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The Side Effects of Central Bank Independence

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Abstract: *Central bank independence (CBI) solves the time inconsistency problem faced by policymakers with respect to monetary policy. However, it does not solve their underlying incentives to manipulate the economy for political gains. Unable to use monetary policy, and often limited in their ability to use fiscal spending, governments can resort to financial deregulation to generate short-term political benefits. We show qualitatively and quantitatively that governments systematically weaken financial regulations in the aftermath of CBI, and that the effect of CBI is separate from an ideological shift toward liberalization. Our findings suggest that the growing financialization of the economy experienced by many countries over the last few decades is partly a by-product of central bank independence.*

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In 1997, Gordon Brown decided to grant the Bank of England independent control over its interest rates. Brown noted the need to make monetary policy "*free of political manipulation.*"[1] Governments that control monetary policy might be tempted to use this power to inflate the economy for electoral purposes (Alesina and Stella 2010; Hibbs 1977). Central bank independence (CBI) offers a solution to this time inconsistency problem (Blinder 1998). In this light, Brown's move was statesmanlike. And indeed, he was lavishly praised for doing so. The *Economist* described the decision as an "astonishingly bold start for the new chancellor."[2] The conventional wisdom, then, is that CBI is desirable (Blinder 1998). Indeed, CBI has spread widely. In 2015, 81% of all countries had a CBI index score above 0.5 (on a scale from 0 to 1) compared to only 12% in 1980. Blinder's (1998) recommendation was thus widely followed: "[CBI] is a fine institution that ought to be preserved where it exists and emulated where it does not" (75).

This article challenges this conventional wisdom. We do not question the benign effect of CBI on inflation. Instead, we ask whether granting a central bank more independence triggers undesirable policy responses. CBI does not on its own remove the underlying incentives for policymakers to manipulate the economy to their advantage. To be certain, CBI eliminates a tempting weapon—monetary policy—from a government's arsenal. Even better (or worse, depending on one's perspective), CBI also weakens fiscal policy because a proactive central bank will offset the effects of deficit spending by increasing interest rates. But policymakers can still enact critical reforms. The last major weapon is to nudge financial markets. One way to do so is by deregulating them. By deregulation, we mean policies that allow laxer lending standards and encourage less oversight of the financial sector. Weaker financial regulations allow financial institutions to increase leverage and credit creation—independent of the monetary policy stance. Sometimes,

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[1] "Brown gives Bank independence to set interest rates," *The Guardian*, May 7, 1997.

[2] "Labour's good start," *The Economist*, May 8, 1997.

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governments can intervene more directly in financial markets. For instance, several countries have subsidized loans in crucial economic sectors. As Rajan (2010) shows, financial market interventions generate political benefits that are similar to public spending or lax monetary policies. Consequently, we conjecture that CBI is accompanied by deregulation. To be clear: we are not arguing that central banks are the culprit; rather, granting them independence forces politicians to adopt riskier financial policies.

Our case studies and large-N analysis offer support to this hypothesis. We find that CBI is consistently followed by financial deregulation. Banks are privatized, entry for foreign banks is made easier, liabilities are transferred from the banking to the public sector, and capital openness is (somewhat) increased. While the point estimates vary, an increase of CBI by one standard deviation generally increases the main deregulation index by about one-tenth of its standard deviation. While seemingly small, the combined effect of CBI can be substantial. In Colombia, for instance, CBI was followed by deregulation that eventually triggered a 30% increase in indebtedness.

The correlation between CBI and financial liberalization could be spurious. For instance, both could be explained by an ideological shift. We do not dispute that such mechanisms have existed. However, we show that CBI has its own separate effect on deregulation. We do so in several ways. First, we show that the effect of CBI only materialized in countries in which governments (and not the central bank) controlled banking regulation. A laissez-faire wave would hardly explain such a pattern. Second, we use an instrumental variable strategy. We instrument CBI with natural resource rents shocks. Governments that face declining rents are likely to find CBI appealing because it increases their access to capital. At the same time, central banks generally host reserves and sovereign wealth funds; higher rents implies more resources to raid. As a result, we expect (and find) a negative relation between shocks to resource rents and CBI. Using this instrument, we continue to find support for our theory.

We then examine an implication of our theory more closely: namely that CBI should promote financialization. A central assumption behind our line of reasoning is that under CBI governments cannot print money to engineer growth or redistribute wealth. This should also be (and is) reflected in lower inflation and smaller monetary growth rates (Section A, supporting information). However, private credit growth increases slightly, as weaker financial regulations allow easier access to foreign capital and encourage financial innovations (Section B, supporting information).

Our immediate contribution is to the literature on the costs and benefits of CBI. The design of central banks has gained much attention in recent years (Adolph 2013; Ainsley 2017; Bodea 2010, 2014; Bodea and Hicks 2015a, 2015b; Goodhart 2015). This research has generally been consistent with the belief that giving independence to central banks is beneficial for macroeconomic performances (Cukierman 2008). The few critical voices that pushed back against this conventional wisdom have generally expressed concern over the democratic deficit of independent central banks (Eijffinger and De Haan 1996; McNamara 2002). Our article raises a new set of issues. We show that delegating power to the central bank can lead to unintended—and possibly undesired—side-effects. It explains why many countries have aggressively liberalized their financial markets and yet have been so negligent towards their regulatory framework (Masciandaro, Quintyn, and Taylor 2008; Rosenbluth and Schaap 2003). As a result, it is possible that countries that adopt the supposedly soundest monetary institution—central bank independence—may become particularly vulnerable to financial instability. From a broader perspective, we show how good institutions can be circumvented. Politicians can innovate to mitigate the consequences of otherwise better institutions. Incentives cannot always be checked by institutional design.

Our second contribution is to the literature on financialization. Financial institutions are increasingly important for individual welfare (Mian and Sufi 2009). In parallel to their growing economic role, financial institutions are important political actors. Johnson and Kwak (2011) document how the banking sector critically shapes policymaking in the United States. The reasons why policymakers would allow for excess financial deregulation, however, remain unclear. We note that a substantial amount of work analyzes the political economy of financial liberalization from an interest group perspective (Rajan and Zingales 2003). The question remains: why did the influence of these groups grow so much in such a short period of time? The influence of financial market interests is quite unparalleled. The answer, we believe, is partly to be found in the need that policymakers had for growth and their loss of the conventional policy tools of fiscal and monetary policy.

