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Monetary technocracy and democratic accountability: how central bank independence conditions economic voting

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ABSTRACT

Central bank independence (CBI) implies that elected governments delegate monetary policy to technocrats in central banks. I argue that given the substantial influence of monetary policy on consumption, investments, exchange rates, capital flows and government spending, all of which critically determine the performance of the economy, CBI can blur the lines of responsibility for economic performance between elected governments and central banks. It can thereby weaken voters' ability and willingness to electorally punish (or reward) governments on the basis of economic outcomes. Utilizing data from the Comparative Study of Electoral Systems, I test how CBI conditions the effects of macroeconomic performance on electoral support for incumbents in 38 countries from 1996 to 2016. The results show that CBI significantly attenuates the reward and punishment mechanism of elections based on economic records. The finding of this article sheds new lights on how the problem of democratic accountability caused by the rise of CBI actually materializes in elections, the most important sanctioning mechanism of democracy. Further, it identifies CBI as another crucial condition that can explain variations in the magnitude of economic voting across countries, as yet unexplored in the election literature.

KEYWORDS

Central bank independence; economic voting; monetary policy; clarity of responsibility; democratic accountability

Introduction

The literature on central bank independence (CBI) has investigated how the delegation of monetary policy from elected governments to conservative central banks affects economic policy and outcomes. Its most crucial finding is that independent central banks can more effectively resist the influence of inflation-prone politicians when conducting monetary policy and thus are more likely to maintain price stability than dependent central banks (Alesina & Summers, 1993; Bodea & Hicks, 2015a). Moreover, given the close links between monetary policy on the one hand

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and fiscal and exchange rate policy on the other as essential components of macroeconomic policy, the CBI literature has further shown that central banks can even restrict the policy autonomy of elected governments in the latter two areas when they perceive that it is necessary to achieve price stability, in particular by using countervailing monetary policy (Bearce, 2008; Bodea & Higashijima, 2017; Freeman et al., 2000). As a whole, the literature on CBI has offered important evidence that CBI can constrain elected governments' macroeconomic policy choices, thereby diminishing democratic control over the domestic economy.

In the political economy literature, there has been growing discussion regarding how restraints on governments' economic policy imposed due to neoliberal reforms, globalization and international institutions such as the International Monetary Fund or the European Union can weaken democratic accountability,[1] particularly by moderating patterns of economic voting (Alcañiz & Hellwig, 2011; Carlin & Hellwig, 2020; Hellwig & Samuels, 2007; Hobolt & Tilley, 2014). However, despite the increasing clout of technocrats in independent central banks due to widespread CBI reform since the 1990s, which has reduced democratic control of economic policy, surprisingly few studies have examined the implications of CBI for the electoral accountability of representative governments with regard to their economic policymaking or performance. That is, few studies have explained whether voters remain as willing or as able to hold governments to account on the basis of their economic performance to the same extent when democratically elected governments' capacity to regulate the economy, or their so-called "room to maneuver,"[2] is limited due to macroeconomic straightjackets imposed by CBI.

I argue that CBI's constraining effects on elected governments' ability to manage the economy complicates who has ultimate responsibility for economic performance and thus attenuates the sanctioning mechanism of democracy, whereby voters punish or reward governments in elections according to their performance. Specifically, given the substantial influence of monetary policy through its manipulation of domestic interest rates on private consumption, investment, exchange rates, capital flows, and government spending, all of which are critically important elements that determine the performance of the domestic economy, the transfer of such important policy authority to independent central banks should result in a proportionate reduction in elected governments' responsibility for the economy. At the very least, it would be logical to expect that some portion of the governmental burden of responsibility would be lessened due to the horizontally distributed policy mandates that can shift the public perception that elected politicians are the only ones in charge of managing the economy.

There is important evidence that voters recognize that independent central banks conducting monetary policy relatively autonomously have a substantial impact on the economy, and accordingly voters attribute a portion of responsibility for the state of the economy to those banks (e.g., Binder & Spindel, 2019; Bursian & Fürth, 2015; Ehrmann et al., 2013; Farvaque et al., 2017; Hobolt & Tilley, 2014; Horvath & Katuscakova, 2016; Ipsos, 2005; Leibrecht & Scharler, 2020; Macchiarelli et al., 2020; Roth et al., 2014). For example, according to a survey carried out by Ipsos in 2005, while 55% of respondents in the U.S. reported that President George W. Bush was most responsible for the economy, 29% said that Alan Greenspan, the Chair of the Federal Reserve (the Fed) at the time, was 'more responsible' than the President. Moreover, Hobolt and Tilley (2014) found that voters living in the

eurozone could assign responsibility for both national economic conditions and interest rate policy to the European Central Bank (the ECB).

Further, given voters' recognition of independent central banks as one of the most important economic policymakers, several existing studies have suggested that politicians may even purposely use independent central banks as a "perfect scapegoat," "whipping boy," or "hedging device" for poor economic outcomes (Alesina & Stella, 2010, p. 22; Binder & Spindel, 2019, p. 27; Burnham, 2001; Cukierman, 1992, p. 213; Johnson, 2019; Kane, 1980, p. 1999). For example, Burnham (2001) argues that the British government granted legal independence to the Bank of England to "off-load responsibility for the consequences of unpopular policies" like interest rate increases aimed at lowering inflation (p. 137). Similarly, Cukierman (1992) claims that the U.S. Congress offered substantial independence to the Fed in order to use it as a hedging device for poor economic performance "in a credible manner" (p. 213). These studies again imply that voters perceive that unelected technocrats in independent central banks share responsibility for economic outcomes with elected officials. This article seeks to move beyond these findings to document evidence that as central banks' independent conduct of monetary policy constrains elected governments' capacity to influence the economy, such governments' electoral accountability for economic performance is reduced.

Utilizing survey data from the Comparative Study of Electoral Systems (CSES Modules 1, 2, 3, and 4) from 1996 to 2016, I tested my hypothesis on 38 countries (107,947 respondents). Specifically, I examined the conditioning effects of CBI on the electoral influence of macroeconomic performance including unemployment and economic growth rates, controlling for both political and economic variables, which the literature on clarity of responsibility has argued crucially affect the amplitude of economic voting. The results suggest that CBI significantly moderates the impacts of unemployment and growth on electoral support for incumbents. Moreover, the outcomes were found to be robust to alternative measures of CBI, different estimation methods, the exclusion of outliers and influential observations, and various model specifications.

This article is organized as follows. The next section reviews the existing literature on CBI and clarity of responsibility and discusses the limitations of previous studies in explaining the implications of CBI on governments' electoral accountability for the economy. Then, in the third section, I develop a theoretical framework to explain how the delegation of monetary policy to unelected technocrats in central banks can weaken economic voting. Finally, I present the empirical outcomes and draw conclusions.

