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

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Abstract

This paper studies the impact of debtor distress during a financial crisis on support for the populist far right. We use foreign currency borrowing of households in Hungary, combined with a large and unexpected exchange rate depreciation, as a natural experiment to generate a shock to household debt burdens. Exploiting zip code level variation in the prevalence of foreign currency household loans, we show that a 10 percentage point unexpected rise in debt-to-income increases the vote share of the far-right party Jobbik by 3 percentage points. Foreign currency debt exposure accounts for 20 percent of the overall rise in the far-right vote share, and the effect persists across multiple elections. This result is robust to a variety of alternative explanations for increased far-right support and is corroborated by survey data on debtors and far-right supporters. We present evidence that conflict between creditors and debtors over the resolution of the crisis is an important mechanism in the electoral success of the far right.

JEL codes: D10, D72, E44, F34, G01

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1 Introduction

In the past decade, there has been a surge in the appeal of right-wing populist parties around the world (Rodrik, 2017). Understanding the success of these parties is important because their emergence has increased policy uncertainty and may pose a threat to pro-growth institutions and liberal democracy. Popular explanations for the rise of populism often point to a cultural backlash against ruling elites.[1] However, the success of populist parties after the 2008 financial crisis suggests a role for explanations based on increased economic insecurity. 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., 2016). Yet there is limited direct evidence that financial distress affects populist far-right voting, and the underlying mechanisms are not well understood.

In this paper, we examine how debtor distress ensuing from the 2008 financial crisis affected support for the populist far right. We focus on Hungary, which experienced a severe household foreign currency debt crisis that coincided with a sudden surge in support for the populist far-right party Jobbik (Movement for a Better Hungary). Prior to the financial crisis, many Hungarian households borrowed heavily in foreign currency, while some borrowed in local currency through government-subsidized loans. Loan currency denomination is driven primarily by the timing of borrowing, and survey data reveal that foreign and local currency debtors are broadly similar on observables. The large and unexpected exchange rate depreciation in the crisis increased debt burdens of foreign currency borrowers but not of local currency borrowers. We show that household financial distress caused by foreign currency debt increased the far-right vote share by 3 percentage points following the depreciation, accounting for 20 percent of the overall increase in far-right support. Moreover, we present evidence that the electoral success of the far-right party is driven by the *creditor-debtor conflict* channel. The sharp change in household debt burdens spurred disagreement between creditors and debtors about the resolution of the crisis, and the far right attracted support by advocating aggressive debtor-friendly policies.

Section 2 describes the foreign currency credit expansion and the political landscape in Hungary. The household lending boom started in 2000 when the government introduced an interest rate subsidy program for local currency mortgage loans. The program was cut back in 2004, fueling a phase of foreign currency lending. By 2008 more than 60 percent of household debt was denominated in Swiss franc. While the exchange rate was stable before the crisis, between September 2008 and the election held in April 2010, the domestic currency depreciated by 23 percent against the Swiss franc. This exchange rate shock increased house-

[1] Many studies in political science point to social or cultural anxieties as leading factors behind the rise of populism, giving less of a role to personal economic factors (e.g., Elchardus and Spruyt (2016), Mutz (2018)).

hold indebtedness by 4 percent of pre-crisis GDP and stoked fears about future depreciation. Figure 1 shows that, concurrent with the increase in debt burdens due to the depreciation, the popularity of the populist far-right party Jobbik surged, increasing from 2.6 percent of votes in 2006 to 16.7 percent in 2010, making it the "most successful far-right party in the European Union" in the years immediately after the Global Financial Crisis (Scheppele, 2014). The rest of the paper is devoted to establishing that this relation is causal and understanding why the debt crisis increased support for the populist far right.

In Section 3 we begin by describing our data. We build a new zip code level panel dataset combining household credit registry data, election outcomes, and data on local characteristics. We also use individual-level survey data to compare foreign and local currency borrowers. The average characteristics of these two groups are similar, but foreign currency borrowers have slightly higher educational attainment and income.

We define exposure to the foreign currency debt shock at the zip code level to be the share of foreign currency denominated household loans in September 2008, the last month prior to the depreciation. Variation in exposure primarily comes from the timing of borrowing caused by the cutback of the interest rate subsidy program. Households who borrowed in the early phase have subsidized local currency loans, while the majority of households who borrowed later have foreign currency loans. The local currency credit boom was more pronounced in regions with higher branch density of domestic banks. With the cut back of the government subsidy program, foreign banks expanded their branch network and offered foreign currency loans in previously underserved regions. This led to a catch-up in household leverage in regions that initially borrowed less in domestic currency.

To quantify the effect of an increase in debt burdens on voting outcomes, we use a difference-in-differences framework, exploiting cross-sectional variation in households' exposure to the exchange rate shock through their debt positions. Our approach uses variation in the currency *composition* of loans and keeps per capita number of loans and pre-crisis debt-to-income fixed. The key identifying assumption is that foreign currency debt exposure is not correlated with time-varying shocks to political preferences.

We present the results in Section 4. Our main finding is that the zip code level household foreign currency debt shock significantly increases the far right vote share in the 2010 Parliamentary election. In terms of magnitudes, a 10 percentage point unanticipated debt-to-income shock raises the vote share of the far right by 1.6 to 3.2 percentage points between 2006 and 2010. Our preferred estimate explains 3 percentage points, or one-fifth, of the overall rise in the far right vote share. The effect of the crisis is persistent and stable, implying that the crisis had a long-lasting impact on political preferences. High exposure zip codes voted more for the far right in the 2014 and 2018 Parliamentary elections.

We tackle a variety of identification concerns to support our main finding. We first show that the far-right vote share evolved in the same way in the decade before the crisis in high and low exposure zip codes, consistent with the parallel trends assumption. In addition, the estimated effect of foreign currency debt exposure on far right support is robust to a wide variety of controls, is not sensitive to the choice of exposure measure, and is similar in magnitude when estimated on a matched sample. Moreover, to address concerns with ecological inference, we document using survey data that, within the same municipality, individuals who report having a foreign currency loan are significantly more likely to support the far right two months before the 2010 election.

Furthermore, we address a variety of alternative explanations for the success of extremist parties. We begin by showing that unobserved extremist attitudes do not drive our results. Extremist attitudes are persistent, and the far right may have been more popular in regions where racism or anti-semitism were more prevalent historically. To address this alternative explanation, we conduct a placebo test using the first secret ballot election in 1939, when far-right parties received 25 percent of the votes, and we find no relation between the foreign currency share in 2008 and the vote share of the far right in 1939. A related concern is that exposed areas may have developed more xenophobic attitudes over time through immigration. However, there is no evidence that a differential presence of minority and immigrant groups in exposed areas drives our results. Finally, accounting for firm foreign currency debt, local labor market shocks, financial literacy, campaign spending, and the change in house prices does not alter our main results.

So far we have established that higher household financial distress from exposure to foreign currency debt significantly increased the appeal of the populist far right. However, this causal relationship does not tell us *why* people with exposure to foreign currency debt voted for a populist far-right 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 policy, a populist party might choose to represent the interests of debtors and advocate debtor-friendly policies to win the support of distressed borrowers. Advocating for debtors' interests fits with populists' broader claim to speak for "the people" and also signals that they are not captured by the establishment. Creditor-debtor conflict may, therefore, explain why far-right populist parties are especially successful after financial crises, in contrast with other economic crises (Funke et al., 2016).

Consistent with the creditor-debtor conflict explanation, during the 2010 campaign, the

far-right party campaigned on explicit policy proposals to mitigate the financial distress of foreign currency debtors. In particular, Jobbik's platform promised payment relief, debt restructuring, and other forms of debtor protections for foreign currency borrowers. In contrast, other parties either had vague proposals or made no mention of foreign currency debtors in their campaign manifestos.

The creditor-debtor conflict channel also has the straightforward implication that foreign currency debtors themselves voted for the far right. We provide evidence consistent with this logic. In particular, we find that areas with a higher fraction of people affected by the financial crisis through other channels than the direct effect of foreign currency debt do not experience a stronger increase in the vote share of the far right. For example, the increase in the zip code default rate on local currency loans, which reflects distress due to other shocks, does not predict a rise in the zip-code-level far-right vote share. Further, survey data evidence corroborates the notion that foreign currency debtors themselves were more likely to support the far right, conditional on individual employment status.

We also examine several other channels for why debtor distress, and the financial crisis more broadly, may have contributed the rise of far right. General dissatisfaction and declining trust in establishment parties may have increased the appeal of extremist parties to distressed borrowers. The declining trust channel implies that new and other extremist parties should also benefit from the crisis. Contrary to this hypothesis, the newly founded green party did worse in more affected zip codes, and the communist far-left increased its vote share only marginally in more affected zip codes. Declining trust is also not reflected in lower turnout or in the share of invalid (blank) votes in exposed areas.

Furthermore, rising inequality and the bail-out of the banking sector cannot account for the electoral success of the far right. Income inequality was flat in the period around the crisis, and Hungary only had a limited bail-out of one major domestic bank that was fully repaid before the 2010 election. Increased financial distress may also have engendered xenophobia. However, examining voting patterns in the 2016 referendum on EU migrant quotas, we find no evidence that areas exposed to foreign currency debt were more likely to support the anti-migrant position. Overall, the creditor-debtor conflict channel emerges as the most compelling explanation for why foreign currency debtors supported the far right.

Although Jobbik was never part of the government, its success influenced policymaking *indirectly* and played an important role in pushing the previously moderate Fidesz toward right-wing populism. After the 2010 election, the Fidesz government attempted to co-opt the foreign currency debt issue by passing several debt relief programs first proposed by Jobbik. However, Jobbik's influence on Fidesz policy was much broader than the foreign currency loans issue. Fidesz adopted several other initiatives from Jobbik's platform including passing

harsher criminal sentencing laws and constructing a border fence to prevent immigration. Moreover, the lack of cooperation between the far right and moderate parties helped Fidesz win a supermajority in three consecutive elections following the crisis, allowing Fidesz to implement a broad range of controversial policies. Fidesz's populist turn ultimately led to the erosion of liberal democratic institutions in Hungary. These dynamics suggest that a rise in the popularity of extremist parties can have a broader impact on democratic institutions. Their success can shift the range of ideas tolerated in public discourse and influence the behavior of moderate parties (Guiso et al., 2017; Abou-Chadi and Krause, 2018).

We know of little work that directly connects financial distress from high household debt and voting for extremist parties. Most closely related to our study, concurrent work by Ahlquist et al. (2018) uses survey data from Poland and finds that Swiss franc debtors were more likely to support a populist right-wing party that promised a generous resolution scheme after a sharp appreciation of the Swiss franc. As we rely on both administrative and survey data, we can estimate the impact of an increase in debt burdens on the far-right vote share and disentangle the creditor-debtor conflict channel from other mechanisms. Stock (1984) and Eichengreen et al. (2017) relate mortgage debt, mortgage interest rates, and the threat of foreclosures to agrarian unrest and populist support in the late 19th century US.[2] We complement these studies by exploiting a natural experiment for debtor distress and focusing on a sharp recent shift in political preferences.

A growing literature examines the impact of financial crises on populism and political extremism. Country-level studies find that financial crises are followed by political polarization and an increase the support for far-right parties (Mian et al., 2014; Funke et al., 2016; Bromhead et al., 2012; Brückner and Grüner, 2010). We complement these studies by using zip code level data, which enables us to control for time-varying aggregate shocks to political preferences and isolate a channel through which financial crises affect political preferences. Braggion et al. (2018) and Doerr et al. (2018) also exploit regional variation to document to a connection between credit supply contraction, another aspect of financial crises, and far-right voting.

Finally, our paper is related to studies analyzing broader economic conditions and voting behavior (Fair, 1978, 1996). Several studies exploit regional variation to study the relation between voting outcomes and fiscal austerity, labor market shocks, or public finance mismanagement.[3] Studies using survey data (Guiso et al., 2017; Geishecker and Siedler, 2011)

[2] Evans (2003, p. 208) argues that declining prices during the stabilization following the German hyperinflation led to bankruptcies and foreclosures among indebted small farmers, increasing Nazi support in Protestant rural areas.

[3] Examples include King et al. (2008), Jackman and Volpert (1996), Autor et al. (2016), Healy and Lenz (2014), Fetzer (2018), Galofré-Vilà et al. (2017), and Daniele et al. (2018).

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 on the demand for populism.[4]

2 Context

In this section we describe the Hungarian household credit boom in the 2000s and the political landscape. We also provide survey evidence on the characteristics of foreign currency debtors and far-right voters.

2.1 Household lending boom

Figure 2a shows the evolution of housing debt to GDP by currency denomination. Household indebtedness was low at the end of the 1990s, but the introduction of a mortgage subsidy program in 2000 significantly lowered the interest rates faced by households on local currency loans (Farkas et al., 2004). This led to increased household borrowing in local currency (LC).

Because of the high fiscal costs of the mortgage subsidy program, at the end of 2003, the government tightened the eligibility rules and decreased the size of the interest subsidy. This cutback of the subsidy program coincided with the start of the foreign currency (FC) credit expansion. Foreign currency loans were first offered by foreign banks, but later in the boom domestic banks also entered the FC loan segment. The continued credit expansion raised housing debt to 25 percent of GDP by September 2008.

Concurrent with the credit expansion, the share of household debt in foreign currency rose from 5 percent in 2004 to 66 percent by September 2008. The most prevalent foreign currency denomination was Swiss franc (CHF), which accounted for 97 percent of household foreign currency debt at the start of the crisis. The remaining debt in FC was denominated mainly in euro.

Both demand and supply side factors contributed to the spread of foreign currency lending. A crucial factor was the large interest rate differential between local currency loans at market rates (but not at subsidized rates) and foreign currency loans (Rosenberg and Tirpák, 2008;

[4]Though several papers examine the success of the far right in Hungary, we are the first to point to the household foreign currency debt crisis as a central factor. Except for Grajczjár and Tóth (2011), all of these papers argue that non-economic reasons explain the rise of Jobbik. Other studies argue that Jobbik gained support because of anti-Roma sentiment (Karácsony and Róna, 2010), ideological reasons (Rudas, 2010), concerns about corruption in mainstream parties (Bíró-Nagy and Rona, 2013), declining trust in democratic institutions (Krekó et al., 2011), and anti-elite and anti-establishment attitudes Kovacs (2013). Though Grajczjár and Tóth (2011) emphasize the economic insecurity of far-right voters, they do not mention the foreign currency debt crisis as a reason for increased economic hardship.

Csajbók et al., 2010).[5] The expectation of euro adoption also led borrowers to believe that mismatch would be temporary, at least with respect to the euro (Fidrmuc et al., 2013). Moreover, banks seeking to match the currency composition of their assets and liabilities (Brown et al., 2014) and loose foreign monetary policy (Ongena et al., 2018) contributed to the supply of foreign currency credit.

Before 2008 the Hungarian forint exchange rate was stable, but, during the crisis, the forint depreciated significantly against the Swiss franc. Figure 2b shows the change in the monthly HUF/CHF and HUF/EUR exchange rates relative to January 2004. During the credit expansion phase, the forint was stabilized around a ±15 percent band against the euro, which *de facto* was a ±5 percent exchange rate band (Ilzetzki et al., 2017). The EUR/CHF exchange rate (and, prior to the euro, the Deutsche mark–Swiss franc exchange rate) was also stable for decades. The HUF band was abolished in February 2008. With the outbreak of the crisis in 2008, the Hungarian forint depreciated significantly vis-à-vis the Swiss franc. Between September 2008 and the April 2010 parliamentary election, the HUF/CHF exchange rate depreciated by 23 percent. During and after the eurozone crisis, between the 2010 and 2014 elections, the HUF depreciated further by more than 30 percent.

The large exchange rate depreciation was not anticipated by market participants. Data from Consensus Economics, an economic survey organization, shows that experts predicted that the HUF/EUR exchange rate would remain stable right before the outbreak of the crisis. Figure 2c plots the expected exchange rate depreciation at 12 and 24 month horizons. Experts forecasted an *appreciation* in months preceding the start of the crisis in October 2008 and a minor depreciation before that.

The increase in foreign currency household debt burdens led to a significant deterioration of household balance sheets, as Hungarian households had limited income and assets in foreign currencies. Backé et al. (2007) documents that less than 10 percent of households had foreign currency holdings between 2002 and 2006, and the median positive holding was around 100 EUR.[6]

As a result, the depreciation quickly translated into a rising share of non-performing loans. Figure 2d shows the share of housing loans that are at least 90 days delinquent by currency and loan type. The delinquency rate for domestic currency loans increased only slightly during this period. On the other hand, by 2014 the share of delinquent foreign currency mortgage loans was almost 20 percent, while 30 percent of foreign currency home equity loans were

[5] Swiss franc loans carried lower interest rates, both relative to loans in Hungarian forint (HUF) and euro (EUR). Because the interest rate subsidy program applied only to mortgage loans, the share of foreign currency debt was close to half for mortgages, while most home equity loans were denominated in foreign currencies.

[6] Moreover, the fraction of households working abroad and thus earning income in foreign currency was low before the crisis (Hárs, 2016).

delinquent. The rise in delinquency rates represents a sharp increase in household financial distress. Strategic default cannot explain the high delinquency rate because in Hungary debt is recourse. In addition, there was no provision for personal bankruptcy prior to 2015. Note that since Switzerland is not a major trading partner for Hungary, the depreciation against the CHF had limited impact on the Hungarian economy through other channels.

Although some warned about the potential risks of foreign currency lending, no effective regulatory measures were taken to curb its growth before the crisis. The Central Bank's 2006 Report on Financial Stability (MNB, 2006) already discussed the risks associated with foreign currency lending in 2006. In 2007, the Central Bank of Hungary succeeded in stopping lending in Japanese yen, as it was considered too risky, but lending in Swiss franc and euro continued.

Prior to the election in 2010, there were no major policies targeted at foreign currency debtors. In October 2008, the Hungarian government obtained a 25 billion euro IMF rescue package to cover its external financing needs, so it had limited space to intervene in domestic credit markets. After the 2010 election, the new Fidesz government implemented two major policies to help foreign currency debtors.[7] First, in the fall of 2011, the government launched the Early Repayment Program (ERP), which allowed households to prepay foreign currency mortgage and home equity loans at a preferential exchange rate at the banks' expense. The preferential exchange rate was approximately 30 percent lower than the market rate at that time. There were no eligibility criteria for participation, but the program stipulated that the entire principal had to be prepaid. Approximately 170,000 loans, about 23 percent of outstanding foreign currency loans, were repaid through the ERP.