Theory

In Section C of the supporting information, we build a decision-theoretic model that captures the main features of our theory. We present its insights here. Our starting point is that governments are intrinsically motivated to

manipulate the economy to generate political gains. In democracies, these gains are generally electoral. By improving short-run economic conditions, an incumbent may increase her chances to stay in power. This line of thinking is related to the well-known theory of political business cycles (Alesina, Roubini, and Cohen 1997). A similar logic applies—probably less systematically—to many autocracies as well: governments have typically an incentive to satisfy the demands of their core constituents (Bueno de Mesquita et al. 2003).

The perverse effects arising from CBI rest on the assumption that a policymaker has three instruments at her disposal to stimulate the economy. She can print money, run fiscal deficits, or intervene in financial markets. An expansionary monetary policy creates short-term gains in growth and employment (Bernhard, Broz, and Clark 2002). Fiscal policy is useful to provide targeted transfers to key supporters. In both cases, the economic well-being of key supporters is boosted in the short-run, possibly at the cost of detrimental effects over the long-run.

CBI implies that the government cannot engage in populist monetary expansions or directly lend money to key constituents. The government (so the argument goes) can only recover these at a prohibitively high cost. Voters and firms benefit from lower inflation (Epstein and Rhodes 2016; Posen 1998; Scheve 2004) and opposing parties from greater oversight (Bodea and Hicks 2015a; Broz 1998). Central banks themselves often lobby to salvage their independence (Lohmann 1999; Johnson 2006). Even if the government decided that it would be worth it, veto players would make it difficult (Bernhard 1998; Crowe 2008; Hallerberg 2002). In some countries, such as Colombia, CBI is guaranteed by the constitution. Finally, successfully scaling back CBI would come at a cost: political uncertainty, higher borrowing costs, and exchange rate volatility (Bodea and Hicks 2018; de Haan and Eijffinger 2016; Fernández-Albertos 2015). This is why CBI is an effective institutional reform (see Section D in the supporting information, for a review). Therefore, monetary policy becomes unavailable to the government under CBI.

CBI also has a muting effect on fiscal policy. When a government spends a lot, inflation will eventually start to increase. This is not a problem if it controls the central bank. But if it does not, then the latter is likely to adopt a tighter monetary policy, precisely to reduce inflationary pressure. This means that the effect of fiscal policy will be less effective under CBI (Bodea and Higashijima 2017; Clark and Hallerberg 2000). Thus, CBI not only limits the use of monetary policy, it also weakens the appeal of fiscal policy.

Yet CBI on its own does not change the policymakers' underlying motives to bolster economic performance and appease their constituents. Although the mandate of the central bank changes, political and economic players are not likely to change their interests and preferences (Acemoglu et al. 2008). In particular, groups that benefit from distortionary monetary and fiscal policies will try to maintain their position.

We argue that governments will try to override CBI to meet their constituents' demands (Rajan 2010). There are multiple ways of achieving this goal. Policymakers sometimes try to undermine CBI through appointing politically close allies onto the governing board of the central bank (Adolph 2013). They can also exercise legislative pressure to change the course of monetary policy. A more radical step is to revoke the central bank's constitutional mandate as in Hungary in 2010 (IMF 2012).

There are less contentious ways to maintain political support. The most effective is by manipulating financial market outcomes.[3] Rajan (2010) argues that private debt can generate political gains. If households and firms can easily borrow, then their consumption and investment levels can increase, even in the absence of fiscal or monetary policy. And while policymakers cannot directly provide loans through the central bank, they can nudge financial institutions into doing so.

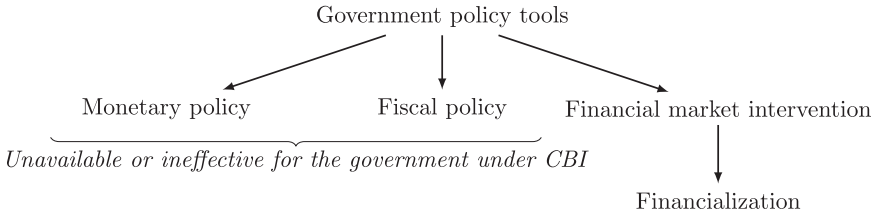
A critical assumption underlying our analysis is that monetary policy and financial regulation are (imperfect) substitutes. Financial market deregulation gives banks easier access to refinancing instruments. For example, in case of a removal of capital controls, banks can now access foreign financial markets to fund their operations. A similar mechanism applies to financial innovations that are not subject to regulatory oversight. This, in turn, effectively makes banks and financial players less reliant on monetary policy action for credit growth. This effect has been described as (monetary) "decoupling," during which financial markets decouple from monetary activity (Jordà, Schularick, and Taylor 2013).

As we show in the following section, a government can influence financial markets in several ways. A common approach is to weaken financial regulations to spur riskier lending. These policies are sometimes accompanied by public credit guarantees. The United States, for instance, is estimated to back credit worth $20 trillion in 2013 (Lucas 2014).[4] Loans elsewhere are often backed by governments; Hawkesworth (2010) estimates the amount of direct loans and loan guarantees

[3] See Section E in the supporting information for an extended discussion.

[4] For skepticism about these numbers, see CBO (2016).

FIGURE 1 Stylized Economic Policy Options Available to Governments



among OECD countries (excluding the United States) to be about $2.5 trillion. Beyond this, governments often use incentives to spur credit demand. Particularly, credit subsidies that reduce the effective cost of borrowing have been widely applied to stimulate housing markets (Ansell 2014; Cerutti, Dagher, and Dell'Ariccia 2017). For many eastern European policymakers, the reason to subsidize mortgage lending was to buy support from middle-class households (Struyk 2000). Fernandez-Villaverde, Garicano, and Santos (2013) show the systematic way in which interest groups across Europe have tried to promote private debt after the European Central Bank took over. In Ireland or in Spain, for instance, interest groups lobbied the government to weaken regulations and fought back against attempts to improve oversight.

We summarize our argument in Figure 1. From a theoretical standpoint, two questions remain. First, if governments meddle with credit markets, why would an independent central bank not retaliate? We believe that there are four reasons against retaliation.[5] First, central banks' mandate often centers on inflation and does not include limiting credit growth (Copelovitch, Frieden, and Walter 2016). Since credit growth does not always translate into inflation, central banks do not have a legal justification to intervene. Second, intervention in credit markets could run counter to rule-based monetary policy. If reducing credit means that central banks have to renege on their promises, then this creates a credibility problem. Blinder (2000, 1422) notes that central bankers themselves consider credibility "of the utmost importance." Third, central banks often do not have the tools to prevent credit growth. For instance, they seldom oversee capital controls. Lastly, identifying credit booms itself is challenging. Without enough evidence, central bankers will be reluctant to burst a bubble, given the political backlash that would follow.

