



Economic performance and incumbents' support in Latin America



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ABSTRACT

We analyze the impact of economic conditions and income shocks on the stability of incumbents' support in Latin America. A reduction in the incumbent's vote share from one election to another is a behavioral indicator of voter discontent with her performance, a crucial element of democratic accountability. In explaining the percentage change in incumbent vote, we emphasize the importance of income effects. In particular, we argue that negative economic conditions have deleterious consequences on the capacity of incumbents to sustain their electoral support. We test this hypothesis both at the aggregate and individual level using electoral and survey data. We find evidence that negative economic shocks erode support for incumbents at both levels of analysis, thus increasing our confidence on results showing the impact of pocketbook economic vote in the region.

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1. Introduction

The Third Wave of democratization had a profound effect in Latin America, ending the regime instability that characterized prior historical periods (Pérez-Liñán and Mainwaring, 2013). Democracy promised to both end political instability and establish electoral accountability to voters. However, electoral accountability did not prevent politicians from ignoring electoral mandates in the new Latin American democracies (Stokes, 2001), nor did it cease political instability, which adopted new forms increasingly associated with voter discontent (Perez-Liñán, 2007). As a result, voter discontent, measured as electoral volatility or decay of electoral loyalties, was associated with dramatic changes in Latin American party systems (Roberts, 2013; Lupu, 2014).¹

To the extent that the opportunity to 'throw the rascals out' establishes the minimum threshold of democratic accountability (Schumpeter, 1942), this study examines the erosion of electoral loyalties as captured by change in support for incumbent executives. We assume that variation on the electoral loyalty to those in

government is a good way to gauge retrospective voting and, in particular, discontent with the performance of presidents in power throughout the region. To explain changes in electoral support for incumbents, we focus on income effects. This focus, which builds on the existing literature on economic voting is especially relevant in a region characterized by economic volatility (Bertola and Ocampo, 2012). Our investigation departs from previous research of Latin American electoral behavior in focusing on support for the incumbent between presidential elections while using both aggregate data on the effect of real economic indicators and individual level data about perceptions of income deterioration.

First, our dependent variable, the change in the vote for the incumbent between consecutive presidential elections (from time $t-1$ to time t), is different from general electoral volatility or incumbent vote share used by most of the existing literature.² We argue that the stability of incumbent support is a more precise measurement of voters' assessment of government performance, which is the crucial tool for building democratic accountability. Second, we combine two different levels of analysis for incumbent volatility: a) the aggregate level using electoral results and

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¹ Mainwaring et al. (1995) path breaking study pointed to electoral volatility as a crucial component of party system institutionalization in Latin America. Roberts (2013, 2015) influential study of Latin American political parties uses electoral volatility as an indicator of political representation and electoral realignment. Levitsky and Murillo (2014) point to electoral volatility in their explanation of institutional instability in the region.

² See, for instance, Mainwaring and Zucco (2000) at the aggregate level and Lewis-Beck and Ratto (2013) at the individual level. Roberts and Wibbels (1999) and Nooruddin and Chhibber (2008) also use change in the vote share of the incumbent in their studies of Latin American and Indian electoral behavior respectively. However, Roberts and Wibbels (1999) use the absolute value of the change, which does not allow understanding when incumbents win and lose voters from one election to the other.

economic data, and b) the individual level using vote intention and perceptions of income reduction based on survey data. In both cases, our dependent variable is the change in support for the incumbent. The use of both country and voter level indicators allows us to have more confidence on the micro-foundations behind the national level trends at which we have measures of real economic performance.³ Additionally, we try to reduce the endogeneity problems generated by the sensitivity of voters' economic perceptions to partisanship and ideological distance to the incumbent in Latin America, both of which also affect the vote (Singer, 2015; Cabezas, 2015). Hence, we rely on income effects produced by real indicators at the country level and perceptions of income deterioration rather than views about the economy reported by voters. Finally, our study enriches previous work on economic vote by expanding the analysis to the 18 Latin American democracies from 1978 to 2014.

At the aggregate level, we focus on the effects of inflation, economic growth, and total international reserve levels. Whereas the former two have been widely used by the literature on economic vote, the third is more explicitly sensitive to international shocks allowing us to assess the impact of variables over which there may be varying levels of agency by incumbents. The negative income effects generated by inflation are regressive and therefore affect large swaths of the population in the unequal societies of Latin America. Voters should be especially sensitive to inflation because it is more clearly associated with monetary policy and government agency. Economic growth and international reserves are measures of a country's increase in wealth. International reserve levels are associated with the appreciation of the exchange rate, a current account surplus, or capital inflows; that is, their income effects can operate through savings, or consumption or even subsidizing the fiscal deficit. Both growth and the level of reserves have been shown to be sensitive to external economic conditions in the region (Izquierdo et al., 2008). We measure general effects, but also assess the impact of bad economic times, which may increase the attention of voters to economic conditions when choosing at the ballot box.⁴

At the individual level, we estimate the effects of income deterioration on the intention of voting for the incumbent among those who reported having already voted for the current presidential party in the previous elections. This approach is different from those traditionally used to measure egotropic and sociotropic concerns, which ask more generally about perceptions of the state of the economy. We believe that it is easier for voters to define whether their income has changed and in which direction than to make general evaluations about the economy, which are more likely to be biased by partisanship or ideological distance from the incumbent. In using this question about income shocks, we are closer to egotropic than sociotropic considerations. Our results show the impact of income effects, in particular economic shocks, on change in support for the incumbent at both the aggregated and individual level.

Our findings provide two main contributions to the literature on the economic vote. First, they illustrate the relation between international reserves and incumbents' support in Latin America, which has not been previously studied and provides important evidence of economic effects for which agency is harder to assess. Second, they support the influence of pocketbook rather than

sociotropic voting, in contrast to the recent literature on Latin American electoral behavior (Ratto 2013, Navia and Soto Castro, 2015).⁵

The remainder of the paper is organized into four sections. The first section discusses the literature and presents our hypothesis. The subsequent two sections present the empirical analysis at the country and the voter levels respectively. In the final section we present our [Conclusion](#).