Political pressure from the far right played an important role in Fidesz's push to pass the ERP. Róna (2015) notes that the far-right party Jobbik began collecting signatures on September 1, 2011 for a petition to force banks to convert foreign currency loans into domestic currency at the exchange rate at the time of origination.[8] In response to the popularity of the petition, Fidesz quickly responded by proposing the ERP, which was enacted on September 19, 2011.

Second, the government implemented a settlement and a conversion program in late 2014. The settlement program required banks to compensate borrowers for charges from unilateral changes in the terms of the contracts (interest rate increases and exchange rate spreads). The compensation amounted to more than 3 percent of 2014 GDP. The conversion program

[7] After the outbreak of the crisis, the government and central bank implemented measures to prevent the continuation of foreign currency lending, which culminated in a ban on foreign currency lending to households in 2010 (Banai et al., 2011). Later policies targeted foreign currency debtors directly.

[8] The question on the petition was: "Do you agree that the conversion of foreign currency loans to domestic currency should happen at the exchange rate at the time of origination, and the burden of the conversion should be borne by the banking sector?"

converted foreign currency mortgage and home equity loans to domestic currency at the late 2014 market exchange rate, thus eliminating households' exposure to subsequent exchange rate movements.

2.2 Political landscape

After the transition from a one-party system to a multi-party system in 1990, there have been elections in Hungary in every four years. Political parties in Hungary are organized at the national level, so we focus on national elections to capture the change in political preferences. Unlike in other countries, local governments in Hungary have limited ability to raise tax revenues, and funds for public services are disbursed from the central government.

The national parliamentary election system has two parts: a majoritarian part, where voters can vote for candidates, and a proportional part, where voters can vote for party lists. The election system is tilted towards the majoritarian system, in which voters elect representatives of single-member districts. The majoritarian component of the election system may motivate supporters of smaller parties to cast their votes strategically for candidates of larger parties. In contrast, strategic voting behavior plays less of a role in voting decisions for party lists, as this part is proportional. Therefore, our analysis focuses on votes cast on party lists. Moreover, there is a 5 percent electoral threshold for parties to obtain parliamentary seats.

In the period after the transition, there have been two significant extremist right-wing parties in Hungary: the *Hungarian Justice and Life Party* (MIÉP) and the *Movement for a Better Hungary* (Jobbik). Minkenberg (2013) reviews radical right-wing parties in Europe and classifies Jobbik and MIÉP as far right. Some observers have classified Jobbik as fascist, as it had a paramilitary wing, the Hungarian Guard, which was banned in 2009 (Bíró Nagy et al., 2013). Both of these parties are also classified as populist (van Kessel, 2015; Inglehart and Norris, 2016).[9] We thus consider a vote as far-right if it is cast for either Jobbik or MIÉP.

We refer to Fidesz as a conservative center-right party. Though this classification contrasts with recent studies, before the 2010 election no study labeled it as a populist far-right party.[10] For example Mudde (2007) labels it as an essentially conservative party, while Norris (2005) only mentions MIÉP in an analysis of radical right parties. Jobbik's success influenced Fidesz by dividing the right-wing vote, leading Fidesz to gradually move from conservatism toward right-wing populism after the 2010 election. As mentioned earlier, Fidesz not only adopted Jobbik's position on debt relief for foreign currency debtors, but also copied several other

[9] For example, Jobbik has claimed to be the only party that genuinely stands up for the interests of the people (Batory, 2010).

[10] Recent studies classify Fidesz as populist (van Kessel, 2015; Rodrik, 2017; Inglehart and Norris, 2016; Mudde and Kaltwasser, 2017).

Jobbik policies.[11] Jobbik's influence is in line with the findings of Abou-Chadi and Krause (2018), who show that the success of extreme right-wing parties influences moderate parties by pushing them toward a more nativist agenda.

We classify the remaining parties as follows. Votes for the Christian Democrats (KDNP), the Hungarian Democratic Forum (MDF), and the Independent Smallholders, Agrarian Workers, and Civic Party (FKgP) are considered center right. The Socialist Party (MSZP), Alliance of Free Democrats (SZDSZ), Together (Együtt), Conversation for Hungary (PM), and Democratic Coalition (DK) are considered as center-left parties. In addition, one green party, Politics Can Be Different (LMP), participated in the 2010 and subsequent elections.

Table 1 summarizes the aggregate vote shares for these political blocks in parliamentary elections since 1998. Vote shares are based on votes cast on party lists. The table shows that the center right was in power between 1998 and 2002, and won three consecutive elections after the crisis. The center left was in power between 2002 and 2010. Until 2010, the center-left and center-right blocks together received a majority of the votes. Then, in the 2010 election, the far-right parties surged in votes, and the green party emerged. One party at the far left end of the spectrum, the communist Workers' Party, remained marginal throughout the whole post-transition period.

2.3 Descriptive statistics on foreign currency debtors and far-right voters

What are the characteristics of foreign currency debtors and far-right voters? We draw on two separate surveys to provide descriptive statistics on these groups. The first survey is the Austrian National Bank's (OeNB) Euro Survey, which contains detailed information on Hungarian households' balance sheets, including the currency denomination of their debts. The second is the February 2010 Tarki Household Monitor, which contains information on political preferences, individual characteristics, and household balance sheets, including a proxy for loan currency denomination. The OeNB Euro Survey is a more reliable source of information on household balance sheets, but it does not contain information on political preferences.

Foreign currency debtors We start by using the OeNB Euro Survey data to compare foreign currency debtors, local currency debtors, and individuals without a loan. Foreign currency debtors are defined as borrowers who have some foreign currency debt. Local currency

[11] Juhász et al. (2017) and Bíró Nagy et al. (2013) list several policies that were first proposed by Jobbik but then later implemented by Fidesz. These include: building a fence on the southern border of Hungary, restrictions on Sunday shopping, nuclear power plant expansion, public works program for the unemployed, making criminal sentences harsher, nationalizing private pension funds, and explicitly mentioning Christianity in the new constitution.

debtors are defined as borrowers who only have local currency debt. To increase power, we pool together waves of the survey between 2007 and 2011, but we find similar patterns using only the 2007 and 2008 waves (not reported).

Table 2 presents the results. Foreign currency debtors have better characteristics on average than local currency debtors, but the differences are relatively small (columns 1 and 2). For example, FC debtors are more likely to have education beyond primary school. FC debtors also have higher income and are more likely to be employed. In addition, FC borrowers are younger than LC borrowers, which is consistent with the later start of foreign currency lending, and they are more likely to live in small cities.

These results are consistent with existing studies on household foreign currency borrowing in Central and Eastern European countries. Using survey data, these papers find that foreign currency debtors are approximately similar to local currency debtors (Pellényi and Bilek, 2009; Beer et al., 2010). The OeNB Euro Survey results are also consistent with the average characteristics of FC debtors, LC debtors, and non-borrowers in the February 2010 Tarki Monitor, as shown in appendix Table A.1. In contrast to the differences between LC and FC borrowers, the differences between borrowers and non-borrowers in column 5 are more pronounced. This indicates that the Hungarian credit boom was not concentrated among low-income individuals.

Far-right voters We examine the characteristics of far-right supporters before the 2010 election using the Tárki Household Monitor. Table 3 presents the results, comparing individuals planning to vote for the far right to those planning on voting for other blocs. The survey reveals that far-right supporters are more likely to have a vocational degree, but are slightly less likely to have a college degree.[12] Far-right voters have similar levels of household income in 2009 but are more likely to be employed.

The Tarki Household Monitor also asks whether an individual has debt payments and whether these debt payments are in foreign currency. Interestingly, far-right supporters are *more* likely to have a bank loan relative to supporters of other parties. In particular, far right supporters are more likely to have an FC, but not an LC loan. These patterns provide suggestive evidence that financial distress may have led debtors to vote for the far right, as it implies that far-right voters are more likely to be exposed to the exchange rate shock through their debt positions.

The next section lays out an empirical strategy based on administrative data and actual voting behavior at the zip code level to more systematically evaluate this hypothesis.

[12]Other studies analyzing the characteristics of Jobbik supporters find that Jobbik voters tend to be wealthier than average. This led previous research to conclude that economic or financial conditions cannot explain the rise of the far right (e.g. Rudas 2010).

3 Data, summary statistics, and empirical strategy

3.1 Data

We build a new zip code level database by combining election data and credit registry data with several other data sources. There are 3475 zip codes in our dataset with an average of 2312 eligible voters per zip code.

Election and referendum data We use zip code level parliamentary election results from the National Election Office for elections between 1998 and 2018. We measure political preferences using votes that are cast on party lists. The data contains the number of votes cast on party lists, turnout, and the number of invalid (blank) votes.

Our primary focus is on the 2010 election, as the election system changed significantly in 2011. This change affected the relative importance of the proportional and majoritarian components, the rules for campaigning, and led to a redrawing of electoral district borders. Since we aggregate polling station level data to zip code level, gerrymandering does not affect our results (more information on how the data is constructed can be found in Appendix B.1). However, some other changes might have had an impact on voters' behavior. We thus exclude 2014 and 2018 from our baseline sample, but we report results for those elections in subsequent analysis. To proxy for attitudes toward immigration, we also use zip code level data on a referendum in 2016 on EU migrant quotas.

Household credit registry data Data on household debt by currency is from the Household Register of the Central Credit Information System (KHR). It contains the universe of household loans that were outstanding or originated after April 2012. The previous version of KHR contained only loans in default and is available from 2010. KHR provides detailed loan characteristics, including time of origination, maturity, originated amount, loan type, payment scheme, currency denomination, and the identity of the bank. These data are supplemented with monthly data on outstanding debt, payment amount, and delinquency status. KHR also records borrower address and year of birth.[13]

We reconstruct the data for the pre-2012 period using the detailed loan characteristics provided in KHR. Since data collection started in 2012, there is no information on household indebtedness for the preceding period (beyond the originated amount). To reconstruct the data at the loan level, we assume an annuity payment structure and complement the credit

[13] Borrowers' zip code level address 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 a borrower has other loans outstanding after June 2014, we use that address information.

registry data with bank-month-currency-loan type specific average interest rate data.[14] This allows us to calculate the outstanding debt and payment for each loan in each month from origination until 2012. We validate our approach by comparing the predicted and actual principal in 2012 and find that the two match closely.

Loans that were terminated before April 2012 are missing from the credit registry. This problem affects two types of loans. First, loans that were originated early in the boom and loans with shorter maturity are more likely to be missing. We restrict the baseline sample to mortgage and home equity loans because these have longer maturities, and they also represent the majority of the household debt. Second, the Early Repayment Program (ERP) initiated by the government at the end of 2011 enabled households with foreign currency mortgage and home equity loans to prepay their loans. Participating loans are missing from the credit registry, as they were repaid before the start of data collection. The aggregate participation rate in the program was 23 percent.

We use three approaches to address the problem of missing loans. Our baseline approach is to allocate the missing loans proportionately with observed loans. We multiply household debt and the number of loans in a zip code by the ratio between the official aggregate statistics and the aggregated credit registry data for each currency denomination.

The second approach estimates participation in the ERP using a shift-share approach. We use a separate dataset maintained by the Central Bank of Hungary with the universe of loans for three major banks with a combined lending market share of 24%. We then assume that the participation rate in each zip code for loans issued by another bank b is the participation for these three major banks times the ratio between the aggregate participation rate for bank b (which was reported by all banks) and the three banks. Because this method allocates missing loans reasonably smoothly across zip codes, and the quantity of missing loans is modest compared to observed loans, our results are highly robust to this missing loans adjustment.

As a third approach, we proxy zip code participation in the ERP using the volume of new local currency borrowing during the ERP window (October 2011 to February 2012). This period saw a spike in local currency borrowing to take advantage of the ERP and refinance into an LC loan. Our estimates are also robust to using this adjustment. Further details on these latter two approaches are provided in Appendix B.

Other data sources We use several other administrative data sources for control variables. The T-Star database contains yearly settlement level data on a wide range of characteristics,

[14] Aggregate statistics show that more than 90 percent of the domestic currency mortgage loans were subsidized. Because of this, for domestic currency mortgages we use the subsidized interest rates to calculate payments and debt balances.

such as demographics, unemployment, and income. We also use data from the 2011 census, which contains settlement-level information on educational attainment and ethnic composition. There are 3,152 settlements in Hungary, so the settlement level control variables are at a slightly coarser level of aggregation than the zip code level variables.[15]

Several administrative firm-level databases allow us to construct settlement employment shares of firms that may have been affected by the exchange rate depreciation or other dimensions of the crisis. Our primary dataset is the Hungarian Corporate Income Tax Data, which covers the universe of double book-keeping firms. It contains information on employment and items from firms' balance sheets and income statements. We match this database with a firm register containing the address of each firm's headquarters. We also merge on *firm* credit registry data to the Corporate Income Tax Data. This combined dataset allows us to construct local employment by sector and by *firm* foreign currency debt exposure. Finally, we use data on 2010 campaign spending collected by several NGOs with information on advertisements and campaign events reported by the national news agency, *Daily Bulletin* (MTI), or spotted by activists.[16]

Summary statistics Table 4 contains zip code level descriptive statistics on the main variables from the election data, credit registry, and our set of control variables. Zip codes are weighted by the number of eligible voters in 2006. The population-weighted average zip code foreign currency loan share was 63 percent in September 2008, and the average foreign currency debt revaluation relative to disposable 2008 income is 8.7 percentage points. The mean zip code far-right vote share in the 2010 election was 15%, almost equalling the average vote share for the incumbent center-left (17%). Average turnout was 64%.

3.2 Measuring exposure to the depreciation

We define zip code level exposure to the foreign currency debt revaluation shock to be the share of foreign currency loans in total loans at the start of the crisis:[17]

$$FCS_i = \frac{N_{FC,i}}{N_{LC,i} + N_{FC,i}},$$

where $N_{FC,i}$ is the number of foreign currency loans in zip code i in September 2008, and $N_{LC,i}$ is the number of local currency loans. This measure captures the fraction of borrowers

[15] Typically, settlements (municipalities) have only one zip code. Some settlements that constitute larger cities have multiple zip codes.

[16] The NGOs are Transparency International, K-Monitor, Atlatszo, and Political Capital. The data is available at http://kepmutatas.hu/kampanymonitor/.

[17] Since 97 percent of foreign currency debt was denominated in Swiss franc, abstracting away from the variation in foreign currencies does not affect our results.

who experience the debt shock in a zip code.

Figure 3 shows the zip code level map of the share of foreign currency loans, FCS. The coloring corresponds to the deciles of FCS. Borrowing in foreign currency was prevalent, and, even in the lowest deciles of exposure, nearly half of all loans were denominated in foreign currency.

Variation in household foreign currency debt exposure stems from the timing of borrowing. Households borrowing in the first phase of the credit boom have subsidized LC loans, while the majority of households borrowing later have FC loans. Though foreign banks were present in Hungary already in the 1990s, they focused on the corporate sector, and domestic banks served the retail market. The LC credit boom was more pronounced in regions with higher branch density of domestic banks. With the cut back of the government subsidy program, foreign banks expanded their branch network to attract retail customers (see Figure A.1), and offered FC loans in previously underserved regions. This led to a catch-up in household leverage in these regions.

What is the correlation between zip code level household foreign currency debt exposure and other zip code characteristics? Table 5 presents results from regressions of FCS_i on zip code level characteristics. Each row represents 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 (175 regions).

Results in Table 5 reveal that zip codes with a high share of foreign currency loans tend to have lower population, lower income, higher vocational share, lower college share, and higher pre-crisis unemployment. At the same time, the per capita number of loans and per capita debt are not related to exposure, while debt-to-income is negatively correlated with the foreign currency share. The differences for most variables are small, and R^2 values are generally also small, with the exception of the education shares. Our main estimation strategy will control for these observables to ensure that the results are not driven by a differential composition of observables in exposed areas.

The foreign currency loan share is an appealing baseline measure of exposure, as it allows us to hold total household debt fixed and use variation only in the currency composition of debt. However, we also present results using several alternative measures of exposure. In particular, we use the number of FC loans per capita as a measure of local penetration of FC lending. We also use the debt revaluation induced by the depreciation relative to 2008 disposable income to capture the magnitude of the increase in debt burdens. In contrast to the FCS measure, the debt revaluation relative to 2008 disposable income is substantially more positively selected, as it is an increasing function of household leverage. For example, the debt revaluation to income is essentially uncorrelated with education and negatively correlated

with local pre-crisis unemployment (see Appendix Table A.2). Thus, this measure provides another useful way to ensure that our results are not driven by lower education and income in high FCS areas.

3.3 Empirical specification

We estimate the effect of household financial distress induced by foreign currency debt exposure on political preferences using a difference-in-differences framework. Specifically, we examine whether the far right vote share increased more following the exchange rate depreciation in zip codes with higher exposure to household foreign currency debt. Our baseline specification is given by:

$$FarRightShare_{it} = \beta FCS_i \times Post_t + \alpha_i + \delta_t + \eta_{ct} + \gamma X_{it} + u_{it}, \tag{1}$$

where $FarRightShare_{it}$ 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 that equals one after 2008 and zero otherwise, and α_i and δ_t are zip code and election year fixed effects, respectively. We also control for county-by-election-year fixed effects, η_{ct}. There are 20 counties in Hungary, and these county-year fixed effects control for time-varying, unobservable shocks to political preferences across larger regions. The parameter of interest is β, which measures the effect of foreign currency debt exposure on the far right vote share.

The control variables in X_{it} are pre-crisis zip code characteristics interacted with election-year dummy variables. The interaction of the controls with election-year dummies allows for different effects of the control variables across election years. The control variables are log population in the settlement (municipality), the share of the population age 18-29 and age 60+, log after-tax income per capita, unemployment relative to working-age population in 2007, vocational, high school and college education shares, per capita number of loans, and debt-to-income. Controlling for the number of loans and household debt-to-income implies that we are comparing two zip codes with the same pre-depreciation debt burden, using only variation in the currency *composition* of household loans.

