Government Ownership of IFI Conditionality Programs: A Formal Derivation*

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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. While the concept of ownership has featured highly in recent academic and policy debates over the effects of IFI conditionality, it still remains elusive, ill-identified, and under-specified. In this paper, we first define ownership over the content and timing of actual reforms with respect to the counterfactual level of *de jure* liberalization that would be achieved in the absence of IFI conditionality. We then use the synthetic control method (SCM) to identify continuous levels of ownership—or the deviation therefrom—as a function of a treatment effect on the treated (TET) and operationalize the concept of ownership across a sample of IMF arrangements (1980-2014) with respect to external-sector conditionality. Furthermore, we probe the face validity of our measure against the case of IMF involvement in Indonesia (1997-2003) and its construct validity with respect to the known determinants and effects of ownership. We

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argue that ours is the first reliable, replicable, valid, robust, and systematic measure of ownership that can help fully identify and estimate the indirect relationship between program design and implementation.

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

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 program)

> *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)

Ownership is one of those buzzwords that features most prominently in the policy jargon surrounding the conditionality programs of international organizations (IOs) and international financial institutions (IFIs), such as the International Monetary Fund (IMF), the World Bank (WB), and the European Union (EU), and yet remains theoretically elusive and empirically ill-identified as a concept. Purportedly, the enhancement of program ownership and country creditworthiness are the main objectives of IO conditionality programs; in the case of the IMF, such goals were given further prominence[1] following the structural overhaul and streamlining of the Fund's conditionality

[1] "When a country borrows from the IMF, its government agrees to adjust its economic policies to overcome the problems that led it to seek financial aid. These policy adjustments are conditions for IMF loans and serve to ensure that the country will be able to repay the IMF. This system of conditionality is designed to promote national ownership of strong and effective policies" (IMF, 2019).

policies in 2009 (IMF, 2009). Related concerns of moral hazard have characterized the politics of the Eurozone debt crisis and more recently the COVID-19 European Recovery Fund (Copelovitch et al., 2016; Frieden and Walter, 2017).

Perhaps, no other program better highlights the inherent contradiction between the notions of conditionality, ownership, and trust in the context of international bailouts than the Third Economic Adjustment Program for Greece sponsored by the European Stability Mechanism (ESM) (but notably not the IMF). After a prolonged and tumultuous period of brinkmanship negotiations with the Troika triumvirate—consisting of the European Commission (EC), the European Central Bank (ECB), and the IMF—the Greek left-wing government of SYRIZA that was initially trying to deliver on its promise of austerity reversal was eventually strong-armed into signing a front-loaded and austerity-laden third bailout program in July 2015.[2] Greek Prime Minister Alexis Tsipras, who first came onto the scene as a populist firebrand, later assumed full responsibility for signing a text he did not believe in but was obliged to implement.[3] 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 that unfolded during the early part of 2015, trust in the incumbent's willingness to comply with an ambitious program of macroeconomic stabilization and structural reforms was at an all-time low in the relationship between Greece and its creditors; and yet, how could the Greek government have attempted to rebuild trust in the context of a liquidity-

[2]The last installment 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).

[3]More specifically, his quote from an interview to The Guardian (2015) on July 14—i.e., a couple of days after the signing of the bailout agreement—reads as follows: "I am fully assuming my responsibilities, for mistakes and for oversights, and for the responsibility of signing a text that I do not believe in, but that I am obliged to implement."

dripping cash-for-reforms program whose harsh conditionality terms barely left it any room to credibly signal that it was willing to reassert itself as a reliable and trustworthy partner?

In effect, the two quotes presented in the preamble with reference to the third Greek bailout beg an interesting question with respect to the relationship between official creditors and debtors, and the corresponding political economy of reforms: To what extent are the concepts of conditionality, trust, and ownership mutually compatible in the context of IFI arrangements? Over the past couple of decades, there has been a lot of thinking on the optimal design of the content and scope of conditionality by scholars and practitioners, namely in terms of fine-tuning the mix of reforms (Rodrik, 2006), maximizing the probability of successful implementation of such programs (Ivanova et al., 2001; Ivanova, 2006), tailoring them to local conditions and local knowledge (Marchesi et al., 2009), screening between good and bad debtors (Marchesi and Thomas, 1999), and enhancing the degree of government (or country) ownership of the programs themselves (Drazen, 2002; Drazen and Isard, 2004). As a result, IFIs such as the IMF and the WB have 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, and the electoral cycle (Alesina et al., 2020; Rickard and Caraway, 2014). According to a 2005 World Bank report, "the experience [of the 1990s] showed that government discretion cannot be bypassed" (World Bank, 2005, 14).

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 program is achievable and is in the country's own interest" (IMF, 2001, 6). Accordingly, trust in this context (or the lack thereof) refers to a set of beliefs among IFI officials and donor states about the target government's willingness and/or ability to comply, reform, and repay its loans, i.e., about whether the latter genuinely feels invested in the program and truly regards the required reforms as conducive to the country's recovery. While these supranational institutions have shifted their emphasis onto questions of ownership and trust, at the same

time they have continued to introduce hard conditions and contractual obligations in their formal arrangements with target countries. This then gives rise to the following conundrum: If it is in a country's best interest to undertake a certain program in question, then loan disbursements or funds needn't become explicitly conditional on a required (and avowedly desired) set of reforms (Drazen, 2002). Arguably, therefore, 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 creditworthiness in international capital markets to be regained.

In that sense, IFI program design seems to remain very much in line with the official view that there should be no conflict of interest between the IFI 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, 235). If those assumptions held water, conditionality and ownership should be viewed as complements as borrowers would be more apt to gain ownership of conditions that make payback more likely and continued lending more readily available. Yet, the fact that official documents keep making ample references to issues 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 a case of a sponsoring IFI and and an ideologically opposed government negotiating over a macroeconomic stabilization program for the sake of preventing regional contagion, then it would less about "trust" and more about "good will".

In this paper, we seek to address this apparent conundrum and advance the related academic and policy debates by (i) presenting the first systematic attempt at measuring and operationalizing the concept of ownership and (ii) validating that measure against the relationship between

conditionality, ownership, and implementation outcomes. The jury is still out on the relationship between program design, ownership, and program implementation as the concept of ownership and the manner in which it mediates between domestic/systemic causes and effects remain 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 IFI contractual arrangement (Drazen, 2002; Bird and Willett, 2004). Based on this counterfactual conceptualization of ownership, we use tools of causal inference—viz., the synthetic control method—to systematically measure (deviation from) ownership as a function of a treatment effect on countries subject to hard conditionality consisting of an observable and verifiable set of reforms in a specific sector. This approach allows us to conceptualize, operationalize, and measure ownership as a latent "bridge" variable that mediates between IFI program design and implementation. Note that, in this regard, ownership can only be defined in the context of an external contractual arrangement; in the absence of external policy constraints, the level of ownership of some domestic reform program becomes tautological and essentially vacuous. In other words, ownership is not an exogenous concept but one that arises endogenously within the contractual relationship of a supranational IFI (principal) and a borrowing country or government (agent).

... We contribute to social-scientific literature in several ways. First, we extend a preliminary theoretical literature on ownership in International Relations, Political Economy, and Development Studies. While ownership is an important concept in this literature, it remained elusive, ill-identified, and under-specified. We use the Synthetic Control Method to develop a systematic, valid, reliable, and replicable measure of ownership. Second, we develop this measure in the context of IMF program lending, but the approach generalizes to other settings of conditional lending, for instance in the World Bank, the European Union, and other regional organizations. The approach is also applicable to negotiations between central states and sub-state jurisdictions in federal systems. Third, we extend a methodological literature on the Synthetic Control Method,

suggesting an adaptation of the donor pool to improve pre-treatment covariate balance. We also develop a simple method for calculating standard errors for the path of the synthetic control unit, adding to recent literature on SCM inference Xu (2017); Firpo and Possebom (2018); Li (2017).

In what follows, we start by discussing the role of ownership within the broader research design of the literature on the political economy of IFI lending and then conceptualizing it as a latent mediating variable. Subsequently, we provide a systematic identification and measurement of the concept of ownership by applying the synthetic control method (Abadie et al., 2010, 2015; Abadie and Gardeazabal, 2003) and illustrate its face validity against an in-depth case-study analysis of the well-known IMF arrangements in Indonesia (1997-2003).[4] In the following section, we operationalize our measure of ownership over the entire sample of IMF arrangements from 1980 to 2014, using external-sector conditions as our treatment, and gauge its reliability by deriving bootstrapped standard errors. Finally, we assess the construct validity of our measure through simple bivariate regressions with known predictors and outcomes of ownership (or the lack thereof).

