Local Ownership of IFI Conditionality Programs: Conceptualization, Measurement, and Validation

Nikitas Konstantinidis (IE University)
Bernhard Reinsberg (University of Glasgow)

C.R.E.T.E. 2022 (Tinos, Greece)

14 July 2022
When a country borrows from the IMF, its government agrees to adjust its economic policies to address the macroeconomic imbalances 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).
Outline of this talk

1 Introduction
   - Motivation
   - Concepts and definitions
   - Research question
   - Literature review

2 Identification
   - Conceptualizing ownership
   - Identifying ownership

3 Operationalization
   - Operationalizing ownership
   - Robustness and reliability

4 Validation
   - Robustness tests

5 Conclusions
The official IMF view of ownership

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).
The official IMF view of ownership

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).

It is based on the following set of assumptions:

1. There should be no conflict of interests between the IMF and the borrowing government in an environment of common beliefs and shared (ex ante and ex post) preferences.

2. The government “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).

3. The IMF trusts in the target government’s willingness and/or ability to comply, reform, and repay its loans.
Critique of the official view

A contrapositive interpretation of this line of reasoning introduces a dubious sense of infallibility in IMF program design.
Critique of the official view

A contrapositional interpretation of this line of reasoning introduces a dubious sense of infallibility in IMF program design.

If it is in a country’s best interest to implement a certain program in question, then why make loan disbursements explicitly and irrevocably conditional on a required (and avowedly desired) set of reforms (Drazen, 2002)?
Critique of the official view

A contrapositive interpretation of this line of reasoning introduces a dubious sense of infallibility in IMF program design.

If it is in a country's best interest to implement a certain program in question, then why make loan disbursements explicitly and irrevocably conditional on a required (and avowedly desired) set of reforms (Drazen, 2002)?

This conundrum is due to the presumption of such “loans-for-reforms” contracts as complete.
Conditionality as an incomplete contract

Conditionality amounts to a corpus of conditions attached to the granting of financial assistance in the form of (concessional or non-concessional) loans or grants in pursuit of goals deemed desirable by the donor organization itself and/or the target government.
Conditionality as an incomplete contract

Conditionality amounts to a corpus of conditions attached to the granting of financial assistance in the form of (concessional or non-concessional) loans or grants in pursuit of goals deemed desirable by the donor organization itself and/or the target government.

Conditionality arrangements as asymmetric incentive schemes (Dixit, 2000) and incomplete contracts (Hart and Holmström, 1987):

1. Observability of reforms at different stages of implementation
2. Hidden action and moral hazard
3. Differential monitoring costs
4. Uncertainty over the effects of country default
Functions of conditionality

Conditionality as a necessary consequence of the *ex ante* asymmetry and incompleteness of such contracts:

1. Confidence-building measures (Beazer and Woo, 2016)
2. Commitment devices (Candel-Sánchez, 2021; Diwan and Rodrik, 1992)
3. Costly signals (IMF, 2001)
4. Domestic agenda-setting tools (Drazen, 2002)
5. Expert policy recommendations (Drazen and Isard, 2004)
6. Rhetorical ploys of cheap talk (Vreeland, 2003)
Functions of conditionality

Conditionality as a necessary consequence of the *ex ante* asymmetry and incompleteness of such contracts:

1. Confidence-building measures (Beazer and Woo, 2016)
2. Commitment devices (Candel-Sánchez, 2021; Diwan and Rodrik, 1992)
3. Costly signals (IMF, 2001)
4. Domestic agenda-setting tools (Drazen, 2002)
5. Expert policy recommendations (Drazen and Isard, 2004)
6. Rhetorical ploys of cheap talk (Vreeland, 2003)

Without prior knowledge over which one(s) of the function(s) listed above the design of any conditionality program is supposed to serve, *ownership is not directly observable or measurable* either *ex ante* or *ex post.*
Our research objectives

1. We first propose a systematic attempt at identifying and operationalizing the concept of ownership.

2. We then validate that measure against specific cases and qualitative evidence.
The political economy of IFI lending

Domestic factors/ Systemic factors \(\rightarrow\) Program design (conditionality) \(\rightarrow\) Policy outcomes/ De facto program implementation

