Escaping the Trilemma: Macroeconomic Constraints and the Politics of Countercyclical Credit Management

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Abstract

Recent research suggests that governments adopt policies aimed at increasing domestic private credit growth as a policy response to adverse economic conditions, financial crises, and rising inequality (Rajan 2010, Kern and Amri 2016, Ahlquist and Ansell 2017). We build on this work by considering how the macroeconomic constraints imposed by the Mundell-Fleming "trilemma" affect governments' incentives to pursue this strategy (Mundell 1960, Fleming 1962). We test a new political theory of credit growth, in which governments encourage private credit growth as an instrument of domestic stimulus when they face more stringent constraints on the use of traditional macroeconomic policy tools (monetary and fiscal policy) as a result of their trilemma commitments. We test this argument using time-series, cross-sectional data covering 134 countries from 1970 to 2014. We find strong evidence that more stringent trilemma constraints have a significant countercyclical effect on the rate of private domestic credit growth and are associated with reductions in banks' capital reserve requirements – a key policy change that increases banks' willingness to extend credit to consumers and firms. Finally, we conduct a synthetic control analysis on the "PIIGS" countries of the Eurozone (Portugal, Ireland, Italy, Greece, and Spain) from 1999 to 2012. We find that these countries became significantly more likely to pursue policies of credit growth during economic downturns after adopting the Euro than they were in the 1980-1998 pre-EMU period. Together, these results strongly suggest that governments seek to escape the macroeconomic policy constraints imposed by the Mundell-Fleming trilemma by embracing private credit growth as an alternative to monetary and fiscal stimulus.

Introduction

A decade since the collapse of Lehman Brothers and the onset of the most serious banking and financial crisis since the interwar era, the massive scope of the transatlantic "Lost Decade" has become apparent. Although overall unemployment has returned to pre-crisis levels in most industrialized countries, it remains extremely high in the countries hit most severely by the Eurozone crisis (e.g., Greece and Italy), and youth unemployment remains stubbornly high throughout the Eurozone. Even in countries that have done relatively well during the crisis, higher rates of economic growth mask severe and rising levels of income and wealth inequality (Piketty 2013, Milanovic 2016). In the US, the economy still remains significantly smaller than it would have been based on its pre-crisis trend (Barnichon et al. 2018).

In addition to the economic damage, the past decade of financial crisis and Great Recession has had massive political effects across the industrialized world. From the victory of "Leave" in the United Kingdom's June 2016 Brexit referendum, to the election of Donald Trump in the United States and the rise of right-wing nationalist and Euroskeptic parties in most EU member-states, the economic crises and shocks of the last decade have transformed the political landscape in the world's richest countries. Right-wing leaders, from Donald Trump to Nigel Farage to Marine Le Pen, have seized on widespread insecurity to assert a new xenophobic nationalism, rejecting migrants and refugees and fueling a backlash against free trade. Although the electoral fortunes of these candidates and parties has been decidedly mixed—as evidenced by Emmanuel Macron's victory in the 2017 French presidential election and the re-election of Angela Merkel in Germany in September, 2017—politics in OECD countries have clearly taken a "hard right turn" (Funke et al. 2016). This stark rightward shift in rich countries' domestic politics has also cast doubt on the

future of the liberal international economic and political order (Morrison 2017, Pepinsky 2017, Staniland 2018).

Given the serious economic and political consequences of financial crises, governments have strong incentives to adopt policies that mitigate the negative impact of crises on economic growth, employment, and voters' wealth and income. Understanding the ability and willingness of governments to manage their economies in response to financial crises and economic downturns remains a question of urgent importance. In this paper, we build on important recent work on the political economy of government policy responses to crises and adverse economic conditions (Walter 2013, Chinn and Frieden 2012, Ahlquist and Ansell 2017). We develop and test a new political theory of credit growth, in which governments encourage private credit growth as an instrument of domestic stimulus when they face constraints on the use of other macroeconomic policy tools (i.e., monetary and fiscal policy) as a result of their exchange rate and monetary commitments. In short, governments encourage countercyclical domestic credit growth when their macroeconomic policy autonomy is constrained, in line with the Mundell-Fleming "trilemma" (Mundell 1960, Fleming 1962).

We argue, and show, that countries under severe trilemma constraints—fixed exchange rates, capital mobility, and lack of monetary policy autonomy—are more likely to employ private credit as a countercyclical stimulus tool than countries without such constraints. Rather than attempting to "round the corners" of the trilemma through occupying intermediate positions on exchange rate policy and capital mobility (Klein and Schambaugh 2015), countries facing more severe trilemma constraints may attempt to escape them by manipulating the availability of credit, especially when faced with poor economic conditions.

We test this argument using time-series, cross-sectional data covering 134 countries from 1970 to 2014. We find strong evidence that more stringent trilemma constraints have a significant countercyclical effect on private domestic credit growth and are associated with reductions in banks' capital reserve requirements—a key policy change that increases banks' willingness to extend credit to consumers and firms. Finally, we conduct a synthetic control analysis on the "PIIGS" countries of the Eurozone (Portugal, Ireland, Italy, Greece, and Spain) from 1999 to 2012. We find that these countries became significantly more likely to pursue policies of credit growth during economic downturns after adopting the Euro than they were in the 1980-1998 pre-EMU period. Together, these results strongly suggest that governments more constrained by the Mundell-Fleming trilemma embrace private credit growth as a substitute for monetary and fiscal stimulus.

The remainder of our paper proceeds as follows. We begin with a brief survey of the relevant literatures on the determinants of credit growth and financial crises, as well as post-crisis policies before introducing our theory. We then present our data and empirical analysis and conclude with a discussion of the implications of our findings for our understanding of the political economy of financial crises.

Financial crises and the politics of macroeconomic stimulus: existing literature

The literature on the origins of financial crises focuses heavily on the origins of high levels of credit growth. Following the conclusion that surges in private credit growth ("credit booms") are one of the most significant predictors of financial crises (Schularick and Taylor 2012, Jorda et al. 2016), scholars have attempted to determine when and why credit growth exceeds sustainable levels. A range of studies have established links between credit booms and capital inflows or large

current account deficits (e.g. Mendoza and Terrones 2008, Reinhart and Reinhart 2009, Elekdag and Wu 2011, and Plantin and Shin 2018), suggesting that financial crises may be the product of large inflows of foreign capital and severe balance of payments imbalances (Chinn and Frieden 2011, Walter 2013). Other studies, however, question the causal chain linking capital inflows to credit growth. Copelovitch and Singer (2017) find that large capital inflows are destabilizing in certain types of financial systems—namely, those in which banks compete alongside large and deep securities markets—but that inflows primarily affect financial stability by altering the quality of bank lending rather than the overall level of credit. Moreover, Amri et al. (2016) find that the link between capital surges and credit booms may not be as strong as often represented: depending on measurement choices, an average of only 8-28% of credit booms are preceded by capital surges, whereas just 3-12% of capital surges were followed by credit booms (Amri et. al. 2016, 19, 23).

A related body of work focuses not on the capital flow/credit boom nexus but rather on credit growth as a policy outcome. Rather than simply reflecting lending by domestic financial institutions flush with newly available international capital, domestic credit growth may instead be an intentional government policy response to rising income inequality (Rajan 2010, Ahlquist and Ansell 2017) or to adverse economic conditions, especially prior to elections, in line with the logic of "political credit cycles" (Kern and Amri 2016). The logic behind these studies is that government policies that increase credit flows or make borrowing cheaper for consumers and firms will stimulate the economy through a variety of channels, including increased growth and rising personal income. We add to this literature by offering a new political theory of private credit growth. Although we agree with existing work that governments have strong incentives, under certain conditions, to increase the flow of private credit, we argue that this must be placed in the context of other macroeconomic policy tools available to governments. Specifically, we argue

that governments are most likely to act to increase private domestic credit growth when they are unable to employ more traditional tools of macroeconomic adjustment—monetary and fiscal policy. As noted above, this is especially the case for countries that have adopted fixed exchange rates and full capital account openness, in line with the Mundell-Fleming "trilemma."

Economists have engaged in a recent and robust debate about whether the monetary trilemma remains a trilemma in the face of widespread capital mobility and the existence of global financial shocks, or whether it has instead been transformed into a dilemma. On the one hand, Rey (2013) provides evidence of substantial positive co-movements in gross capital flows and asset prices in many areas of the world, which are in turn correlated with the VIX index, a measure of market volatility and uncertainty based on the implied volatility of S&P 500 Index options. She argues that the existence of this "global financial cycle" means that, regardless of exchange rate choice, countries with open capital accounts lack monetary policy autonomy, contradicting the trilemma. Various authors (e.g., Bruno and Shin 2015, Miranda-Agrippino and Rey 2015, Rey 2016) also find that the global financial cycle is substantially driven by changes in U.S. monetary policy. On the other hand, Klein and Schambaugh (2015) find significant differences in monetary policy autonomy between pegged and floating countries with open capital accounts, suggesting that the trilemma remains relevant. Georgiadis and Mehl (2016) show that domestic monetary policy shocks may be amplified or diminished by a country's net foreign currency position, which implies that floating countries may still have access to effective independent monetary policy. If the trilemma is truly a dilemma due to capital mobility and global financial shocks rendering monetary policy ineffective regardless of exchange rate, we should expect to find no difference in credit growth rates between countries with pegged versus floating exchange rate regimes, as both types of regimes would face similar incentives to escape their constraints.

Our argument builds on this latter perspective and brings the focus on macroeconomic policy autonomy in the modern age of global finance into conversation with the aforementioned political economy literature on policy responses to financial crises and adverse economic conditions. In fact, as we will show below, we find significant differences in the extent and cyclicality of credit growth, supporting the argument that the trade-offs implied by the trilemma remain very relevant. In the following section, we develop our theory and hypotheses, focusing on specifying the conditions under which governments—facing trilemma-imposed constraints on traditional monetary and fiscal policy—turn to private credit as an alternative mechanism of economic stimulus.

Escaping the trilemma: a political theory of credit growth

Our theory builds off of the logic of the canonical Mundell-Fleming model, which outlines a fundamental macroeconomic policy conundrum faced by all governments in the modern global economy. The Mundell-Fleming trilemma, as illustrated in Figure 1, depicts trade-offs between three competing monetary policy goals: global financial integration, exchange rate stability, and domestic monetary policy autonomy. Each of these dimensions contains a spectrum of policies, but they are best illustrated by their ideal points: complete capital mobility, a fixed exchange rate, and fully autonomous monetary policy. Since the financial liberalization of the 1980s, however, there has been relatively little meaningful variation in capital account openness in higher-income countries, with most governments maintaining open capital accounts and refraining from imposing capital controls (Aizenmann et al. 2010). As a result, in many cases the trilemma choice has distilled—in practice—to a trade-off between the exchange rate stability rendered by fixing the exchange rate, or monetary policy autonomy and a flexible exchange rate.

Figure 1: Mundell-Fleming Trilemma: Pick Two

Capital Mobility

Exchange Rate Stability   Monetary Autonomy
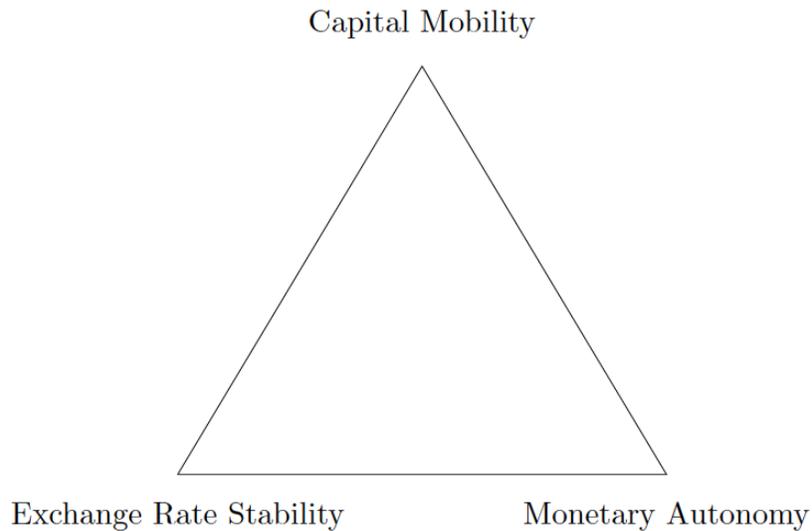
While the trilemma encapsulates trade-offs in monetary policy objectives, trilemma choices also affect other macroeconomic policy areas, such as fiscal policy and financial regulation (Clark and Hallerberg 2000, Schoenmaker 2013). Theoretically, fixed exchange rates should enable governments to enact effective fiscal policy expansions because central banks are engaged in maintaining the exchange rate rather than managing domestic economic conditions (Clark and Hallerberg 2000). Under flexible exchange rates, in contrast, fiscal expansions are more likely to be neutralized by an adjustment in the money supply, although there is some evidence that fiscal policy still has a positive effect on output under flexible rates (e.g., Bodea and Higashijima 2017). Countries with fixed exchange rates may also face constraints on the use of fiscal policy, however, either through self-imposed fiscal constraints (e.g., the EMU's Stability and Growth Pact, constraining deficits to three percent of GDP) or higher public debt-to-GDP ratios, commonly

known as public debt overhang. High levels of public debt may also generate concern about a country's exchange rate commitments and constrain their ability to pursue expansionary fiscal policy due to pressure on the currency (e.g., Greece in the Great Recession).

We argue that a country's macroeconomic context and trilemma commitments are vital to understanding credit growth and the politics of financial crises. The tools available to governments attempting to manage their national economies are directly related to their trilemma choices: countries with open capital accounts and fixed exchange rates opt to forgo monetary policy autonomy, thereby losing a principal instrument for managing the economy. With fixed exchange rates, governments may be able to use fiscal policy expansions to stimulate their economy, subject to public debt or domestic political constraints. Governments may be particularly likely to face limitations on public borrowing and fiscal expansion in periods of slower economic growth, such as following financial crises. These constraints on the management of the economy may generate political problems for governments, especially during economic downturns and recessions. The political pressures to stimulate the economy in bad times may be particularly acute for left-wing governments, as their traditional constituents—laborers, service workers, and otherwise domestically-oriented producers—are often the first and worst hurt in economic recessions. In these cases—with traditional macroeconomic tools constrained to managing the exchange rate rather than the ups and downs of the business cycle—governments may search for a third instrument: private credit.