The key identifying assumption for consistent estimation of β is that there are no time-varying, zip code level shocks to political preferences that are correlated with household foreign currency debt exposure, conditional on (X_{it}, η_{ct}). That is, the far right vote share in more exposed and less exposed zip codes would have evolved in parallel in the absence of differential exposure to household foreign currency debt. The regressions are weighted by the number of eligible voters in 2006. We estimate robust standard errors clustered at the subregion level (175 regions). Given that our estimation uses nearly 3,500 zip codes,

clustering at 175 subregions is conservative. We can reject at traditional significance levels that a coarser level of clustering is appropriate using the test proposed by Ibragimov and Müller (2016).

4 Results

4.1 Baseline results

Figure 4 summarizes our main result. We plot binned bivariate means of the change in the far-right vote share from 2006 to 2010 against the household foreign currency loan share as of September 2008. Both variables are measured at the zip code level. Zip codes with a higher share of foreign currency loans see a stronger increase in the far-right vote share. The relation is strong and linear, which supports the assumption of linearity implicit in equation (1).

The baseline results from estimation of (1) are presented in Table 6. The specifications are estimated using election years from 1998 to 2010, and observations are weighted by the number of eligible voters in 2006. The first column in Table 6 shows the point estimate controlling only for zip code and county-election fixed effects. The point estimate is positive and highly significant.

In column 2, we add education shares (high school, vocational, and college) as control variables. The coefficient drops to 5.2 but remains highly significant. The estimate implies that moving from a zip code where all debt is in local currency to a zip code where all debt is in foreign currency increases the far right vote share by 5.2 percentage points. The estimates on the education share variables are also interesting. Areas with a higher vocational education share have higher far-right support, whereas areas with a higher share of college-educated individuals have a lower far-right vote share. These patterns are consistent with the individual-level survey evidence from Section 2.3.

Our preferred specification is reported in column 3 of Table 6. It adds our additional baseline control variables, including pre-crisis household indebtedness, income, unemployment rate, and age shares. The estimate with this specification is 4.4, which is similar to column 2. Once we control for educational attainment, the coefficient is reasonably stable to additional controls. To the extent that unobserved selection is correlated with these covariates, this suggests that controlling for educational attainment accounts for most potential omitted variable bias (Altonji et al., 2005).

In column 4, we include 175 subregion fixed effects interacted with election-year fixed effects. This provides a tighter specification that controls for unobserved shocks at a level of aggregation that approximately corresponds to labor markets (Pálóczi et al., 2016). Subregion-time fixed effects also account for subregional differences, such as cultural or economic differ-

ences, that may be correlated with shocks to far-right support. The estimate in column 4 is essentially unchanged with this control, which shows that our results hold using variation in exposure to foreign currency debt *within* local labor markets. The effect of foreign currency debt exposure is also robust to the inclusion of zip code specific linear time trends, which is reported in column 5.

Interpretation of the magnitudes The estimate from our preferred specification in Table 6 column 3 is economically meaningful, in addition to being statistically significant. Moving from zero to full foreign currency debt share exposure implies an increase in debt relative to pre-crisis income of 14.9 percentage points. The FCS estimate in column 3 thus implies that a 10 percentage point increase in debt-to-income increases the far right share by 3.0 percentage points ($10 \times 4.4/14.9$).

What fraction of the overall rise in the far right vote share does household foreign currency debt exposure explain? The average foreign currency debt share is 63 percent, so foreign currency debt exposure explains approximately 2.8 percentage points (0.63×4.4) of the 14 percentage points increase of far-right vote share between 2006 and 2010, which is 20 percent of the increase. According to this estimate, foreign currency debt exposure led to 142 thousand additional far-right votes in the 2010 election (2.8 percent of 5.1 million voters). This effect is economically significant, given that there were approximately 740 thousand foreign currency housing loans outstanding in 2008.

Impact of foreign currency debt exposure over time We next examine whether support for the far right in zip codes with high foreign currency exposure evolved in the same way as in low exposure zip codes before the crisis. We estimate the following specification, allowing the foreign currency loan share, FCS, to have a different effect on the far right vote share across elections:

$$FarRightShare_{it} = \sum_{j \neq 2006} \beta_j FCS_i \times \mathbf{1}[j = t] + \alpha_i + \delta_t + \eta_{ct} + \gamma X_{it} + \epsilon_{it}, \qquad (2)$$

where $FarRightShare_{it}$ is the far right vote share in zip code i in election year t, and FCS_i is the share of foreign currency loans in zip code i in September 2008. $\mathbf{1}[j = t]$ is a dummy variable that equals one in year t and 0 otherwise. α_i and δ_t are zip code and election year fixed effects, respectively, η_{ct} controls for county-election year fixed effects, and X_{it} is a set of control variables. Again, the regression is weighted by the number of eligible voters in 2006, and standard errors are clustered at the subregion level.

Figure 5 plots the estimated β_t coefficients, with 2006 as the reference election year. The

coefficients for the pre-crisis period are close to zero and insignificant. There is no pre-trend in the far right vote share in more exposed relative to less exposed zip codes before the crisis, which supports the parallel trends assumption.

The far-right vote share then increased sharply in more exposed zip codes after the depreciation starting in 2008, and the effect persists through the 2014 and 2018 election. Financial distress experienced by debtors in the crisis thus has a persistent impact on political preferences. One explanation for the persistence may be that the act of voting for a candidate leads to a more favorable opinion of the candidate in the future, as suggested by Mullainathan and Washington (2009).

As a complementary approach to estimating (2), in Figure 6 we split zip codes into four equal population quartiles by FCS_i and plot the unconditional average far right vote share in each election separately by quartile. Figure 6 clearly shows that high and low exposure zip codes had similar levels and changes in the far right vote share in elections between 1998 and 2006. The almost identical *levels* of far right support in high and low FCS areas prior to 2008 indicates that high FCS areas did not have an initial predisposition for far right support. Starting in the 2010 election, high exposure areas see a much sharper rise in the far right vote share. Zip codes in the highest quartile of exposure saw a rise in the far right vote share from 2.0 percent in 2006 to 19.4 percent in 2010. Meanwhile, the far right vote share in the lowest quartile rose from 2.4 percent in 2006 to 13.7 percent in 2010.

Alternative specifications Next, we show that alternative definitions of household foreign currency debt exposure yield similar results as our baseline foreign currency share measure. Table 7 summarizes the findings. Column 1 shows the point estimate when we use the share of foreign currency denominated *debt* instead of the share of loans in foreign currency. As the average outstanding principal prior to the depreciation was slightly higher for foreign currency loans, the coefficient is slightly smaller than the coefficient on FCS, but it remains positive and highly significant.

In column 2, we use the number of FC loans per capita as the measure of exposure. We also control for the fraction of LC loans per capita.[18] The point estimate on the number of FC loans per capita is positive and significant. The estimate implies that increasing the FC loan penetration in a zip code by 10 percentage points leads to a 1.52 percentage point increase in the far right vote share. In contrast, the coefficient on the number of LC loans per capita suggests that LC borrowers were less likely to vote for the far-right. LC debtors were less exposed to personal economic distress, and far-right debtor-friendly proposals primarily

[18]Since this specification measures the effect of adding one extra FC loan per capita, we drop the debt-to-income and per capita number of loans variables from the set of control variables.

targeted FC debtors, as we discuss in section 5.

Column 3 in Table 7 uses the change in debt induced by the depreciation relative to the pre-crisis household income as the measure of debtors' financial distress. It is not the currency denomination *per se* that matters for political preferences, but rather the financial distress caused by the sharp increase in debt burdens following the depreciation. We thus compute the difference between debt burdens in April 2010 at market exchange rates and the counterfactual debt level if the exchange rate had remained at its pre-crisis level. The estimate implies that an unexpected 10 percentage point increase in household debt-to-income leads to a 1.6 percentage point increase in the far right vote share.

Since some observable characteristics of zip codes are correlated with foreign currency debt exposure, we verify that our findings are not sensitive to limited overlap in the covariate distributions of more exposed and less exposed zip codes. To do this, we construct a matched sample in which the covariate distribution has common support. We split zip codes into treatment and control groups based on whether FCS exposure is above or below the median. Using our baseline controls, we then estimate the propensity score and keep only treated zip codes in which the propensity score distance to the nearest control zip code is sufficiently low.[19] Table A.3 confirms that high and low FCS zip codes in this matched sample are similar in terms of observable covariates. In particular, the Imbens and Wooldridge (2009) normalized difference statistics are generally low, indicating that high and low FCS samples are well balanced.

Column 4 presents results from re-estimating (1) on the matched sample. We include all of our baseline controls to account for any remaining observable differences across these zip codes that may affect the far right vote share. The estimate on this matched sample remains highly significant and rises slightly to 5.4, which implies that going from a zero to full FC debt exposure translates into a 5.4 percentage point increase in the far-right vote share.

Finally, columns 5 and 6 in Table 7 show that the results are robust to two approaches described in section 3.1 to account for loans missing due to the 2011 Early Repayment Program (ERP). Column 5 estimates the fraction of missing loans using a shift-share approach based on information contained in a separate database of loans for three large anonymous banks. Column 6 estimates the fraction of missing loans using the volume of borrowing during the period of the ERP from November 2011 to January 2012. The point estimates are close to the baseline coefficient estimates, indicating that our results are not affected by loans missing in our data due to the ERP.

[19] This procedure follows Di Maggio et al. (2017).

4.2 Evidence from individual-level survey data

We corroborate our findings from zip code level data using individual-level survey data. To measure individual debt positions by currency and far-right support, we use the February 2010 Tarki Household Monitor, conducted two months prior to the April 2010 election. The advantage of using survey data is that it is immune to the ecological inference problem (King, 1997) and allows us to control for individual-level characteristics. Moreover, it allows us to exploit variation within settlements (municipalities), which helps rule out time-varying unobservable settlement level shocks. The drawbacks of the Tarki Household Monitor are that loan currency denomination is likely to be measured with error, the sample size is limited to 1833 individuals, and actual voting behavior may differ from reported preferences, especially for extremist parties. Given these advantages and drawbacks, we view survey data evidence as complementary to evidence from zip code level data.

Table 8 presents estimates from individual-level linear probability models of far right support. Column 1 and 2 show that individuals with a loan are 3.6 to 4.6 percentage points more likely to support the far right. Columns 3 and 4 separate individuals with a loan into those who have a FC debt and those with only LC debt. The effect of having a loan is driven entirely by individuals with a foreign currency loan. Individuals with a FC loan are 5.4 to 6.1 percentage points more likely to vote far right. This effect is large relative to the mean intention to vote far-right of 11.8 percent and is robust to the inclusion of education, income, and other household controls. Furthermore, the effect holds as strongly when exploiting only variation across individuals *within* municipalities. Finally, columns 5 and 6 confirm that this result also holds when measuring FC and LC debt exposure as the reported most recent monthly payments on FC and LC debt, respectively.

4.3 Robustness to other explanations

In this subsection, we examine whether our baseline result is robust to alternative explanations for the rise in the far-right vote share.

Persistent extremist attitudes Persistent far-right attitudes that are correlated with foreign currency debt exposure pose a potential threat to identification. Several studies argue that far-right attitudes are persistent (Voigtländer and Voth, 2012; Avdeenko and Siedler, 2015; Fontana et al., 2017). However, these attitudes may need to be "activated" and may therefore only manifest themselves during crises (Cantoni et al., 2017; Ochsner and Roesel, 2017). This suggests that the increasing popularity of the far right may be driven by a resurfacing of these attitudes and not by household financial distress itself.

To address this endogeneity concern, we conduct a placebo test using data on the first secret ballot election in 1939. Six far-right parties, including the Arrow Cross Party, received 25 percent of the votes in 1939, which makes it an ideal election to measure historical extremist attitudes.[20] Though support for the far right was widespread, far right parties were only on the ballot in about half of the electoral districts. The government used various administrative measures to attempt to limit far-right success at the polls, including preventing far-right parties from appearing on the ballot in many districts (for details see Appendix B.1). Figure B.3 shows the spatial distribution of the vote share of far-right parties. In large swaths of the country, the far right vote share was zero, while in other regions the far right received over 30 percent of the votes.

We start by estimating the correlation between 2008 FCS and the 1939 far right vote share in settlements where the far right was on the ballot. Column 1 of Panel A in Table 9 shows that the foreign currency share, measured in September 2008, is uncorrelated with the 1939 far right vote share. Column 2 reports the same regression estimated using all settlements, including settlements where the far right was not on the ballot in 1939. Far-right parties might have run only in regions where they were popular, so here we include settlements with no far-right party lists. The unconditional correlation between the far right vote share and FCS is marginally significant and negative, which goes against the persistent extremist attitudes concern.

In column 3, we regress the change in the far-right vote share between 2006 and 2010 on the 1939 far-right vote share. This specification asks whether far-right attitudes dating back to the 1930s predict the rise of the far-right in 2010. Using only settlements where the far right was on the ballot, the correlation is positive, albeit small and not significant, consistent with the persistent extremist attitudes hypothesis. In the full sample, the correlation disappears (column 4). In columns 5 and 6, we interact the 2008 foreign currency share with the 1939 far right vote share. The interaction term in the full sample is positive, indicating that the effect of foreign currency exposure is stronger in regions with higher historical far-right attitudes. However, the point estimate is significant only at the 10 percent level.

In Table 9A column 7, we take another approach to control for past extremist attitudes. In particular, we control for the far-*left* vote share in 1998. Far-left and far-right parties might be reasonably close from the viewpoint of extremist voters. Indeed, a higher far-left vote share in 1998 predicts higher far-right vote share in 2010. Yet, the effect of household foreign currency debt exposure remains quantitatively similar. These results suggest that the

[20]The six far-right parties participating in the 1939 election were the Arrow Cross Party, National Front, United Hungarian Nationalist Socialist Party, Christian National Socialist Party, Hungarian National Socialist Agricultural Labourers' and Workers' Party, and far-right candidates without a party affiliation. Appendix B.1 provides further details.

foreign currency debt crisis did not simply "activate" latent far-right attitudes.

Roma minority and immigration Fears about immigration and the scapegoating of minority groups may also have contributed to the rise of the far right.[21] Though the immigration rate was relatively low in the period leading up to the 2010 election, Hungary has a sizable Roma minority.[22] Several studies attribute the success of Jobbik to their openly racist anti-Roma rhetoric.[23]

We address these potentially confounding factors by controlling for local minority population shares. In addition to the Roma minority, we distinguish between minorities from surrounding countries and immigrants from other regions. Column 1 in Panel B of Table 9 shows that our main result is robust to controlling for the population shares of minority groups. Of course, voters may be influenced by anti-immigrant and anti-minority rhetoric without living in proximity to minorities. Nevertheless, a higher local presence of minority groups has been shown to influence voting for right-wing parties, so this provides a useful robustness check.

The coefficients on the controls in column 1 of Panel B are also interesting. The estimate on the local Roma share is insignificant, but the point estimates on both the local minority and immigrant groups are significantly negative, indicating that a higher presence of these groups is associated with lower support for the far right. Living near minority groups may increase interactions between ethnic majorities and minorities, decreasing prejudice, in line with the model of Glaeser (2005). In addition, minority groups themselves are less likely to vote for the far right.

Financial literacy Less financially literate households may be more likely to borrow in foreign currency and may also be more inclined to support the far right. So far we control for education, which partially proxies for financial literacy. Further, individual-level survey data indicate that foreign and local currency borrowers are broadly similar. Here we use two additional settlement level proxies for financial literacy to corroborate our previous findings.

The first proxy is the pre-crisis default rate, measured in September 2008, which captures potentially declining lending standards. Most FC debtors borrowed later in the credit

[21] Several studies find a positive relationship between exposure to immigrants and far right voting (Halla et al., 2016; Dustmann et al., 2018). However, Steinmayr (2016) shows using data from Austria that exposure to refugees can also lower local support for the far right.

[22] Our main focus is on the 2010 election, so our results are not driven by the the impact of the refugee crisis, which started in 2013. Immigration was not a major issue in the 2010 election campaign.

[23] Common themes of far-right rhetoric are that Romani people exploit social transfers and engage in criminal activity. Before the 2010 election, several high-profile murders committed by Roma individuals received significant public attention. Karácsony and Róna (2010) attribute the success of the far-right to these events and to the related rhetoric of the far right.

expansion, after the removal of local currency loan subsidies. If lending standards declined during the boom, these borrowers may be less creditworthy. Second, we use the share of home equity loans in total FC loans, which proxies for mis-selling and high-risk lending according to observers of the Hungarian credit boom (Bethlendi, 2015).

As column 2 in Panel B of Table 9 reports, controlling for these variables does not meaningfully change our results. The coefficients on these control variables indicate that declining lending standards may also have contributed to far-right support. Households who were sold foreign currency loans without being fully informed of the depreciation risk may be attracted to Jobbik's proposals because they perceive their increased burden of debt as unfair. This connects closely with the creditor-debtor conflict hypothesis, which we explore in the next section.

Local labor market shocks Local labor market shocks may separately affect political preferences (Geishecker and Siedler, 2011; Autor et al., 2016; Colantone and Stanig, 2017; Dippel et al., 2015), and might also be correlated with households' foreign currency debt exposure. Table 9B column 8 shows that our results are robust to controlling for two-digit industry employment shares to capture sector-specific shocks.[24] Given that our results are robust to the inclusion of subregion-election year fixed effects, we control for these shocks at the settlement level. We also control for the local employment share of firms with foreign currency denominated debt in 2007 to capture for firm balance sheet distress from FC debt. The decline in the number of observations in column 3 is due to the fact that there are no firms registered in the smallest settlements.

Next, we directly control for the change in the settlement-level unemployment rate between 2008 and 2010. This measure captures a variety of shocks that raised unemployment, beyond sectoral or corporate foreign currency debt related shocks. The results are presented in column 4, which reveals that controlling for the increase in the unemployment rate leads to quantitatively similar estimates on the FC share. The increase in the unemployment rate itself is positively, but not significantly, related to the rise in the far-right vote share.[25]

House prices Our results are also robust to controlling for the decline in house prices during the crisis. Foreign currency loans are more likely to default, and the resulting foreclosures

[24] Foreign currency lending was also prevalent in the corporate sector (Bodnár, 2006, 2009; Endresz et al., 2012). Firm foreign currency exposures weakened firm balance sheets and depressed investment during this period (Endrész and Harasztosi, 2014).

