

The impact of Corruption on participation in global value chains Empirical evidence from Arab countries using the (Bias corrected method of moment)

Issam Djouadi ^{1,*}

¹ Laboratory of quantitative economics applied to development. Higher National School of Statistics and Applied Economics, Koléa University Center, Koléa, Tipaza, Algeria.

أثر الفساد على المشاركة في سلاسل القيمة العالمية: دلائل تجريبية للدول العربية باستعمال طريقة العزوم المصححة للتحيز

عصام جوادي ^{1*}

¹ المدرسة الوطنية العليا للإحصاء والاقتصاد التطبيقي القليعة ، الجزائر

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Summary: The study aims to measure the impact of corruption on participation in global value chains in Qatar, Kuwait, Oman, Algeria, Tunisia, and Morocco from 1996 to 2020. The impact of corruption, economic freedom, investment freedom, and financial freedom. Government spending and economic growth on forward linkages, backward linkages, and participation in global value chains. Relying on econometric models using dynamic approaches estimated through the bias-corrected method of moments. The study concluded that corruption enhances participation in global value chains through forward linkages, backward linkages, and overall participation. At the same time, government spending and economic growth enhance participation and advancement in global value chains.

Keywords: Corruption; Participation in Global Value Chains; Forward linkages; Backward Linkages; Bias-Corrected Method of Moments

Jel Classification Codes: D73; F14; C23

ملخص: تهدف هذه الدراسة إلى قياس أثر الفساد على المشاركة في سلاسل القيمة العالمية في كل من قطر والكويت وعمان والجزائر وتونس والمغرب خلال الفترة 1996-2020، من خلال دراسة أثر متغيرات الفساد، والحرية الاقتصادية، وحرية الاستثمار، والحرية المالية، والإنفاق الحكومي، والنمو الاقتصادي، على الروابط الأمامية والروابط الخلفية والمشاركة في سلاسل القيمة العالمية.

تعتمد الدراسة على نماذج قياسية اقتصادية باستخدام مقاربات ديناميكية تُقدَّر بطريقة العزوم المصححة للتحيز (Bias-Corrected Method of Moments). وقد توصلت الدراسة إلى أن الفساد يُعزز المشاركة في سلاسل القيمة العالمية من خلال الروابط الأمامية والروابط الخلفية والمشاركة الكلية، في حين يُعزز الإنفاق الحكومي والنمو الاقتصادي المشاركة والارتقاء في سلاسل القيمة العالمية.

الكلمات المفتاحية: الفساد؛ المشاركة في سلاسل القيمة العالمية؛ الروابط الأمامية؛ الروابط الخلفية؛ طريقة العزوم المصححة للتحيز.

تصنيف JEL: D73 ; F14 ; C23

* Corresponding author, e-mail: issam0djouadi@gmail.com

I- Introduction :

Over the past few decades, the organization of global production has undergone profound transformation. The fragmentation of production across national borders has given rise to what are now widely known as Global Value Chains (GVCs) — international networks through which the stages of production, from design and manufacturing to logistics, marketing, and after-sales services, are distributed across multiple countries and firms (Mudambi et al., 2018; Henderson et al., 2002). Leading multinational corporations coordinate these complex networks, orchestrating upstream activities of high knowledge intensity alongside downstream distribution and branding operations, while delegating intermediate manufacturing and assembly tasks to firms in developing and emerging economies (Gereffi, 1999; Grossman & Rossi-Hansberg, 2008).

The architecture of value creation within GVCs follows what is known as the "smile curve" (Shih, 1996; Meng et al., 2020), wherein upstream activities — research and development, design, and intellectual property — and downstream activities — branding, marketing, and customer relationships — generate the highest shares of value added, while intermediate stages of production yield comparatively modest returns (Timmer et al., 2014; Stöllinger, 2021). This configuration presents both opportunities and challenges for developing countries: while participation in GVCs provides access to global markets, foreign technology, and managerial knowledge, it also risks trapping low-income economies in low-value-added segments of the production chain (Gereffi, 2018; Kordalska & Olczyk, 2022).

Arab countries face a distinctive set of structural challenges in their efforts to deepen integration into global production networks. While some Gulf Cooperation Council (GCC) economies have leveraged hydrocarbon wealth to diversify their economic bases and attract foreign investment, other Arab economies — including Algeria, Tunisia, and Morocco — grapple with limited industrial diversification, underdeveloped institutional environments, and constrained access to advanced technologies. A critical structural impediment shared across much of the Arab world is corruption: persistent misuse of public authority for private gain that distorts incentive structures, raises transaction costs, undermines the rule of law, and erodes investor confidence (Transparency International, 2023; Kaufmann et al., 2011).

The relationship between corruption and economic performance has long been debated in the economics literature. Two principal hypotheses compete: the "sand in the wheels" view, which holds that corruption impedes economic efficiency by creating uncertainty, misallocating resources, and discouraging productive investment (Mauro, 1995; Rose-Ackerman, 1999); and the "grease the wheels" view, which contends that, in environments characterized by rigid and inefficient bureaucracies, corruption may serve as a lubricant — enabling firms to bypass administrative obstacles and facilitate transactions that would otherwise be stalled by cumbersome regulations (Leff, 1964; Huntington, 1968; Méon & Sekkat, 2005). Empirical evidence on this debate is heterogeneous and context-dependent, and its applicability to GVC participation in Arab countries remains an underexplored frontier.