We suggest that countries' trilemma constraints change the strategic choices governments make when considering the manipulation of credit growth and availability. Under flexible exchange rates, countries' monetary policy autonomy should enable them to better control the business cycle by raising and lowering interest rates, which in turn should directly affect the

availability of credit. In other words, countries with limited trilemma constraints (i.e., flexible exchange rates and more closed capital accounts) use traditional tools to manipulate the business cycle, and the ability of these same tools to respond directly to domestic economic conditions limits the scope for effective and independent credit policies. For countries with fixed exchange rates and open capital accounts, however, private credit may present a way to circumvent constraints on traditional macroeconomic tools that are occupied with maintaining the exchange rate. As monetary policy is targeted at the exchange rate and not domestic economic conditions, manipulations of domestic credit should be less likely to be limited by tightening or loosening monetary conditions. Thus, governments with open capital accounts and fixed exchange rates should find private credit more attractive as a demand management tool than those with flexible exchange rates for two reasons: (1) fixed exchange rates remove access to a crucial macroeconomic management tool, monetary policy, thereby restricting governments' menu of available policy tools; and (2) lack of monetary policy should create more policy space for independent private credit expansions as they will not be directly constrained by targeted adjustments to the money supply. This gives rise to our first hypothesis:

> *H1: All else equal, rates of credit growth should be higher in countries faced with more stringent trilemma constraints, defined as a fixed exchange rate and high levels of capital account openness.*

We expect that the manipulations in private credit by countries with severe trilemma constraints will be countercyclical rather than procyclical, because the constraints on traditional monetary and fiscal tools force more procyclical policy than under conditions of full monetary autonomy. Our second hypothesis is thus that *H1* should be conditional on "bad" times:

H2: All else equal, rates of credit growth should be higher in countries faced with more stringent trilemma constraints during economic downturns and lower during economic upswings.

Finally, we anticipate that the search for policy alternatives rendered by constraints on monetary and fiscal stimulus will be more likely under left-wing governments than right-wing governments due to their distinct political bases. Left-wing parties historically represent lower economic classes and domestically-oriented constituents such as laborers, producers of non-tradable goods and services, and import-competitors, whereas right-wing parties tend to capture the upper classes, often including export producers and corporate and financial actors (Alesina et al. 1997, Iversen and Soskice 2006). These constituencies give rise to distinct preferences over macroeconomic policies, with right-wing parties supporting tighter fiscal and monetary conditions, higher interest rates, less inflation, and less redistribution than left-wing parties (Alvarez et al. 1991, Iversen and Soskice 2006). Redistribution generally brings to mind fiscal policy and taxation, but credit growth can also be an effective redistributive policy tool (Rajan 2010, Ahlquist and Ansell 2017). Moreover, though there is substantial debate about the extent to—and conditions under—which partisan economic cycles occur, parties do retain some autonomy to implement their preferred macroeconomic policies (Mosley 2000, Clark and Arel-Bundock 2013, Kern and Amri 2016). We suggest that left-wing parties' distinct voter constituencies, and political pressures arising therefrom, should make them more likely to attempt to escape the macroeconomic constraints imposed by the combination of fixed exchange rates and capital mobility, and should therefore find credit expansions more attractive as a policy response to economic downswings. As such, our third hypothesis is as follows:

H3: All else equal, rates of credit growth should be higher under left-wing governments than right-wing governments in countries with more stringent trilemma constraints.

Empirical Analysis

In order to test these hypotheses, we first analyze a dataset of 134 middle- and high-income countries from 1977 to 2012. To begin our quantitative analysis, we use an error-correction linear model with fixed effects and clustered standard errors robust to spatial and temporal dependence to try to substantiate the correlations proposed by our theory. The results remain substantively similar if we use regular fixed effects models with cluster-robust standard errors, but, given the global nature of finance—perhaps best exemplified by the spreading of financial crises via contagion—, the spatial dependence specification better accounts for interdependence among groups as well as heteroskedasticity between groups.

We employ a single-equation error correction model (ECM) for our analysis. The ECM specification is appropriate in cases where there are both long-term equilibrium relationships between X and Y and short-run fluctuations as a result of period-to-period changes in the explanatory variables (see De Boef and Keele 2008, 185-87; Box-Steffensmeier et. al. 2014, 150-70; Soroka et. al. 2015, 464-65). ECMs are useful for estimating both relationships and are applicable to both integrated and stationary time series. The estimated specification is:

$$\Delta Y_t = \alpha + \alpha_1 Y_{t-1} + \beta_0 \Delta X_t + \beta_1 X_{t-1} + \beta e_t$$

where X is a vector of covariates. β_0 and β_1 are vectors of associated coefficients for the year-on-year change and lag versions of these covariates, respectively. In this specification, changes in Y are a function of contemporaneous changes in X, as well as the one period lagged values of both X and Y. If the ECM is appropriate, then $-1 < \alpha_1 < 0$ and α_1 is statistically significant.

Our primary dependent variable is the yearly change in private credit provision to the domestic economy as a percentage of GDP, with a mean of 1.08 (percent) and a standard deviation

of 4.87.[1] Our key independent variable, *Trilemma*, is a composite measure of trilemma constraints. To construct this variable, we draw on the trilemma indices data of Aizenmann, Chinn, and Ito (2012). These data code the three "corners" of the Mundell-Fleming trilemma: monetary policy autonomy, exchange rate stability, and capital account openness. Each variable is scaled on a 0 to 1 index, with 0 indicating complete policy autonomy and 1 indicating no policy autonomy. Thus, exchange rate stability takes a value of "0" when a country has adopted a freely floating exchange rate regime, and a value of "1" when it has adopted a hard peg fixed exchange rate. Capital account openness takes a value of "0" when a country has imposed complete capital controls and a value of "1" when it has removed all controls. To measure monetary policy autonomy, Aizenmann et. al. calculate "the reciprocal of the annual correlation between the monthly interest rates of a country and its "base" country (the country to which it pegs its exchange rate or would be most likely to do so) (2013).[2] *Trilemma* is the sum of these three variables, normalized between 0 and 1. Higher values, therefore, indicate less macroeconomic policy autonomy. For example, member-states of the Eurozone have a trilemma index value of "1" indicating that they have a completely fixed exchange rate, no monetary autonomy, and complete capital account openness. We include both the one-year lag and the year to year change in this variable, reflecting the conviction that credit conditions may be influenced both by long-run trends as well as short-term changes in macroeconomic policies. In our full sample, the trilemma index has a mean of 0.55 and a standard deviation of 0.2, with an observed minimum of 0.07.

Our left-wing government variable is a simple dummy variable indicating whether or not all major government branches are controlled by a left-wing party; the measure combines the left-

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[1] Data from: *World Development Indicators*. Washington, D.C.: The World Bank.
[2] On base countries, see Klein and Shambaugh
(http://www.dartmouth.edu/~jshambau/Papers/KleinShambaughClassificationDescription.pdf).

center-right measure of executive ideology, from the World Bank *Database of Political Institutions* (2015), with the DPI's "allhouse" variable, indicating that the party of the executive also controls the legislature.[3]   Again we include one-year lagged levels as well as changes, although our primary quantity of interest here is the level, since changes measure both partisanship and shifts in the government in power, and because the lagged partisanship of the government is more likely to affect current credit growth and policies than the current-period change. We also include some economic and political controls that likely influence credit growth, including level of democracy, current account balance, GDP levels, and dummies for financial crises.

We first run simple, non-interactive models to estimate the unconditional effect of trilemma constraints on private credit growth. Then, to test our second and third hypotheses, we interact the lagged value of the index with the yearly change in (log) GDP per capita and the left-wing government dummy, respectively, to find the conditional effects of trilemma constraints on private credit. The simple error-correction model with the full sample shows that, in support of our theory, trilemma constraints do indeed affect domestic credit growth. From the first column in Table 1, we can see that the extent (level) of trilemma constraints is associated with a statistically and substantively significant, positive effect on credit growth, as predicted by our first hypothesis. Holding all other covariates constant, a one standard deviation increase in the trilemma index, reflecting less monetary autonomy and further global financial integration, is associated with an unconditional 1.13 percent increase in private credit relative to GDP—significant to the 99.9 percent level. For comparison, this effect is similar in magnitude to that associated with an increase in the current account deficit: a one standard deviation increase in the current account deficit (as a

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[3] While the World Bank DPI executive ideology variable has some shortcomings—it is a blunt measure and constant across time despite the potential for shifting party positions—it is highly correlated with other measures of government partisanship (e.g. The Manifesto Project's RILE measure), and our results remain substantively the same if we use other measures.

percentage of GDP), corresponds to a one percent increase in private credit relative to GDP. Much of the literature on credit growth and financial crises has emphasized a link between capital inflows (i.e. current account deficits) and credit growth (e.g. Mendoza and Terrones 2008, Reinhart and Reinhart 2009, Elekdag and Wu 2011, Amri et al. 2016, and Plantin and Shin 2018); in support of our theory, we are able to show an additional and strong effect of domestic macroeconomic policy choices on the rate of private credit provision. We also find that left-wing governance is associated with a 0.88 percent higher rate of credit growth relative to GDP than expected under non-left-wing governments.

These results on both the trilemma index and left-wing government from the non-interactive model hold if we reduce the sample from 134 to 52 high and middle-income countries (see Table 1). However, if we reduce the sample even further, to 20 original OECD countries, the coefficients on both trilemma index and left-wing governance lose significance. We return to analysis of the OECD and EMU countries below in the synthetic control analysis.

While the non-interactive models support the contention that trilemma constraints unconditionally affect the provision of private credit, our theory proposes that this effect should be countercyclical, i.e., conditional on domestic economic conditions. We therefore run the same model in the full sample, interacting the trilemma index and the change in GDP per capita. We also test *H3* directly by interacting trilemma constraints and government partisanship. The results of the full sample interactive models are reported in Table 2. We find significant support for our second hypothesis: all else equal, rates of credit growth should be higher in countries with severe trilemma constraints during economic downturns, and lower during economic upswings. However, we find no significant effects for partisanship, in contradiction of our third hypothesis (Figures 4 and 5 below).

Table 1: Simple ECM Results with Driscoll-Kraay SEs

	Dependent variable:		
	Δ private credit growth (% of GDP)		
	(1)	(2)	(3)
private credit growth (lag)	−0.044***	−0.057*	−0.050
	(0.016)	(0.029)	(0.030)
trilemma index (lag)	5.655***	6.715***	5.073
	(0.777)	(1.566)	(3.230)
Δ trilemma index	1.745**	0.796	−0.961
	(0.877)	(1.498)	(4.554)
left government (lag)	0.881**	1.879**	3.458
	(0.410)	(0.879)	(2.225)
Δ left government	0.824	0.837	2.419
	(0.605)	(0.854)	(1.597)
current account balance (reverse, lag)	0.123***	0.332***	0.259***
	(0.017)	(0.064)	(0.082)
Δ current account balance (reverse)	0.108***	0.306***	0.665***
	(0.023)	(0.094)	(0.147)
Polity (lag)	−0.051	0.079	−0.569
	(0.032)	(0.124)	(0.546)
Δ Polity	−0.053	0.230	−1.169
	(0.060)	(0.179)	(1.375)
log GDP per capita (lag)	2.791***	6.570***	21.638**
	(0.702)	(1.228)	(8.295)
Δ log GDP per capita	−15.029***	−24.590**	−73.240***
	(4.192)	(12.045)	(23.509)
banking crisis (lag)	−3.374***	−3.335***	−2.835***
	(0.547)	(0.683)	(0.715)
banking crisis	0.806	1.538*	2.352**
	(0.504)	(0.901)	(1.061)
Constant	−23.421***	0	−217.196**
	(5.096)	(omitted)	(91.827)
Observations	2,881	956	504
Fixed Effects	✓	✓	✓
Groups	134	52	20
R^2	0.168	0.210	0.281
F Statistic (df = 48; 35)	119,623.32***	3.04e+08***	95,670.77***

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

Table 2: Full Sample Interactive ECM Results with Driscoll-Kraay SEs

	Dependent variable:	
	Δ private credit growth (% of GDP)	
	(1)	(2)
private credit growth (lag)	−0.0470***	−0.044***
	(0.016)	(0.016)
trilemma index (lag)	6.395***	5.385***
	(0.806)	(0.810)
Δ trilemma index	1.664*	1.822*
	(0.879)	(0.855)
left government (lag)	0.960**	0.029
	(0.411)	(0.994)
Δ left government	0.845	0.856
	(0.597)	(0.623)
trilemma index × Δ log GDP per capita	−53.987***	
	(12.070)	
trilemma index × left government		1.758
		(2.262)
current account balance (reverse, lag)	0.132***	0.123***
	(0.015)	(0.017)
Δ current account balance (reverse)	0.115***	0.108***
	(0.021)	(0.023)
Polity (lag)	−0.052	−0.053
	(0.032)	(0.033)
Δ Polity	−0.057	−0.054
	(0.060)	(0.060)
log GDP per capita (lag)	3.070***	2.767**
	(0.737)	(0.708)
Δ log GDP per capita	13.048*	−15.114***
	(6.523)	(4.226)
banking crisis (lag)	−3.420***	−3.392***
	(0.546)	(0.559)
banking crisis	0.776	0.794
	(0.495)	(0.506)
Constant	−25.967***	−23.101***
	(5.322)	(5.127)
Observations	2,881	2,881
Fixed Effects	✓	✓
Groups	134	134
R^2	0.175	0.168
F Statistic (df = 49; 35)	362,597.66***	79,747.94***

Figure 2 shows the effect of a one standard deviation increase in the trilemma index on the provision of domestic credit, conditional on the yearly observed change in per capita GDP (holding all other covariates at their median). As predicted by our theoretical framework, the effect of the trilemma index on private credit growth is statistically significant and decreasing in changes in per capita GDP, suggesting that trilemma constraints are correlated with countercyclical changes in private credit. Figure 3 shows the reverse interaction: the effect of changes in GDP on private credit growth at differing levels of trilemma constraints, again holding all other covariates at their medians. The effect of an increase in per capita GDP on credit provision to the domestic economy is decreasing in trilemma constraints, again suggesting that fixed exchange rates and high capital are associated with a countercyclical effect on credit growth.

In sum, we find strong evidence that the effect of trilemma constraints on private domestic credit growth is conditional on the state of the economy. In "good" times, trilemma constraints are associated with lower levels of credit growth, as we would expect; governments committed to fixed exchange rates and capital account openness are more likely to adopt tighter monetary and fiscal policy than those choosing alternative points on the Mundell-Fleming trilemma. In "bad" times, however, trilemma constraints become "golden fetters" (Eichengreen 1992), and governments find themselves unable to lower interest rates and/or run larger deficits in order to stimulate the macroeconomy. As our results indicate, these are precisely the cases in which escaping the trilemma via the incentivization of private credit growth becomes most attractive as a policy substitute.