[25] The unconditional relation between the increase in the unemployment rate and the far-right vote share is larger and significant (not reported). Controls, such as county-election year fixed effects, are intended to soak up a substantial amount of local labor market variation, which reduces the power to estimate the impact of the rise in local unemployment.

potentially depressed house prices. House price declines, in turn, weaken household balance sheets, which may also contribute to support for the far right. The house price channel is, therefore, complementary to the foreign currency debt channel.

In column 5 of Table 9 Panel B, we control for the change in subregional (175 units) house prices, and the point estimate decreases slightly but remains significant. It is important to emphasize, however, that since household foreign currency debt exposure depresses house prices, controlling for house prices over-controls for the effect of financial distress induced by foreign currency debt. Notably, a larger decline in house prices also predicts a larger increase in the far-right share.

Campaign expenditures Campaigning is also likely to have an impact on political preferences. Though the credit registry data, with information on the prevalence of foreign currency loans, is not available to the public or to political parties, campaigning and foreign currency exposure might be correlated, as foreign currency debt exposure increased unemployment (Verner and Gyöngyösi, 2018). Therefore, the far right might have been especially successful in the 2010 election because they focused their campaigning on depressed regions.

In column 6 of Table 9, we control for the per capita spending of the far-right, center-right and center-left parties by interacting the 2010 spending with election year dummies. The point estimate of FC share is close to the baseline estimate, suggesting that disproportional campaigning in more depressed zip codes does not explain the impact of FC debt exposure on the rise of the far right vote share. Of course, campaign spending may be concentrated in exposed areas *because* the far right targeted foreign currency debtors, so including campaign spending may be over-controlling.

In the last column of Table 9, we include all control variables from the far-left vote share in 1998 to campaign expenditures. The coefficient is quantitatively the same as in our baseline specification in Table 6, indicating that our results are not driven by observable differences between more and less exposed zip codes.

4.4 Impact on other parties

This subsection examines the impact of foreign currency debt exposure on the vote share of other parties. This also allows us to examine the parallel trend assumption for political preferences more broadly. Figure 7a shows the results from estimating (2) for the center-right vote share, and Figure 7b presents the same estimates for the center-left share. There is no evidence of a pre-trend for these parties in the latest two elections before the crisis. However, there is evidence that center-right parties were more popular in more exposed zip codes in 1998 relative to 2006, while the opposite is true for center-left parties. The political landscape

shifted substantially during this period, as the main center-right party, Fidesz, moved from being a traditional liberal party to becoming a more conservative-nationalist party in the late 1990s and early 2000s (Rupnik, 2012). Following the 2008 crisis and depreciation, areas with higher FCS exposure saw increased support for the center-right and a decline in support for the center-left.

Figure 7c plots the parameter estimates for the communist far-left Workers' Party. The far left was less popular than the far right throughout this period, and there is a declining trend in their vote share in high compared to low FCS zip codes. In section 4.3, we saw that controlling for the far left share in 1998 does not affect the estimated effect of household foreign currency exposure on the far right share, but far-left leaning zip codes in 1998 were more likely to vote far right in 2010.

5 Mechanisms

So far we have documented that household financial distress from foreign currency debt increases the far right vote share. In this section, we examine the channels through which the crisis influenced political preferences.

5.1 Creditor-debtor conflict

Creditor-debtor conflict is fundamentally a dispute about risk sharing and which group should bear the burden of adjustment to the crisis. Debt contracts impose the full burden adjustment to adverse economic shocks on borrowers, even though borrowers tend to have the least capacity to absorb losses. Disputes about the resolution of the crisis, therefore, manifest themselves in different policy and political preferences. Debtors prefer debt relief, debt restructuring, and other debtor-friendly interventions, while creditors oppose these measures (Mian et al., 2014; Frieden, 2015). Since creditors are often less dispersed, they may find it easier to organize themselves and influence policy makers (Olson, 2009). This creates a niche for populist parties to win support from debtors by advocating debtor-friendly policies.[26] Debtor-friendly redistributive policies also allow politicians to signal that they are not captured by the elite (Acemoglu et al., 2013). The influence of creditor-debtor conflict on politics has a long history, going back at least to the 19th century populist movement in the United States. We now turn to evidence supporting this hypothesis.

[26]This mechanism is related to the model in Guiso et al. (2017), where populist parties promise policies that benefit workers with uncertain income.

Campaign promises First, we look at the campaign promises made to foreign currency debtors by examining the campaign manifestos of political parties. In its manifesto, the main far-right party, Jobbik, advocated for payment relief and debt restructuring, as well as other forms of debtor protections. For example, Jobbik's campaign manifesto (Jobbik, 2010, p. 12.) contains the following pledges (translated from Hungarian):

> "The eviction of troubled foreign currency borrowers will be suspended immediately for one year... We will make it mandatory for loans with a maturity of more than three years to be able to suspend repayment for 6-12 months, without any additional conditions or penalties. If foreclosure cannot be avoided, then the owner should be given at least six months to sell the property. A long term solution is a maintained low interest rate from the National Bank of Hungary, and the refinancing of the foreign currency loans into low-interest rate domestic currency loans provided by the National Bank of Hungary. After the significant decrease in the interest rate, we will incentivize maturity extension for both domestic and foreign currency denominated loans."

In contrast to the far right, the incumbent Socialist Party was vague about their intentions on how to help foreign currency debtors (MSZP, 2010). Moreover, any promises they made were regarded as incredible, as they were in government until 2010. The manifesto of the center-right party Fidesz did not contain any reference to foreign currency debtors (Fidesz, 2010). The newly founded green party also did not mention foreign currency debtors in their manifesto (LMP, 2010).

Party leaders' campaign speeches show a similar pattern. Gábor Vona, the Jobbik leader, campaigned on the conversion of foreign currency denominated loans to local currency to prevent foreclosures. At the same time, Viktor Orbán, prime minister candidate of the leading opposition party Fidesz, made no mention of foreign currency debt in several of his speeches in the months prior to the 2010 election.[27] In addition to campaign pledges in their manifesto, in August 2009, Jobbik held demonstrations at the Ministry of Finance and the Hungarian Banking Association to protest against the increasing monthly payments on foreign currency loans, which they compared to usury.

Far-right media A prominent far-right online news portal also had extensive coverage of the financial crisis and foreign currency debtors.[28] This site was linked to Jobbik, so their

[27] Jobbik and Fidesz speeches can be found online: https://szolnok.jobbik.hu/content/vona-gábor-beszéde-2010-március-15-én and http://2010-2015.miniszterelnok.hu/beszedek/.

[28] The news portal is kuruc.info.

articles provide information about populist far-right propaganda. Initially, the far-right media blamed the center-left government for the IMF rescue package, arguing that it required reforms that would hurt ordinary people, while funds would be used to rescue creditors. Later, the far-right media criticized the banks and the government for the economic hardship of foreign currency debtors.

Indirectly affected voters The creditor-debtor conflict hypothesis implies that it is distressed debtors *themselves* who vote for the far-right. This effect should be strongest for foreign currency debtors, as these borrowers were the main target of the far-right's debt-relief proposals. In contrast, individuals who are negatively affected by the crisis, but who do not have FC debt, should be relatively less likely to support the far right.

Household foreign currency debt has both direct effects on FC borrowers themselves and indirect effects on other nearby households through local financial externalities (Farhi and Werning, 2016). In Verner and Gyöngyösi (2018), we find that the revaluation of foreign currency debt depresses local employment through a decline in local demand. This decline in employment increases default rates for all borrowers, including LC borrowers. However, unless LC borrowers have a sophisticated understanding of the local demand externality channel, LC debtors in default should not necessarily support the far right because of their FC debtor-friendly policies. In fact, distressed LC debtors may even resent the far-right policies targeted at FC borrowers.

In Table 10, we provide evidence that zip codes that were *indirectly* affected by the foreign currency debt revaluation are not as likely to vote for the far right as those more directly affected by having many households with FC debt. First, we confirm that local foreign currency exposure predicts a rise in local unemployment and the default rate, both measured from 2008 to 2010 (columns 1 and 2).[29] The effect on the default rate is driven by both a direct effect on FC debtors and an indirect effect through local general equilibrium effects.

In column 3, we examine the relation between the change in the local household default rate and the increase in the far right vote share. The default rate captures household financial distress both for households that are directly and indirectly affected by the crisis. Areas that experience a larger rise in default rates see a larger increase in the far-right vote share. The estimate falls slightly but remains large and significant when controlling for the increase in the local unemployment rate, which proxies for indirect effects of FC debt (column 4).

Columns 5 through 7 investigate the direct and indirect effects further by separately estimating the effect of the local currency and foreign currency default rates on the far right

[29]For more detailed results on the impact of the household debt revaluation on the local economy see Verner and Gyöngyösi (2018).

vote share. A higher default rate on local currency loans has a limited effect on the far right vote share. In contrast, the foreign currency default rate has a strong and significant effect on the local far right vote share. These results suggest that the impact of foreign currency exposure on the far-right share is driven by FC debtors themselves. Moreover, the individual level survey data evidence in Table 8 further supports the notion that FC debtors themselves are more like to vote far right.

In Table A.4, we examine how the direct and indirect channels affect the vote share of the center-right parties that were in opposition prior to 2010. We run the same regressions as in Table 10 but use the center-right vote share as a dependent variable. In contrast to the results for the far right, the local currency default rate has a significant positive effect on center-right votes, while foreign currency default is smaller and not statistically significant. These results suggest that foreign currency borrowers saw the far right as providing a solution to their distress. At the same time, people who experienced financial distress, but who were not directly affected by the exchange rate depreciation, voted for the center-right.

5.2 Alternative channels

In this subsection we examine several alternative channels through which the increase in foreign currency debt burdens may have influenced political preferences.

Bank bailout Financial crises often involve some form of bank bailout. Bailouts tend to be unpopular and are often exploited by populist rhetoric. In part, this reflects creditor-debtor conflict. Populist parties criticize bank bailouts precisely because they reduce the burden of loss-absorption for bank shareholders and creditors, but not for debtors. In Hungary, Jobbik and the far-right media heavily criticized the center-left government for providing loans of EUR 1.4 billion and 0.4 billion to two domestic banks, OTP and FHB, to meet liquidity shortfalls in early 2009. The bailouts were contrasted with the lack of relief provided for foreign currency debtors.

More generally, populist parties can exploit popular dissatisfaction with taxpayer-funded bailouts, without seeking to directly appeal to distressed debtors. In this context, however, bank bailouts alone are unlikely to explain the surge in the far right vote share. The Hungarian banking sector is mostly foreign-owned. Therefore, the government did not need to undertake a large-scale recapitalization of the banking sector. The above-mentioned bail-outs were moderate in size, and the larger bank, OTP, repaid the loan before the 2010 election. Without salient debtor distress, the bailouts alone would probably not have led to a large surge in the far right share.

Declining trust Distressed foreign currency debtors may have voted for the far right to express their discontent with establishment parties. For example, Algan et al. (2017) find a strong correlation between the decline in trust and the rise in populism across European regions. This explanation differs from the creditor-debtor conflict hypothesis, as it implies that dissatisfaction with the mainstream parties drove exposed individuals to vote for the far right, instead of the far right's debtor-friendly policies.

The declining trust channel has several testable implications. First, the declining trust channel implies that other anti-establishment parties should also have benefited from the household balance sheet crisis. New parties promising a break from mainstream politics should also have performed better in more affected regions. Second, declining trust and increased dissatisfaction with the political system would imply lower turnout and an increase in the number of invalid (blank) votes.

Table 11 presents the effect of FCS on the vote share of other parties by re-estimating equation (1) for other blocs. Column 1 reports the result for the center-right parties. The center right was in opposition in 2008, and they saw a significant increase in high FCS zip codes. The opposite is true for the governing center-left parties, that lost more in exposed regions. These results are consistent with economic voting theory, whereby people vote against the incumbent in recessions.

Column 3 of Table 11 presents the estimate for the communist far left. The point estimate is significantly negative, indicating that the far left did *worse* in zip codes with higher foreign currency share. Even more telling, Table 1 shows that the far-left received only 0.11 percent of the votes in 2010, so the far left certainly did not see increased support due to the foreign currency debt crisis.

In contrast, the newly founded green party, *Politics Can Be Different*, garnered more support in the 2010 election, with 7.48 percent of the overall vote.[30] However, columns 4 and 5 reveal that the green party fared relatively worse in areas with greater foreign currency exposure. Since the party was newly established, we estimate the relation cross-sectionally for the 2010 election. Column 4 reports that there is a negative, but statistically insignificant, relation between FCS and the green vote share. Column 5 shows that the point estimate falls further when we include the 2006 vote shares of other parties to control for persistent differences in political preferences across zip codes.

Next, we examine the relation between foreign currency debt exposure and turnout.[31]

[30] The green party campaigned on standard green issues such as environmental protection and sustainable development, but also emphasized corruption among political elites and a rejection of the mainstream political parties.

[31] Charles and Stephens (2013) and 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 lowers the likelihood of electing a populist. Similarly, McCartney (2017) finds that

Column 6 shows that the estimate on FCS is negative, suggesting that the crisis had a discouraging effect on participation. However, as seen in Figure 7d, the negative estimate is driven by a negative trend in turn-out in high FCS areas. When we control for zip code specific time trends, household foreign currency debt exposure has only a modest discouraging effect on turnout (column 7). Furthermore, FC debtors were not less likely to abstain from voting according to individual-level survey data from the Tarki Monitor (see Table A.7).

In column 8, we examine how FC debt exposure affects the share of invalid votes. Invalid votes are typically blank protest votes, and voting blank provides a way to express dissatisfaction with the political system. The impact of FCS on invalid votes is a tightly estimated zero. In the aggregate, there is also no evidence of an increase in invalid votes. In the 2010 election, 0.7 percent of overall votes were invalid, compared to 0.9 percent in 2006. The emergence of the debtor-friendly far right provided a policy platform for distressed debtors who might otherwise have cast a blank vote to express their frustration.

Overall, there is limited evidence that foreign currency debt exposure increased support for other anti-establishment parties, depressed turnout, or led to an increase in protest votes. This suggests that declining trust in the establishment is not the main reason for the rising popularity of the populist far right in regions exposed to foreign currency debt.[32]

Inequality and redistribution Financial crises can also affect political preferences through their impact on inequality (Funke et al., 2016; Mian et al., 2014). Economic crises tend to increase inequality (Atkinson and Morelli, 2011), and financial crises disproportionately affect the poor (Halac et al., 2004). Populist parties may respond by advocating for redistributive policies. In this context, however, there are several reasons why inequality and preferences for redistribution are unlikely to explain the increasing popularity of the far right.[33]

First, overall income inequality measured by the Gini coefficient was declining between 2006 and 2010, as seen in Figure A.3. Though there is a jump in the Gini index in 2011, it reflects the effect of a 2011 tax reform that benefited high-income individuals. Since the popularity of the far-right started rising already in late 2008 (Figure 1), rising aggregate inequality is unlikely to explain the overall rise in the far right.

Second, the importance of inequality should also be reflected in the composition far right

household financial distress depressed voter participation in North Carolina.

[32]Another possibility is that increased EU-skepticism explains the rise of the far right. Jobbik's campaign rhetoric was critical of European integration and the Lisbon Treaty. While we cannot match local FC debt exposure to surveys data on opinions about EU membership, Figure A.2 uses Eurobarometer data to show that there was no aggregate decline in EU-skepticism in Hungary leading up to the 2010 election. The figure plots the share of people who answer "yes" to the question, "Taking everything into consideration, would you say that Hungary benefited from being a member of the EU?"

[33]Of course, debtor-friendly policies themselves are also a form of redistributive policies, but here we focus on more traditional policies (e.g., tax and transfer policy) to reduce inequality.

voters. Poorer individuals tend to favor more redistribution (Alesina and Giuliano, 2009), so the popularity of the far right should be higher among poorer people. Contrary to this hypothesis, Table 3 showed that average income of far-right supporters is similar to supporters of mainstream parties, and far right voters are more likely to be employed compared to voters of other parties.[34]

Third, if concerns about inequality influenced far right support in 2010, then one would also expect the far right to advocate for more redistributive policies. In Table A.5, we compare policy positions of the far right to other moderate parties in 2010 using the Manifesto Project data. The far right scores lower on support for redistribution through welfare compared to the center-left and center-right, which is inconsistent with the support for redistribution hypothesis.

Xenophobia Economic shocks may also increase xenophobic attitudes. Far right populists tend to use nativist and xenophobic rhetoric, which may have increased appeal during times of economic distress. To understand whether foreign currency debt exposure increased support for the far right by kindling xenophobic preferences, we examine attitudes toward refugees captured by the 2016 referendum on EU migrant quotas. The referendum was initiated by the Fidesz government, and both Fidesz and Jobbik campaigned aggressively against the migrant quotas.[35] Opposition parties, on the other hand, campaigned against participation in the referendum, and voter turnout fell short of the 50 percent threshold required for the referendum outcome to be binding. This resulted in a 97 percent of votes against the EU quota, with a turnout of 44 percent.

In Table A.6, we investigate how foreign currency debt exposure impacted on the 2016 referendum. The table shows that turnout was lower in areas with higher exposure to FC debt in September 2008. Moreover, the share of "yes" votes, indicating support for the EU's migrant resettlement plan, was slightly higher in high FCS areas. While we cannot observe the pre-crisis response to this question, this evidence does suggest that increased xenophobia was not a key channel through which FC exposure translated into far-right support. Instead, this suggests that individuals who voted for Jobbik because of their exposure to foreign currency debt may be single-issue voters, voting for Jobbik primarily in support of their debtor-friendly policies. More broadly, some far right voters may vote for the far right because they support a particular aspect of a that party's platform, while ignoring the party's toxic messages on other topics.

[34] Rudas (2010) also finds that far right voters are more likely to have other assets compared to voters of other parties.

