012
share of 18-29 year old pop	-.36	.34	3450	.0011
Share of population age 60+, 2007	.29**	.098	3450	.015
share of Roma population	.023	.041	3450	.00026
Crime rate	.049	.075	3450	.00041
log eligible voters, 2006	.0038*	.0018	3450	.0045
Vote share, far-right, 2006	-.37	.25	3450	.0027
Vote share, centre-right, 2006	-.099**	.024	3450	.026
Vote share, centre-left, 2006	.0059	.025	3450	.000091
Employment share of exporters, 2007	.0025	.0099	3450	.000043
Employment share of manufacturing, 2007	.022*	.01	3450	.003
Employment share of firms with FC debt, 2007	.037**	.0096	3450	.0065
Corporate foreign currency share of debt	.007	.01	2850	.00048

Notes: This table shows the results of bivariate regressions where the dependent variable is the composition of flow. Currency composition of flow is defined as the share of foreign currency loans originated between 2004 and 2008, given that they are outstanding in 2008. The regressions are weighted by the number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table B.2: Balance test of change in stock

	Coefficient	Standard error	N	R^2
# of unemployed relative to pop 18-59	.39**	.062	3455	.11
log after tax income per cap	-.012**	.0019	3455	.13
Share of college educated, age 25+	-.64**	.044	3455	.42
per capita number of loans, 2008	.094	.22	3455	.0016
log per capita indebtedness, 2008	-.044**	.0046	3455	.11
share of 18-29 year old pop	.68	.55	3455	.0048
Share of population age 60+, 2007	-.038	.19	3455	.00033
share of Roma population	.29**	.067	3455	.05
Crime rate	-.52*	.21	3455	.056
log eligible voters, 2006	-.016**	.0014	3455	.1
Vote share, far-right, 2006	-.43	.62	3455	.0042
Vote share, centre-right, 2006	.044	.03	3455	.0062
Vote share, centre-left, 2006	.076 ⁺	.039	3455	.018
Employment share of exporters, 2007	-.08**	.015	3455	.055
Employment share of manufacturing, 2007	.00054	.023	3455	2.3e-06
Employment share of firms with FC debt, 2007	-.015	.013	3455	.0013
Corporate foreign currency share of debt	-.078**	.017	2850	.071

Notes: This table shows the results of bivariate regressions where the dependent variable is the change in stock. Change in stock is defined as the share of loans in September 2008 that originated after 2004. The regressions are weighted by the number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table B.3: Balance test of foreign currency share of mortgage loans

	Coefficient	Standard error	N	R^2
# of unemployed relative to pop 18-59	.047	.074	3414	.00074
log after tax income per cap	-.00012	.0014	3414	5.7e-06
Share of college educated, age 25+	-.24**	.037	3414	.029
per capita number of loans, 2008	-.16	.15	3414	.0022
log per capita indebtedness, 2008	-.029**	.0071	3414	.025
share of 18-29 year old pop	.094	.45	3414	.000045
Share of population age 60+, 2007	.46**	.094	3414	.023
share of Roma population	.021	.059	3414	.00014
Crime rate	-.05	.08	3414	.00025
log eligible voters, 2006	.0053*	.0027	3414	.0054
Vote share, far-right, 2006	-.62 ⁺	.35	3414	.0045
Vote share, centre-right, 2006	-.15**	.044	3414	.035
Vote share, centre-left, 2006	.097*	.039	3414	.015
Employment share of exporters, 2007	.013	.012	3414	.00072
Employment share of manufacturing, 2007	.028*	.014	3414	.0031
Employment share of firms with FC debt, 2007	.05**	.013	3414	.0071
Corporate foreign currency share of debt	.0017	.013	2839	.000017

Notes: This table shows the results of bivariate regressions where the dependent variable is foreign currency share of loans in September 2008. The regressions are weighted by the number of eligible voters in 2006. Standard errors are clustered at the subregion level.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table B.4: Foreign currency share and xenophobia