Despite the growing body of literature on the determinants of GVC participation, there remains a significant lacuna in empirical research specifically examining the corruption–GVC nexus in Arab countries. Most extant studies have examined broader indices of institutional quality — encompassing governance, regulatory quality, and rule of law — rather than isolating the specific role of corruption as a distinct institutional variable. Moreover, existing empirical studies are predominantly conducted on global or large cross-country samples that may obscure the region-specific dynamics that characterize Arab economies, where informal networks, weak regulatory enforcement, and pervasive rent-seeking behavior interact in ways that differ systematically from other developing regions.

This study aims to fill this gap by providing rigorous empirical evidence on the impact of corruption on GVC participation in a panel of six Arab countries — Qatar, Kuwait, Oman, Algeria, Tunisia, and Morocco — over the period 1996–2020. The study makes three primary contributions.

First, it focuses exclusively on corruption as the key institutional variable of interest, enabling a more precise identification of its effects relative to broader institutional composites. Second, it employs the bias-corrected method of moments (BC-MM) estimator proposed by Breitung, Kripfganz, and Hayakawa (2022), a methodologically rigorous approach for dynamic panel data that addresses the Nickell bias inherent in fixed-effects estimators and simultaneously controls for endogeneity arising from the inclusion of lagged dependent variables. Third, it provides region-specific evidence for a diverse sample of Arab economies spanning different levels of economic development, hydrocarbon dependence, and institutional quality.

The remainder of the article is organized as follows. Section 2 reviews the relevant theoretical and empirical literature on GVC participation and corruption. Section 3 describes the data, variables, and econometric methodology. Section 4 presents and discusses the empirical results. Section 5 concludes with policy implications and directions for future research.

II. Literature Review

1. Global Value Chains: Participation, Linkages, and the Smile Curve

Global value chains represent a fundamental reorganization of international production, wherein activities are distributed across countries according to comparative and competitive advantages (Gereffi, 1999; Timmer et al., 2014). The concept of GVC participation is operationalized through two principal dimensions: backward linkages, which measure the extent to which a country incorporates imported intermediate inputs into its exports (foreign value added in exports — FVA); and forward linkages, which capture the degree to which a country's domestically produced intermediates are used as inputs in the exports of other countries (domestic value added in exports — DVA). Total GVC participation is the sum of these two dimensions normalized by gross exports (Elms & Low, 2013; Abdellaoui et al., 2018).

The smile curve framework, introduced by Stan Shih (1996) and extended by subsequent scholars (Rungi & Del Prete, 2017; Meng et al., 2020; Liu et al., 2022), illustrates the non-linear relationship between production stages and value added: upstream activities (R&D, design) and downstream activities (branding, marketing) occupy the high-value segments of the curve, while manufacturing and assembly constitute the low-value middle. This has important implications for developing countries: achieving economic upgrading — the shift towards higher-value activities — is a primary policy objective, yet it requires institutional preconditions, technological capabilities, and enabling regulatory environments that are often absent in developing-country contexts (Marchi & Alford, 2022; Szalavetz, 2017).

The determinants of GVC participation are diverse and have been examined extensively in the literature. Barbero and Rodríguez-Crespo (2020) demonstrate that institutional quality positively and significantly affects both forward and backward GVC engagement, with voice and accountability driving backward engagement and the rule of law driving forward engagement. Ge, Dollar, and Yu (2020) confirm that regulatory quality and political stability strongly enhance GVC participation, particularly in institutionally sensitive industries. Alhassan et al. (2021) find that institutions are key drivers of GVC participation in Africa, with government integrity and investment freedom facilitating backward linkages. Nadeem et al. (2020) show that institutions mediate the relationship between economic development and GVC participation, and that the nature of institutional effects varies across types of GVCs.

In the Arab country context, Abdellaoui et al. (2018) provide early empirical evidence on the relationship between GVC participation and economic development for a sample of Arab countries, concluding that participation in GVCs is associated with improved economic performance but that the institutional environment significantly conditions these outcomes. More recent analyses have sought to disentangle the specific institutional channels through which Arab economies can deepen GVC integration, underscoring the importance of regulatory reform,

property rights protection, and governance improvements (Chikhun & Romanov, 2023; Romanov, 2023).

2. Corruption and International Trade

Corruption, defined as the abuse of public power for private benefit — encompassing bribery, embezzlement, nepotism, and state capture — has been identified as one of the most significant institutional barriers to economic development (Transparency International, 2023; Kaufmann et al., 2011). Its effects on trade and investment have been extensively studied, though the empirical literature yields mixed conclusions that depend critically on the national and institutional context.

The dominant theoretical perspective — the "sand in the wheels" hypothesis — holds that corruption deters trade and investment by raising effective transaction costs, creating uncertainty about contract enforcement, distorting the allocation of resources towards rent-seeking rather than productive activities, and undermining the regulatory predictability that firms require to plan and execute long-term commitments in international value chains (Mauro, 1995; Rose-Ackerman, 1999; Wei, 2000). Mauro's (1995) seminal study established a robust negative relationship between corruption and economic growth, operating through the channel of reduced investment in physical and human capital. Wei (2000) demonstrated that corruption imposes a significant tax-equivalent burden on foreign direct investment inflows, functioning as a barrier to the international capital flows that are essential for GVC integration. Anderson and Marcouiller (2002) showed that insecurity and corruption impose implicit tariff-equivalent costs on bilateral trade flows that are comparable in magnitude to formal tariff barriers.

An alternative strand of thought — the "grease the wheels" hypothesis — advanced by Leff (1964) and Huntington (1968) and later formalized by Méon and Sekkat (2005) and Méon and Weill (2010), posits that corruption may play an efficiency-enhancing role in contexts where the formal regulatory environment is itself the primary obstacle to economic activity. In heavily bureaucratized economies characterized by excessive red tape, arbitrary regulation, and slow administrative procedures, corruption — particularly in the form of speed money or facilitation payments — can enable firms to obtain necessary permits, licenses, and clearances more rapidly, thereby reducing transaction costs that the formal system imposes. Dreher and Gassebner (2013) provide empirical support for this hypothesis, showing that corruption significantly reduces the negative impact of regulatory burdens on entrepreneurship in highly regulated economies. Houston (2007) similarly finds that the relationship between corruption and development outcomes is conditioned by the quality of the broader institutional environment.