Literature review

CBI and democratic accountability

CBI refers to the delegation of monetary policy from elected officials to central banks and constraints on governments' influence on the banks (de Haan et al., 2018, p. 184). The most broadly used measure of CBI, first created by Cukierman et al. (1992) and later updated by Bodea and Hicks (2015a) and Garriga (2016), is based on the following crucial conditions: the tenure of the head of a central bank, the formation and objective of the bank's monetary policy, and restrictions on the

bank's lending to elected governments. For example, a central bank is considered more independent if the head of the bank's term of office is longer, if the bank has stronger control over the formation of monetary policy, if price stability is specified as a more important objective of the bank than other goals, and if there are heavier restrictions on lending to elected governments.

Political economists have explained what gave rise to CBI with a focus on the problem of time inconsistency (Barro & Gordon, 1983; Kydland & Prescott, 1977). The problem occurs because elected officials cannot credibly commit to maintaining price stability. Politicians often have an incentive to renege on their pledges of price stability since unexpected inflation can boost economic growth and employment, both of which are electorally more beneficial to incumbent politicians than preventing inflation (Ehrmann & Fratzscher, 2011). Thus, inflation bias in the economy would persist as long as monetary policy, which crucially determines the level of inflation, remained in the hands of elected governments. In contrast, if monetary policy is delegated to relatively politically insulated central banks, which have a stronger aversion to inflation than politicians, the commitment to low inflation is much more credible. Therefore, the CBI literature suggests that since the 1990s, elected governments in many countries have renounced their control over monetary policy and established independent central banks as a commitment to maintain price stability.

In addition to CBI's economic function in maintaining price stability, some studies have focused on its more political purposes. One of the political benefits of establishing CBI is to use independent central banks as a potential scapegoat for poor economic outcomes. Thus, independent central banks are expected to shield politicians from voters' blame for a souring economy because in the eyes of the public the banks' autonomous monetary policy must also take some responsibility for such outcomes.

Specifically, according to such studies, independent central banks can perform as a "perfect scapegoat," "whipping boy," or "hedging device" when the economy goes wrong (Alesina & Stella, 2010, p. 22; Binder & Spindel, 2019, p. 27; Burnham, 2001; Cukierman, 1992, p. 213; Johnson, 2019; Kane, 1980, p. 1999). For example, Burnham (2001) argues that the British government granted legal independence to the Bank of England to "off-load responsibility for the consequences of unpopular policies" like interest rate increases aimed at lowering inflation, which may increase unemployment or slow economic growth (p. 137). We can clearly see this logic in the following statement from one Member of Parliament during the parliamentary debate over a bill establishing the independence of the Bank of England.

> *The Bill is yet another example of the Government's desire to remove power from the House and from elected representatives and give it away to appointed officials. They want to escape the blame for difficult decisions* (The Parliament of the United Kingdom, 1997).

Similarly, Cukierman (1992) claims that the U.S. Congress offered sufficient independence to the Fed in order to use it as a hedging device for poor economic performance "in a credible manner" (p. 213). According to Cukierman, the Fed takes "occasional bashing graciously" because its function as a scapegoat helps to guarantee its independence in return.

The argument that CBI can serve as a scapegoat for politicians is supported by extensive evidence that voters are able to recognize the crucial role of independent

central banks, conducting autonomous monetary policy that shapes the economy, and thus hold those banks accountable for economic conditions as they do elected governments. For example, based on analysis of public approval of the Fed from 1979 to 2015, Binder and Spindel (2019) found that because citizens are sufficiently aware of "the centrality of the Fed to the nation's economy," when the economy sours, they hold the Fed responsible (p. 27).

Moreover, several studies of public trust of the ECB show that citizens condition their trust of the bank according to macroeconomic performance and even income distribution (e.g., Bursian & Fürth, 2015; Ehrmann et al., 2013; Farvaque et al., 2017; Horvath & Katuscakova, 2016; Leibrecht & Scharler, 2020; Macchiarelli et al., 2020; Roth et al., 2014). Specifically, these studies indicate that citizens tend to withdraw their trust of the ECB as unemployment rises or as economic growth decreases.

These studies suggest that while independent central banks consist of unelected technocrats, they can also be held accountable by citizens. Moreover, the studies even imply that the delegation of monetary authority may partially shift voters' blame for poor economic conditions from elected governments to central banks. I claim that while the existing literature offers important clues that link the emergence of CBI to changes in the democratic accountability of elected governments, it falls short of directly examining the specific mechanism by which the two are related. That is, few studies have systematically explained how the delegation of monetary authority to central banks can lead to weakened government accountability for the economy and especially how this relationship materializes via elections. This article thus seeks to shed light on this mechanism by documenting how CBI influences patterns of economic voting.

Clarity of responsibility

The literature on economic voting has suggested that there are important 'contextual conditionalities' that can blur the clarity of elected governments' responsibility for economic performance. Specifically, it explains that a variety of political, institutional, and economic factors that significantly undermine governments' ability to manage the economy can also weaken voters' incentives to hold those governments accountable for economic outcomes.

For instance, Hellwig and Samuels (2007) have argued that because voters understand that globalization, primarily characterized by free trade and mobile capital, inevitably reduces elected governments' ability to control the economy, patterns of economic voting, in which elections function as a sanctioning mechanism, tend to be moderated in countries with relatively open economies. Similarly, Hobolt and Tilley (2014) have claimed that citizens in EU member countries are aware that a significant portion of their countries' sovereignty over economic policy was delegated to the EU, thus they are less likely to attribute responsibility for economic outcomes to their national governments. The economic voting literature has also proposed a list of conditions that voters might take into account as exonerating factors when they assess elected governments' responsibility for the economy. These include the degree of government cohesion (Hobolt et al., 2013), multi-level governance (Anderson, 2006), neoliberal reforms (Carlin & Hellwig, 2020), and policy impositions by international institutions (Alcañiz & Hellwig, 2011; Lobo &

Lewis-Beck, 2012). Yet no study has explored the effect of CBI on voters' electoral assessments of governments' competence at managing the economy.[3] Given that a large number of countries, especially democratic ones, have already adopted this crucial institutional reform and that, consequently, the representative governments in those countries have insufficient authority over monetary policy to control their economy, a scholarly investigation of CBI's impact on economic voting is long overdue.

Theory

I argue that CBI, which constrains elected governments' ability to run the economy, attenuates voters' ability and willingness to punish (or reward) incumbents for the state of the economy. As the literature on clarity of responsibility suggests, in order for voters to be willing and able to hold incumbents fully accountable, elected governments must have complete control over the policy instruments that are essential to managing the economy (Anderson, 2006; Carlin & Hellwig, 2020; Kosmidis, 2018). In contrast, if crucial authority for economic policy is institutionally separated from elected governments' control, voters will be less likely to assign full responsibility for economic conditions to those governments. In particular, as is true in the case of CBI, when elected officials voluntarily renounce their powerful policy authority in order to avoid the politicization of that authority for electoral advantage (Alesina et al., 1997; Dellepiane-Avellaneda, 2013; Lohmann, 1997), voters will be more likely to cut those governments slack when it comes to economic outcomes. Therefore, to the extent that the increased economic clout of independent central banks undermines elected officials' grip on the economy, it is expected that the reward and punishment mechanisms of economic voting will be weakened.