Program design influenced by domestic (e.g., Nelson, 2014; Rickard and Caraway, 2014) and systemic factors (e.g., Copelovitch, 2010; Dreher et al., 2015; Gould, 2003; Stone, 2008)

Effects on socioeconomic development (Stiglitz, 2004; Vreeland, 2007), macroeconomic outcomes (Bas and Stone, 2014), and de facto compliance (Killick, 1997; Reinsberg et al., 2019)
The political economy of IFI lending

Domestic factors/ Systemic factors \[\rightarrow\]
Program design (conditionality) \[\rightarrow\]
Policy outcomes/ De facto program implementation

- Program design influenced by *domestic* (e.g., Nelson, 2014; Rickard and Caraway, 2014) and *systemic* factors (e.g., Copelovitch, 2010; Dreher et al., 2015; Gould, 2003; Stone, 2008)

- Effects on socioeconomic development (Stiglitz, 2004; Vreeland, 2007), macroeconomic outcomes (Bas and Stone, 2014), and *de facto* compliance (Killick, 1997; Reinsberg et al., 2019)
The political economy of IFI lending

Domestic factors/ Systemic factors → (a) Program design (conditionality) → (b) Policy outcomes/ De facto program implementation

(a) Program design influenced by *domestic* (e.g., Nelson, 2014; Rickard and Caraway, 2014) and *systemic* factors (e.g., Copelovitch, 2010; Dreher et al., 2015; Gould, 2003; Stone, 2008)

(b) Effects on socioeconomic development (Stiglitz, 2004; Vreeland, 2007), macroeconomic outcomes (Bas and Stone, 2014), and *de facto* compliance (Killick, 1997; Reinsberg et al., 2019)
The political economy of IFI lending

Domestic factors/ Systemic factors \(\rightarrow\) Program design (conditionality) \(\rightarrow\) Policy outcomes/ De facto program implementation

(a) (b) (c)

Ownership

(e)

Political economy models of special interest politics and common agency

Ownership and de facto implementation (Bird and Willett, 2004; Henisz and Mansfield, 2019))

Indirect proxies of countries’ “willingness to reform” (Wei and Zhang, 2010)
The political economy of IFI lending

Domestic factors/Systemic factors \[\rightarrow\] Program design (conditionality) \[\rightarrow\] Policy outcomes/De facto program implementation

- Political economy models of special interest politics and common agency
- Ownership and *de facto* implementation (Bird and Willett, 2004; Henisz and Mansfield, 2019)
- Indirect proxies of countries’ “willingness to reform” (Wei and Zhang, 2010)
The political economy of IFI lending

Domestic factors/ Systemic factors \(\rightarrow\) Program design (conditionality) \(\rightarrow\) Policy outcomes/ De facto program implementation

- Ownership

Political economy models of special interest politics and common agency

Ownership and *de facto* implementation (Bird and Willett, 2004; Henisz and Mansfield, 2019))

Indirect proxies of countries’ “willingness to reform” (Wei and Zhang, 2010)
The political economy of IFI lending

Domestic factors/ Systemic factors \(\rightarrow\) Program design (conditionality) \(\rightarrow\) Policy outcomes/De facto program implementation

1. Ownership (a)
2. Political economy models of special interest politics and common agency (b)
3. Ownership and *de facto* implementation (Bird and Willett, 2004; Henisz and Mansfield, 2019) (c)
4. Indirect proxies of countries’ “willingness to reform” (Wei and Zhang, 2010) (d)
A counterfactual conceptualization of ownership

Program ownership occurs in “a situation in which the policy content of the program is similar to what the country would have chosen in the absence of IFI involvement” (Khan and Sharma, 2003: 235):
A counterfactual conceptualization of ownership

Program ownership occurs in “a situation in which the policy content of the program is similar to what the country would have chosen in the absence of IFI involvement” (Khan and Sharma, 2003: 235):

- Let \( r_{it}^j \in \mathbb{R}^+ \) denote country \( i \)’s level of policy adjustment in period \( t \) through the enactment of de jure reforms in policy area \( j \).
A counterfactual conceptualization of ownership

Program ownership occurs in “a situation in which the \textit{policy content} of the program is similar to what the country would have chosen \textbf{in the absence of IFI involvement}” (Khan and Sharma, 2003: 235):