Dutt (2009) examines the relationship between corruption and bilateral trade flows using a gravity model framework, finding evidence that the direction of the effect depends on the institutional context of both importing and exporting countries, with corruption facilitating trade in some bilateral relationships while impeding it in others. Horsewood and Voicu (2012) confirm these heterogeneous effects, demonstrating that corruption can reduce trade costs in institutionally weak environments by bypassing cumbersome administrative procedures. De Rosa, Gooroochurn, and Görg (2010) analyze the relationship between corruption and firm performance in transition economies, finding that corruption affects firms' export intensity in context-dependent ways.

3. Corruption, FDI, and Global Value Chain Participation

The nexus between corruption and GVC participation operates through several channels that are analytically distinct from the general trade-corruption relationship. GVC integration is fundamentally predicated on firms' willingness to establish long-term supplier-buyer relationships that cross national borders, requiring sustained investment in relationship-specific assets, technology transfer, and organizational capabilities. Corruption can both impede and facilitate these dynamics depending on context.

Cattaneo, Gereffi, Miroudot, and Taglioni (2013) provide a strategic framework for understanding how developing countries can join, upgrade, and remain competitive in GVCs, identifying corruption and weak governance as key risks that can deter multinational lead firms from establishing sourcing relationships with suppliers in high-corruption environments. Their analysis suggests that fighting corruption can help developing countries maximize the benefits and reduce the risks associated with GVC participation by reducing the reputational and legal risks faced by multinational firms subject to anti-corruption legislation such as the U.S. Foreign Corrupt Practices Act or the UK Bribery Act.

Tolba (2022) examines trade participation of developing countries in the context of GVCs, finding that anti-corruption measures can enhance participation, though the effects are mediated by the overall regulatory environment. (Bustaman et al., 2022) demonstrate that institutional quality — including governance and anti-corruption dimensions — has a significant impact on export performance in GVCs, with higher institutional quality associated with improved competitiveness in global markets. Their analysis of Indonesia highlights the role of domestic institutional quality in mediating the relationship between GVC engagement and export performance.

In the African context, Alhassan et al. (2021) find that government integrity — a sub-component inversely related to corruption — motivates backward GVC participation, while property rights and tax burdens negatively affect backward linkages. Barbero and Rodríguez-Crespo (2020) report that different dimensions of institutional quality have differentiated effects on forward versus backward GVC engagement, with the nuances depending on whether one focuses on supply-side or demand-side participation channels.

In the Arab and MENA regional context, the corruption–GVC relationship takes on specific characteristics. The six countries in this study — Qatar, Kuwait, Oman, Algeria, Tunisia, and Morocco — span a wide spectrum of institutional quality, resource dependence, and economic openness. GCC economies (Qatar, Kuwait, Oman) benefit from substantial hydrocarbon revenues that finance public investment and diversification strategies, yet simultaneously exhibit high corruption perceptions scores driven by opaque public procurement and state-owned enterprise operations. North African economies (Algeria, Tunisia, Morocco) face different challenges: complex regulatory environments, large informal sectors, and governance deficits that interact with corruption in ways that may create incentives for corruption as a mechanism for navigating bureaucratic obstacles to trade and investment. This institutional heterogeneity makes the Arab country context particularly relevant for testing the competing hypotheses regarding corruption's effects on GVC participation.

4. *Synthesis and Research Gaps*

The review of the literature reveals several important research gaps that this study addresses. First, while the general relationship between institutional quality and GVC participation has been reasonably well established in the literature, the specific role of corruption as a distinct institutional variable — as opposed to composite governance indices — has received insufficient attention. Isolating corruption from broader institutional quality measures is analytically important because corruption may operate through mechanisms that differ fundamentally from those associated with other governance dimensions such as regulatory quality or the rule of law. Second, the Arab country context has been underrepresented in empirical GVC research, despite the region's significant structural transformation challenges and its strategic geographic position connecting European, Asian, and African markets. Third, methodological concerns — particularly the endogeneity of corruption with respect to economic outcomes and the Nickell bias in dynamic panel models — have not always been adequately addressed in prior studies. This study addresses all three gaps by focusing specifically on corruption in a panel of Arab countries estimated using the methodologically rigorous BC-MM estimator.

III- Data and Methodology :

1. Data and Variables

The empirical analysis draws on a balanced panel dataset covering six Arab countries — Qatar, Kuwait, Oman, Algeria, Tunisia, and Morocco — over the period 1996–2020, yielding a total of 150 country-year observations. The selection of these countries reflects the availability of data across all variables of interest and the objective of capturing institutional and economic heterogeneity within the Arab region, including Gulf hydrocarbon economies and North African emerging market economies.

Three dependent variables are employed to capture different dimensions of GVC participation, all sourced from the UNCTAD-Eora GVC database (worldmrio.com/unctadgvc). The first is Forward Linkages (DVA), measured as the domestic value added embodied in exports that is subsequently used as inputs in the production of other countries' exports. This variable captures the upstream dimension of GVC participation, reflecting the extent to which a country contributes its domestic productive capacity to global production networks. The second is Backward Linkages (FVA), measured as the foreign value added embodied in a country's exports — that is, the imported intermediate inputs used in generating export output. This captures the downstream dimension of GVC integration, reflecting the degree to which a country absorbs foreign inputs into its export supply chains. The third dependent variable is the overall GVC Participation Index, computed as the sum of forward and backward linkages divided by gross exports, providing a comprehensive measure of integration depth in global production networks.