[35] The referendum question was: "Do you want the European Union to impose compulsory introduction of non-Hungarian citizens to Hungary without the consent of the National Assembly?"

6 Conclusion

We study the effect of the recent financial crisis on political preferences using a natural experiment in Hungary. Our empirical framework uses detailed zip code level data and exploits variation the prevalence of foreign currency household loans around the sharp depreciation of the Hungarian forint. We find that the vote share of the populist far-right increased significantly more in zip codes with greater exposure to household foreign currency debt. This result is highly robust and is corroborated by survey data on debtors and far-right voters. The shock to debt burdens of foreign currency borrowers explains 20 percent of the overall increase in the far right vote share. We present evidence that this result is consistent with the creditor-debtor conflict hypothesis for political polarization after financial crises. Other prominent hypotheses, such as increased inequality or declining trust in political institutions, are less compelling explanations for the rise of the far right in this context.

An important implication of our paper is that increased financial distress as a consequence of risky lending not only affects the real economy; it can also influence political outcomes. Even when extremist parties are not part of government, they can shape policymaking indirectly by setting the agenda (Minkenberg, 2001) and exerting influence on the strategy of moderate parties (Guiso et al., 2017; Abou-Chadi and Krause, 2018), which we saw in the populist turn of Fidesz in Hungary. Therefore, even moderate electoral success of populist parties can have a profound effect. As a result, interventions in credit markets during a crisis may be needed to mitigate political polarization, beyond traditional motivations based on inefficient debt overhang and stimulating aggregate demand (Bolton and Rosenthal, 2002; Mian and Sufi, 2015).

A discussion about external validity and a broader interpretation of our results is warranted. Though we use a natural experiment from Hungary, the change of political preferences in Europe and the U.S. after the outbreak of the crisis suggests that our results might be more general. While foreign currency lending was prevalent mainly in Central and Eastern Europe, household financial distress and conflicts between debtors and creditors were widespread. For example, other European far-right and far-left populist parties, such as the Law and Justice Party in Poland and Podemos in Spain, have evoked distressed debtors in their campaign rhetoric and proposals.

More generally, our results suggest that personal economic distress can be an important factor in explaining increased support for far-right populism, in addition to social or cultural factors. Financial distress may be particularly powerful in engendering support for populist parties when the hardship is perceived to be unfair. Future research should seek to understand whether redistributive policies that target indebted households, or households economic dis-

tress more generally, can moderate the electoral success of populist parties. As Rodrik (2018) suggests, "some economic populism may in fact be the only way to forestall its much more dangerous cousin, political populism."

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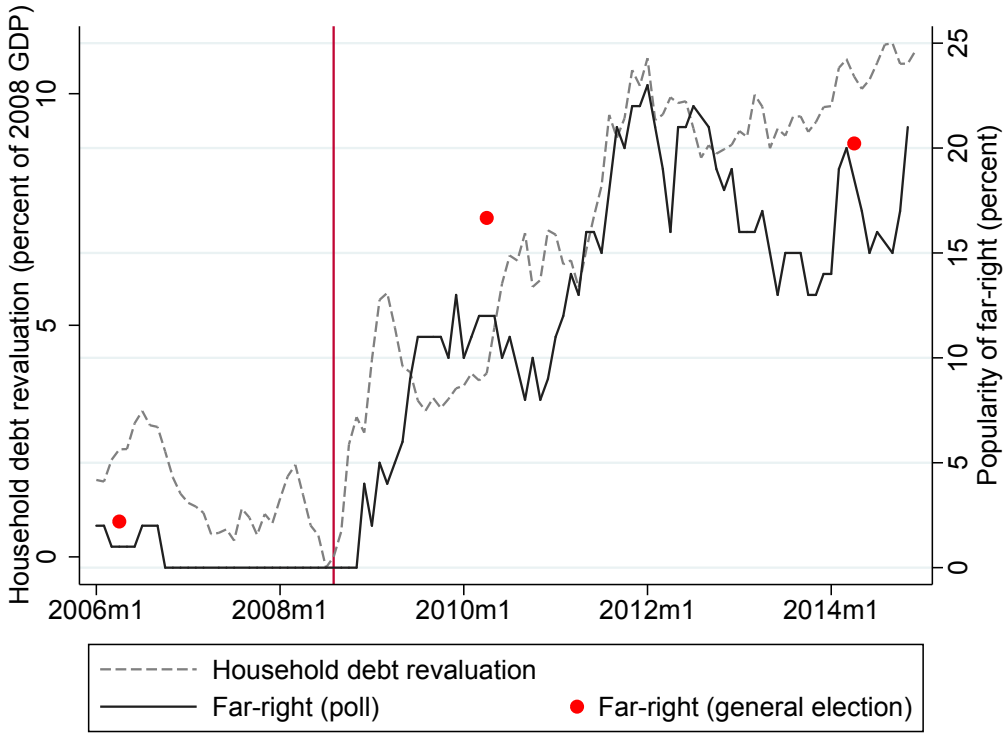
Figures

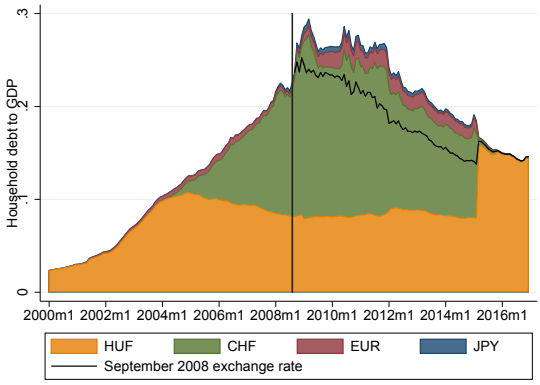
Figure 1: Household debt revaluation and support for the far-right



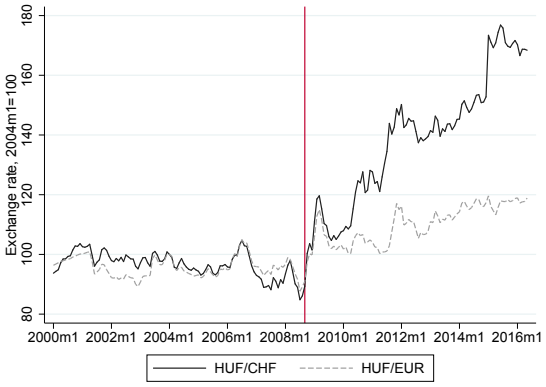
Note: This figure shows the increase in household debt burdens induced by the exchange rate depreciation (dashed line) and the popularity of far-right based on poll data (solid line) and Parliamentary election data (dots). The household debt revaluation is calculated as the increase in 2008 household debt induced by the exchange rate depreciation, relative to 2008 GDP. 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, the month prior to the exchange rate depreciation.

Figure 2: Housing debt expansion, exchange rate dynamics, and household default rates

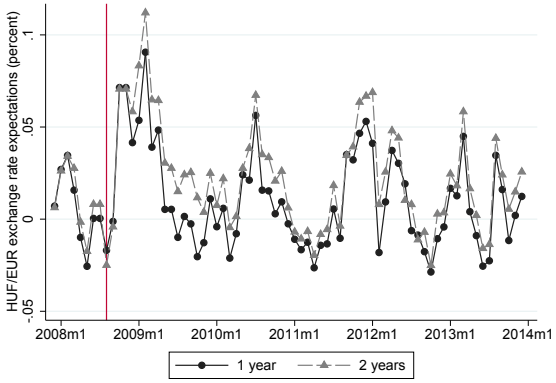
(a) Housing debt



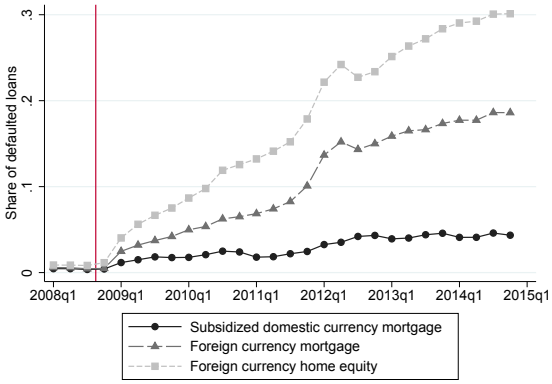
(b) Exchange rates



(c) Exchange rate expectations

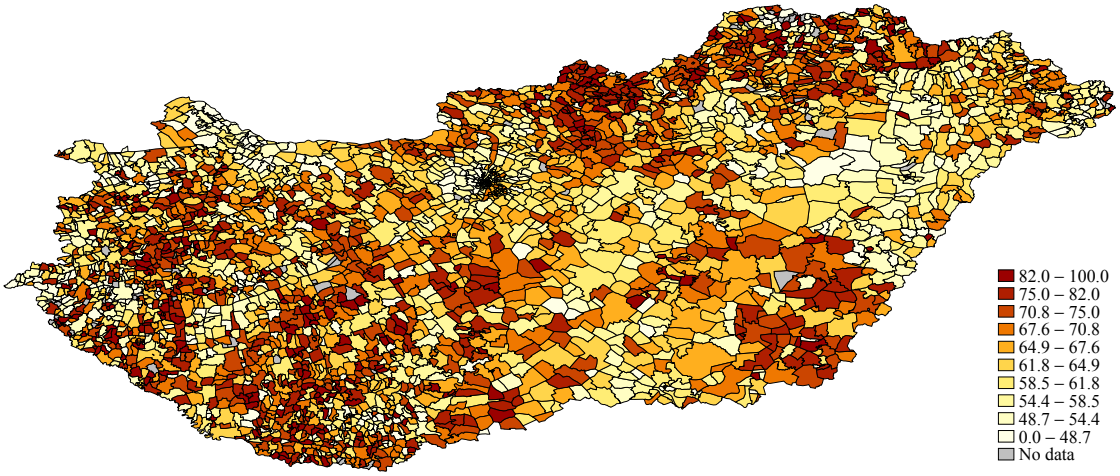


(d) Default rate by currency



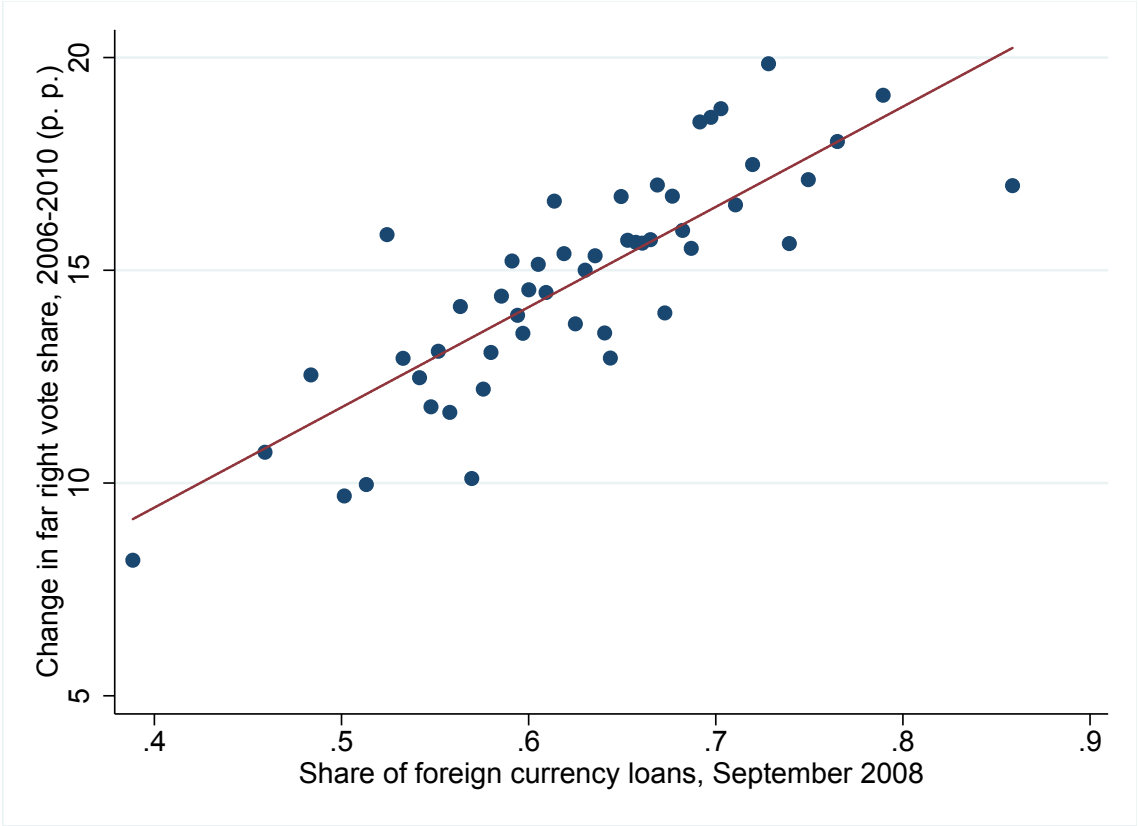
Notes: Panel (a) depicts housing debt relative to GDP by currency denomination in local currency. The solid line plots the counterfactual dead level if exchange rates has remained at their September 2008 values. Panel (b) shows the HUF/EUR and HUF/CHF exchange rates relative to January 2004. An increase in the exchange rate represents a depreciation of the Hungarian forint (HUF). Panel (c) plots the expected exchange rate depreciation based on Consensus Economics forecasts at 1 (solid line) and 2 year (dashed line) horizons. Positive values indicate an expected depreciation of the HUF. Panel (d) plots 90 days delinquency rates on housing loans by currency denomination and loan type.

Figure 3: Share of foreign currency loans in September 2008



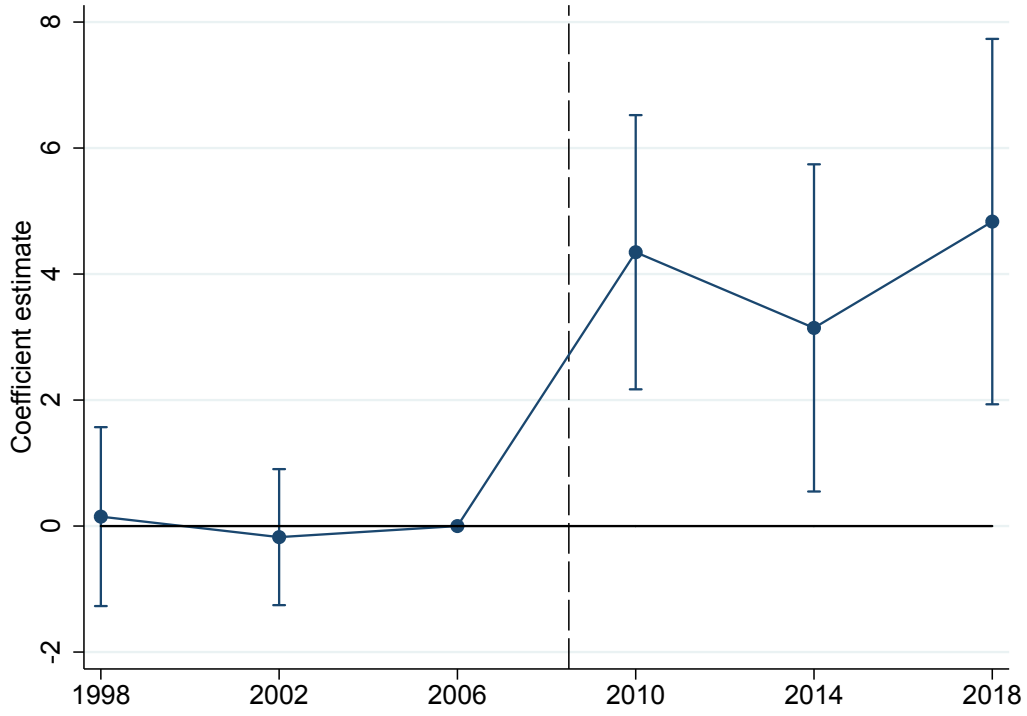
Note: This figure shows a zip code level choropleth map of the share of foreign currency denominated mortgage and home equity loans in September 2008, FCS. The shading represents the deciles of the foreign currency loan share.

Figure 4: Foreign currency loan share and the rise in the far-right vote share from 2006 to 2010



Note: This figure shows binned bivariate means of the zip code level household foreign currency loan share in September 2008 and the change in the zip code level far-right vote share from 2006 to 2010.