[5]See Section F in the supporting information for an extended discussion.

Second, how quickly should policy reforms follow CBI? Two models are plausible. On the one hand, governments know the side effects of CBI and act promptly to change financial regulations after increasing it. On the other hand, the effect is delayed because (a) governments need to learn about the constraints imposed by CBI, (b) the legislative process takes time, or (c) the effect becomes more urgent around election time. These timelines are both consistent with our core hypothesis, which is why we let the data shed light on this question. We show below that policy reforms quickly follow CBI, but that their effect on credit only fully materializes around elections.

We can make a second prediction. The effect of CBI on deregulation is more likely to materialize when the government is also the main banking regulator. Banking regulation is often under the control of the central bank, the government, and sometimes some other independent authority (Gandrud 2013). If financial deregulation is indeed a political tool (as we claim), then it should only be implemented if the regulatory power is in the hands of the government and not when it is controlled by the central bank (as is often the case). Instead, if deregulation results from a shift in ideology and beliefs about regulations, then it should happen regardless of the institution in charge of banking regulation.[6]

Finally, we expect financialization to increase after CBI. Governments will seek to boost credit, even though money supply might decrease after independence is granted (which would be the case if the central bank

[6]Of course, governments could strip banking supervision from their central bank or hand it back at will. While absolutely feasible technically, we believe that there high costs of doing so. First, veto players may oppose such moves (Masciandaro and Quintyn 2016). The debates around the European Banking Union illustrate this case. Second, shifting banking supervision generates political uncertainty and financial volatility (Baker, Bloom, and Davis 2016). Third, it is often more challenging for governments than for central banks to hire skilled supervisors (Johnson 2016). Thus, while governments can indeed take or give supervisory power away, we believe that they are unlikely to do so very often.

TABLE 1 Central Bank Independence and Financial Deregulation: Overview of Cases

Country	Year	CBI Reform	Deregulation	Other	Consequences
Brazil	1990s	×	×	—	Excessive fiscal deficits
Colombia	1991	✓	✓	Credit market intervention	Boom-bust cycle
Hungary	2001	✓	✓	Credit market intervention	Boom-bust cycle
UK	1997	✓	✓	×	Excessive financial innovation

Note. This list of cases is not exhaustive and reflects case studies that are presented in the main text. The assessments are based on various sources and references, which we used constructing our case studies. *CBI Reform* refers to the question whether there has been a central bank reform increasing central bank independence in the country. *Deregulation* refers to the type of regulatory shift in response to a change in central bank policy. *Other* indicates whether governments have used additional instruments to manipulate financial markets. This category captures direct government interventions in financial market such as credit subsidies (e.g., interest rate subsidies), a government induced allocation of credit (i.e., directed credit) and/or any type or form of government intervention that impacts the allocation of credit. Public private partnerships, such as the PFI in the UK do not qualify for being included in this category because these programs do not imply a direct government interference in financial markets. *Consequences* refers to the financial market consequences of the intervention.

needs to bring down inflation). Therefore, we expect that CBI will not lead to tighter credit. On the contrary, building on credit-friendly policies, we expect private credit to go up even as money supplies go down.

As for scope conditions, we believe that our theory is particularly likely to hold in democracies. Democratic governments may have stronger incentives to provide short term growth (Bueno de Mesquita et al. 2003; Rajan 2010). However, we see no reason why our basic rationale could not hold in a broader set of countries. The logic presented here operates as long as governments see value in manipulating the economy. Therefore, we provide the results of our analysis both for all countries and for democracies.

Case Studies

We analyze four instances of central bank reform. The full versions and additional cases are reported in Section G of the supporting information. These case studies play several roles. One is to illustrate the mechanisms underpinning our theory. We show that governments have used a wide range of policies to compensate for CBI. Another is to show the political context in which these policy decisions are made. Lastly, they provide support for our interpretation of the links between CBI and deregulation over competing hypotheses.

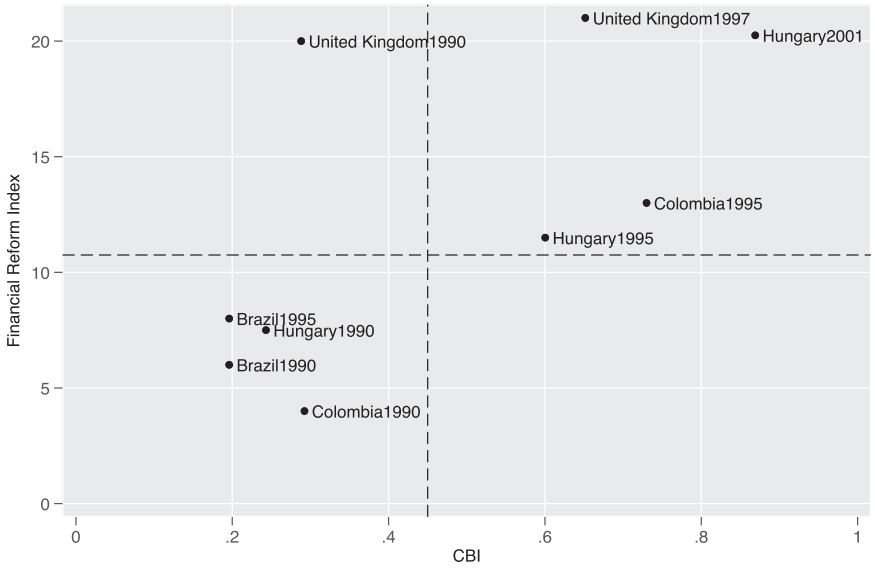
We focus on four countries: Hungary, the UK, Brazil, and Colombia (Table 1). We selected cases that offer variation in terms of important confounding factors, such as their level of economic wealth and geographical location. We begin with two individual case studies: Hungary and the UK. In both cases, we document the process that linked increased CBI to deregulation or push-back by the authorities. This offers us a deeper dive in the political consequences of CBI and verify the crucial role played by constrained monetary policy. We then continue with a comparison of two cases: Colombia and Brazil. While different in important ways, the two countries offer us a good test case for our core hypotheses: they are nearby in geographic terms. At the time under consideration, they also shared similar level of democratic institutions, with both scoring 8 on the Polity scale. While both have been hit by similar shocks in the 1980s, only Colombia granted more independence to its central bank. Brazil therefore offers a plausible counterfactual. The degree of financial liberalization and of CBI of each country is reported in Figure 2.