The key explanatory variable is the Corruption Perceptions Index sourced from the World Governance Indicators database developed by Kaufmann, Kraay, and Mastruzzi (2011) and updated annually (Kaufmann & Kraay, 2023). This index measures the extent to which public power is exercised for private gain, including petty and grand forms of corruption, as well as elite capture of the state. Higher values indicate higher perceived levels of corruption. The inclusion of this variable — rather than the "control of corruption" indicator used in prior literature — enables a direct test of how the level of corruption, rather than anti-corruption capacity, affects GVC participation.

Control variables include: (i) GDP per capita (World Bank, current USD, log-transformed) as a proxy for economic development and market size; (ii) Government Spending (Heritage Foundation Index, as a percentage of GDP) reflecting the scale of the public sector; (iii) Trade Freedom (Heritage Foundation Index, 0–100) capturing the openness of trade policy including tariff and non-tariff barriers; (iv) Investment Freedom (Heritage Foundation Index, 0–100) reflecting restrictions on capital flows; (v) Financial Freedom (Heritage Foundation Index, 0–100) measuring banking sector efficiency and independence from government control; and (vi) Economic Freedom (Heritage Foundation overall index, 0–100) as a composite measure of market openness and regulatory environment. All continuous variables are log-transformed to facilitate interpretation of estimated parameters as elasticities. Where institutional indices include negative values, a constant (3.5) is added prior to log transformation.

2. Econometric Models

Three dynamic panel data models are specified, corresponding to the three dimensions of GVC participation:

Model 1 – Backward Linkages (FVA):

$$\begin{aligned} lfvait = & \beta_0 + \beta_1 lfvai_{t-1} + \beta_2 lgdppercapitait + \beta_3 lgovernmentspendingit \\ & + \beta_4 ltradefreedomit + \beta_5 linvestmentfreedomit + \beta_6 lfinancialfreedomit \\ & + \beta_7 leconomicfreedomit + \beta_8 corpit + \alpha_i + \gamma_t + \varepsilon_{it} \dots (1) \end{aligned}$$

Model 2 – Forward Linkages (DVA):

$$\begin{aligned} ldv_{it} = & \beta_0 + \beta_1 ldv_{it,t-1} + \beta_2 lgdp_{it} + \beta_3 lgov_{it} + \beta_4 ltr_{it} + \beta_5 lin_{it} + \beta_6 lfin_{it} \\ & + \beta_7 lecon_{it} + \beta_8 corp_{it} + \alpha_i + \gamma_t + \varepsilon_{it} \dots (2) \end{aligned}$$

Model 3 – GVC Participation Index:

$$\begin{aligned} lgvc_{it} = & \beta_0 + \beta_1 lgvc_{it,t-1} + \beta_2 lgdp_{it} + \beta_3 lgov_{it} + \beta_4 ltr_{it} + \beta_5 lin_{it} + \beta_6 lfin_{it} \\ & + \beta_7 lecon_{it} + \beta_8 corp_{it} + \alpha_i + \gamma_t + \varepsilon_{it} \dots (3) \end{aligned}$$

where $\beta_0 \dots \beta_8$ denote the structural parameters of the model; *corp_it* is the corruption index; α_i captures unobserved country-specific fixed effects; γ_t represents time fixed effects controlling for global shocks common to all countries; and ε_{it} is the idiosyncratic error term. The inclusion of the lagged dependent variable (β_1) captures the persistence of GVC integration, reflecting the path-dependent nature of participation in global production networks. All models are estimated in logarithmic form, so that the estimated parameters represent elasticities with respect to the corresponding independent variables.

3. Estimation Method: Bias-Corrected Method of Moments (BC-MM)

Dynamic panel data models that include lagged dependent variables pose well-known econometric challenges. The standard fixed-effects (within) estimator is subject to the Nickell (1981) bias, which arises from the correlation between the lagged dependent variable and the within-transformed error term. This bias is non-trivial even in panels with moderate time dimensions and does not vanish as N increases. The generalized method of moments (GMM) estimator developed by Arellano and Bond (1991) addresses this issue by differencing the model to eliminate fixed effects and using lagged levels as instruments. However, GMM estimators are known to suffer from instrument proliferation problems and weak instrument issues, particularly in panels with persistent dependent variables and limited time series variation.

To address these limitations, this study employs the bias-corrected method of moments (BC-MM) estimator proposed by Breitung, Kripfganz, and Hayakawa (2022). This estimator represents a correction of the bias of the GMM-difference estimator, using the second-order backward lags ($t-2$) of the differenced variables as instrumental variables while conducting estimation in differences. The BC-MM estimator combines the advantages of both fixed-effects and GMM approaches: it absorbs both individual fixed effects and random effects, addresses heterogeneity problems, handles autoregressive models with high-order lags, and delivers robust and efficient parameter estimates compared to standard GMM. Importantly, the BC-MM estimator explicitly corrects for biases arising from the correlation between the independent variables and the error term — a particularly relevant concern in this study given that the GVC participation measures are defined as ratios involving the dependent variable itself, creating a potential endogeneity problem. All models are estimated using STATA 17.0.

IV- Results and discussion :

The following sub-sections present and discuss the results of estimating the three dynamic panel models. Table 1 (Appendix 2) reports the results for backward linkages, Table 2 (Appendix 3) for forward linkages, and Table 3 (Appendix 4) for the overall GVC participation index.