2. Economic performance, incumbent support and electoral accountability

We focus on change in support for the incumbent between presidential elections as a measure of accountability to gauge electoral behavior, and in particular, voter discontent. Latin American presidents are the crucial actors in terms of both defining policy mandates and abandoning them (Stokes, 2001) and, therefore, are also the focus of voter discontent producing new forms of political instability, which in some cases forces the early end of their terms (Perez-Liñan, 2007). Changes in electoral support for the incumbent between presidential elections are the clearest expression of a retrospective evaluation of the president's performance and the most meaningful tool possessed by voters for electoral accountability.

Following studies that have focused on the importance of economic voting on Latin American electoral behavior, even when compared with other developing countries (Singer, 2013), we analyze the impact of income effects on changes in voters' support for the incumbent. Economic voting has been widely accepted as a crucial factor explaining voters' behavior in comparative analysis based on individual level surveys (e.g. Duch, 2001; Duch and Stevenson, 2008; Nadeau et al., 2013), and has been associated with voters' capacity to attribute policy responsibilities (Duch and Stevenson, 2008; Hellwig, 2014).⁶ The literature provides evidence of economic voting in Latin America, where presidential regimes should facilitate blame assignment based on economic performance (Hellwig and Samuels, 2008).⁷

The capacity of voter to discern the agency of incumbents in dealing with adverse conditions has generated a debate in the literature. Achen and Bartels (2016) and Bermeo and Bartels (2013) hold that US and European citizens will tend to punish the government for natural disasters outside their control, including floods, droughts and shark attacks, as well as economic crises, because they are myopic and not able to distinguish the origin of adverse conditions. Campello and Zucco (2015) argue that Latin American voters are unable to assess the origin of domestic economic conditions even when blaming or rewarding incumbents for such state of affairs.⁸ By contrast, Healy and Malhotra (2010) defend the rationality of US voters in punishing incumbents after natural disasters by focusing on the performance of governments in reaction to such negative events. US voters, they show, only punish the incumbents after tornados when no disaster declaration takes place and do not blame them for tornado-caused deaths. Their evidence, thus, casts doubts on the idea of blind electoral retrospection. We do not take a position on this debate since our independent variables (real economic conditions and income shocks) can be

⁵ See Lewis-Beck and Steigmaier (2013) for a general argument about the strength of sociotropic over egotropic considerations on the vote.

⁶ For reviews of the literature, see Hellwig (2010) and Lewis-Beck and Steigmaier (2007).

⁷ See Gelienu (2007), Singer (2013, 2015), Ratto (2013), and Lewis-Beck and Ratto (2013), for economic voting in Latin America using individual data.

⁸ They show that US interest rates and commodity prices predict presidential popularity in the region.

³ Alternatively, Nadeau et al. (2013) probe the impact of economic performance on perceptions about the economy by voters as a 'reality check' of economic voting.

⁴ Singer (2013) and Kaplan (2013) suggest that negative economic conditions increase the salience of economic indicators, such as inflation, on Latin American voters' behavior and individuals' attention, respectively.

explained by both exogenous shocks and domestic agency or a combination of both. We do not know how voters attribute responsibilities for the particular economic conditions in a given country and in a given year to test whether they are rational (assigning the government stronger responsibility for economic conditions explained by domestic agency) or irrational (providing the same judgement regardless of the origin of the negative shock). Indeed, whereas inflation can be more easily associated to domestic policy-making than international reserve levels, which are more sensitive to exogenous shocks, we find that both affect aggregate electoral behavior.

Our use of alternative measures of economic performance follows a Latin American literature on economic voting based on studies of aggregate electoral behavior—either using electoral volatility or the vote share for the incumbent as dependent variables—, but which has debated on the appropriate indicators to show the influence of economic performance on electoral behavior.⁹ Mainwaring and Zoco (2007) and Roberts and Wibbels (1999) find that growth affects electoral volatility. By contrast, in explaining voting shifts in Latin America, Murillo et al. (2010) find significant effects for inflation, but not for growth in the period between 1978 and 2010. Looking at the share and rate of change of support for the incumbent, Remmer (2003) finds a negative effect of inflation in the 1980s and 1990s, but a positive effect for growth only since the 1990s. Singer (2013) also finds significant effects for inflation in the 1980s and 1990s while growth only becomes significant in the 2000s.

In seeking to contribute to the debates over economic agency and the diverse impact of economic variables across times, we decide to incorporate not only growth and inflation in our analysis but also the level of international reserves. Furthermore, we test separately the impact of bad economic times and its effect on electoral behavior. Whereas the effect of growth (rate of change in GDP), and inflation (rate of change in prices) have been widely accepted in the literature, we are not aware of prior studies of the level of international reserves as a determinant of incumbents' electoral support.¹⁰

Inflation generates negative and regressive income effects. The Latin American poor have few options to protect their income from declining purchasing power as they consume a larger share of it. Whereas wages are more difficult to protect from inflation than assets, income derived from the informal economy is hit even harder given the lack of collective bargaining or automatic indexation mechanisms—and half of the Latin American workforce is in the informal sector. Voters perceive inflation on daily prices, and the widely different levels of inflation experienced by voters increased its political significance. For instance, Argentinean voters experienced hyperinflation during the 1989 presidential election—a year when inflation was more than 3000 percent—but went into the 1999 presidential election amidst a deflation as prices fell by almost 2 percent (World Development Indicators, 2015). Politicians have reacted with policies that can be associated with inflationary outcomes during this period, such as the monetization (or contraction) of the deficit, the establishment of price controls, trade liberalization, fixing or controlling exchange rates, thus making inflation easier to associate with government agency (Kaplan, 2013; Baker, 2009).