The CBI literature has offered ample evidence that independent central banks have limited elected governments' economic room to maneuver. In this section, I will focus on how CBI constrains governments' policy authority and thus blurs the lines of responsibility for policy outcomes in three macroeconomic policy areas: monetary, fiscal, and exchange rate policy. First, CBI implies strong restrictions on elected governments' influence over monetary policy, which is a key device to manipulate important economic outcomes, including employment and economic growth. These outcomes are also exactly the macroeconomic variables that the economic voting literature has found are crucial in determining electoral outcomes. When CBI is not institutionally established and central banks thus act as mere subdivisions of finance ministries, monetary policy is set to achieve the economic outcomes that elected governments desire. Under this circumstance, where elected governments appear to have full control over macroeconomic policy tools, voters know who to blame clearly when overall economic conditions turn out poorly.

Under the condition of CBI, however, central banks can conduct monetary policy relatively autonomously to keep inflation low, resisting political pressure toward monetary expansion. The CBI literature has empirically demonstrated that CBI can effectively prevent elected governments from intervening in monetary policy and, as a result, central banks are more likely to shape macroeconomic outcomes in accordance with their preference for low inflation. For example, Bodea and Hicks (2015a) indicate that the direction of monetary policy in countries with CBI systematically differs from that of countries without independent central banks. Their

empirical analysis shows that the growth rate of the money supply tends to be lower in countries with relatively independent central banks. This finding implies that independent central banks generally prioritize the goal of keeping down inflation over promoting growth or employment, thus they tend toward a more restrictive monetary policy than elected governments would prefer.

This conservative monetary policy embraced by independent central banks often results in macroeconomic outcomes that elected governments did not intend. Particularly, while restrictive monetary policy can ensure price stability, it should sometimes sacrifice other important economic goals, such as stronger growth or higher employment, which politicians typically value more.[4] For instance, Rogoff (1985) has argued that it is not optimal to appoint a central banker whose only concern is low and stable inflation, since this exclusive emphasis on price stability comes at the cost of central banks' ability to respond to economic disturbances including rising unemployment or recessions. Rodrik (2018) also suggests that independent central banks that mainly focus on low inflation generate a deflationary bias that usually conflicts with economic growth. Also, regarding deflationary bias under CBI, Fischer and Capie (1994, p. 293) wrote:

> "*An important reason to expose central bankers to elected officials is that, just as the latter may have an inflationary bias, the former may easily develop a deflationary bias. Shielded as they are from public opinion, cocooned within an anti-inflationary temple, central bankers can all too easily deny… that cyclical unemployment can be reduced by easing monetary policy.*"

Empirically, there is mixed evidence as to the effects of CBI on economic growth or employment levels. However, several studies have shown that the delegation of monetary policy to conservative central banks can be costly, since these banks tend to deepen recessions (Debelle & Fischer, 1994) or generate a higher sacrifice ratio (Hall & Franzese, 1998; Iversen, 1998; Posen, 1995).[5] I suggest that this considerable influence of CBI on the economy complicates who is deemed responsible for fluctuations in economic outcomes, thus weakening elected governments' accountability for those outcomes during elections.

Second, CBI can put strong restraints on fiscal policy, which also plays a critical role in management of the economy. Fiscal policy has been considered an effective tool to reduce the economic fluctuations arising from the business cycle. For example, when the economy's aggregate output is significantly lower than its potential output, thereby creating a recessionary gap, governments can boost output through expansionary fiscal policy. Fiscal expansion, which usually takes the form of government purchases of goods and services, tax cuts, or government transfers, can help increase growth and employment levels by increasing aggregate demand when other components of demand, such as private consumption and investment, are too weak. The recent Great Recession clearly proved that fiscal policy is essential to stimulate the depressed economy (Coenen et al., 2012; Furman et al., 2014).

Authority over fiscal policy generally belongs to elected politicians and is evidently beyond the mandate of unelected central bankers. Yet prominent studies of CBI argue that independent central banks can significantly constrain elected governments' fiscal policy (Bodea & Higashijima, 2017; Cusack, 2001; Neyapti, 2003). In particular, those studies have suggested that the banks can impose fiscal discipline on governments. Because fiscal deficits can put pressure on central banks to

accommodate those deficits by increasing the money supply and thus inflation, independent central banks aiming at price stability have an incentive to force governments to balance their budgets. According to these studies, when fiscal balance seems to deteriorate due to elected governments' expansionary policy, the banks often actively attempt to impose fiscal discipline by threatening to raise interest rates, thereby elevating the governments' borrowing costs. Using this countervailing monetary policy, independent central banks, especially those in democratic countries, are able to effectively limit governments' fiscal activities.

Recent anecdotal evidence also shows that central bankers can publicly intervene in discussions of fiscal policy and pressure governments to implement the banks' policy preferences. For instance, when eurozone countries were still suffering from the recession brought about by the global financial crisis, Mario Draghi, then head of the ECB, asserted that those countries needed "fiscal adjustment" (Blackstone, 2012). Jerome Powell, the chairman of the Fed, also openly warned that the current level of fiscal deficit was not "sustainable" and urged the U.S. Congress to reduce the deficits (Rugaber, 2019).

Romania's central bank (the National Bank of Romania or BNR) has engaged more directly in restrictive fiscal policy. According to Ban (2016), in the face of the credit crunch during the global financial crisis, the central bank "refused" to offer liquidity to domestic banks holding government bonds because this was considered monetization of government debts (p. 228). As the liquidity problem subsequently deepened, interest rates on the government bonds increased beyond the central bank's policy rate, seriously hurting the Romanian economy, which was already in bad shape. Ban suggested that "it was a replay of the BNR's policy actions during the 1999 crisis, which had almost plunged the government into bankruptcy" (Ban, 2016, p. 228).

In addition, in Britain, Chancellor of the Exchequer George Osborne even sought an "endorsement" (or "blessing") from Mervyn King, the Governor of the Bank of England at the time, of his government's plan to cut spending (Brereton, 2010). This case seems particularly interesting in relation to my theory, because here the elected government clearly attempted to share its responsibility for macroeconomic policy in the eyes of the public with its independent central bank. Thus, one could expect that the Governor's support for the restrictive fiscal policy would make him "the prime scapegoat" when the policy turned out to have negative impacts on the economy. In sum, I argue that when authority over fiscal policy, which is at the core of democratic politics, is undermined by unelected technocrats in central banks, as the previous cases show, elected officials can more easily shirk their responsibility for the performance of the economy.

Finally, exchange rate policy is another macroeconomic instrument elected governments can use to shape the condition of the national economy in their preferred way. Yet their autonomous implementation of such a policy can again be interrupted by independent central banks' monetary policy. That is, even if elected governments have a particular preference toward an exchange rate policy, regarding either the level or the flexibility of exchange rates, the outcome of the policy can significantly depart from that preference when independent central banks have a conflicting policy preference.