Figure 2

Marginal Effect of Trilemma Index
on Private Credit Growth (Full Sample)

Figure 3

Marginal Effect of Change in GDP per Capita
on Private Credit Growth (Full Sample)
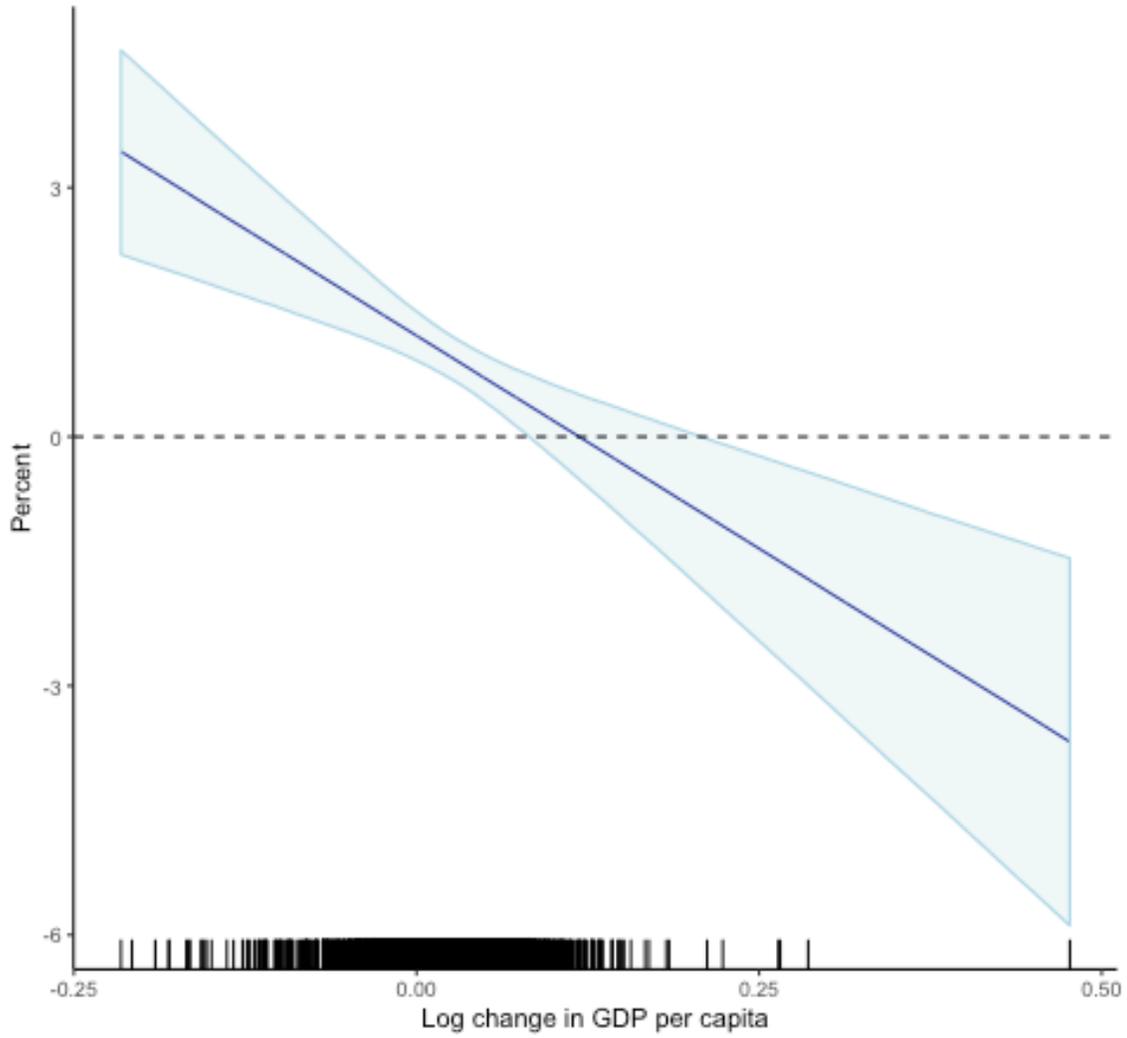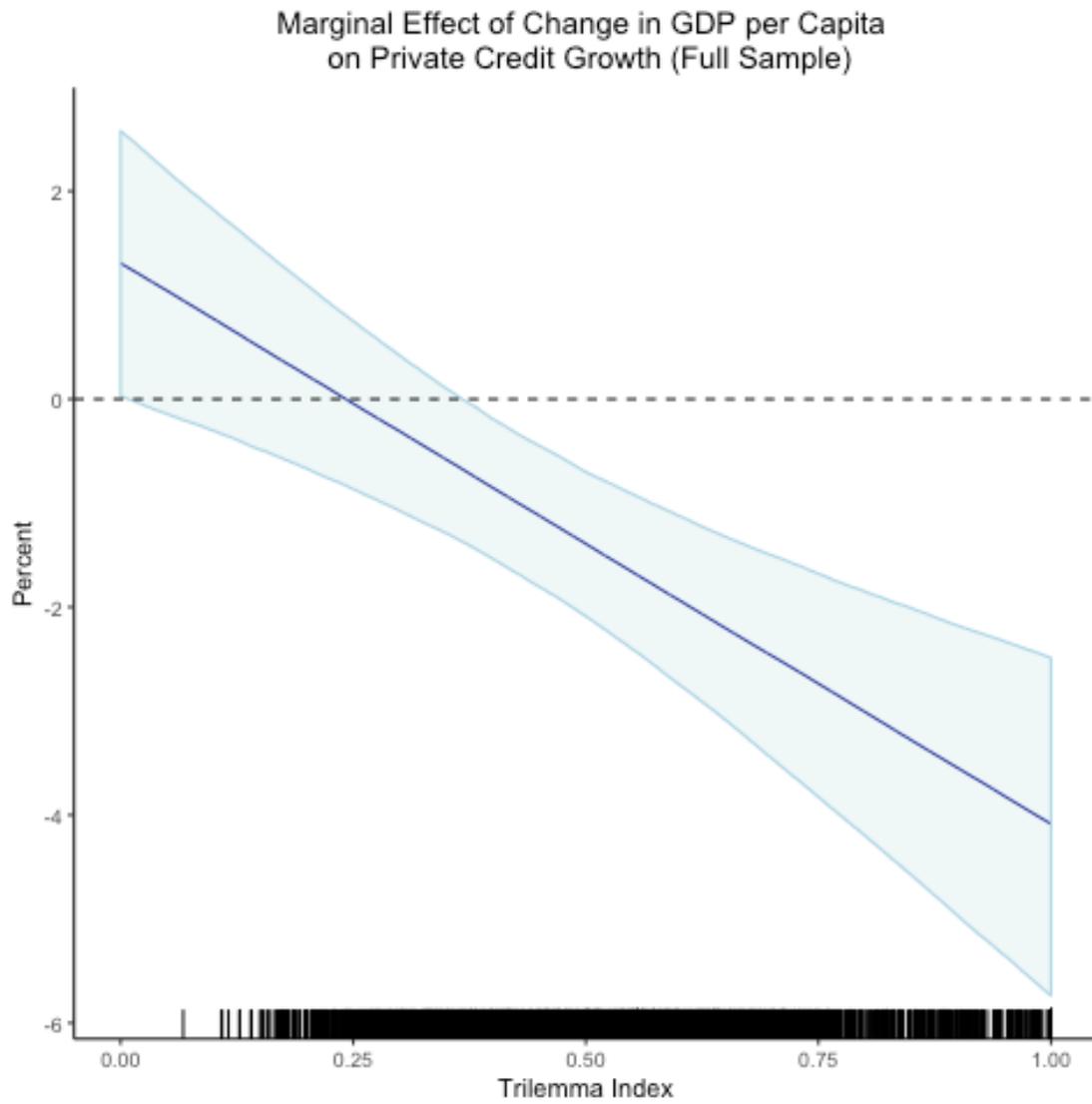
Figure 4

Marginal Effect of Trilemma Index
on Private Credit Growth (Full Sample)
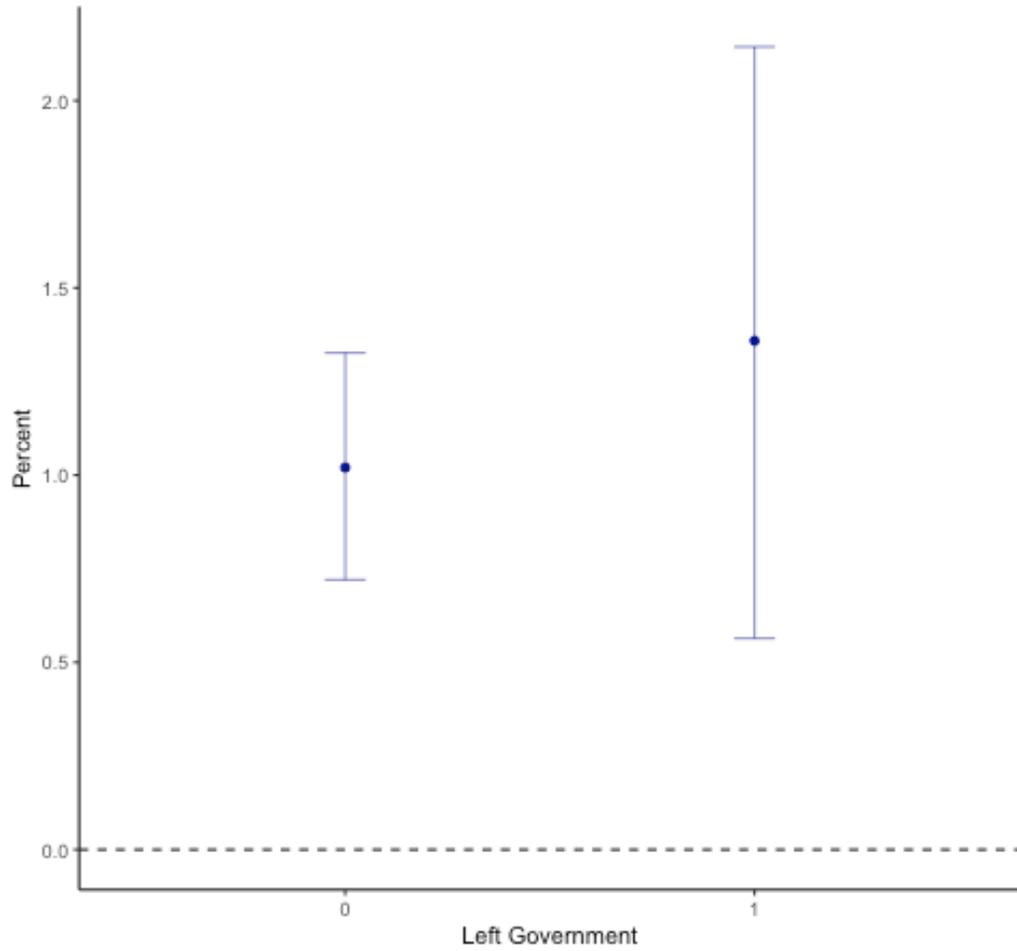
Figure 5

Marginal Effect of Left Government
on Private Credit Growth (Full Sample)
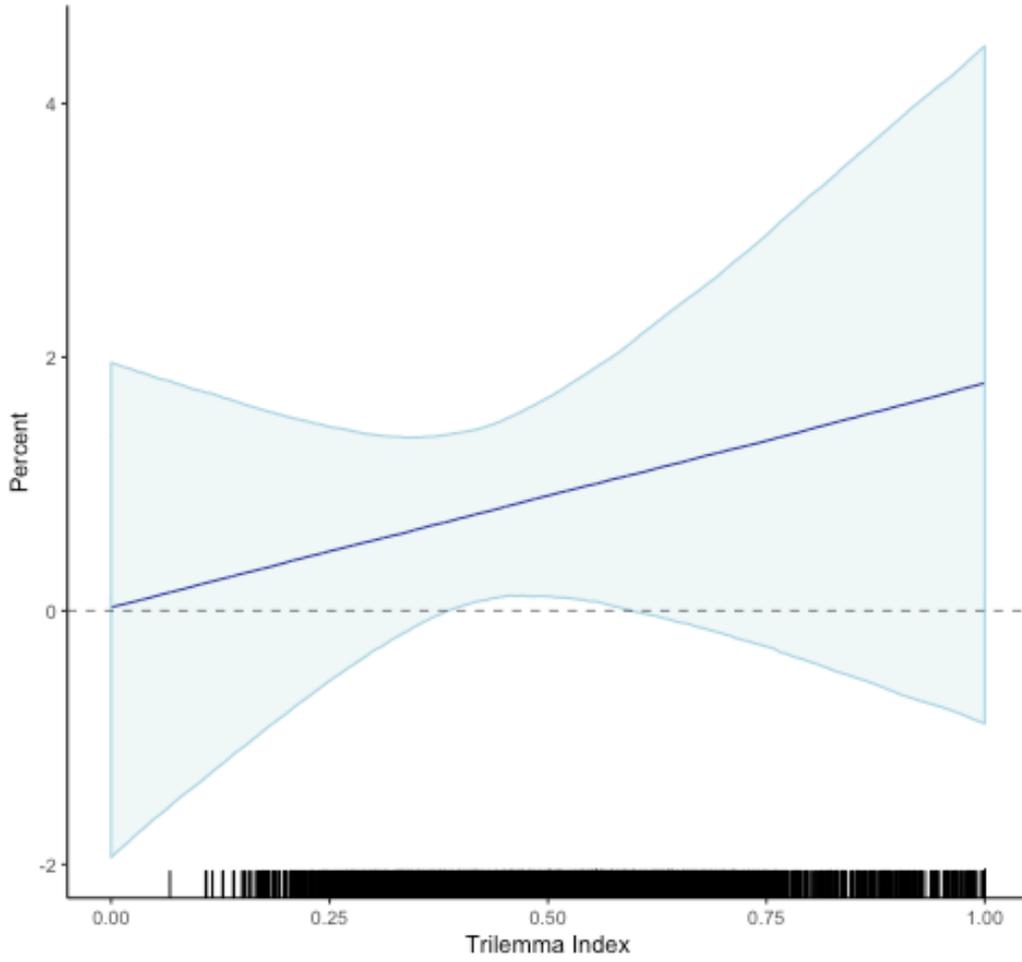
We also run our interactive ECM models on the same smaller sample sizes as the non-interactive model, the results of which are shown in Tables 3 and 4. In the mid-size, 52 country sample, we obtain the same results on the interactions between trilemma constraints and changes in per capita GDP. As Figures 6 and 7 show, the effect of the trilemma index on private credit growth is increasing in GDP growth, and the effect of an increase in GDP growth on private credit is decreasing in trilemma constraints. This again indicates that trilemma constraints and credit growth have a countercyclical relationship: governments seek to escape the monetary and fiscal austerity constraints imposed by commitments to fixed exchanges rates and capital account openness in "bad" times by using private credit growth as a substitute for macroeconomic stimulus.