Hungary

Hungary illustrates how a policy mix of deregulation and targeted subsidy intervention can offset the tightening effect of CBI. In June 2001, in preparation to joining the EU, the Hungarian Parliament amended the Act on the Central Bank (Act LVIII), granting the Magyar Nemzeti Bank (MNB) more political independence and prohibiting authorities any type of budgetary financing (MNB 2001, 11–12). These monetary reforms created a "straightjacket for fiscal and social policies" (Bohle 2014, 921), during a time when Hungarian politicians were in a "permanent election campaign" (Benczes 2011, 129). As a result, Hungarian policymakers became very creative in circumventing these constraints.

First, the same month the Act was implemented, the government lifted remaining controls on international capital movements, in particular restrictions on direct foreign borrowing for Hungarian banks and citizens (IMF 2002, 10). Previously a small fraction of household borrowing, foreign currency denominated housing loans soared and increased by 400% between December

FIGURE 2 Financial Liberalization and CBI Index in the Case Studies



Note: Higher scores mean more liberalized financial markets (*y*-axis) and more independent central banks (*x*-axis). Dashed lines show median values

2003 and September 2004 (Rózsavölgyi and Kovács 2005, 5). Overall, household debt—measured as total stock of loans and debt securities issued to households as a share of GDP—increased from 7.9% in 2001 almost fivefold to 39.4% in 2008 (IMF 2018), of which a substantial share was denominated in foreign currency.[7]

Second, the Hungarian government implemented several modifications to its existing housing subsidy scheme. Since 1999, Hungary operated a combination of a direct interest rate subsidy and personal income tax exemptions that allowed for mortgage payment deductions. Due to very narrow access criteria, the subsidy scheme was seen as largely ineffective (Dobricza 2004, 22). However, in light of rising constraints on monetary policy, the government expanded the program in several steps. By the end of 2001, the effective real interest rate on these subsidized loans was ranging between –2.1% and –4.1% (Dobricza 2004, 22).[8]

In July 2001, personal tax exemptions related to the housing loan program were extended, so that up to 40% of the loan repayment could be deducted from the tax base. An intriguing feature of the subsidy scheme was that all interest rate risk on these loans was borne by the Hungarian government (Rózsavölgyi and Kovács 2005, 3–4). As result household credit jumped by 54% in 2001 and continued to grow at double digit rates until the onset of the financial crisis in 2008 (IMF 2002, 15; IMF 2012, 20).

The Hungarian Financial Supervisory Agency (HFSA), the agency supervising domestic financial institutions, did very little. Observing the boom of foreign currency loans, the HFSA did not take any direct regulatory measures and simply issued a consumer information leaflet (Duebel and Walley 2011, 51). Partly, this was because it lacked the proper tools to alter lending dynamics, but more importantly it was still under the control of the Ministry of Finance (IMF 2002, 37; Johnson 2016, 245). Given the effectiveness of private loans to boost economic growth in light of fierce political competition, the government did not have any incentives to slow credit growth (Bohle 2014, 932). In his infamous speech after his re-election in 2006, even former Prime

[7]For instance, Verner and Gyongyosi (2018, 7) report that "in September 2008, 69% of outstanding housing debt was denominated in foreign currency, primarily Swiss Francs." According to IMF (2012, 19) estimations, household debt denominated in Swiss Francs reached approximately 17% of GDP in 2008.

[8]In December 2001, loan interest rates were reduced to "4 per cent for new, and 6 per cent for used dwellings" (Dobricza 2004, 22). According to the Central Statistical Office of Hungary, the core inflation index in December 2001 stood at 8.1% (MNB 2002, 9). Subtracting the inflation rate from the nominal interest, we calculated a real interest rate of –4.1% for new, and –2.1% for used dwellings. Even when taking a more conservative inflation measure, based on calculations of the MNB, which is reported to be 6.8% in December 2001 (MNB 2002, 9), the real interest rates on these subsidized mortgages remains negative.

Minister Ferenc Gyurcsány admitted that "*the abundance of cash in the world economy, and hundreds of tricks* [...], *have helped us to survive this.*"[9]

United Kingdom

The UK illustrates how regulatory loosening can offset monetary policy independence without raising red flags, especially when loose regulations lead to financial innovation and liquidity creation outside of central bank control.

After the 1997 election, one of New Labour's first initiative was to grant operational independence to the Bank of England (BoE). According to Gordon Brown, the aim of CBI was to break with Labour's reputation for poor macroeconomic management and to put an end to an "*an inflation-prone, slow-growing*" UK economy (Brown 2017, 115). At the same time, CBI meant that the new administration could not rely on monetary policy to achieve its ambitious economic growth and employment goals. Facing severe funding constraints, the incoming Blair administration chose to deploy a unique set of financial policies.

The British government took two critical decisions to spur economic performance without increasing budgetary outlays. First, it chose to move financial supervision out of the BoE and created the Financial Stability Authority (FSA). This move transferred substantial power to the Blair administration that crafted the Financial Services and Markets Act (2000) and setup the FSA with the directive to oversee its so-called "light-touch" regulation (Daripa, Kapur, and Wright 2013, 71). The aim of light-touch was to sustain the City's global competitive advantage, to establish a pro-market reputation for New Labour, and to maintain strong growth of the industry (Hodson and Mabbett 2009, 1049). This approach also translated into a chronic underfunding and limited oversight power of the FSA. Daripa, Kapur, and Wright (2013, 81) find that the regulatory budget for supervising a portfolio amounting $1 billion was £18,000 for the UK, compared to $247,000 in the US, limiting its effectiveness. Strikingly, non-bank financial institutions such as hedge funds were partially exempt from regulatory oversight. In parallel, New Labour was quick in effectively reducing the capital gains tax rate to boost investment. In parallel, New Labour was quick in effectively reducing the capital gains tax rate to boost investment (Cobham, Adam, and Mayhew 2013, 17). In combination with the implementation of "light-touch" financial regulation, this policy reform highlights the political need for credit growth after CBI. To underscore his ambitions to further loosen the regulatory burden on businesses, Tony Blair even lashed out against the FSA in what he saw "as hugely inhibiting of efficient business by perfectly respectable companies that have never defrauded anyone."[10]

Second, the new administration moved large chunks of public expenses into the Private Finance Initiative (PFI). A comparably small program initially, by 2008 it was estimated that "the liabilities arising from future payments for signed PFI projects were at £130 billion, or 9% of GDP" (House of Lords 2010, 4). The PFI was effectively a flexible government spending account requiring limited political oversight. The PFI also illustrates that granting independence to the BoE did not assuage the government's desire to spend. Indeed, in a private conversation after the election in 1997, Geoffrey Robinson, Paymaster General in Tony Blair's first cabinet cheerfully said "how much he was looking forward to turning the government spending tap on again."[11]

Latin America: Colombia and Brazil

Comparing and contrasting the cases of Colombia and Brazil is instructive to show that the correlation between CBI and deregulation is not just a secular trend. Whereas the legal status of the Central Bank of Brazil remained mostly unchanged since its inception in 1964, the Central Bank of Colombia gained political and legal independence in 1991 (Carrière-Swallow et al. 2016). Facing similar policy challenges concerning public indebtedness, these two cases allow us to study the implications of CBI for policy maneuvering. We first outline the Colombian and then turn to the Brazilian case.

