B.J.Pol.S. **48**, 825–842 *Copyright © Cambridge University Press, 2016*
doi:10.1017/S0007123416000181
First published online 8 November 2016

Patrimonial Economic Voting and Asset Value – New Evidence from Taxation Register Data

MIKAEL PERSSON AND JOHAN MARTINSSON*

Recent research on economic voting has moved beyond the traditional reward–punishment hypothesis, according to which the economy is merely considered a valence issue. Instead, patrimonial economic voting research looks at voters as property owners within the economic system. These studies have relied on survey items that measure whether individuals own different kinds of property to test the patrimonial dimension. This study emphasizes the importance of a surprisingly neglected aspect: the value of assets. It uses official register data files from the Swedish Tax Agency on the value of individuals' assets merged with survey data from the 2006 Swedish National Election Study. The study finds that the relationship between patrimony and voting behavior in Sweden is similar to that found in other countries, but only when it is tested in a similar way as in these studies – that is, only when it is coded as whether voters own different assets. This study brings three important contributions to the debate. First, it offers a new empirically based categorization of the dimensionality of asset ownership and shows that the previous distinction between low- and high-risk assets is insufficient. Secondly, it shows that merely having assets or not, which is what previous studies have measured, is not what primarily matters; the relevant factor is the *value* of the assets. And thirdly, it demonstrates that only the value of some kinds of assets matters (especially stocks and real estate properties), while other assets (savings in bonds and funds) do not affect voting behavior or political opinions.

Keywords: economic voting; wealth and political behaviour.

Studies of economic voting have long been dominated by analyses of individual economic perceptions.[1] Recent research on economic voting has moved beyond the traditional reward–punishment hypothesis, according to which the economy is merely considered a valence[2] or positional issue.[3] Patrimonial economic voting studies instead look at voters as property owners within the economic system.[4] This strand of research, which Lewis-Beck and Stegmaier identify as one of the important 'new directions in the field',[5] has demonstrated the importance of asset ownership for voting behavior. In particular, these studies suggest that high-risk assets influence voting behavior, and that this effect is independent of other dimensions of economic voting.

* Department of Political Science, University of Gothenburg, Sweden (emails: mikael.persson@pol.gu.se, johan.martinsson@pol.gu.se). Persson's work in this project was supported by 'Stiftelsen Lars Hiertas Minne'. The authors wish to thank participants for useful comments from presentations at APSA 2013 in Chicago and a seminar at the University of Gothenburg. In order to access the register data used for this article, the authors had to sign a contract stating that they were not allowed to make the data publicly available. The authors were only allowed to analyze the data using Statistics Sweden's remote server system MONA. The dataset and Stata do-files used to carry out the analyses are stored at Statistics Sweden, Stockholm. Instructions on how to obtain the data replication files for the analyses are available at http://dataverse.harvard.edu/dataverse/BJPolS. Online appendices are available at http://dx.doi.org/doi: 10.1017/S0007123416000181.

[1] Healy and Malhotra 2013; Stevenson and Duch 2013.
[2] Lewis-Beck and Stegmaier 2007.
[3] Kiewiet 1983.
[4] Lewis-Beck and Nadeau 2011.
[5] Stegmaier and Lewis-Beck 2013.

In the present study we address a major shortcoming of previous studies on patrimonial economic voting: they draw on an oversimplified distinction between owners and non-owners of property. Previous studies have relied on survey items measuring whether individuals own different kinds of property.[6] We emphasize the importance of taking into account the *value* of assets. Apart from the number (and types) of assets people own, the value matters – presumably because it determines the extent of an individual's vulnerability to economic risks. Using a unique data set from Sweden, we further the debate by utilizing official register data files from the Swedish Tax Agency on the value of individuals' assets. These data are merged with a nationally representative survey of individual voters from the Swedish National Election Study (SNES) for the 2006 parliamentary election. This gives us the opportunity to use high-quality data to analyze the impact of patrimony on voting behavior.

Our results closely resemble the pattern found in previous studies on patrimonial economic voting when asset ownership is modeled in the traditional way (that is, when we test the effect of whether people own assets or not). However, when adding the value of the assets, we find that the effect of patrimony is largely driven by the tendency for those with the highest value of some assets to vote for center-right parties and to position themselves to the right ideologically. Owning assets below average value only marginally affects voting behavior and ideology.

The article is structured as follows. The next section will present the state of the research field and the theoretical discussion. We then present our data and empirical analyses. The article concludes by discussing implications for further research.

THEORY

The idea that wealth might influence peoples' voting behavior is far from new. The importance of citizens' positions in the economic structure, and whether they own property or not, goes all the way back to classical Marxist theory. More generally speaking, what people own determines which economic policies are beneficial or detrimental to their material self-interest, which in turn might influence their voting behavior.[7] To understand what is at the heart of patrimonial economic voting studies, we need to remember that property ownership – patrimony – must be kept separate from both social class and income (or at least labor income).

Previous studies of patrimony within the economic voting tradition use the distinction between low-risk and high-risk assets, and argue that ownership of these two types of assets might have different implications for policy preferences and party choice.[8] The point of departure for previous studies on patrimonial economic voting is that possession of high-risk assets increases the tendency to support right-wing parties, while possession of low-risk assets does not. These studies also usually make a distinction between 'direct' effects on the vote and 'indirect effects' (through ideology).

Let us consider the bulk of evidence that supports the idea that property ownership influences voting. The first published study on patrimonial economic voting appeared in 2010 and examined the effect of property ownership in three French national elections.[9] This study by Nadeau and colleagues confirmed the importance of patrimony for voting behavior and spurred further interest in the idea. It was the first study in the election studies literature to distinguish between low- and high-risk assets and to examine their links to policy attitudes. It revealed both direct and indirect effects (through ideology) of ownership. However, it did not include the traditional economic perception item from classic (valence) economic voting studies. Hence, some insecurity as to the independent value of patrimony remained. In later studies the

[6] For an exception, see Foucault, Nadeau, and Lewis-Beck (2013).
[7] Cf. Foucault, Nadeau, and Lewis-Beck 2013.
[8] Lewis-Beck and Nadeau 2011; Nadeau, Foucault, and Lewis-Beck 2010.
[9] Nadeau, Foucault, and Lewis-Beck 2010.

patrimony effect was also confirmed in presidential elections in France,[10] and a more recent study[11] verifies the continuing importance of property ownership in French elections.