In contrast to the results in the full and mid-size samples, the interaction between trilemma constraints and left-wing governance becomes significant in the expected direction in the OECD sample. Figures 8 and 9 plot the interaction: an increase in trilemma constraints is associated with an increasing effect on private credit growth for left-wing governments, and the effect of left-wing governance on private credit is increasing in trilemma constraints, respectively. These results provide evidence, though limited to a small number of wealthy countries, for our third hypothesis. As noted previously in the data description, there are limitations in the DPI partisanship data arising from difficulty of coding left-wing parties outside the industrialized democracies. This gives us more confidence in the OECD partisanship data compared to the larger samples. However, taking into account these data limitations, support for our third hypothesis—all else equal, rates of credit growth should be higher under left-wing governments with severe trilemma constraints—remains qualified.

Table 3: Mid-Size Sample Interactive ECM Results with Driscoll-Kraay SEs

	Dependent variable:	
	Δ private credit growth (% of GDP)	
	(1)	(2)
private credit growth (lag)	−0.063**	−0.056*
	(0.030)	(0.029)
trilemma index (lag)	9.034***	6.226***
	(1.784)	(1.449)
Δ trilemma index	0.786	0.791
	(1.454)	(1.468)
left government (lag)	1.931**	0.122
	(0.929)	(1.555)
Δ left government	0.733	0.828
	(0.792)	(0.837)
trilemma index $\times$ Δ log GDP per capita	−105.660***	
	(30.768)	
trilemma index $\times$ left government		3.366
		(3.344)
current account balance (reverse, lag)	0.329***	0.325***
	(0.064)	(0.067)
Δ current account balance (reverse)	0.275***	0.300***
	(0.089)	(0.091)
Polity (lag)	0.091	0.089
	(0.121)	(0.122)
Δ Polity	0.243	0.238
	(0.178)	(0.174)
log GDP per capita (lag)	7.066***	6.252***
	(1.441)	(1.237)
Δ log GDP per capita	31.431	−24.457*
	(20.331)	(12.217)
banking crisis (lag)	−3.305***	−3.424***
	(0.674)	(0.674)
banking crisis	1.409	1.490*
	(0.843)	(0.883)
Constant	0	0
	(omitted)	(omitted)
Observations	956	956
Fixed Effects	✓	✓
Groups	52	52
R^2	0.219	0.211
F Statistic (df = 49; 35)	3.62e+07***	1.71e+08***

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

Table 4: Small Sample Interactive ECM Results with Driscoll-Kraay SEs

	Dependent variable:	
	Δ private credit growth (% of GDP)	
	(1)	(2)
private credit growth (lag)	−0.051*	−0.055*
	(0.030)	(0.030)
trilemma index (lag)	5.604*	3.349
	(3.316)	(3.725)
Δ trilemma index	−0.957	−0.622
	(4.535)	(4.632)
left government (lag)	3.394	−4.982
	(2.276)	(3.164)
Δ left government	2.322	2.259
	(1.518)	(1.427)
trilemma index $\times$ Δ log GDP per capita	−52.182	
	(67.437)	
trilemma index $\times$ left government		12.178**
		(4.581)
current account balance (reverse, lag)	0.259***	0.235***
	(0.084)	(0.084)
Δ current account balance (reverse)	0.660***	0.676***
	(0.150)	(0.154)
Polity (lag)	−0.566	−0.528
	(0.531)	(0.501)
Δ Polity	−1.133	−1.248
	(1.342)	(1.321)
log GDP per capita (lag)	22.401**	21.034**
	(8.288)	(8.231)
Δ log GDP per capita	−36.821	−76.400***
	(50.272)	(22.578)
banking crisis (lag)	−2.812***	−2.986***
	(0.737)	(0.716)
banking crisis	2.301**	2.320**
	(1.051)	(1.136)
Constant	−225.713**	−209.512**
	(92.704)	(91.957)
Observations	504	504
Fixed Effects	✓	✓
Groups	20	20
R^2	0.282	0.289
F Statistic (df = 49; 35)	104,503.93***	141,840.06***

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

Figure 6

Marginal Effect of Trilemma Index
on Private Credit Growth (52 Country Sample)
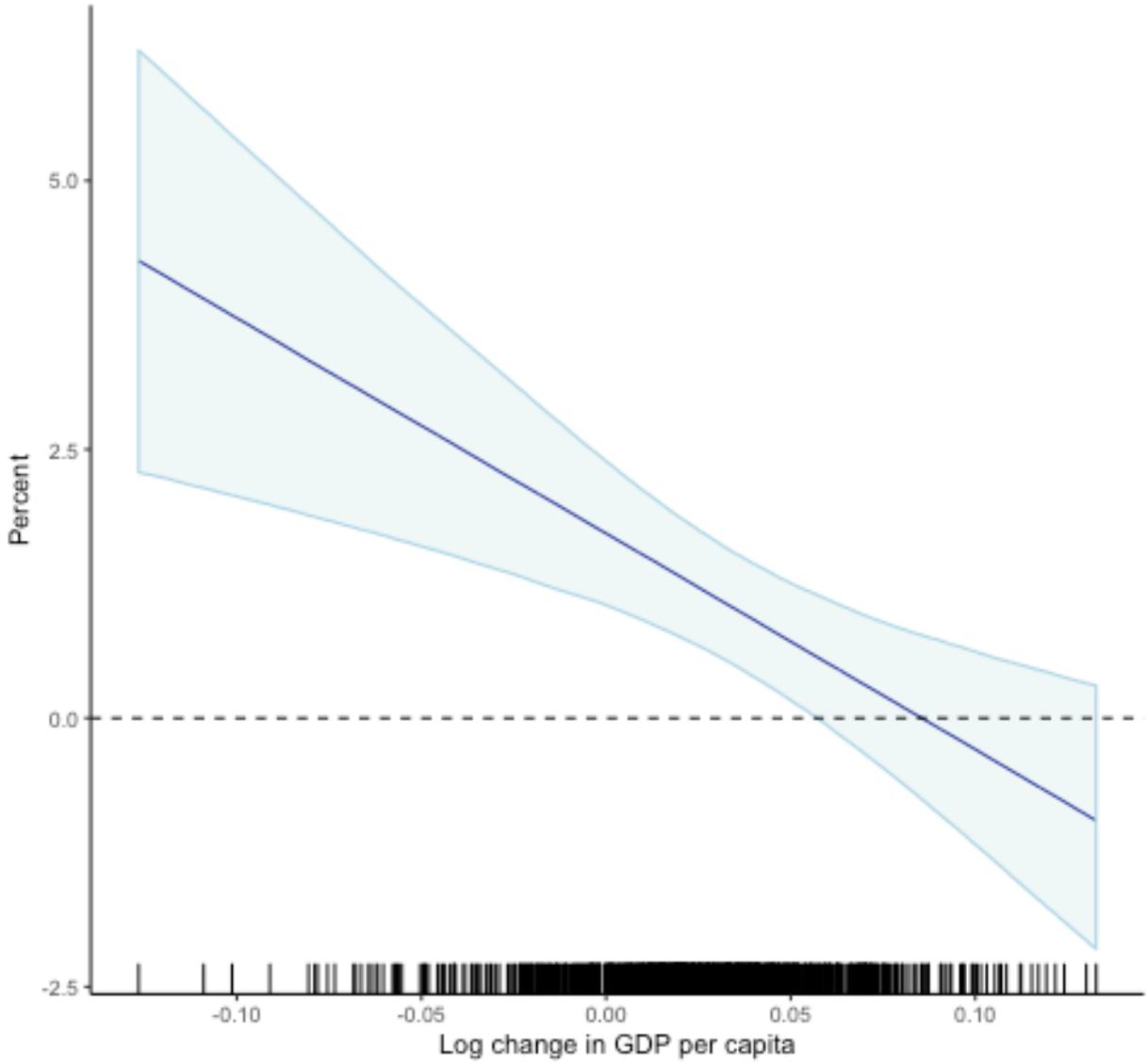
Figure 7

Marginal Effect of Change in GDP per Capita
on Private Credit Growth (52 Country Sample)
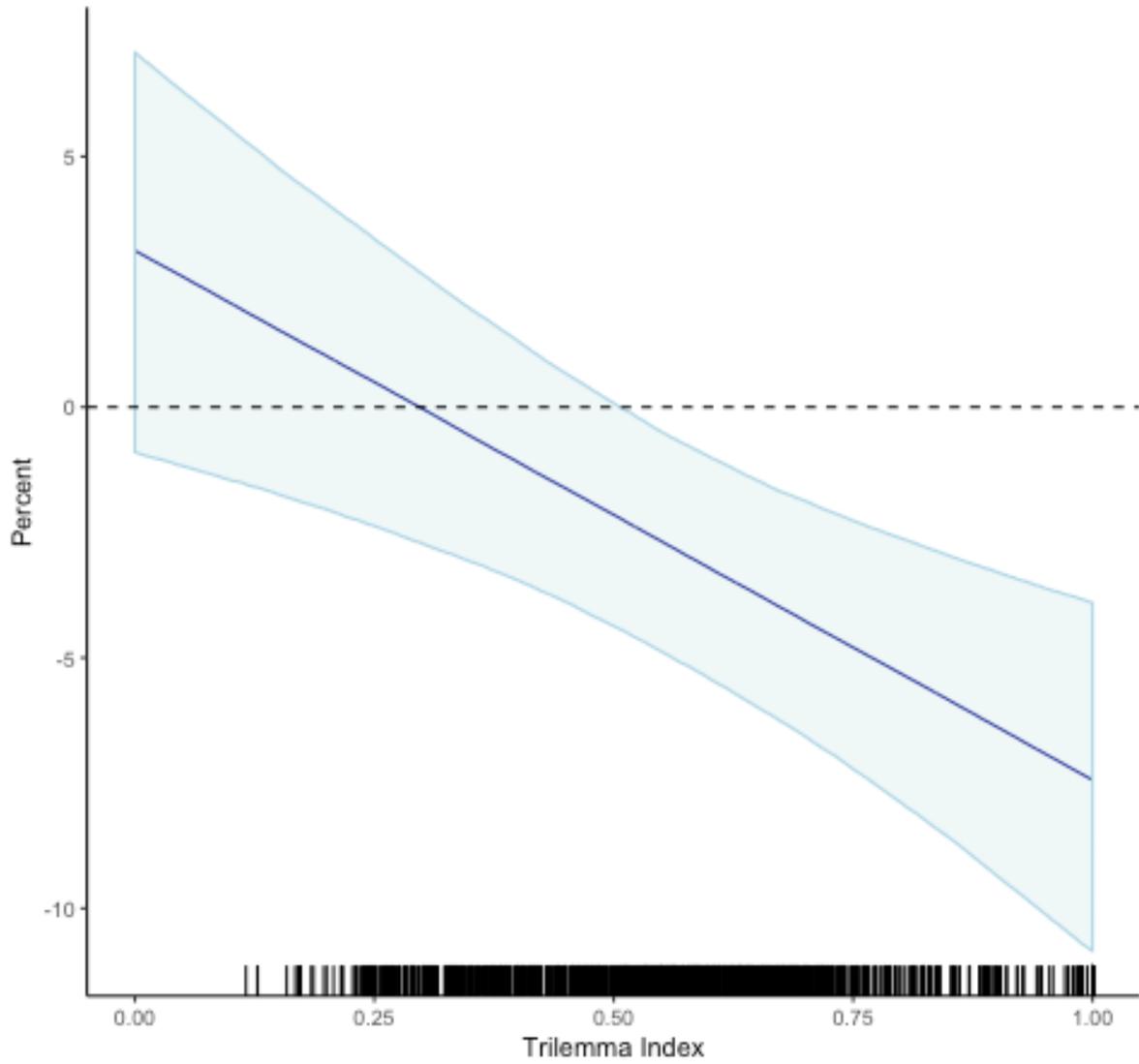
Figure 8

Marginal Effect of Trilemma Index
on Private Credit Growth (20 Country Sample)
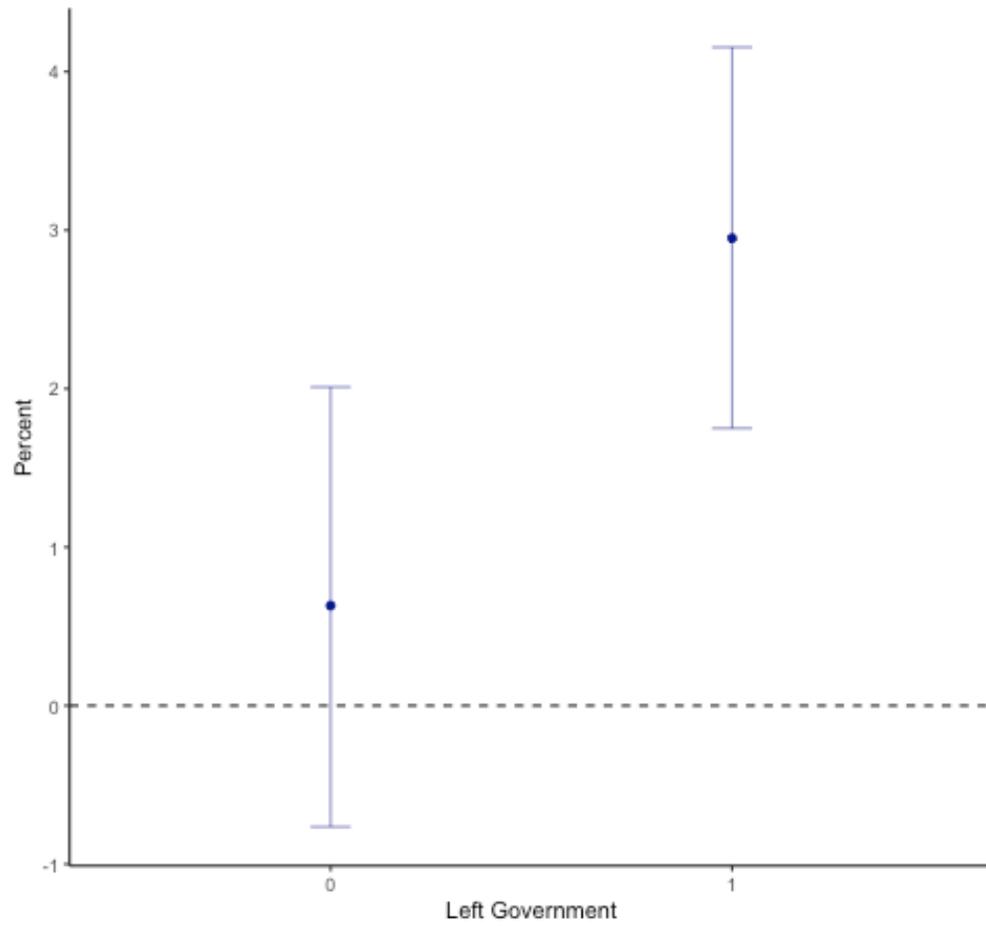
Figure 9