Figure 5: Effect of foreign currency share of loans on far right vote share

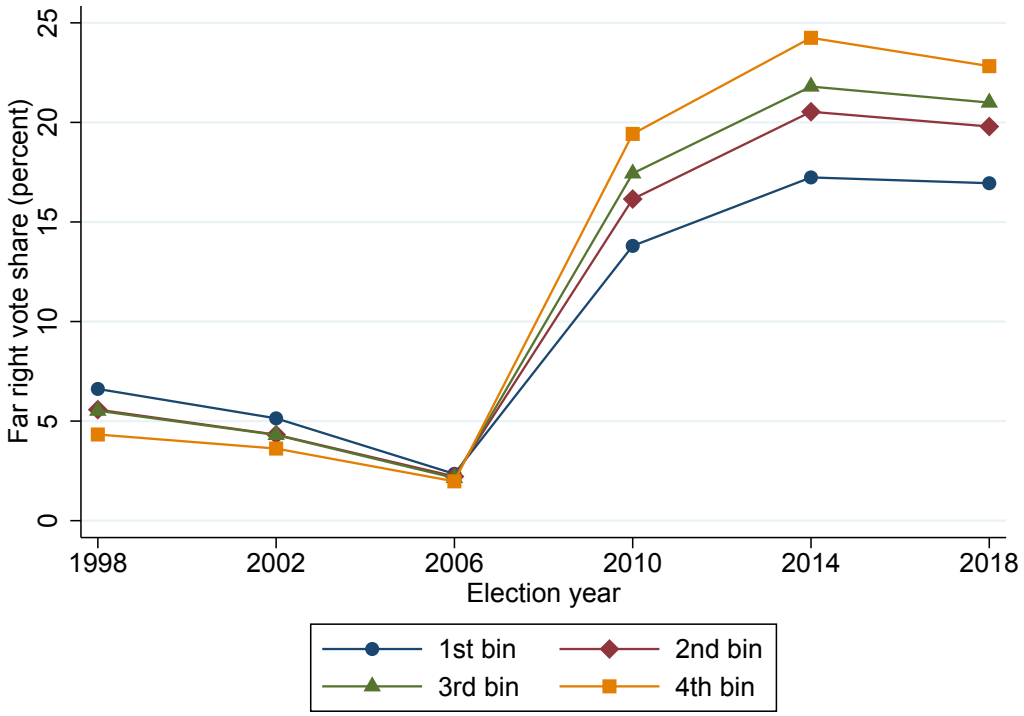


Notes: This figure shows the dynamic effect of the zip code foreign currency share on the far right vote share for parliamentary elections from 1998 to 2018. The figure plots the sequence of estimates $\{\hat{\beta}_y\}$ from the following regression:

$$FarRightShare_{it} = \sum_{y \neq 2006} \beta_y (FCS_i \times Year_y) + \alpha_i + \delta_t + \eta_{ct} + X_{it}\Gamma + \varepsilon_{it}.$$

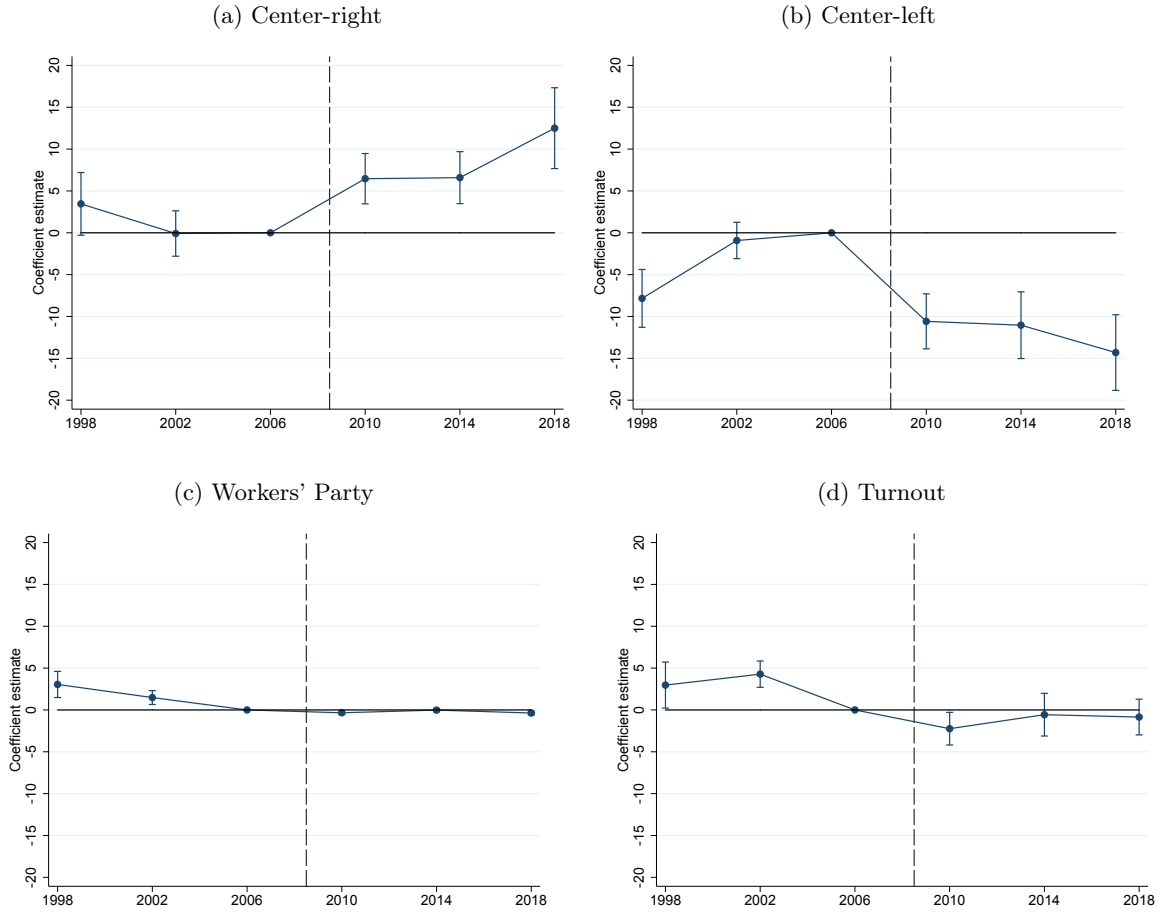
Error bars represent 95% confidence intervals from standard errors clustered at the subregion level (175 units).

Figure 6: Evolution of the far right vote share across quartiles of foreign currency debt exposure



Notes: This figure presents the average far right vote share in each quartile of foreign currency debt exposure. Far right vote shares are from parliamentary elections from 1998 to 2018. Specifically, we sort zip codes into four equal population bins by the foreign currency loan share, FCS_i, and compute the average far right vote share in each bin for parliamentary elections from 1998 to 2018.

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



Notes: This figure shows the dynamic effect of the zip code foreign currency share on vote shares for other blocs and on turn-out for Hungarian parliamentary elections from 1998 to 2018. Specifically, the figure plots the sequence of estimates $\{\hat{\beta}_y\}$ from estimating equation (2) for other political blocs and turnout. Error bars represent 95% confidence intervals from standard errors clustered at the subregion level (175 units).

Tables

Table 1: Election results and turnout

Election year	Far right	Center right	Center left	Far left	Green	Turnout
1998	5.47	47.74	40.49	4.08	-	56.26
2002	4.37	41.82	47.62	2.16	-	70.53
2006	2.20	42.03	49.71	0.41	-	67.83
2010	16.67	52.73	19.30	0.11	7.48	64.38
2014	20.69	43.55	26.21	0.57	5.47	61.24
2018	19.80	47.36	17.95	0.28	7.31	70.22

Notes: This table reports vote shares received on party lists at parliamentary elections from 1998 to 2018, as well as turnout.

Table 2: Observable characteristics of foreign currency borrowers in survey data

	FC mean/sd	LC mean/sd	Rest mean/sd	FC-LC difference b/t	Borrower-nonborr. difference b/t
Primary education	0.13	0.20	0.28	-0.07***	-0.12***
	(0.33)	(0.40)	(0.45)	(-4.76)	(-13.31)
High school /vocational	0.67	0.63	0.57	0.04*	0.09***
	(0.47)	(0.48)	(0.50)	(2.01)	(7.79)
College education	0.20	0.17	0.16	0.03*	0.03***
	(0.40)	(0.38)	(0.36)	(2.09)	(3.82)
Low Income	0.24	0.31	0.37	-0.07***	-0.10***
	(0.43)	(0.46)	(0.48)	(-4.05)	(-9.38)
Medium Income	0.26	0.30	0.25	-0.03	0.03*
	(0.44)	(0.46)	(0.43)	(-1.88)	(2.42)
High Income	0.32	0.26	0.19	0.07***	0.10***
	(0.47)	(0.44)	(0.40)	(3.68)	(9.81)
Age	41.77	43.21	50.11	-1.44**	-7.77***
	(11.44)	(12.95)	(18.10)	(-2.93)	(-22.77)
Have children	0.49	0.41	0.21	0.08***	0.25***
	(0.50)	(0.49)	(0.40)	(3.81)	(22.63)
Size of Household	3.10	2.86	2.39	0.24***	0.61***
	(1.22)	(1.24)	(1.23)	(4.95)	(20.94)
Employed	0.69	0.61	0.42	0.08***	0.24***
	(0.46)	(0.49)	(0.49)	(4.46)	(21.09)
Retired	0.13	0.20	0.39	-0.06***	-0.24***
	(0.34)	(0.40)	(0.49)	(-4.16)	(-24.14)
Self employed	0.05	0.04	0.03	0.01	0.02***
	(0.22)	(0.19)	(0.17)	(1.72)	(3.60)
Able to save money	0.12	0.12	0.14	-0.00	-0.03*
	(0.32)	(0.33)	(0.35)	(-0.21)	(-2.51)
Settlement size $<$ 5,000	0.32	0.33	0.29	-0.00	0.03**
	(0.47)	(0.47)	(0.46)	(-0.14)	(2.75)
Settlement size 5,000-100,000	0.46	0.42	0.40	0.04*	0.05***
	(0.50)	(0.49)	(0.49)	(2.15)	(4.06)
Settlement size $>$ 100,000	0.22	0.26	0.31	-0.04*	-0.08***
	(0.41)	(0.44)	(0.46)	(-2.34)	(-7.53)
Observations	1569	1061	5389	2630	8019

Notes: This table shows the average characteristics of local currency borrowers, foreign currency borrowers, and individuals without a loan. The data is from the Austrian Central Bank's Euro Survey Project. Foreign currency borrowers are individuals who report having a foreign currency loan. Local currency borrowers are individuals who report having only local currency debt.
+, *, ** indicate significant differences in means at the 0.1, 0.05 and 0.01 levels, respectively.

Table 3: Characteristics of far right voters in survey data

	Far-right mean/sd	Center-right mean/sd	Center-left mean/sd	Other mean/sd
Primary	0.21	0.31	0.25	0.17
	(0.41)	(0.46)	(0.43)	(0.38)
Vocational	0.45	0.29	0.32	0.27
	(0.50)	(0.46)	(0.47)	(0.45)
High school	0.27	0.27	0.31	0.36
	(0.44)	(0.44)	(0.46)	(0.48)
College	0.07	0.12	0.13	0.20
	(0.26)	(0.33)	(0.33)	(0.41)
HH income in 2009 (1000 HUF)	2408.51	2410.09	2496.71	2718.35
	(1167.16)	(1284.35)	(1356.15)	(1446.71)
Employed	0.54	0.45	0.34	0.49
	(0.50)	(0.50)	(0.48)	(0.50)
Retired/student	0.35	0.43	0.59	0.37
	(0.48)	(0.50)	(0.49)	(0.49)
HH size	3.14	2.98	2.64	2.92
	(1.46)	(1.59)	(1.36)	(1.28)
Loan	0.51	0.40	0.37	0.49
	(0.50)	(0.49)	(0.48)	(0.50)
FC loan	0.30	0.22	0.16	0.23
	(0.46)	(0.41)	(0.36)	(0.42)
LC loan	0.21	0.18	0.22	0.27
	(0.41)	(0.38)	(0.41)	(0.45)
Observations	191	1197	359	86

Notes: This table shows the average characteristics of far right voters and voters for other blocs, as reported in the February 2010 Tarki Monitor survey. Foreign currency borrowers are individuals who report having positive loan payments in foreign currency. Local currency borrowers are individuals who report having positive loan payments, but zero foreign currency loan payments.
+, *, ** indicate significant differences in means at the 0.1, 0.05 and 0.01 levels, respectively.

Table 4: Descriptive statistics

	N	Mean	SD	p10	p90
Main variables					
FC share, FCS	3475	.63	.089	.52	.73
FC debt share	3475	.66	.094	.54	.77
FC loans per capita	3475	.057	.019	.035	.079
LC loans per capita	3475	.035	.015	.019	.05
Debt revaluation to income	3475	.087	.032	.052	.13
	N	Mean	SD	p10	p90
Control variables					
Debt to income	3475	.59	.21	.36	.86
Per capita number of loans, 2008	3475	.089	.03	.054	.12
Vocational share	3475	.2	.055	.12	.26
High school share	3475	.27	.068	.17	.35
College share	3475	.15	.095	.053	.27
Log per capita income	3475	7.7	2.1	6.2	12
Log number of eligible voters, 2006	3475	9.4	1.8	6.9	12
Unemployment rate, 2007	3475	.073	.058	.023	.15
Share of people age 18-29	3475	.16	.014	.15	.18
Share of people age 59+	3475	.22	.033	.18	.25
	N	Mean	SD	p10	p90
Dependent variables					
Vote share, far-right, 2010	3475	15	7.3	8	26
Vote share, center-right, 2010	3475	50	13	31	65
Vote share, center-left, 2010	3475	17	6.4	8.9	26
Vote share, far-left, 2010	3475	.11	.4	0	.28
Turnout, 2010	3475	64	6.1	56	72

Notes: This table presents descriptive statistics for the main zip code level variables used in the analysis. Observations are weighted by the number of eligible voters in 2006.

Table 5: Correlates of the zip code level foreign currency share of loans

	Coefficient	Standard error	N	R^2
Debt to income, 2008	-0.063**	0.0099	3475	0.040
Per capita number of loans, 2008	-0.083	0.13	3475	0.002
Vocational share	0.59**	0.047	3475	0.140
High school share	-0.38**	0.044	3475	0.084
College share	-0.42**	0.045	3475	0.200
Log per capita income, 2007	-0.011**	0.0019	3475	0.063
Log number of eligible voters, 2006	-0.013**	0.002	3475	0.073
Unemployment, 2007	0.42**	0.067	3475	0.076
Share of people age 18-29	0.84**	0.33	3475	0.017
Share of people age 59+	0.15	0.21	3475	0.003
Debt per capita, 2004	-0.75**	0.053	3475	0.320
Employment share of exporters, 2007	-0.068**	0.015	3475	0.025
Employment share of manufacturing, 2007	0.012	0.021	3475	0.001
Employment share of firms with FC debt, 2007	0.0095	0.014	3475	0.000
Corporate foreign currency share of debt	-0.056**	0.018	2867	0.023

Notes: Each row in this table reports a bivariate regression where the dependent variable is foreign currency share of loans in September 2008 and the independent variable is listed in the first column. The regressions are weighted by the number of eligible voters in 2006. Standard errors are clustered at the subregion level (175 units).
+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 6: Effect of household foreign currency exposure on the far-right vote share

	(1)	(2)	(3)	(4)	(5)
FC share×Post	18.25**	5.171**	4.397**	4.187**	4.567**
	(2.579)	(1.279)	(1.174)	(1.079)	(1.372)
Vocational share×Post		24.48**	16.78**	19.72**	13.59*
		(6.160)	(6.177)	(5.217)	(6.612)
High school share×Post		4.003	-15.10**	-1.702	-12.86*
		(4.693)	(5.273)	(3.141)	(5.814)
College share×Post		-23.08**	-28.30**	-19.80**	-21.99**
		(6.122)	(6.023)	(2.412)	(5.925)
Log income, 07×Post			-0.258	0.0199	-0.312
			(0.208)	(0.222)	(0.228)
Unemp. rate, 07×Post			-19.02**	-16.65**	-16.79**
			(5.099)	(4.876)	(5.903)
Young share, 07×Post			15.08+	7.113	15.47
			(8.965)	(7.664)	(11.08)
Old share, 07×Post			-10.21*	-20.96**	-9.331*
			(4.009)	(4.250)	(4.636)
Election FE	✓	✓	✓	✓	✓
Zip code FE	✓	✓	✓	✓	✓
County-election FE	✓	✓	✓		✓
Controls			✓	✓	✓
Subregion-election FE				✓	
Zip code linear trend					✓
R^2	0.891	0.910	0.913	0.933	0.969
Observations	13900	13900	13900	13900	13900

Notes: This table presents regression estimates of equation (1) at the zip code level using election years from 1998 to 2010. Post is a variable that equals 1 in the 2010 election and zero in previous elections. FC share is the share of foreign currency loans in total housing loans in a zip code. Unreported controls are the number of loans in 2008 per eligible number of voters, debt-to-income in September 2008, and log settlement population. 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 7: Robustness to alternative specifications

	OLS			Propensity score matched sample	ERP adjustment: 3-banks	ERP adjustment: Refinance
	(1)	(2)	(3)	(4)	(5)	(6)
FC debt share×Post	3.648**					
	(1.073)					
FC loans per capita×Post		15.19**				
		(4.331)				
LC loans per capita×Post		-19.34**				
		(6.181)				
Debt revaluation to income×Post			15.99*			
			(6.887)			
FC share×Post				5.439**	3.485**	4.036**
				(1.362)	(1.211)	(1.349)
Election FE	✓	✓	✓	✓	✓	✓
Zip code FE	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓
County-election FE	✓	✓	✓	✓	✓	✓
Subregion-election FE						
R^2	0.913	0.913	0.913	0.913	0.913	0.913
Observations	13900	13956	13956	9676	13828	13908

Notes: This table shows the results of zip code level regression where the dependent variable is the share of far-right votes. Controls include the number of loans in 2008 per eligible number of voters, debt-to-income in September 2008, per capita income in 2008, education shares, age shares, and log settlement population. All controls are interacted with election-year fixed effects. Regressions are weighted by the number of eligible voters in 2006. Standard errors are clustered at the subregion level (175 units). +, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 8: Foreign currency debt exposure and far right support in survey data

	Pr(Far right vote)					
	(1)	(2)	(3)	(4)	(5)	(6)
Loan	0.0463**	0.0360*				
	(0.0178)	(0.0181)				
FC loan			0.0618**	0.0543*		
			(0.0228)	(0.0235)		
LC loan			0.0286	0.0164		
			(0.0224)	(0.0225)		
FC payments (1000 HUF)					0.00111*	0.00109*
					(0.000476)	(0.000484)
LC payments (1000 HUF)					0.000437	0.000318
					(0.000324)	(0.000340)
Vocational		0.0635**		0.0607**		0.0616**
		(0.0224)		(0.0225)		(0.0225)
High school		0.0356		0.0303		0.0307
		(0.0252)		(0.0253)		(0.0253)
College		-0.00824		-0.0137		-0.0188
		(0.0278)		(0.0278)		(0.0280)
Female		-0.0403*		-0.0405*		-0.0426*
		(0.0166)		(0.0166)		(0.0167)
Log HH income		-0.00995		-0.00971		-0.0180
		(0.0221)		(0.0221)		(0.0217)
HH size		0.0104		0.0104		0.0124
		(0.00766)		(0.00765)		(0.00771)
Constant	0.0991**	0.140	0.0991**	0.141	0.105**	0.204
	(0.0108)	(0.156)	(0.0108)	(0.157)	(0.00957)	(0.153)
Settlement FE		✓		✓		✓
Observations	1833	1833	1833	1833	1820	1820

Notes: This table presents linear probability model estimates of the intention to vote for the far right based on survey data from the Tarki Monitor. Variables are measured in February 2010, two months prior to the April 2010 election. Robust standard errors in parentheses.
+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table 9: Robustness to persistent extremist attitudes and other alternative explanations