The first study on patrimonial economic voting in the United States was published in 2011.[12] Lewis-Beck and Nadeau used data from the 2008 US presidential election and presented a new general framework for economic voting studies that consists of three dimensions: valence, position and patrimony. They found strong effects of the economy in Obama's favor when it was defined as a valence or positional issue. For patrimonial economic voting, however, their study only finds indirect effects on voting through ideology and party identification. Although the indirect effects they find are substantially large, the direct independent effect of patrimony quickly disappears when proper controls are introduced. It should also be noted that this study contains rather few ownership items and does not distinguish between low- and high-risk assets.

Lewis-Beck, Nadeau and Foucault next applied their new threefold economic voting framework to Britain and found similar results as those in the United States.[13] In 2010 the economy directly influenced Tory voting intentions as a valence and positional issue, but the effects of property ownership were only indirect, although of substantial importance.

The next wave of patrimonial economic voting studies expanded the territory to include four new countries: Denmark, Spain, Portugal and Canada. In Denmark, Stubager, Lewis-Beck and Nadeau found strong effects of property ownership in the 2011 Danish parliamentary election,[14] which were stronger than in any of the previous studies from France, the United States and Britain. The strong patrimony effect in Denmark was in accordance with their theory, which suggested that the country's welfare state character would render Danish voters more aware of how the state influences the economy. Likewise, the state is seen as more important for peoples' private economic situation than it is in more individualistic and economically liberal countries.

In Spain, a direct (although weaker) patrimonial effect on voting behavior was found.[15] The Spanish study does not distinguish between low- and high-risk assets. In fact, the patrimony index used in the study exclusively contains low-risk assets such as 'first and second house plus lands or other buildings'.[16] What is perhaps a bit peculiar about the Spanish results is that the patrimony effects lead Spanish voters to favor the rightist conservatives, despite the fact that the patrimony index only contains low-risk assets. This result seems to be partly in conflict with the original patrimonial economic voting theory, in which risk-averse voters who possess mainly low-risk assets are assumed to prefer leftist policies.[17]

The study by Costa Lobo on economic voting in Portugal finds that valence is the most important dimension of the economic vote, and observes no direct independent effects of patrimony on voting behavior.[18] However, the patrimony index is found to have an indirect effect through party identification. The study on Portugal does not analytically distinguish between low- and high-risk assets, but the index includes both kinds.

Lastly, a book chapter by Foucault studied patrimonial economic voting in the provincial elections in Québec in 2012.[19] This study also confirmed a patrimonial effect on voting where

[10] Nadeau, Foucault, and Lewis-Beck 2011.
[11] Bélanger et al. 2014.
[12] Lewis-Beck and Nadeau 2011.
[13] Lewis-Beck, Nadeau, and Foucault 2013.
[14] Stubager, Lewis-Beck, and Nadeau 2013.
[15] Fraile and Lewis-Beck 2013.
[16] Fraile and Lewis-Beck 2013, 468.
[17] E.g., Lewis-Beck, Nadeau, and Foucault 2013, 245; Nadeau, Foucault, and Lewis-Beck 2010, 1264–5.
[18] Costa Lobo 2013.
[19] Foucault 2013.

high-risk assets increased the probability of voting for a more rightist party. An innovative aspect of this study was the discovery that the patrimonial effects were mediated by income level and were only significant among above-average income earners.

Summing up, previous studies have confirmed the existence of a patrimonial dimension of economic voting in France, the United States, Britain, Denmark, Spain and Portugal. In the United States, Britain and Portugal, the effects of property ownership were found to be mainly indirect via political ideology, while direct effects were also found in Denmark, France and Spain.

STUDIES ON ASSET VALUE

As mentioned in the beginning of this article, we believe that asset value is a neglected aspect of patrimony, and that this factor deserves more careful attention. There has been some attention to the topic in three previous studies. Using the British case, Lewis-Beck, Nadeau and Foucault were the first to argue that the value of voters' properties does not affect how they vote.[20] They analyze whether homeowners who own their homes outright differ in their voting intentions from those with mortgages. Their conclusion is, quite surprisingly, that it does not matter. Secondly, a study on Denmark includes a section that evaluates an alternative measure of patrimony,[21] which takes into account respondents' self-reports on whether the value of their assets exceeds a certain monetary threshold. With this information, Stubager, Lewis-Beck and Nadeau constructed an alternative, more fine-tuned, index. Their results indicate that the original results were unchanged, and that the alternative index including information on asset value (in addition to the number of different assets) did not increase the explanatory power of the model. Thirdly, by far the most ambitious attempt to examine patrimonial value is a study on the 2007 French presidential election that employs a measurement of the value of voters' assets.[22] The survey used by Foucault, Nadeau and Lewis-Beck contained a question in which respondents were asked to report the approximate value of their overall patrimony, without deducting their debt.[23] When controlling for this new measure of total asset value, the established measures of low- and high-risk patrimony still demonstrate the theoretically expected effects, as in previous studies. However, their study also demonstrates that asset value in itself has an independent, significant effect on ideology.[24]

Our view is that all previous studies that include asset value have severe limitations that warrant further examination. Although clearly a step in the right direction, the study by Stubager, Lewis-Beck and Nadeau still uses a very crude measure of the value of voters' property.[25] In addition, their measures of asset value are not entered separately into the equation since it cannot be combined into a properly quantified variable. The study by Foucault, Nadeau and Lewis-Beck, by contrast, has a very precise self-reported approximate value of voters' total patrimony.[26] However, it suffers from not using a conventional measure of voting intentions or

[20] Lewis-Beck, Nadeau, and Foucault 2013.
[21] Stubager, Lewis-Beck, and Nadeau 2013.
[22] Foucault, Nadeau, and Lewis-Beck 2013.
[23] Foucault, Nadeau, and Lewis-Beck 2013, 559.
[24] In the published article, Model 4 in Table 3 also seems to indicate a very strong effect of asset value on their measure of electoral expectations ('partisan satisfaction'). However, personal communication with the authors confirmed that this is a misprint, and that their conclusion that asset value does not influence voting behavior still holds.
[25] Stubager, Lewis-Beck, and Nadeau 2013.
[26] Foucault, Nadeau, and Lewis-Beck 2013.

voting behavior. Instead, its main dependent variable is a very specific measure of the distance between voters' evaluations of the two main presidential candidates.

MEASURING WEALTH AND INCOME

Another issue that should be considered is the reliability of the self-reported economic situation. There is some research on the accuracy of income reports, but research on the accuracy of reported assets is more scant. However, we will briefly consider some of this research here. Stephen Withey called into question the reliability of recall of income as early as 1954.[27] He studied whether annual income was reliably recalled and whether the recall was affected by systematic bias or random error, and found that there was bias in the recollection of income and that this bias was in the direction of the income change – that is, those who have seen an increase tend to over-report their income and vice versa.