1. Model 1: Backward Linkages (FVA)

The BC-MM estimation results for the backward linkages model reveal a statistically significant and positive effect of corruption on backward GVC participation. An increase of one unit in the corruption index leads to a significant increase in the level of backward linkages, indicating that in the Arab countries under study, higher levels of corruption are associated with

greater incorporation of imported intermediate inputs into export production. This finding is consistent with the "grease the wheels" hypothesis: in environments where administrative and regulatory barriers impose substantial transaction costs on the import of intermediate goods and on the establishment of supplier relationships with foreign firms, corruption — in the form of facilitation payments and informal networks — can reduce these de facto barriers and enable firms to access the foreign inputs necessary for export-oriented production.

The results also confirm a significant positive impact of GDP per capita on backward linkages, with a 1 percent increase in GDP per capita leading to an increase in backward linkage levels by approximately 0.334 percent. This finding is consistent with the theoretical expectation that wealthier economies have greater absorptive capacity for foreign intermediate inputs, reflecting higher levels of industrialization and more sophisticated domestic production processes that can effectively incorporate imported components and technologies. Government spending also exerts a significant positive effect on backward linkages, with a 1 percent increase in government spending contributing to an increase in backward linkage levels by approximately 0.014 percent, reflecting the role of public investment in infrastructure and productive capacity as a facilitating factor for GVC integration.

Financial freedom is found to exert a significant negative effect on backward linkages, indicating that an increase in financial freedom levels by 1 percent leads to a decrease in backward linkage levels by approximately 0.139 percent. This counter-intuitive result may reflect the reallocation of financial resources towards domestic investment opportunities or financial market speculation when financial sector constraints are relaxed, reducing firms' reliance on imported inputs for export production. The effects of trade freedom, investment freedom, and economic freedom are not statistically significant, suggesting that these dimensions of economic policy openness do not independently drive backward GVC participation in this sample.

2. Model 2: Forward Linkages (DVA)

The estimation results for the forward linkages model similarly reveal a statistically significant and positive effect of corruption on forward GVC participation. Higher corruption levels are associated with increased domestic value added embodied in other countries' exports — that is, Arab country firms succeed in establishing stronger upstream GVC positions when corruption is more prevalent. This result reinforces the grease-the-wheels interpretation: in Arab countries where domestic suppliers face significant bureaucratic obstacles in accessing export markets, obtaining quality certifications, and establishing commercial relationships with foreign buyers, corruption may facilitate these connections by enabling firms to bypass regulatory bottlenecks that would otherwise prevent entry into GVC supply chains.

GDP per capita exerts a significant positive effect on forward linkages, with a 1 percent increase in GDP per capita leading to an increase in forward linkage levels by approximately 0.285 percent. This reflects the positive relationship between economic sophistication and the capacity to supply higher-value intermediate inputs to global production networks. Government spending similarly has a positive and significant effect on forward linkages, with a parameter estimate of approximately 0.043, underlining the importance of public investment — particularly in infrastructure, education, and research and development — in enhancing the quality and competitiveness of domestically produced intermediates that can enter global value chains as upstream inputs.

Trade freedom has a positive and significant effect on forward linkages, consistent with the theoretical expectation that reduced tariff and non-tariff barriers enhance the capacity of domestic firms to export value-added intermediates. Financial freedom exerts a significant negative effect on forward linkages, consistent with the findings from the backward linkages model. Investment freedom and economic freedom do not yield statistically significant effects, suggesting that these broader dimensions of economic openness operate through channels other than the direct enhancement of domestic value added in exports.

3. Model 3: Overall GVC Participation Index

The results of the overall GVC participation model are consistent with those obtained for the two individual linkage measures. Corruption exerts a statistically significant and positive effect on the GVC participation index, confirming that in the Arab country context, higher corruption levels are associated with deeper integration into global production networks across both upstream and downstream dimensions. This finding provides the most comprehensive evidence for the grease-the-wheels mechanism operating in the Arab region: the same institutional deficit that is typically associated with economic retardation in other contexts appears, in the specific institutional environment of Arab countries, to serve as a transaction-cost-reducing mechanism for GVC integration.

GDP per capita and government spending both exert significant positive effects on overall GVC participation, with an increase of one unit in GDP per capita leading to an increase in GVC participation levels by approximately 0.336 percent. Financial freedom again registers a significant negative coefficient, while the remaining control variables — trade freedom, investment freedom, and economic freedom — do not achieve statistical significance in the overall participation model.

4. Discussion: The Grease-the-Wheels Mechanism in Arab GVCs

The consistent finding that corruption positively and significantly enhances GVC participation across all three dimensions — backward linkages, forward linkages, and the overall participation index — in the six Arab countries under study constitutes the central empirical contribution of this paper. This result warrants careful theoretical interpretation in the specific institutional context of Arab economies, drawing on the grease-the-wheels framework while acknowledging its limitations and policy implications.

The grease-the-wheels mechanism through which corruption enhances GVC participation in Arab countries can be understood through several complementary channels. First, many Arab economies are characterized by heavily bureaucratized regulatory environments where obtaining permits, licenses, customs clearances, and certifications for international trade activities involves protracted administrative procedures, multiple agency approvals, and significant uncertainty about outcomes. In such environments, corruption — particularly in the form of speed money or facilitation payments — can effectively reduce the time and resources required to complete these procedures, enabling firms to meet the delivery deadlines and quality standards demanded by international buyers in GVCs. Firms that are unable or unwilling to engage in these informal practices may find themselves at a systematic competitive disadvantage in accessing GVC relationships.