2 The role of ownership in conditional lending programs

There is a very extensive literature on the political economy of IFI conditional lending studying both the determinants and effects of program design. Since the 1970s, numerous international organizations, most notably the IMF, the WB, and the EU, have operated conditionality policies; the attractiveness of conditionality as a tool to gain leverage over target countries' political and economic reforms (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 accession (or association) conditionality programs for ap-

[4]See Online Appendix B for an extended discussion of the 1998 IMF arrangement in Bosnia and Herzegovina.

plicant countries (or countries targeted by the European Neighborhood Policy) (Konstantinidis and Karagiannis, 2020; Schimmelfennig and Sedelmeier, 2005) as well as, more recently, conditional bailouts for Eurozone member states (Bechtel et al., 2017).

IFI conditionality refers to a set of conditions attached to the granting of financial assistance in the form of a (concessional or non-concessional) loans in pursuit of goals deemed desirable by the IFI 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 more general terms, we view the design of IFI conditionality arrangements through the contract-theoretic lens of extrinsic incentive schemes (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. Therefore, in contractual terms, program design comprises the total size of the loan and the number of loan tranches, the scope and sectoral coverage of conditionality, the number of conditions, the enforceability of conditions (hard vs. soft), the depth of reforms, and the timing of program reviews.

Figure 1 below illustrates the broader research design of this literature and distinguishes between the various links discussed in this body of work: (i) A large number of papers have sought to explain the design of conditionality *per se* by studying the effects of *systemic* factors, such as major donor countries' geopolitical interests (Dreher et al., 2015; Kang, 2007; Stone, 2008), preference heterogeneity among donor states (Copelovitch, 2010b), and financial interests (Gould, 2003) as well as *domestic* factors, such as the electoral cycle (Rickard and Caraway, 2014), citizens' economic interests (Caraway et al., 2012), and the incumbent's ideological orientation (Nelson, 2014). While some works deal with the preliminary question of whether financial assistance will be granted or conditionality imposed in the first place, others have shown that the design of condi-

tionality programs themselves obeys a geopolitical logic as much as an economic or developmental one (Vreeland, 2007; Copelovitch, 2010a).

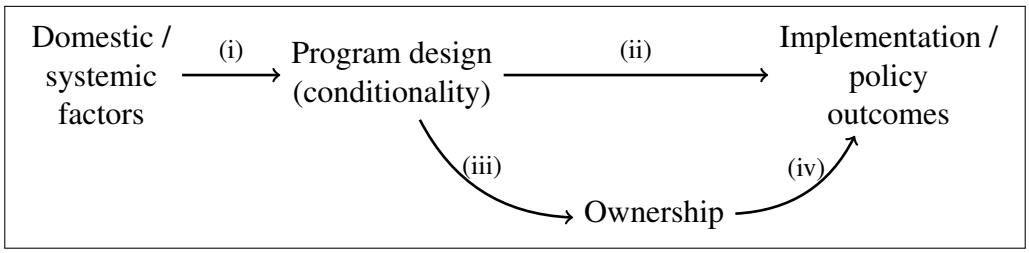


Figure 1: A graphical illustration of the broader research design of the literature on the political economy of IFI lending and conditionality.

Link (ii) in Figure 1 captures the direct effects of program design. One strand of the literature has focused on the explanation of program implementation outcomes, conceptualizing the designing organization as the principal and the target country as its agent. The granting of conditionality may lead to either high levels of compliance or high rates of shirking, target slippage, and re-negotiation. By and large, the related IMF literature depicts a predominantly pessimistic story according to which conditions are usually not met (Killick, 1997; Vreeland, 2006). Among some of the reasons why this failure might occur one finds the role of powerful countries such as the US that render the threats of conditionality less credible in support of their developing-country allies (Stone, 2008; Thacker, 1999). Alternatively, failure may be due to the inherent tension engendered by conditionality policies in terms of the asymmetric burden of risks, the short-term economic and political costs associated with stabilization and structural reforms, and the high monitoring and enforcement costs (Martin, 2006).

Another strand of the literature has sought to assess the normative properties of conditionality programs in terms of their direct effects on political, socioeconomic, and developmental outcomes. Some, for example, have argued that IMF conditionality undermines domestic democratic institutions and bureaucratic capacity (Reinsberg et al., 2019), sets unattainable standards of austerity, hampers economic development and social justice, and leads to poverty especially among those already poor (Stiglitz, 2004; Vreeland, 2007). Others have found that, controlling for selection ef-

fects, IMF programs have more successful growth performance among *long*-term users than among *short*-term users (Bas and Stone, 2014). Furthermore, quantitative work has shown that IMF conditions may also actually reduce foreign direct investment in target countries (Jensen, 2004).

On the other hand, links (iii) and (iv) in Figure 1 illustrate the indirect effects of program design on outcomes via the mediating factor of ownership (Chaudoin et al., 2015). As discussed above, the contentious experience of the financial crises and corresponding programs of the 1990s sparked a burgeoning theoretical paradigm on the relationship between IFI conditionality and ownership, primarily predicated on political economy models of special interests, common agency, and heterogeneity in actor preferences (Mayer and Mourmouras, 2004; Paloni and Zanardi, 2006; Mayer and Mourmouras, 2008). Most of these papers start with the premise that all conditionality policies (including the most successful ones) are conditional on domestic politics (domestic political costs of reform and/or number of veto players), administrative capabilities, and timing effects, and concur that under certain circumstances conditionality may enhance the government's or the lending IFI's bargaining leverage vis-à-vis recalcitrant special interests opposing specific adjustment measures and structural reforms.[5] In other words, IFI conditionality arrangements are negotiated by reform-minded governments and domestic leaders in order to overcome the opposition of domestic special interests and thus mitigate the short-term political cost of reforms (Mayer and Mourmouras, 2008; Vreeland, 1999).

On the whole, there have been several approaches to theorizing the relationship between conditionality and ownership:[6] *Preference*-based models emphasize the heterogeneity of interests between the IFI and the target government, commitment and time-inconsistency problems (Diwan and Rodrik, 1992), moral hazard (Svensson, 2000), partisanship and ideology (Beazer and Woo,

[5]Scholars in this literature often make the distinction between country and government ownership, thereby 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.

[6]See Dreher (2009) for an excellent review of this literature.

2016), and domestic political constraints and resistance by vested interests (Drazen, 2002; Mayer and Mourmouras, 2004). According to this line of argument, the need for conditionality is highest when there are stark discrepancies between the objectives of creditors and debtors either due to the borrowing government's ideological bias or due to strong domestic political constraints and resistance by "vested interests" (Paloni and Zanardi, 2006; Mayer and Mourmouras, 2008). In other words, creditors mete out conditional financial assistance in order to impose certain policy reforms against the will of the government. 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 reform-minded governments neutralize the power of domestic veto players by *scapegoating* (or deflecting 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 fiscal capacity to implement certain reforms (Drazen and Isard, 2004). The key question then becomes how the technical design of conditionality can enhance state capacity, program effectiveness, and policy learning.[7] Finally, *informational* approaches show how IFI program design may affect the debtor's intrinsic belief in the effectiveness of the program and the necessity for reforms. Accordingly, these asymmetric-information models find that making financial assistance conditional on the implementation of certain reforms may end up undermining the target government's political ownership of such a policy package and hence its long-term effectiveness and sustainability (Konstantinidis and Karagiannis, 2020). The argument is essentially that if financial assistance keeps flowing in with strings attached, the agent will eventually infer that either the required task is tougher than expected or that the (s)he is less capable of completing it than originally thought (crowding-out effect) (Bénabou and Tirole, 2003). In that sense, conditionality and ownership can be viewed as substitutes, not complements.

While strand (iii) of the literature does not effectively focus on why some conditionality pro-

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

grams work better than others (Killick, 1997; Barro and Lee, 2005), existing work on link (iv) between ownership and program implementation remains rather scant (Bird and Willett, 2004). Experimental evidence by Dal Bó et al. (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 targets of *de jure* liberalization have been met.

So, on the one hand, strand (ii) of the literature on the political economy of IFI lending, which focuses on the *direct* effects of program design on policy/implementation outcomes, underidentifies the relationship and hence suffers from omitted variable bias—even after controlling for selection effects. On the other hand, strands (iii) and (iv) on the *indirect* effects mostly consist of theoretical work (with interesting normative implications) since up to now the concept of program ownership, an inherently unobservable latent variable, has not been empirically operationalized in a consistent and reliable manner. Therefore, this indirect channel of causality has yet to be properly identified or subjected to rigorous empirical testing. The goal of this paper is to help address this gap in the literature.

3 Conceptualizing and identifying ownership through the synthetic control method

In what follows, we seek to conceptualize and identify ownership of external (IO-sponsored) conditionality programs attached to particular lending facilities and viewed as "second-order" extrinsic incentive schemes (Dixit, 2000) and incomplete contracts (Hart and Holmström, 1987) whose design accounts for potential preference heterogeneities and informational asymmetries between creditors and debtors. Accordingly, we adhere to a counterfactual and continuous conceptualization of 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 [IO] involvement" (Khan and Sharma, 2003, 235). This definition allows us to identify an ideal upper bound on the degree of program ownership by assuming perfect alignment between the *actual* level of *de jure* reforms and the *counterfactual* reform trajectory, where the latter is predicted by a given set of underlying domestic and systemic factors.