Marginal Effect of Left Government
on Private Credit Growth (20 Country Sample)

29
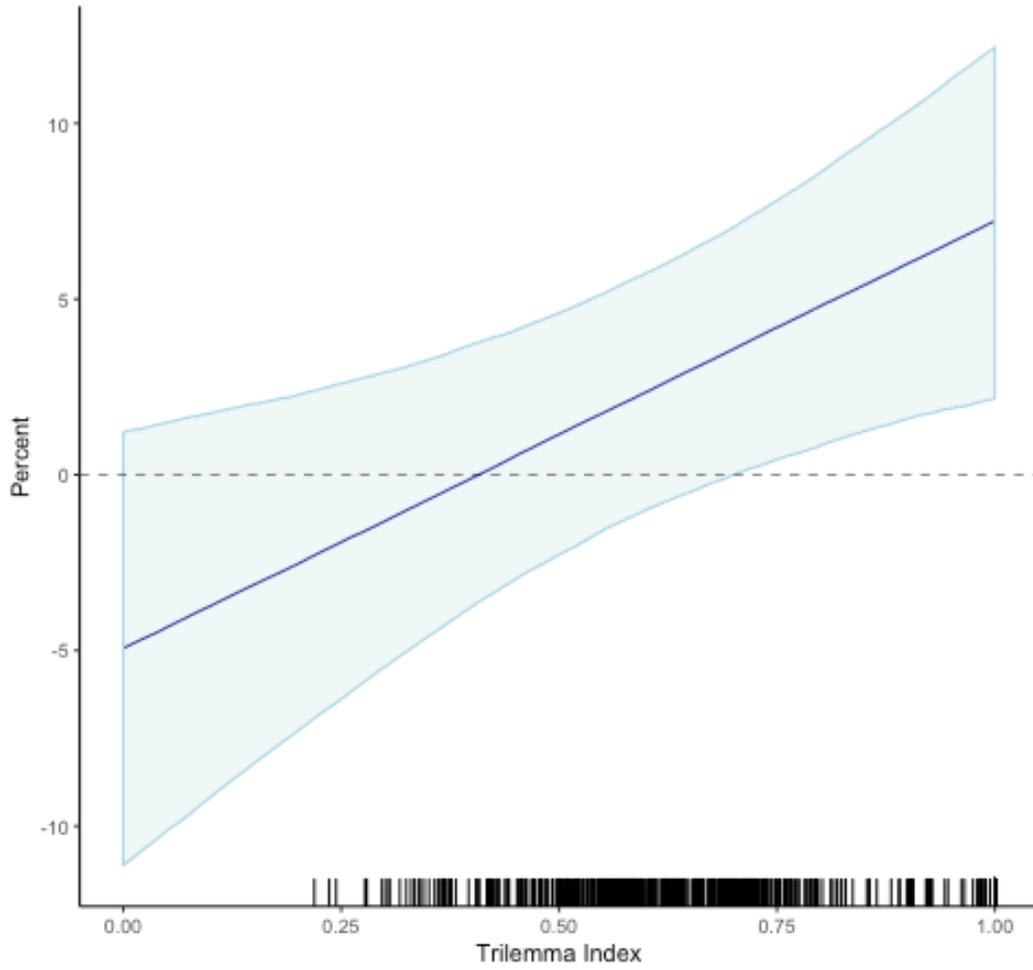
Bank reserve requirements: measuring credit policy

While we have presented highly suggestive evidence of our theory that constraints on the use of certain macroeconomic policies can lead countries to promote private credit growth as a method of managing the domestic economy, our dependent variable in the previous analysis is an outcome measure and not a policy measure. The possibility remains that private credit may increase or decrease independent of intentional actions taken by the government, for a range of macroeconomic reasons. At the same time, there are many possible policy mechanisms for increasing credit growth, such as loan guarantees or various types of subsidies to financial institutions. One such mechanism is the manipulation of capital reserve requirements for banks and financial institutions, which mandate how much capital banks and financial institutions must hold on hand to safeguard against the institutions' liabilities and risky assets. Decreasing reserve requirements can increase the provision of private credit by allowing banks and financial institutions to extend more loans with the same amount of reserves on hand. Increasing reserve requirements should correspondingly limit the domestic credit available to the economy.

We attempt to test this mechanism using the same error correction model as above, but replace private credit growth with the yearly change in average reserve requirements for financial institutions as the dependent variable. The data come from Cordella et al. (2014) and again span 1977-2012 for 55 middle- and high-income countries. Average reserve requirements are given in percent and range from 0 to 1 with a mean of .097. We include the same independent controls as previously (levels and changes in the trilemma index, left-wing governance, GDP, the current account, democracy, and financial crises), and our key independent variable remains the trilemma index representing constraints on the deployment of traditional macroeconomic management tools.

Table 5 presents the results of the model. The trilemma index is significant in the expected direction: high levels of constraints on macroeconomic policy tools are associated with significant decreases in capital reserve requirements for banks and financial institutions. A one standard deviation increase in the trilemma index is associated with a decrease in average reserve requirements by 0.003 percent. We note that the decrease induced by constraints on macroeconomic policies, as captured by our index, though small, is three times the average yearly change in reserve requirements. Left-wing governance, on the other hand, does not seem to influence domestic credit via changes in capital reserve requirements. The results provide further support for the theoretical contention that constraints on traditional macroeconomic policies affect states' incentives to manipulate credit growth as an alternative route to economic management, and provide evidence of a possible mechanism states may use manipulate credit availability.

Table 5: Capital Reserves ECM Results with Driscoll-Kraay SEs

	Dependent variable:
	Δ average reserve requirements
average reserve requirements (lag)	−0.238***
	(0.022)
trilemma index (lag)	−0.016**
	(0.007)
Δ trilemma index	−0.003
	(0.012)
left government (lag)	−0.002
	(0.002)
Δ left government	0.001
	(0.003)
current account balance (reverse, lag)	−0.00004
	(0.0002)
Δ current account balance (reverse)	0.0002
	(0.0003)
Polity (lag)	0.001**
	(0.0004)
Δ Polity	0.001***
	(0.0004)
log GDP per capita (lag)	0.0001
	(0.005)
Δ log GDP per capita	0.080*
	(0.043)
banking crisis (lag)	0.004***
	(0.002)
banking crisis	−0.001
	(0.002)
Constant	0
	(omitted)
Observations	1,086
Fixed Effects	✓
Groups	55
R^2	0.227
F Statistic	2.50e+07*** (df = 48; 35)

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

Synthetic control analysis: credit growth in Eurozone countries before and after EMU

Thus far, our analysis has shown that countries under more severe trilemma constraints are more likely to experience higher levels of private credit growth and more likely to reduce bank reserve requirements. These results are in line with our expectation that governments with less monetary and fiscal policy autonomy will pursue the provision of cheap credit as an instrument of domestic stimulus. In spite of these findings, endogeneity remains a potential concern. It may be the case that a country's choice of exchange rate regime and/or its level of capital account openness in a given year may be influenced by credit growth or financial regulations such as bank reserve requirements.

In order to address these concerns, we focus on a subset of countries in which trilemma constraints can be plausibly taken as exogenous: the member-states of the Eurozone. For Eurozone countries, monetary union means that member-states cannot adopt a more flexible exchange rate regime or independently use monetary policy as a tool of macroeconomic stimulus. In addition, as the Euro crisis has made abundantly clear, EMU countries have limited ability to employ fiscal policy in economic downturns. Finally, as members of the EU's single market, the Eurozone countries have little ability to employ capital controls in the face of large capital inflows or outflows. Consequently, we seek to test our argument on the Eurozone sample of countries from 1999 to 2012, in order to see whether these countries have become more likely to pursue policies aimed at increasing credit growth in the years since they have sacrificed macroeconomic policy autonomy by adopting the single currency.

To do this, we employ the synthetic control method (SCM) for comparative case studies (Abadie and Gardeazabal 2003; Abadie et. al. 2010, Abadie et. al. 2015). SCM is similar to a difference-in-differences approach, but in contrast to DID, SCM estimates treatment effects for a

treated unit of interest based on a weighted average of untreated units that closely matches the treated unit in the pre-treatment period (Galiani and Quistorff 2016). SCM is well-suited to analyzing the Eurozone, since studying the Euro's effects presents small-sample data problems, and because finding relevant comparison units in a broader sample of countries is more difficult. The goal is to compare post-intervention (post-Euro adoption) outcomes on credit growth between the treated units (Eurozone member-states), and the synthetic control, which is not exposed to the intervention, for a post-intervention period (2000-2012) (Abadie et. al. 2015). In our analysis, we seek to compare an individual Eurozone member-state (Greece) against "synthetic" Greece, constructed from a weighted-average of non-Eurozone countries in our donor pool. Our expectation is that we should find further evidence of the countercyclical pattern identified in our previous analysis: following the adoption of the Euro (i.e., once trilemma constraints become more stringent), credit growth should be lower than it would be otherwise (i.e., if EMU countries had not adopted the single currency) in good economic times, but higher in bad times.

In order to generate our synthetic controls, we use a set of 14 non-Eurozone countries in the OECD as our donor poll. This sample excludes the post-Communist members that have joined since the mid-1990s, for which credit growth data are unavailable for the full 1980 to 2012 sample and which were not fully market economies until the mid-1990s. The countries in the donor poll include: Australia, Canada, Chile, Denmark, Iceland, Israel, Japan, Korea, Norway, Sweden, Switzerland, the United Kingdom, and the United States. Using this pool of countries, we draw on 19 years of pre-intervention data (1980-1998) to estimate the post-intervention outcomes for private credit growth. As Abadie et. al. (2015) note, matching on as large a number of pre-intervention observations as possible helps to control for unobserved factors and for the

heterogeneity of the effect of observed and unobserved factors on outcomes (498).[4]

Since we are particularly interested in the propensity of trilemma-constrained governments to adopt credit-increasing policies in hard times, we apply the SCM, specifically, to estimate the effect of monetary union on credit growth in the countries hit hardest by the global and Euro crisis shocks of 2008-12: the "PIIGS" countries (Portugal, Ireland, Italy, Greece, and Spain). The "treatment" variable is adoption of the Euro, which occurred in 1999 for the original twelve EMU member-states and 2001 for Greece. In the pre-intervention period, we use lagged values of the dependent variable (change in private credit/GDP) and the following independent variables for 1982, 1990, and 1998: trilemma index, lagged private credit/GDP, lagged current account deficit/GDP, and the lagged GDP per capita growth rate. We also include the 1980-1998 overall period average of the World Bank's systemic banking crisis variable to control for the effects of historical financial instability on outcomes in the post-Euro era.

For each of the PIIGS countries, we first estimate the treatment effect of EMU membership and generate the unit weights for each synthetic control. After estimating each effect, we then run placebo tests, which estimate the same model on each untreated unit in the donor pool, assuming it was treated at the same time (Galiani and Quistdorff 2016, 4). This generates a distribution of effects for the treated country and donor pool units, which enables us to estimate the probability that the estimated treatment effect was observed by chance. We exercise caution in interpreting these probability estimates as confidence intervals, since—as Abadie et. al. (2015) and Galiani and Quistdorff (2016, 4) note—they do not have the standard interpretation when treatment is not randomly assigned. Nonetheless, these estimates give us a sense of the cases and observations in

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[4] We conduct our analysis using the *synth* command for Stata (Abadie et. al. 2010) and the *synth-runner* extension by Galiani and Quistdorf (2016).

which observed post-EMU changes in credit growth and reserve requirement are most likely to be statistically significant.

Figures 10-12 illustrate the estimated treatment effect, treatment vs. placebo effects, and estimated probabilities for Greece. The analysis generates a "synthetic Greece" that is a weighted combination of Iceland (47.1%), Denmark (29.9%), Chile (12.3%), the US (1.7%), and Canada (0.09%). Figure 10 graphs observed vs. predicted credit growth for Greece vs. "synthetic Greece" before and after the country joined the Euro in 2001.

Figure 10: Trends in private credit growth, Greece vs. Synthetic Greece
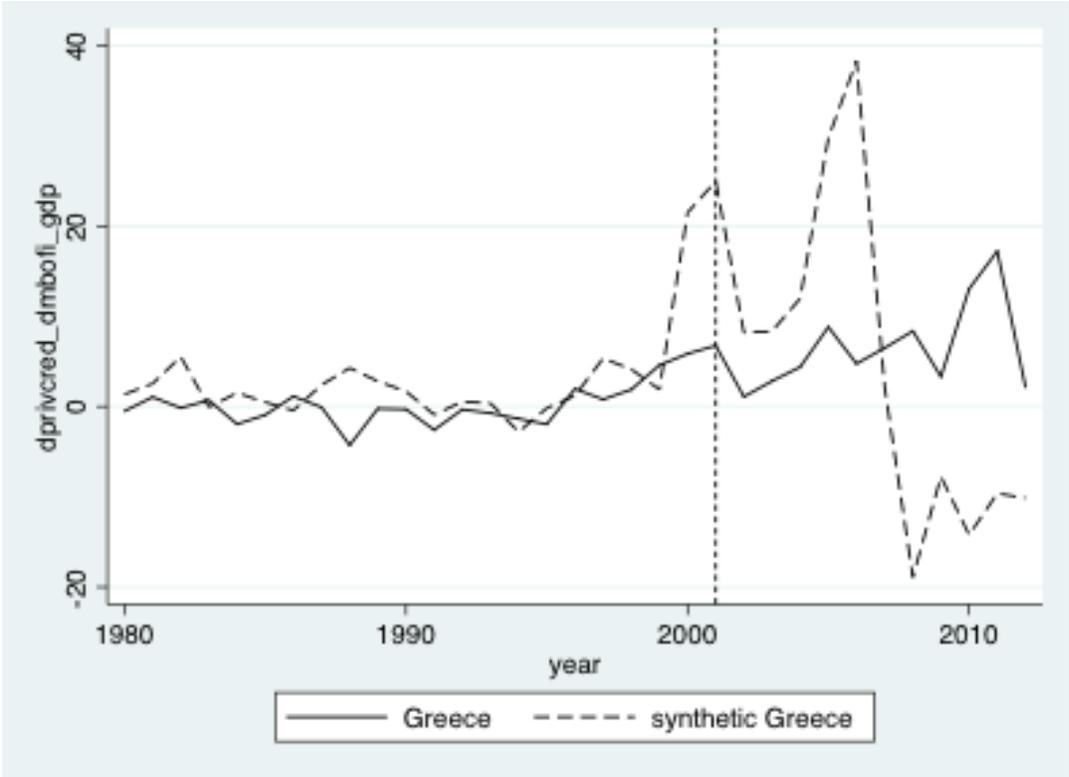
We see here that the observed vs. estimated values in the pre-Euro area are quite close, while the estimated vs. observed outcomes after 2001, when Greece joined the Euro, deviate

substantially. Credit growth in "synthetic Greece" is estimated to have been substantially higher in the pre-financial crisis years (2001-6), while it is estimated to be substantially lower in the 2007-12 period, when Greece was rocked first by the global financial crisis and subsequently by the Eurozone debt crisis. This pattern suggests that trilemma constraints have had two effects in the post-Euro era: restraining credit growth in "normal" times, while increasing credit growth in "crisis" periods. Such a pattern is in line with our expectation that governments unable to use monetary and fiscal policy as tools of macroeconomic adjustment may seek to increase credit growth as a substitute adjustment policy in hard times. Figures 11 and 12 provide an illustration of the likely significance of these effects.