The effect of economic growth on Latin American electoral

behavior has a long trajectory since Remmer's (1991) analysis of its effect on incumbent support. Growth, as a measure of countries' wealth, is a pre-condition for individuals improving their economic well-being. Economic volatility in Latin America has generated widespread variation on patterns of economic growth in most countries of the region during the studied period, giving voters the opportunity to experience its consequences. For instance, Peruvian voters re-elected President Alberto Fujimori after having experienced an economic growth greater than 10 points in 1995, but when they elected him for the first time in 1990 the country was in an economic recession with a GDP decline of more than 10 points. Yet, there has been a debate about the causes of growth in the region, and the impact of exogenous shocks, such as commodity prices or international interest rates on the evolution of domestic GDPs, even when domestic policies can shape the swings produced by these external factors.¹¹

Given the association of growth with external economic conditions, such as commodity prices and international interest rates (Campello and Zucco, 2015), and given that recent experiences of inflation have been associated with the monetization of fiscal deficits or the appreciation of the exchange rate, we include in our models the effect of foreign-exchange reserves on electoral volatility. The level of reserves can produce income effects through diverse mechanism and be associated with either exogenous shocks or domestic policies. Commodity prices—over which Latin American policymakers have little agency—can influence both growth levels and access to international reserves. Conversely, when politicians run fiscal deficits, they can choose to increase taxes, print money, or borrow reserves from the central bank. Additionally, exogenous or domestic factors may generate balance of payment shortages that could not be covered with foreign-exchange reserves leading to a devaluation of the domestic currency if the nominal and the real exchange rate were not aligned, thus reducing the purchasing value of the domestic currency. Therefore, even if voters are unable to distinguish whether higher levels of reserves result from current account surpluses, from capital inflows as a result of repatriation, foreign investment or external credit or from domestic changes in productivity or macroeconomic policy, the resulting income effects will be apparent. That is, foreign reserves translate into stocks of country wealth that could affect the value of its currency in terms of purchasing power, access to credit, salaries or job demand, and thereby generate income effects felt by voters, even if they cannot distinguish their origin.¹²

The level of reserves has varied quite dramatically for the same Latin American voters. For example, Evo Morales was elected president of Bolivia in 2005 and reelected in 2009. By the time of his 2009 re-election, the level of international reserves of the country was six times larger than in 2005—the result of both higher commodity prices and a prudent macroeconomic policy (Kaufman, 2011).

Given the income effects associated with changes in the rate of growth and inflation as well as reserve levels, we expect voters to react using their vote to express dissatisfaction with incumbents when conditions deteriorate or satisfaction when conditions improve. Therefore, we expect inflation to decrease support for the incumbent and growth and reserves to increase the support for the incumbent between presidential elections. Our first set of

⁹ See, for example, Remmer (1991, 2006), Roberts and Wibbels (1999), and Benton (2005).

¹⁰ Total reserves “comprise holdings of monetary gold, special drawing rights, reserves of IMF members held by the IMF, and holdings of foreign exchange under the control of monetary authorities” (World Bank).

¹¹ Izquierdo et al. (2008) show that external factors account for significant share for variance of GDP growth in the larger Latin American countries.

¹² Higher levels of stocked wealth (or country savings) can also reduce the impact of negative exogenous shocks whereas lower levels wealth can make countries more exposed to balance of payment crisis.

hypotheses is summarized below:

Hypothesis 1: Higher inflation decreases the incumbent's electoral support from presidential election $t-1$ to t .

Hypothesis 2: Lower growth decreases the incumbent's electoral support from presidential election $t-1$ to t .

Hypothesis 3: Lower levels of reserves decrease the incumbent's electoral support from presidential election $t-1$ to t .

At the individual level, we also expect negative income effects to be associated with voters' retrospective evaluation of incumbents and vote intention. Whereas this hypothesis is in line with the literature on economic voting in Latin America, Lewis-Beck and Ratto (2013) and Ratto (2013) emphasize sociotropic rather than egotropic evaluations to explain individual vote intention.¹³ We use a question asking voters to report negative income shocks, which should be less sensitive to views of the incumbent than macro-economic assessments.¹⁴ We expect reports of income deterioration to be associated with an increase in the probability of reducing electoral loyalty to the incumbent.

To assess the impact of economic performance on support for the incumbent, we focus on those respondents who report having voted for the incumbent in the prior election, but do not plan to keep their electoral allegiance in a hypothetical election in the current week; that is, they plan to vote for a candidate different from the one supported by the incumbent or plan to cast a blank vote. We are using this strategy in seeking to isolate the income effects on the electoral loyalty of those who had voted for the incumbent before rather than other pre-existing factors shaping their attitudes towards the governing party.¹⁵ Therefore, at the individual level we test the following hypothesis:

Hypothesis 4: Among voters who reported having voted for the incumbent in the last elections, those who experienced a negative income shock should be more likely of defecting from the incumbent than those that who did not experience a negative shock.

In the next two sections, we seek to identify the impact of income effects on change in support for the incumbent. First, we use aggregate data for presidential elections in 18 Latin American countries to estimate how growth, inflation and reserves affect change in support for the incumbent. In the subsequent section, we use individual survey data and matching to construct a treated and control group of individuals, where the treatment is a negative shock in the income of respondent's household in the last two years. We estimate the effects of this shock on not voting for the incumbent in a sample of voters who report having voted for the incumbent in the previous election.

¹³ The broader literature also finds stronger effects for sociotropic rather than egotropic concerns (Lewis-Beck, 1988; Kinder et al., 1989). Both Lewis-Beck and Ratto (2013) and our study rely on the LAPOP surveys but on different questions. However, sociotropic measurement has been criticized due the reverse causality issues between electoral preferences and the evaluation of the national economy (Evans and Andersen, 2006).

¹⁴ Singer (2015) finds that ideological distance from the incumbent shapes evaluations of the incumbent more than sociotropic or egotropic evaluations of the economy.

¹⁵ Even if respondents report voting for the incumbent, but they have not done it, it shows a positive predisposition toward the incumbent. Thus, we are comparing respondents who had a positive inclination toward the incumbent and perceive a negative income shock.

3. Aggregate economic conditions and change on incumbents' support

In seeking to understand how economic conditions, and in particular negative economic shocks, affect the performance of incumbent parties, our aggregate analysis uses a dataset including all the presidential elections in 18 Latin American countries from the third wave of democratization until 2014. In this empirical analysis we focus on how inflation, economic growth, and the level of reserves shape support for the incumbent party. We have a panel data with 18 countries and an average of 7 presidential elections. We use country and decade fixed effects, which allow us to control for unobserved heterogeneity. We include decade fixed effects based on the high levels of economic volatility in the region. Each of the last four decades has been associated with different economic periods; the economic crisis in the '80s, the adoption of neoliberal reforms in the '90s, the commodity boom in the '00, and finally the decline on the prices of the commodities in the last years.