Coming to power in 1990, President Gaviria intended to reshuffle the political and institutional landscape to contain long-standing political conflicts (Edwards and Steiner 2000). As economic policy reform constituted a cornerstone of this reshuffling, the new administration gave into the demands of central bank staff for greater independence (Cardenas, Junguito, and

[9] "Excerpts: Hungarian 'Lies' Speech," BBC News. September 19, 2006; retrieved from http://news.bbc.co.uk/2/hi/europe/5359546.stm

[10] "Full Text: Tony Blair's Speech on Compensation Culture." *The Guardian*, May 26, 2005; retrieved from https://www.theguardian.com/politics/2005/may/26/speeches.media; "What Blair really thinks about the FSA." *The Telegraph*, July 3 2005; retrieved from https://www.telegraph.co.uk/finance/2918368/What-Blair-really-thinks-about-the-FSA.html

[11] "The Great Debt Deceit: How Gordon Brown Cooked the Nation's Books," *The Spectator*, September 17, 2008; retrieved from https://www.spectator.co.uk/2008/09/the-great-debt-deceit-how-gordon-brown-cooked-the-nations-books/

Pachón 2006, 105–6). In the process of crafting the new constitution, monetary authorities gained political and legal independence in 1991, which prohibited them to extend direct loans to the government and subsidized loans to specific sectors (Lozano 2000, 7–8). Simultaneously, the government announced a 5% economic growth target that it intended to achieve through implementing a battery of financial reforms (Uribe and Vargas-Herrera 2002, 4). Our hypothesis is clear: CBI is predicted to increase the value in broader financial deregulation that exceeds classical neoliberal prescriptions.

One of the authorities' first steps was to liberalize the financial sector and to grant financial intermediaries more freedom in setting interest rates (Edwards 2001, 51). These reforms were enshrined in the legal provisions of Law 45 in 1990, Law 9 in 1991, and Law 35 in 1993. Besides assigning financial regulation to the government, these new laws also aimed at removing entry barriers, lowering reserve requirements, and eliminating government-forced bank lending (Lozano 2000, 8; Uribe and Vargas-Herrera 2002, 4).

These reforms triggered an unseen credit boom. Increasing demand for loans in combination with enhanced competition and access to foreign capital incentivized banks to engage in riskier lending practices (Gomez-Gonzalez and Kiefer 2009; Uribe and Vargas-Herrera 2002). The *Corporaciones de Ahorro y Vivienda* (CAVs, similar to savings and loan associations), enjoying favorable regulatory treatment, were rapidly expanding their lending portfolios (Uribe and Vargas-Herrera 2002, 13–15). In general, reserve requirements were lowered and forced reserve substituting investments eliminated (Barajas, Steiner, and Salazar 1999, 197; IMF 1995, 64–68).[12] Furthermore, even supervised banks were not effectively punished for fraudulent behavior (Rahman and Schwarz 2003, 8). Unsurprisingly, "the ratio of intermediated assets (loans plus bonds) to GDP increased from 31 percent in 1990 to 47 percent in 1996" (Gomez-Gonzalez and Kiefer 2009, 16).

From the outset of these reforms, the rapid expansion in credit led to mounting inflationary pressures. Responding with several rounds of monetary tightening, the newly independent central bank triggered a sharp appreciation of the currency, which led to rising political discontent among key political constituents (Jaramillo, Steiner, and Salazar 1999, 15–16; Rettberg 2001, 58–60). Businesses in the exporting sector were forming strong political opposition against the course of monetary policy. Teaming up with Colombian policymakers, these groups launched a large number of initiatives to change the course of monetary policy or even tried to undermine CBI (Cardenas, Junguito, and Pachón 2006, 103–105). While CBI was not reversed, political pressure worked. Following suite with his campaign promises of "providing credit at more favorable conditions" (Edwards 2001, 73), President Samper's National Competitiveness Strategy in 1995 consisted of a whole arsenal of direct lending instruments and credit subsidies to fight rising discontent with the course of independent monetary policy (Melo 2001; Schrank and Kurtz 2005).

In summary, the loss of control over monetary policy in 1991 encouraged the Colombian government to liberalize financial markets. The initial economic reforms of the Gaviria administration went "beyond the prescriptions of the [World] Bank staff" (Edwards 2001, 41). An American banker, commenting on the privatization of the second largest bank in Colombia, Banco de Colombia, stated that "the change in Colombia is almost miraculous."[13] When political attempts to regain government control over exchange rate dynamics failed, a newly elected government started extensively disbursing credit subsidies to key constituents to compensate these groups for the adverse consequences of CBI. These findings support our theoretical claim that financial liberalization is not driven by ideological shifts.

Compared to Colombia, Brazil chose a different path. The democratization of the country in 1988 did not lead to a change in CBI and led only to a moderate change in financial regulation (Studart 2000). The few attempts to liberalize financial markets, such as opening to international investors, proved to be largely ineffective in boosting private credit in a sustainable fashion (de Carvalho 2008, 135; Studart 2000, 9).[14] Fiscal and monetary policy remained the government's principal tools.

Although the direct financing of government outlays is legally prohibited, "the sudden surge of accumulated demands on government for additional spending from previously repressed and excluded political actors" (Armijo 2005, 2015) forced the government to expand

[12] According to the IMF (1995, 64-68), "minimum reserve requirement bands on time deposits were reduced from 5–10 per cent to 1–3 per cent, depending on the maturity of these deposits." Moreover, the government introduced a 5% marginal reserve requirement on foreign deposits of financial entities in October 1994, complementing existing regulations on capital inflows (Càrdenas and Barrera 1997, 28; IMF 1995, 64–68).