Second, the establishment of GVC relationships — particularly as a supplier to multinational lead firms — typically requires firms to demonstrate compliance with a range of standards and certifications, establish trust with potential buyers, and navigate complex contracting arrangements. In institutional environments where the formal mechanisms for contract enforcement, dispute resolution, and information verification are weak, corruption and informal networks may serve as alternative mechanisms for building trust and ensuring commitment. The "social capital" embedded in informal networks — which often involves a corrupt exchange — can substitute for the formal institutional infrastructure that provides credibility in higher-quality institutional environments.

Third, the specific economic structure of Arab countries amplifies the grease-the-wheels effect in the GVC context. GCC economies in the sample (Qatar, Kuwait, Oman) operate primarily through state-owned enterprises and government-linked companies in key export sectors, where access to production contracts, resource concessions, and export licenses is often mediated by political connections and informal networks rather than market competition. In this context, corruption effectively functions as an allocation mechanism for GVC-related economic activities, with firms better connected to networks of influence gaining preferential access to export-oriented production opportunities. North African economies in the sample (Algeria, Tunisia, Morocco)

exhibit different but complementary dynamics: complex import licensing systems, opaque customs procedures, and pervasive rent-seeking in export credit and trade finance create conditions in which informal payments facilitate GVC integration in ways that formal reforms have not yet been able to replicate.

It is essential, however, to contextualize these findings within their full theoretical and normative implications. The finding that corruption enhances GVC participation in Arab countries does not constitute an endorsement of corruption as an economic policy instrument. Rather, it reflects an important second-best reality: in environments where the formal institutional infrastructure is sufficiently deficient that formal channels cannot deliver the regulatory certainty and transactional efficiency required for GVC integration, corruption fills the gap in ways that produce observable economic outcomes. The appropriate policy response is not to tolerate corruption but to invest in the formal institutional reforms — simplification of regulatory requirements, digitization of customs procedures, strengthening of commercial courts, and enhancement of property rights protection — that would render corruption unnecessary as a transaction-cost-reduction mechanism.

The positive and significant effects of government spending and economic growth on GVC participation across all three models are consistent with prior literature and reflect the role of public investment and economic development as complementary drivers of GVC integration. Government expenditure — particularly in areas such as infrastructure, education, digital connectivity, and research and development — creates enabling conditions for GVC integration by reducing logistics costs, enhancing workforce capabilities, and fostering innovation. Economic growth, as reflected in GDP per capita, increases market sophistication, productive complexity, and absorptive capacity for foreign technologies and management practices, all of which facilitate deeper GVC engagement.

The negative effect of financial freedom on GVC participation across all models is a noteworthy finding that warrants attention. One interpretation is that financial sector liberalization in Arab countries may redirect capital towards more immediately profitable opportunities — real estate, financial instruments, or import-substituting domestic production — rather than towards the long-term investment in export capabilities required for GVC integration. Another interpretation is that access to domestic credit markets, which increases with financial freedom, may reduce firms' dependence on the trade credit arrangements embedded in GVC relationships, thereby reducing their incentive to deepen GVC participation. Understanding the precise mechanism through which financial freedom affects GVC participation in Arab countries represents an important avenue for future research.

V- Conclusion:

This study provides empirical evidence on the impact of corruption on GVC participation in a panel of six Arab countries — Qatar, Kuwait, Oman, Algeria, Tunisia, and Morocco — over the period 1996–2020. Using the bias-corrected method of moments estimator proposed by Breitung, Kripfganz, and Hayakawa (2022), which addresses the Nickell bias and endogeneity concerns characteristic of dynamic panel models, the study examines the effects of corruption on three dimensions of GVC integration: backward linkages (foreign value added in exports), forward linkages (domestic value added in exports), and the overall GVC participation index.

The key finding is that corruption positively and significantly enhances GVC participation across all three dimensions in the Arab country context. This result, consistent with the grease-the-wheels hypothesis, reflects the specific institutional reality of Arab economies: in environments where formal regulatory channels are insufficiently developed to facilitate the transactional requirements of GVC integration, corruption substitutes for the absent institutional infrastructure by reducing de facto transaction costs and enabling firms to navigate bureaucratic obstacles. Government spending and economic growth are additionally found to exert significant positive effects on GVC participation, confirming the complementary role of public investment and

economic development in deepening integration into global production networks. Financial freedom, by contrast, is found to reduce GVC participation, potentially reflecting a reallocation of financial resources away from export-oriented productive investment.

These findings carry important and nuanced policy implications for Arab countries seeking to deepen GVC participation. The grease-the-wheels interpretation of the corruption result must be understood as a second-best equilibrium rather than a policy endorsement: what the finding reveals is that the formal institutional environment is currently so deficient in facilitating GVC integration that corruption fills the resulting void. The appropriate policy response is therefore to undertake comprehensive formal institutional reform — streamlining regulatory requirements for international trade and investment, digitizing customs and licensing procedures to reduce opportunities for administrative discretion, strengthening commercial courts and contract enforcement mechanisms, and enhancing transparency in public procurement and state enterprise operations. Such reforms, if effectively implemented, would simultaneously reduce corruption and improve the formal channels through which GVC integration can occur, potentially achieving superior outcomes to the current corruption-as-grease equilibrium.

In parallel, the positive effects of government spending and economic growth on GVC participation suggest that supply-side policies — investment in trade infrastructure, logistics, human capital, and productive technology — remain essential complements to institutional reform in Arab countries' GVC integration strategies. Balancing these investment priorities with fiscal sustainability, particularly in hydrocarbon-dependent GCC economies subject to commodity price volatility, is a central policy design challenge.