3.1 Formal derivation

By way of formalization, we assume that country i's sector-specific level of adjustment $r_{it}^{j} \in \mathbb{R}$ in period t through the enactment of *de jure* reforms in policy area j by the incumbent may be modeled along a unidimensional scale, where higher values correspond to more pro-globalization adjustment measures. Let $R_{it} = \left[r_{it}^{j}\right]_{j=1}^{J}$ denote the economy-wide reform package implemented in period t across the full range of policy areas J. An initial IO-sponsored loan program $P_{iT}\left(L_{iT};C_{iT}\right)$ of time-length T for country i—as outlined in an official letter of intent (LoI) and expounded in a memorandum of understanding (MoU)—comes into force, i.e., $e_{i0} = 1$ at time $t = 0$ subject to the agreement of both parties (e.g., the IMF and the target government). It normally comprises a pre-specified schedule of financial loan tranches and future repayments (possibly including a "grace period") $L_{iT} = (l_{i0}, l_{i1}, \ldots, l_{iT})$ and a conditional structural adjustment program C_{iT}, where $C_{iT} = \left[c_i^j\right]$ is a $1 \times J$ conditionality vector that captures whether at least one *hard*[8] *de jure* policy condition $c_i^j \in \{0,1\}$ applies in each policy area $j \in J$ throughout the duration of the arrangement T.[9]

[8] *Hard* conditions are those whose implementation is a prerequisite for the successful completion of a program review and the disbursement of funds. In the case of the IMF, those include prior actions that a country agrees to enact before the IO approves financing, quantitative performance criteria, and structural performance criteria.

[9] Formally, $\overline{J}_{iT} = \{j \in J | c_{it}^{j} = 1 \text{ for some } t = 0,1,\ldots,T\}$ denotes the initial full scope and sectoral coverage of conditionality as outlined in an official LoI and expounded in an MoU.We only consider treatments in $t = 0$ even if a condition gets rolled over to subsequent years. In other words, we consider the first use of sectoral conditionality as

In line with the literature on the political economy of ownership and international lending (Drazen, 2002; Mayer and Mourmouras, 2004), we model the target government's latent preferences over (constrained or unconstrained) structural reform packages R_{it} through a quasi-concave, continuous, and twice differentiable function $s_{it}\left(R_{it}|P_{it};D_{it},S_t\right)$, which amounts to a time-varying reduced-form political support function of a weighted average between general welfare and financial contributions from special interest groups (Grossman and Helpman, 1994). Political support for reforms at time t is conditional on the accepted terms of the program $\left(P_{it}\right)$ and a host of time-varying (institutional and political) *domestic* $\left(D_{it}\right)$—e.g., ideological profile of the government, electoral mandate,[10] public opinion, administrative capacity, electoral institutions, veto players, etc.—and *systemic* $\left(S_t\right)$—e.g., foreign competition, financial contagion, diffusion, learning, etc.—factors. These factors, which may be idiosyncratic and privately known thereby introducing potential ideological bias and informational asymmetries, will influence the design of both the conditional adjustment program C_{it} itself and the government's *de jure* reform output r_{it}.

We consider the design of $P_{iT}\left(L_{iT};C_{iT}\right)$ as a second-best outcome within an environment of imperfect contractibility. The choice of lending facility L_{iT} and repayment terms will depend on a host of factors such as the country's short- and long-term financing needs, the severity of its balance-of-payments imbalance, the need to smoothen out the implementation of reforms, and the country's income level among others. External financial loans are presumably meant to help countries spread out the costs of adjustment (but the evidence shows otherwise, programs tend to be much more front-loaded than desired by the government). The original design of P_{iT}, even if subject to mutual agreement, does not pre-determine government i's level of ownership.[11] Uncertainty

treatment and require control units to have no such conditionality over the entire program duration.

[10]Note that more often than not a crisis-induced reform agenda is not part of a government's electoral mandate; adjustment is usually forced upon it by the exigencies of an economic/financial crisis.

[11]We are measuring ownership over the initial design of the conditionality program (as stated in the letter of intent). The IO principal cannot perfectly predict whether these conditions will be implemented in the future.

over the government's latent set of preferences and beliefs does not help infer whether the imposed conditionality is desirable say because it allows governments to deflect the blame for painful reforms ("scapegoating" argument) or it enhances the country's creditworthiness in capital markets (IMF, 2001), or whether it is the necessary sacrifice of a loan-for-reforms trade-off hoisted upon a crisis-ridden country.

We assume that only *de jure* reforms enacted through either executive or legislative acts are observable and hence directly contractible, as opposed to *de facto* on-the-ground reforms $y_{it}^{j}\left(R_{it}^{j};D_{it},S_{t}\right)\in\mathbb{R}$ (Henisz and Mansfield, 2019). In that vein, a government is said to be in compliance with the terms of the loan contract P_{it} at the end of review cycle t, i.e., $m_{i}^{j}=1,\ \forall j\in\overline{J}_{it}$, *if and only if* $r_{it}^{j}\geq\overline{r}_{it}^{j},\ \forall j\in\overline{J}_{it}$, where the $\overline{r}_{it}^{j}$'s denote the period- and sector-specific hard structural reform targets and policy benchmarks. Since the IO sponsor would not agree to a program that sets targets and conditions that have already been achieved, we posit that $r_{i,-1}^{j}\leq\overline{r}_{i0}^{j}\leq\ldots\leq\overline{r}_{iT}^{j}$ *if and only if* $c_{i}^{j}=1$, i.e., the mandated level of structural reforms should exceed the country's pre-program level and weakly increase throughout the duration of the IMF program. After all, successfully implemented international lending programs tend to generate higher levels of market-oriented structural reforms than those predicted by other domestic or systemic political economy factors. Finally, note that for any given type of lending facility L_{iT}, the adjustment program C_{iT} and the initial scope of conditionality $\overline{J}_{iT}$ can be renegotiated and amended *ex post* through the use of waivers $\left(w_{it}^{j}=1\right)$ that redesignate some hard structural conditions as unnecessary prerequisites for the disbursement of the funds, i.e., at the end of review cycle t, $C_{it}=\left[c_{i}^{j}\right]\odot\left[1-w_{it}^{j}\right]$,[12] where $j=1,2,\ldots,J$ and $0\leq t\leq T$.

In line with our counterfactual conceptualization and our operationalization strategy below, we identify government ownership (or the deviation therefrom) over sector-specific IO conditionality (as agreed upon and expounded in the MoU) as a function of a treatment effect on a directly observable set of *de jure* reforms. In other words, to measure program ownership, we compare the

[12]This symbol denotes the element-wise Hadamard product of vectors.

actual post-crisis reform trajectory of a country subject to IO conditionality with the latent reform trajectory of the same country without such conditionality and determine whether the actual rate of reforms would have been indeed incentive-compatible with respect to the true underlying preferences of the incumbent government without the extrinsic (positive or negative) incentivization of financial assistance and explicitly-enforced conditionality provided by the contractual terms of the arrangement.

Formally, assuming that country i has selected into a binary treatment of sector-specific conditionality at time $t = 0$, we identify government i's ownership α_{it}^{j} over the conditional adjustment program in sector j and t periods after program initiation as a function of a time-varying "treatment effect on the treated" (TET), i.e., conditional on $e_i = 1$,

$$\alpha_{it}^{j} = -\left| \frac{r_{it}^{j1*}\left(L_i, \left(C_i^{-j}, 1\right); D_{it}, S_t\right) - r_{it}^{j0*}\left(L_i, \left(C_i^{-j}, 0\right); D_{it}, S_t\right)}{r_{it}^{j0*}\left(L_i, \left(C_i^{-j}, 0\right); D_{it}, S_t\right)} \right| \qquad \text{(TET)}$$

Here, $r_{it}^{j1*} \in \underset{r_{it}}{\operatorname{argmax}}\, s_{it}\left(R_{it}; D_{it}, S_t\right)$ subject to $P_{it}^{j1} = \left(L_i, \left(C_i^{-j}, 1\right)\right)$ reflects the (observed) actual support-maximizing policy output of *de jure* reforms in sector j for the treated unit, and $r_{it}^{j0*} \in \underset{r_{it}}{\operatorname{argmax}}\, s_{it}\left(R_{it}; D_{it}, S_t\right)$ subject to $P_{it}^{j0} = \left(L_i, \left(C_i^{-j}, 0\right)\right)$ captures the (unobserved) counterfactual support-maximizing policy output of *de jure* reforms in sector j for the same unit in the absence of the sector-specific conditionality treatment.[13] Ownership α_{it}^{j} over *de jure* reforms in policy area j at time t reaches a maximum value of zero that denotes a situation of perfect alignment between the actual implemented level of *de jure* reforms and the counterfactual level that would materialize were the incumbent's reform program not subject to explicit conditionality. The lower α_{it}^{j} is found to be, the lower the estimated level of ownership since one can then infer that post-intervention adjustment and reform is primarily driven by the extrinsic (positive and negative)

[13]Note that in line with our operationalization approach, we collapse the temporal dimension of the conditionality program C_i and assume that $c_{it}^{j} = 1$ for all t *if and only if* $c_{i0}^{j} = 1$, i.e., a country is subject to sectoral conditionality as long as its adjustment program comprises at least one hard condition in that sector during the first review cycle.

incentives of the IMF program itself (both in terms of the size of the loan and the overall design of conditionality). In the absence of ownership, a country would presumably adjust much less without an explicit conditionality program in place. This type of causal inference relies on the so-called "stable unit treatment value assumption" (SUTVA), 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).