Figure 11: Estimated treatment and placebo effects: credit growth, Greece vs. donor pool
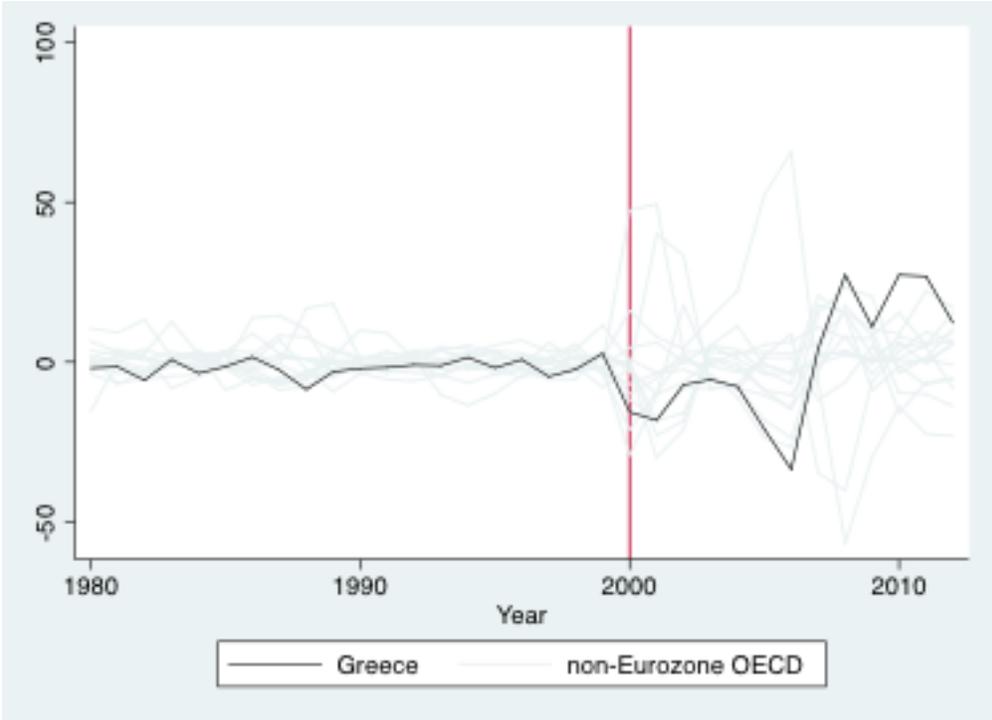
Figure 12: Greece – Probability that estimated treatment effect is observed by chance
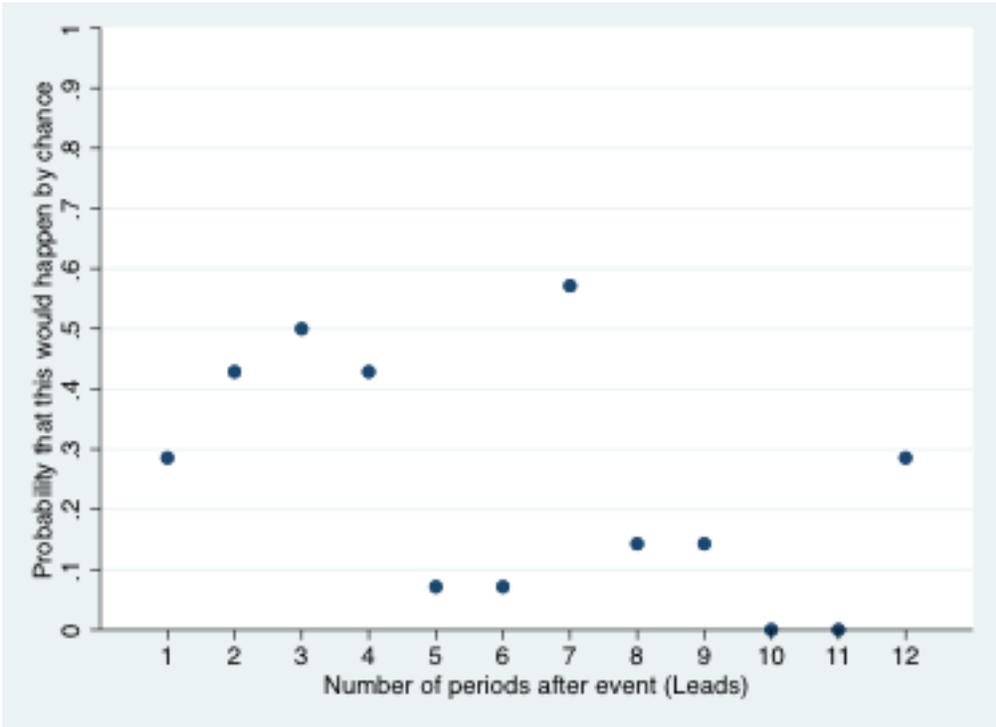
As Figure 12 illustrates, the probability that the difference between Greece and "synthetic Greece" in 2010-11 is random chance is effectively zero, indicating that credit growth in Greece during the Euro crisis was almost certainly significantly higher than it would have been had Greece not joined the Euro and still retained monetary and fiscal policy autonomy. Figure 12 also provides weaker evidence that credit growth in Greece in 2006-7 was significantly lower than it would have been had Greece not joined the Euro: the probability that the estimated effects here for "synthetic Greece" are random chance is less than 10%. Thus, the Greek synthetic control analysis provides evidence of the same pattern we found earlier in the regression analysis: trilemma constraints contribute to a countercyclical pattern in credit growth, in line with the cheap credit hypothesis.

Figures 13-15 illustrate the results of the synthetic control analysis for Spain. Here, "synthetic Spain" is a weighted average of the observed values for Iceland (29.3%), Denmark

(28.9%), Sweden (15.9%), Japan (12.3%), Norway (8.8%), Chile (2.9%), and the US (1.8%).

Once again, the pre-intervention estimates closely mirror the actual observed values for Spain, particularly in the 1990s, before diverging markedly in the post-EMU era. Again, the same pattern is evident as with Greece: observed credit growth for Spain is lower than estimated credit for "synthetic Spain" in the pre-crisis period (2001-6) and higher in the crisis era (2007-12).

Figure 13: Trends in private credit growth, Spain vs. Synthetic Spain
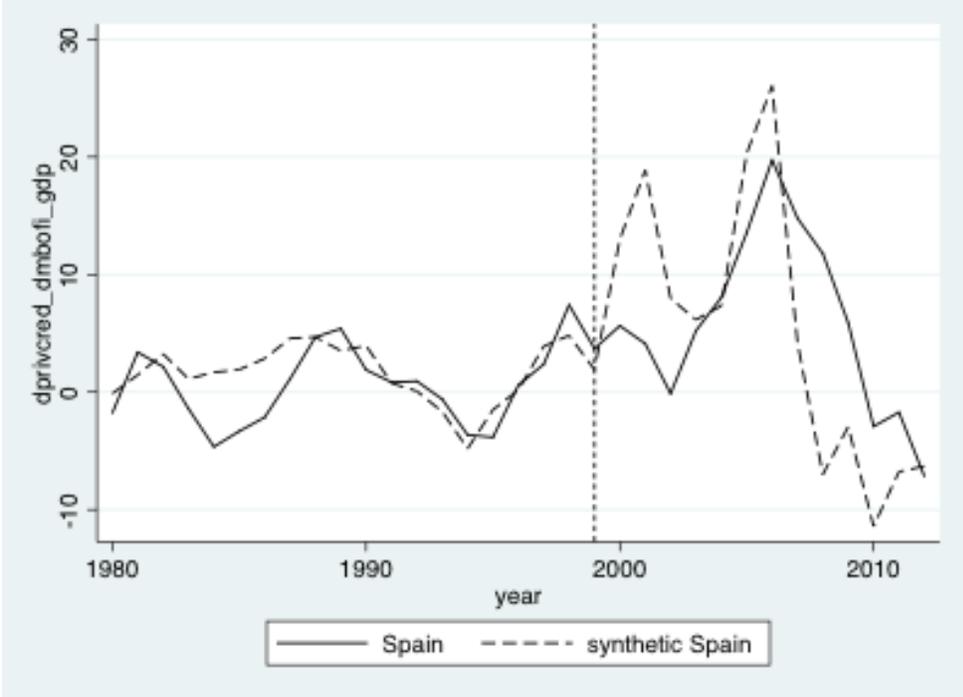
Figure 14: Estimated treatment and placebo effects: credit growth, Spain vs. donor pool
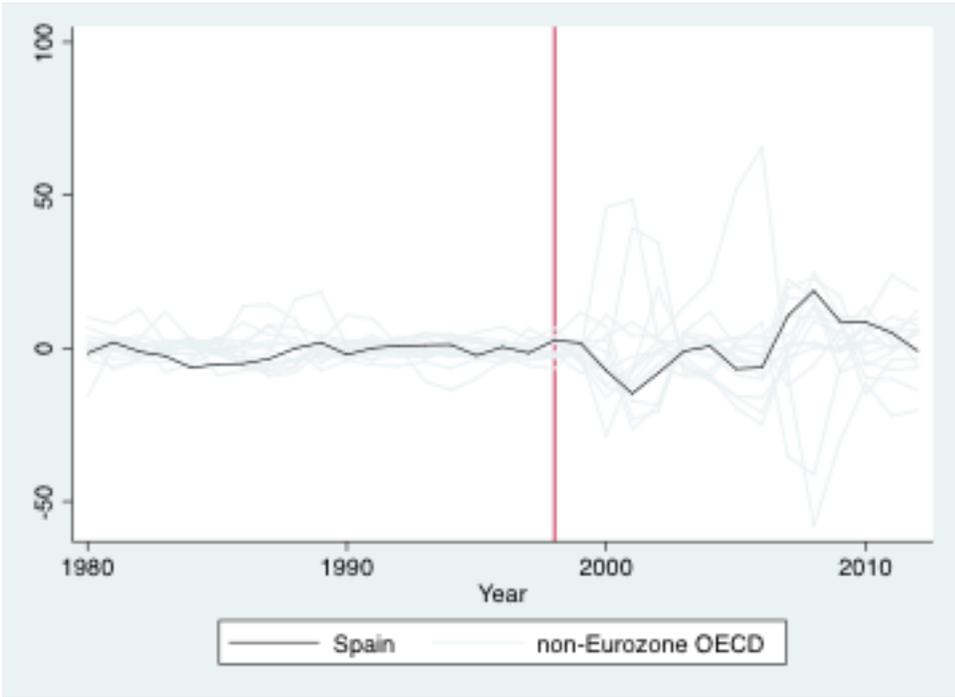
Figure 15: Spain – Probability that estimated treatment effect is observed by chance
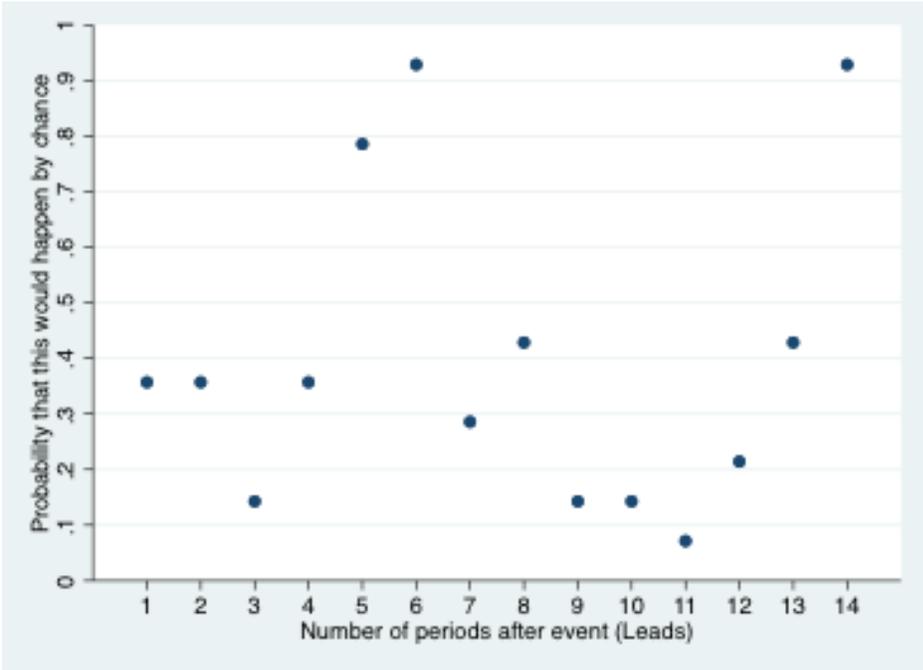
Figures 14 and 15 illustrate the estimated treatment effects for "synthetic Spain" vs. the placebo effects for the countries in the donor pool. Here, the estimated probabilities suggest weak(er) significance in 2010 (11 years after Spain joined EMU in 1999): the probability that the estimated treatment effect is observed by chance is less than 10%. Thus, the pattern for Spain mirrors that of Greece in the Euro crisis period. Although the evidence is less clear-cut, it is still suggestive that EMU membership—and the increased trilemma constraints that accompanied it— led Spanish politicians to pursue policies of cheap credit during the depths of the Euro crisis.

We conduct similar synthetic control estimation Italy, Ireland, and Portugal. The corresponding graphs are presented in the Appendix. "Synthetic Italy" is a weighted average of Denmark (45.4%), Israel (19.9%), Norway (12.7%), Canada (8.2%), Switzerland (3.6%), Japan (2.5%), and Sweden (0.7%). "Synthetic Ireland" is a weighted average of Australia (58.7%), Norway (28.8%), the US (10.6%), and Japan (1.9%). "Synthetic Portugal" is a weighted average of Israel (34.4%), Chile (17.6%), Korea (15.1%), Iceland (11.9%), Switzerland (11.8%), Canada (5.7%), and the US (3.6%). The results for Italy and Portugal illustrate the same pattern seen in the Greek and Spanish cases: observed credit growth is lower than estimated credit growth for "synthetic Italy" prior to 2007 and higher afterward during the global and Eurozone crises. The estimated probabilities again suggest weak significance for the treatment effect during the Euro crisis, this time in 2011 (12 years after Italy joined EMU in 1999): the probability that the estimated treatment effect is observed by chance is less than 10%. At the same time, the analysis strongly suggests that the treatment effect of greater credit growth for "synthetic Italy" in 2002 is significant. Likewise, credit growth in "synthetic Portugal" is higher in the pre-crisis era but lower from 2007 onward. Once again, these results are estimated to be different from random chance with a probability of less than 10%.