Following Moore, Stinson and Welniak, there are a wide variety of factors that could produce non-responses and random or systematic error in respondents' reports of their economic situation: misunderstanding, retrieval problems due to lack of knowledge or confusion, or sensitivity about providing information on income.[28] In addition to the cognitive factors mentioned above, Yan, Curtin and Jans stress the importance of respondent motivation in explaining non-response.[29] In general, income data collected through surveys are associated with high values of missing data, often in the region of 20–40 per cent, while missing data for other survey questions often range between 1 and 4 per cent.[30] The degree of non-response seems to decrease when income data are collected with a single question – with values between 10 and 15 per cent – compared to more detailed income questions (for which non-response ranges up to a quarter of all respondents).[31]

Further, previous studies have repeatedly shown that non-response is also affected by demographic characteristics such as race, gender and education.[32] In addition, the degree of non-response seems to vary strongly with different income sources. While under-reporting of wages and salary seems to be rather moderate, it is higher for transfer programs; of particular interest here, the existing evidence – although limited – indicates that it is highest for asset incomes such as dividends.[33]

Using official register data will overcome these problems related to measurement error. But despite these limitations of the survey research, we believe that studies of patrimonial economic voting should not abandon the ambition to further study the potential importance of asset value in addition to asset diversification and the type of assets. At the end of the day, data from survey items are of course better than no data at all.

The distinction between low- and high-risk assets in previous research has been supported by findings in political economy[34] and by the empirical results in studies on patrimonial economic voting. However, since the actual value of assets has been considered only to a very small extent, the concept of risk has also been very narrow. The degree of risk an individual is taking with an investment or economic asset is very different depending on his or her economic situation.

[27] Withey 1954.
[28] Moore, Stinson, and Welniak 2000, 349.
[29] Yan, Curtin, and Jans 2010, 149.
[30] Moore, Stinson, and Welniak 2000, 334; Yan, Curtin, and Jans 2010, 145.
[31] Micklewright and Schnepf 2010, 413f; Moore, Stinson, and Welniak 2000.
[32] Yan, Curtin, and Jans 2010, 157.
[33] Moore, Stinson, and Welniak 2000, 336.
[34] Alesina and Rosenthal 1995.

Having high-risk assets with low value is very different from having a large bulk of high-risk assets. In the latter case, even during an economic downturn or during a period of low growth, such a voter would still be well off. We believe this reasoning strengthens the case for including the value of assets in studies of how patrimony influences voting behavior.

WHAT LINKS WEALTH TO VOTING?

A further reason to include the actual value of assets when studying patrimony is related to material self-interest and the link to voting through policy preferences. In the same way as voters with many high-risk assets are assumed, in previous studies of patrimonial voting, to prefer (or have an interest in) rightist policies of de-regulation and liberalization, the value of a voter's assets is also likely to have implications for policy preferences and material interest. For example, wealthy voters who possess valuable assets (no matter the degree of risk these assets are associated with) are more likely to be economically independent of welfare state arrangements typically supported by parties to the left. Voters with no assets, or assets of low value, are more directly and continuously dependent on labor income or welfare state institutions. Our hypothesis is straightforward: what matters is not whether one owns different kinds of assets – the relevant factor is the *value* of the assets. The more valuable a voter's assets, the more likely he or she is to vote for parties to the right, and to ideologically identify with the right.

Previous studies on patrimonial economic voting have focused little on the causal mechanisms that supposedly link patrimony with vote choice and political preferences. Essentially, we believe that voters' asset ownership determines their material self-interest. Voters tend to reward parties with policies that might positively affect the value of their assets, and punish those with policies that might decrease the value of their assets. Here it should be noted that the value of some assets is more likely than others to be affected by which party is in power. For example, savings in low-risk bonds and funds are not likely to fluctuate very much as a consequence of government policies. However, the value of assets in, for example, the housing market or stocks can be more influenced by government policies. Therefore, we suppose that ownership of such assets is more likely to affect individuals' voting behavior and political preferences than ownership of low-risk assets. To summarize, we believe that material self-interest is the causal mechanism connecting asset ownership and patrimonial economic voting. And furthermore, we believe that the effect is stronger for people who own assets for which the value is more likely to be affected by government policies. Moreover, voting and preferences are only altered when the value of these assets are so large that it is highly relevant to people's material self-interest. When these conditions are fulfilled, we hypothesize that voters' material self-interests function as the causal mechanism linking asset ownership and political preferences.

To understand patrimonial voting, it can be illustrative to think about the importance of policy distance in the vote utility function: that is, voters are more likely to vote for a party with positions that are close to their own ideal points on these issues. And voters supposedly ascribe more importance to this kind of policy proximity in their vote decision when they care a lot about the issues, which we believe that owners of valuable assets tend to do.

One could of course question whether the electorate is sophisticated enough to anticipate the potential consequences of future policies implemented by governments and to calculate how these policies might affect their economic interests. While these are high requirements to put on voters, we believe that the information context in Sweden during the 2006 election campaign was rich enough to assume that voters could make such calculations. We will return to this issue when we discuss the context of the 2006 election in the next section.

THE 2006 ELECTION IN SWEDEN

To analyze the relationship between property ownership and voting behavior, we use a rare data set that combines the 2006 SNES data with official register data from the Swedish Tax Agency. For readers unfamiliar with the Swedish case we provide a very brief overview of the country's political and economic context in 2006. In that year, the four center-right parties (the Moderate Party, the Liberal People's Party, the Centre Party and the Christian Democrats) joined forces as the 'Alliance for Sweden' and delivered a joint election manifesto. In the September 2006 election they defeated the Social Democratic minority government, which had been in power since 1994, by winning 178 of the 349 seats in parliament and formed a majority coalition government. The economy was in a fairly good state: the unemployment rate lower than in the beginning of the term and decreasing (one month before the election it was 0.8 percentage points lower than the year before). Moreover, economic growth was high, about 5 per cent during the first six months of 2006, which was also manifested in an increase in personal income of about 4 per cent during the election year.