As former Fed chair Paul Volcker once said, the exchange rate is the most important price in the whole economy because it affects the relative prices of goods

and services across countries and thus can determine flows of international investments and trade. In open economies where such international transactions account for a high proportion of the economic output, a country's economic fortunes critically depend on fluctuations in exchange rates. A significant body of empirical research has demonstrated this important link between exchange rates and macroeconomic performance. For instance, Dollar (1992), Bosworth et al. (1995), and Belke and Kaas (2004) have suggested that volatile real exchange rates negatively affect economic growth and employment while Galindo et al. (2007) and Rodrik (2008) have shown that undervalued currency is positively associated with such macroeconomic outcomes.

Due to these important impacts of exchange rates, governments have actively intervened in exchange rate markets to manipulate the level and the degree of flexibility in exchange rates to achieve their preferred economic goals (Jäger, 2016; Plümper & Neumayer, 2011; Sattler & Walter, 2010). However, since an exchange rate is essentially a function of the amount of money in circulation and the domestic interest rate, both of which are controlled by central banks, in addition to the level of foreign reserves which governments generally control, central banks' monetary policy inevitably interacts with governments' exchange rate policy (Krugman et al., 2017). Therefore, due to the divergent policy objectives of independent central banks and elected governments, a conflict over exchange rate policy can arise, making it difficult for governments to achieve the exchange rate that they consider most optimal.

Bearce's study (2008) of CBI's effects on exchange rate stability, for example, clearly shows this tension between independent central banks, which primarily aim for low inflation, and elected governments, which have to achieve a delicate balance among the goals of economic growth, full employment, and price stability. Bearce (2008) explains that under a fixed exchange rate regime, central banks must accommodate fiscal expansion intended to boost economic growth. However, 'independent' central banks tend to refuse to implement similarly expansionary monetary policy to stabilize exchange rates, since such loose monetary policy can lead to higher inflation. When high interest rates caused by expansive fiscal policy cannot be lowered due to the banks' opposition, the high rates can weaken the positive effects of a fiscal stimulus on economic growth by crowding out private consumption and investments.

Furthermore, high interest rates can also negatively affect exchange rate stability, which governments strive to maintain because sudden inward flows of foreign capital can disrupt foreign exchange markets. Given these substantial impacts independent central banks can have on exchange rate policy, I argue that CBI can blur the lines of responsibility for exchange rate policy by intruding into a policy area elected governments have traditionally controlled. This constitutes another important context where voters' ability to hold governments accountable for economic policy and its outcomes diminishes.

Though thus far I have explained that governments' influence on the economy is significantly limited by CBI, I emphasize that my theory does not assume that governments that delegate their monetary authority to central banks can no longer play any meaningful role in shaping the economy. Nor does it deny that CBI is an imperfect restraint on government, like any other institution of checks and

balances in a democracy. Further, my theory acknowledges that the legal independence of central banks is not the only determinant of their autonomy in monetary policy.

Several studies have pointed out that there are important mechanisms by which governments can still influence central banks in order to serve their political needs (Adolph, 2013; Binder, 2021; Baerg et al., 2021; Chappell et al., 1993; Havrilesky & Gildea, 1992; Lohmann, 1992, Moschella & Diodati, 2020). Lohmann (1992) suggests that because governments can always override central banks by amending the laws that establish their independence, with positive but finite costs, it would be optimal for the banks to voluntarily accommodate governments' preferences when there are extraordinary economic shocks. Moreover, Adolph (2013), Chappell et al. (1993), and Havrilesky and Gildea (1992) have suggested that governments can exert significant influence on central banks by using their authority to appoint central bankers. Finally, Binder's (2021) data regarding political pressure on central banks have shown that even independent central banks sometimes succumb to political pressure from governments, though those cases are quite unusual (approximately 2% of her total observations from 2010 to 2018).

In line with the implications of these studies, my theory accepts the conventional wisdom that "even the most independent central bank does not operate in a political vacuum" and thus assumes that no matter how constrained governments are by CBI, they still have some capacity to meaningfully affect the economy (de Haan & Eijffinger, 2016, p. 2). Therefore, my theory does not claim that in the presence of independent central banks, voters place no responsibility on governments for economic outcomes. It only argues that in such a context, voters assign less than full responsibility to governments.

Based on the discussion in the theory section, I test how CBI conditions the electoral influence of economic outcomes. The economic voting literature has traditionally regarded inflation, employment, and economic growth as having significant influence on citizens' voting choices.[6] In this article, I concentrate on CBI's moderating impacts on the electoral effects of employment and economic growth because they are the two economic goals that elected governments are assumed to trade off for lower inflation in the short term by delegating monetary authority to independent central banks, according to the CBI literature (Fischer & Capie, 1994; Rodrik, 2018; Rogoff, 1985).

There is another reason why I limit the implications of my theory to the electoral influence of employment and growth, but not inflation. In recent low-inflation environments (the median inflation rate in my sample from 1996 to 2016 is 2.6%), the traditional assumption that the public has a negative perception of inflation has been seriously questioned by several studies that have found neutral or even positive public perceptions of inflation (Farvaque et al., 2017; Horvath & Katuscakova, 2016; Singer, 2013). Specifically, Farvaque et al. (2017) suggest that the insignificant or positive public perception of inflation can be attributed to "the excessive disinflation and risk of disinflation" in low-inflation environments (p. 657). Similarly, Horvath and Katuscakova (2016) claim that when employment and growth are in bad shape, low inflation may be perceived by the public as "a sign of economic difficulty" or "inability" to address economic crises (p. 5631). Therefore, I concentrate on testing how CBI moderates the electoral impacts of employment and

economic growth, toward which the public has more consistent and clearer preferences. Accordingly, I posit the following hypotheses:

H1: *The higher the CBI, the weaker the negative effects of unemployment on respondents' electoral support for an incumbent.*

H2: *The higher the CBI, the weaker the positive effects of economic growth on respondents' electoral support for an incumbent.*

Empirical analysis

Data

Dependent variable

This article draws on election data from the Comparative Study of Electoral Systems survey (CSES Modules 1, 2, 3, and 4), and the sample includes all elections for 'national office' in the data (presidential elections for presidential and semi-presidential systems and parliamentary elections for parliamentary and semi-parliamentary systems).[7] Given the availability of data on the other independent variables used in the analysis, the sample consists of 108 elections in 38 countries from 1996 to 2016 (with a total of 107,947 respondents). Table A.1 in the Appendix lists the elections included in the sample. The dependent variable is respondents' voting for or against the incumbent government party. This variable is coded 1 if a respondent voted for the head of an incumbent government, a candidate from his or her party, or the incumbent government party itself, and is coded 0 otherwise.[8]

Independent variables

To test the conditional effects of CBI on economic voting, I use two interaction variables that each combine the measure of CBI with one of two macroeconomic variables, unemployment and real GDP growth.[9] The interaction variables are *CBI*Unemployment* and *CBI* Growth,* respectively. I expect a positive coefficient on *CBI*Unemployment* and a negative coefficient on *CBI*Growth*. I use data from Garriga (2016) for the measure of CBI. Based on coding methods originally introduced by Cukierman et al. (1992), Garriga updated the CBI data by increasing their coverage in terms of both the countries and periods observed. Also, instead of using decade-average data, she created annual CBI data. Her CBI scores are constructed using a weighted average of four broad components: characteristics of the CEO; policy formulation attributions; the central bank's objective; and the central bank's limitations on lending to the public sector. The scores range from 0 to 1, with higher scores indicating greater CBI. As a robustness check, I also use the CBI data created by Bodea and Hicks (2015a).[10]

Control variables

I also include both individual- and country-level control variables to isolate the effects of CBI on economic voting. First, all models include individual-level control variables to account for respondents' gender (*Female*), *Age*, *Education*, *Income* and partisan affiliation with the party of an incumbent government (*Party ID*). Moreover, at the aggregate level, the incumbent party's vote share in a previous

Table 1. Summary statistics.