While the results for Greece, Spain, Italy, and Portugal suggest a consistent pattern, the estimated treatment effect for Ireland is the reverse pattern from that seen in the previous cases. Here, estimated credit growth in the post-EMU period is lower for "synthetic Ireland" than for observed Ireland in the pre-crisis period but greater in the crisis era (2007-12). We speculate that there are two possible reasons for this discrepancy. First, Ireland's financial crisis in 2010 was primarily a crisis resulting from the bursting of a credit bubble fueled by large quantities of interbank lending, capital inflows, and real estate investment. In contrast, the rest of the "PIIGS" countries experienced a more garden-variety balance of payments crisis driven primarily by sovereign borrowing. Thus, for Ireland, using cheap credit as a policy response to crisis and recession was not really an available option in the 2010-12 period, while the Irish banking sector was partially nationalized and undergoing massive retrenchment in its lending. Second, the weighted average for "synthetic Ireland" is calculated largely from non-European countries, with Australia and the US comprising a much larger share of the weighting. This weighting reflects Ireland's fundamentally different position in global value chains and global capital markets prior to 2008. In short, Ireland's position as a partially "Anglo" and partially "Euro" economy stands out from its "PIIGS" peers, and this may explain the discrepancies.

Overall, the synthetic control analysis provides further evidence in support of our argument that trilemma constraints affect government's incentives to use private credit as a substitute for monetary and fiscal policy in hard times. In four of the five PIIGs countries, the expected countercyclical pattern is evident and the data suggest that credit growth was greater during the Euro crisis period (2008-12) than it otherwise would have been had Greece, Spain, Italy, and Portugal not faced the stringent trilemma constraints imposed on monetary and fiscal policy autonomy by Eurozone membership. In conjunction with our earlier results, the findings here lend

support to our argument that governments pursue credit growth as a way to escape the macroeconomic constraints on traditional economic stimulus policies imposed by the Mundell-Fleming trilemma.

Conclusion

In the wake of a decade of severe economic and political costs due to the global financial crisis and Great Recession, understanding which policies governments adopt in response to hard economic times remains of the utmost importance. In this paper, we bring together recent work on the politics of macroeconomic management with the literature on the Mundell-Fleming trilemma in open economy macroeconomics. We argue, and show, that countries under severe trilemma constraints—fixed exchange rates, capital mobility, and lack of monetary policy autonomy—are more likely to employ private credit as a countercyclical stimulus tool than countries without such constraints. We test this argument using both time-series, cross-sectional data covering 134 countries from 1970 to 2014, and synthetic control analysis of the Eurozone countries hit hardest by the Euro crisis of 2008-12. Our results strongly suggest that more stringent trilemma constraints have a significant countercyclical effect on private domestic credit growth and are associated with reductions in banks' capital reserve requirements. Within the Eurozone, we find that four of the five "PIIGS" countries (Portugal, Ireland, Italy, Greece, and Spain) became significantly more likely to pursue policies of credit growth during economic downturns after adopting the Euro than they were in the 1980-1998 pre-EMU period. Together, these results strongly suggest that governments more constrained by the Mundell-Fleming trilemma embrace private credit growth as a substitute for monetary and fiscal stimulus.

Our analysis raises a range of new questions for future research. To what extent are governments successful—both economically and politically—in escaping the trilemma? Future work should focus on modeling the effects of credit growth policies on key economic outcomes, as well as on political outcomes, especially the electoral fortunes of office-seeking politicians in democratic countries. In addition, our work here suggests that a key consequences of membership in European Monetary Union has been an exacerbation of financial credit cycles: credit growth is lower in good times and higher in bad times than it would otherwise have been if EMU countries retained a greater degree of exchange rate flexibility, with the corresponding increased monetary and fiscal policy autonomy. Understanding what this means, both for financial stability and macroeconomic policy outcomes, remains a key topic going forward. Finally, our analysis suggests the need to delve deeper into how patterns of countercyclical credit management vary across space and time, given the different results we find across the various samples of countries we analyze in our study. Ultimately, the research here highlights the need to focus more clearly on how constraints imposed by the Mundell-Fleming trilemma—based on countries' exchange rate and capital account openness policies—affect the political economy of macroeconomic policymaking, especially in hard times.

References

Abadie, A., & Gardeazabal, J. (2003). The Economic Costs of Conflict: A Case Study of the Basque Country. *American Economic Review, 93*(1): 113-132.

Abadie, A., Diamond, A., & Hainmueller, J. (2010). Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program. *Journal of the American Statistical Association, 105*(490), 493-505.

Abadie, A., Diamond, A., & Hainmueller, J. (2015). Comparative Politics and the Synthetic Control Method. *American Journal of Political Science, 59*(2), 495-510.

Aizenman, J., Chinn, M., & Ito, H. (2010). The emerging global financial architecture: Tracing and evaluating new patterns of the trilemma configuration. *Journal of International Money and Finance, 29*(4), 615-641.

Aizenman, J., Chinn, M., & Ito, H. (2013). The "Impossible Trinity" Hypothesis in an Era of Global Imbalances: Measurement and Testing. *Review of International Economics, 21*(3), 447-458.

Alesina, A., Roubini, N., & Cohen, G. (1997). *Political cycles and the macroeconomy*. Cambridge, Mass.: MIT Press.

Alvarez, R., Garrett, G., & Lange, P. (1991). Government Partisanship, Labor Organization, and Macroeconomic Performance. *The American Political Science Review*, 85(2), 539-556.

Amri, P., Richey, D., & Willett, G. (2016). Capital Surges and Credit Booms: How Tight is the Relationship? *Open Economies Review, 27*(4), 637-670.

Ansell, B., & Ahlquist, J. (2017). Taking credit: Redistribution and borrowing in an age of economic polarization. World Politics, 69(4), 640–675.

Barnichon, R., Matthes, C., & Ziegenbein, A. (2018). The Financial Crisis at 10: Will We Ever Recover? *Economic Letter / Federal Reserve Bank of San Francisco* (August 13).

Bodea, C., & Higashijima, M. (2017). Central Bank Independence and Fiscal Policy: Can the Central Bank Restrain Deficit Spending? *British Journal of Political Science, 47*(1), 47-70.

Box-Steffensmeier, J., Freeman, J., Hitt, M., & Pevehouse, J. (2014). *Time Series Analysis for the Social Sciences*. Cambridge: Cambridge University Press.

Bruno, V., & Shin, H. (2015). Capital flows and the risk-taking channel of monetary policy. *Journal of Monetary Economics, 71*(C), 119-132.

Chinn, Frieden, & Frieden, Jeffry A. (2011). *Lost decades : The making of America's debt crisis and the long recovery* (1st ed.). New York: W.W. Norton & Co.

Chinn, M., & Frieden, J. (2012). The Eurozone in Crisis: Origins and Prospects. *La Follette Policy Report, 21*(2), 1-5.

Clark, W., & Hallerberg, M. (2000). Mobile Capital, Domestic Institutions, and Electorally Induced Monetary and Fiscal Policy. The American Political Science Review, 94(2), 323-346.

Clark, W., & Arel-Bundock, V. (2013). Independent but Not Indifferent: Partisan Bias in Monetary Policy at the Fed. *Economics & Politics, 25*(1), 1-26.

Copelovitch, M., & Singer, D. (2017). Tipping the (Im)balance: Capital inflows, financial market structure, and banking crises. *Economics & Politics, 29*(3), 179-208.

Cordella, T., Federico, P., Vegh, C., & Vuletin, G. (2014). *Reserve Requirements in the Brave New Macroprudential World*. Washington, DC: World Bank.

Cruz, C., Keefer, P., & Scartascini, C. (2016). *The Database of Political Institutions 2015 (DPI2015)*.

De Boef, S. and Keele, L. (2008), Taking Time Seriously. *American Journal of Political Science, 52*(1): 184-200.

Elekdag, S., & Wu, Y. (2011). Rapid Credit Growth: Boon or Boom-Bust? *IMF Working Papers, 11*(241), 1-39.

Fleming, J. (1962). Domestic Financial Policies under Fixed and under Floating Exchange Rates. *Staff Papers (International Monetary Fund), 9*(3), 369-380.

Funke, M., Schularick, M., & Trebesch, C. (2016). Going to extremes: Politics after financial crises, 1870–2014. *European Economic Review, 88*, 227-260.

Galiana, S., & Quistorff, B. (2016). The synth_runner package: Utilities to automate synthetic control estimation using synth. *Working paper.*

Georgiadis, & Mehl. (2016). Financial globalisation and monetary policy effectiveness. *Journal of International Economics, 103*, 200-212.

Iversen, T., & Soskice, D. (2006). Electoral Institutions and the Politics of Coalitions: Why Some Democracies Redistribute More than Others. *The American Political Science Review, 100*(2), 165-181.

Jordà, &., Schularick, M., & Taylor, A. (2016). Sovereigns Versus Banks: Credit, Crises, and Consequences. *Journal of the European Economic Association, 14*(1), 45-79.

Kern, A., & Amri, P. D. (2016). Political Credit Cycles - Myth or Reality? *SSRN Electronic Journal*. doi:10.2139/ssrn.2865817

Klein, M., & Shambaugh, J. (2015). Rounding the Corners of the Policy Trilemma: Sources of Monetary Policy Autonomy. *American Economic Journal: Macroeconomics, 7*(4), 33-66.

Mendoza, E., & Terrones, M. (2008). An Anatomy Of Credit Booms: Evidence From Macro Aggregates And Micro Data. *NBER Working Paper Series,* 14049.

Milanović, B. (2016). *Global inequality : A new approach for the age of globalization*. Cambridge, Massachusetts: The Belknap Press of Harvard University Press.

Miranda-Agrippino, S., & Rey, H. (2015). World Asset Markets and the Global Financial Cycle. *NBER Working Paper Series,* 21722.

Morrison, J. (2017). Bound to Not Lead: 2016 as Unexceptional Americanism. *SSRN Electronic Journal*. doi:10.2139/ssrn.3053962.

Mosley, L. (2000). Room to Move: International Financial Markets and National Welfare States. *International Organization, 54*(4), 737-773.

Mundell, R. A. (1960). The Monetary Dynamics of International Adjustment under Fixed and Flexible Exchange Rates. *The Quarterly Journal of Economics, 74*(2), 227-257.

Pepinsky, T. (2017). Dis-embedding Liberal Internationalism. *SSRN Electronic Journal*. doi:10.2139/ssrn.3054001.

Piketty, T. (2013). *Capital in the twenty-first century*. Cambridge, Massachusetts ; London, England: Harvard University Press.

Plantin, G., & Shin, H. (2018). Exchange rates and monetary spillovers. *Theoretical Economics, 13*(2), 637-666.

Rajan, R. (2010). *Fault lines: How hidden fractures still threaten the world economy*. Princeton: Princeton University Press.

Reinhart, C., & Reinhart, V. (2009). Capital Flow Bonanzas: An Encompassing View of the Past and Present. *Ensayos Politica Economica, 27*(59), 188-250.

Rey, H. (2013). Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence. *Federal Reserve Bank of Kansas City Economic Policy Symposium.*

Rey, H. (2016). International Channels of Transmission of Monetary Policy and the Mundellian Trilemma. *IMF Economic Review, 64*(1), 6-35.

Schoenmaker, D. (2013). *Governance of international banking : The financial trilemma*. New York: Oxford University Press.

Schularick, M., & Taylor, A. (2012). Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 18702008. *American Economic Review,102*(2), 1029-1061.

Soroka, S. N., Stecula, D. A. and Wlezien, C. (2015), It's (Change in) the (Future) Economy, Stupid: Economic Indicators, the Media, and Public Opinion. American Journal of Political Science, 59: 457-474.

Staniland, P. (2018). Misreading the "Liberal Order": Why We Need New Thinking in American Foreign Policy. *Lawfareblog.com*. Retrieved from https://www.lawfareblog.com/misreading-liberal-order-why-we-need-new-thinking-american-foreign-policy.

Walter, S. (2013). *Financial crises and the politics of macroeconomic adjustments*. Cambridge: Cambridge University Press.

World Development Indicators. Washington, D.C.: The World Bank.