The following equation represents our main specification for country i and election t . It includes political, economic and institutional variables:

$$Y_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 P_{it} + \beta_3 I_{it} + \omega_i + \lambda_d + \varepsilon_{it}$$

Y_{it} represents the change on the incumbent vote share from election $t-1$ to election t for a country i . E includes a set of lagged economic variables (lagged logarithm of inflation, lagged growth and lagged logarithm of reserves), which assess the retrospective evaluation of voters about economic performance,¹⁶ P refers to a set of political variables¹⁷ (logarithm of age of democracy, effective number of parties,¹⁸ the ideology of the president's party,¹⁹ clean elections,²⁰ lagged incumbent vote share, barriers to forming new parties,²¹ political corruption,²² and party linkages²³), and I depicts a set of institutional variables (reelection,²⁴ concurrent election,²⁵ two-round system,²⁶ and compulsory vote²⁷). Finally, ω represents the unobserved time-invariant country effect and λ the

¹⁶ We include lagged economic independent variables to describe the entire year before the presidential election, and not a fraction of the year when the election occurs.

¹⁷ Ecuador, Honduras, Panama, and Venezuela had observations until the year 2012 in the Varieties of Democracy dataset v6. These countries had presidential elections in 2013 or 2014; therefore for these elections we imputed the 2012 values for the four V-DEM control variables (clean elections, barriers to parties, political corruption, and party linkages).

¹⁸ Effective number of parties (seats) in Congress (last legislative election) from Negretto (2013).

¹⁹ Ideology goes from 1 (very left) to 5 (very right) from Murillo et al. (2010).

²⁰ To what extent are elections free and fair? The index is formed by taking the point estimates from a Bayesian factor analysis model that goes from 0 to 100; it is taken from V-Dem Data - Version 6.

²¹ How restrictive are the barriers to forming a party? The index is constructed by using a Bayesian item response theory measurement model and is taken by V-Dem Data - Version 6.

²² How pervasive is political corruption? The index goes from 0 to 100 and is from V-Dem Data - Version 6.

²³ Among the major parties, what is the main or most common form of linkage to their constituents? The index is constructed by using a Bayesian item response theory measurement model and is from V-Dem Data - Version 6 (from clientelistic to programmatic).

²⁴ Can the current president run in the next presidential election? (Nohlen, 2005; Carreras, 2012; and Payne, 2003).

²⁵ Are the President and Congress (or part of the Congress) elected at the same time? (Nohlen, 2005; Carreras, 2012; and Payne, 2003).

²⁶ Does the country have a two round system with runoff for electing the president? (Nohlen, 2005; Carreras, 2012; and Payne, 2003).

²⁷ Does the country have compulsory vote for that presidential election? (Nohlen, 2005; Carreras, 2012; and Payne, 2003).

unobserved country-invariant time effect by decade.²⁸ We use the logarithm transformation for inflation and reserves because they have wide data ranges with a positive skewed distribution.

We select control variables to reduce the omitted-variable bias, but we are not particularly interested on how they affect the dependent variable. Our main controls are the political and institutional factors theorized to affect the nature of party competition and the stability of voters' preferences (see Mainwaring et al., 1995, Roberts and Wibbels, 1999; Tavits, 2005; Mainwaring and Zoco, 2007; Carreras, 2012). For instance, concurrent elections can reduce electoral fragmentation through coattail effects (Payne et al., 2001) while also affecting the likelihood of outsiders' success (Carreras, 2012). Similarly, older democracies are associated to more stable electoral preferences given prior electoral experience and knowledge of party trajectories (Mainwaring and Zoco, 2007).

Regarding our dependent variable, a candidate is coded as an incumbent if fulfilling one of the two following requirements: (i) the candidate is the current president looking for the reelection, or (ii) the candidate belongs to the same party that the president who won the previous election.²⁹ Our dependent variable can take negative or positive values. A negative/positive value represents a decrease/increase on the incumbent vote share from election $t-1$ to election t . We have 119 elections in our dataset, but there are 7 observations where there was not an incumbent candidate running in the election in time t ,³⁰ so it was not possible to compute the change in the incumbent vote share for those cases.³¹ We additionally test our main model on a different dependent variable, the electoral volatility among existing or status quo parties or type B volatility³² (the direction of effects on this dependent variable should be the opposite of those on our main dependent variable, since higher values represent more electoral volatility). The following figure shows the distribution of our main dependent variable for all of the 112 cases. (see Fig. 1).

Following the hypotheses previously described, we expect that higher inflation should negatively affect changes on the incumbent vote share; meanwhile higher reserves and growth should have a positive effect. The set of institutional and political variables are included as controls, and we are agnostic about their possible effects on the outcome. The descriptive statistics for our dependent and independent variables are reported in the online appendix.

We estimate six different models. The first is the baseline and only includes our economic independent variable to show their effects when we do not include any control. The second model

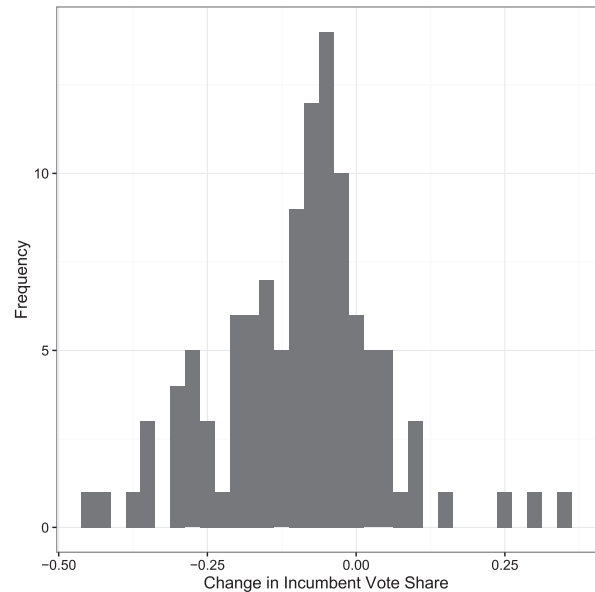


Fig. 1. Distribution of the dependent variable for the aggregate analysis.

represents our main specification. The third does not include cases of hyperinflation.³³ The fourth excludes Argentina during the years when it had a currency board and no control over its exchange rate policy (1991–2001). The fifth model excludes cases with extreme positive and extreme negative values of economic growth.³⁴ The last model repeats our main specification (second model) but using a different dependent variable (type B volatility). All the analyses include country and decade fixed effects. Table 1 reports coefficients and standard errors for the six models described.

