IMF Conditionality and the Local Ownership of Reforms*

Nikitas Konstantinidis
IE University
School of Global & Public Affairs
nikitas.konstantinidis@ie.edu

Bernhard Reinsberg
University of Glasgow
School of Social & Political Sciences
bernhard.reinsberg@glasgow.ac.uk

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Abstract

The shifting emphasis on performance evaluation and accountability in the context of external conditionality programs has brought to the fore the question of local ownership of reforms. On the demand side of conditionality, a standard argument in the literature is that contracting governments often resort to external assistance in order to deflect the political costs of painful liberalization reforms and also to restore the country's international image and credibility. On the supply side, the design of conditionality programs is either dictated by the foreign policy interests of the major donor countries (especially the US) or the policy agenda of international bureaucrats. However, the scope of conditionality, both with respect to the level of specificity, pace, and sequence of required reforms, conveys an informational content to the target government and thus influences the level of local ownership. In this paper, we apply a principal-agent signaling game that gives rise to a "crowding-out" hypothesis whereby conditionality undermines ownership. We first propose an empirical operationalization and measurement of the concept of ownership using the synthetic control method (SCM) and then provide illustrative evidence on ownership over sector-specific reforms drawn from current databases on the design of IMF conditionality and aggregate measures of structural reforms.

Keywords: IMF; conditionality; ownership; reforms; synthetic control method

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1 Introduction

> "*Success requires ownership of the reform agenda programme by the Greek authorities. The Government therefore stands ready to take any measures that may become appropriate for this purpose as circumstances change. The Government commits to consult and agree with the European Commission, the European Central Bank and the International Monetary Fund on all actions relevant for the achievement of the objectives of the Memorandum of Understanding before these are finalized and legally adopted.*" (Greece Memorandum of Understanding for a three-year ESM programme)

> "*The Euro Summit stresses the crucial need to rebuild trust with the Greek authorities as a pre-requisite for a possible future agreement on a new ESM programme. In this context, the ownership by the Greek authorities is key, and successful implementation should follow policy commitments.*" (Euro Summit Statement Brussels, 12 July 2015)

Following a tumultuous period of brinkmanship negotiations between the Troika triumvirate – consisting of the European Commission (EC), the European Central Bank (ECB), and the International Monetary Fund (IMF) – and the Greek government of the left populist party of SYRIZA fighting for austerity reversal, the latter was forced to cave in and sign a front-loaded and austerity-laden third bailout program in July 2015.[1] The populist firebrand Greek Prime Minister Alexis Tsipras later assumed responsibility for signing a text he did not believe in but that he was obliged to implement (The Guardian, 2015). In fact, although this third Greek bailout program was ratified by parliament with the widest level of legislative support (garnering a total of 222 votes – out of 300 – from government backbenchers and moderate pro-European opposition MPs), it had *prima facie* the lowest level of political ownership compared to the previous two. In light of the tempestuous concatenation of events of the early part of 2015, trust in the incumbent's willingness to comply and reform was a major issue in the relationship between Greece and its creditors; and yet, how would the Greek government attempt to rebuild trust in the context of a liquidity-dripping cash-for-reforms

[1] This most recent instalment of the Greek debt crisis started with the election of the SYRIZA government in January 2015 and ended in the third Greek bailout agreement on July 12 following a dramatic concatenation of events including the closure of banks, the imposition of capital controls, and the resounding victory of No in a dubious and ill-timed referendum on a draft proposal by the European Commission (Walter et al., 2018).

program whose hard conditionality barely left any room for the agent to credibly signal that it had become a reliable and trustworthy partner for the future?

In effect, the two quotes presented in the preamble with reference to the Greek Troika-sponsored bailout and structural adjustment programs capture an interesting paradox with respect to the relationship between International Financial Institutions (IFIs), such as the International Monetary Fund (IMF), and member states, and the corresponding political economy of reforms. While these supranational institutions have shifted their emphasis onto issues of "ownership" and "trust", at the same time they seek to introduce a heavy and explicit set of conditions and contractual obligations in their formal arrangements with target countries. Arguably, the whole rationale for the use of explicit conditionality in such arrangements is predicated on the lack of program ownership on the part of the petitioning government ("agent") and the lack of trust by the lending IFI ("principal") in the government's willingness and/or ability to implement those reforms necessary for the program to be successfully completed, debt sustainability to be restored, and for the borrower's credibility in international capital markets to be regained.

On one hand, we view the design of IFI arrangements in general and conditionality in particular through the contract-theoretic lens of an incentive scheme (Dixit, 2000). More specifically, we think of them as so-called incomplete contracts (Hart and Holmström, 1987) whose design depends on several factors such as (i) the observability of reforms at different stages of implementation, (ii) the possibility for hidden action and moral hazard, (iii) differential monitoring costs, and (iv) the uncertainty over the effects of country default. Over the past couple of decades, there has been a lot of thinking on the optimal design of such incentive schemes on the part of IMF scholars and practitioners in terms of maximizing the probability of successful implementation of the program (Ivanova et al., 2001; Ivanova, 2006), tailoring it to local conditions and local knowledge (Marchesi, Sabani and Dreher, 2009), and enhancing the degree of government (or country) ownership of the program itself (Drazen, 2002; Drazen and Isard, 2004; Bird and Willett, 2004). As a result, the IMF has become much more attuned to political economy factors such as political feasibility constraints, the domestic level of polarization, and the strength of domestic anti-reform groups.

This shift in policy is clearly reflected in a 2001 IMF report where ownership is defined as "a willing assumption of responsibility for an agreed program of policies, by officials in a borrowing country who have the responsibility to formulate and carry out those policies, based on an understanding that the pro-

gram is achievable and is in the country's own interest" (International Monetary Fund, 2001, p. 6). This definition, however, begs the following conundrum: if a country (or government) is assumed to take full responsibility for a program it thinks is in its own interest, then why make loan disbursements explicitly conditional on the required (and avowedly desired) set of reforms (Drazen, 2002)? This theoretical puzzle sparked a burgeoning literature on the relationship between IMF conditionality and ownership, primarily predicated on political economy models of special interests, common agency, and heterogeneity in actor preferences (Khan and Sharma, 2003; Mayer and Mourmouras, 2004; Paloni and Zanardi, 2006; Mayer and Mourmouras, 2008). Most of these papers concurred that under certain circumstances conditionality may enhance the government's or the lending IFI's bargaining leverage vis-à-vis recalcitrant special interests that are opposed to specific adjustment measures and structural reforms. It can also provide cover to reform-minded governments that seek to avoid the short-term political costs of reforms by scapegoating external actors (Vreeland, 1999).

Yet, the verdict is still not out on the relationship between conditionality and ownership. On one hand, there is still a lot of ambiguity around the concept of ownership, which remains conceptually elusive and inadequately operationalized. To address that gap in the literature, we stipulate that ownership occurs in a situation in which the policy content of a program is similar to what the country would have organically chosen itself in the absence of an extrinsic incentive scheme (Drazen, 2002; Bird and Willett, 2004). Based on this counterfactual conceptualization of ownership, we proceed to use tools of causal inference to measure ownership as a function of a treatment effect on the treated with one-sided imperfect compliance. According to this view, ownership can only be defined for a specific situation of externally imposed and contracted reforms. In other words, ownership is not an exogenous concept but one that arises endogenously within the contractual relationship of a supranational institution (principal) and a country or government (agent). Note that in the absence of external policy constraints the level of ownership of some domestic reform program cannot be defined as the concept becomes tautological and essentially vacuous.

On the other hand, program design seems to remain very much in line with the IMF view that there should be no conflict of interest between the IMF and the borrower country in a world of perfect and complete information assuming that "the country shares with the IMF both the objectives of the program and an understanding of the appropriate economic model linking those objectives to economic policy." (Khan

and Sharma, 2003, p. 235) Yet, the fact that IMF official documents keep making ample references to the element of trust implies that the determining factor of program success is not commonly known preference heterogeneity between the IFI and the contracting government but rather asymmetric information over the costs and benefits of reforms. If it were simply the case of the IMF and and an ideologically opposed government negotiating over a balance-of-payments adjustment program for the sake of preventing regional contagion, then we would be simply talking about "good will". Trust (or the lack thereof) refers to some set of beliefs on the part of IFI officials about whether the target government really feels invested in the program and believes that the required reforms are indeed in the country's own best interests.

In a globalized world, the process of institutional reform is heavily conditioned by the external environment, which in turn generates a certain (positive or negative) "institutional balance". Some countries seem to reform in an organic, piece-meal manner in response to societal pressures and external trends, acting in the process as innovators and pioneers of global benchmarking standards (Kayser and Peress, 2012); others take on a more adaptive approach by emulating diffuse policy standards and institutions, internalizing them, and tailoring them to the local environment; and yet others simply import and implement such governance rules and regulations in unquestioning fashion and oftentimes in conformity with externally imposed conditions. The former then are like the "top students" of their class who earn critical praise for their perspicacity and original thinking, while the latter are like the "unmotivated students" who do just enough by way of memorizing and regurgitating the material in order to pass the class.

In this paper, we extend this "learning" analogy to account for the differential impact of external material incentives and international benchmarking on the domestic political economy of reforms. More specifically, we provide a theoretical analysis of the informational content inherent in *high*- (and *low*-) powered supranational mechanisms of IO policy conditionality and compliance enforcement and how that affects *short*- and *long*- term institutional quality and performance. We show that under certain circumstances extrinsic incentives created by conditionality agreements "crowd out" the target country's intrinsic motivation for reform. Where that effect is important enough, conditionality programs "shoot themselves in the foot". To show how this "crowding-out" effect may occur, we develop an informational theory of international incentive schemes that focuses on the signaling value of program characteristics. Our theoretical analysis helps motivate the hypothesis that – *pace* the sanguine view of the IMF literature in the 2000s – conditionality and

ownership are indeed incompatible.

We then proceed to apply our counterfactual measure of ownership to the European debt crisis and the Troika-sponsored economic adjustment programs in Cyprus, Greece, Ireland, and Portugal as illustrative evidence of the negative relationship between conditionality and ownership. In the context of the Eurozone debt crisis, bailout conditionality was introduced in the form of multidimensional reform programs (Memoranda of Understanding) attached to bailout agreements mandating both fiscal adjustment measures and structural reforms. For reasons explained below, we choose to focus on the effects of programs on fiscal outcomes such as primary balances (Nooruddin and Simmons, 2006).

Yet, the question remains why some conditionality programs work better than others (Killick, 1997; Barro and Lee, 2005). In that regard, we also argue that our conception of ownership acts as a "bridge" variable that mediates between program design and (un)successful program implementation. Experimental evidence by Dal Bó, Foster and Putterman (2010) has shown that home-grown policies and institutions will be more effective at improving behavior or performance than reforms transplanted from outside. Therefore, ill-designed and excessive levels of conditionality may undermine ownership and thus lead to poor long-term *de facto* outcomes even if medium-term *de jure* targets have been met.

In what follows, we start by discussing IMF conditionality and providing a theoretical conceptualization and empirical operationalization of ownership. We then present the sketch of a signaling model that motivates the hypothesis that conditionality and ownership are incompatible. Subsequently, we provide a systematic identification and measurement of the concept of ownership by applying the synthetic control method (Abadie, Diamond and Hainmueller, 2010, 2015; Abadie and Gardeazabal, 2003) and showcase some illustrative evidence of ownership over specific sectoral conditions (first, external and financial, and then, fiscal) drawn from all IMF arrangements (1980-2014).

2 IMF Conditionality and Ownership

IMF conditionality refers to a set of conditions attached to the granting of financial assistance in the form of a (concessional or non-concessional) loan in pursuit of goals deemed desirable by the Fund itself and/or the target country. Those conditions may comprise broad macroeconomic adjustment measures (e.g., fiscal consolidation, inflation targets, debt) or more specific microeconomic structural reforms in the direction of

market liberalization (e.g. trade liberalization, privatization, deregulation). In one form or another, conditionality has officially existed at least since 1952 when the IMF first attached conditions to its loans. The attractiveness of conditionality as a tool to gain leverage over target countries' policies (or, on the flip side of the same relation, as a risk-sharing insurance mechanism that allows the target country to receive the benefits it seeks) is such that most major countries or organizations active in international policies now design such programs (Stone, 2002). For example, over the past decade, an average of forty countries participated in IMF conditional debt relief programs. Similarly, the EU has created conditionality programs both for existent member states and, more obviously, for applicant countries and countries targeted by the European Neighbourhood Policy (ENP) (Schimmelfennig and Sedelmeier, 2005).

Nevertheless, the attractiveness of conditionality policies is not so clear to all. Among many positive and normative objections, for example, critics argue that IMF conditionality undermines domestic democratic institutions, sets unattainable standards of austerity, hampers economic development and social justice, and leads to poverty especially among those already poor (Stiglitz, 2004; Vreeland, 2006*b*). They also point out that conditionality programs are unduly influenced by financial interests (Gould, 2003), or major donor countries' geopolitical agendas (Stone, 2008; Copelovitch, 2010*b*; Dreher, Sturm and Vreeland, 2015). Alternatively, they are negotiated by domestic leaders who may thereby gain additional leverage over domestic opponents and special interests (Mayer and Mourmouras, 2008; Dreher, 2009). Finally, quantitative evidence has shown that IMF conditions may also actually reduce foreign direct investment in target countries (Jensen, 2004). On the other hand, a number of scholars have found these criticisms exaggerated. Recent research shows that citizens' economic interests do influence conditionality (Caraway, Rickard and Anner, 2012) and stresses the fact that IMF programs act as screening devices that enable creditors to discriminate between "good" and "bad" debtor countries (Marchesi and Thomas, 1999).