Appendix – Synthetic control results: Italy, Ireland, and Portugal

Figure A1: Trends in private credit growth, Italy vs. Synthetic Italy
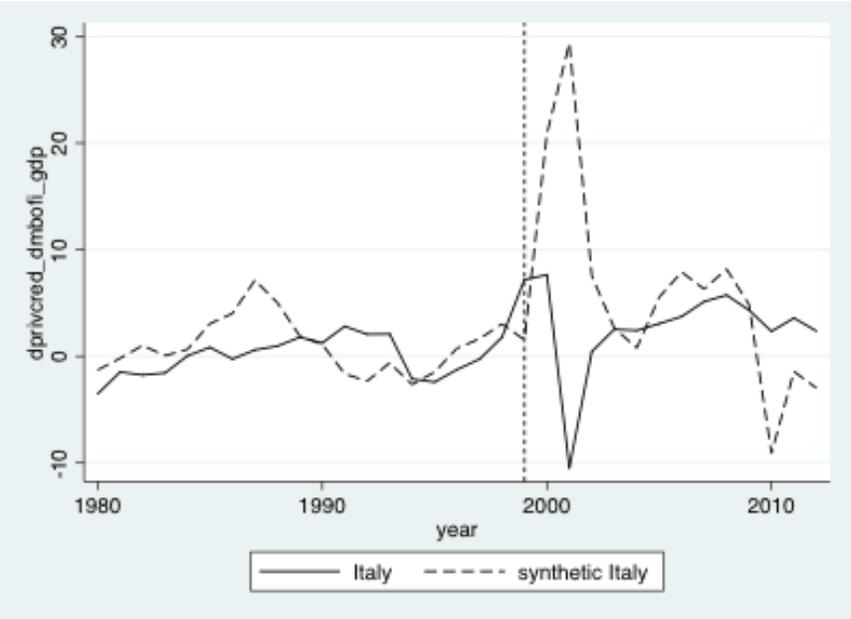
Figure A2: Estimated treatment and placebo effects: credit growth, Italy vs. donor pool
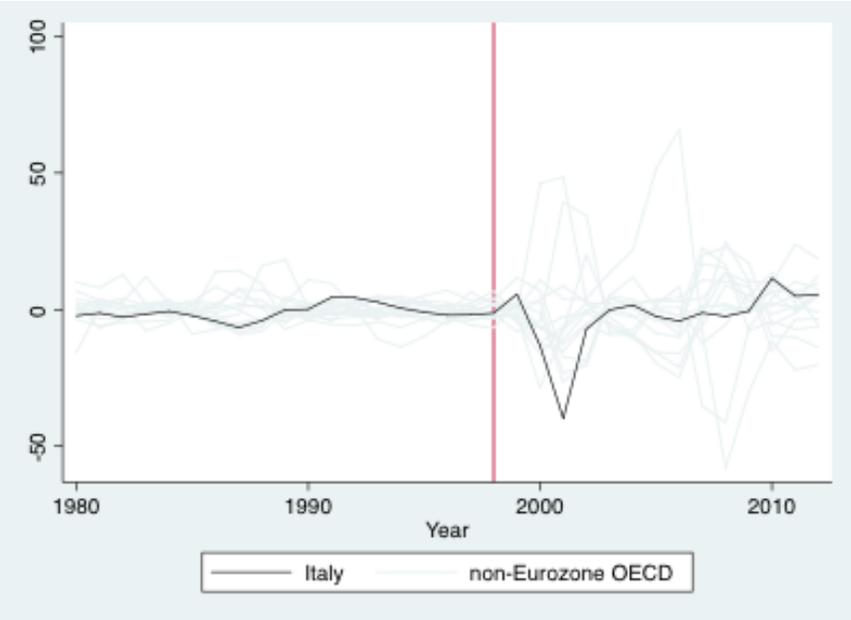
Figure A3: Italy – Probability that estimated treatment effect is observed by chance
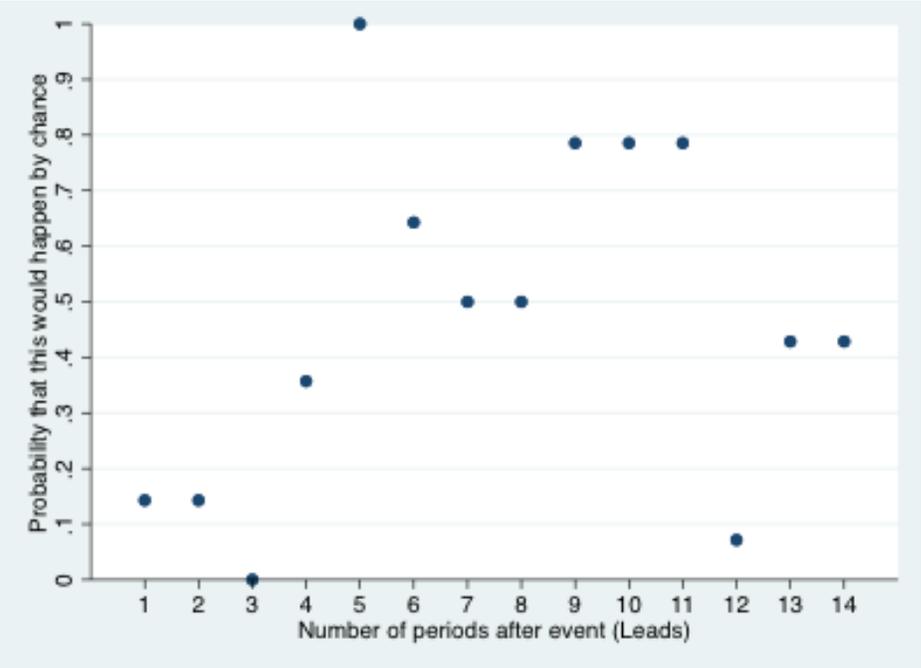

Figure A4: Trends in private credit growth, Ireland vs. Synthetic Ireland
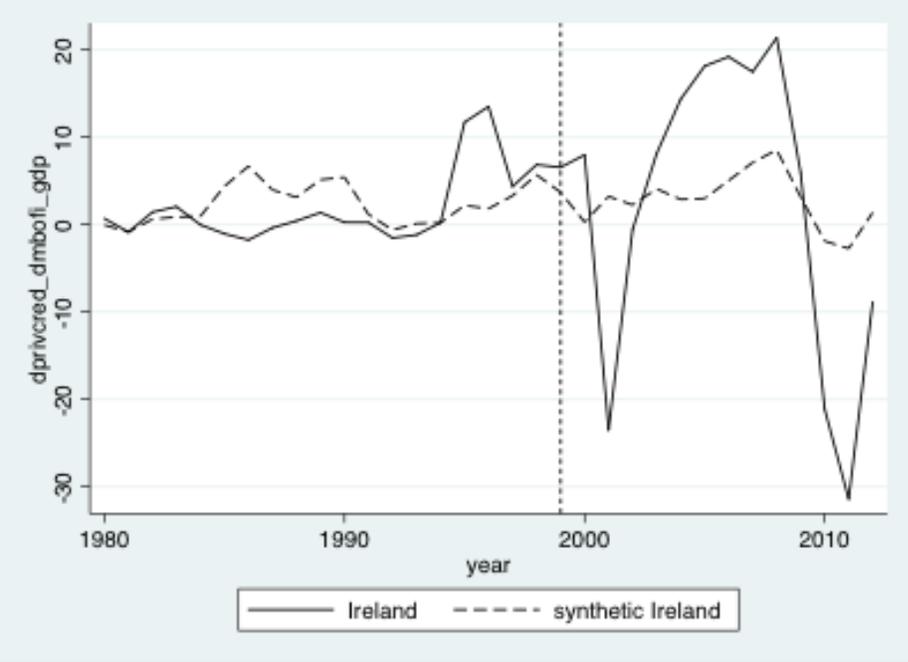
Figure A5: Estimated treatment and placebo effects: credit growth, Ireland vs. donor pool
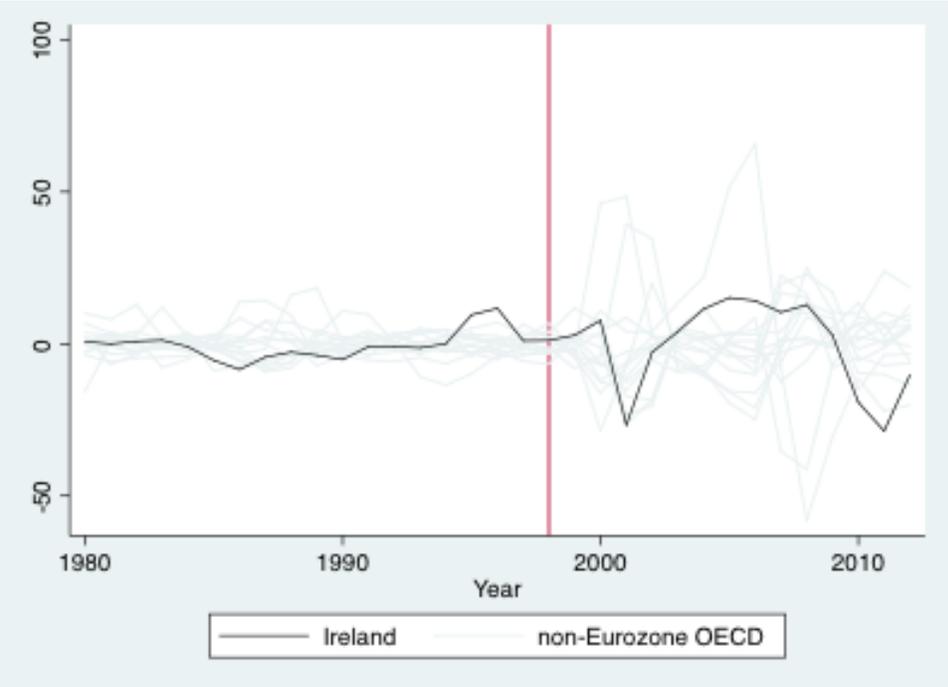
Figure A6: Ireland – Probability that estimated treatment effect is observed by chance
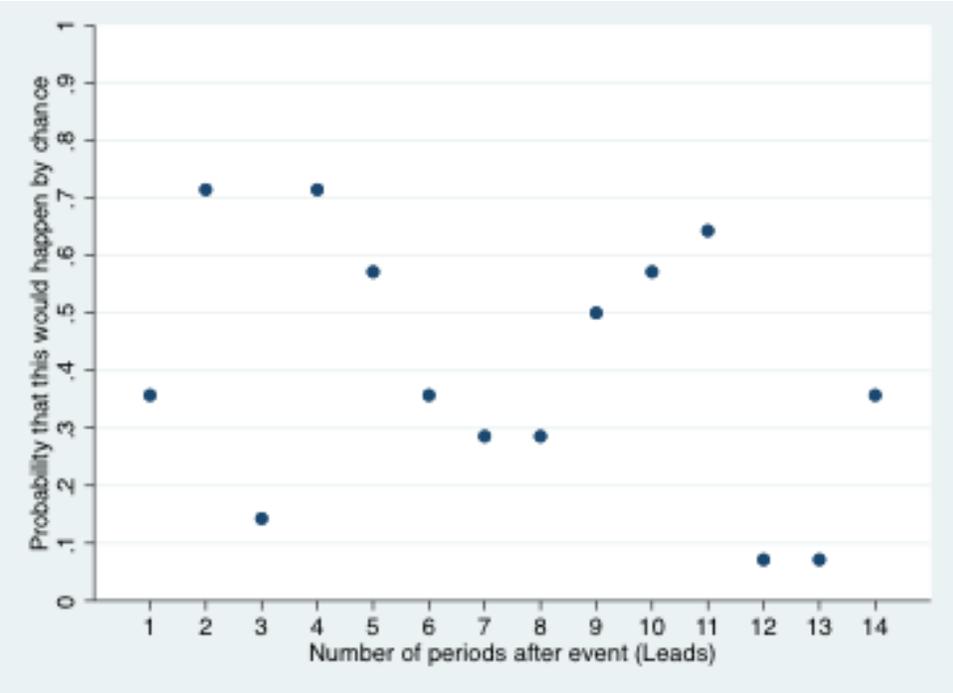
Figure A8: Trends in private credit growth, Portugal vs. Synthetic Portugal
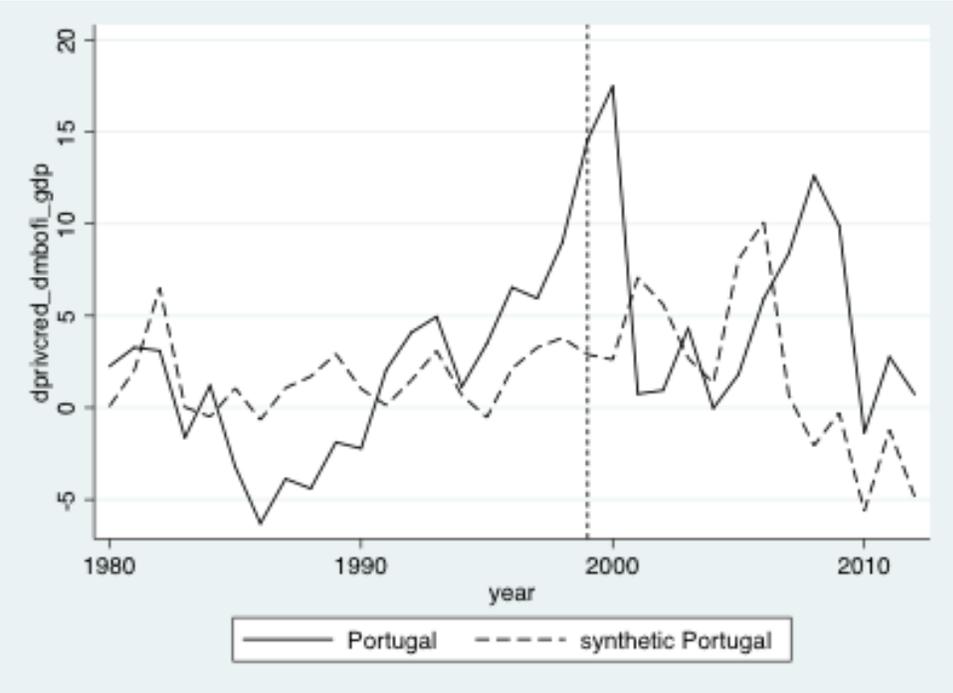

Figure A9: Estimated treatment and placebo effects: credit growth, Portugal vs. donor pool
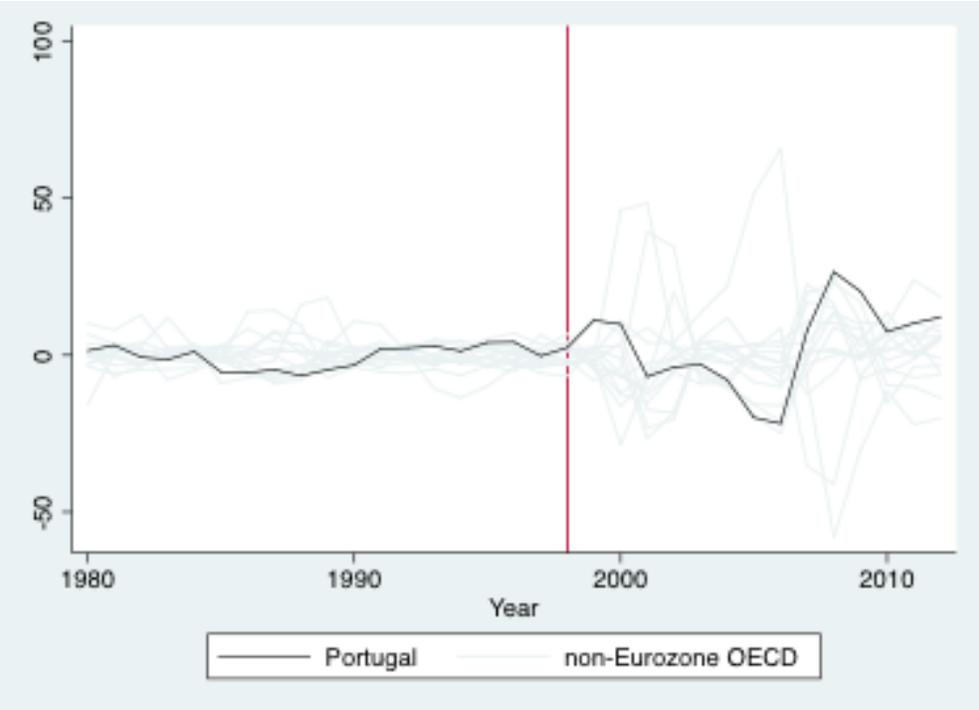
Figure A10: Portugal – Probability that estimated treatment effect is observed by chance