Inflation, growth and reserves, as expected, are associated with changes on the incumbent vote share between presidential elections in Latin American countries. First, inflation rate has the expected negative effect, with higher rates decreasing the vote for the incumbent candidate from election $t-1$ to t . Meanwhile, greater reserve levels and growth have a positive effect on change of the incumbent vote share. The effects of inflation and reserves are significant and robust to all specifications. Growth is not significant when we exclude the extreme cases (fifth model), which suggest that its impact is driven by extreme values in terms of booms and boosts.

Finally, the last model focuses on type B volatility that includes only existing parties (that compete in election $t-1$ and t) and received more than 2 percent of the vote; that is, 'status quo' parties rather than new parties. This dependent variable expresses a more general impact of retrospective vote on established parties and therefore seeks to assess whether electoral accountability opens the door to more general voter discontent with party systems. Remember that we expect coefficients with the opposite direction here. As expected, higher inflation increases volatility for established parties whereas higher growth or reserve levels reduce it. Therefore, negative economic conditions can also be associated with more systemic consequences that open the door to the

²⁸ All the sources are reported in the appendix.

²⁹ In case of a party split, we focus on the faction that keeps the party name (and therefore voters' can attribute responsibility to that faction for the economic conditions).

³⁰ Colombia 2002, Ecuador 1996, Guatemala 1995, Peru 2001, Peru 2006, Peru 2011, and Venezuela 1998.

³¹ Presidential elections in Venezuela 1998 and Colombia 2002 can be ambiguous cases. The incumbent parties backed Chavez and Uribe, respectively, but these candidates did not run under the Convergencia or Conservador party labels, making it difficult to voters to associate Chavez and Uribe for the performance of their predecessors. We include a robustness check in the appendix coding Chavez 1998 and Uribe 2002 as incumbents (see online appendix Table A2). Another odd case is the Argentine presidential elections of 2003. We coded Leopoldo Moreu (UCR) as the incumbent because his co-partisan Fernando de la Rúa (UCR) had won the previous presidential election. However, De La Rúa resigned and was replaced by a transitional Peronist president, who oversaw those elections and supported his successor. Consequently, we include a robustness check in the appendix excluding Argentina 2003 from the analysis (see appendix Table A3). Results are not affected in either case.

³² Volatility B captures when voters switch their vote between existing parties (Powell and Tucker, 2014), which ran both in t and $t-1$ and received more than two percent of the vote. We have more cases here since we did not have to exclude the previous 7 countries where the incumbent candidate or party did not run in the next election.

³³ We exclude the following observations for hyperinflation: Argentina 1989, Brazil 1994, Peru 1990 and Nicaragua 1990.

³⁴ We exclude the following extreme positive values of growth (greater than 10 points): Chile 1993, Peru 1995, and Venezuela 2006. And the following for extreme negative values of growth (lower than -10 points): Argentina 2003, and Peru 1990.

Table 1
Regression results aggregate level.

	Dependent variables:					
	Change in incumbent vote share					Type B volatility
	(1)	(2)	(3)	(4)	(5)	(6)
Lagged GDP Growth	0.013*** (0.004)	0.009** (0.004)	0.011*** (0.004)	0.009** (0.004)	0.005 (0.005)	-0.005* (0.003)
Lagged log Inflation	-0.020* (0.011)	-0.021* (0.011)	-0.030* (0.015)	-0.023* (0.012)	-0.028** (0.011)	0.035*** (0.008)
Lagged log Reserves	0.040* (0.023)	0.038* (0.021)	0.040* (0.022)	0.040* (0.022)	0.035* (0.020)	-0.032** (0.015)
Ideology Presidential Party		-0.040*** (0.011)	-0.039*** (0.012)	-0.039*** (0.011)	-0.040*** (0.011)	0.021** (0.008)
Log Age of Democracy		0.038 (0.039)	0.021 (0.044)	0.035 (0.040)	0.049 (0.040)	-0.002 (0.028)
Effective Number of Parties		-0.003 (0.016)	-0.009 (0.017)	-0.004 (0.017)	-0.006 (0.017)	0.013 (0.011)
Lagged Incumbent Vote Share		-0.354** (0.165)	-0.404** (0.173)	-0.350** (0.168)	-0.324** (0.159)	-0.143 (0.112)
Second Round		-0.048 (0.049)	-0.048 (0.053)	-0.048 (0.050)	-0.047 (0.048)	0.097*** (0.035)
Reelection		0.135*** (0.037)	0.141*** (0.038)	0.138*** (0.039)	0.125*** (0.036)	0.043 (0.027)
Concurrent Election		0.034 (0.052)	0.028 (0.053)	0.037 (0.053)	-0.009 (0.055)	-0.028 (0.037)
Compulsory Vote		-0.004 (0.085)	0.023 (0.087)	-0.008 (0.087)	-0.036 (0.086)	0.122** (0.057)
Clean Elections		0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	-0.0005 (0.002)	-0.002* (0.001)
Barriers to Parties		-0.012 (0.034)	-0.005 (0.035)	-0.012 (0.034)	0.009 (0.033)	-0.030 (0.024)
Political Corruption		0.006* (0.003)	0.007** (0.003)	0.005 (0.003)	0.004 (0.003)	-0.003 (0.002)
Party Linkages		0.021 (0.037)	0.011 (0.039)	0.019 (0.038)	0.022 (0.037)	-0.016 (0.025)
Constant	-0.992* (0.516)	-1.063** (0.530)	-1.187** (0.543)	-1.076** (0.537)	-0.705 (0.524)	0.990** (0.381)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Decade fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All countries	All countries	No hyperinflation	No Argentina	'90 No extreme growth	All countries
Observations	112	112	108	110	107	119
R ²	0.328	0.599	0.593	0.600	0.570	0.530
Adjusted R ²	0.152	0.415	0.395	0.411	0.357	0.332

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

collapse of traditional parties.³⁵

We explore, in particular, the effect of 'bad economic times', which represents more closely the impact of economic shocks, which we are also measuring in the individual level analysis. Our emphasis on 'bad times' is consistent with the theme of this special symposium and with the research that suggests that deleterious economic shocks raise voters' attention to the economy when choosing at the ballot box. We measure the effect of 'bad economic times' by creating three new binary variables: "low economic growth", which correspond to economic growth lower than 2 points and "high inflation", with cases where inflation is higher than 10 points.³⁶ We also create the variable "negative economic shocks," which captures cases simultaneously experiencing both negative shocks (high inflation and low economic growth). The models include the same independent variables used in the previous regressions, and include country and decade fixed effects.