A few works deal with the preliminary question of whether conditionality will be granted or not. Authors have theorized the conditions under which conditionality may be granted by the IMF and demonstrates that these obey a geopolitical logic as much as an economic or developmental one (Vreeland, 2006*b*; Copelovitch, 2010*a*). The literature focusing on the implementation and effects of conditionality conceptualizes the designing organization as the principal and the target country as its agent. The granting of conditionality may lead either to high levels of compliance or to a process of shirking, target slippage, and

re-design. By and large, the literature on the IMF depicts a predominantly pessimistic story according to which conditions are usually not met (Killick, 1997; Vreeland, 2006*a*). Among the reasons why this failure occurs one finds the role of powerful countries such as the US that support their developing country allies by rendering the threats of conditionality less credible (Thacker, 1999; Stone, 2008). Alternatively, failure may be due to the inherent tension engendered by conditionality policies in terms of the asymmetric burden of risks, the high economic and political costs associated with reform measures in the short term, and the high monitoring and enforcement costs (Martin, 2006; Reinsberg, Stubbs and Kentikelenis, 2019). This strand of the literature on IMF conditionality is important for the proposed research because it (a) demonstrates the utility of principal-agent analyses of conditionality, (b) establishes the case that conditionality may not work, and above all (c) establishes that this may not be solely due to an indolent agent but to factors endogenous to the conditionality process.

The politics of conditionality have also been linked to the concept of ownership of reforms. In the context of IMF conditionality, Khan and Sharma (2003, p. 235) refer to ownership as "a situation in which the policy content of the program is similar to what the country would have chosen in the absence of IMF involvement". In other words, a financial assistance program is characterized by higher levels of local ownership when it is tailored to the country-specific economic environment and political system as opposed to an extraneous package of "one-size-fits-all" neoliberal IMF-sponsored reforms. Ownership may be counterfactually defined with respect to the desirability of the conditional macrostructural reforms, the optimal mix of actions to achieve target outcomes, as well as the timing and sequencing of implementation. While program ownership may refer to the overall negotiated design of the program as such, reform ownership refers to the more standard counterfactual definition with respect to specific prior actions, quantitative macroeconomic targets, and structural benchmarks. Our counterfactual definition is more germane to the latter as we assume that mandated conditionality reforms are take-it-or-leave-it types of offers by the IFI (pertaining to the "one-size-fits-all" principle of liberalization) without any room for negotiation.

On the whole, there have been two approaches to the relationship between ownership of reforms and external conditionality arrangements insofar as the impact of all conditionality policies (including the most successful ones) is conditional on domestic politics (domestic political costs of reform and/or veto players),

administrative capabilities, and timing effects.[2] Preference-based models argue that the need for conditionality is highest when there are stark discrepancies between the objectives of creditors and debtors. In other words, creditors mete out conditional financial assistance in order to impose certain policy reforms against the will of the government, either due to the latter's ideological bias or due to strong domestic political constraints and resistance by "vested interests" (Paloni and Zanardi, 2006; Mayer and Mourmouras, 2008). Otherwise, the absence of any conflict of interest – and hence a maximum level of ownership – would negate the need for explicit conditionality. Moreover, conditionality may help a reform-minded government to overcome domestic veto players by scapegoating (or passing the blame onto) external creditors and IFIs (Vreeland, 1999; Bird and Willett, 2004). On the other hand, capacity-based approaches define ownership with respect to the technical, bureaucratic, and state capacity to implement certain reforms. The key question then becomes how the technical design of conditionality can enhance bureaucratic capacity and program effectiveness.[3]

In this paper we introduce a novel information-based approach to conditionality and ownership by assessing how the design of such a contractual arrangement may affect the debtor's intrinsic belief in the effectiveness and necessity of imposed reforms. Here we assume that the agent (in this case the target government) has imperfect information over the long-term benefits of policy adjustments, while it is fully aware of the short-term political costs and those special interests that are negatively affected by such reforms. Moreover, although the principal (in this case, the creditor IFI) is fully aware of the economic effects of policy reforms on the debtor country's external competitiveness as well as the economic and political constraints that it faces, yet it remains uncertain about the agent's self-perception of the usefulness and desirability of those reforms. As shown in the theoretical analysis to follow, making financial assistance conditional on the implementation of certain reforms ends up undermining the target government's political ownership of such a policy package and hence its long-term effectiveness and sustainability.

[2] In the context of this literature, people often make the distinction between country and government ownership thus drawing a clear distinction between the perceived aggregate welfare benefits of liberalization reforms and the short-term political costs that affect the government's intrinsic political will for such reforms.

[3] See Reinsberg et al. (2019) for a pessimistic view.

3 An Informational Model of IMF Conditionality

Principal-agent models tend to assume that extrinsic incentives automatically induce effort and performance (Laffont and Martimort, 2002). Where externally imposed conditionality agreements have not been the main drivers of change, they are nevertheless depicted as "positive reinforcers". Where they fail, their failure is attributed to lower-powered incentives, credibility issues, or factors that undermine their contractibility. This contrasts with a behavioral literature in cognitive psychology (Deci, Koestner and Ryan, 1999) and economics (Kreps, 1997; Bénabou and Tirole, 2003), which emphasizes the counter-productive effects of extrinsic incentives when the agent is intrinsically motivated. More specifically, these works signify a departure from simple neo-classical assumptions regarding the shape of supply curves. Whereas neo-classical economists thought that extrinsic incentives always induced additional effort and performance, Deci, Koestner and Ryan (1999) and Bénabou and Tirole (2003) show that this need not necessarily be so. Like children who play games of their liking, agents who are intrinsically motivated to perform a task will initially react positively to external payment. But eventually, as payments keep flowing in, they are bound to process the informational content of the signal entailed in those inducements. If financial assistance keeps flowing in with strings attached, the agent will infer that either the required task is tougher than expected or that the (s)he is less capable than originally thought. In equilibrium, this crowds out the agent's intrinsic incentives to continue performing the task. We now proceed to apply this logic to the case of IFI/IMF conditionality and show that conditionality and ownership are substitutes, not complements.

On that basis, we propose a novel game-theoretic account of sovereign bailout conditionality in the IMF context. We consider such IMF programs as club membership contracts because successful IMF program completion bestows reputational benefits of fiscal rectitude and financial stability to borrowing country (Vreeland, 2006*b*). Conditionality becomes a useful tool to gain leverage over the policies of target countries as well as a commitment device for the transfer of benefits to these countries (Stone, 2002). IMF club membership can also be linked to membership in other major IOs. For example, in the case of the recent bailout agreements of the European "South" (i.e., Greece, Portugal, Ireland, Cyprus, and to some extent Spain) in the context of the Eurozone debt crisis – where continued Eurozone membership was at stake for some countries (see case of "Grexit") –, the offer of a financial bailout ("carrot") was conditional on the implementation of fiscal adjustment, market liberalization, and structural reforms ("stick") as stipulated

in the various Memoranda of Understanding. Although outright expulsion from the union was not possible under existing treaties, the Eurogroup representing the interests of the surplus "North" could choose between offering a bailout to the government of the indebted country as an inducement for continued membership or forcing it into disorderly debt default and eventual exit from the Economic and Monetary Union (EMU) and even the EU as a whole.

In what follows, we set out to model the strategic relationship between a supranational principal (p), such as the IMF or the "Troika" (consisting of the European Commission, the European Central Bank, and the International Monetary Fund) in the context of the Eurozone crisis, and the government of a target (indebted) country i (henceforth the agent), focusing on two issues: (1) the effect of bailout conditionality on the target government's intrinsic motivation for reform and (2) the role of incentives in the design of conditionality contracts. We propose an informational mechanism of conditionality whereby the agent receives and interprets an informative signal by the principal with respect to the true desirability and feasibility of politically costly reforms (e.g. fiscal adjustment, liberalization of labor markets, etc.). The better-informed principal (e.g., the IMF, the European Commission, and/or the ECB) and the agent play a Bayesian signaling game of conditionality whereby the former offers the latter a conditional bailout contract. Creditors design loans based on country-specific macroeconomic indicators that determine a borrower's financing needs and the amount of policy adjustment necessary to ensure its long-term debt sustainability. The principal offers the agent certain extrinsic incentives (e.g., in the form of an outright bailout, debt reprofiling, subsidized lending, and/or liquidity infusion measures) to reform or risk the reputational damage of a default or possibly the exit from a supranational union. Of course, the agent does not just take these incentives for granted; given that the overall package may differ from one type to another, the agent will also interpret them as signals with respect to the nature of the task at hand or the agent's ability to perform that task.

In light of the above, bailout conditionality is viewed as an (in)complete contract[4] of non-concessional (concessional) lending in return for the full implementation of a policy target $N > 0$ $(C > 0; C < N)$ of common policies and benchmarks (as explicitly stipulated in intergovernmental treaties and agreements such as in our case the Growth and Stability Pact or implicitly propagated through normative paradigms such as the

[4]Contractual incompleteness denotes the inability to anticipate all future contingencies and thus to arrive at a first-best efficient contractual arrangement. Transaction costs arise from (i) the difficulty of anticipating all possible eventualities, (ii) the costs of agreeing and deciding, (iii) the imprecision in describing all possible states of the world, and (iv) the costs of enforcement. For an economic elaboration of these concepts, see Hart and Holmström (1987).

"Washington Consensus"). In other words, we assume a "one-size-fits-all" approach to economic development and adjustment. Thus, liberalization reform packages r_i by country i are captured as one-directional increments in the unidimensional scale of liberalization l_i. We proceed to show that in equilibrium the design of the bailout contract (A, t_i), where $A \in \{N, C\}$ and $t_i (\geq 0)$ denotes the size of the bailout or liquidity transfers,[5] signals an informational content to the agent with respect to its perception of the intrinsic long-term benefits of reforms (or, in other words, its true level of ownership of those reforms).

The supranational principal p has a direct positive interest in the success of the program, which could entail the repayment of external debts to creditors from the official and private sectors. Program success is essentially a function of the government's reform efforts at debt sustainability (r_i) as well as some random exogenous component.[6] In the context of the IMF, economic liberalization and macroeconomic adjustment help achieve financial stability; thus, the principal acts as the guardian of an existing set of economic norms, standards, and benchmarks. Furthermore, the principal derives some net non-pecuniary benefits (b_i) from the successful completion of a program by country i, which are a function of the country's geopolitical clout or systemic importance within the global financial system. On the flip side, the possibility of a sovereign default an/or program failure may entail significant costs for the principal – also depending on the economic size, political influence, and systemic risk of the targeted country – in the form of sovereign systemic risk and financial spillover effects. Thus, the principal's net benefit of program success amounts to $b_i - t_i$.

The target government (agent i) is subject to an array of reform-specific and membership-specific costs and benefits. On one hand, it enjoys aggregate economic benefits of reform $V(r_i; \cdot)$, conditioned by an exogenous competitiveness parameter α_i, net of variable political costs of reform $\kappa(r_i)$. Clearly, any government must consider the negative impact of fiscal adjustment and structural reforms on the entrenched interests of special groups and core constituencies. Thus, the government's intrinsic political will to pursue reforms is a function of the above political cost-benefit considerations $V(r_i; \alpha_i) - \kappa(r_i)$, or else its perceived level of ownership of given reforms.[7] On the other hand, conditional on the successful implementation of

[5] We should note here that we do not consider the possibility of negative sanctions conditional on missing policy reform targets, i.e., $t_i < 0$ when $l_i < A$ since the agent would never accept such a contract. Sanctions and fines may only become credible and enforceable within the context of an intergovernmental negotiation agreement with sufficient lock-in clauses.

[6] Since the focus of our analysis is on the contractual rather than the distributive aspects of conditionality, we assume that the principal is a unitary actor that acts in pursuit of either its own distinct agency interests or the overlapping interests of existing members of the union. In that sense, we abstract away from other geopolitical aspects of bailout negotiations (Copelovitch, 2010*b*).

[7] In other words, ownership of a certain IMF contract is tantamount to the concept of incentive compatibility in the absence of extrinsic incentives. In that light, the degree of ownership would be inversely related to the absolute difference between the agent's

the one-size-fits-all level of liberalization (N), it stands to gain non-concessional bailout (or liquidity) transfers t_i as well as non-pecuniary reputational benefits of successful program completion B_i, such as enhanced access to international capital markets, net of sovereignty losses s_i. Program failure entails considerable costs in terms of currency depreciation, debt default, and loss of real GDP. Hence, the latter components $(B_i - s_i + t_i)$ denote the target government's extrinsic net incentive of accepting bailout conditionality.

In terms of the information structure, we assume that an exogenous random component of the competitiveness parameter (α_i) is perfectly known to the principal p but only indirectly observed by the agent i through a private noisy signal $\sigma_i)$. In other words, the principal is fully aware of the agent's true intrinsic motivation but uncertain about i's self-perception of the inherent desirability of the conditional reforms.[8] As a benchmark case, we assume that financial bailouts are strictly conditional on a minimum set of fully observable rules and, thus, we do not entertain the possibility of moral hazard in the form of an implementation drift on the part of the agent. The order of play in this game is as follows: first, the principal p makes a "take-it-or-leave-it" conditional bailout contract offer, which the agent i chooses to either accept or reject. If the agent accepts the contract, it then has to decide whether to see it through by implementing the necessary reforms. If not, it chooses to default on its external debt and to make the appropriate policy adjustments. Finally, the government of the target country implements a certain reform package subject to its information, beliefs, and contracts on offer. Note that in this simple version of the model we do not allow for renegotiation in the form of implementation waivers of hard conditions, such as prior actions (PAs), structural performance criteria (SPCs), and quantitative performance criteria (QPCs) in the case of the IMF (International Monetary Fund, 2019*b*).