[13] "Despite Violence, Colombia Surges," *The New York Times*, February 10, 1994; retrieved from https://www.nytimes.com/1994/02/10/business/despite-violence-colombia-surges.html

[14] Although private credit supply increased after the implementation of the financial liberalization efforts, these were not sustained and remained below 50% of GDP during the 1990s (de Carvalho 2008, 135).

public spending through direct monetary intervention. Particularly, public sector banks were de facto relying on monetary financing to accomplish their political mandates (Bomfim and Shah 1994, 538–40). Additionally, private banks funding ballooning regional governments' deficits were banking on monetary authorities (Sola and Garman 1998, 120). In light of rising public indebtedness and inflation, political interference of private and public banks led to the failure of multiple domestic monetary stabilization plans. Inflation, reaching 1,430% in 1994, forced the Cardozo administration to implement the so-called Real Plan (Averbug 2002, 927; Ban 2013, 6–7).

Against his electoral campaign promises, however, Cardozo did not manage to implement major central bank reform (Maxfield 1997, 136). Instead, the Brazilian government retained control over Banco do Brasil and implemented one of the most restrictive financial supervisory regimes (Stallings and Studart 2003, 299–303), handing private credit business to public sector banks, introducing a public debt bias, and effectively choking off financial innovation (Ban 2013, 9).

Statistical Analysis

Model and Data

We are claiming (a) that CBI is followed by the adoption of laxer financial regulations to compensate for a government's inability to inflate the economy, and (b) that this will be the case especially for countries in which the central bank is not controlling banking regulation. A powerful test to demonstrate the offsetting effect of these laxer financial regulations on monetary policy is to show that (c) although money growth decreases after an increase in CBI, credit growth increases.

We built a dataset containing economic outcomes and policy indicators. Given the paucity of data for some variables, our sample size varies considerably. Up to 78 countries from 1973 to 2009 are included in the analysis. From the outset, we emphasize that the results presented in this section are suggestive, given the risks of omitted variable bias. In the later section (Tackling Inferential Challenges), we discuss several strategies employed to reduce such concerns.

We use the CBI measure built by Bodea and Hicks (2015b) and updated since. This is the latest version of a series of CBI measures going back to Cukierman, Miller, and Neyapti (2002). A distinctive advantage of using this index in comparison to other measures is that it covers 142 countries during the time span between 1972 and 2015, and thus allows us to systematically analyze the effects arising from CBI (the actual sample is often smaller because of restrictions on the dependent variables). CBI ranges between 0 and 1, with higher values denoting a more independent central bank. This and all other main variables are summarized in Section H of the supporting information. In the same section of the supporting information, we show the full results using both the index from Bodea and Hicks and a competing indicator from Acemoglu et al. (2008), with very similar results.

At the heart of our theory lies a policymaker's desire to compensate for her loss in the ability to inflate the economy. To mimic expansionary monetary policies, we argue that governments concentrate on measures that (a) increase the availability of capital and (b) put downward pressure on interest rates for key constituencies. A powerful way to achieve this goal is through implementing a battery of complementary regulatory reforms. Thus, we expect more aggressive reforms to be more effective in substituting monetary policy. To test this prediction, we chose the most comprehensive indicator available: the financial liberalization index of Abiad, Detragiache, and Tressel (2010). It ranges from 0 to 21. Higher values indicate a higher level of liberalization.

To further disentangle this effect, we tested for several other government-induced financial market interventions. An extremely powerful way to mimic monetary expansions is to remove domestic and international entry barriers for financial institutions (Pepinsky 2013; Wu et al. 2017). To capture this effect, we consider two particularly relevant subcomponents of this index. First, we look at the ease with which new financial players can enter the domestic credit market. We predict entry into domestic banking should become easier after CBI. Second, as the privatization of state-owned banks constitutes a key pillar of infusing more competition into domestic financial markets (Epstein 2016; La Porta, Lopez-de Silanes, and Shleifer 2002), we examine whether banks are increasingly privatized in the aftermath of CBI.

Besides these interventions, governments often remove barriers to capital inflows (Claessens and van Horen 2014). This can be particularly effective in countries with low saving rates (Brooks and Kurtz 2007; Frieden 2016; Quinn 1997). Thus, we estimate the effect of CBI on capital account openness. We predict that CBI is followed by more openness, as capital inflows are a powerful instrument to boost the economy and reduces banks' reliance on domestic monetary conditions. Capital account openness data come from Karcher and Steinberg (2013); it ranges from –2 to 2, higher values indicating more openness.

Additionally, governments can implement additional layers of financial regulation that amplify these initial effects. Prominently, governments often implement deposit insurance schemes. Deposit insurance transfers liabilities from banks to the domestic government, and therefore enables banks to take greater risks (Anginer, Demirguc-Kunt, and Zhu 2014; Diamond and Dybvig 1983). As noted above, these public bailout guarantees allow stretching credit and weakening stakeholders' incentives to monitor lending policies. This variable is a dummy coded 1 when a deposit insurance is in place and 0 otherwise. Furthermore, we show that countries with more independent central banks display higher annual growth rates of deposit insurance coverage (see Section I, supporting information).

We estimate several models. Their general form is

$$\text{Policy}_{i,t+1} = \alpha_i + \gamma_t + \beta(\text{CBI})_{i,t} + \lambda'\mathbf{X}_{i,t} + \varepsilon_{i,t},$$

where i denotes countries, t years, α are country fixed effects, γ are either year fixed effects or a quadratic time trend, and $\mathbf{X}$ is a vector of control variables. All independent variables are lagged by one year. Throughout, we report standard errors clustered at the country level. Sometimes, we present the estimates for all countries and sometimes for the subset of countries that are democratic (see our discussion on scope conditions above). In line with conventions, we use a *Polity* score of 6 and greater as our cutoff point. We estimate all models with least squares.

Since the data is observational, we rely on model-based inference, which means that we need to think carefully about confounding factors. At the same time, we wish to avoid 'garbage-can' models, especially since risks related to post-treatment bias are quite high with a treatment like CBI (Acharya, Blackwell, and Sen 2016). Below, we present a sparse model. We control for GDP, GDP per capita (both in log form), and the level of democracy. This eliminates confounding effects from the size of the economy, income, and from the institutional setup of the government. It also accounts for variables that are closely proxied by these covariates. We also control for the type of exchange rate regime using data from Klein and Shambaugh (2010). Country fixed effects ensure that our estimates are not affected by time-invariant features of the countries in the sample. Year fixed effects time control for common shocks.

We list the robustness tests that we conducted in Section I in the supporting information. In additional results, we control for other potential economic (income inequality, trade openness, and the size of the industry sector) as well as political confounders (ideology of the government and the type of political system). In all cases, our results remain qualitatively the same, with a few minor exceptions.

Results: Policy Changes

The main results are reported in Table 2 (for all countries) and Section I in the supporting information (for democracies). We also list the full results for each dependent variable and for various specifications in Section H of the supporting information.