Regarding the question of whether the information context was rich enough for voters to be able to assess how different policies would affect the value of their assets, it should be noted that the economy was a visible issue in the 2006 election campaign. When voters were asked to rank the most important issues in the election (from a list of about twenty issues), 'employment' was ranked highest, 'taxes' ranked fifth and 'the economy' ranked seventh. Only issues related to education and the health system were ranked higher. And among voters who switched from voting for any of the left parties in 2002 to voting for the center-right Alliance in 2006, the importance ascribed to 'taxes' and 'the economy' was what characterized these voters.[35] During the election campaign several issues related to asset ownership were frequently discussed. Most importantly, the housing tax was a very salient issue that generated considerable debate during the election campaign. There is no doubt that a majority of the voters were aware of the parties' positions on these issues. For example, Naurin and Oscarsson have shown that even four years later, by the time of the 2010 election, 62 per cent of the voters were aware of the fact that abolishing the housing tax was an explicit election promise from the center-right Alliance parties in the 2006 election.[36]

During the election campaign the center-right Alliance put forward several explicit political proposals that would benefit owners of assets such as houses or stocks. The center-right parties made an election promise to abolish the housing tax (which was 1 per cent of the taxation value) in their election manifesto. Perhaps even more importantly, the Alliance also proposed to abolish a 'wealth tax', which at that point was 1.5 per cent of the total property (including stocks, savings accounts, bonds and funds, and real estate properties) exceeding 1.5 million SEK. Moreover, they proposed a number of changes intended to improve the general conditions for companies such as allowing taxes on capital gains to be deferred, introducing a tax reduction on venture capital and cutting the corporation tax (which was later decreased from 26.3 to 22.0 per cent during the Alliance's terms in office).[37] The left-wing parties did not propose many changes that would affect asset value; instead they were in favor of the *status quo*. An exception is the Left Party, which had an explicit election promise to increase the tax on capital and capital gains.[38] Taken together, the policy changes proposed by the center-right Alliance would

[35] Oscarsson and Holmberg 2008.
[36] Naurin and Oscarsson 2015.
[37] Naurin and Håkansson 2015.
[38] Naurin and Håkansson 2015.

supposedly be beneficial for the material self-interest of voters who were owners of high-value assets. Hence, it provided them with a clear incentive to vote for the opposition.

DATA

The SNES studies have been carried out in conjunction with every parliamentary election since 1956, and every survey covers representative samples of approximately 3,000 voters. Since the 1970s the studies have been two-wave panels between elections, which means that for each study half the sample was interviewed during the previous election and the other half of the sample will be interviewed again at the next election. The fieldwork is carried out by Statistics Sweden, and the survey mode is face-to-face interviews.

Statistics Sweden adds information about age, gender, education, total income, citizenship and country of birth from the official registers to the survey data. They remove the personal identification key before the data are delivered to researchers. In order to secure the respondents' anonymity, the personal identification key is destroyed two years after the study is finished. This means that we cannot add data from the official registers to any previous Swedish election study since all the personal identification keys are destroyed. Moreover, the center-right government that entered office after the 2006 election decided to remove the 'wealth tax' and 'housing tax'. As a consequence all official registers on assets and property ownership among Swedish citizens were discontinued in 2007 and will not be further updated. This means that it is not possible to add data on assets and ownership to any Swedish election studies after 2006.

After the 2010 election we applied for permission to add further register data on income and assets to the 2006–10 SNES panel study. Unfortunately, the personal identification key was irreparably destroyed for half of the 2006 sample (those in the 2002–06 panel), but still existed for the other half of the 2006 respondents who had been interviewed again in 2010. Hence, after approval from the ethical review board and Statistics Sweden, we were able to merge detailed data on assets, asset value and income from the official register files to 1,788 persons in the 2006 SNES sample. An advantage of the SNES design is that this subsample is in itself a fully functional random sample of the Swedish voting-age population, although only half the size of the complete 2006 SNES.

From the register files we have information about ownership and the exact value of the following assets that previous research would regard as low risk: house or apartment, country house, and low-risk investments in bonds and interest funds. This list of low-risk assets closely resembles the items examined in previous studies on patrimonial economic voting,[39] with the difference that we lack information on savings accounts. But instead we have information on low-risk investments in bonds and interest funds. As for high-risk assets, we have information on rental properties, stocks and farms. We also have information about ownership of companies, but not the value of companies. The high-risk items covered in our study are nearly identical to the items used in previous studies on patrimonial economic voting.[40]

The data on the value of houses and apartments deserve further consideration. The actual market value of, for example, a house can, for obvious reasons, not be determined until it has been sold. However, as long as Sweden had a tax on properties such as houses, the Swedish Tax Agency needed to estimate this value. Thus, the registers contain the so-called taxable value of real estate properties. This value was updated and estimated by the Swedish Tax Agency at

[39] Cf. Lewis-Beck, Nadeau, and Foucault 2013.
[40] Cf. Lewis-Beck, Nadeau, and Foucault 2013.

regular intervals, partly based on regional sales statistics, and usually consistently set somewhat below the actual market value. It is thus considered a conservative estimate of property value.

We use two dependent variables in this article: vote choice and left-right political ideology. In our analyses, voting for the center-right 'Alliance' is coded 1, while voting for any other party a (or not voting) is coded 0.[41]

In our regression models we use a set of standard control variables that includes: years of age, gender (1 = male, 0 = female), marital status (1 = married, 0 = non-married), total income (in five categories), education (0 = elementary school, 1 = secondary education (gymnasium), 2 = higher education) and occupation (1 = white collar, 0 = all others).

Our empirical analyses proceed in four steps. First, we present descriptive data on the structure and value of asset ownership in Sweden. Thereafter we present factor analyses of the dimensionality of ownership. Next, we try to mimic as closely as possible previous studies on patrimonial economic voting by testing two summary scales on how many forms of low- and high-risk assets respondents own. Thirdly, we compare these traditional patrimonial economic voting measures with our new measures that include asset value. Fourthly, we examine more closely the effects of having assets with different levels of value to scrutinize at which levels potential effects of asset value operate.

RESULTS

We begin by looking at the structure of asset ownership in Sweden. Table 1 presents the share of the population that owns different forms of assets, following the categorization found in previous studies on patrimonial economic voting. It also provides the mean value of assets in Swedish kronor. Among what Lewis-Beck, Nadeau and Foucault categorize as low-risk assets, owning houses and apartments are the most frequent. About 49 per cent of the Swedish population owns houses or apartments, compared to 65 per cent in Britain,[42] 64 per cent in France[43] and 67 per cent in Denmark.[44] Country houses are owned by about 9 per cent, which is quite similar to the proportion in Denmark (13 per cent) and France (11 per cent) but much higher than in Britain (3 per cent). And savings in low-risk bonds and interest funds are held by 26 per cent, while equity funds are owned by about 46 per cent, but here we have no comparable measures from other countries. The most common high-risk assets are stocks, which are owned by 24 per cent. This is lower than reported for Denmark (42 per cent), but similar to Britain and France (26 per cent in both countries). But it should be noted that there are probably different kinds of assets included in the stocks measure in different countries: 24 per cent stock owners only relates to direct ownership of stocks; if we include indirect ownership through equity funds, the proportion of owners in the population is 53 per cent. Within this group of assets, there is both active ownership (stockholders interact with the market) and indirect ownership through retirement funds, but the exact proportions of active and passive owners are impossible to get from our data. Businesses and farms are owned by 9 per cent, which is roughly similar to those in Britain (8 per cent) and France (10 per cent) but somewhat lower than in Denmark (17 per cent). Rental properties are an uncommon asset in Sweden: only about 0.5 per cent of the population owns rental properties. This comparatively low number is due to regulations on the ownership of apartments and rental properties that make it difficult for

[41] Restricting the reference category to only those who voted for the Social Democrats, the Green Party or the Left Party does not alter the general conclusions of this study.