Note that so far we are assuming perfect compliance with the treatment $(m_i^j = 1)$ for all governments willingly selecting into the program $(e_i = 1)$, i.e., $Pr(m_i^j = e_i = 1) = 1$. Nonetheless, as countries do not necessarily comply in full with IO arrangements (Vreeland, 2006; Reinsberg et al., 2019), a more accurate measure of ownership would account for two-sided imperfect compliance, i.e., $0 \leq Pr(m_i^j = 1|e_i = 0) \leq 1$ and $0 \leq Pr(m_i^j = 1|e_i = 1) \leq 1$, and identify ownership as a function of a treatment effect on treated compliers (TETC), i.e., a TET conditional on $m_i^j = e_i = 1$ (Angrist et al., 1996; Marbach and Hangartner, 2020). Implementation failures and lack of compliance with IO conditionality could in fact go hand-in-hand with a popular backlash against liberalization, backpedaling of reforms, and thus a negative TET.[14]

3.2 Estimation using the SCM

By way of estimation, we apply the synthetic control method (SCM) for causal inference in comparative case studies (Abadie and Gardeazabal, 2003; Abadie et al., 2010, 2015) and estimate the effect of the conditionality treatment applied at time $t = 0$ by comparing the evolution of an aggregate policy outcome for a unit affected by the intervention with the evolution of the same outcome variable for a synthetic control group. The synthetic control group is constructed through an op-

[14]While we have verified that the assumption of full compliance holds for the purposes of our illustrative case studies, the lack of condition-specific compliance and implementation data does not allow us to exclude cases where the actual trajectory of *de jure* liberalization reforms falls below the counterfactual level due to imperfect compliance with a sector-specific set of conditions.

timization algorithm that seeks to minimize a loss function between the weighted combination of control units and the unit affected by the intervention in terms of factors that are predictive of the outcome. The post-intervention evolution of the outcome for the endogenously-derived synthetic control group is used to identify the counterfactual of what would be observed for the affected unit in the absence of the intervention, i.e., $r_{it}^{j0*}|e_i^j = m_i^j = 1$. In other words, the synthetic control method allows us to determine whether the actual rate of reforms would indeed be incentive-compatible with respect to the true underlying preferences of the incumbent government without the extrinsic (positive or negative) incentivization of financial assistance and explicitly-enforced conditionality provided by the contractual terms of the arrangement.

Our approach allows us to measure ownership with respect to an IO program as a whole or a specific set of IO conditions. We identify two measures of ownership (or rather deviation from a state of perfect ownership): Our first measure is defined with respect to specific points in time during the post-treatment period $(1 \leq t \leq T)$ until the program is successfully completed; year-level ownership is then inversely proxied by the absolute gap between observed and counterfactual *de jure* policy outcomes in one, two, or more years after program initiation at time $t = 0$ until program completion at time T.[15] The higher the absolute gap, the less ownership the incumbent has over specific conditions or the program as a whole in any given year. This measure is informative because year-level ownership can vary throughout the duration of a program due to changes in domestic conditions that make a given program more or less viable from the perspective of the incumbent government.

Ownership may be counterfactually defined with respect to the scope and content of required reforms, the optimal mix of actions to achieve target outcomes, as well as the timing and sequencing of implementation. Accordingly, we identify two measures of ownership. Let I denote the set

[15] We use the absolute value in order to account for some anomalous cases where the effects are found to be negative due to backlash and non-compliance with the specific policy condition. Alas, we are not able to systematically account for such cases due to the lack of condition-specific compliance data.

of treated units and K the "donor pool" of control units (with $|K|$ as its measure). Then, our *first* year-level measure is defined as follows:

$$\widehat{\alpha}_{it}^{j} = -\frac{\left| r_{it}^{j} - \sum_{k \in K} w_{k}^{*} r_{kt}^{j} \right|}{\sum_{k \in K} w_{k}^{*} r_{kt}^{j}}. \tag{1}$$

Here, $t = 1, \ldots, T$ refers to the successive years of the post-treatment period until the completion of the program at time T and r_{it}^{j} denotes the observed level of *de jure* structural reforms implemented by country $i \in I$ at time t in sector $j \in J$. Let X_i be an $x \times 1$ vector containing the values of the pre-intervention characteristics of the treated unit $i \in I$ and X_0 an $x \times |K|$ matrix containing the values of the same variables for the control units in the donor pool K. Then, the optimal $|K| \times 1$ synthetic control vector of weights W^* is such that $\|X_i - X_0 W\|$ is minimized subject to $0 \leq w_k \leq 1$ for all $k \in K$ and $\sum_{k \in K} w_k = 1$.

Our *second* measure is estimated with respect to the post-treatment goodness of fit between actual and counterfactual *de jure* policy outcomes throughout the duration of an (uninterrupted) IO arrangement. As such, it captures government ownership over the timing and sequencing of conditional structural reforms of an entire IO program. Even if cumulative policy outcomes do not differ as much between treated and synthetic units by the end of the program, borrowers may find their conditionality programs relatively too front-loaded in terms of adjustment measures. In formal terms, a target government i's ownership $\widehat{\rho}_i$ over the timing and sequencing of conditional reforms as stipulated in the LoI and MoU of an IO program at time $t = 0$ is directly proportional to minus the root mean square prediction error (RMSPE), i.e.,

$$\widehat{\rho}_{i}^{j} = -\frac{1}{T}\left(\sum_{t=1}^{T}\left(\widehat{\alpha}_{it}^{j}\right)^{2}\right)^{1/2} = -\frac{1}{T}\left(\sum_{t=1}^{T}\left(\frac{r_{it}^{j} - \sum_{k \in K} w_{k}^{*} r_{kt}^{j}}{\sum_{k \in K} w_{k}^{*} r_{kt}^{j}}\right)^{2}\right)^{1/2}. \tag{2}$$

As before, the maximum level of ownership is attained at value 0 when there is perfect overlap between the actual and the synthetic post-treatment *de jure* reform trajectories.

While our counterfactual-based identification strategy can apply to *program*-level measures of ownership over an IO program as a whole, our operationalization strategy estimates ownership over *sector*-specific policy conditions. In what follows, we operationalize our concept by using external-sector conditions as our treatment and proceed to assess the reliability of our measure by deriving bootstrapped standard errors. Moreover, we probe its *face* validity against the case of the 1997-2003 International Monetary Fund (IMF) programs in Indonesia—using anecdotal evidence from primary and secondary sources.

4 Operationalizing ownership of IO conditionality

In line with our definition, ownership may vary across policy sectors. Due to data limitations we focus on just two sectors for which IMF conditions can be clearly mapped onto specific *de jure* policy outcomes, namely the *external* sector, which includes measures of trade and capital-account liberalization, and the *financial* sector, which comprises measures of financial institutional reform and market liberalization. We then apply the SCM method on all uninterrupted IMF arrangements that comprised at least one external- or financial-sector condition, which allows us to compare actual *de jure* policy reforms to the level of *de jure* (economic or financial) structural reforms that would have materialized had the country not been subject to conditionality in either of those two sectors.[16]

[16] A recent literature has developed extensions to the Synthetic Control Method, specifically for the case of multiple staggered treatments (Xu, 2017; Ben-Michael, Eli and Feller, Avi and Rothstein, Jesse, 2019). To obtain an ATET, researchers can either pool all treatments together, or run separate SCMs, with different implications for achieving pre-treatment covariate imbalance (Ben-Michael, Eli and Feller, Avi and Rothstein, Jesse, 2019). Since our interest is in estimating ownership for individual cases, we prioritize program-specific pre-treatment covariate balance and therefore perform separate SCMs. However, we seek to enhance pre-treatment balance by drawing on donor pools that also include untreated units with different program start years compared to the treated unit.