In order to characterize the Perfect Bayesian Nash equilibrium of this game, we need to examine several possibilities. First, it is quite straightforward to rule out a perfectly separating equilibrium, whereby the principal p offers a different equilibrium contract to the agent i depending on the latter's true competitiveness type α_i. In such an equilibrium, the agent would disregard its own private signal σ_i altogether and, therefore, the principal would have an incentive to induce the highest level of liberalization possible by pooling on the

autarchic reservation utility in the absence of the IMF contract and its intrinsic utility of implementing the bailout contract without enjoying the extrinsic perks of financial assistance, i.e, $\left|u^g\left(A_t,0;t_i,E\left(\alpha_{i,1}|\sigma^g_{i,1},p_i,\alpha_{i,0}\right)\right)-u^g\left(\widetilde{l}_{i,1},0;0,E\left(\alpha_{i,1}|\sigma^g_{i,1},\alpha_{i,0}\right)\right)\right|$.

[8]The justification of this information structure seems quite straightforward in the context of the IMF, a supranational actor endowed with the accumulated experience and necessary technical wherewithal to be able to anticipate the long-term profile of economic benefits of liberalization based on the target economy's competitive standing within the integrated economic space under its purview.

highest competitiveness type. This obviously leads to a contradiction. Moreover, perfectly pooling on all possible types cannot be an equilibrium strategy for the principal since then the agent would not be receiving any additional information from the principal and thus would only form its estimate of the true benefits of liberalization on the basis of its own signal, which is a suboptimal outcome for both. In other words, a perfectly pooling equilibrium is ruled out by the principal's partial incentive to impart its private information to the agent and thereby induce the necessary reform efforts.

This implies that the Perfect Bayesian equilibrium of the game has to be semi-pooling. The principal p will offer uniform weakly decreasing levels of (bailout or liquidity) transfers to increasing intervals of competitiveness types. In equilibrium, the recalcitrant governments of countries on the brink of default (i.e., with $s_i > B_i$) will receive a semi-pooled conditional bailout contract (N, t_i^*) with positive net bailout receipts $(t_i^* \geq s_i - B_i > 0)$; similarly, the governments of countries willing to adjust regardless of sovereignty costs (i.e., with $s_i \leq B_i$) will receive a semi-pooled contract $(N, t_i^{*\prime})$ mandating necessary reforms in return for (liquidity) transfers $t_i^* \geq 0$.[9] Note that for the same competitiveness type the bailout package offered to the first group of countries on the brink of default (t_i^*) will obviously be higher than that for the latter group $(t_i^{*\prime})$ since it primarily aims at restoring the government's willingness to remain afloat in addition to inducing further liberalization reforms. Effectively, the creditor institution sends a signal about the true source of the country's balance-of-payments crisis.[10] Finally, there may also be cases of countries that have so much ground to cover in terms of converging to IMF liberalization requirements that the principal will find it too costly to offer non-concessional loans in the form of Stand-by Arrangements (SBAs) or Extended Fund Facilities (EFFs), choosing instead to offer a lower-powered concessional loan contract (C, t_i) inducing liberalization reforms up to level $C(< N)$ in exchange for aid $t_i^*(< s_i - B_i)$.[11]

The main results of the game-theoretic analysis we propose above may be summarized as follows: (i) Bailout assistance (especially when it also comes with additional non-pecuniary – reputational or even geopolitical – benefits) may act as a positive short-term "reinforcer" of adjustment reforms in the short term,

[9] See for example the cases of Italy, Spain, and France and the ECB's monetary expansion programs of Emergency Liquidity Assistance (ELA), Securities Markets Program (SMP), and Outright Monetary Transactions (OMT).

[10] Note that there exists a truthful fixed-point equilibrium here whereby countries that are truly competitive enough to just implement the IFI's one-size-fits-all level of liberalization N will receive no conditions; this unconditional type of contract will then truthfully confirm the agent's self-perception about its true level of competitiveness (and hence intrinsic motivation).

[11] Thus, the model allows us to draw the distinction between *ex ante* selectivity (*adverse selection*) and *ex post* conditionality (*moral hazard*) in the design of IMF incentive schemes (Marchesi and Thomas, 1999; Dixit, 2000; Bas and Stone, 2014).

allowing the country to remain solvent. (ii) However, higher levels of financial assistance and conditionality are essentially "bad news" about a country's long-term debt sustainability and competitiveness in a globalized economy. (iii) Thus, higher extrinsic (bailout) rewards and harder conditions crowd out intrinsic incentives (or level of ownership) for reforms in the long run. (iv) Moreover, as shown in several empirical studies, for any given level of competitiveness, systemically important countries (high b_i) will receive higher levels of bailout loans in equilibrium (i.e., high t_i^*). (v) Finally, "early reformers" i.e., countries with high initial levels of liberalization at the time of the balance-of-payments crisis, are *ex ante* more likely to accept the contract and achieve the policy target N. In light of these findings, we expect that (a) target governments' post-arrangement pace of reform will decline over time and (b) the crowding-out effect will be stronger for countries that have enjoyed higher levels of bailout transfers. Another counterfactual prediction coming out of this model is that were the target government to reject the offer and go into default, it would still not engage in any meaningful set of reforms with the aim of restabilizing its economy other than by devaluing its own currency.[12] All of the above are subhypotheses to the main hypothesis that conditionality undermines ownership.

The design of bailout conditionality could also take the form of a linear contract comprising both conditional short-term liquidity assistance and unconditional (or concessional) debt forgiveness or restructuring. This opens up the possibility of multiple signaling equilibria that determine the optimal shape of such a contract. In a simplified two-type version of the above model, there exists an appropriately refined semi-pooling equilibrium, whereby the high-competitiveness type will receive an unconditional debt haircut while the principal will mix between debt forgiveness and reform-contingent financial assistance for the low-competitiveness type.

Besides the informational asymmetries described above, IFI arrangements are incomplete contracts in terms of moral hazard due to the imperfect observability of *de facto* (as opposed to *de jure*) implementation outcomes. In our model, moral hazard can take the form of a bureaucratic drift from *de jure* policy transposition to *de facto* policy implementation. In other words, the agent i can take some hidden action (x_i) retracting observable reforms (r_i). Therefore, agents with low levels of ownership may indeed engage in extensive *de jure* reforms in the short run, but that will not be reflected in their overall level of *de facto*

[12] This is the case of the so-called "serial defaulters".

liberalization.[13] If, then, the offer of a bailout remains conditional on observable level of liberalization, then in equilibrium the principal will pool on all possible competitiveness types. In other words, all agent types will receive the same contract offer and will liberalize only to the extent of their self-perceived intrinsic motivation. Of course, the extent of the moral hazard problem can be tempered by limits to the permissible size of implementation discretion, increased monitoring, and contract renegotiability.

4 Indentifying Ownership

4.1 Research design

In our empirical analysis, we first discuss our empirical operationalization of the concept of ownership and then provide some early illustrative evidence from various IMF arrangements focusing on current- and capital-account liberalization as well as the four IMF-sponsored bailout arrangements in Cyprus, Greece, Ireland, and Portugal of the negative relationship between conditionality and ownership. Our approach to measuring ownership is a counterfactual one: ownership is defined as a situation in which the policy reforms that a country undertakes as a result of an IMF program are the same as the country would have undertaken if not under an IMF program (Khan and Sharma, 2003, p. 235). In this section, we operationalize this notion.

As per this counterfactual-based definition, we identify ownership (or lack thereof) as a function of a treatment effect of IMF conditionality on a directly observable and verifiable set of macroeconomic adjustment measures and/or structural reforms. In other words, in order to measure program ownership, one needs to causally infer the path of post-crisis (macroeconomic and/or structural) adjustment of a conditionality-"treated", i.e., IMF-program, country in the absence of that program. That amounts to identifying the treatment effect on the treated for each IMF-program country i, i.e., $Y_{i1} - Y_{i0}|W_i = 1$, where $W \in \{0,1\}$ denotes the binary (IMF program/condition) treatment status, Y_{i1} reflects the actual observed outcome for the treated unit, and Y_{i0} captures the counterfactual outcome for the same unit absent the treatment. The higher this treatment effect is found to be, the lower the estimated level of program ownership since we can infer that post-intervention adjustment and reform is primarily driven by the extrinsic incentives of the IMF program itself (both in terms of loan size and scope/degree of conditionality). In the absence of ownership,

[13] The distinction between policy *outputs* as legislative or executive acts and policy *outcomes* socioeconomic aggregates, such as unemployment levels, GDP growth, income inequality, etc., is key here.

these countries would have adjusted much less. This type of causal inference relies on the so-called stable unit treatment value assumption (SUTVA) assumption, according to which the realized outcome for each particular unit depends only on the value of the treatment of that unit and not on the treatment or outcome values of other units (Athey and Imbens, 2017; Abadie and Cattaneo, 2018).[14]

Note, however, that up this point we are assuming perfect compliance with the treatment $(W_i = 1)$ for all assigned units $(Z_i = 1)$, i.e., $Pr(W = Z = 1) = 1$. When it comes to compliance with IMF arrangements, several studies have shown that this is not necessarily the case (Vreeland, 2006*a*; Reinsberg, Stubbs and Kentikelenis, 2019). Therefore, a more accurate measure of ownership needs to account for one-sided imperfect compliance, i.e., $Pr(W_i = 0|Z_i = 0) = 1$ but $0 < Pr(W_i = 1|Z_i = 1) < 1$.[15] In that case, we would have to identify the treatment effect on treated compliers, i.e., $Y_{i1} - Y_{i0}|W_i = Z_i = 1$. For the purposes of our empirical illustrations, we will assume that all our treated units fully take on the IMF program and comply with its conditions.[16]

We posit that ownership may vary across different sectors. This is evident from the above definition of ownership. In the following subsection, we choose two sectors for which IMF conditions can be clearly mapped onto specific *de jure* policies that a country needs to adopt to comply with them.[17] The first is the external sector (*EXT*), which entails measures toward trade liberalization and capital account liberalization. The second is the financial sector (*FIN*), which entails measures to liberalize financial markets. In all sectors, we apply the synthetic control method (SCM) for causal inference in comparative case studies as developed in Abadie and Gardeazabal (2003) and Abadie, Diamond and Hainmueller (2010, 2015) on all cases in which IMF programs mandated the respective type of sectoral conditionality. This allows us to compare actual *de jure* policy change to the policy change that would have obtained if the country had not been subject to binding conditionality in the respective sector.

The SCM method estimates the effect of an intervention (treatment) at time T_{i0} by comparing the evolution of an aggregate outcome for a unit affected by the intervention to the evolution of the same aggregate outcome for a synthetic control group. The synthetic control group is constructed by an optimization al-

[14] Presumably, this is a strong assumption in the context of the Eurozone debt crisis and the generalized economic contagion effects.

[15] It is trivial to argue that countries not assigned to an IMF program treatment would never seek to implement it.

[16] We make this assumption due to lack of compliance data, which we plan to collect in the near future.

[17] Our main reason for adopting a sectoral approach to the identification of ownership is the existence of a close mapping between IMF conditions and quantifiable policy output variables.

gorithm that seeks to minimize some loss function between the weighted combination of control units and the unit affected by the intervention in terms of characteristics that are predictive of the outcome. The post-intervention evolution of the outcome for the resulting synthetic control group is used to identify the counterfactual of what would have been observed for the affected unit in the absence of the intervention, i.e., $Y_{i0}|W_i = 1$.

In our approach, ownership thus is defined only in the context of an IMF program, and more specifically with respect to specific types of conditions. We measure ownership (or the lack thereof) in two ways. Our first measure of ownership is with respect to specific points of time in the post-treatment period $(T_0 < t \leq T)$ and is inversely proxied by the absolute gap between observed and counterfactual policy outputs in one, two, three, or more years after program initiation at time T_0. We measure ownership at successive post-treatment periods because it can change quickly, for instance due to changes in domestic conditions that would make a given program less viable from the perspective of the incumbent government. In formal terms, let I denote the set of treated units and J the "donor pool" of control units. Then, a target government's $i \in I$ lack of ownership of the IMF-sponsored level of sectoral liberalization is captured by the following estimated treatment effect on the treated (TET):

$$\widehat{\alpha}_{it} = \left| Y_{it} - \sum_{j \in J} w_j^* Y_{jt} \right| \tag{1}$$

Here, $t = T_0 + 1, \ldots, T$ denotes any post-intervention period and Y_{it} denotes the *de jure* policy output variable. Let X_i be a $k \times 1$ vector containing the values of the pre-intervention characteristics of the treated unit $i \in I$ and let X_0 be the $k \times J$ matrix collecting the values of the same variables for the units in the donor pool J. Then, the $J \times 1$ synthetic control vector of weights $W^* = (w_j)_{j \in J}$ is selected to minimize $\|X_i - X_0 W\|$ subject to $0 \leq w_j \leq 1$ for all $j \in J$ and $\sum_{j \in J} w_j = 1$.