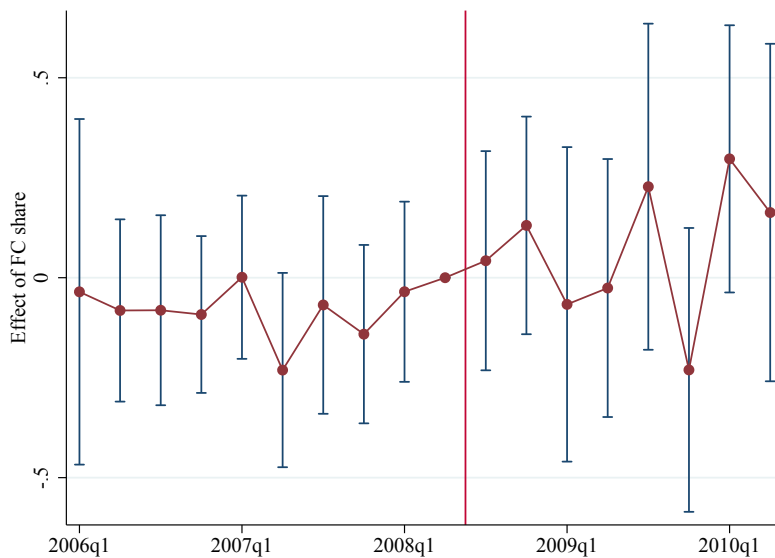
Panel A: Hungarian from other countries			
FC share×Post	-0.191 (0.18)	-0.225 (0.18)	-0.223 (0.18)
Individual controls		✓	✓
Indebtedness controls			✓
R^2	0.00198	0.0173	0.0205
Observations	2415	2414	2414
Panel B: Chinese			
FC share×Post	0.0597 (0.42)	0.102 (0.42)	0.0733 (0.42)
Individual controls		✓	✓
Indebtedness controls			✓
R^2	0.00979	0.0424	0.0486
Observations	2335	2334	2334
Panel C: Arab			
FC share×Post	-0.218 (0.36)	-0.222 (0.36)	-0.234 (0.36)
Individual controls		✓	✓
Indebtedness controls			✓
R^2	0.00845	0.0507	0.0524
Observations	2337	2336	2336
Panel D: Romanian			
FC share×Post	-0.245 (0.48)	-0.193 (0.48)	-0.209 (0.48)
Individual controls		✓	✓
Indebtedness controls			✓
R^2	0.00243	0.0285	0.0342
Observations	2321	2320	2320
Panel E: Russian			
FC share×Post	-0.145 (0.44)	-0.126 (0.44)	-0.156 (0.44)
Individual controls		✓	✓
Indebtedness controls			✓
R^2	0.00702	0.0390	0.0550
Observations	2327	2326	2326
Panel F: Pires			
FC share×Post	0.0357 (0.38)	0.145 (0.37)	0.114 (0.37)
Individual controls		✓	✓
Indebtedness controls			✓
R^2	0.00771	0.0541	0.0619
Observations	1712	1711	1711

Notes: This table shows the results of individual-level regression where the dependent variable is whether the individual agrees with the statement that Hungary should admit people of various ethnicity. Pires is a fictious ethnicity. Individual controls include educational attainment, size of household, log income and employment status. Indebtedness controls include per capita number of loans and log per capita indebtedness. Standard error are clustered at sub-region level.