Variable	Mean	Std. Dev.
Unemployment	7.313888	3.585944
Growth	0.0438248	0.03587
CBI	0.6018368	0.2449368
Incumbent vote share	0.3270332	0.4691317
Female	0.5086927	0.4999268
Education	5.176481	1.844141
Income	3.029075	1.391133
Party identification	0.1997833	0.3998393
Incumbent vote share [in previous election]	37.22647	9.484726

election is included to control for the persistent effect of a governing party's popularity (*Vote share*). My main models include these control variables. Table 1 reports the summary statistics of all the variables used in the main models.

Additionally, in order to control for the endogeneity problem that might occur because of potential correlations between CBI and other factors that may also influence the effects of unemployment and growth on respondents' votes for incumbents, I include more country-level control variables in separate models as a robustness check. First, inflation and an interaction term linking inflation to CBI are included in the separate model as control variables since inflation is likely to be related to both unemployment and growth on the one hand and CBI on the other. Thus, the inclusion of these variables is expected to control for a possible spurious relationship among inflation, CBI, and the two macroeconomic variables. Further, this model includes both unemployment and growth variables and two interaction terms combining each with CBI in the same model to show that CBI conditions the effects of each macroeconomic variable independently of the other.

Second, in another models, I include several institutional and economic variables that can attenuate economic voting as suggested by the literature on clarity of responsibility (Anderson, 2006; Hellwig & Samuels, 2007; Hobolt & Tilley, 2014; Powell & Whitten, 1993). Specifically, to rule out the effects of political and institutional factors that decentralize the policy authority of governments and thus potentially weaken governments' responsibility for economic performance, I include '*Unified government,*' which measures whether an incumbent governing party controls all chambers of the legislature; '*Number of other government parties;*' '*State government,*' which measures the degree of federalism in a country, more specifically whether a country has locally elected state or provincial governments; and '*Partisanship,*' which measures the ideological positions of the executive. Moreover, because it is possible that measures of globalization such as trade openness and financial liberalization can have correlations with both CBI (Bodea & Hicks, 2015b) and the magnitude of economic voting (Hellwig & Samuels, 2007), I also include the variables *Trade* and *Capital Openness* in the models.

Third, quite a high proportion of countries in my sample belong to the eurozone and thus have the ECB as their central bank. This raises the possibility that voters in those countries are less likely to hold their governments accountable for economic performance, not because the ECB is a highly independent central bank but because it is a 'supranational' institution with substantial influence on their economies, thereby limiting the policy autonomy of their national governments

(Hobolt & Tilley, 2014). Thus, I include a dichotomous variable (*ECB*) indicating whether a country is a member of the eurozone in my analysis (see Table A.6 in the Appendix). It is coded 1 if a country is a member and 0 otherwise. In addition, because all the eurozone countries in my sample are also members of the EU, I add another dummy variable (*EU*) measuring whether a country belongs to the EU (Table A.6 in the Appendix). Each of the control variables above is combined with CBI to create respective interaction terms. Then all the interaction terms are included in the models along with their individual components. Finally, all the independent and control variables are lagged by one year to mitigate any potential endogeneity problem.

Econometrics models

Given that the value of the dependent variable, respondents' voting for incumbent governments, is either 0 or 1, I employ logistic regressions to estimate the conditional influence of CBI on the electoral effects of unemployment and growth, respectively. I use country fixed effects to control for unobserved heterogeneity across countries that may bias the effects of CBI on patterns of economic voting.[11] Particularly, this is expected to mitigate the potential problem of endogeneity, if the magnitude of economic voting varies not because CBI reduces the clarity of responsibility but because countries with low CBI are fundamentally different from those with high CBI with regard to other country characteristics. Moreover, year fixed effects are employed to account for year-specific shocks.

In addition to adding more control variables and employing alternative measures of CBI, as another robustness check, I re-estimate the main models, this time using a different estimation method and excluding certain groups of observations, respectively. First, in two additional models, I estimate multilevel logistic regressions as a means to prevent potential underestimation of the standard errors derived from the intra-country dependence of the observations in my hierarchical data structure and to allow random intercepts at both the individual and country levels.[12]

Second, to show that the main findings of my analysis are not critically determined by observations with particularly low or high CBI values, I re-estimate the main models excluding observations that fall into the lowest or highest 5% across the whole sample (Table A.2 in the Appendix). I also add another model that re-estimates the main models excluding observations that can be considered unusually influential according to Pregibon's Delta-Beta statistic (Table A.3 in the Appendix).[13]

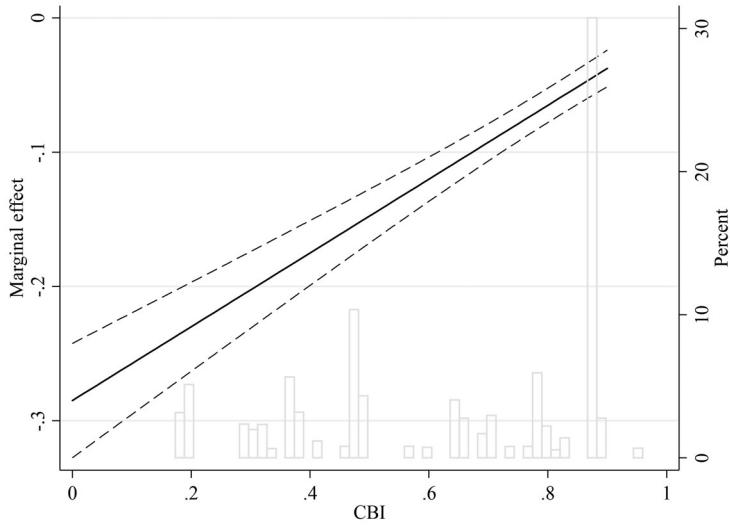
Results and discussion

The results of the main models (Models 1 and 2) in Table 2 show that CBI significantly moderates the effects of the two macroeconomic variables on vote choice. Both the positive influence of economic growth and the negative impact of unemployment on respondents' votes for incumbent governments diminish as CBI increases. Both interaction terms (*CBI*Unemployment* and *CBI*Growth*) are statistically significant and have the hypothesized signs. Figures 1 and 2 illustrate how

Table 2. The effects of CBI on economic voting.