Our second measure captures the incumbent's ownership over the timing and sequencing of liberalization reforms for as long as an IMF program is formally in effect and is thus proxied by the post-treatment goodness of fit between actual and counterfactual *de jure* policy outputs throughout the duration of an IMF arrangement $(T - T_0)$ as designated in the program initiation period T_0. Even if quantitative or structural targets by the end of the program may not differ as much between treated and synthetic units, it could be

the case that some IMF programs are structurally rather too front-loaded in terms of liberalization or adjustment reforms. In formal terms, a target government *i*'s lack of ownership over the timing and sequencing of IMF-sponsored level of sectoral liberalization reforms is captured by the root mean square prediction error (RMSPE) between actual and synthetic *de jure* policy outputs:

$$\widehat{\rho}_i = \frac{1}{T - T_0} \left(\sum_{t=T_0+1}^{T} \left(Y_{it} - \sum_{j \in J} w_j^* Y_{jt} \right)^2 \right)^{1/2} \tag{2}$$

Our key variable of interest is ownership. A situation of perfect ownership is one in which the post-treatment discrepancy between actual and counterfactual policy outputs is zero. For a perfectly matched synthetic control, the pre-treatment difference will be zero and the post-treatment effect will be well identified. Deviations from zero imply lower ownership. For example, if a country liberalizes more than it would have without IMF conditionality, this implies that the Fund was able to coerce the country into policy change that would not have otherwise occurred. However, a country could also liberalize less than it would have without IMF conditionality, which for instance could be due to a domestic backlash against attempted reforms or a so-calledcrowding-out effect. The involvement of the Fund in such cases might have caused domestic groups to mobilize to push back on the foreign imposition of reform, with the result of even lower reform effort than would otherwise have occurred. In any case, the more the difference in post-treatment liberalization efforts deviates from zero, the less ownership a country displays with respect to some given measure of reform.

4.2 A sector-specific approach for all IMF arrangements (1980-2014)

We employ two independent variables corresponding to the two sectors under scrutiny. As per IMF classification, external sector conditions comprise trade-related issues, such as lifting of trade tariffs, non-tariff measures, and quotas changes, exchange system measures, such as exchange rate regime and exchange rate level, capital account liberalization, and foreign direct investment policies (Kentikelenis, Stubbs and King, 2016). Financial sector conditions comprise legal reforms, regulatory changes, supervisory policies on financial institutions, including privatization of state-owned banks and insurance companies, as well as

central bank conditions (Kentikelenis, Stubbs and King, 2016). We only consider hard conditions such as structural performance criteria (SPCs) because these specify policy instruments that governments must effectively legislate and adopt. This is different from quantitative conditions, which specify policy goals that cannot be effectively legislated or transposed and thus are less useful for calculating ownership because a country can exercise ownership by choosing policy instruments as it sees fit (Khan and Sharma, 2003). We use a dummy variable indicating the presence of structural conditions in the respective sector.

To obtain well-identified treatment effects, we need to ensure that countries have not been under an IMF program for enough time. We require a gap of at least five years from the last active program in order to prevent picking up reform activity from a previous program, which would bias our results. The same gap is required for control units. As many countries have consecutive spells of IMF programs, this exclusion rule reduces the number of treated cases available for analysis. Overall, we identify 24 cases of external sector liberalization and 35 cases of financial sector liberalization satisfying these criteria.

For each treated case, the synthetic control method searches for a convex combination of control cases to construct a synthetic case that is as similar as possible to the treated case in terms of predictor values in the pre-treatment period. Our outcome variables (Y_{it}) consist of the KOF indices of *de jure* economic, trade, and financial globalization (Gygli et al., 2019).[18] We consider the following covariates to help generate quasi-identical synthetic control cases, reflecting fundamental macroeconomic characteristics, features of the political system, the international environment, and pre-treatment outcomes. In particular, we include (logged) GDP per capita, reflecting the level of development of a country (The World Bank, 2019). We also include (logged) population, as a proxy for country size (The World Bank, 2019). Furthermore, we include the Polity IV index (Marshall and Jaggers, 2015), measuring democratic institutions, as well as the State Capacity Index (Hanson and Sigman, 2013). Capturing international determinants, we include foreign aid per capita (The World Bank, 2019), the UN General Assembly vote alignment of a country with the G7 countries (Bailey, Strezhnev and Voeten, 2017), and the political globalization index (Dreher, 2006; Gygli et al., 2019). The time window over which the alignment of these covariates is optimized ranges from five years before treatment until one year before treatment.[19] We choose these variables because they likely predict both IMF conditionality and *de jure* policy liberalization. In addition, we condition on the

[18] One of the main advantages of these outcome variables is that they are continuous and well balanced within our panel dataset.

[19] For treatments before 1985 we use the years available from 1980 onwards, with the earliest possible treatment year being 1981.

total number of conditions as well as the scope of conditionality at program start, which is to ensure that fundamentally similar IMF programs in terms of conditionality will be matched, thus isolating the effect of sector-specific conditionality on post-treatment outcomes. To control for unobserved factors and to enhance the fit, we also match on pre-treatment outcomes, both one year before treatment and five years before treatment.

An important step of the synthetic control method is to define the universe of control cases, i.e., the so-called donor pool (Abadie, Diamond and Hainmueller, 2010, 2015), that the matching algorithm considers when calculating the synthetic control unit. Results may differ depending on the choice of the donor pool although in our case we find results to be consistent in most cases. We use three qualitatively different donor pool sets, each of which makes different assumptions and involves different trade-offs:

Set 1 (S1) Our first set includes IMF program observations that start in the same year as the treated case but without the sectoral condition over the project lifetime. The benefit of this approach is to eliminate the confounding impact of global shocks because control units are subject to the same shocks and thus these cannot explain outcome differences. The drawback is that there may not be many programs to choose from given that we also require a minimum of five years having elapsed from the last active program for a control unit to be included in the set. As a result, covariate balance is sometimes poor, which necessitates to account for pre-treatment differences in policy outcomes.

Set 2 (S2) Our second set includes IMF program observations but allowing for any start year. The SCM method will thus search among all IMF programs in the entire sample period to maximize covariate balance. This approach ensures a much better fit thanks to a larger control set (typically around 100 programs to choose from). The disadvantage is that country trajectories may be influenced by global time-variant factors, such as the incidence of global financial crises. To mitigate this challenge, we include the number of countries under programs as an additional matching variable, which is often taken as proxy for the overall demand for IMF resources (Reinsberg, Stubbs and Kentikelenis, 2019; Stubbs et al., 2018).

Set 3 (S3) Our third set enlarges the potential set of control units by conditioning on the propensity score of being under an IMF program, rather than actually being under an IMF program. This includes in the

set for comparison near-misses of IMF programs that are otherwise similar to the treated case. To obtain the propensity score, we use a standard probit model of IMF program selection based on the literature (Moser and Sturm, 2011; Oberdabernig, 2013)

Our predictors include UN General Assembly voting alignment, UN Security Council membership, GDP per capita, GDP per capita growth, reserves in months of imports, debt service as a percentage of GNI, Freedom House index scores, executive elections, British legal origin, as well as year dummies and region dummies.

To probe robustness against additional control sets. For instance, one might be worried that countries from the same region get chosen as control units, which might induce bias to the extent that there are spillover effects at the regional level. We therefore repeat our analysis excluding countries from the same region in the control set. The results are remarkably similar, which is explained by the fact that the most-similar control cases identified by the synthetic control method are typically not in the same region anyway. As another robustness check, we also extend the time interval that must have elapsed after the last active program up to seven years. While this represents a more conservative approach for identifying treatment effects, it has the drawback of further reducing the number of treated units. For those treated cases that survive the treatment criteria of all three approached, we obtain qualitatively similar results. In fact, there is no case for which our conclusion is different if we use the five-year cutoff rather than the seven-year cutoff.

By restricting the control units to country cases under IMF programs, we mitigate bias arising from potential unobserved differences between IMF borrowers and non-IMF borrowers. Where we allow for any observation to be matched to the treated one, we include the propensity of being under an IMF program to address selection bias (Rosenbaum and Rubin, 1983, 1985). But in all the approaches thus far we assume that conditionality is exogenous, conditional on control variables included in the matching model. To relax this assumption, we also consider a model in which we match on the propensity score of receiving the treatment. Lacking a mainstay model for IMF conditionality, we use the same model that previously predicted IMF programs.

4.3 Results from the sector-specific approach

This subsection presents our findings. To illustrate the usefulness of our approach, we first go through some prototypical cases for which ownership is very consistently estimated across all possible variants of the synthetic control approach. We then report on the aggregate-level properties of our ownership measure across all programs. We begin our discussion of program ownership with respect to external sector conditionality, followed by ownership on financial sector liberalization.

External sector (EXT)

A prototypical case where IMF conditionality led to external sector reforms that the government would not have otherwise undertaken is Indonesia in 1997. The country turned to the Fund for a three-year stabilization loan (SDR 7.4 billion), which was followed by an Enhanced Funding Facility (SDR 4.7 billion) after one year and another EFF loan over SDR 3.6 billion in 2000. Indonesia turned to the Fund amidst the Asian Financial Crisis. The program entailed a long list of external sector conditions. In 1998, Indonesia had to reduce tariffs and lift restrictions on foreign investment in wholesale trade. As prior actions, the government had to issue instructions to local governors to eliminate all local export taxes. It further had to replace quantitative restrictions on palm oil and related produce with an export tax of no more than 40 percent. A final structural performance criterion was to reduce export taxes on logs and sawn timber to 20 percent (Kentikelenis, Stubbs and King, 2016).

In effect, Indonesia improved its *de jure* trade liberalization score. Figure 1 below shows that IMF conditionality was indeed effective in increasing *de jure* trade liberalization in Indonesia. In terms of ownership, however, the program was poor, because counterfactually Indonesia would not have undertaken these reforms on a similar scale, and the pace of policy reforms was likely possible only because Indonesia urgently needed fresh credit and liquidity. The IMF offered a generous program but also imposed a lot of conditions. Our ownership measure in this case has high face validity. It is well known that Indonesia felt the Fund imposed this program, epitomized in an infamous picture in which the then-IMF director Rodrigo Rato forced Suharto to sign the agreement in a humiliating posture. Clearly the Indonesian government claimed little ownership of this program. As Indonesia remained under IMF programs with ambitious external sector conditionality, ownership fell further in the post-treatment period.

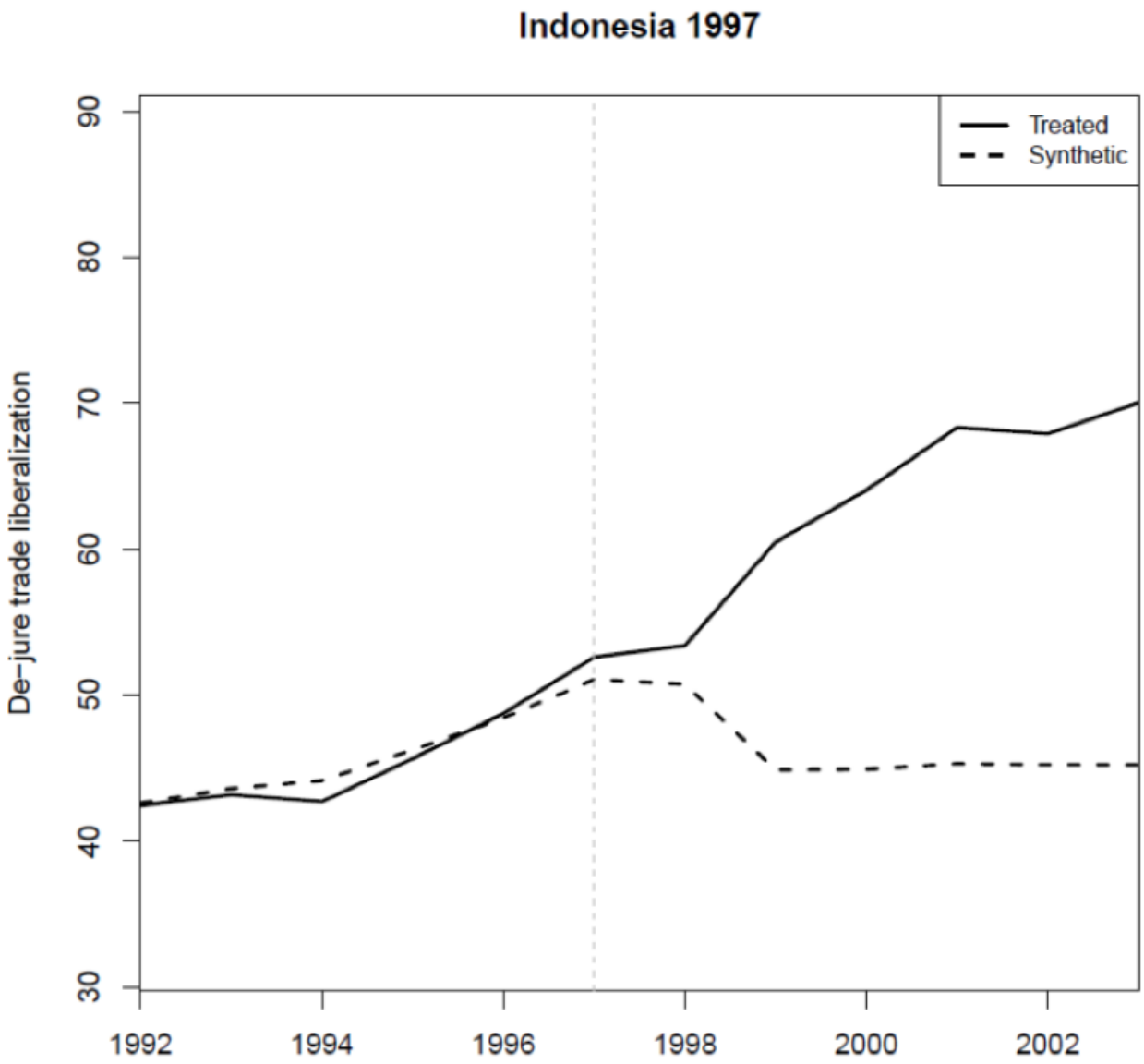


Figure 1: *De jure* trade globalization in actual and synthetic Indonesia before and after the IMF intervention (1997)

Financial sector (FIN)

Bosnia and Herzegovina in 1998 is a case of a fully-owned program with respect to the financial sector. The country requested a stand-by arrangement for 12 months over SDR 60.6 million. The program included several financial conditions, most of them as prior actions, such as for instance the agreement on a timetable for issuing new currency, the appointment of a liquidator for the NBBH, and the separation of the payments bureau from the Serb State Bank. Conditions also required the maintenance of foreign exchange cover at 100 percent for the domestic liabilities of the Central Bank (Kentikelenis, Stubbs and King, 2016). Figure 2 suggests that Bosnia would have undertaken financial reforms without IMF conditionality, given that the counterfactual policies closely match the actual policies. It is perhaps only after the fifth year where *de facto* financial reforms slow down relative to the counterfactual. This might be no coincidence as the IMF program would have ended by then and thus the government would have less (external) support to follow through its desired reforms. While ownership is generally high over the entire program, it is somewhat lower in these years. A different question of course is whether Bosnia would have been able to undertake these reforms without IMF expertise. In any case, the government in this case seemed to have requested IMF assistance to undertake these financial reforms. This makes sense given that the reforms are aimed at generating state capacity, which was important for Bosnia that just came out of the Balkan war and needed to quickly restore its sovereignty.