[42] Lewis-Beck, Nadeau, and Foucault 2013.

[43] Nadeau, Foucault, and Lewis-Beck 2010.

[44] Stubager, Lewis-Beck, and Nadeau 2013.

TABLE 1 *The Distribution of Asset Ownership*

	Percent owners	Mean among total sample (SEK)	SD among total sample	Mean among Owners (SEK)	SD among owners
House or apartment	49.2	501,397	894,885	1,018,582	1,048,910
Country house	8.9	57,654	293,254	645,985	764,791
Savings in bonds and interest funds	25.7	29,253	220,073	113,825	423,028
Equity funds	45.5	46,845	151,669	105,153	213,347
Stocks	24.1	60,102	922,997	249,128	1,867,332
Farm	4.5	68,497	836,093	1,505,428	3,642,751
Rental properties	0.5	20,081	1,034,505	4,227,539	14,798,226

TABLE 2 *The Structure of Ownership in Low- and High-Risk Categories*

Ownership of low-risk assets	Percent
0 items	37.4
1 item	44.4
2 items	17.3
3 items	1.95
Ownership of high-risk assets	
0 items	73.2
1 item	24.5
2 items	2.3
3 items	0

individuals to buy an apartment with the intent to sublet it. In the other three mentioned countries, 6 to 10 per cent of the population owns rental properties.

Table 2 presents the distribution of our sample with respect to property ownership when employing a categorization that is as close as possible to previous studies on patrimonial economic voting (here we have included 'house or apartment', 'country house' and 'savings in bonds and interest funds' in low-risk assets and 'stocks', 'business or farm' and 'rental properties' in high-risk assets).[45] This distribution roughly resembles the distribution in countries such as Britain, where most people own some low-risk assets while very few own many different kinds of assets.

The previous categorization of high- and low-risk assets has been motivated mainly by theoretical considerations. Less is known about how these forms of ownership are related to each other empirically. For that reason, we present results from analyses of the dimensionality among the asset value measures.[46] In order to determine the number of factors, we present the estimated levels of the Root Mean Square Error of Approximation (RMSEA) and Confirmatory Fit Index (CFI) for 1, 2 and 3 factor models. RMSEA values below 0.05 and CFI values above

[45] We did not include equity funds in this categorization since they are not included in previous studies on patrimonial economic voting. Savings in bonds and interest funds are the forms of ownership in our data that most closely resemble 'savings accounts', which is the commonly used item in the field.

[46] We have excluded ownership of rental properties from these analyses, since in the SNES data only five survey respondents own rental properties.

0.95 indicate a good fit.[47] Appendix Table A1 shows that there are three dimensions in the ownership data since only the three-factor model achieves satisfactory fit measures. Appendix Table A2 presents rotated loadings from a principal component analysis. One dimension is dominated by real estate properties – that is, houses or apartments, country houses and farms. A second dimension is made up of savings in bonds, interest funds and equity funds.[48] Common to these forms of ownership is that the majority of these savings are in relatively low-risk forms of ownership. On a third dimension we find stocks. Apparently, stocks stand out as a high-risk form of ownership that is distinct from the others. Therefore, the previous categorization in the patrimonial voting literature seems unsatisfactory, since it lumps stocks together with other forms of ownership (such as farms) that seem to belong to the same dimension as low-risk assets such as houses and apartments. Hence, in the following analyses, when we look at the impact of asset value, we will use three indices for the sums of value along the three dimensions of ownership: 'value of real estate properties', 'value of low-risk savings' and 'value of stocks'.

Table 3 presents the results from logistic regression models with voting for the center-right alliance as the dependent variable. The first column presents a baseline model including only the control variables. The control variables behave as expected, since voters with higher education, higher income, white-collar occupations and higher age are more likely to vote center-right. The first model shows an R^2 of 0.067. Next, we estimate a model that aims to mimic previous studies of patrimonial economic voting as closely as possible. Hence, the second model includes the low- and high-risk summary scales in addition to the control variables. The results show a positive coefficient for owning high-risk assets (significant at the 99 per cent level), while there is no significant association between center-right voting and the low-risk assets index. This pattern – a large and significant coefficient for high-risk assets and a smaller and weak (or statistically insignificant) coefficient for low-risk assets – is in accordance with the results from previous research on patrimonial economic voting in Britain, France and Denmark. Adding the summary scales of high- and low-risk assets as in previous studies increases R^2 by about 2 percentage points when comparing Models 1 and 3. Thus the results from previous studies on patrimonial economic voting also hold in Sweden, when using a similar approach as previous studies, despite using slightly different data (official register data on assets rather than self-reported asset ownership).

The next step is to see what happens when we include register data on asset value. In Model 3 we include the total value of the three forms of assets shown in our analysis of the dimensionality, that is, real estate properties, low-risk savings and stocks (the values are log-transformed since the raw variables are heavily skewed). While stocks have a strong and significant coefficient (at the 99 per cent level), the value of real estate properties is only significant at the 90 per cent level, and we find no significant relationship between low-risk savings and center-right voting. This means that the higher the value of both stocks and real estate properties, the higher the probability of voting for the center-right coalition. The model also shows that, compared to the baseline models, including the value of the assets increases R^2 slightly more than when adding the summary scales.[49]

[47] Cf. Kaplan 2000.

[48] We do not have any detailed information on what kinds of equity funds people hold – only that they are not interest funds. Most likely a substantial part of these are pensions funds that people hold in a long-term perspective and should thus be considered a relatively low-risk form of savings compared to, for example, stocks.