- Let \( r_{it}^j \in \mathbb{R}^+ \) denote country \( i \)’s level of \textit{policy adjustment} in period \( t \) through the enactment of \textit{de jure reforms} in policy area \( j \).
- Let \( R_{it} = \left[ r_{it}^j \right]_{j=1}^J \) denote the \textit{economy-wide policy reform package} implemented in period \( t \) across the full range of policy areas \( J \).
A counterfactual conceptualization of ownership

Program ownership occurs in “a situation in which the policy content of the program is similar to what the country would have chosen in the absence of IFI involvement” (Khan and Sharma, 2003: 235):

- Let $r_{it}^j \in \mathbb{R}^+$ denote country $i$’s level of policy adjustment in period $t$ through the enactment of de jure reforms in policy area $j$.
- Let $R_{it} = \left[ r_{it}^j \right]_{j=1}^J$ denote the economy-wide policy reform package implemented in period $t$ across the full range of policy areas $J$.
- An initial IO-sponsored loan program $P_{iT}(L; C_{iT})$ of time-length $T$ for country $i$ comes into force, i.e., $e_{i0} = 1$ at time $t = 0$. 
A counterfactual conceptualization of ownership

Program ownership occurs in “a situation in which the policy content of the program is similar to what the country would have chosen in the absence of IFI involvement” (Khan and Sharma, 2003: 235):

- Let $r_{it}^j \in \mathbb{R}^+$ denote country $i$’s level of policy adjustment in period $t$ through the enactment of de jure reforms in policy area $j$.
- Let $R_{it} = \left[r_{it}^j\right]_{j=1}^{J}$ denote the economy-wide policy reform package implemented in period $t$ across the full range of policy areas $J$.
- An initial IO-sponsored loan program $P_{iT} (L_i; C_{iT})$ of time-length $T$ for country $i$ comes into force, i.e., $e_{i0} = 1$ at time $t = 0$.
- It comprises a pre-specified schedule of financial loan tranches and repayments $L_i = (l_{i0}, l_{i1}, \ldots)$ and a structural adjustment program $C_{iT} = \left[c_{it}^j\right]_{j=1}^{J}$, where $c_{it}^j \in \{0, 1\}$ and $c_{it}^j = 1$ iff $r_{it}^j \geq r_{i,-1}^j > 0$. 
A counterfactual conceptualization of ownership

Program ownership occurs in "a situation in which the policy content of the program is similar to what the country would have chosen in the absence of IFI involvement" (Khan and Sharma, 2003: 235):

- Let $r_{jt}^j \in \mathbb{R}^+$ denote country $i$’s level of policy adjustment in period $t$ through the enactment of de jure reforms in policy area $j$.
- Let $R_{it} = \left[ r_{jt}^j \right]_{j=1}^J$ denote the economy-wide policy reform package implemented in period $t$ across the full range of policy areas $J$.
- An initial IO-sponsored loan program $P_{iT}(L_i; C_{iT})$ of time-length $T$ for country $i$ comes into force, i.e., $e_{i0} = 1$ at time $t = 0$.
- It comprises a pre-specified schedule of financial loan tranches and repayments $L_i = (l_{i0}, l_{i1}, \ldots)$ and a structural adjustment program $C_{iT} = \left[ c_{it}^j \right]_{j=1}^J$, where $c_{it}^j \in \{0, 1\}$ and $c_{it}^j = 1$ iff $r_{jt}^j \geq r_{i,-1}^j > 0$.
- The government is in compliance with $P_{iT}$ at time $t$, i.e., $m_{jt} = 1$ if and only if $r_{jt}^j \geq r_{it}^j$ for all $j \in \overline{J}_{it}$.
Latent government preferences

Latent government preferences over (constrained or unconstrained) structural reform packages $R_{it}$ are modeled through a quasi-concave, continuous, and twice differentiable reduced-form political support function $s_{it}(R_{it}|L_i; D_{it}, S_t)$, which amounts to a weighted average between general welfare and financial contributions from special interests.
Latent government preferences

Latent government preferences over (constrained or unconstrained) structural reform packages $R_{it}$ are modeled through a quasi-concave, continuous, and twice differentiable reduced-form political support function $s_{it}(R_{it}|L_i; D_{it}, S_t)$, which amounts to a weighted average between general welfare and financial contributions from special interests.