A different case is Belarus in 1995. Our findings suggest a lack of ownership in that Belarus undertook fewer reforms than expected under a counterfactual scenario. In 1995 alone, Belarus faced eight prior actions and several structural benchmarks in the financial domain. Key measures included a new refinance rate for the NBB and a new minimum interest rate on commercial bank deposits, limits to NBB subsidies and uniform reserve requirements for banks, elimination of convertibility limits by banks, and allowing enterprises to borrow freely from more than one bank (Kentikelenis, Stubbs and King, 2016). These measures arguably challenged financial sector interests, specifically banks close to the government, and therefore must have been very unpopular. Figure 3 suggests that Belarus did not follow the spirit of the agreement as it did not effectively liberalize its financial sector while its most-similar synthetic control cases liberalized more.

Based on the full sample of treated units, we now proceed to provide a first test of the hypothesized relationship between conditionality and ownership by fitting our different measures of ownership over financial

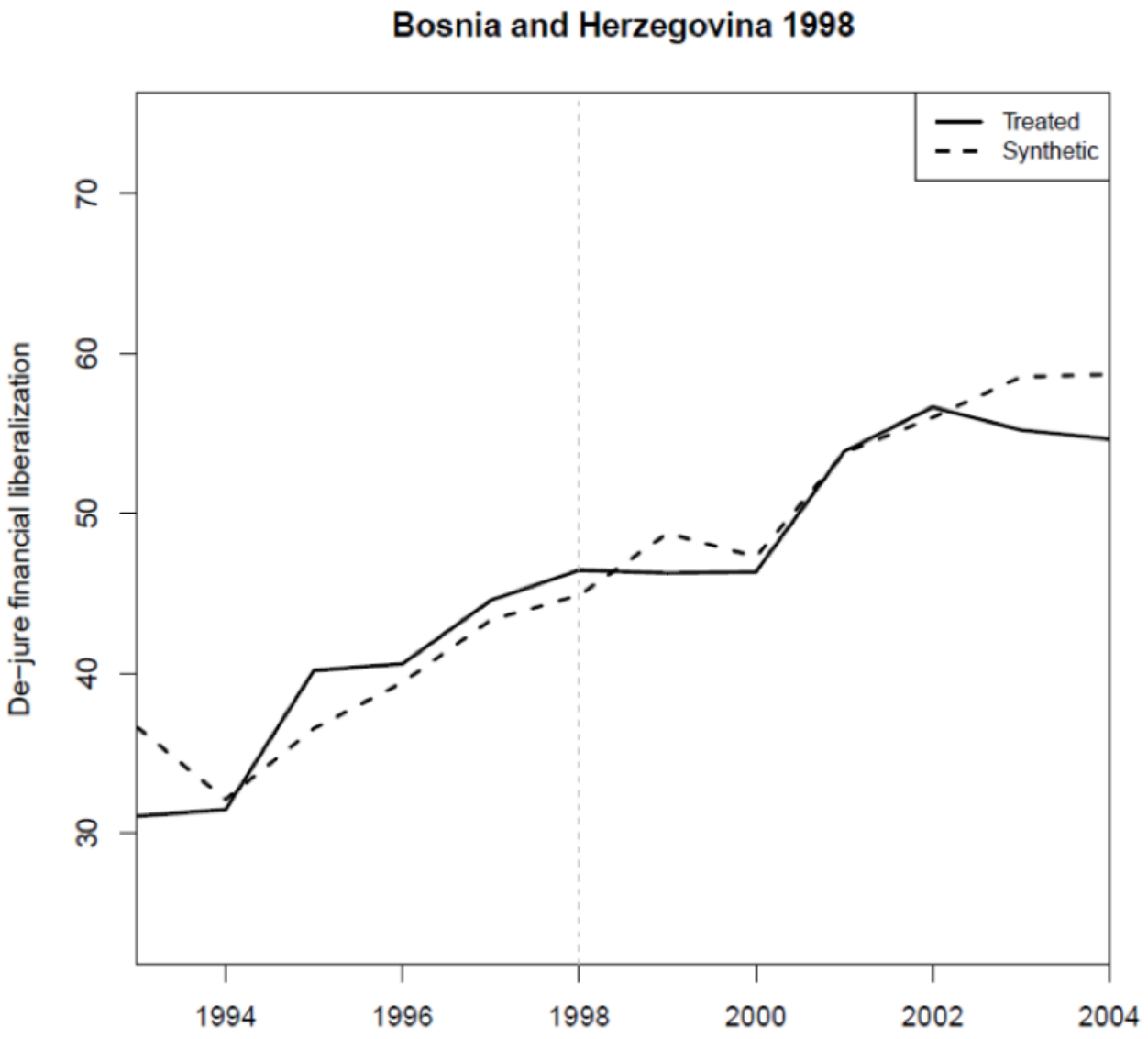


Figure 2: *De jure* financial globalization in actual and synthetic Bosnia and Herzegovina before and after the IMF intervention (1998)

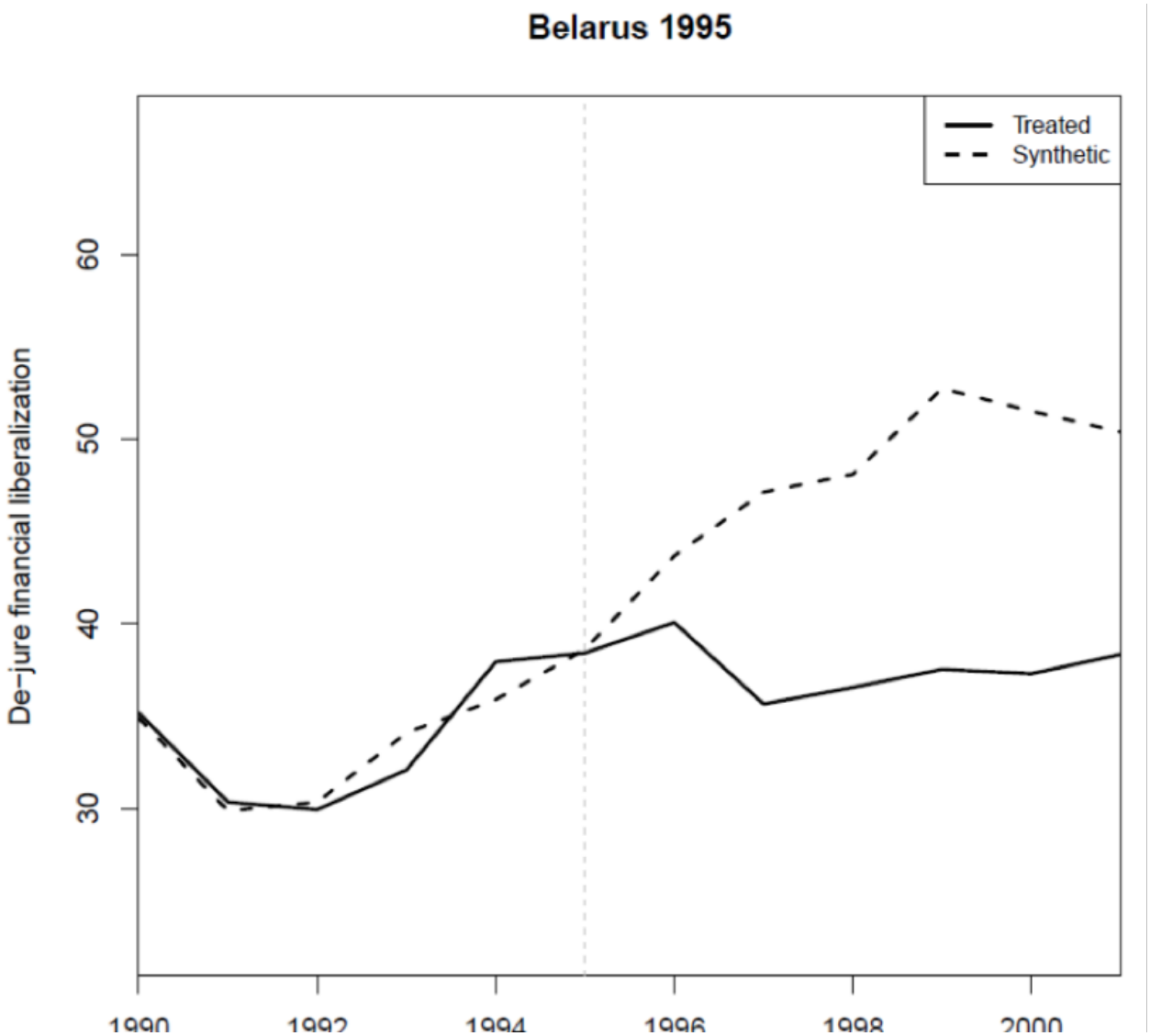


Figure 3: *De jure* financial globalization in actual and synthetic Belarus before and after the IMF intervention (1995)

globalization reforms against the number of conditions in the financial sector. Figure below consists of a simple histogram of the number of hard financial structural conditions in the treated sample S3 (1998-2014) while 5 below illustrates four scatterplots and binomial OLS regressions of $\widehat{\alpha}_{i,T_0+1}$, $\widehat{\alpha}_{i,T_0+2}$, $\widehat{\alpha}_{i,T_0+3}$, and $\widehat{\rho}_i$ on the number of conditions. Note that these are cross-sectional regressions with specific country-arrangements as the basic unit of analysis. With respect to our measure of end-of-year program ownership $(\widehat{\alpha}_{it}, t > T_0)$, our hypothesized negative relationship between conditionality and ownership is most evident at the end of the first year after program initiation, which is entirely plausible as one year is the modal scheduled duration of IMF arrangements. Moreover, we get the same positively sloped OLS regression line with respect to the relationship between the number of conditions and the ownership over the sequencing and timing of financial reforms $(\widehat{\rho}_i)$, as captured by the goodness-of-fit measure RMSPE. In conclusion, early evidence shows that program design does have a significant effect on the mediating variable of ownership and, by extension, on post-treatment outcomes such as compliance, *de facto* policy implementation, defaults, and serial IMF program initiation.

Robustness tests and general takeaways

The discussion of these cases shows that our measure of ownership passes the test of face validity as it shows low ownership in cases where this should be intuitively expected and high ownership where governments had incentives to implement conditions (for instance to consolidate statehood). We now proceed to check the stochastic properties of our measure. Presumably our synthetic control point estimates of the outcome variable are noisy and imprecise due to the effect of the choice of donor pool countries and predictors on the synthetic weights as we as the lack of perfect pre-treatment matching. Figure 6 below shows one attempt to estimate the confidence intervals around our synthetic control outcome estimates through a bootstrapping technique of repeated resampling of donor pool countries with replacement. We present the case of the Afghanistan IMF arrangement of 1998 where we bootstrap on a subsample (donor subpool) of 10 countries out of the S3 donor pool in order to find the precision of our point estimate of lagged first differences in *de jure* financial globalization during the pre- and the post- intervention periods. As the figure indicates, there is strong evidence of lack of ownership three years after the initiation of the program.

