Political instability, global value chains, and structural transformation: Synthetic control evidence from Madagascar

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2026-08-11

1 Extended Abstract: Political instability, global value chains, and structural transformation: Synthetic control evidence from Madagascar

1. Introduction & Motivation Labor-intensive manufacturing constitutes a well-established engine of structural transformation in low-income economies. Integration into Global Value Chains (GVCs) via backward linkages—the assembly of imported intermediate inputs for re-export—has historically offered developing countries a pathway to formal employment, technology transfer, and industrial upgrading. Yet the conditions under which countries sustain this form of integration are poorly understood, particularly in the presence of recurrent political instability. Madagascar illustrates this puzzle sharply. Despite a cost-competitive labor force, a strategic geographic position, and a nascent light manufacturing sector in the early 2000s, the country has experienced a marked divergence from its Sub-Saharan African (SSA) peers since its independence.

Existing studies largely attribute this trajectory to successive political crises, but they have focused almost exclusively on aggregate output losses rather than on the structural

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consequences for trade composition. What is lacking in the recent literature is an understanding of how political instability alters the qualitative structure of a country's international integration. Standard cross-country regressions linking instability to growth provide mixed evidence and are ill-suited to identifying the sectoral reallocation effects that follow a specific institutional disruption. To address this gap, we propose an original theoretical formalization: political instability does not affect all forms of international integration symmetrically. Rather, it operates through what we term an institutional filter: a mechanism whereby instability raises transaction costs disproportionately in sectors with high contractual intensity—such as manufacturing assembly—while leaving relatively unaffected, or even inadvertently favoring, captive extractive industries with high sunk costs and limited relocatability. Empirically, our results validate this proposition by revealing a profound and asymmetric sectoral reallocation post-crisis, locking the economy into a rent-dependent equilibrium.

2. Political and Institutional Background Madagascar's development trajectory has been shaped by recurrent political crises since its independence in 1960. The 2002 presidential election produced a severe six-month post-electoral crisis, effectively bisecting the country and disrupting internal trade. Following a period of paralysis, the subsequent presidency (2002–2009) was associated with an expansion phase: annual GDP growth averaged above 5%, driven primarily by textile Export Processing Zones (EPZs) benefiting from duty-free access to the United States market under the African Growth and Opportunity Act (AGOA), and by large inflows of resource-seeking Foreign Direct Investment (FDI) into the mining sector. This period established a dual productive structure: a fragile, contract-intensive light manufacturing sector dependent on trade preferences, alongside a capital-intensive extractive sector anchored by high sunk costs.

From the perspective of causal identification, the 2009 crisis possesses three properties that distinguish it from earlier episodes of Malagasy instability and support its use as a treatment event. First, the shock was largely unanticipated. It erupted mid-presidential term, triggered by a conflict that forced a presidential resignation and the unconstitutional transfer of power to a High Transitional Authority (HAT). Second, the crisis generated an immediate and measurable exogenous disruption to the manufacturing sector. The unconstitutional change of government triggered Madagascar's exclusion from AGOA in late 2009 and the suspension of most bilateral aid. The loss of preferential market access led to rapid factory closures and the destruction of tens of thousands of formal urban jobs in the textile sector. Third, the duration of the transition was exceptional. The HAT governed without electoral mandate for nearly five years (2009–2013), prolonging the period of legal uncertainty and favoring structural reallocation.

3. Theoretical Framework: The Institutional Filter Our analysis is anchored at the intersection of the institutional economics of international trade, the theory of investment under uncertainty, and the political economy of rent-seeking. While the Heckscher-Ohlin theory explains intersectoral specialization through relative differences in production factors, this framework remains silent on the fine-grained fragmentation of productive processes observed in GVCs. Empirical studies establish that institutional quality constitutes a source of comparative advantage in its own right. Countries with more effective institutions export relatively more in industries intensive in complex contractual relationships or specific investments. This perspective is particularly relevant in the context of GVCs. Integration via Backward Linkages involves a multiplicity of incomplete contracts, strong sequential interdependence, and synchronized logistics. Consequently, countries characterized by low institutional quality appear structurally disadvantaged in their integration into GVCs via Backward Linkages. Conversely, Forward Linkages—exports of primary inputs incorporated into the exports of other countries—are generally less sensitive to local contractual frictions.

To fix ideas, we formalize the impact of political instability on the expected profitability of firms according to their mode of insertion into GVCs. Following the incomplete contracts literature, production requires a generic factor and relationship-specific intermediate inputs, where a parameter captures the sector's contractual intensity. We maintain the standard assumption that manufacturing assembly is more contract-intensive than extractive industries. Political instability degrades the rule of law, meaning contracts are only enforceable with a reduced probability. Anticipating hold-up, suppliers under-invest, which acts as a wedge on the effective marginal cost.

The filtering mechanism emerges mathematically through the cross-derivative of the cost function. An abrupt increase in instability disproportionately penalizes contract-intensive sectors. This establishes a critical threshold where massive exit of manufacturing firms occurs while extractive firms are retained due to massive sunk costs. Efficiency-seeking FDIs insert themselves into the manufacturing segments of GVCs with low sunk costs and high geographical mobility. Their exposure to institutional shocks is high: a political deterioration leads to almost immediate relocation. Conversely, resource-seeking FDIs exploit immobile natural resources and involve massive sunk costs, becoming captive and adapting to the institutional environment.