Panel A: Persistent Extremist Attitudes

	1939 far right vote share		Δ_{06-10} Far right vote share				Far right vote share
	(1) Only far right list	(2) Whole sample	(3) Only far right list	(4) Whole sample	(5) Only far right list	(6) Whole sample	(7) Far left vote share
FC share	-5.420	-25.45^{+}			27.22**	11.48**	
	(10.82)	(13.88)			(8.144)	(4.150)	
Far right vote share 1939			0.0225	-0.0471	0.0854	-0.223^{+}	
			(0.0188)	(0.0330)	(0.0866)	(0.116)	
Far right vote share 1939×FC share					-0.0893	0.274^{+}	
					(0.128)	(0.148)	
FC share×Post							4.014**
							(1.186)
Far left vote share in 1998×Post							0.167**
							(0.0468)
Election and Zip code FE							✓
Controls							✓
County-election FE							✓
R^2	0.000671	0.0112	0.00349	0.0218	0.0963	0.0774	0.924
Observations	1676	2876	1680	2890	1676	2876	13900

Panel B: Alternative explanations

	Far right vote share						
	(1) Minority	(2) Financial literacy	(3) Local labor market	(4) Local labor market	(5) House Prices	(6) Campaign spending	(7) All controls
FC share×Post	4.446**	3.997**	4.742**	4.354**	4.185**	4.511**	4.145**
	(1.195)	(1.269)	(1.229)	(1.210)	(1.161)	(1.171)	(1.321)
Share of local minorities×Post	-6.651**						-5.917**
	(1.631)						(1.613)
Share of immigrants×Post	-31.07*						-39.58*
	(15.37)						(16.18)
Share of Roma population×Post	-0.470						0.810
	(3.756)						(3.934)
Pre-crisis default rate×Post		17.15*					15.56^{+}
		(7.750)					(8.252)
Share of home equity FC loans×Post		3.927*					3.899*
		(1.558)					(1.612)
Share of firms with FC debt, 07 × Post			0.367				0.336
			(0.626)				(0.604)
Change in unemployment, 08-10 × Post				1.309			-3.143
				(8.699)			(8.946)
Change in house prices, 08-10 × Post					-0.0297*		-0.0287*
					(0.0127)		(0.0121)
Far left vote share in 1998×Post							0.168**
							(0.0462)
Election and Zip code FE	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓
County-election FE	✓	✓	✓	✓	✓	✓	✓
Change in unemployment				✓			✓
Industry employment shares in 2007			✓				✓
Campaign expenditures, 2010						✓	✓
R^2	0.924	0.924	0.925	0.923	0.924	0.924	0.928
Observations	13900	13760	13060	13880	13900	13900	12960

Notes: 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 10: Directly and indirectly affected voters and the far right vote share

	Δ_{08-10} Unemp. rate	Δ_{08-10} Default	Δ_{06-10} Far right vote share				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
FC share	0.0247**	0.0500**					
	(0.00531)	(0.00496)					
Δ_{08-10} Default			12.17**	11.94**			
			(3.892)	(3.943)			
Δ_{08-10} Unemp. rate				3.443	3.583	4.109	3.510
				(8.902)	(8.914)	(8.880)	(8.904)
Δ_{08-10} Default, FC					8.917**		8.773**
					(3.039)		(3.034)
Δ_{08-10} Default, LC						3.013	2.327
						(2.955)	(2.958)
Controls	✓	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓	✓
R^2	0.216	0.230	0.686	0.686	0.686	0.685	0.686
Observations	3470	3474	3473	3468	3468	3468	3468

Notes: Columns 1 and 2 regressions of the rise in the local unemployment and household default rates on local foreign currency debt exposure. Columns 3-7 estimate the relation between various variables and the change in the far right vote share from 2006 to 2010. Controls include the number of loans in 2008 per eligible number of voters, debt-to-income in September 2008, per capita income in 2008, education shares, age shares, and log settlement population. 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: Effect of foreign currency exposure on other parties' vote shares, turnout and invalid votes

	Center right	Center left	Far left	Green		Turnout		Invalid votes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FC share×Post	4.355**	-7.258**	-1.824**			-4.547**	-1.338	0.0771
	(1.192)	(1.246)	(0.422)			(0.866)	(1.827)	(0.151)
FC share				-0.369	-1.402**			
				(0.618)	(0.495)			
Election FE	✓	✓	✓			✓	✓	✓
Zip code FE	✓	✓	✓			✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓
County-election FE	✓	✓	✓			✓	✓	✓
County FE				✓				
Political preferences in 2006					✓			
Zip code specific trend							✓	
R^2	0.881	0.950	0.763	0.835	0.856	0.890	0.953	0.640
Observations	13900	13900	13900	3475	3475	13872	13872	13872

Notes: This table shows the results of zip code level regressions where the dependent variable is the vote share of various political parties. Controls include the number of loans in 2008 per eligible number of voters, debt-to-income in September 2008, per capita income in 2008, education shares, age shares, and log population. Controls are interacted with election years. 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.

A Appendix

Table A.1: Characteristics of foreign currency borrowers, local currency borrowers, and non-borrowers in Tarki Monitor survey data

	FC mean/sd	LC mean/sd	Non-borr. mean/sd	FC-LC difference b/t	Borrower-non-borr. difference b/t
Primary	0.18	0.33	0.31	-0.15**	-0.06**
	(0.38)	(0.47)	(0.46)	(-4.41)	(-2.76)
Vocational	0.32	0.35	0.30	-0.03	0.03
	(0.47)	(0.48)	(0.46)	(-0.77)	(1.27)
High school	0.34	0.21	0.28	0.13**	0.00
	(0.48)	(0.41)	(0.45)	(3.86)	(0.03)
College	0.16	0.11	0.11	0.05+	0.03+
	(0.37)	(0.32)	(0.31)	(1.87)	(1.86)
HH income in 2009 (1000 HUF)	2778.53	2703.11	2228.05	75.43	515.34**
	(1365.64)	(1377.13)	(1191.66)	(0.70)	(7.84)
Employed	0.60	0.51	0.36	0.08*	0.19**
	(0.49)	(0.50)	(0.48)	(2.15)	(7.64)
Retired/student	0.30	0.37	0.53	-0.07+	-0.23**
	(0.46)	(0.48)	(0.50)	(-1.89)	(-8.42)
Age	41.43	44.59	53.34	-3.16**	-10.44**
	(13.38)	(15.32)	(18.49)	(-2.85)	(-12.89)
HH size	3.40	3.41	2.62	-0.01	0.78**
	(1.35)	(1.60)	(1.48)	(-0.05)	(10.07)
Observations	365	331	1137	696	1833

Notes: This table presents the average characteristics of foreign currency borrowers, local currency borrowers, and non-borrowers from the February 2010 Tarki Monitor survey. Foreign currency borrowers are individuals who report having positive loan payments in foreign currency. Local currency borrowers are individuals who report having positive loan payments, but zero foreign currency loan payments. Non-borrowers are individuals who report having no loan payments. +, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table A.2: Correlation between debt revaluation to income shock and zip code level observables

	Coefficient	Standard error	N	R^2
Debt to income	0.15**	0.0027	3475	0.860
Per capita number of loans, 2008	0.65**	0.061	3475	0.500
Vocational share	0.051	0.062	3475	0.004
High school share	0.095^{+}	0.053	3475	0.020
College share	-0.0086	0.05	3475	0.000
Log per capita income, 2007	-0.002**	0.00062	3475	0.008
Log number of eligible voters, 2006	0.0017	0.0017	3475	0.004
Unemployment, 2007	-0.15*	0.059	3475	0.035
Share of people age 18-29	-0.19	0.18	3475	0.003
Share of people age 59+	-0.35**	0.051	3475	0.066
Debt per capita, 2004	0.24**	0.034	3475	0.130
Employment share of exporters, 2007	-0.0012	0.0077	3475	0.000
Employment share of manufacturing, 2007	0.0075	0.0089	3475	0.001
Employment share of firms with FC debt, 2007	-0.0053	0.0077	3475	0.000
Corporate foreign currency share of debt	0.0004	0.01	2867	0.000

Notes: This table presents bivariate regressions the household debt revaluation to income shock on zip code level covariates. The household debt revaluation to income measure is computed as the increase in zip code housing debt induced by the exchange rate depreciation between September 2008 and April 2010, relative to 2008 zip code level income. 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 A.3: Balance test for matched sample

	Above median average	Below median average	Difference	t stat.	Normalized difference
Debt to income, 2008	0.841	0.924	-0.082	-1.61	-0.20
Per capita number of loans, 2008	0.146	0.149	-0.003	-0.54	-0.04
Vocational share	0.213	0.214	-0.0006	-0.21	-0.01
High school share	0.258	0.258	-0.0003	-0.04	-0.003
College share	0.118	0.118	0.0006	0.10	0.006
Log per capita income, 2007	7.39	7.43	-0.044	-0.39	-0.01
Log number of eligible voters, 2006	8.94	8.84	0.10	0.57	0.04
Unemployment, 2007	0.083	0.079	0.004	0.76	0.05
Share of people age 18-29	0.164	0.163	0.001	1.02	0.06
Share of people age 59+	0.218	0.219	-0.0003	-0.14	-0.006
Empl. share of exporters, 2007	0.326	0.343	-0.017	-0.97	-0.05
Empl. share of manuf., 2007	0.285	0.282	0.002	0.16	0.009
Empl. share of firms with FC debt, 2007	0.263	0.254	0.009	0.65	0.04
Corporate FC debt share	0.393	0.407	-0.014	-0.73	-0.04
Observations	1730	689	2419	2419	2419

Notes: This table presents covariate balance tests for the matched sample. The first two columns present averages for zip codes above and below the median FCS. Averages are weighted by the number of eligible voters in 2006. t-statistics for the difference are computed using standard errors clustered at the subregion level. The Normalized Difference is defined as $\frac{\bar{X}_1-\bar{X}_0}{\sqrt{V_1+V_0}}$), where X_ω (V_ω) is the sample average (variance) for the samples above and below the median, as defined in Imbens and Wooldridge (2009).

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

Table A.4: Effect of economic distress on change in the center right vote share

	Δ_{06-10} Center right vote share				
	(1)	(2)	(3)	(4)	(5)
Δ_{08-10} Default	8.520	8.438			
	(5.225)	(5.216)			
Δ_{08-10} Unemployment		0.808	1.133	1.135	0.947
		(7.151)	(7.162)	(7.169)	(7.161)
Δ_{08-10} Default, FC			3.120		2.754
			(3.826)		(3.840)
Δ_{08-10} Default, LC				6.137^{+}	5.922^{+}
				(3.188)	(3.172)
Controls	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓
R^2	0.260	0.260	0.259	0.260	0.260
Observations	3473	3468	3468	3468	3468

Notes: 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 A.5: Manifesto Project party positions

	Far right	Center right	Center left
Percent of vote	16.67	52.73	19.3
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

Notes: This table presents party positions from the Manifesto Project Database.

Table A.6: Foreign currency exposure and participation in the 2016 referendum on migrant quotas

	Turnout				Share of yes				Share of blank votes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
FC share	-13.35**	-12.03**	-6.647**	-7.728**	0.301	0.404*	0.0717	0.286+	-1.269*	-12.03**	-2.053**	-2.177*
	(2.647)	(3.022)	(2.041)	(2.084)	(0.188)	(0.178)	(0.158)	(0.163)	(0.641)	(3.022)	(0.784)	(0.893)
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
County FE	✓		✓		✓		✓		✓		✓	
Subregion FE		✓		✓		✓		✓		✓		✓
Political preferences in 2014			✓	✓			✓	✓			✓	✓
R^2	0.450	0.612	0.685	0.767	0.195	0.263	0.240	0.294	0.813	0.612	0.830	0.846
Observations	3380	3380	3380	3380	3380	3380	3380	3380	3380	3380	3380	3380

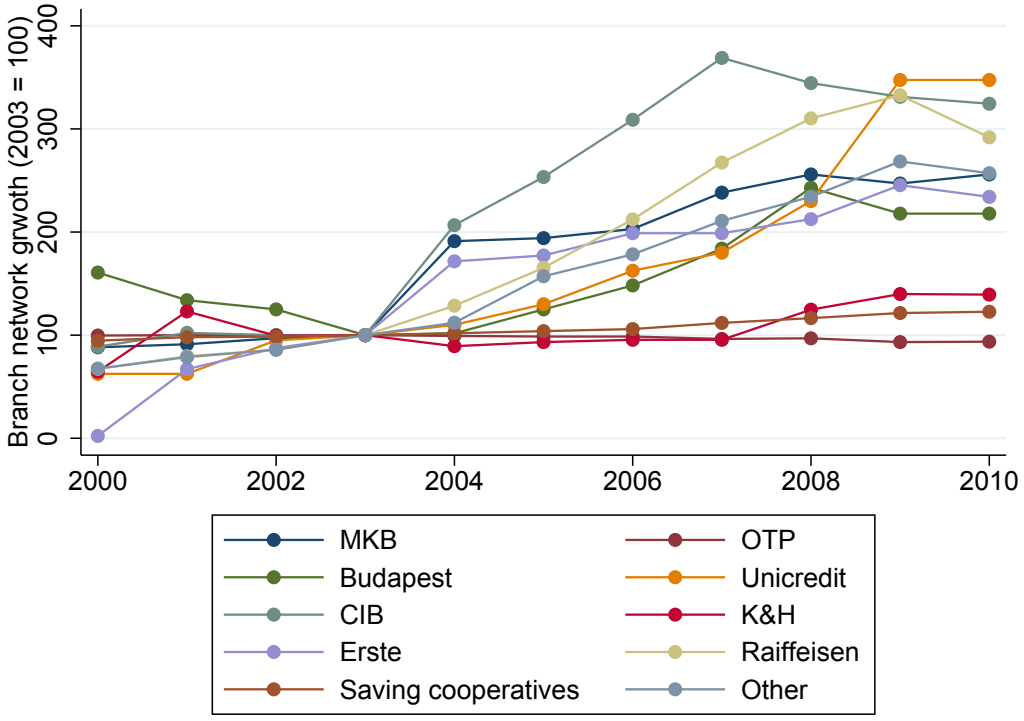
Notes: This table presents cross-sectional regressions of outcomes in the 2016 Hungarian referendum on European migrant quotas. The referendum question was: "Do you want the European Union to be able to mandate the obligatory resettlement of non-Hungarian citizens into Hungary even without the approval of the National Assembly?" Controls include the number of loans in 2008 per eligible number of voters, debt-to-income in September 2008, per capita income in 2008, education shares, age shares, and log settlement population.
+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Table A.7: FC debtors and election participation in survey data

	Pr(Voting in the April 2010 election)					
	(1)	(2)	(3)	(4)	(5)	(6)
Loan	0.00377	-0.00317				
	(0.0125)	(0.0135)				
FC loan			0.00136	-0.00966		
			(0.0157)	(0.0168)		
LC loan			0.00653	0.00381		
			(0.0156)	(0.0168)		
FC payments (1000 HUF)					0.000274	0.000158
					(0.000231)	(0.000275)
LC payments (1000 HUF)					0.000247*	0.000112
					(0.000120)	(0.000141)
Vocational		0.0280		0.0290		0.0279
		(0.0184)		(0.0184)		(0.0186)
High school		0.0366+		0.0384+		0.0364+
		(0.0197)		(0.0196)		(0.0199)
College		0.0775**		0.0794**		0.0768**
		(0.0220)		(0.0218)		(0.0221)
Female		-0.00980		-0.00970		-0.00920
		(0.0122)		(0.0122)		(0.0123)
Log HH income		0.0155		0.0154		0.0143
		(0.0184)		(0.0184)		(0.0187)
HH size		0.00171		0.00171		0.000904
		(0.00519)		(0.00519)		(0.00520)
Constant	0.932**	0.788**	0.932**	0.787**	0.929**	0.795**
	(0.00823)	(0.129)	(0.00823)	(0.129)	(0.00704)	(0.131)
Settlement FE		✓		✓		✓
Observations	1818	1818	1818	1818	1805	1805

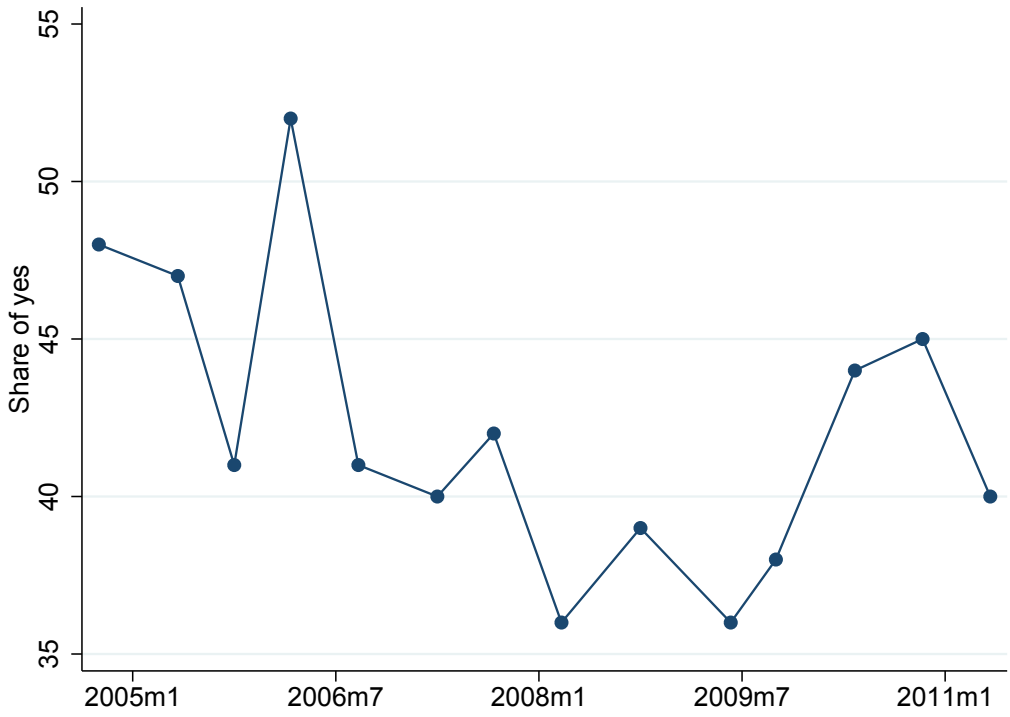
Notes: This table presents linear probability model estimates of the intention to participate in the April 2010 election using survey data from the Tarki Monitor. The table shows that debtors, and FC debtors in particular, do not state that they are less likely to participate in the election. Variables are measured in February 2010, two months prior to the April 2010 election. Robust standard errors in parentheses.
+, *, ** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively.