[49] We have also estimated models similar to those in Table 3 with an additional control for left-right ideology. These models can be found in Appendix Table A3. The first model in Table A3 shows that left-right ideology has, as expected, a strong and significant effect on center-right voting. When introducing the traditional high- and low-risk asset scales, we find that the coefficient for high-risk assets is reduced in strength and significance

TABLE 3 *Relationship between Ownership and Center-right Voting, Logit Models*

	Model 1	Model 2	Model 3
Age	0.009**	0.005	0.002
	(0.005)	(0.005)	(0.005)
Gender	0.207	0.302**	0.281**
	(0.134)	(0.138)	(0.138)
Education	0.451***	0.408***	0.420***
	(0.099)	(0.101)	(0.102)
Income	0.215***	0.206***	0.157**
	(0.060)	(0.062)	(0.063)
Occupation	0.477***	0.484***	0.407***
	(0.148)	(0.151)	(0.152)
Low-risk assets (summary scale)		−0.072	
		(0.095)	
High-risk assets (summary scale)		0.690***	
		(0.123)	
Value of real estate properties			0.019*
			(0.011)
Value of low-risk savings			0.004
			(0.013)
Value of stocks			0.080***
			(0.015)
Constant	−2.915***	−2.910***	−2.819***
	(0.416)	(0.422)	(0.423)
n	1,106	1,106	1,106
Pseudo R^2	0.067	0.089	0.092

Note: logistic regression coefficients, standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

In Table 4 we look at similar models but with left-right ideology as the dependent variable (measured on an eleven-point scale for which higher values mean more rightist). These models tell a similar story as the previous models. As for the traditional summary scales, the high-risk index has a significant positive relationship with rightist ideology, while there is no relationship between ideology and ownership of low-risk assets. When we add the measures of asset value, we again find that there is no relationship between the value of low-risk savings and the outcome variable of interest. However, the value of both real estate properties and stocks is significantly related to left-right ideology; that is, the higher the values of these assets, the more to the right ideologically the respondents are. Moreover, compared to the baseline models, R^2 increases by about the same amount when adding the traditional indices or value measures (about 3 percentage points). Taken together, the analyses of left-right ideology as the dependent variable strengthen our confidence in the previous findings since they point in the same direction.[50]

(F'note continued)
compared to Model 2 in Table 3, but is still significant at the 90 per cent level. When adding the variables for the value of real estate properties, low-risk savings and stocks in Model 3 we find a significant effect of the value of stocks (at the 95 per cent confidence level). Hence, when including a control for left–right ideology, the coefficients for the asset ownership variables are not altered in any dramatic way, although the strength and significance of the estimates are somewhat reduced.

[50] As an additional robustness check we have estimated models similar to those in Tables 5 and 6 when including the socio tropic evaluation of the Swedish economy (valence). However, this variable is only available

TABLE 4 *Relationship between Ownership and Left-Right Ideology, OLS*

	Model 1	Model 2	Model 3
Age	0.000	−0.006	−0.007
	(0.005)	(0.005)	(0.005)
Gender	−0.132	−0.046	−0.062
	(0.142)	(0.141)	(0.142)
Education	0.063	0.011	0.028
	(0.106)	(0.105)	(0.105)
Income	0.152**	0.123*	0.069
	(0.063)	(0.064)	(0.065)
Occupation	0.443***	0.424***	0.364**
	(0.160)	(0.158)	(0.159)
Low-risk assets (summary scale)		0.054	
		(0.098)	
High-risk assets (summary scale)		0.700***	
		(0.124)	
Value of real estate properties			0.034***
			(0.011)
Value of low-risk savings			0.002
			(0.013)
Value of stocks			0.064***
			(0.015)
Constant	4.572***	4.635***	4.683***
	(0.433)	(0.427)	(0.428)
n	1,000	1,000	1,000
R^2	0.030	0.062	0.059

Note: OLS regression coefficients, standard errors in parentheses. ***p < 0.01, **p < 0.05, *p <0.1

(F'note continued)

for half of the sample (the post-election survey), and hence the sample size is considerably reduced. Already having access to only half of the 2006 sample in the first place, we end up with fewer than 500 respondents in these analyses. A possible objection to our results could be that correlations between asset ownership and voting might simply be capturing a performance vote – owners of these assets experienced negative economic development during the incumbent's term and therefore voted for the opposition. The robustness checks presented here suggest that the results hold against this objection. Previous studies on economic voting in Sweden have repeatedly found that the standard retrospective socio-tropic question has a strong relationship with incumbent voting, but this relationship was unusually weak in 2006 (Martinsson 2013). Appendix Table A4 presents models on center-right voting similar to those in Table 5 but with an additional control for valence voting (measured on a three-point scale: 0 = the national economy has gotten worse during the last twelve months, 0.5 = no change, 1 = economic circumstances have improved). The results in Tables A4 and 5 point in the same direction, although as expected they are somewhat weaker under control for valence voting. Yet we find that traditional high-risk assets (with the coefficient reduced from 0.7 to 0.4) have a significant effect, and that the value of stocks (reduced from 0.08 to 0.06) has a statistically significant coefficient. Furthermore, Appendix Table A5 presents models similar to those in Table 6 under control for valence. Here we also find slightly weaker (but substantially similar) results to those in the main article. The signs and significance of the coefficients for high-risk assets and value of stocks are still highly significant and differ only marginally in size. However, the coefficient for the value of real estate properties is rendered insignificant under control for valence voting. As an additional robustness check we have also re-estimated the models that formed the basis for Figures 1 and 2 (with the predicted values of voting and ideology for different levels of asset value) under control for valence voting. These models are presented in Appendix Tables A8 and A9. Although the sample is substantially reduced and valence has a strong and significant effect, the coefficients for the variables measuring the value of assets are not dramatically altered, and the main pattern is the same as in the results presented in the main article – i.e., it is

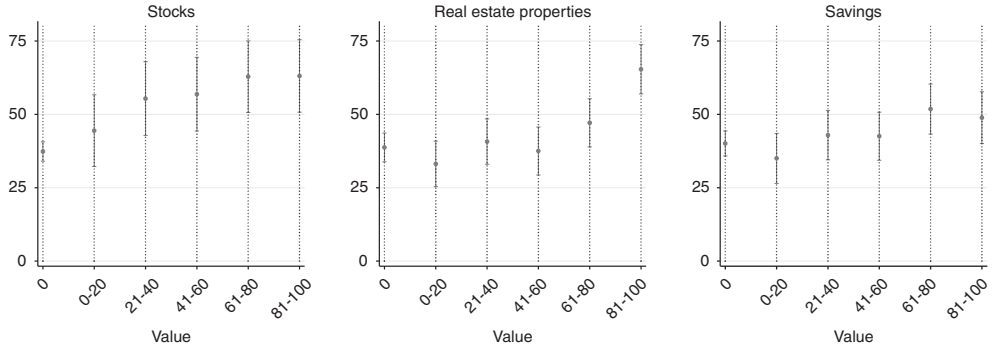

Fig. 1. Predicted probabilities of voting for the centre-right parties across different levels of ownership, point estimates and 95 per cent confidence intervals