4. Empirical Strategy and Data To identify the causal effect of the 2009 crisis on global value chain participation, we employ the Synthetic Control Method (SCM). Relying on cross-country cross-sectional data often yields uninformative results due to pervasive coefficient biases and the endogeneity of political instability measures. The SCM constructs an optimal control group by minimizing the pre-treatment discrepancies in the outcome of interest between Madagascar and its synthetic counterpart. The causal impact of the crisis is estimated as the post-treatment difference in outcomes between the treated unit and its synthetic control.

It is critical to clarify that our methodology does not frame the 2009 crisis as merely an isolated political shock, but rather as a structural phase transition. Prior to 2009, Madagascar existed in a stable corruption equilibrium. Institutions were weak, yet they provided enough predictability to foster a nascent light manufacturing sector. Following 2009, the political shock transformed the nature of these institutions, shifting from centralized rent management to decentralized, chaotic predation. Therefore, our synthetic counterfactual is explicitly designed to reflect these initial conditions. We incorporate institutional variables, such as Control of Corruption and Rule of Law from the World Governance Indicators (WGI) directly into our optimization predictors. By doing so, the synthetic Madagascar is not an idealized, corruption-free economy, but a composite of developing countries that shared the exact same structural flaws and rent dependencies as Madagascar prior to 2009.

The dependent variables capturing GVC integration are sourced from the EORA-26 Multi-Region Input-Output (MRIO) database. GVC backward participation is measured as the share of foreign value added in gross exports, capturing integration into contract-intensive manufacturing assembly. GVC forward participation is measured as the share of domestic value added embedded in third-country exports, capturing upstream integration dominated by primary commodity supply chains. Macroeconomic predictors are drawn from version 11.0 of the Penn World Table and include consumption, investment, government expenditure, exports, imports, residual trade, GDP per capita, GDP growth, and population growth. The full sample covers the 1996–2018 period.

We restrict our potential donor pool to 45 countries with a GDP per capita below US$4,000 at the onset of the treatment in 2009. This data-driven threshold naturally groups Madagascar with comparable low- and middle-income economies. A strong proportion of Sub-Saharan African countries helps control for broad regional economic trends, while the inclusion of Asian nations and countries from other regions is crucial as they share a heavy historical reliance on light manufacturing and the export of primary raw materials.

5. Main Empirical Results Our results demonstrate that the synthetic units closely approximate Madagascar's pre-treatment values across macroeconomic, trade, and institutional dimensions. For backward GVC participation, the two trajectories track each other closely over the pre-treatment period, which supports the validity of the counterfactual. Following the 2009 crisis, a persistent and widening negative divergence emerges. The estimated gap reaches approximately -12 percentage points by the end of the sample period, indicating that Madagascar's backward integration in 2018 was substantially lower than what would have been expected in the absence of the political shock. This result is consistent with the institutional filter hypothesis: the abrupt loss of AGOA eligibility and the collapse in legal predictability disproportionately affected contract-intensive assembly industries.

For forward GVC participation, the post-treatment pattern reveals an absence of significant negative effect. Madagascar's observed trajectory does not diverge substantially and significantly from its synthetic counterfactual from 2009 onward. This lack of divergence suggests that resource-seeking activities, anchored by large sunk costs and less sensitive to contractual frictions, were effectively insulated from the institutional deterioration that followed the crisis. Taken together, the results document an asymmetric structural reallocation: a contraction of backward linkages alongside a relative resilience of forward linkages.

To assess whether the estimated divergences are statistically unusual relative to the donor pool, we implement standard in-space placebo exercises. For backward GVC participation, Madagascar's post-2009 trajectory lies at or near the lower bound of the placebo distribution, and its post/pre-treatment RMSPE ratio ranks among the highest in the donor pool, suggesting that its post-2009 decline is unlikely to be attributable to chance.

6. Mechanism Evidence and Conclusion The institutional filter hypothesis posits that the 2009 crisis affected GVC composition primarily through two channels: a deterioration of contractual security (Rule of Law) that made contract-intensive manufacturing untenable, and a strengthening of rent-seeking dynamics (Control of Corruption) that entrenched extractive forward linkages. Applying the SCM framework to both institutional indicators as outcome variables, we find that following 2009, both indicators diverge persistently and negatively from their synthetic benchmarks. For Control of Corruption, the estimated gap widens continuously, reaching approximately -1.0 by the end of the sample. For Rule of Law, the estimated gap settles at approximately -0.5 by the mid-2010s. This co-movement between institutional deterioration and GVC reallocation is firmly consistent with the transmission mechanism proposed in our theoretical framework.

This paper provides evidence that political instability restructures trade composition, not merely aggregate trade volumes—a distinction with profound implications for structural transformation trajectories. We formally ground the institutional filter mechanism within the theory of incomplete contracts, demonstrating how institutional degradation acts as an asymmetric implicit tax. The policy implications extend far beyond Madagascar. Countries seeking to integrate into manufacturing-intensive GVC segments face a fundamental prerequisite that industrial or fiscal incentives alone cannot substitute for: the legal predictability and contract enforceability required to mitigate supplier hold-up risks. Trade preferences such as AGOA can provide a temporary scaffold for nascent manufacturing, but their effects are highly vulnerable if the underlying institutional environment cannot guarantee political continuity. The Malagasy case suggests that a single, sufficiently severe institutional disruption can permanently reconfigure an economy's international integration toward a rent-dependent equilibrium, even if formal democratic institutions are eventually restored.