Political support for reforms at time $t$ is a function of the loan structure of the program ($L_i$) and a host of time-varying (institutional and political) domestic ($D_{it}$) and systemic ($S_t$) factors.
Latent  government  preferences  over (constrained  or unconstrained) structural reform packages $R_{it}$ are modeled through a quasi-concave, continuous, and twice differentiable reduced-form political support function $s_{it}(R_{it}|L_i; D_{it}, S_t)$, which amounts to a weighted average between general welfare and financial contributions from special interests.

Political support for reforms at time $t$ is a function of the loan structure of the program ($L_i$) and a host of time-varying (institutional and political) domestic ($D_{it}$) and systemic ($S_t$) factors.

We adopt a “revealed-preferences” approach to extrapolate the utility cost of abiding by the structural adjustment program $C_{iT}$.
Local ownership ($\alpha$) as a “shadow price”

Formally, local ownership reflects the inverse of the “shadow price” (Lagrange multiplier) of the conditionality constraint on the incumbent’s latent utility (political support) from structural reforms, i.e.,

$$
\max_{R_{it} \in \mathbb{R}^+} s_{it} \left( L_i \mid P_{it}, D_{it}, S_t \right) \text{ s.t. } r^j_{it} \geq r^j_{it} \text{ for all } j \in J_{it} \text{ so that } \quad \text{(CM)}
$$

$$
\alpha_{it} = \left[ \lambda^j_{it} \right]_{j \in J_{it}} = \left[ \frac{d s_{it} \left( R^*_it \mid L_i, C_{it}, D_{it}, S_t \right)}{d r^j_{it}} \right]_{j \in J_{it}} < 0. \quad \text{(LM)}
$$
Local ownership ($\alpha$) as a “shadow price”

Formally, local ownership reflects the inverse of the “shadow price” (Lagrange multiplier) of the conditionality constraint on the incumbent’s latent utility (political support) from structural reforms, i.e.,

$$\max_{R_{it} \in \mathbb{R}^+} s_{it} (L_i \mid P_{it}, D_{it}, S_t) \text{ s.t. } r_{it}^j \geq r_{it}^j \text{ for all } j \in J_{it} \text{ so that } (CM)$$

$$\alpha_{it} = \left[ \lambda_{it}^j \right]_{j \in J_{it}} = \left[ \frac{d s_{it} (R_{it}^* \mid L_i, C_{it}, D_{it}, S_t)}{d r_{it}^j} \right]_{j \in J_{it}} < 0. \quad (LM)$$

Moreover, we posit that the optimal level of de facto reforms $Y_{it} = \left[ y_{it}^j \right]_{j=1}^J \in \mathbb{R}^+J$ will be a function of local ownership insofar as

$$\frac{d y_{it}^j}{d \alpha_{it}} < 0 \text{ for all } j \in J_{it}.$$
Identifying ownership

Assuming that country $i$ has selected into ($e_{it} = 1$) and complied with ($m_{it}^j = 1$) a binary treatment of sector-specific conditionality at time $t = 0$, we identify government $i$’s ownership over the conditional adjustment program in sector $j$ and $t$ periods as a function of a time-varying “treatment effect on treated compliers” (TETC), i.e.,

$$r_{it}^{j1*} \left( L_i, \left( C_{i}^{-j}, 1 \right); D_{it}, S_t \right) - r_{it}^{j0*} \left( L_i, \left( C_{i}^{-j}, 0 \right); D_{it}, S_t \right) | m_{it}^j = e_{it} = 1,$$

(TETC)
Identifying ownership

Assuming that country $i$ has selected into $(e_{it} = 1)$ and complied with $(m^j_{it} = 1)$ a binary treatment of sector-specific conditionality at time $t = 0$, we identify government $i$’s ownership over the conditional adjustment program in sector $j$ and $t$ periods as a function of a time-varying “treatment effect on treated compliers” (TETC), i.e.,

$$r^{j1*}_{it} \left( L_i, (C^{-j}_i, 1) ; D_{it}, S_t \right) - r^{j0*}_{it} \left( L_i, (C^{-j}_i, 0) ; D_{it}, S_t \right) | m^j_{it} = e_{it} = 1, \quad \text{(TETC)}$$