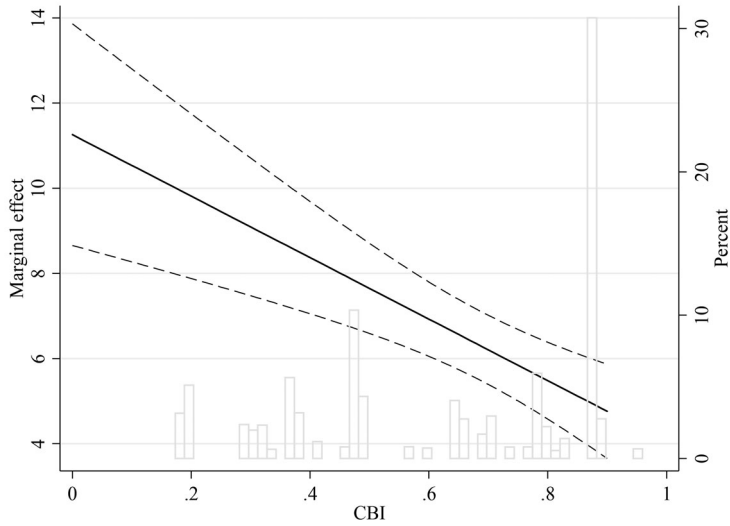
	Model 1 Main Model	Model 2 Main Model	Model 3 Multilevel	Model 4 Multilevel	Model 5 Bodea &Hicks	Model 6 Bodea &Hicks	Model 7 Unemployment & Growth
CBI	−0.479***	1.621***	−0.986***	1.346***	−1.895***	0.775***	0.393
	(0.172)	(0.177)	(0.163)	(0.166)	(0.236)	(0.194)	(0.244)
Unemployment	−0.285***		−0.320***		−0.252***		−0.226***
	(0.0217)		(0.0204)		(0.0192)		(0.0230)
CBI*Unemployment	0.275***		0.298***		0.236***		0.218***
	(0.0257)		(0.0243)		(0.0226)		(0.0275)
Growth		11.26***		12.36***		12.90***	8.532***
		(1.328)		(1.264)		(1.373)	(1.368)
CBI*Growth		−7.222***		−8.434***		−8.505***	−5.193***
		(1.829)		(1.756)		(1.824)	(1.857)
Inflation							−0.0170**
							(0.00700)
CBI*Inflation							0.00640
							(0.0162)
Party ID	3.682***	3.675***	3.616***	3.608***	3.711***	3.705***	3.682***
	(0.0269)	(0.0267)	(0.0247)	(0.0246)	(0.0269)	(0.0269)	(0.0268)
Income	−0.00164	0.000301	0.0133**	0.0145**	−0.00146	−0.00168	−0.00138
	(0.00685)	(0.00684)	(0.00653)	(0.00652)	(0.00676)	(0.00675)	(0.00689)
Education	−0.0678***	−0.0679***	−0.0659***	−0.0648***	−0.0685***	−0.0678***	−0.0692***
	(0.00566)	(0.00566)	(0.00538)	(0.00538)	(0.00563)	(0.00563)	(0.00570)
Age	−0.0180***	−0.0159**	−0.0147**	−0.0125**	−0.0211***	−0.0189***	−0.0168***
	(0.00645)	(0.00645)	(0.00617)	(0.00617)	(0.00636)	(0.00636)	(0.00650)
Female	0.0990***	0.101***	0.104***	0.106***	0.0991***	0.0990***	0.101***
	(0.0177)	(0.0177)	(0.0168)	(0.0168)	(0.0174)	(0.0174)	(0.0178)
Vote share	−0.0189***	−0.0153***	−0.0142***	−0.00977***	−0.0124***	−0.00744***	−0.0169***
	(0.00202)	(0.00199)	(0.00200)	(0.00197)	(0.00193)	(0.00190)	(0.00204)
Constant	1.541***	−0.940***	1.053***	−2.224***	1.655***	−0.973***	0.676***
	(0.180)	(0.136)	(0.205)	(0.173)	(0.189)	(0.145)	(0.210)
Countries	37	37	37	37	38	38	37
Elections	102	102	102	102	108	108	101
Observations	104,283	104,283	104,283	104,283	107,947	107,947	103,577
Country FE	Yes	Yes			Yes	Yes	Yes
Year FE	Yes	Yes			Yes	Yes	Yes
Pseudo R2	0.304	0.305			0.307	0.308	0.307

Note: Logit regressions with country and year fixed effects. Standard errors in parentheses. Sampling weights applied.
***p < 0.01, **p < 0.05, *p < 0.1.



Note: Dashed lines report 95% confidence intervals.

Figure 1. CBI and marginal effects of unemployment rate.



Note: Dashed lines report 95% confidence intervals.

Figure 2. CBI and marginal effects of economic growth rate.

CBI moderates the marginal effects of the two macroeconomic variables on respondents' electoral support for incumbents. While Figure 1 shows that as CBI increases, the negative marginal effect of the unemployment rate on respondents'

Table 3. The marginal effects of macroeconomic outcomes on the probability of voting for incumbents.

	Unemployment	Growth
Low CBI	−0.023*** (0.001)	0.011*** (0.001)
High CBI	−0.01*** (0.001)	0.008*** (0.001)
Difference	0.013***	0.003**

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ High CBI equals to the average value of CBI plus one standard deviation of CBI. Low CBI equals to the average value of CBI minus one standard deviation of CBI. Chi-Squared tests are used to examine whether the difference between the marginal effects in High and Low CBI is statistically significant.

voting for incumbents decreases, Figure 2 suggests that the positive marginal effect of economic growth on the dependent variable decreases when CBI is high.

For a more substantive analysis, I estimated how a change in CBI value moderates the marginal effects of each macroeconomic variable on the probability of voting for incumbent governments. Table 3 summarizes the results. In the table, "Low CBI" is defined as a CBI value that is one standard deviation below the average while "High CBI" is a CBI value that is one standard deviation above the average. The table suggests that the change generates approximately a 1.3 percentage point reduction in the negative marginal effects of unemployment on the probability of voting for incumbents. It also indicates that the change causes about a 0.3 percentage point decrease in the positive marginal effects of growth on the probability of voting for incumbents. The table also shows that the declines in the marginal effects are statistically significant at the 99% confidence level according to a chi-squared test.

Models 3 and 4 in Table 2 show the outcomes of the multi-level regressions. They indicate that the conditional influence of CBI still remains significant after controlling for the intra-country dependence of the observations. In Models 5 and 6, I replace Garriga's CBI measure with that of Bodea and Hicks and re-estimate CBI's conditioning effects. The outcomes show that the interaction terms still have the hypothesized signs and remain statistically significant. In Model 7, I include unemployment and growth and two interaction terms combining each with CBI in the same model. The outcome shows that CBI moderates the effects of each of the two macroeconomic variables, independent of the influence of the other. Model 7 also contains an inflation variable and an interaction term linking it to CBI. Thus, the results of this model also demonstrate that CBI significantly reduces the marginal effects of unemployment and growth, independent of the influence of inflation. Taken together, these outcomes in Table 2 suggest that among voters, elected governments' accountability for economic performance weakens as independent central banks increasingly constrain the governments' capacity to manage the economy.