4.1 Key variables

For our policy outcome variable r_{it}^{j}, we use the KOF index of *de jure* economic globalization (Dreher, 2006; Gygli et al., 2019) (instead of its sub-component of trade liberalization) in order to match the relatively broad category of external-sector conditionality, which goes beyond trade liberalization and also includes capital-account liberalization. Its main advantage is that it is conceptually close to the types of sectoral reforms mandated by IMF programs that we examine here. An additional empirical advantage is that this measure is continuous and has extensive coverage.

As for our treatment variable, we use a dummy variable indicating the presence of structural conditions in the external or financial sectors during the first year of the program. In line with the IMF classification, external-sector conditions comprise trade-related issues (e.g, lifting of tariffs and non-tariff barriers, quotas changes, etc.), exchange-rate regimes, capital-account liberalization, and foreign direct investment policies, among others (Kentikelenis et al., 2016). Financial-sector conditions include measures such as financial market liberalization, legal reforms, privatization of state-owned banks and insurance companies, regulatory oversight over domestic banks, as well as central-bank transparency and independence (Kentikelenis et al., 2016). We focus on *structural* conditions because these specify the exact legislative instruments that governments are expected to adopt, typically in order to achieve broader macroeconomic aims. By contrast, *quantitative* conditions specify policy goals that cannot be effectively legislated, which renders them less useful for measuring ownership as governments can simply choose policy instruments as they see fit.

To obtain well-identified treatment effects on treated compliers, we need to ensure that countries have not been under an IMF program during the *pre*-intervention period and that the program remains uninterrupted during the *post*-intervention period. Therefore, we impose a gap of at least five years from the last active program in order to avoid picking up reform activity from a previous program, which would bias our results. The same gap is required for control units. Moreover, for lack of a systematic way to code program spells, we apply a uniform program duration T of four years. Furthermore, we restrict our sample to only include programs that were not subject to

temporary or permanent interruptions after initiation in order to eliminate negative deviations from the counterfactual trend due to imperfect compliance.[17]

By way of calibrating our SCM model, we include covariates reflecting fundamental macroeconomic characteristics, features of the political system, the international environment, and pretreatment outcomes in order to make synthetic control units as similar as possible to treated units along this range of observable predictors. We control for the following covariates because they likely predict both IMF conditionality and *de jure* structural reforms. In terms of macroeconomic variables, we include (log) GDP per capita, (log) population as a proxy for country size, the level of economic growth, the stock of foreign-exchange reserves in months of imports, the current-account balance as a percentage of GDP, and debt service as a percentage of GNI (World Bank, 2019). These variables collectively help predict whether countries will require IMF financial assistance in the first place (Moser and Sturm, 2011; Vreeland, 2003). Our domestic political predictors include the Veto Player Index (Henisz, 2002), which denotes the relative strength of actors that can undermine policy reforms, as well as the State Capacity Index (Hanson and Sigman, 2021), which captures limits in the technical and/or bureaucratic capacity of governments to implement reforms. Finally, we control for international linkages, including a measure of fuel exports, military expenditures as a percentage of GDP (World Bank, 2019), the political globalization index (Dreher, 2006; Gygli et al., 2019), and the fraction of time in which a country has been involved in any type of war during the previous five years (Gleditsch et al., 2002; Sarkees and Wayman, 2010). As shown in the online appendix, our results are robust to the inclusion of additional control variables

[17] In fact, we find that almost all negative deviations from the counterfactual in the full sample of 59 treated cases are due to program interruptions occurring in the four years after the initial treatment. Since we are interested in estimating the treatment effect on treated compliers (TETC), we drop these cases altogether. This leaves us with a small number of cases with negative deviations we cannot readily explain mainly due to the lack of data on program interruptions and condition-specific compliance. Exclusion of these anomalous cases does not substantively alter the diagnostic plots and, therefore, we keep them in the diagnostic sample.

such as political instability and business cycle effects.[18]

We choose these variables because they likely predict both IMF conditionality and *de jure* liberalization reforms. In addition, we control for the total number of conditions as well as the scope of conditionality at the start of the program (Kentikelenis et al., 2016) in order to ensure that similar IMF programs will be matched, thereby 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. Finally, we match treated and synthetic control units with respect to the number of countries under IMF programs in the year before treatment. As this systemic variable varies only over time, its inclusion allows us to effectively control for unobserved time-period effects.[19] The time window for optimizing covariate balance comprises the five years before the onset of the IMF conditionality treatment.[20]

4.2 Donor pool

An important aspect of the synthetic control method is how best to define the "donor pool", i.e., the universe of potential cases that the matching algorithm considers when constructing the synthetic control unit (Abadie et al., 2010, 2015). Our preferred donor pool includes observations of *all* onset years of IMF programs without structural conditionality in the treated sector (external or financial). This choice of donor pool balances the need to maximize available observations with the need to include similar-enough cases for which the hypothesized mechanism can plausibly

[18]Controlling for government turnover could help reduce estimation uncertainty in the post-treatment period given that deviations from ownership may be a result of political instability.

[19]Since we do not require synthetic control units to be observed throughout the same time period as treated units, this variable helps eliminate bias due to omitted global trends.

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

hold. Our donor pool—consisting of 195 programs—is relatively large as we do not restrict the search to control units under IMF program in the same year. This permissive donor pool sampling strategy deviates from the standard SCM approach but helps improve pre-treatment balance due to an enlarged donor pool. Control units in the pool can be considered as similar enough to treated ones because they requested IMF assistance but without obtaining sector-specific conditionality.[21] Because we control for year effects, we ensure that only units are matched that are observed in a similar global context.

By way of robustness, we consider several alternatives to our proposed donor pool specification. *One* is to include all IMF programs without sectoral conditionality starting in the same year as the treated unit as potential control units. This specification drastically reduces our donor pool size and thus leads to poor matching. A *second* alternative is to also include untreated observations not under an IMF program, while matching on their propensity score of being under an IMF program. To obtain the propensity score, we use a probit model of IMF program selection with standard variables from the literature (Moser and Sturm, 2011; Vreeland, 2007).[22] A *third* donor pool specification matches on the propensity score of receiving the treatment, using a selection model for IMF programs and adding the scope of conditionality and the total number of conditions as additional program-specific predictors. A *fourth* alternative excludes countries from the same region because their inclusion might introduce bias due to regional spillover effects. We find that our key results remain remarkably robust to different donor-pool specifications (see online appendix).

[21] This choice of donor pool is hence informed by the so-called "possibility principle" (Mahoney and Goertz, 2004).

[22] Predictors of IMF program participation include the number of countries under programs, temporary UN Security Council membership, UN General Assembly vote alignment with G7, civil liberties and political rights, executive elections, GDP per capita, GDP growth, reserves, debt service, British legal origin, region dummies, and year dummies.

4.3 Inference

A remaining task is to estimate confidence intervals around point estimates of ownership levels obtained from the SCM approach (Abadie et al., 2010; Xu, 2017; Firpo and Possebom, 2018). We use a bootstrapping method, which entails the following three steps. First, in each bootstrap iteration, we perform the SCM approach using a (smaller) subsample of potential control cases obtained through resampling with replacement from the entire donor pool.[23] Second, we store all ownership estimates in a vector of length B, where B denotes the number of bootstrap iterations. In the interest of computational efficiency, we perform seven iterations throughout as additional iterations yield similar results but take more time to compute. Third, we aggregate the SCM point estimates from the various donor pools and compute the confidence interval based on the standard error of the empirical distribution of point estimates. Specifically, the 90th percentile upper confidence band is

$$\bar{r}^{j}_{kt} + 1.645\sqrt{\frac{1}{B}\sum_{b=1}^{B}\left(\hat{y}^{j}_{bt} - \bar{r}^{j}_{kt}\right)^2}, \tag{3}$$

where $\bar{y}_i$ is the mean policy outcome estimate.

5 Validating the ownership measure

We first present the outcome of our SCM-based estimation of ownership in the context of IMF programs with external-sector conditionality. Table 1 summarizes for all matched cases the ratio of the root-mean squared prediction error (RMSPE) after the treatment and before the treatment.

[23] In line with recent suggestions for inference under the SCM method (Li, 2017), our bootstrapped standard errors rely on "resampling with replacement" from the entire donor pool such that for each iteration we keep the unique donor pool units. This induces more variability than the traditional leave-one-out cross-validation procedure. Hence, our standard errors are more conservative.