Several limitations of this study should be acknowledged. The corruption index used, drawn from the World Governance Indicators, measures perceptions of corruption rather than direct corruption acts, which may introduce measurement error. The six-country sample, while selected to represent institutional and economic heterogeneity within the Arab region, limits the generalizability of the findings. Additionally, the BC-MM estimator, while addressing the key econometric challenges of the dynamic panel setting, relies on identifying assumptions regarding instrument validity that cannot be fully tested. Future research should explore the mechanisms through which corruption affects specific GVC sectors, examine the threshold effects of institutional quality on the grease-versus-sand trade-off, and employ alternative corruption measures — such as the Corruption Perceptions Index from Transparency International — to assess the robustness of the findings.

References:

- Abdellaoui, O., Djedidi, S., Bahi, A., & Bahi, O. (2018). The Effect of Participation in Global Value Chains on Economic Development in the Arab Country: Case of Some Selected Arab Countries (1995–2015). *Magallat al-Tanmiyat wa-al-Siyasat al-Iqtisadiyyat*, 20(2), 7–41.
- Bustaman, A., Indiatuti, R., Budiono, B., & Anas, T. (2022). Quality of Indonesia's domestic institutions and export performance in the era of global value chains. *Journal of Economic Structures*, 11(1). <https://doi.org/10.1186/s40008-022-00293-5>
- Alessandrini, D. (2022). Global value chains, development and the long durée of trade and investment law. *Leiden Journal of International Law*, 35(3), 619–640. <https://doi.org/10.1017/s0922156522000255>
- Alhassan, A., Zoaka, J., & Ringim, S. (2021). Africa as headwaiter at the dining table of global value chains: do institutions matter for her participation? *African Development Review*, 33(3), 560–572. <https://doi.org/10.1111/1467-8268.12592>
- Anderson, J. E., & Marcouiller, D. (2002). Insecurity and the Pattern of Trade: An Empirical investigation. *The Review of Economics and Statistics*, 84(2), 342–352. <https://doi.org/10.1162/003465302317411587>
- Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, 58(2), 277–297. <https://doi.org/10.2307/2297968>
- Baars, G. (2016). The Role of Law in Global Value Chains: A Research Manifesto. *London Review of International Law*, 4(1), 57–79. <https://doi.org/10.1093/LRIL/LRW003>

- Barbero, J., & Rodríguez-Crespo, E. (2020). The Role of Institutional Quality on Participation in Global Value Chains. *Cuadernos Económicos de ICE*, (100). <https://doi.org/10.32796/cice.2020.100.7117>
- Breitung, J., Kripfganz, S., & Hayakawa, K. (2022). Bias-corrected method of moments estimators for dynamic panel data models. *Econometrics and Statistics*, 24, 116–132. <https://doi.org/10.1016/j.ecosta.2021.07.001>
- Cattaneo, O., Gereffi, G., Miroudot, S., & Taglioni, D. (2013). Joining, Upgrading and Being Competitive in Global Value Chains: A Strategic Framework. World Bank Policy Research Working Paper No. 6406. <https://doi.org/10.1596/1813-9450-6406>
- Chikhun, L., & Romanov, I. (2023). Factors determining participation of developing countries in global value chains. *BRICS Journal of Economics*, 4(2), 225–242. <https://doi.org/10.3897/brics-econ.4.e101915>
- De Rosa, D., Gooroochurn, N., & Görg, H. (2010). Corruption and Productivity: Firm-level Evidence from the BEEPS Survey. World Bank Policy Research Working Paper No. 5348.
- Dreher, A., & Gassebner, M. (2013). Greasing the wheels of entrepreneurship? The impact of regulations and corruption on firm entry. *Public Choice*, 155(3–4), 413–432. <https://doi.org/10.1007/s11127-011-9871-2>
- Dutt, P. (2009). Trade protection and bureaucratic corruption: an empirical investigation. *Canadian Journal of Economics/Revue Canadienne D Économique*, 42(1), 155–183. <https://doi.org/10.1111/j.1540-5982.2008.01503.x>
- Elms, D., & Low, P. (2013). Global Value Chains in a Changing World. World Trade Organization and Temasek Foundation Centre for Trade & Negotiations (TFCTN). <https://doi.org/10.30875/0b68ab34-en>
- Ge, Y., Dollar, D., & Yu, X. (2020). Institutions and participation in global value chains: Evidence from belt and road initiative. *China Economic Review*, 61, 101447. <https://doi.org/10.1016/j.chieco.2020.101447>
- Gereffi, G. (1999). International trade and industrial upgrading in the apparel commodity chain. *Journal of International Economics*, 48, 37–70. [https://doi.org/10.1016/S0022-1996\(98\)00075-0](https://doi.org/10.1016/S0022-1996(98)00075-0)
- Gereffi, G. (2018). *Global Value Chains and Development*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/9781108559423>
- Gereffi, G. (2019). Economic upgrading in global value chains. In Edward Elgar Publishing eBooks. <https://doi.org/10.4337/9781788113779.00022>
- Grossman, G. M., & Rossi-Hansberg, E. (2008). Trading tasks: A simple theory of offshoring. *American Economic Review*, 98(5), 1978–1997. <https://doi.org/10.1257/aer.98.5.1978>
- Henderson, J., Dicken, P., Hess, M., Coe, N., & Yeung, H. (2002). Global production networks and the analysis of economic development. *Review of International Political Economy*, 9(3), 436–464. <https://doi.org/10.1080/09692290210150842>
- Horsewood, N., & Voicu, A. M. (2012). Does corruption hinder trade for the new EU members? *Economics*, 6(1). <https://doi.org/10.5018/economics-ejournal.ja.2012-47>
- Houston, D. A. (2007). Can corruption ever improve an economy? *Cato Journal*, 27(3), 325–342.
- Huntington, S. P. (1968). *Political Order in Changing Societies*. New Haven, CT: Yale University Press.
- Kaufmann, D., & Kraay, A. (2023). *Worldwide Governance Indicators, 2023 Update*. World Bank. www.govindicators.org
- Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The worldwide governance indicators: Methodology and analytical issues. *Hague Journal on the Rule of Law*, 3(2), 220–246. <https://doi.org/10.1017/s1876404511200046>
- Kordalska, A., & Olczyk, M. (2022). Upgrading low value-added activities in global value chains: A functional specialisation approach. *Economic Systems Research*, 35(2), 265–291. <https://doi.org/10.1080/09535314.2022.2047011>
- Leff, N. H. (1964). Economic development through bureaucratic corruption. *American Behavioral Scientist*, 8(3), 8–14.
- Liu, X. J., Liu, H., Liu, S. Y., Shen, J. H., & Lee, C. C. (2022). Profit sharing, industrial upgrading, and global supply chains: Theory and evidence. *Review of Development Economics*, 26(4), 2454–2493. <https://doi.org/10.1111/rode.12906>
- Lwesya, F. (2022). Integration into regional or global value chains and economic upgrading prospects: An analysis of the East African Community (EAC) bloc. *Future Business Journal*, 8(1), 33. <https://doi.org/10.1186/s43093-022-00141-9>
- Marchi, V., & Alford, M. (2022). State policies and upgrading in global value chains: A systematic literature review. *Journal of International Business Policy*, 5(1), 88–111. <https://doi.org/10.1057/s42214-021-00107-8>