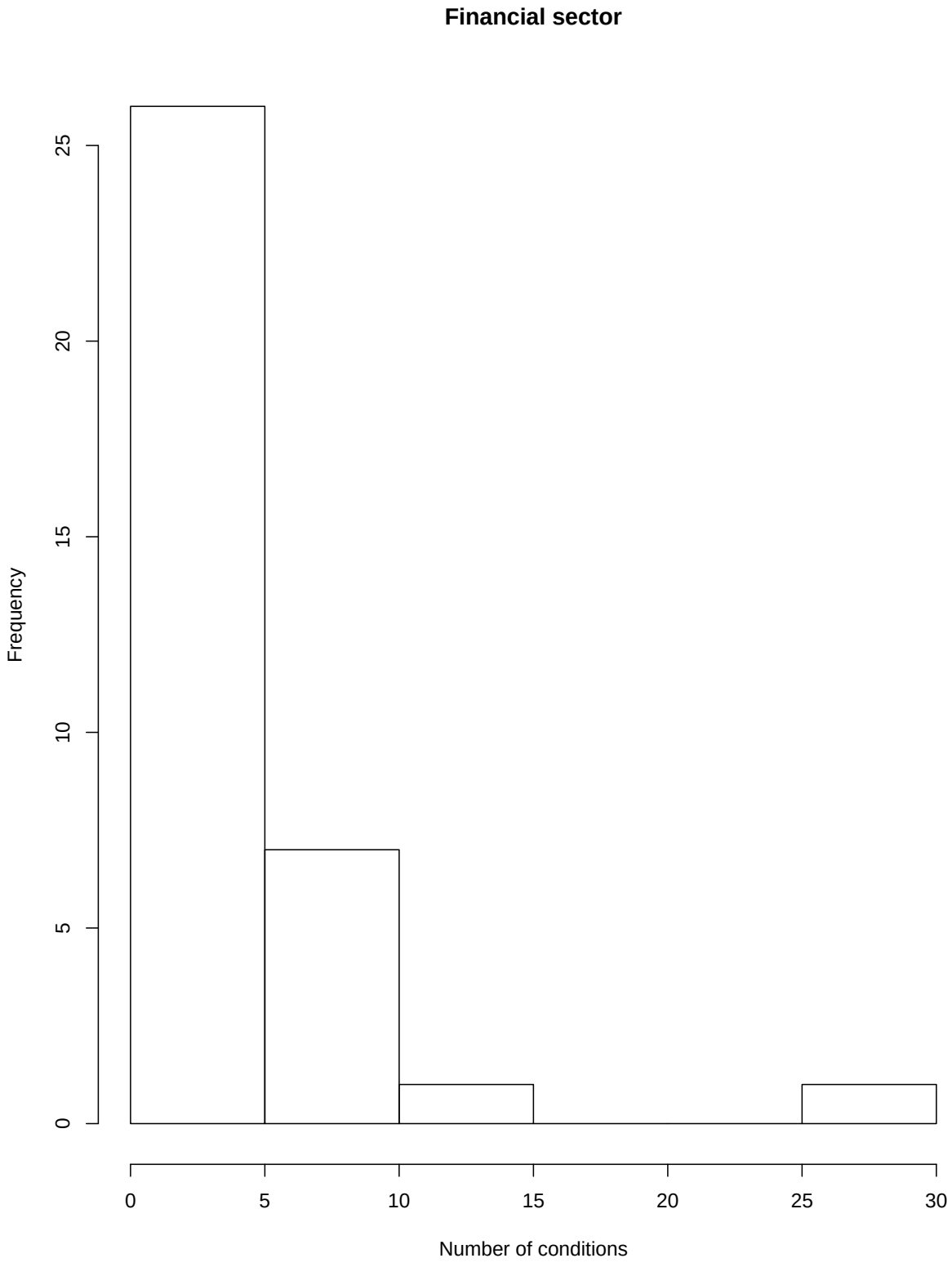


Figure 4: Number of hard structural condition in the financial sector (FIN) for all IMF arrangements in the treated sample S3 (1998-2014)

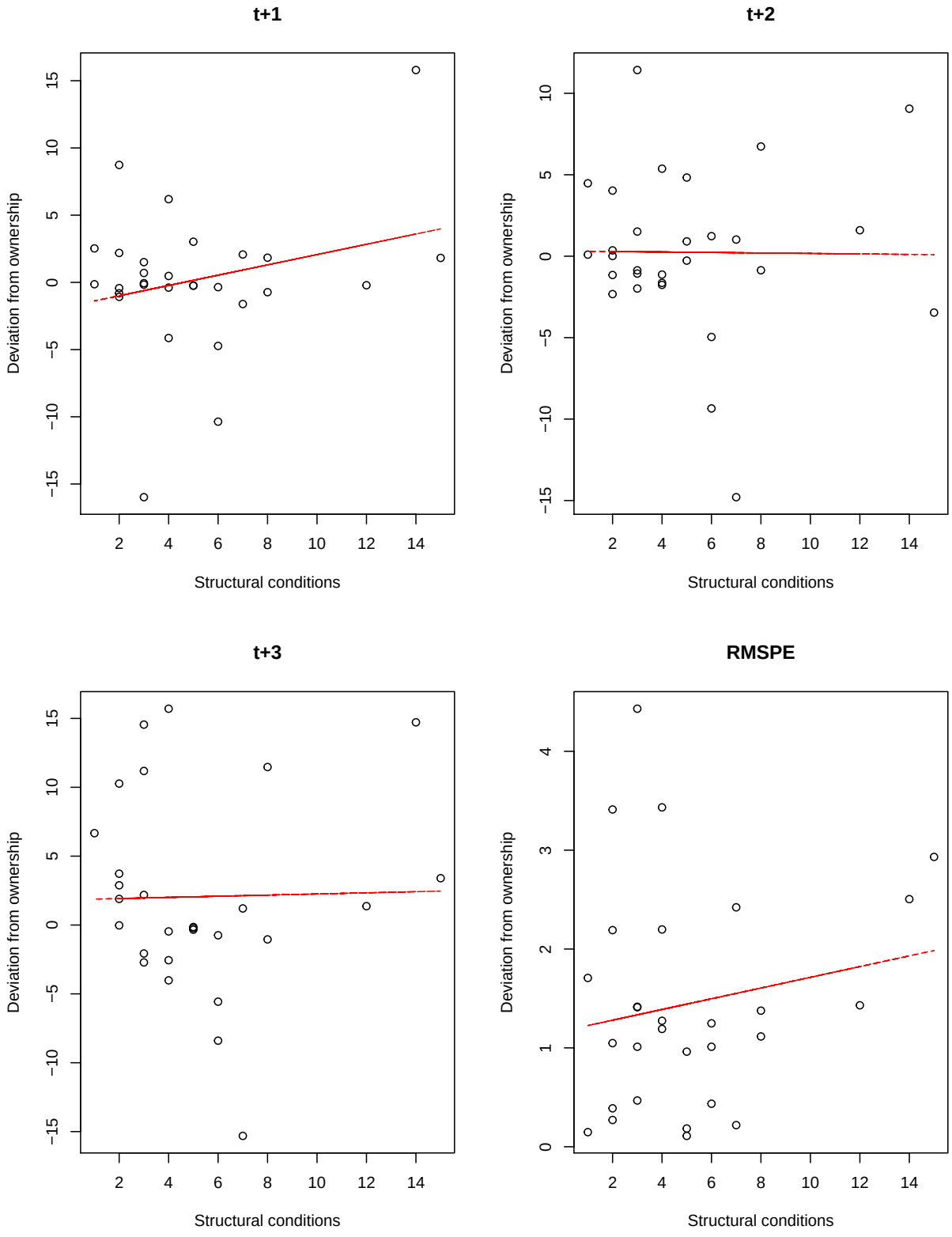


Figure 5: Scatterplots and binomial OLS fittings of program and timing measures of ownership over *de jure* financial globalization with respect to the number of hard structural IMF arrangement conditions in the financial sector (FIN)

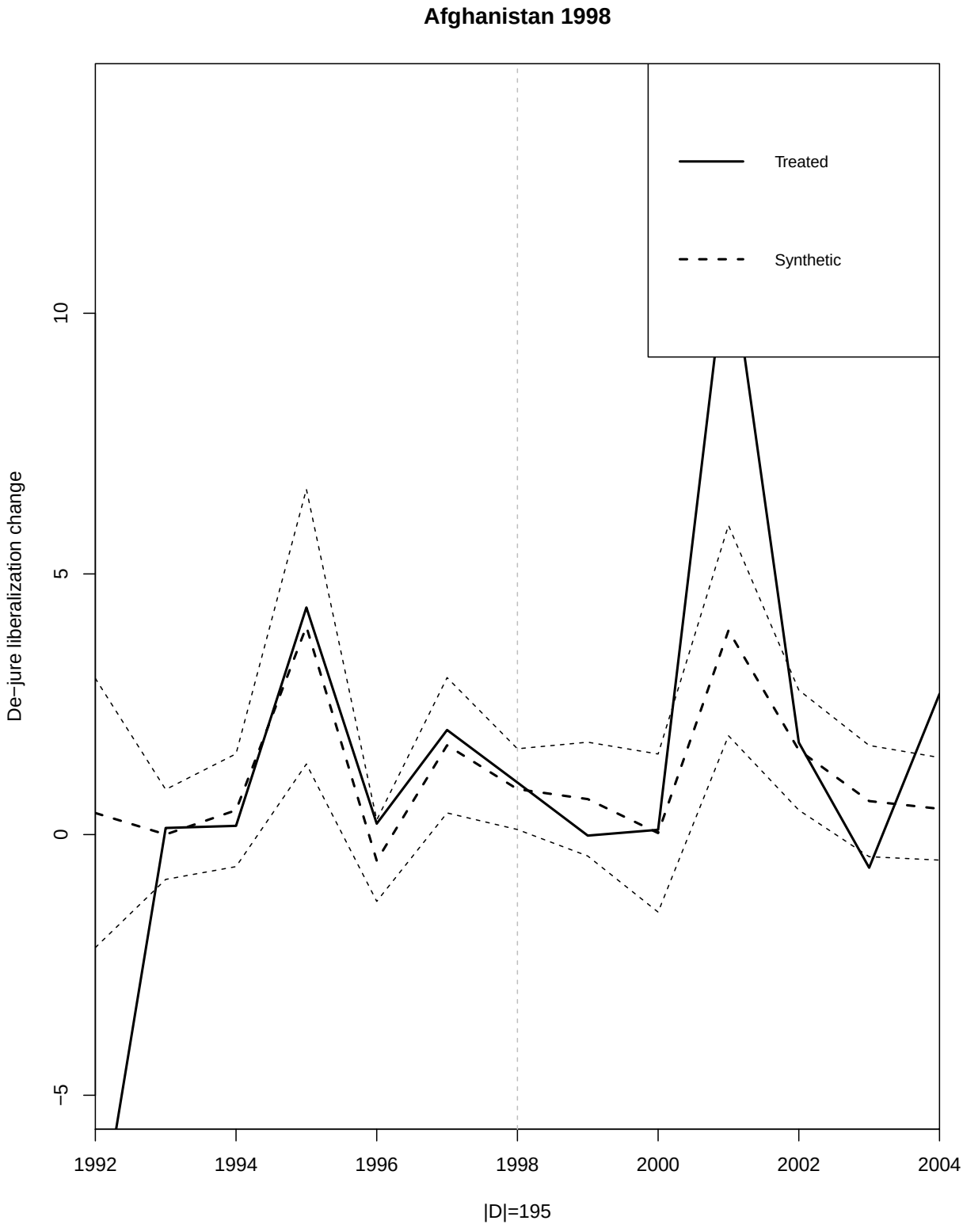


Figure 6: Confidence intervals over the point estimate of lagged first differences in *de jure* financial globalization in synthetic Afghanistan before and after the IMF intervention (1998)

4.4 Ownership of Eurozone bailouts

By way of another illustration, we now proceed to apply the synthetic control method (SCM) for causal inference in comparative case studies as developed in Abadie and Gardeazabal (2003) and Abadie, Diamond and Hainmueller (2010, 2015) to the cases of the Eurozone IMF-sponsored bailouts of the early to mid 2010s, namely Cyprus (2013-4), Greece (2010-5),[20] Ireland (2010-3), and Portugal (2011-4).

In this case, we focus on the lagged first difference (adjustment) in countries' primary fiscal balance (% GDP) as the outcome variable of interest. We choose to focus on this variable because much of the emphasis of these bailout packages – in terms of their scope of conditionality – was on fiscal consolidation. Moreover, the primary balance is a more accurate reflection of a government's spending and taxing policies and is less susceptible to exogenous random factors. The first difference more accurately captures the gradual and incremental nature of conditioned reforms subject to regular IMF Staff reviews. Finally, despite plentiful evidence of practices in "fiscal gimmickry" and "creative accounting" among some of these countries (Alt, Lassen and Wehner, 2014), primary balances are more easy to observe or measure from an accounting point of view. Yet, there remains substantial confounding heterogeneity, in terms of time-varying and country-specific unobservable factors (e.g., automatic stabilizers, country- or region- specific shocks, etc.). Unlike difference-in-difference and fixed-effect estimators, SCM can correct for the confounding effects of time-varying unobserved heterogeneity while estimating treatment effects on the treated unit throughout the post-intervention period. As such, it allows us to measure ownership as a dynamic concept that evolves throughout the duration of the IMF program (e.g., due to a change in government, sequencing effects, macroeconomic shocks, etc.).

If the IMF program was signed during the first half of the year, then we denote the previous year as the treatment year, which allows us to estimate treatment effects in the post-intervention period until the end of the program, i.e., years $T_{i0}+1,\ldots,T_i$. Otherwise, if the IMF program was signed during the second half of the year, then we denote that year as the treatment year. Our "donor pool" of countries used to construct the synthetic control unit consists of all OECD members excluding the treated units, namely Cyprus, Greece, Ireland, and Portugal, and some other "contaminated" units, such as Hungary, Iceland, Latvia, Lithuania, and

[20] Note that the period in parenthesis comprises two separate economic adjustment programs for Greece as a well as a sovereign-debt-restructuring agreement in 2012. The second bailout package officially ended on 30 June 2015 and the IMF chose not to officially participate in the third bailout agreement sponsored by the European Stability Mechanism (ESM).

Turkey, which experienced idiosyncratic shocks or IMF program treatments throughout the pre-treatment period, i.e., from 2001 until year T_{i0}.[21] OECD countries are meant to be similar enough in terms of macroeconomic outcomes and political variables that we expect our treated units to fall within the convex hull of control units which would allow for the derivation of a unique and sparse set of synthetic control weights (Abadie and Cattaneo, 2018). Finally, in terms of predictors, we use a number of economic variables, such as current account balance (% GDP), gross debt (% GDP), GDP per capita (log), GDP growth rates, trade and financial openness, and political variables, mean district magnitude, time until end of electoral term, the executive's ideological orientation, an index of political constraints, and fiscal transparency. Table A.1 in the appendix lists all the variables and data sources.