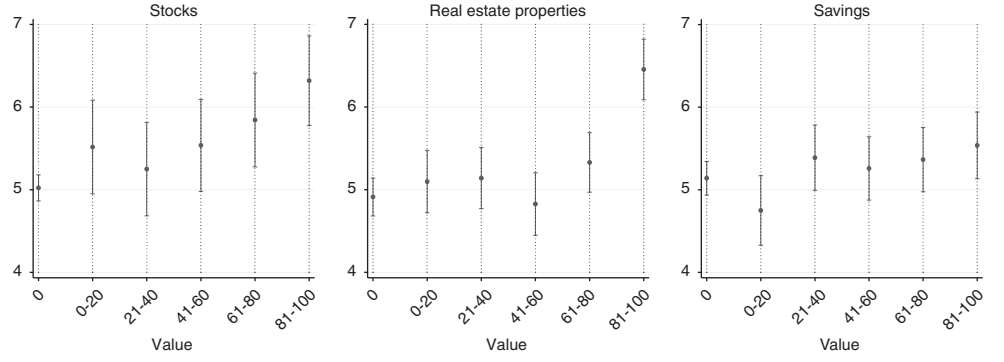

Fig. 2. Predicted levels of left–right ideology (0-10) across different levels of ownership, point estimates and 95 per cent confidence intervals

Having seen that asset value also matters, the relevant question is now: how much value is enough to alter political attitudes and behavior? In Figures 1 and 2 we show the results of analyses of the effects of having different levels of asset value. We do this by dividing the value of the three new dimensions of assets into six categories each, and include dummy variables for the respective categories of asset value. To get a sense of the effect sizes, we visualize the predicted levels of center-right voting and left-right ideology across different levels of asset ownership in Figures 1 and 2, holding controls at their means. We refer to Appendix Tables A6 and A7 for the full models. Having no assets serves as the reference category in all models, and those who have assets are divided into five groups that each encompass 20 per cent of the remaining distribution of respondents.

The three graphs in Figure 1 use voting for the center-right government as the dependent variable. There is a large difference in the probability of voting for the center-right government when comparing those who do not own any stocks (37 per cent probability of voting for the center-right parties) and those who own stocks with the highest value (63 per cent probability of

(F'note continued)
primarily those who own stocks and real estate properties of high value that differ in their voting behavior and political ideology.

voting for the center-right parties). Individuals who own stocks of low value do not have a significantly different probability of voting for the center-right parties compared to those who do not own any stocks at all. Hence, it is not enough to just be a stockowner; only those who own stocks of relatively high value have a probability of voting for the center-right that is significantly different from those who do not own any stocks at all.

Next, looking at the probability of voting for the center-right across different levels of value of real estate properties, we find that those who own properties in the value range up to the 80th percentile have a voting behavior that is indistinguishable (at the 95 per cent confidence level) from the voting pattern among those who do not own any properties at all. However, the top 20 per cent has a much stronger probability of voting for the center-right (65 per cent). Hence, the voting behavior of real estate property owners is not different from non-owners in general; the relevant difference is between those who own properties of high value and the rest.

Moving to voting behavior across different levels of value of low-risk savings, the right-most graph in Figure 1 shows small differences between the groups, although the richest have a slightly stronger probability of voting for the center-right.

Figure 2 presents the predicted levels of left-right ideology across asset value levels. Again, the results for ideology corroborate the results for voting behavior. As for the value of stocks, we see a large difference between the top two categories and the non-owners, while the difference between non-owners and those with stocks of value in the range up to the 60th percentile is more modest (about a half unit on the eleven-point scale). This pattern is even more pronounced across different levels of real estate ownership. While the difference between the non-owners and the top 20 per cent is about one and a half units, the differences between the lower categories are small and confidence bounds are overlapping. And as for different levels of value of savings, we find a small tendency that those with large amounts of savings are more rightist, but the differences are small and the confidence bounds are overlapping – and not even the top 20 per cent stand out as dramatically more rightist than the rest.

CONCLUSIONS

The results presented here bring some important new knowledge to the debate on economic voting. In addition to income and the economy as a valence issue, the asset ownership structure is related to voting in Sweden. When testing the effect of patrimonial economic voting using traditional summary scales (indicating how many different forms of assets individuals possess) the results from Sweden are relatively similar to those from other countries. Those who possess many high-risk assets tend to favor parties to the right.

We also have the rare opportunity to test the effects of the value of assets with reliable register-based data, and present new evidence on the dimensionality of ownership structure. Using these data we demonstrate that, in addition to having different assets or not, the value of assets itself is of pivotal importance. While previous studies have analyzed the effects of having different kinds of assets, this article indicates that a key dimension is missing in previous research. What matters is not primarily if one has different kinds of assets or not; what matters is the value of the right kind of assets. The simple distinction between owners and non-owners is not sufficient to understand patrimonial economic voting. Stocks and real estate properties of higher value drive people to support center-right parties and lean right ideologically.

However, ownership of low-risk savings in bonds and interest funds has no strong relationship to voting behavior or political ideology. Furthermore, closer examination of asset value revealed that those who have assets of relatively low value differ only marginally from those who have no assets at all. On the contrary, the relationship is largely driven by the

tendency that those owning high-value assets are much more likely to vote center-right than those with asset values below the median or those with no assets at all. The importance of the stock market for voting behavior has previously been established at the macro level in the United States.[51] As far as we know, this study is the first to establish this relationship at the individual level.

In sum, our study brings three important insights to the debate. First, we offer a new empirically based categorization of the dimensionality of asset ownership and show that the previous distinction between low- and high-risk assets is insufficient. Second, we show that merely having assets or not, which is what previous studies have measured, is not all that matters – the most relevant factor is the value of the assets. And third, we show that only some kinds of assets matter (namely stocks and real estate properties), while other kinds (savings in bonds and funds) do not influence voting behavior or political ideology. Owning even very high levels of value of some assets matters little in relation to voting behavior, while owning other kinds of assets matters a great deal. Taken together, we hope these findings will nuance our understanding of how asset ownership is related to voting behavior.