In Table 4, I include the interaction terms that combine the macroeconomic variables on the one hand and on the other, the globalization variables (*Trade* and *Capital Openness*) as well as the political decentralization variables (*Unified Government*, *Number of Other Government parties*, *State Government,* and *Partisanship*), which the literature on clarity of responsibility considers crucial in shaping the context of economic voting. The conditioning effects of CBI remain significant in all these models.

In addition, Table A.6 in the Appendix shows that the main findings of my analysis remain significant after controlling for the influence of supranational

Table 4. The effects of CBI on economic voting with political decentralization and economic globalization variables.

	Model 8 Political Institutions	Model 9 Political Institutions	Model 10 Globalization	Model 11 Globalization
CBI	−0.483***	0.797***	−0.778***	1.782***
	(0.177)	(0.204)	(0.184)	(0.183)
Unemployment	−0.435***		−0.258***	
	(0.0361)		(0.0233)	
CBI*Unemployment	0.235***		0.317***	
	(0.0281)		(0.0277)	
Growth		4.857**		11.16***
		(2.083)		(1.974)
CBI*Growth		−11.08***		−5.270***
		(2.181)		(1.973)
Party ID	3.649***	3.647***	3.688***	3.677***
	(0.0273)	(0.0272)	(0.0269)	(0.0268)
Income	−0.00394	0.00378	−0.00246	−0.000794
	(0.00704)	(0.00705)	(0.00690)	(0.00689)
Education	−0.0683***	−0.0698***	−0.0686***	−0.0688***
	(0.00584)	(0.00584)	(0.00572)	(0.00570)
Age	−0.0203***	−0.0159**	−0.0180***	−0.0169***
	(0.00662)	(0.00662)	(0.00649)	(0.00649)
Female	0.0981***	0.101***	0.0998***	0.102***
	(0.0182)	(0.0182)	(0.0178)	(0.0178)
Vote share	−0.0196***	−0.0118***	−0.0180***	−0.0136***
	(0.00236)	(0.00225)	(0.00216)	(0.00222)
Unified government	0.389***	−0.379***		
	(0.114)	(0.0664)		
Number of other gov parties	−0.714***	0.202***		
	(0.112)	(0.0587)		
State government	0.798***	2.174***		
	(0.153)	(0.113)		
Partisanship	−0.117***	−0.0876***		
	(0.0318)	(0.0278)		
Unified government*Unemployment	−0.101***			
	(0.0127)			
Number of other gov parties*Unemployment	0.114***			
	(0.0129)			
State government*Unemployment.	0.0177			
	(0.0117)			
Partisanship*Unemployment	0.0460***			
	(0.00454)			
Unified government*Growth		−3.161**		
		(1.333)		
Number of other gov parties*Growth		2.940***		
		(0.970)		
State government*Growth		−4.080***		
		(0.966)		
Partisanship*Growth		5.159***		
		(0.493)		
Trade			0.0192***	0.00334*
			(0.00208)	(0.00182)
Trade*Unemployment			−0.00178***	
			(0.000123)	
Capital openness			−0.287***	0.251***
			(0.0416)	(0.0240)
Capital openness*Unemployment			0.0603***	
			(0.00539)	
Trade*Growth				0.0188
				(0.0189)

(*continued*)

Table 4. Continued.

	Model 8 Political Institutions	Model 9 Political Institutions	Model 10 Globalization	Model 11 Globalization
Capital openness*Growth				−2.819***
				(0.393)
Constant	0.419	−4.463***	0.941***	−1.580***
	(0.362)	(0.234)	(0.213)	(0.164)
Countries	34	34	37	37
Elections	94	94	101	101
Observations	99,432	99,432	103,577	103,577
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Pseudo R2	0.307	0.308	0.309	0.307

Note: Logit regressions with country and year fixed effects. Standard errors in parentheses. Sampling weights applied.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

institutions like the ECB and the EU. Further, Table A.2 suggests that those findings are also robust to the exclusion of the observations whose CBI values are in the lowest or highest 5% of the sample. This implies that the primary outcomes of my analysis do not critically depend on the small number of observations with particularly low or high CBI values. In addition, Table A.3 in the Appendix demonstrates that the main findings are not driven by unusually influential observations identified using Pregibon's Delta-Beta statistic.

Finally, it could be argued that most voters are insufficiently informed about the implications of CBI and that the main findings of my analysis are driven by the small portion of voters who have highly sophisticated knowledge and thus understand the meaning of CBI. Alternatively, it could be argued that the main outcomes are determined solely by those who experienced the 2008 global financial crisis and likely learned about the influence of independent central banks as a result.

To rule out these possibilities, I ran additional models and included them in the Appendix. First, given that voters' education levels can indicate their general level of sophistication, I re-estimate the main models including a three-way interaction term that combines *CBI*, *Education*, and each of the two macroeconomic variables. I present the outcomes in Table A.9. This analysis examines whether CBI's conditional influence on economic voting critically depends on voters' level of knowledge. Second, I re-estimate the main models only using sample elections prior to the 2008 global financial crisis and present the results in Table A.10. This analysis explores the possibility that the main findings do not hold before 2008 because voters were not sufficiently informed about the influence of independent central banks prior to the 2008 crisis.

In the Appendix, Table A.9 indicates that the three-way interaction terms are not statistically significant. It suggests that CBI's conditional effects on economic voting are not driven by a subset of sophisticated voters. Moreover, Table A.10 shows that CBI still significantly weakens the effects of both unemployment and growth on respondents' votes for incumbents in elections prior to 2008. These results imply that voters were sufficiently informed about the implications of CBI even before the 2008 crisis.

Conclusion

The key findings in this article indicate that as an institutionalized form of monetary technocracy, CBI discourages citizens from evaluating their representative governments in elections based on the fluctuating fortunes of their jobs and businesses, even though these are the conditions that may affect their lives most fundamentally. Specifically, the empirical evidence in this article showed that both the negative influence of unemployment and the positive impact of economic growth on respondents' electoral support for incumbent governments are significantly attenuated by CBI. Thus, this article demonstrates the implications of CBI for electoral democracy: weakened electoral accountability for the economy followed by weakened democratic control over it.

This article contributes to the literature on political economy in three ways. First, it shows how the problem of democratic accountability caused by the rise of CBI actually materializes in elections, the most important sanctioning mechanism of democracy. The CBI literature has convincingly shown that central banks have emerged as a strong countervailing force against elected governments in the area of macroeconomic policy and has shed light on the robust policy constraints CBI can impose on governments. Further, the literature has suggested that CBI may weaken those governments' democratic accountability for the economy as voters increasingly assign a share of responsibility for economic outcomes to unelected technocrats in independent central banks. However, the literature falls short of linking the weakened responsibility of governments to changes in voters' incentives to hold those governments accountable via elections. Thus, a serious discussion of CBI's effect on the electoral accountability of governments for the economy has been long overdue. This article documents that the delegation of monetary authority to central banks significantly undermines the role of elections as a mechanism of rewarding or punishing incumbents on the basis of economic performance.