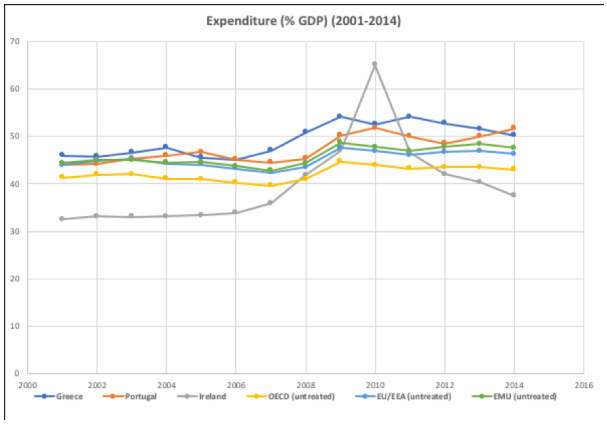
Figure 7 depicts fiscal outcomes throughout our sample period (2001-2014) for Greece, Portugal, and Ireland, and a simple average of OECD control units, EU/EEA control units, and EMU control units. Surprisingly, the graph shows that both Greece and Portuguese fiscal trends seem to parallel those in other countries although Greece seems more like an outlier in terms of expenditures in the 2000s and revenues in the early 2010s. Ireland, on the other hand, is an overall outlier in terms of expenditures and primary fiscal balance due to its financial crisis and hefty bank bailout. This speaks to the disparate nature of the structural imbalances of each of our treated countries. For both Greece and Portugal, it seemed to be more a fiscal nature, i.e., government spending, while for Ireland it mostly afflicted its banking sector.

Therefore, running a SCM analysis on each of our treated units allows us to find a better approximation of our treated units with respect to a weighted combination of control units. Figure 8 illustrates the distribution of such weights for each treated country (including Cyprus) so that the pre-intervention, i.e., pre-IMF-program, mean squared prediction error (MSPE) between actual and synthetic unit outcomes is minimized. Interesting enough, synthetic Greece puts a lot of weight on a couple of non-EU countries (Canada and the US) with which *prima facie* Greece has little in common. Moreover, note that Ireland seems to be best approximated by only one country, namely New Zealand at 100 %, which seems to imply that Ireland is a significant outlier as it lies outside of the convex hull of our control unit sample.

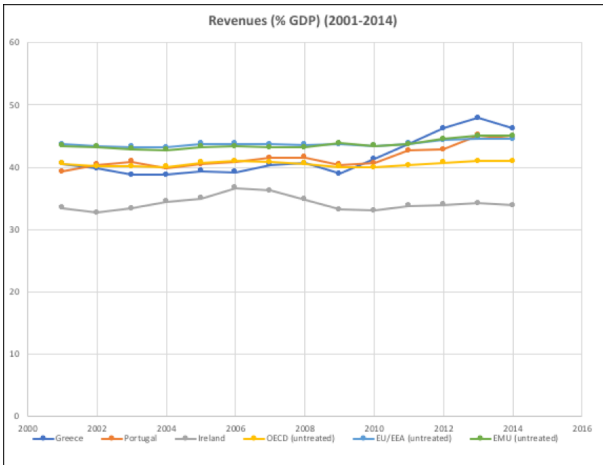
We now proceed to juxtapose pre- and post- treatment trends in the fiscal outcomes of our actual and synthetic units. In line with our conception of ownership as described above, we think of program ownership

[21] We also dropped South Korea from our donor pool sample due to missing data.

(a) Expenditures (% GDP)



(b) Revenues (% GDP)



(c) Primary fiscal balance (% GDP)

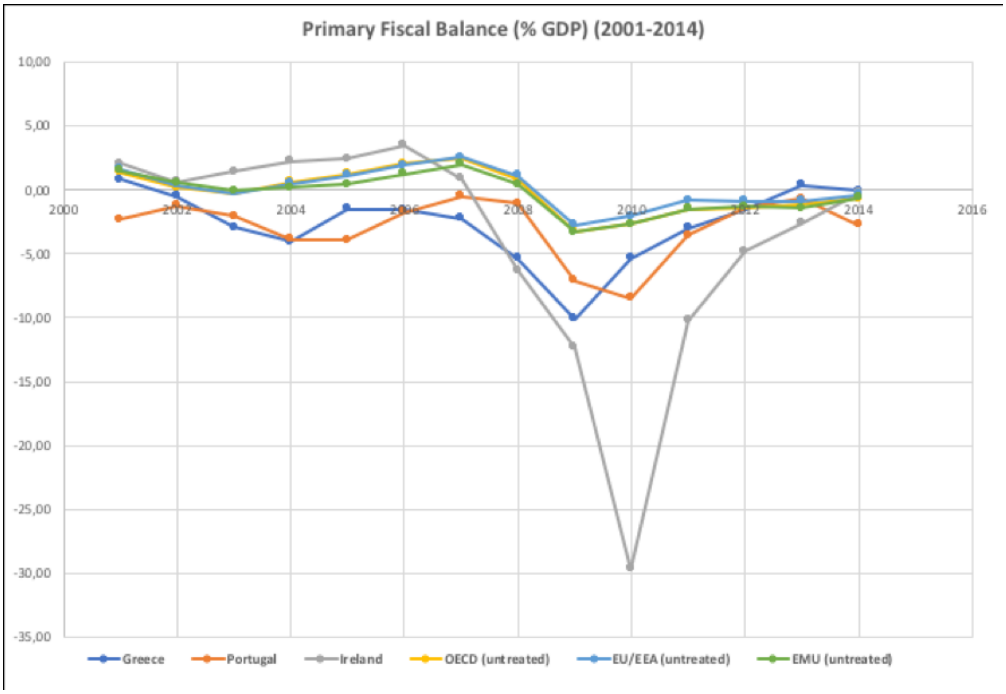


Figure 7: Fiscal outcome variables (expenditures, revenues, and primary balances) among OECD control units and treated units

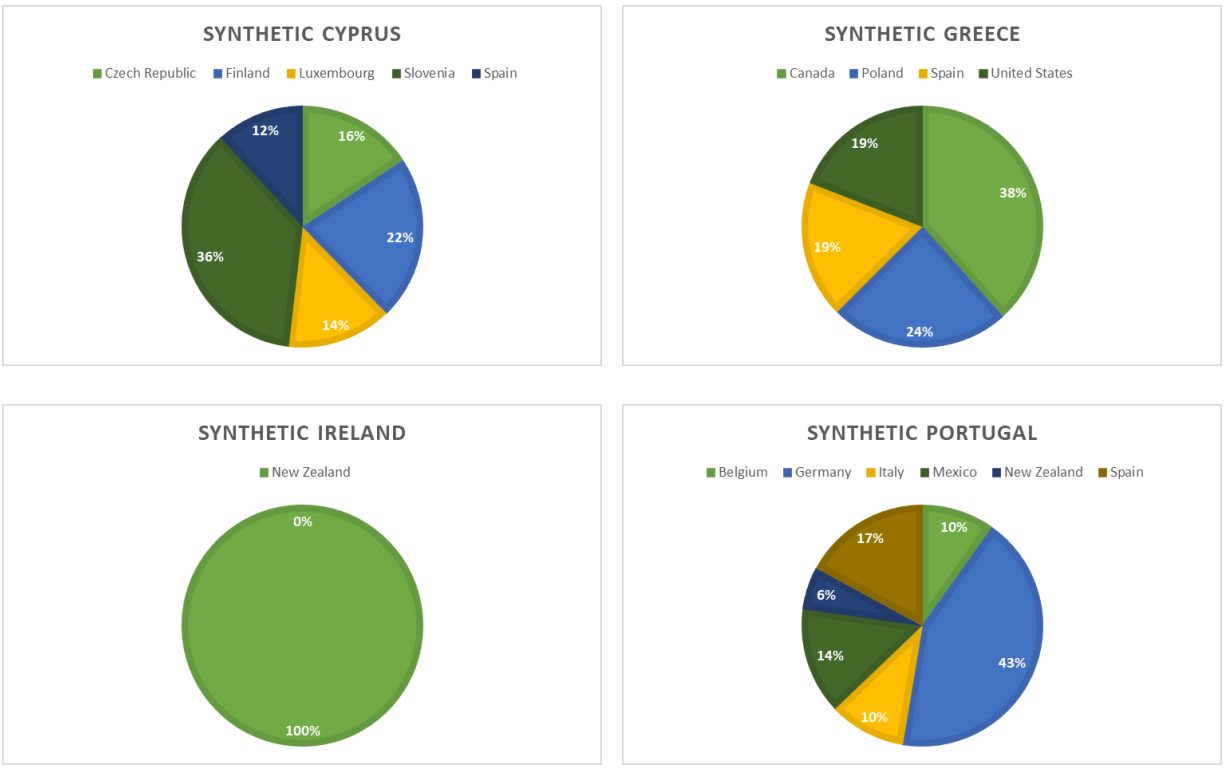


Figure 8: Relative weights of OECD control units on the synthetic (counterfactual) units of treated countries

as a negative function of the gaps and the fit between actual and synthetic post-intervention trends.

The following figures depict such trends in primary fiscal balance adjustment (% GDP) for Cyprus and Greece (Figure 9) and Ireland and Portugal (Figure 10). Naturally, we should expect a positive treatment effect and an overall high level of fiscal adjustment during the post-crisis period. Admittedly, in all four cases the pre-intervention fit between actual and synthetic unit trends is not great although in all four cases the root mean squared prediction error (RMSPE), a indirect measure of fit between the two lines, is greater in the post-intervention period compared to the pre-intervention period. Surprisingly, Greece has the lowest pre-intervention RMSPE (1.097) while Ireland has the highest (5.132), which constitutes further evidence that Ireland is a significant outlier in our sample.[22] Further analysis confirms the common wisdom that fiscal adjustment in Ireland during the Eurozone debt crisis took place mostly through expenditure cuts while the treatment effect of IMF fiscal conditionality on Greece and Portugal took the form of substantial increases in taxes and government revenues. According to Table 1 below, the overall IMF program effect in terms of net fiscal adjustment throughout the duration of the program (sum of gaps) was 5.440% in Cyprus, 5.075% in Greece, 22.871% in Ireland, and 2.844% in Portugal.

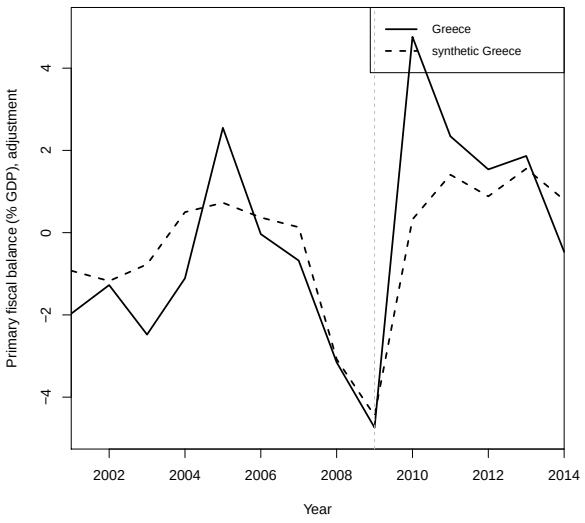
Moreover, in line with our hypothesis that conditionality undermines ownership, we should expect that the absolute post-treatment gap between actual and synthetic units should narrow as the number of conditions increases and that overall program ownership (measured as a negative function of the ratio between the post-intervention RMSPE and the pre-intervention RMSPE) correlate negatively with the number of fiscal policy conditions – both quantitative performance criteria (QPCs)[23] and the total number of fiscal condition – (as well as the relative size of the non-concessional loan) as stipulated in the Memoranda of Understanding. Surprisingly, we find the highest level of program ownership in Portugal (1.768) and then Greece (1.942) and the lowest in Cyprus (2.304) and then Ireland (2.146).

One of the benefits of SCM analysis is that it can demonstrate the dynamic evolution of the treatment effect throughout the post-intervention as captured by the absolute gaps between actual and synthetic units in each program year $T_{i0}+1,\ldots,T$. In line with our hypothesis, we find a highly positive correlation coefficient

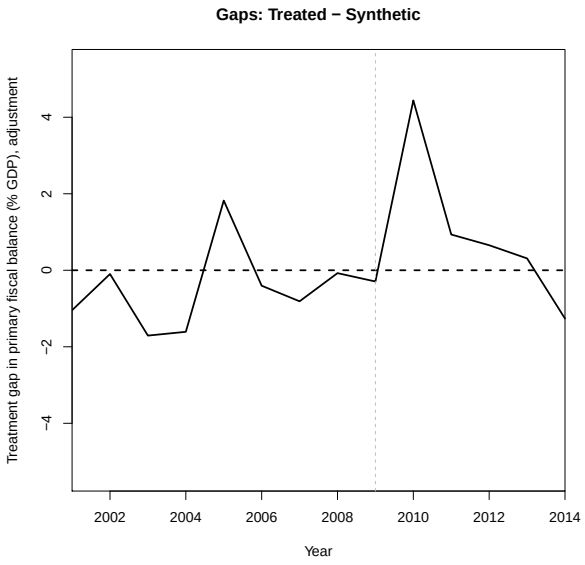
[22] In such cases, Abadie, Diamond and Hainmueller (2010, 2015) argue against the use of the SCM method for causal inference unless one applies a linear interpolation technique. The reason is that SCM will not work well for cases that lie outside of the convex hull of control units because the method constraints weights to lie between zero and one and looks for the optimal convex combination of such units.

[23] Arguably these are the types of conditions that best correspond to the outcome of primary fiscal balance adjustment.