Here, $r^{j1*}_{it} \in \arg\max_{r_{it}} s_{it}(R_{it}; D_{it}, S_t)$ s.t. $P^{j1}_{it} = (L_i, (C^{-j}_i, 1))$ reflects the (observed) actual support-maximizing policy output of de jure reforms in sector $j$, and $r^{j0*}_{it} \in \arg\max_{r_{it}} s_{it}(R_{it}; D_{it}, S_t)$ s.t $P^{j0}_{it} = (L_i, (C^{-j}_i, 0))$ captures the (unobserved) counterfactual support-maximizing policy output for the same unit in the absence of the sector-specific conditionality treatment.
The synthetic control method (SCM)

The synthetic control method (SCM) (Abadie and Gardeazabal, 2003; Abadie et al., 2010, 2015) estimates the effect of an intervention (treatment) at time $t = 0$ 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 method (SCM)

The synthetic control method (SCM) (Abadie and Gardeazabal, 2003; Abadie et al., 2010, 2015) estimates the effect of an intervention (treatment) at time $t = 0$ 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 unit is a weighted average of countries from a “donor pool” $K$. 
The synthetic control method (SCM)

The synthetic control method (SCM) (Abadie and Gardeazabal, 2003; Abadie et al., 2010, 2015) estimates the effect of an intervention (treatment) at time $t = 0$ 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 unit is a weighted average of countries from a “donor pool” $K$.

We apply the SCM method to identify the counterfactual of what would be observed for the affected unit in the absence of the intervention, i.e., $r^0_{jt} | e_{jt} = m_{jt} = 1.$
The synthetic control method (SCM)

The **synthetic control method (SCM)** (Abadie and Gardeazabal, 2003; Abadie et al., 2010, 2015) estimates the effect of an intervention (treatment) at time $t = 0$ 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 unit** is a weighted average of countries from a “donor pool” $K$.

We apply the SCM method to identify the **counterfactual** of what would be observed for the affected unit in the absence of the intervention, i.e., $r_{it}^{0*} | e_{it} = m_{it} = 1$.

In other words, SCM allows us to determine whether the actual rate of reforms would indeed be **incentive-compatible**.
Measures of ownership

(i) A target government’s $i \in I$ yearly level of ownership of an IO-mandated level of sector-specific liberalization is captured by the following year-level measure:

$$\hat{\alpha}_{it}^j = -\frac{|r_{it}^j - \sum_{k \in K} w_k^* r_{kt}^j|}{\sum_{k \in K} w_k^* r_{kt}^j}.$$
Measures of ownership

(i) A target government’s \( i \in I \) yearly level of ownership of an IO-mandated level of sector-specific liberalization is captured by the following year-level measure:

\[
\hat{\alpha}_{it}^j = - \frac{\left| r_{it}^j - \sum_{k \in K} w_k^* r_{kt}^j \right|}{\sum_{k \in K} w_k^* r_{kt}^j}.
\]

(ii) Our second measure is estimated with respect to the post-treatment goodness of fit between actual and counterfactual de jure policy outcomes. A target government \( i \)'s ownership over the timing and sequencing of conditional reforms at time \( t = 0 \) is directly proportional to minus the root mean square prediction error (RMSPE), i.e.,

\[
\hat{\rho}_i^j = - \frac{1}{T} \left( \sum_{t=1}^{T} \left( \hat{\alpha}_{it}^j \right)^2 \right)^{1/2} = - \frac{1}{T} \left( \sum_{t=1}^{T} \left( \frac{r_{it}^j - \sum_{k \in K} w_k^* r_{kt}^j}{\sum_{k \in K} w_k^* r_{kt}^j} \right)^2 \right)^{1/2}.
\]
External- and financial-sector conditionality

We apply SCM to all **uninterrupted** IMF arrangements (1980-2014) with at least one **external**- (current and capital account liberalization) or **financial-sector** (banking reform, regulatory oversight) condition:
External- and financial-sector conditionality

We apply SCM to all uninterrupted IMF arrangements (1980-2014) with at least one external- (current and capital account liberalization) or financial-sector (banking reform, regulatory oversight) condition:

- **Outcome variable** $r_{it}$: KOF index of *de jure* economic globalization (Dreher, 2006; Gygli et al., 2019)
- **Policy intervention**: EXT or FIN structural conditions ($\#SPCs + \#PAs > 0$) signed at time $t = 0$ and enforced throughout $T = 4$
- **Pool of treated countries** ($I$): all uninterrupted programs that received IMF conditions in either sector with a gap of at least five years from the last active program (32 cases)
- **Donor pool of control units** ($K$): all IMF arrangements beginning in any year but without the respective structural conditionality
- **Predictors** ($X_i$): pre-treatment outcomes and *domestic/systemic* macroeconomic, political, and security variables
Robustness of our measures

Alternative **donor-pool specifications**:

1. All IMF programs without the same sectoral conditionality starting in the same year as the treated unit

2. All untreated observations not under an IMF program matching on the propensity score of being under an IMF program

3. All untreated observations matching on the propensity score of receiving the treatment through a selection model for IMF programs

4. All IMF programs without the same sectoral conditionality excluding countries from the same region
Reliability of our measures

We apply a **bootstrapping approach** for the estimation of confidence intervals around point estimates of ownership levels.
Reliability of our measures

We apply a **bootstrap approach** for the estimation of confidence intervals around point estimates of ownership levels.

For a total of $B$ 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.
Reliability of our measures

We apply a **bootstrapping approach** for the estimation of confidence intervals around point estimates of ownership levels.

For a total of $B$ 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.

The 90th-percentile **upper confidence band** based on the standard error of the empirical distribution of point estimates is

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

where $\bar{r}_{kt}^j$ is the mean policy outcome estimate.
The case of Indonesia (1997-2003)
Year-level ownership and *de facto* policy implementation
### Covariate weights

<table>
<thead>
<tr>
<th>Covariates</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>0.009</td>
</tr>
<tr>
<td>Population</td>
<td>0.021</td>
</tr>
<tr>
<td>State capacity</td>
<td>0.006</td>
</tr>
<tr>
<td>Political globalization</td>
<td>0.000</td>
</tr>
<tr>
<td>GDP growth</td>
<td>0.000</td>
</tr>
<tr>
<td>Reserves</td>
<td>0.005</td>
</tr>
<tr>
<td>Current account</td>
<td>0.010</td>
</tr>
<tr>
<td>Debt service</td>
<td>0.047</td>
</tr>
<tr>
<td>Fuel exports</td>
<td>0.016</td>
</tr>
<tr>
<td>Veto player index</td>
<td>0.011</td>
</tr>
<tr>
<td>Past conflict</td>
<td>0.071</td>
</tr>
<tr>
<td>Military expenditure</td>
<td>0.001</td>
</tr>
<tr>
<td>Total conditions</td>
<td>0.000</td>
</tr>
<tr>
<td>Scope of conditionality</td>
<td>0.058</td>
</tr>
<tr>
<td>Pre-treatment outcome (t-1)</td>
<td>0.400</td>
</tr>
<tr>
<td>Pre-treatment outcome (t-5)</td>
<td>0.328</td>
</tr>
<tr>
<td>Trade openness (t-1)</td>
<td>0.013</td>
</tr>
<tr>
<td>Countries under programs (t-1)</td>
<td>0.002</td>
</tr>
</tbody>
</table>
Inclusion of additional control variables

(a) Political (in)stability controls.

(b) Business cycle controls.

Figure: Paths of *de jure* economic globalization in actual and synthetic Indonesia (1997) for additional controls.

Figure: Placebo test “pretending” the treatment kicked in 10 years later.
Summary and future work

What we have done:

- We propose counterfactual-based measures of local ownership as a latent mediating variable between program design and policy implementation.

- In another paper, we systematically operationalize our measures through the SCM method and validate them across a restricted sample of uninterrupted IMF arrangements (1980-2014).
Summary and future work

What we have done:

- We propose counterfactual-based measures of local ownership as a latent mediating variable between program design and policy implementation.

- In another paper, we systematically operationalize our measures through the SCM method and validate them across a restricted sample of uninterrupted IMF arrangements (1980-2014).

What we intend to do:

- Collect and operationalize more sector-specific compliance data.

- Perform instrumental variable analysis and causal mediation analysis controlling for two-sided imperfect compliance.

- Develop a full principal-agent model to account for multiple tasks and multidimensional reform packages.
Thank you for your attention!