Country	Year	RMSPE ratio	Pre-RMSPE	Post-RMSPE	Covariate imbalance
BIH	1998	13.622	0.514	6.996	2.789
BLR	1995	1.663	2.048	3.405	1.458
BRA	1998	4.394	0.292	1.281	2.405
BRB	1992	94.135	0.059	5.510	2.363
COG	2004	5.706	0.865	4.938	3.240
COM	1991	1.654	1.760	2.912	1.767
CPV	1998	19.905	0.190	3.784	1.832
CZE	1993	1.983	3.309	6.562	0.993
GHA	2009	8.433	0.756	6.377	2.387
GNB	2000	14.102	0.535	7.544	1.666
GRC	2010	2.490	0.838	2.085	0.697
GRD	1981	3.743	2.037	7.625	5.519
HTI	1995	11.231	0.238	2.673	2.566
HTI	2006	12.514	0.877	10.977	1.275
IDN	1997	4.894	1.371	6.709	1.757
KHM	1999	2.966	3.230	9.580	1.489
LBR	2008	1.076	0.406	0.437	2.741
LKA	1988	54.260	0.110	5.980	0.931
LTU	2000	1.127	2.547	2.871	1.394
MDG	1996	9.708	0.280	2.721	0.376
MEX	1995	3.016	1.101	3.321	1.821
MMR	1981	1.550	0.216	0.335	2.523

Table 1: Program ownership estimates in the external-sector liberalization sample
Note: The RMSPE ratio is the post-RMSPE divided by the pre-RMSPE. Covariate imbalance denotes the Mahalanobis distance. Two cases are dropped from the sample as they had no pre-treatment outcomes.

Higher values indicate larger deviations from perfect ownership. The last column computes the Mahalanobis distance, which is a commonly used measure of covariate imbalance (Hainmueller, 2012). Lower values indicate better balance in the covariates between treated unit and synthetic control unit upon which the matching is based.

To get a better sense of which covariates were important in the matching process, we also tracked covariate weights for all treated units. Table 2 shows the results, indicating that pre-treatment outcomes were particularly influential, while other covariates like population, past conflict, countries under programs, and military expenditure were somewhat less important.

Covariate	Mean	Std. Dev.	Min	Max
GDP per capita	0.015	0.025	0.000	0.103
Population	0.047	0.075	0.000	0.272
State capacity	0.019	0.035	0.000	0.141
Political globalization	0.026	0.034	0.000	0.132
GDP growth	0.027	0.051	0.000	0.199
Reserves	0.033	0.047	0.000	0.218
Current account	0.031	0.041	0.000	0.144
Debt service	0.022	0.033	0.000	0.127
Fuel exports	0.016	0.025	0.000	0.097
Veto player index	0.026	0.034	0.000	0.143
Past conflict	0.045	0.062	0.000	0.281
Military expenditure	0.040	0.063	0.000	0.232
Total conditions	0.014	0.028	0.000	0.126
Scope of conditionality	0.019	0.020	0.000	0.059
Pre-treatment outcome (t-1)	0.311	0.164	0.054	0.534
Pre-treatment outcome (t-5)	0.230	0.156	0.003	0.445
Trade openness (t-1)	0.035	0.055	0.000	0.231
Countries under programs (t-1)	0.045	0.063	0.000	0.247

Table 2: Descriptive statistics of variable weights for all matched units.

5.1 Validation against qualitative evidence: IMF involvement in Indonesia (1997-2003)

To demonstrate the face validity of our approach, we compare our SCM-based estimates of ownership with well-documented qualitative assessments of ownership in the case of external-sector reform in Indonesia (1997-2003). While Appendix B presents the case study in full, we highlight our key findings here.

Indonesia turned to the IMF in October 1997 for a Stand-By Agreement (SBA) over SDR 7.3 billion, following a general loss of market confidence during the Asian Financial Crisis. Historical records show that key actors in the Indonesian government had little ownership in the program. They questioned the necessity of a full-fledged SBA and disagreed with many of the IMF-imposed policy measures.

First, the Indonesian authorities questioned the need for a full-fledged SBA, arguing that countries under similar circumstances had obtained precautionary credit lines in the past. Yet, the proposal for a Precautionary Arrangement was pushed aside by the IMF Asia-Pacific department during a visit of the Indonesian delegation at the IMF Annual Meetings in 1997 (Djiwandono, 2000, 53). Second, the Indonesian authorities were uncomfortable with some specific measures, such as state provision of full guarantees for bank deposits and bank liabilities (Djiwandono, 2000, 63). At the same time, they lamented the IMF's failure to address neither the problem of unsustainable corporate debts denominated in foreign currency nor the question of social safety nets. These two issues were tackled by the IMF only upon the insistence of the Indonesian team and following criticism by international experts (Djiwandono, 2000, 64). The proposal for a currency board—floated by president Suharto in late January 1998—was declined by IMF officials and dismissing it prematurely as an inappropriate measure to stabilize the currency (Boughton, 2012, 531). Third, as another visible sign of lack of government ownership, Suharto signed the revised SBA agreement but immediately proclaimed his lack of commitment to and ownership of the program in parlia-

ment (Boughton, 2012). Finally, at the IMF Executive Board meeting in May 1998, directors from key creditor countries were highly skeptical of the government's willingness or ability to reform and carry out the program; several developing country directors argued that the IMF was injecting itself much too deeply into micromanaging Indonesia's structural policies (Boughton, 2012, 537). The qualitative evidence thus points toward low ownership over the content and pace of structural reforms in Indonesia's engagement with the IMF (1997-2003).

Our own analysis using the SCM approach confirms these findings. Figure 2 below shows that Indonesia—prompted by a bundle of structural conditions—was effective at reforming its external sector, as reflected in its increasing *de jure* economic liberalization score. However, ownership was rather low throughout the duration of the program, given the discrepancy between the outcomes of the treated and the synthetic control units; counterfactually speaking, Indonesia would not have undertaken these structural reforms on a similar scale or at the same pace were it not for the hard conditionality of the IMF programs. It is only toward the end of the IMF's involvement in the country that the actual and counterfactual reform trajectories start to converge but again at a relatively lower level. Overall, the SCM-based ownership estimates therefore have high face validity in the Indonesian case.

5.2 Validation against known determinants and effects of ownership

Using our full sample of treated units, we now conduct systematic tests of aggregate-level relationships between ownership and other pertinent variables to demonstrate the construct validity of our measure in the context of IMF conditionality programs. To that end, we first examine the determinants of ownership, focusing specifically on the relationship between the design of IMF conditionality and program ownership. We then turn to the impact of ownership (or lack thereof), considering its effects on program compliance and *de facto* reform outcomes. Our tests are based

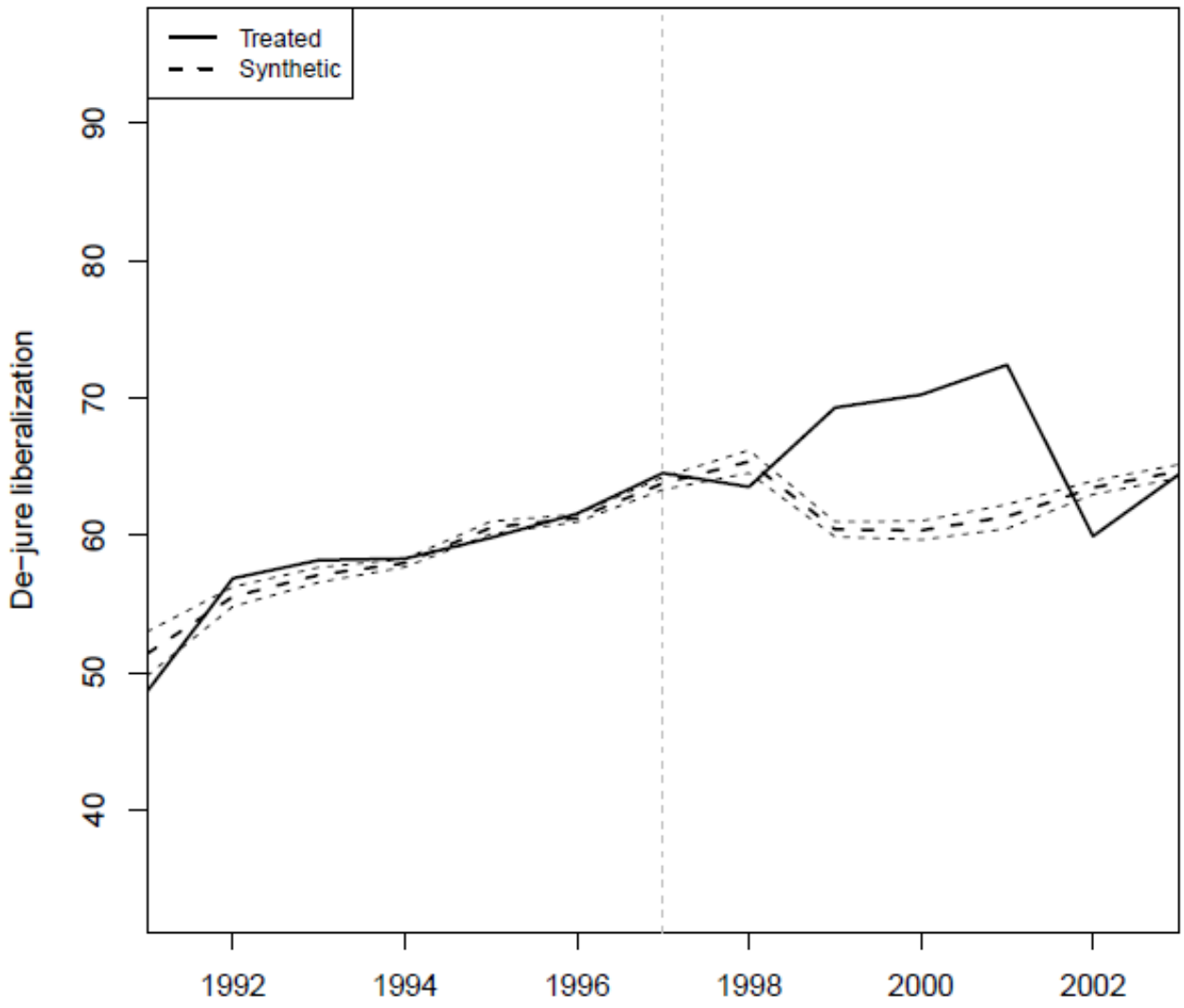


Figure 2: *De jure* economic globalization in actual and synthetic Indonesia before and after the initial IMF intervention (1997).