We find overwhelming evidence that CBI is followed by financial liberalization. Throughout all models, the point estimates are statistically different from zero and substantively meaningful (except for model 15). A one-standard deviation increase in CBI increases the financial reform index by about 0.5 point (a bit less than one-tenth of its own standard deviation). Entry barriers to foreign banks are removed and national banks are privatized. The effects are not trivial; a standard deviation increase in CBI increases the degree of privatization by 0.15 or one-fifth of a standard deviation. The likelihood of a deposit insurance system being adopted increases by about 5 percentage points. Capital openness increases as well, opening the floodgates for foreign capital inflows, although the effect is contingent on the specification of the model.

Note that taken individually, the estimates may not appear very large. However, the combined effect of CBI is substantial. Take Colombia: In 1990, Colombia—with a Financial Liberalization Index value of 4—ranked among the least financially liberalized economies, placing the country in the lowest quintile in the dataset of Abiad, Detragiache, and Tressel (2010). Granting the Central Bank of Colombia political and legal independence in 1991, President Gaviria's administration implemented an entire battery of financial reforms. The financial liberalization index displays an increase by 8 points between 1990 and 1991. As result, private indebtedness exploded and grew on average by more than 30% annually (Gomez-Gonzalez and Kiefer 2009). We find similar effects across all our case studies.

Overall, the effects are consistent with our main hypothesis: governments deregulate after CBI, suggesting that the two are substitutes. They are not, however, perfect substitutes: the marginal effects are qualitatively not large enough substantively to argue that monetary policy is entirely replaced by deregulation.

We find that the effects also materialize and are generally stronger for the subset of countries that are democratic. In virtually all cases, the point estimates increase (in absolute values). The effect of capital openness becomes statistically significant. The only exception are the

TABLE 2 Policy Reaction to CBI: All Countries

	Financial Reform			Bank. Entry Barriers			Bank. Liberalization			Deposit Insurance			Capital Openness		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
CBI	3.71**	2.77*	2.21*	0.87**	0.75*	0.66*	1.19**	1.06**	1.01**	0.54**	0.41**	0.40**	1.27*	0.86	0.57
	(1.08)	(1.14)	(1.09)	(0.29)	(0.31)	(0.31)	(0.35)	(0.33)	(0.34)	(0.15)	(0.14)	(0.14)	(0.51)	(0.49)	(0.50)
GDP (log)		−1.49	−1.97		−0.38	−0.46		0.38	0.33		−0.20	−0.20		−1.22*	−1.36*
		(1.79)	(1.83)		(0.57)	(0.58)		(0.46)	(0.47)		(0.15)	(0.15)		(0.59)	(0.59)
GDP/Cap (log)		0.90	1.54		0.35	0.47		−1.09*	−1.04*		0.31*	0.30*		1.52*	1.74**
		(1.64)	(1.65)		(0.56)	(0.57)		(0.46)	(0.46)		(0.15)	(0.15)		(0.58)	(0.59)
Democracy		0.02	0.01		0.00	0.00		−0.00	−0.00		0.00	0.00		0.00	0.00
		(0.03)	(0.03)		(0.01)	(0.01)		(0.01)	(0.01)		(0.00)	(0.00)		(0.01)	(0.01)
Type of Peg		✓	✓		✓	✓		✓	✓		✓	✓		✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE			✓			✓			✓			✓			✓
Quadratic Time	✓	✓		✓	✓		✓	✓		✓	✓		✓	✓	
N	2120	2005	2005	2120	2005	2005	2120	2005	2005	3673	3279	3279	3356	3030	3030
R^2	0.79	0.80	0.83	0.61	0.64	0.67	0.31	0.34	0.34	0.35	0.37	0.37	0.17	0.21	0.25
$\hat{\sigma}$	2.14	2.07	1.97	0.55	0.53	0.51	0.57	0.55	0.55	0.27	0.26	0.27	0.87	0.86	0.84
# Countries	84	80	80	84	80	80	84	80	80	132	119	119	137	126	126

Note. The dependent variable is listed at the top of the models. All countries are included in the sample. Robust standard errors clustered by country reported in parentheses. *Financial Reform* is an index (from 0 to 21) where higher values denote higher levels of financial liberalization. *Bank. Entry Barriers* is an index (from 0 to 5) where higher values denote that banking entry barriers are laxer. *Bank. Liberalization* is an index (from 0 to 3) where higher values denote that the banking sector is more liberalized/privatized. *Deposit Insurance* is a dummy variable that is equal to 1 if a country-year has a national deposit insurance. *Capital Openness* is an index (from −2 to 2) that denotes the degree of capital openness, with higher values denoting more open systems. *: $p < 0.05$, **: $p < 0.01$.

results for deposit insurances, which are indistinguishable from zero. This is partly due to smaller point estimates and to lower statistical power. In Section I (supporting information), we examine whether the effect of CBI is linear or not. We find that most of the effect of CBI occurs between values of 0.2 and 0.6; this is when increases in CBI are most likely to trigger policy responses. We find less of an effect at higher levels, possibly because of a ceiling effect: at the highest levels of CBI, it is also likely that financial markets have been mostly deregulated already. Another interpretation is that countries at the very highest level of independence may have solved the political conundrum we presented in this article. While possible, we think that this is unlikely; the case study of the United States (Section G, supporting information) shows that countries that possess highly independent central banks are not immune to the temptation to deregulate.

What happens after CBI? One of our main claims is that losing control over monetary policy, governments will try to boost the financialization of the economy.[15] We propose several ways to show that this is the case. We report our findings in Section B (supporting information). We can detect substantive (monetary) "decoupling effects" (Jordà, Schularick, and Taylor 2013). Although the growth rate of M2 slows, private credit and asset prices increase. We show that domestic money is partially replaced by international capital inflows. Another prediction of our theory is that asset prices should increase even when overall inflation decreases. This is to say, if CBI leads politicians to intervene in credit markets, inflation should be pushed into asset and equity markets. The results are reported in Panel B. Overall, it appears

[15]See Section B in the supporting information for the full results.

that governments are effectively offsetting the tightening effects of CBI.

Lastly, we examine the timing of these regulatory changes in Section J of the supporting information. Using error correction models, we show that the effect of CBI generally materializes rapidly and is persistent in the long-run. The effect on debt accumulation, however, is highest in election years. Together, this suggests that deregulation closely follows CBI, yet the full effect on credit markets follows an election cycle.