Figure A.1: Expansion in the branch network of foreign banks



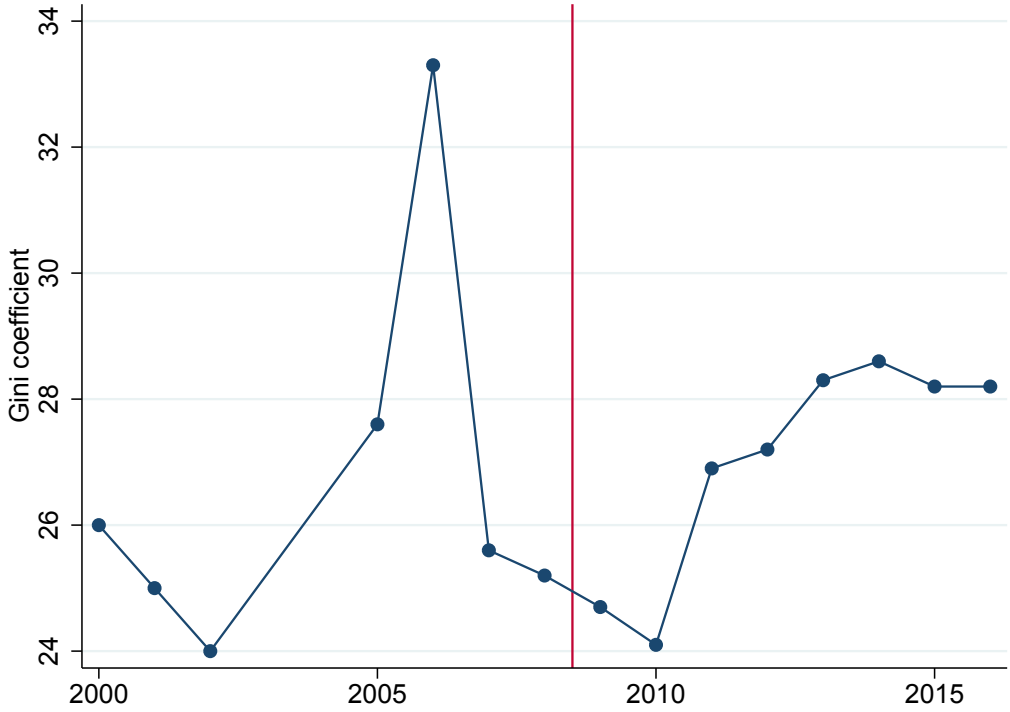
Note: This figure shows the growth in number of branches by bank.

Figure A.2: Share of people saying that Hungary benefited from EU membership



Note: This figure shows the aggregate share of people who say that Hungary benefited from the membership of EU from Eurobarometer.

Figure A.3: Income inequality in Hungary



Note: This figure shows the Gini coefficient for Hungary from Eurostat and World Bank.

B Data construction

B.1 Credit Register data

Outstanding amount and monthly payment

The household credit register database (KHR) was set up in spring 2012 and data collection started in April 2012. Therefore, data on outstanding debt is available from April 2012 onwards. For the preceding period, we construct outstanding debt at the loan level by assuming that the amortization schedule of mortgage and home equity loans in our sample follows an annuity. Note that this reconstruction only affects the foreign currency share of debt in 2008, not the fraction of loans in foreign currency. For ease of computation, we allow for monthly changes in the interest rate. Due to the large number of delinquent loans during the crisis, we calculate the annuities forward from origination until 2012, instead backwards from actual balances in 2012. The default rate was close to zero before the crisis, so this approximation is reasonable and allows us to capture households' local and foreign currency debt positions before the crisis. 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 maturity, and E_t is the monthly average exchange rate (which equals 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 outstanding debt for each loan in each month from origination until April 2012.

Interest rate data We use detailed interest rate data to calculate outstanding debt. The National Bank of Hungary collects monthly average interest rate data at bank-month-currency-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, we use the average interest rate across banks. The credit register does not contain information on the interest rate fixed-rate period. Therefore, we use the less-than-1-year fixed-rate, which is the most common contract structure 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 (inflation, GDP, and policy rates in each currency) and then backcast the interest rates using these variables.

Banks report the market interest rates for the domestic currency loans but not the subsidized interest rates. As approximately 92 per cent of domestic currency mortgages outstanding in 2008 were subsidized, we need to determine the amount of subsidy. The subsidy program distinguished between asset and liability side subsidies (description of the subsidy program for the early period can be found in (Farkas et al., 2004)). The asset side subsidy was given to all banks, while the liability side subsidy was tied to mortgage bond financing. During this period only a few banks issued mortgage bonds. The subsidy was initially linked to the mortgage bond interest rates and subsequently to government bond interest rates.

Figure B.1 compares the official aggregate debt to the aggregate calculated based on the reconstructed data by currency denomination and loan type. In September 2008, prior to the start of the forint depreciation, the two match quite well. For domestic currency loans the aggregates are nearly identical in 2008:9, but for foreign currency loans, there is a 27 percent shortfall in the credit registry. This is almost entirely because of the Early Repayment Program, as the loans participating in the program are missing from our dataset. Therefore, we estimate participation in the program as a next step.

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

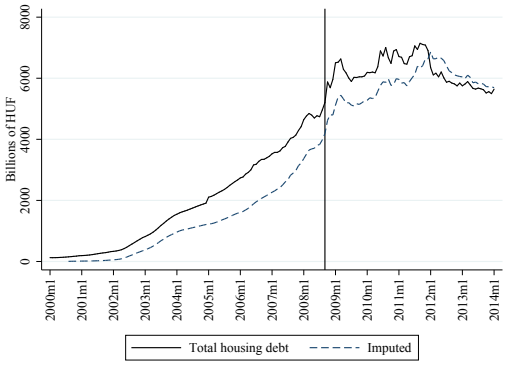
To ensure that our results are not biased by loans missing through the ERP, we use two approaches to estimate zip code level participation in the program. First, we estimate the zip code level participation rate in the program using a loan-level monthly panel database of three large banks with market share of approximately 25 percent. The database follows loans from origination, and contains detailed loan and borrower characteristics. We identify loans as being prepaid through the ERP if they disappear from the dataset during the program, between October 2011 and February 2012. We complement this data with aggregate statistics on participation rates by bank collected by the National Bank of Hungary.

With this information, we estimate the participation in zip code i using a shift-share approach:

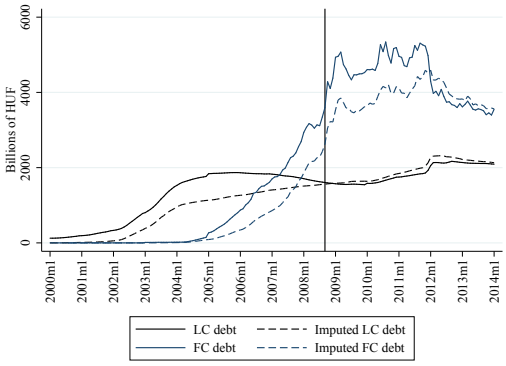
$$P_i = \sum_b TP_i^{3banks} \cdot (TP^b / TP^{3banks}) \cdot \alpha_{b,i}$$

Figure B.1: Comparing the KHR credit register to official aggregate debt statistics by loan type and currency

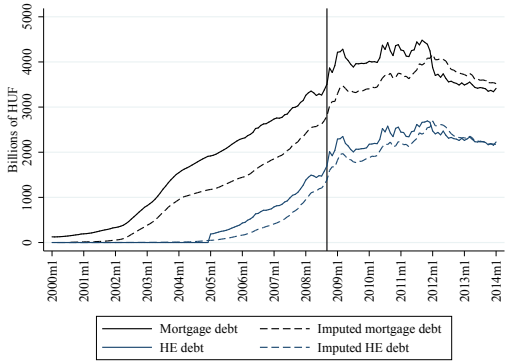
(a) Total housing debt



(b) Housing debt by currency



(c) Housing debt by type



Notes: This figure compares housing debt from aggregate statistics (financial accounts) to aggregate housing debt in KHR (credit register). Imputed debt refers to debt in the KHR. The vertical line represents September 2008.

where $\alpha_{b,i}$ is the market share of bank b in zip code i, TP^b is the aggregate participation rate of bank b, TP_i^{3banks} is the participation rate for loans held by the three banks in zip code i, and TP^{3banks} is the aggregate participation rate for the three banks.

Our second approach uses the fact that approximately a third of the loans were prepaid by refinancing. Because the credit register starts in April 2012, these new loans can be observed. We assume that all housing loans originated between October 2011 and February 2012 are used to refinance the FC loans prepaid through the ERP. Both of these approaches give the zip code participation in the ERP, and hence the outstanding debt at the time of the program. By assuming an annuity payment structure, we can calculate the outstanding debt at the start of the crisis.

Delinquency before 2010

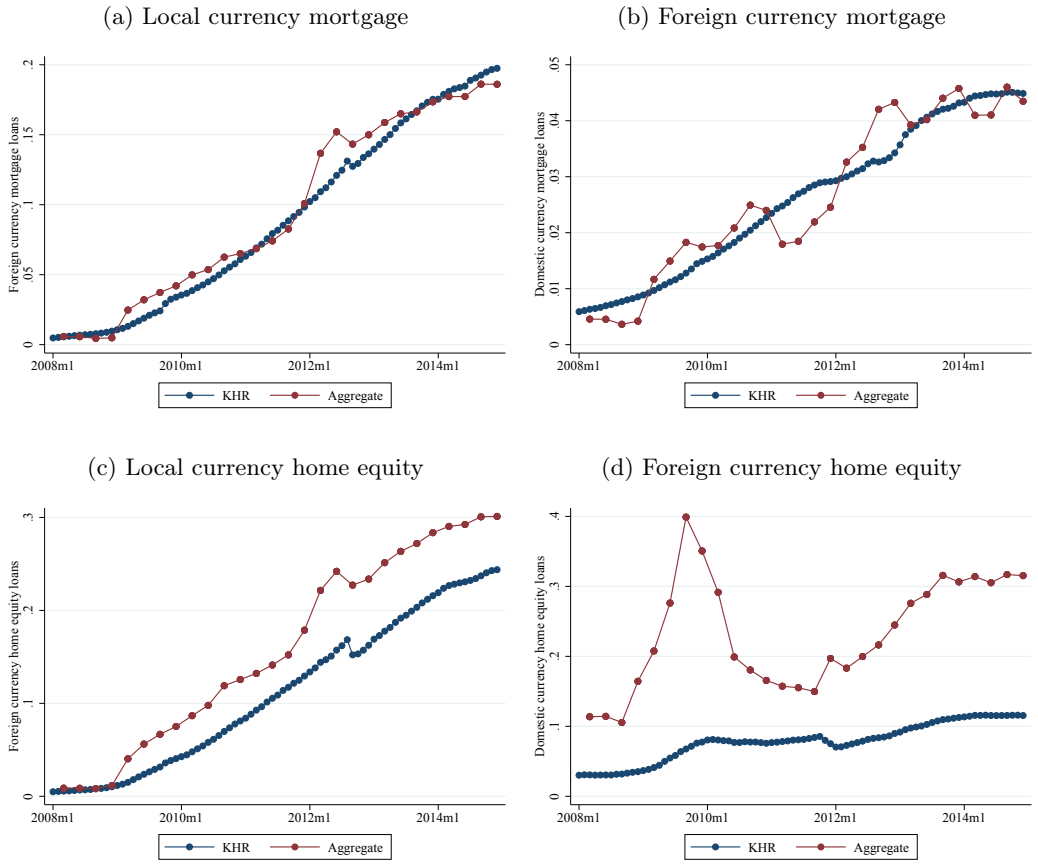
The household credit registry contains all loans starting in April 2012 and contains delinquent loans starting in January 2010. Information on the start date of the delinquency is available in both cases. This implies that we can only observe the last delinquency spell before 2010. That is, we cannot observe 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 loans. However, moving backwards in time, information on delinquent status might not be known for some loans.

As a result, the observed share of delinquent loans in KHR prior to 2010 is a lower bound for 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, but it could be larger before October 2008. If delinquency status during this period is an absorbing state, then the data would give the true delinquency status. Because of the large exchange rate depreciation, this is a plausible assumption.

To minimize the problem stemming from this nature of the data, we construct backwards delinquency status only until August 2008, two months prior to the October 2008 depreciation. Aggregate statistics show that before August 2019, the delinquency rate was almost flat.

Figure B.2 compares the delinquency rate calculated from the credit registry data to delinquency rates from aggregate statistics reported by the banking sector to the National Bank of Hungary. We plot the two series for domestic currency mortgage and home equity loans and foreign currency mortgage and home equity loans. The correlation between the two series is visibly high, with the exception of domestic currency home equity loans. However, the overall stock of domestic currency home equity loans is very low, as these loans were not eligible for the interest rate subsidy.

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



Notes: This figure plots the default rates for loans in KHR (credit registry) against default rates in aggregate statistics separately by currency and loan type.

Borrower address

Detailed borrower address (settlement and zip code) is available for all loans outstanding in June 2014. Borrower subregion, a coarser level of aggregation, is available for all loans in the credit registry. In the credit registry, the zip code is provided at the loan-level, not the individual level. If the address is missing for a given loan, but an individual has other loans with an address, we use the zip code reported on nearest originated loan. To address the issue that borrowers may have different addresses stated for different loans, we determine borrower addresses in the following way. At the time of the origination, the creditor asks the address of the debtor, so at the time of origination, the reported address is the borrowers true address. However, after origination individuals may move and might have not reported their move to the bank, so their address would not be updated in the database. We assume that none of the moves are reported to the banks, so all addresses correspond to the true address at the time of origination.

Election data

1998-2018 elections We obtain election data at the polling station level. Because the boundaries of the polling places change over time, we aggregate voting data to zip code level. We assume that the zip code of the polling place is the same as voters' zip code assigned to that polling station. In larger cities, voters belonging to a polling place might split across several zip codes. However, since the number of voters assigned to each polling place is small, this is unlikely to significantly affect the results. Because the polling station address does not contain the zip code, we geocode the addresses obtain the polling station zip code.

1939 election Data on the 1939 election is from Hubai (2001), who collected settlement level election results. Between 1939 and 2010 the settlement structure changed substantially. Many settlements were either merged or plit. We use Hungarian Statistical Office's gazetteer[36] to find the successors and predecessors of settlements. We define inclusive settlements, which are artificial settlements that enable us to match the current settlement structure to the historical structure. If two settlements overlap in any of the two elections years, then we merge those in the other election year as well. This provides us with a balanced panel of settlements for 1939 and 2010.

The 1939 election system was similar to the present system in Hungary. Most of the voters had two votes, one for a candidate in their electoral district and one for a party list. Voters living in large cities could only vote for party lists. As for the recent elections, for the 1939

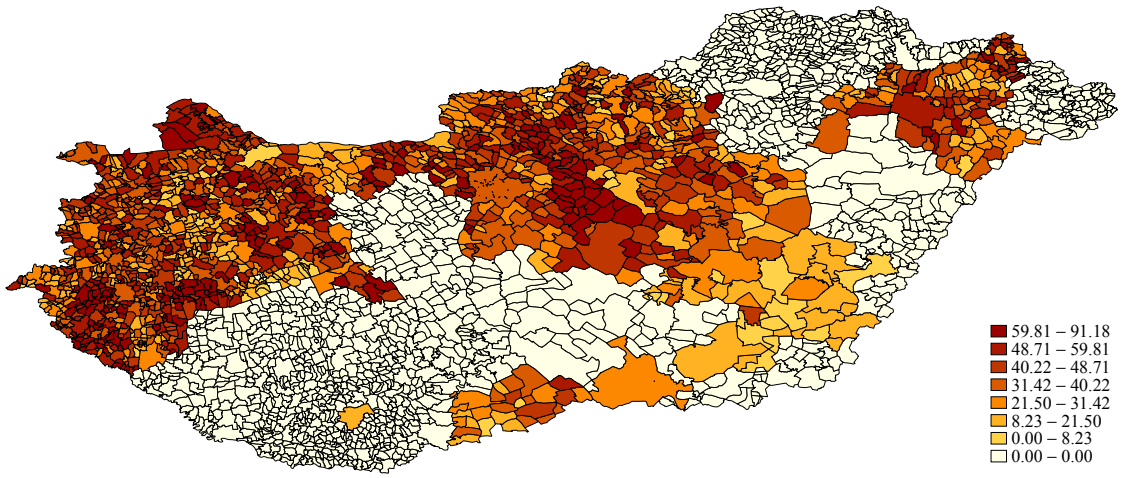
[36] http://www.ksh.hu/apps/hntr.main?p_lang=EN

election we also focus on votes cast on party lists.

Six far-right parties participated in the 1939 election: the Arrow Cross Party, National Front, United Hungarian National Socialist Party, Christian National Socialist Party, Hungarian National Socialist Agricultural Labourers' and Workers' Party, and far-right candidates without a party affiliation. Historians aggregate the votes for these parties, as they coordinated before the election by running one candidate and one party list in most electoral districts to prevent the division of their support. The Communist Party was barred from participating in the 1939 election.

The 1939 election was the first secret ballot election, which was introduced with a change in the election law in 1938. There was not universal suffrage at this time, and the government, concerned with the popularity of the far-right, used various measures to prevent the far-right from winning. For example, an election law decreased the number of eligible voters, there was gerrymandering weeks before the election, a certain number of nominations were required for candidates and party lists, a financial deposit was required to run a party list or candidate, etc. (for more details, see Pintér (2010)). This implied that in many electoral districts there was no far-right party list to vote for, and the number of party lists varied across electoral districts. Figure B.3 shows the electoral map for the far right.

Figure B.3: 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 cast 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 a party.