on reforms in the external sector.[24]

Figure 3 shows the relationship between (deviation from) program-level ownership (as captured by the RMSPE measure 2) and the number of structural conditions in the external sector as outlined in the IMF letter of intent.[25] To the extent that the scope of conditionality is an indicator of how much the IMF staff trusts the government to undertake reforms without external inducement, we would expect a larger deviation from a situation of perfect ownership in cases where the IMF staff prescribe many conditions (Erbas, 2003; Konstantinidis and Karagiannis, 2020). Our expected pattern is borne out by the data. While the ownership measure in Figure 3 is based on the sequencing of reforms throughout the duration of the post-intervention period, Online Appendix A illustrates the same relationship using the year-level (deviation from) ownership measure 1.

Demonstrating the criterion validity of our measure, we further examine the correlation of our RSMPE ownership measure with other plausibly related proxies external to the program: First, we confirm that deviation from full ownership is higher for governments with low scores on the Fraser Institute Economic Freedom Index (Teorell et al., 2020) and lower for governments with high economic freedom scores. This is in line with the expectation that right-wing governments need less external inducement to commit to market-liberalizing reforms (Beazer and Woo, 2016; Gunaydin, 2018). Second, we find the same expected results when regressing against the partisan ideology of the country negotiation team (Chwieroth, 2013) although the measure has many missing values so that the estimated relationship relies on few data points. Third, we show that deviation from ownership is smaller when many foreign banks are present in the borrowing country. Our interpretation for this result is that the more exposed Western banks are to the borrower's economy, the more lenient Western governments will be in respect to the design of IMF conditionality (Copelovitch, 2010b), which induces higher program ownership. Further analysis suggests that exposure by US banks more specifically has a strong association with ownership.

[24]Online Appendix B illustrates the corresponding results based on financial-sector conditionality.

[25]The variables pertaining to the scope of conditionality are taken from Kentikelenis et al. (2016).

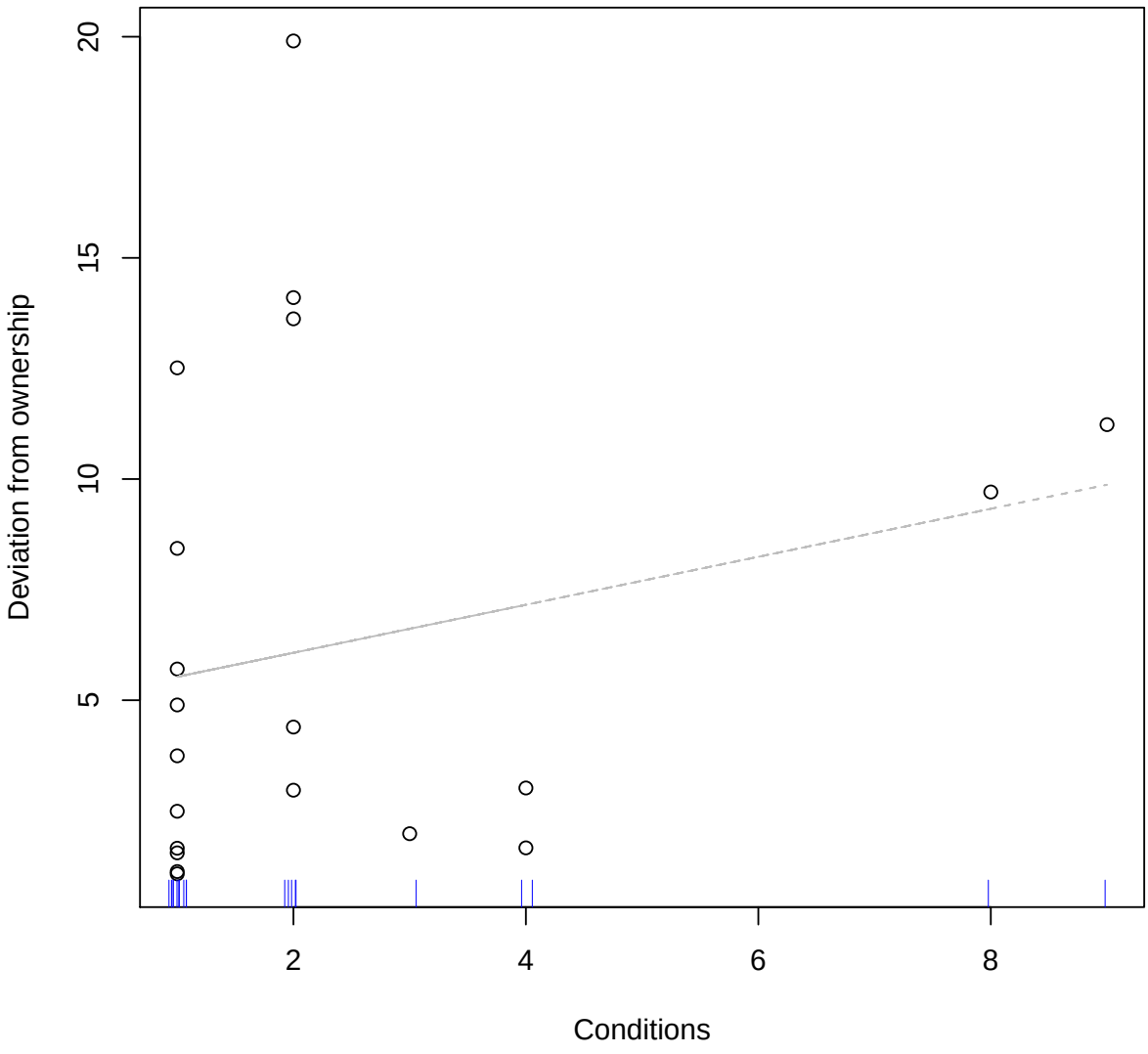


Figure 3: Number of external-sector structural conditions and deviation from ownership.

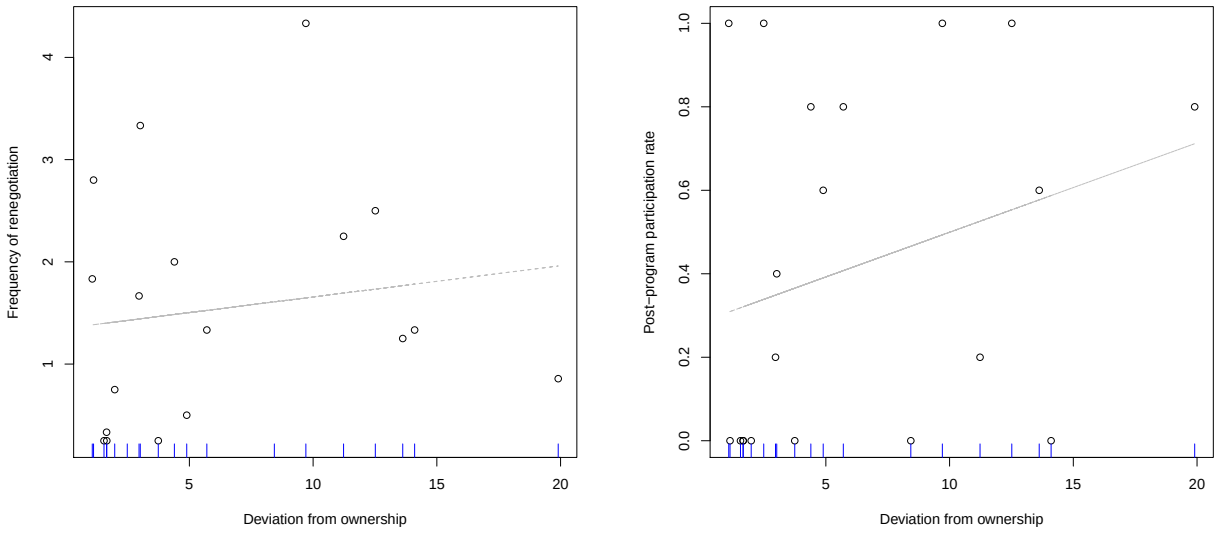
Figure 4a illustrates the relationship between ownership over the sequencing of reform and the frequency of program renegotiation, which occurs when a program gets off-track due to non-implementation of critical conditions and the authorities turn to the IMF to seek adaptations to the mandated reform measures (Kentikelenis et al., 2016). We find a positive association between the number of renegotiations and the lack of ownership. We obtain a similar result when examining the correlation between deviation from ownership and the incidence of temporary program interruptions that occur when a program has gone off-track due to non-implemented conditions. This correlation is positive for external-sector conditionality ($\rho = 0.39$).[26]