Second, this article also contributes to the academic discussion of the tension between technocracy as "rule by experts" and representative democracy as rule by parties, which has been reignited by the recent global financial crisis and the subsequent emergence of technocratic politics (Caramani, 2017, 54; Alexiadou et al., 2022; Marangoni & Verzichelli, 2015). In particular, the existing literature suggests that technocratic rule can harm democratic accountability by isolating policymakers from proper checks and balances and by reducing transparency in policymaking procedures (Bertsou & Caramani, 2020; Sánchez-Cuenca, 2017). Since CBI has been understood as one of the most prominent technocratic reforms with such features (Broz, 2002), the implication of this reform for democratic accountability should also be taken into account when discussing the relationship between technocracy and representative democracy in general.

The final contribution of this article is its identification of CBI as another crucial condition that can explain variations in the magnitude of economic voting across countries, as yet unexplored in the election literature. This omission seems quite surprising, considering the significant implications of CBI for the autonomy of elected governments in their management of macroeconomic policy. I expect that the evidence offered in this article of CBI's conditional effects on the influence of macroeconomic indicators in elections will deepen our understanding of economic voting in contemporary economies with highly independent central banks.

I expect that more meaningful studies can build on the findings in this article, elucidating the relationship between central banks and democratic accountability. First, my research can be extended to examine how economic crises can again condition the mitigating effects of CBI on economic voting. While experiencing the series of recent economic crises, we observed that nothing else brought more public attention to central bankers than those crises. In particular, when monetary policy emerges as "the only stabilization tool in town" during such crises due to the tight fiscal constraints imposed on many governments by high borrowing costs in unstable financial markets or binding fiscal rules, the relative role of independent central banks in addressing such crises may appear more prominent than that of elected governments (Buiter, 2015, p. 270). Therefore, as the public expects more from these unelected bankers than the representative governments, we might speculate that CBI's erosive effects on democratic accountability intensify during economic crises.

Second, it would be useful for future research to explore the impact of another important aspect of central bank reform—increasing transparency—on voters' ability to monitor and electorally evaluate economic conditions. Given that transparency reform, in direct contrast to CBI reform, has been considered an effective way to democratically control central banks and their policymaking, we might expect it to have different impacts on economic voting.

Finally, given the existing evidence that poor economic outcomes tend to reduce public trust in independent central banks, future research may attempt to explain how a bad economy may create public demand for weakening CBI. Several studies have suggested that the rise of populism has threatened central banks' autonomy with regard to monetary policy (Binder, 2020; Reichlin, 2017; Rodrik, 2018; Rogoff, 2019). Future research may systematically examine whether unfavorable economic conditions under independent central banks, in particular high unemployment or low growth, undermine citizens' trust in those banks and ultimately generate popular demand for making the banks more responsive to citizens' preferences for less restrictive monetary policy.

Notes

1. "Democratic accountability" refers here to "the electorate's capacity to reward or sanction incumbent politicians" (Samuels, 2004, p. 425).
2. Freeman, 2002) defines room to maneuver as "the degree to which officials in one country can choose a distinctive mix of welfare outcomes for their citizens" (p. 890).
3. Carlin and Hellwig's recent study on Latin America (2020) addresses the conditional effects of "neoliberal reforms" on economic voting. Yet they do not include CBI as one of those reforms in their theoretical discussion. Rather, they focus on the influence of trade, financial markets, tax reform, private sector ownership, labor markets, and minimum wage.
4. Often, the public finds the problem of high unemployment and low growth under CBI so serious that citizens come to demand that the banks improve those conditions rather than focusing too much on low inflation. For example, in 2017 New Zealanders elected a coalition government that included the populist New Zealand First Party and the Labour Party, which had campaigned on a promise to add maximum sustainable employment to the objectives of the Reserve Bank of New Zealand (the RBNZ). As a result, the RBNZ, once considered one of the most independent central banks in the world, now has dual mandates of price stability and full employment (Binder, 2020).

5. For more evidence on the negative effects of CBI on economic growth and employment, see Fischer & Capie, 1994) and Soskice & Iversen, 2000).
6. See Lewis-Beck & Stegmaier, 2000) for a review of the economic voting literature.
7. I am grateful to Ju Yeon Park for generously sharing her study's replication dataset (Park, 2019).
8. Respondents' votes cast for other parties that constitute a coalition government are coded 0.
9. Unemployment data was retrieved from the World Bank and real GDP growth data from the Penn World Table.
10. As an additional robustness check, I add another analysis using a dichotomous CBI variable (*CBI-High*) coded 1 if a country's CBI value is greater than 0.5 and coded 0 otherwise. This is included in the Appendix (Table A.7). The main findings are robust to the use of this CBI dummy variable. Further, I replace the aggregate CBI measure with each of its four components in separate models (Table A.4 and A.5 in the Appendix). The results show that those components also reduced the magnitude of economic voting in six models out of eight.
11. One may argue that because 'within-country' variations in CBI values tend to be relatively small, only a weak inference can be drawn from country fixed effects models. This is a valid argument. Yet, it must be noted that important studies of CBI (e.g., Aklin & Kern, 2021; Bodea & Hicks, 2015a, Bodea & Hicks, 2015b; Clark & Hallerberg, 2000; Eijffinger et al. , 1996; and Garriga, 2016) have relied on country fixed effects to estimate the influence of CBI on various outcome variables despite the aforementioned problem. Presumably this is because the authors deem the benefits of the strong control on unobserved country heterogeneity to be greater than the drawbacks. Still, to demonstrate the robustness of my findings, I add another analysis. In Table A.8 in the Appendix, I re-estimate my main models using random effects as a robustness check. The outcomes in the table show that CBI still significantly reduces the effects of both unemployment and growth on respondents' votes for incumbents.
12. Angrist & Pischke, 2008; Steenbergen & Jones, 2002.
13. Pregibon's Delta-Beta statistic measures the standardized change in coefficients "due to the deletion of the observation along with all others that share the same covariate pattern." (Maor et al., 2013, p. 597) Studies using a dichotomous dependent variable often employ this diagnostic test to identify unusually influential observations or groups of them because "maximum likelihood estimation of binary choice models tends to be more sensitive to outlier observations" (Dettrey & Palmer, 2013, p. 725). Generally, an observation is considered problematic when its Pregibon Delta-Beta statistic is above 1.0 (Dettrey & Palmer, 2013). According to my estimation, no observation in my sample has a Pregibon Delta-Beta statistic larger than 1.0. In fact, no observation in my sample has a Pregibon Delta-Beta statistic larger than 0.4. Some scholars suggest that observations with Pregibon Delta-Beta statistics three times larger than the average can be considered influential observations (Thachil, 2014). Based on this definition of influential observations, I re-estimate my main models excluding those observations with a Pregibon Delta-Beta value three times larger than the average across all the observations and present the outcomes in Table A.3 in the Appendix.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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Data availability statement

The data that support the findings of this study are openly available here: https://www.dropbox.com/sh/y195g4y6p2302nl/AADenGXFcjMYvfBddCHvh5fMa?dl=0

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