This pattern makes sense if we think about how different policies could affect the value of different assets. We believe that the kinds of assets that would be most affected by government policies are the ones that matter most in relation to voting behavior. It is reasonable to believe that voters think that the choice of government could greatly affect the stock market, and thereby the value of the stocks they own. It is also reasonable that voters might think that the choice of government would affect the housing market. However, it is less reasonable to believe that voters think the choice of government would affect the value of their savings in low-risk bonds and funds. The value of these assets is less likely to be less affected by government policies, and their ownership is more often in the long-term perspective. We believe this is why asset ownership in the form of bonds and funds does not affect voting behavior in the same way as the ownership of stocks and real estate properties. As we explained earlier, it is reasonable to believe that Swedish voters are sophisticated enough to make such assessments, especially given the saliency of economic issues in the 2006 election campaign. Indeed, Swedish voters have been characterized as highly sophisticated in comparative studies. For example, they are generally seen as having higher levels of political knowledge than voters in, for example, the United States.[52]

Our data do not, however, reveal anything about the causal direction of asset ownership in relation to voting and opinions. The most obvious idea is perhaps that ownership causes people to have different opinions and behavior in order to preserve and enshrine their assets. But the relationship could also be the other way around: opinions could affect ownership. For example, people who support the left might not want to own stocks for ideological reasons. Likewise, supporters of the right who have a strong belief in the free market might be tempted to own stocks rather than, for example low-risk bonds because they are interested in entrepreneurship and trading. The causal direction is of course hard to establish, especially since experimental studies would be unrealistic to conduct.

For a fuller understanding, and to reveal the most substantially interesting differences, future studies must strive to distinguish between those who own assets of high value and those who own assets of lower value or none at all. We understand that the kind of register-based data that we use will be hard (or even impossible) to acquire in most countries. For that reason, there is a need to develop more detailed survey instruments that can capture these dimensions.

[51] Barbaras 2006; Fauvelle-Aymar and Steigmaier 2013.
[52] Oscarsson 2007.

REFERENCES

Alesina, Alesina, and Howard Rosenthal. 1995. *Partisan Politics, Divided Government, and the Economy*. Cambridge: Cambridge University Press.

Barabas, Jason. 2006. Rational Exuberance: The Stock Market and Public Support for Social Security Privatization. *Journal of Politics* 68:50–61.

Bélanger, Éric, Richard Nadeau, Mathieu Turgeon, Michael Lewis-Beck, and Martial Foucault. 2014. Patrimony and French Presidential Vote Choice: Evidence from the 2012 Election. *French Politics* 12:59–68.

Costa, Lobo, and Marna. 2013. Dimensions of the Economic Vote: Valence, Positional and Patrimony Voting in Portugal's 2011 Elections. *Electoral Studies* 32:460–64.

Fauvelle-Aymar, Chrstine, and Mary Steigmaier. 2013. The Stock Market and US Presidential Approval. *Electoral Studies* 32:411–17.

Foucault, Martial. 2013. Vote et richesse économique (Voting and economic wealth). In *Les Québécois aux urnes: les partis, les médias et les citoyens en campagne* (The Quebecers at the Polls: The Parties, the Media and the Citizens during Campaigns), edited by Frédérick Bastien, Éric Bélanger and François Gélineau, 219–31. Montréal: Presses de l'Université de Montréal.

Foucault, Martial, Richard Nadeau, and Michael Lewis-Beck. 2013. Patrimonial Voting: Refining the Measures. *Electoral Studies* 32:557–62.

Fraile, Marta, and Michael Lewis-Beck. 2013. Multi-Dimensional Economic Voting in Spain: The 2008 Election. *Electoral Studies* 32:465–69.

Healy, Andrew, and Neil Malhotra. 2013. Retrospective Voting Reconsidered. *Annual Review of Political Science* 16:285–306.

Kiewiet, Donald R. 1983. *Macroeconomics and Micropolitics: The Electoral Effects of Economic Issues*. Chicago, IL: The University of Chicago Press.

Lewis-Beck, Michael, and Richard Nadeau. 2011. Economic Voting Theory: Testing New Dimensions. *Electoral Studies* 30:288–94.

Lewis-Beck, Michael, Richard Nadeau, and Martial Foucault. 2013. The Complete Economic Voter: New Theory and British Evidence. *British Journal of Political Science* 43:241–61.

Lewis-Beck, Michael, and Mary Stegmaier. 2007. Economic Models of Voting. In *The Oxford Handbook of Political Behavior*, edited by R. J. Dalton and H.-D. Klingemann, 518–37. Oxford: Oxford University Press.

Martinsson, Johan. 2013. Economic Voting in Sweden 1985–2010. *Electoral Studies* 32:470–75.

Micklewright, John, and Sylke V. Schnepf. 2010. How Reliable are Income Data Collected with a Single Question? *Journal of the Royal Statistical Society: Series A (Statistics in Society)* 173: 409–29.

Moore, Jeffrey C., and Edward J. Welniak. 2000. Income Measurement Error in Surveys: A Review. *Journal of Official Statistics* 16:331–62.

Nadeau, Richard, Martial Foucault, and Michael Lewis-Beck. 2010. Patrimonial Economic Voting: Legislative Elections in France. *West European Politics* 33:1261–277.

Nadeau, Richard, Martial Foucault, and Michael Lewis-Beck. 2011. Assets and Risk: A Neglected Dimension of Economic Voting. *French Politics* 9:97–119.

Naurin, Elin, and Niklas Håkansson. 2015. The Swedish Election Pledge Data Base. The Swedish National Election Study Programme, Department of Political Science, University of Gothenburg.

Naurin, Elin, and Henrik Oscarsson. 2015. When and Why are Voters Correct in Their Evaluations of Specific Government Performance? Evidence from Sweden. Unpublished manuscript.

Oscarsson, Henrik. 2007. A Matter of Fact: Knowledge Effects on the Vote in Swedish General Elections, 1985–2002. *Scandinavian Political Studies* 30:301–22.

Oscarsson, Henrik, and Sören Holmberg. 2008. *Regeringsskifte: Väljarna och valet 2006* (Change of Government: The Voters and the 2006 Election). Stockholm: Norstedts juridik.

Stegmaier, Mary, and Michael. Lewis-Beck. 2013. Economic Voting. In *Oxford Bibliographies in Political Science*, edited by Rick Valelly. New York: Oxford University Press.

Stevenson, Randolph, and Raymon Duch. 2013. The Meaning and Use of Subjective Perceptions in Studies of Economic Voting. *Electoral Studies* 32:305–20.

Stubager, Rune, Michael Lewis-Beck, and Richard Nadeau. 2013. Reaching for Profit in the Welfare State: Patrimonial Economic Voting in Denmark. *Electoral Studies* 32:438–44.

Withey, Stephen B. 1954. Reliability of Recall of Income. *Public Opinion Quarterly* 18:197–204.

Yan, Ting, Richard Curtin, and Matthew Jans. 2010. Trends in Income Nonresponse Over Two Decades. *Journal of Official Statistics* 26:145–64.