IMF recidivism, i.e., the rate at which borrowers return to the Fund to request financial assistance, taps into a similar notion given that governments without much ownership will not be as effective in adopting reforms and will thus be more likely to reapply for IMF assistance. Our bivariate correlation implies a strong effect given that the likelihood of return to the Fund over the five-year period after the initial program ends is as low as 30% under perfect ownership and as high as 75% for the highest possible deviation from ownership in our sample (see Figure 4b).

The appendix presents results using yet another program implementation measure, notably the share of waived conditions. A condition waiver implies a decision by the Executive Board to remove the requirement to implement it—typically in order to allow completion of the program review and disbursement of the next tranche (Reinsberg et al., 2019). We find a higher percentage of waivers for increasing levels of deviation from ownership, which holds also when using the annual measure of ownership 1 and pooling all program observations in a given sector.

As a final test of construct validity, we examine the relationship between ownership and *de facto* reform outcomes. The intuition for this measure is that if countries truly "own" a program, they should not only adopt reforms on paper but also implement them on the ground. The KOF index allows us to distinguish *de jure* and *de facto* economic globalization. Figure 5 confirms our

[26]This correlation is also positive for financial-sector conditionality ($\rho = 0.18$). As the dependent variable is binary, we do not present plots.



(a) Frequency of renegotiation.

(b) Post-program participation rate.

Figure 4: Deviation from ownership and implementation outcomes.

expectations, showing that *de facto* trade globalization increasingly lags behind *de jure* trade liberalization as deviation from ownership grows larger. We interpret this as evidence of backsliding on reforms, where governments with little ownership commit to the letter of reform but not to its spirit (Meyer and Rowan, 1977; Cole and Ramirez, 2013).

6 Conclusions

Although IFI conditionality policies have been investigated to a considerable extent and with unambiguous success, we still have limited ability to explain different responses in similar target countries. On the demand side of conditionality, a standard argument in the literature is that contracting governments often resort to external assistance to deflect the political costs of painful liberalization reforms and to restore international credibility. On the supply side, the design of conditionality programs is dictated by either the foreign policy interests of the major donor countries (especially the US) or the policy agenda of international bureaucrats or even the domestic

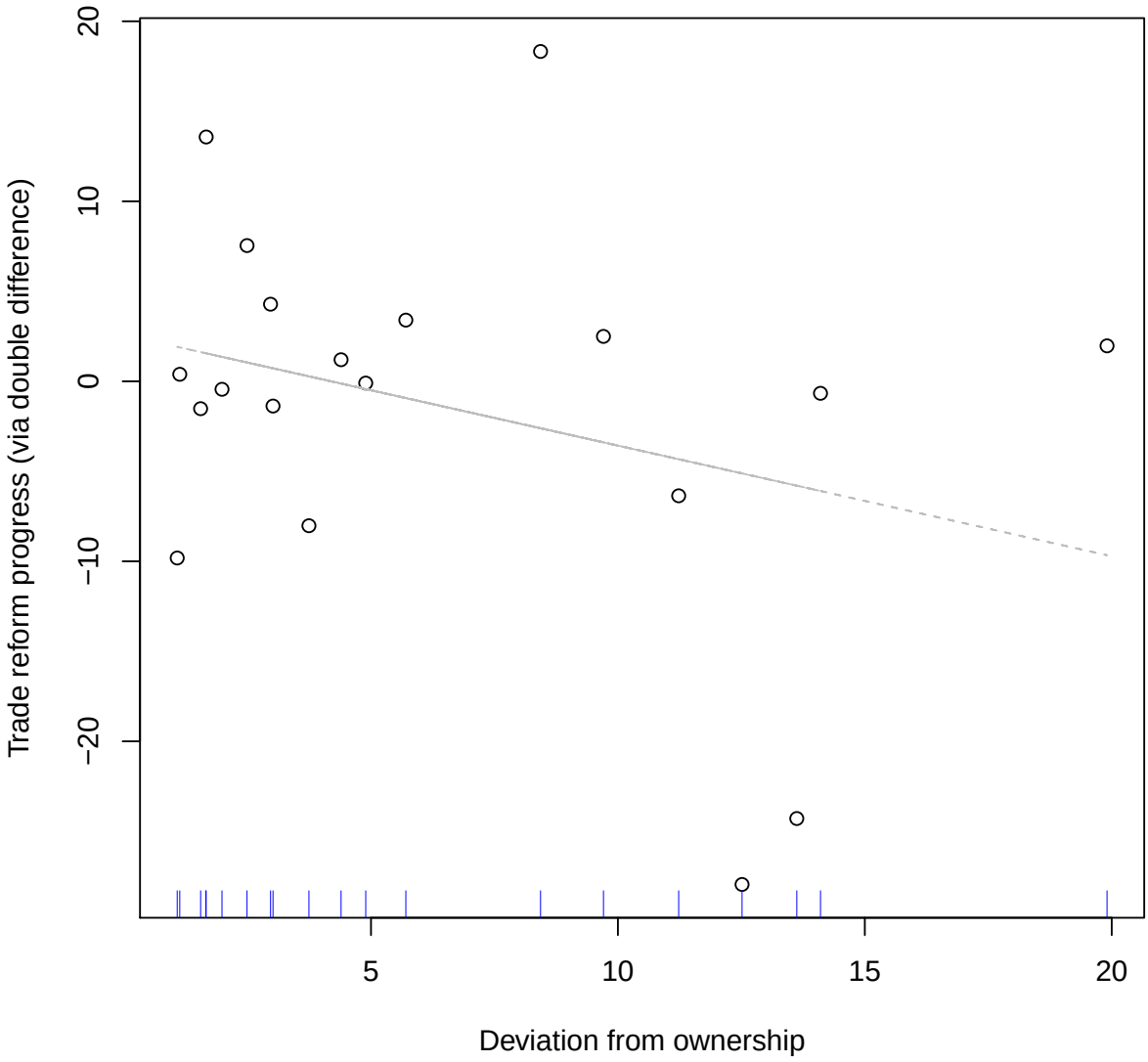


Figure 5: Deviation from ownership and the difference between *de facto* and *de jure* trade liberalization.

politics of the borrowing country. We argue that in order to provide a more complete picture of the political economy of IFI lending, one needs to fully identify and operationalize the indirect link between program design and implementation or policy outcomes as mediated by local program ownership.

In this paper, we propose what is to our knowledge the first reliable, replicable, valid, versatile, robust, and systematic measure of local ownership across a wide range of cases (Adcock and Collier, 2001). It is based on a procedural and continuous conceptualization of ownership as a situation of perfect alignment between the actual implemented level of *de jure* reforms and the counterfactual level that would materialize were the incumbent's reform program not subject to explicit conditionality. We systematically operationalize our measure across a sample of IMF arrangements (1980-2014) and assess its reliability by deriving bootstrapped standard errors. We then probe its face validity against the case of IMF involvement in Indonesia (1997-2003) and demonstrate how it offers a sensible interpretation of the country's actual reform trajectory. Furthermore, our measure passes several (criterion and construct) validity tests against known predictors, indicators, and effects of ownership over a larger sample of treated cases. Finally, we argue that our measure is versatile with respect to both program- and year-specific levels of ownership over conditional liberalization reforms, replicable across a wide range of sectoral reforms, and qualitatively robust to any meaningful alterations in the setup of our operationalization strategy.

This is a timely research project in light of ongoing policy debates on fiscal rules, conditionality, and institutional design in response to the COVID-19 crisis. Despite the weakening of the liberal economic order, the IFIs will continue to play an important role as most governments seem unable to single-handedly grapple with the economic uncertainty and turbulence of our times. However, the design of the contractual relationship between official creditors and national borrowers remains as contentious as ever. We seek to contribute and advance those debates by proposing ways of operationalizing the direct and indirect links between the various components of the political economy of IFI lending.

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