³⁵ Roberts (2015) suggests that party system effects are related to voter discontent with incumbents when left-wing parties adopt market reforms, but this result suggest a more general effect that deserves further investigation.

³⁶ When we include a binary indicator for low economic growth, we exclude growth from the regression. The same when we include a binary indicator for high inflation.

Table 2 reports coefficients and standard errors for the three models described.³⁷

Our results show that economic malaise reduces electoral loyalty to the incumbent. All three indicators of 'bad economic times' have the expected negative effects on the change of the incumbent vote share. In particular, a negative inflationary shock decreases the incumbent vote share by 7 percent in the next election whereas negative growth erodes incumbent support by 6 percent.³⁸ Therefore, this supplementary analysis reinforces our expectations that voters' electoral discontent is sensitive to negative economic conditions. These results may be compared with those of the individual analysis in the next section, where we examine voter responses to negative income shocks, to which we now turn.

³⁷ We did not include a binary indicator for reserves since the cutoff for bad times is less intuitive.

³⁸ The results of bad economic growth are sensitive to different cutoffs points. This confirms the results from Table 1 model 5 showing that the effects of GDP are driven by extreme values. We observe the same instability across cutoffs when using an indicator for good economic growth. On the other hand, inflation has more stable patterns across multiple cutoffs points. In Table 2 we are reporting the results from the cutoffs that generate the more even distribution between 0s and 1s.

Table 2
Regression results aggregate level.

	Dependent variable:		
	Change in incumbent vote share		
	(1)	(2)	(3)
Negative Economic Shock	−0.069** (0.029)		
Low Economic Growth		−0.055* (0.032)	
High Inflation			−0.073*** (0.027)
Country fixed effects	Yes	Yes	Yes
Decade fixed effects	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	112	112	112
R ²	0.568	0.583	0.616
Adjusted R ²	0.377	0.391	0.439

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

4. Individual income shocks and electoral defection

In this section we shift the analysis to the individual level using the Americas Barometers survey conducted in 2010, 2012, and 2014, which have been used in studies seeking to understand economic voting at the individual level using sociotropic³⁹ and egotropic⁴⁰ perceptions. To measure our dependent variable of voter discontent we use two questions in the surveys: a) *who did you vote for in the last general elections?* And b) *if the next general elections were being held this week, what would you do?* Using the first question we subset the sample to voters that voted for the incumbent in the previous elections, and the second to generate an outcome of 0 if voters keep voting for the incumbent and 1 if they decide to vote for someone else (not the current president or her candidate), or to leave the ballot blank. In summary, the outcome reports a 0 for keeping the previous political preference and 1 for changing the previous political preference for individuals that reported having voted for the current incumbent in the previous election.⁴¹ This variable is capturing when incumbents' supporters decide to change their previous voting behavior.⁴² We believe it is a better measure of electoral accountability than the intention to vote for the incumbent because it focuses on those voters who shift electoral loyalties; that is, voters who were originally supportive and changed their views of the incumbent. It therefore allows us to explore the conditions that produced voters' discontent toward the incumbent.

To measure our treatment, we use a different indicator from sociotropic or egotropic perceptions to reduce the possibility of bias since economic perceptions are usually correlated with attitudes about the incumbent. We use a question asking respondents about the evolution of their household income in the last two years seeking to capture negative shocks on individuals' household's incomes: *“Over the past two years, has the income of your household:*

*(1) Increased? (2) Remained the same? (3) Decreased?”*⁴³ While we recognize that these responses may be shaped by voters' political preferences, we believe they are less likely to be affected by views of the incumbent than questions about sociotropic and egotropic perceptions of respondents. Moreover, this question is a good proxy for the 'bad economic conditions' that we investigate using aggregate electoral data, thereby giving us more confidence in the connection between results at both levels of analysis.

The treatment will be equal to 1 if the household income “decreased”, and equal to 0 if “remained the same”. We use matching to generate matched treated and control groups. The idea is to create comparable groups of individuals that only differ in their treatment status. Following Singer (2013) argument about the impact of negative economic conditions, and our results in the prior section, we hold that a negative income shock should be associated with a decline in the chances of voting for the incumbent candidate or party (conditional on having voted for the incumbent on the previous election).

We use a recent optimal matching technique called cardinality matching, which finds the largest matched sample that achieves the covariate balance requirements imposed by the researchers (Zubizarreta et al., 2014).⁴⁴ We select 11 covariates to be included in the matching procedure. Following Rosenbaum and Rubin (1983) we should only match using pretreatment covariates. However, we have survey rather than panel data. In the attempt to partially reduce biases, we follow the Rosenbaum (1984) advice about adjusting for post treatment covariates. Therefore, we select covariates based on two criteria: first, we exclude variables with a high probability of being affected by the treatment like economic perceptions or evaluations of the president's performance. Second, we include covariates as proxies for variables that cannot be included in the analysis; for example, opinions about a military intervention to reduce crime can be a replacement of ideology, since the latter can be affected by the treatment (a negative economic shock), and therefore introduce biases. Table 3 reports the 11 covariates included in the analysis.

We include covariates that can affect voters' behavior, the stability of political preferences and the treatment assignment. For example, being a victim of a crime or the perceptions of security can modify the chances of voting for the incumbent. The political knowledge might affect both the process of blame attribution after an economic shock and the stability of electoral decisions. The preferences about military intervention to reduce crime might be correlated with ideology, an important factor that cannot be included in the matching since it might be affected by the economic negative shock. Finally, the level of education, age, gender, ethnicity, religion, country and year can be correlated with the probability of receiving the treatment—that is, reporting a negative shock in your income. The descriptive statistics for all the covariates and the outcome before and after matching are reported in the online appendix.

³⁹ Do you think that the country's current economic situation is better than, the same as or worse than it was 12 months ago?

⁴⁰ Do you think that your economic situation of the country is better, the same or worse than it was 12 months ago?