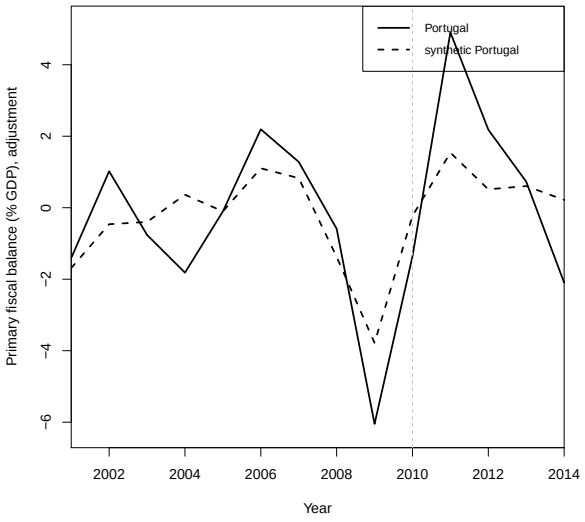
(a) Greece primary fiscal balance adjustment, levels



(b) Greece primary fiscal balance adjustment, gaps



(c) Portugal primary fiscal balance adjustment, levels



(d) Portugal primary fiscal balance adjustment, gaps

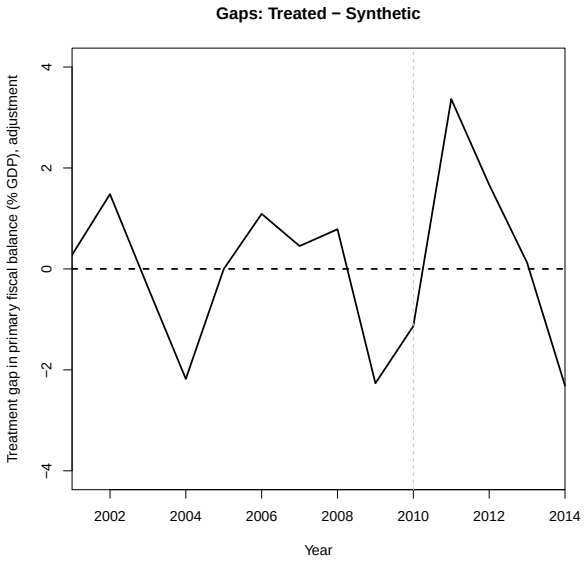
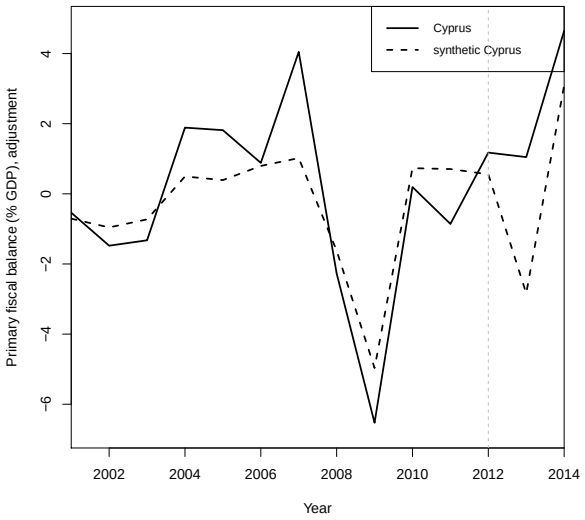
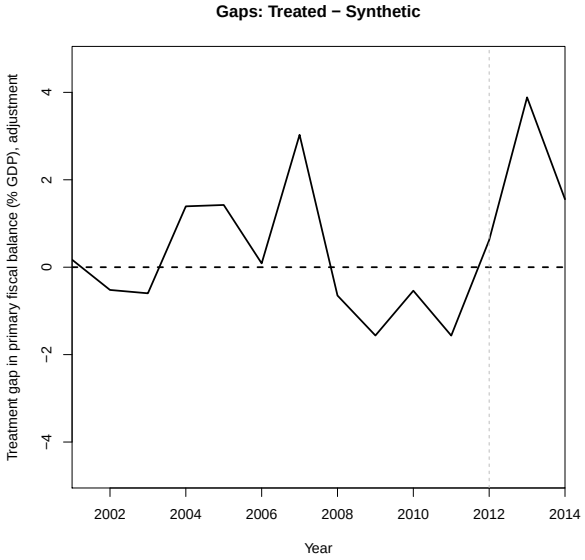


Figure 9: Primary fiscal balance adjustment (% GDP) and gaps between treated and synthetic units

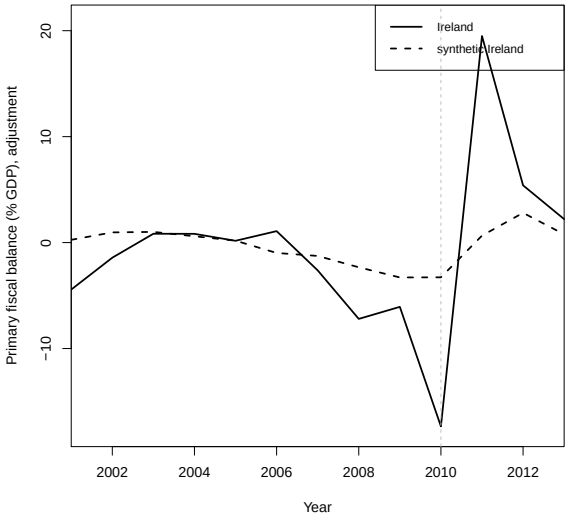
(a) Cyprus primary fiscal balance adjustment, levels



(b) Cyprus primary fiscal balance adjustment, gaps



(c) Ireland primary fiscal balance adjustment, levels



(d) Ireland primary fiscal balance adjustment, gaps

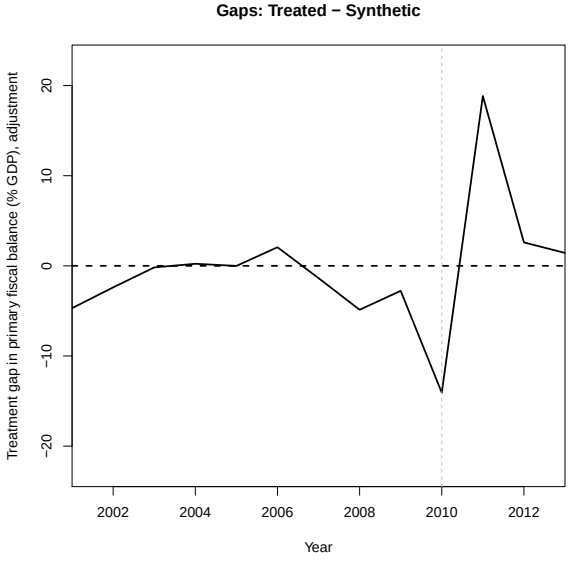


Figure 10: Primary fiscal balance adjustment (% GDP) and gaps between treated and synthetic units, continued

Treated units / program years	2010	2011	2012	2013	2014	Total period
Greece						
Actual	4.761	2.343	1.538	1.864	-0.466	
Synthetic	0.322	1.409	0.883	1.555	0.797	
Absolute gap	4.439	0.934	0.655	0.309	1.263	
Sum of gaps						5.075
Ownership (pre-/post- RMSPE)						1.942
Fiscal policy (FP) QPCs	8	8	8	0	0	
Total FP conditions	13	19	22	18	15	
Non-con loan/IMF quota	11.102	8.161	15.328	7.187	7.196	
Portugal						
Actual		4.904	2.183	0.729	-2.097	
Synthetic		1.540	0.515	0.605	0.217	
Absolute gap		3.365	1.669	0.124	2.314	
Sum of gaps						2.844
Ownership (pre-/post- RMSPE)						1.768
Fiscal policy (FP) QPCs		0	0	0	0	
Total FP conditions		13	12	11	3	
Non-con loan/IMF quota		7.843	7.754	7.677	0	
Cyprus						
Actual				1.047	4.647	
Synthetic				-2.838	3.093	
Absolute gap				3.885	1.555	
Sum of gaps						5.440
Ownership (pre-/post- RMSPE)						2.304
Fiscal policy (FP) QPCs				0	0	
Total FP conditions				14	17	
Non-con loan/IMF quota				1.875	1.877	
Ireland						
Actual		19.497	5.403	2.214		
Synthetic		0.656	2.807	0.780		
Absolute gap		18.841	2.596	1.434		
Sum of gaps						22.871
Ownership (pre-/post- RMSPE)						2.146
Fiscal policy (FP) QPCs	4	4	0	0		
Total FP conditions	2	7	6	4		
Non-con loan/IMF quota	8.026	5.265	5.206	0		

Table 1: Fiscal conditionality, non-concessional loans, and gaps between actual and synthetic units in terms of primary fiscal balance adjustment (% GDP) (notation: QPCs = Quantitative Performance Criteria, RMSPE = root mean squared prediction error)

between the number of fiscal policy QPCs and the yearly absolute gap for Greece and Ireland.[24] In other words, a loosening of conditions will tend to enhance reform ownership over time.

Our overall causal inference analysis of conditionality and ownership in the recent IMF economic adjustment programs of Eurozone countries using the SCM method has yielded mixed results. This could be due to two reasons: (i) Ireland and Cyprus experienced different types of structural imbalances primarily afflicting their banking sector. Therefore, their abrupt fiscal consolidation can be seen as a short-term aberration correcting for prior liquidity injections into the banking sector. (ii) By the same token, our outcome variable of primary fiscal balance adjustment is subject to large idiosyncratic and unobserved shocks and thus can be highly volatile. This hence would suggest that the choice of outcome variable and donor pool sample is crucial for the accurate estimation of post-intervention treatment effects (Abadie, Diamond and Hainmueller, 2015).

5 Conclusion and Extensions

Although IFI conditionality policies have been investigated to considerable extent and with unambiguous success, we still do not have convincing answers to certain questions pertaining to the different responses of otherwise similar targets. Accordingly, the proposed research investigates the potentially negative effects of conditionality policies on the intrinsic motivation of target countries to pursue reforms. To do so, it builds on cutting-edge insights from economics (contract theory and behavioral economics), political science (principal-agent models in international relations), cognitive psychology, and program evaluation.

The original idea that motivates this paper is that, contrary to a common assumption in the literature, the political-economic world does not always replicate the upward-sloping supply curves of neo-classical economic theory. Whereas a shoemaker with no intrinsic motivation to keep producing additional pairs of shoes may be convinced to do so if offered a higher price (upward-sloping supply curve), a country that recognizes the necessity of reforms may not always respond to external incentives in such a linear way. In the long run, extrinsic incentives will crowd out its intrinsic motivation for reform, thereby producing a counter-productive effect. In other words, we focus on the informational content of conditionality packages as

[24] The coefficient cannot be defined for Cyprus and Portugal because neither of them had any fiscal policy QPCs in their IMF arrangements.

extrinsic incentive schemes and seek to explain variation in the adjustment trajectories of target countries. I show how conditional bailout contracts, such as the design of recent Troika-sponsored economic adjustment programs in the Eurozone, are affected by the interplay of intrinsic and extrinsic incentives for reform, the observability of reforms at different stages of implementation, and the possibility for hidden action and moral hazard.

Future work will extend the analysis of conditionality contracts to multiple tasks, multidimensional reform packages (e.g., fiscal adjustment measures and structural reforms), and differential monitoring costs. This is a timely research project in light of ongoing policy debates on fiscal rules and austerity, conditionality, and institutional design in response to the Eurozone crisis. The previous experience with conditionality programs run by the IMF and the EU is well suited to bear upon ongoing debates on the institutional response to the European debt crisis and the overall design of the EMU. The recent political turmoil and economic stagnation experienced by countries hit by austerity and recession in the European periphery make this project all the more pertinent and topical.

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Appendix

Variable name	Variable description	Data source
IMFnn	IMF program active at any point in the year	IMF Monitor (Kentikelenis, Stubbs and King, 2016)
loanNon	IMF non-concessional loan amount (2014 million SDR)	IMF Monitor (Kentikelenis, Stubbs and King, 2016)
BA1FP	Total number of fiscal policy conditions	IMF Monitor (Kentikelenis, Stubbs and King, 2016)
QCsFP	Total number of fiscal policy quantitative conditions	IMF Monitor (Kentikelenis, Stubbs and King, 2016)
Primarynetlendingborrowinga	Primary net lending/borrowing (also referred as primary balance) (% of GDP)	IMF Fiscal Monitor (International Monetary Fund, 2019*c*)
ExpenditureofGDP	Expenditure (% of GDP)	IMF Fiscal Monitor (International Monetary Fund, 2019*c*)
RevenueofGDP	Revenue (% of GDP)	IMF Fiscal Monitor (International Monetary Fund, 2019*c*)
CurrentAccountGDP	Current account balance (% GDP)	Global debt database (Mbaye, Moreno-Badia and Chae, 2018)
GrossdebtofGDP	Gross debt (% of GDP)	IMF Fiscal Monitor (International Monetary Fund, 2019*c*)
lngdppc	GDP per capita (log)	World Development Indicators (The World Bank, 2019)
gdppcgrowthWDI	GDP per capita growth	World Development Indicators (The World Bank, 2019)
KOFTrGIdf	Trade globalization, *de facto*	KOF Globalization Index (Gygli et al., 2019)
KOFFiGIdf	Financial globalization, *de facto*	KOF Globalization Index (Gygli et al., 2019)
mdmh	Mean district magnitude, House	Database of Political Institutions 2017 (Cruz, Keefer and Scartascini, 2018)
yrcurnt	Years left in current term	Database of Political Institutions 2017 (Cruz, Keefer and Scartascini, 2018)
execrlc	Party orientation with respect to economic policy	Database of Political Institutions 2017 (Cruz, Keefer and Scartascini, 2018)
hpolcon3	Political constraints index	The Political Constraint Index (POLCON) Dataset (Henisz, 2002)
GFSIndexScore	GFS fiscal transparency index	Coverage of Fiscal Reporting (COFR) dataset (International Monetary Fund, 2019*a*)

Table A.1: Variable code names, variable description, and data sources