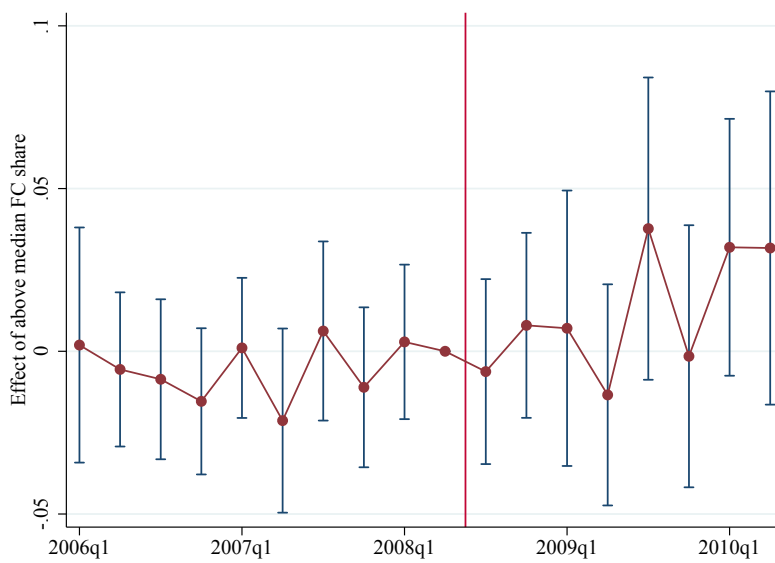
+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Figure B.2: The effect of regional exposure on far-right popularity based on poll data

(a) Continuous foreign currency share



(b) Above median foreign currency share



Notes: These figures show the effect of regional foreign currency share on far-right popularity using poll data. Figure a) uses continuous foreign currency share measure, and Figure b) uses a dummy variable for above median foreign currency share as independent variables

Table B.5: Balancedness test of share of home equity loans among all loans

	Coefficient	Standard error	N	R^2
# of unemployed relative to pop 18-59	.69**	.12	3455	.17
log after tax income per cap	-.021**	.0021	3455	.2
Share of college educated, age 25+	-.78**	.074	3455	.34
per capita number of loans, 2008	-.16	.26	3455	.0026
log per capita indebtedness, 2008	-.066**	.0063	3455	.14
share of 18-29 year old pop	-.15	1.1	3455	.00012
Share of population age 60+, 2007	-.011	.38	3455	.000015
share of Roma population	.5**	.098	3455	.082
Crime rate	-.69*	.32	3455	.053
log eligible voters, 2006	-.03**	.0028	3455	.19
Vote share, far-right, 2006	-.6	.98	3455	.0046
Vote share, centre-right, 2006	.12**	.027	3455	.024
Vote share, centre-left, 2006	.0061	.088	3455	.000065
Employment share of exporters, 2007	-.15**	.027	3455	.1
Employment share of manufacturing, 2007	-.012	.044	3455	.00062
Employment share of firms with FC debt, 2007	-.029	.021	3455	.0026
Corporate foreign currency share of debt	-.11**	.037	2850	.081

Notes:

Table B.6: Effect of regional foreign currency share on far-right support

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Continuous foreign currency share						
FC share \times Post	0.176** (0.065)	0.149+ (0.081)	0.208** (0.071)	0.138 (0.087)	0.241** (0.073)	0.144+ (0.087)
Month FE	✓	✓	✓	✓	✓	✓
Individual controls			✓	✓	✓	✓
Indebtedness controls		✓		✓		✓
Individual controls \times Post					✓	✓
R^2	0.0355	0.0357	0.0564	0.0567	0.0643	0.0647
Observations	25159	25159	18683	18683	18683	18683
Panel B: Above median foreign currency share						
Above median FC Share \times Post	0.0251** (0.0062)	0.0282** (0.0081)	0.0246** (0.0068)	0.0198* (0.0088)	0.0282** (0.0070)	0.0204* (0.0088)
Month FE	✓	✓	✓	✓	✓	✓
Individual controls			✓	✓	✓	✓
Indebtedness controls		✓		✓		✓
Individual controls \times Post					✓	✓
R^2	0.0364	0.0368	0.0567	0.0568	0.0646	0.0649
Observations	25159	25159	18683	18683	18683	18683

Notes: This table shows the results of individual-level regressions where the dependent variable is whether individual would vote for the far-right. The FC share is the share of foreign currency loans in the region where the respondent live. Controls include educational attainment, size of household, employment status, log income, indebtedness controls include regional log per capita indebtedness in September 2008, regional per capita number of loans in September 2008.

+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.