⁴¹ We test the effects of a negative income shocks on the voters that did not vote for the incumbent in the previous elections (non-supporters) as a robustness check. As expected, economic deterioration decreases their probability to vote for the incumbent (see online appendix Table A8).

⁴² This question started to be implemented in 2010.

⁴³ We exclude all the cases where in the last two years there were two different presidents.

⁴⁴ This matching technique follows two steps. The first finds the optimal units to generate the largest matched treated and control groups that are balanced on all the observed covariates. The second step use a Mahalanobis distance computed with covariates that are predictive of the outcome to reduce heterogeneity or dispersion of treated-minus-control response differences Y . From Rosenbaum (2005) we know that heterogeneity of Y affects the degree of sensitivity to unmeasured biases, therefore this second step will reduce the effects of unobserved bias. In the second step, we use education and support of military intervention to re-pair the units after the first step. This second step is not affecting the estimation when using regressions since it is only repairing units. However, we can observe its benefits when implementing a Rosenbaum sensitivity analysis.

Table 3
Covariates for individual data.

Variable	Question/Explanation
Country	Country where the survey was conducted
Year	Year when the survey was conducted
Education	How many years of schooling have you completed?
Age	How old are you?
Gender	Gender noted by the interviewer
Ethnicity	What racial or ethnic group best describes you?
Religion	What is your religion, if any?
Military intervention to reduce crime	Do you justify a military coup to reduce crime?
Political knowledge	How many years is the presidential term of office in your country?
Crime victim	Have you been a victim of any type of crime in the past 12 months?
Perceptions of security	Speaking of the neighborhood where you live and thinking of the possibility of being assaulted or robbed, how do you feel?

Cardinality matching permits achieving different forms of covariate balance. We use fine balance,⁴⁵ which consists of balancing the marginal distributions of the treated and control groups exactly in aggregate, but without constraining whom is paired to whom (Rosenbaum, 2010; Zubizarreta, 2012).⁴⁶ In other words, fine balance for gender means that the treated and control groups will have the same number of women and men but a woman will not necessarily be paired to a woman.⁴⁷ In the following figures we show graphically how fine balance works for the covariate educational level. In the first plot we can see the imbalances between the treated and control groups. There are consistently more observations in the control group across the five categories of education. Meanwhile, the second plot shows how cardinality matching (through fine balance) is producing a matched treated and control group with exactly the same number of observations per category of education by optimally pruning observations.⁴⁸ The same is happening for all the other covariates (figures reported in the online appendix)(see Fig. 2).

This procedure generates a matched sample that is balanced for the 11 covariates included. Using this new matched sample, we use standard regression analysis to estimate the effects of the treatment (Ho et al., 2007). We implement a linear probability model to analyze the impact of a negative income shock on defecting from the incumbent. The results on Table 4 show that individuals are more likely to change their vote intention for the incumbent after perceiving a negative income shock on their household's income.

⁴⁵ We transform three continuous or ordinal variables into bins: education, age and perceptions of security. We include these original variables in the mean balance constraints; therefore we will obtain the same marginal distributions for the binned version of these covariates, and similar means for their continuous or ordinal versions. Additionally, some of the covariates we use have missing values. We impute the median for each of these observations, and generate a binary indicator that identified if the value was imputed or not. We include all the binary indicators in the matching procedure to also have balance in terms of imputed values. We use mean balance for the missing value indicators.

⁴⁶ This balance is less restrictive than exact matching since it does not focus on pairing but on balance.

⁴⁷ We use this type of balance for 10 covariates, but for "country" we use exact matching. Following the recommendation provided by Rosenbaum (2010), when the matching problem is too large (too many observations), it is better to divide it into several smaller problems using exact matching. Therefore, we conduct fine balance within each country, which by default produced exact matching for country. We merge the 18 matched samples into a large final matched sample.

⁴⁸ The matching includes by definition a process of pruning observations to be able to get covariate balance. Cardinality matching attempts to maximize the size of the sample and allows us to keep 89% of the observations available for the matching.

The shock increases their chances of defecting from the incumbent candidate (conditional on having voted for the incumbent in the previous elections) by almost 6 percent. We include three different models. In the first one we only regress the outcome on the treatment. In the second, we include country and year fixed effects. In the third model, we keep the fixed effects and also include the observed covariates used in the matching as controls. Table 4 reports the coefficients and standard errors for these three models.⁴⁹

Finally, we conduct a sensitivity analysis for hidden biases to assess the degree to which our results are sensitive to the existence of unmeasured factors of different magnitudes. The odds of differential assignment to treatment are represented by the parameter Γ . When this is equal to 1 it means that two units with the same observed covariates x will have the same odds of receiving treatment. Table 5 reports the upper bound on the one-sided p-value testing the null hypothesis of no treatment effects using a Wilcoxon signed rank test statistics.

According to this test, our results only begin to be sensitive when $\Gamma = 1.24$. This means that two Latin American voters who have the same observed covariates x , may differ in terms of unobserved characteristics, in such a way that one of them may have a greater odds of receiving the treatment (reporting a negative income shock in this case). In particular, one of them may be 1.23 times more likely than the other to receive the treatment because the existence of some unobserved covariate u without changing the significance of our results. Consequently, our study is not sensitive to small biases derived from a failure to control some unmeasured characteristic.

In sum, our analysis of the individual level vote intention shows that reporting a negative shock on their income is associated with respondents being more likely to defect from their prior electoral loyalties to the incumbent, thereby providing supporting evidence on individual behavior that can be associated with our prior aggregate analysis linking electoral volatility with voters' income effects. The two level analyses, thus, give us more confidence about the impact of income effects on voter discontent with incumbents.

5. Conclusion

This paper has focused on the impact of income effects on electoral support for incumbents in Latin America. Our analysis relies on aggregate measures of voting behavior and intentions to defect from the incumbent at the individual level. We show that a weak economic performance, measured using inflation, economic growth, and reserves, has a negative impact on electoral loyalty to the incumbent. Bad economic performance generates voter discontent with the incumbent whereas good performance increases support for the party in power, suggesting that the vote provides an effective tool for electoral accountability. Bad economic times, in particular, generated voter discontent, whether measured on aggregate electoral data or individual vote intention (using LAPOP data)—this combination of macro and micro evidence gives us more confidence in our findings. Moreover, our results show that these effects may generate systemic spillovers to the status quo parties as suggested by the literature on party system realignment in the region.