Tackling Inferential Challenges

Given the observational nature of our data, there exists a risk of omitted variable bias. A related problem is that our results are observationally equivalent to other theories. Among these, the most likely competing theory is the following. Politicians underwent a broad ideological change that encouraged both CBI and financial liberalization. If this were the case, our results may be spurious. Next, we summarize our efforts to respond to this and other competing theories. To save space, the discussion and results of these tests are left in the appendix (Section K, supporting information).

First, our theory leads us to predict that the effect of CBI on deregulation is most likely to materialize when the government controls financial supervision. See Section L (supporting information) for details and tables. This is when governments can compensate the loss of monetary policy power through implementing weaker regulation. If, however, financial regulation is outside of its reach, then we expect CBI to have no or perhaps even a negative effect on financial deregulation. Would the ideological theory be the correct one, then the effect of CBI should be independent of *who* is in charge of financial supervision.

We use data on bank regulation and supervision from Masciandaro and Romelli (2018). They provide an indicator (from zero to six) that measures the degree of control exerted by the central bank on financial regulation. A distinct advantage using their indicator is that it covers the role of central banks for supervising the entire financial industry and not just banks. We recode it in three separate categories (no, medium, and high control of banking regulations by the central bank) and interact each of them with CBI. Recoding is needed because some of the categories have few observations. We then reestimate our models, this time interacting CBI and banking supervision.

We find that the effect of CBI only materializes when the central bank lacks supervisory control over the financial industry.[16] The effect of CBI is about twice as large as in the previous estimates when the government has closer control of financial regulation. When financial supervision is kept under the control of the central bank, however, the effect is negative.

Another competing theory is that CBI and deregulation were both triggered by powerful financial interests. Banks and other financial institutions could have lobbied both in favor of weaker financial oversight and in favor of an independent central bank (Posen 1998). The literature offers conflicting views on this theory. Banks are not uniformly in favor of CBI: low inflation and interest rates can be challenging and force banks into risky ventures. Likewise, financial institutions often oppose liberalization, because opening up financial markets can reduce the rents of oligopolistic financial institutions (Haggard and Maxfield 1996; Pepinsky 2013; Rajan and Zingales 2003). In Section M (supporting information), we replicate our results controlling for the strength of the financial sector, relying on the coding strategy suggested by Pepinsky (2013). We show that our results hold. We also find that the effect of CBI declines as the strength of the financial sector increases.[17] In other words: deregulation was not only a product of financial lobbying; CBI constitutes a separate, additional channel.

Third, international pressure for policy adjustment might constitute an additional confounding factor (McNamara 2002). The most likely source is the IMF: financial reforms and CBI might be jointly encouraged by the Fund (Polillo and Guillén 2005). We build on the coding procedure suggested by Dreher (2006) and verify whether the IMF confounds our results (Section A9, p.52). Our results remain similar. In practice, case studies show that the IMF often provides technical assistance to countries implementing CBI, but governments often initiate and implement CBI themselves (Johnson 2016). To account for more general spillovers, we re-estimate our baseline model applying Discroll–Kraay standards errors that correct for temporal spatial correlation. Our results remain unchanged.

These tests, however, do not offer a general solution to the problem of endogeneity. To strengthen confidence in our results, we implement an instrumental variable

[16]One concern is whether the central bank's control banking supervision is driven by ideology; we show in Section L (supporting information) that ideology (measured in several ways) does not affect the identity of banking supervisors.

[17]In Section K.2 (supporting information), we examine whether the relation between CBI and deregulation is reciprocal using a panel vector autoregression model; consistent with our argument, we find that the path from CBI to deregulation is stronger than the opposite.

strategy (see Section N, supporting information, for details). We instrument CBI with natural resource rents. There are three reasons why resource rents shocks may affect a government's incentive to increase or decrease CBI. First, a negative shock increases the need for higher capital inflows (e.g., for public spending). As Maxfield (1997, 4) notes, "politicians use central bank independence to signal their nation's creditworthiness." Second, larger rents increases a government's incentives to raid central banks, since they typically manage reserves and sovereign wealth funds (Bawumia and Halland 2017). Third, an increase in the value of rents puts upward pressure on exchange rates, which may have adverse effects on key industries (Johnson 2016). Thus, keeping control over monetary policy becomes particularly important when resource rents go up. Together, this suggests that rents are negatively correlated with CBI.

This conjecture is supported by the data. Rents are good predictors of CBI, with an F statistic is about 30 in all cases. One concern is that the exclusion restriction may not be met. We therefore augment our main models to control for additional causal channels that, left uncontrolled for, may threaten this analysis. We control for labor market dynamics, changes in consumption patterns, and shocks to important constituencies such as the export sector, with unchanged results. Despite these precautions, a risk remains that the exclusion restriction assumption may still fail to hold. We rely on Conley, Hansen, and Rossi (2010) to implement sensitivity tests. The estimates of the instrumental variable analysis are reported in Section N (supporting information). We find strong effects of CBI in almost all cases.

Conclusion

The political economy literature has praised CBI as an institutional safeguard for macroeconomic stability. Unsurprisingly, observers have typically lauded policymakers who grant more independence to their central banks. But the experiences of several countries in Europe, Latin America, and elsewhere indicate that CBI has been associated with uncontrolled financial liberalizations. Possibly, CBI made these economies more vulnerable to financial shocks.

According to traditional political economy approaches, loose financial oversight is the result of special interest group interference. It is widely believed that these manipulate or simply buy policymakers to squeeze rents out of financial markets. This, however, raises the question: why policymakers would give in to these special interest group pressures? Although we do not challenge the importance of special interest group interference in financial regulation, we argue that CBI creates an environment where the interests of financial players and policymakers become aligned. In a constrained setting, in which policymakers cannot simply print money or drive up fiscal deficits to buy off important political supporters, we show that fostering the growth of the financial industry through deregulation becomes a politically desirable option.

Does a return to government-controlled central banks make sense? We are doubtful. Such a return would not on its own re-regulate the financial system. And few policymakers would see an incentive to push for financial repression at a time of sluggish growth. As credit has turned into a political drug, it is quite likely that CBI is a one-way path. Our conclusion is therefore twofold. First, more attention should placed on the conditions under which regulations *improve*. A better understanding of international efforts such as those related to the Basel Accords would be fruitful. Second, and more generally, our results offer a stark reminder that tweaking the design of monetary institutions cannot solve all woes resulting from the pursuit of political self-interest. Institutions can weaken the power of incentives, but not make it disappear altogether.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

A Market Effects of CBI
B Results: Financial Outcomes
C Decision-Theoretic Model
D CBI and the Costs of Removal
E CBI and Substituting Monetary Policy
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