Our findings contribute to existing debates about economic voting in the region by bringing attention to a crucial mechanism for voters to assess economic performance: how does it shape their individual well-being. In both the aggregate and the individual

⁴⁹ We also estimated the effects of a negative economic shock on the president approval as a robustness check. As expected, economic deterioration also decreases the president's approval rate (see online appendix Table A9).

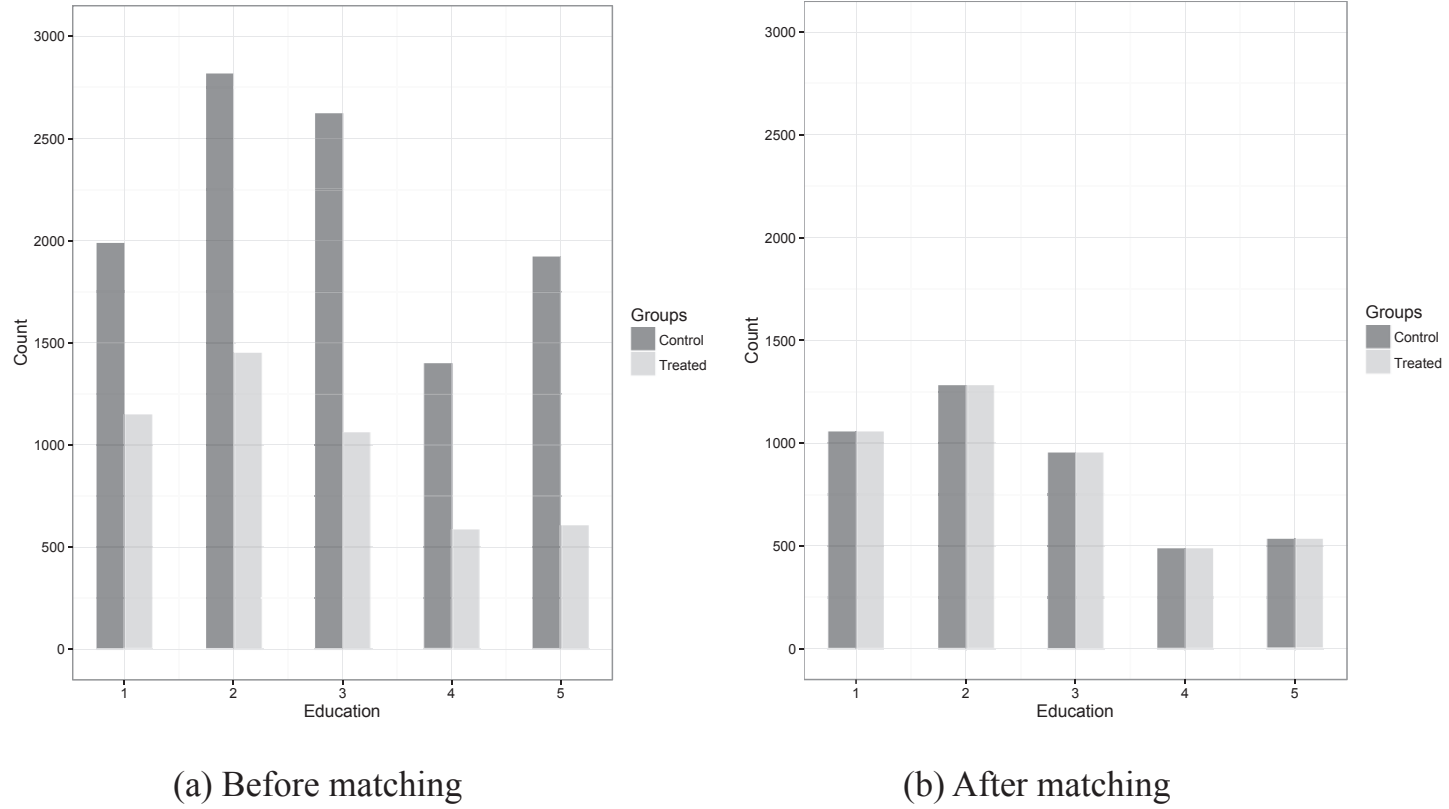


Fig. 2. Fine balance for education.

Table 4
Regression results individual level.

	Dependent variable:		
	Defection from incumbent		
	(1)	(2)	(3)
Economic Deterioration	0.056*** (0.010)	0.056*** (0.009)	0.056*** (0.009)
Constant	0.330*** (0.007)	0.398*** (0.020)	0.376*** (0.032)
Country fixed effects	No	Yes	Yes
Year fixed effects	No	Yes	Yes
Controls	No	No	Yes
Observations	8590	8590	8590
R ²	0.003	0.166	0.178
Adjusted R ²	0.003	0.164	0.176

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 5
Upper bounds on the one-sided P-value using Wilcoxon's statistic.

Γ	P-values
1.00	0.000
1.10	0.000
1.20	0.015
1.21	0.022
1.22	0.033
1.23	0.047
1.24	0.066

analysis, we thought to probe the connection between income effects and voting behavior, in particular linking negative income shocks to the decision of shifting electoral loyalties toward the incumbent. Even though we remain agnostic about the origin of these income effects, voters react by rewarding or punishing incumbents, even when some of the studied effects are likely to be generated by exogenous shocks. Yet, the vote is the ultimate tool of electoral accountability for voters, who tend to use it retrospectively for sending signals to incumbents. Given the weight of economic voting in the region, this seems to be an effective tool of electoral accountability, even when it can also foster systemic discontent.

To conclude, we want to emphasize that voting incumbents back into or out of office is a crucial mechanism of democratic accountability, which seems to be working in Latin American democracies. The risk generated by this mechanism is that government agency on economic performance is more limited than what voters perceive and they may be frustrated repeatedly if politicians cannot produce good results, opening the door for party system realignment and political instability. In particular, as economic vote is especially relevant in bad times and the region has been characterized by economic volatility, the systemic consequences of voter discontent may be magnified. Indeed, the economic volatility that characterizes the region may reinforce these patterns and generate perverse incentives for politicians who do not wish to explain their luck and limited agency during good times while seeking re-election for their parties, but who lack credibility to do it during bad times.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.electstud.2016.10.007>.

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