- Mauro, P. (1995). Corruption and growth. *Quarterly Journal of Economics*, 110(3), 681–712. <https://doi.org/10.2307/2946696>
- Meng, B., Ye, M., & Wei, S. (2020). Measuring smile curves in global value chains. *Oxford Bulletin of Economics and Statistics*, 82(5), 988–1016. <https://doi.org/10.1111/obes.12364>
- Méon, P.-G., & Sekkat, K. (2005). Does corruption grease or sand the wheels of growth? *Public Choice*, 122(1–2), 69–97. <https://doi.org/10.1007/s11127-005-3988-0>
- Méon, P.-G., & Weill, L. (2010). Is corruption an efficient grease? *World Development*, 38(3), 244–259. <https://doi.org/10.1016/j.worlddev.2009.06.004>
- Mudambi, R., Li, L., Ma, X., Makino, S., Qian, G. (2018). Zoom in, zoom out: Geographic scale and multinational activity. *Journal of International Business Studies*, 49, 929–941. <https://doi.org/10.1057/s41267-018-0158-4>
- Nadeem, M., Yang, J., Niazi, M., Tian, Y., & Subhan, S. (2020). Paths of economic development: A global evidence for the mediating role of institutions for participation in global value chains. *Economic Research – Ekonomska Istraživanja*, 34(1), 687–708. <https://doi.org/10.1080/1331677x.2020.1804426>
- Nickell, S. (1981). Biases in dynamic models with fixed effects. *Econometrica*, 49(6), 1417–1426.
- Porter, M. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.
- Romanov, I. (2023). Factors determining participation of developing countries in global value chains. *BRICS Journal of Economics*, 4(2), 225–242. <https://doi.org/10.3897/brics-econ.4.e101915>
- Rose-Ackerman, S. (1999). *Corruption and Government: Causes, Consequences, and Reform*. Cambridge: Cambridge University Press.
- Rungi, A., & Del Prete, D. (2017). The "smile curve": Where value is added along supply chains. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2936710>
- Ruppert, N., Sobel-Read, K., & Pepper, B. (2021). Law, Global Value Chains and Upgrading in the Mining Industry: A Case Study on Zambia. *African Journal of International and Comparative Law*, 29(4), 521–550. <https://doi.org/10.3366/ajicl.2021.0382>
- Stöllinger, R. (2021). Testing the smile curve: Functional specialisation and value creation in GVCs. *Structural Change and Economic Dynamics*, 56, 93–116. <https://doi.org/10.1016/j.strueco.2020.10.002>
- Szalavetz, A. (2017). Upgrading and Value Capture in Global Value Chains in Hungary: More Complex than What the Smile Curve Suggests. In B. Szent-Iványi (Ed.), *Foreign Direct Investment in Central and Eastern Europe. Studies in Economic Transition* (pp. 127–150). Cham: Palgrave Macmillan. https://doi.org/10.1007/978-3-319-40496-7_6
- Timmer, M., Erumban, A., Los, B., Stehrer, R., & Vries, G. (2014). Slicing up global value chains. *Journal of Economic Perspectives*, 28(2), 99–118. <https://doi.org/10.1257/jep.28.2.99>
- Tolba, H. (2022). The trade participation of developing countries in the context of the global value chains. *The Business & Management Review*, 13(02). <https://doi.org/10.24052/bmr/v13nu02/art-24>
- Transparency International. (2023). *Corruption Perceptions Index 2023*. Berlin: Transparency International. <https://www.transparency.org/en/cpi/2023>
- Wei, S.-J. (2000). How taxing is corruption on international investors? *Review of Economics and Statistics*, 82(1), 1–11. <https://doi.org/10.1162/003465300558533>

- Appendices:

Table A1 summarizes the variables, their definitions, and data sources.

Variable	Definition	Data Sources
Forward Linkages (DVA)	Domestic value added in exports whose outputs are locally manufactured. Measures locally produced intermediate inputs used to generate export output	https://worldmrio.com/unctadgvc
Backward Linkages (FVA)	Foreign value added in exports whose outputs are produced abroad. Measures imported intermediate inputs used to generate export outputs (known as "VS" in technical literature)	
GVC Participation Index	Sum of forward and backward linkages divided by gross exports: $GVC\ Participation = (DVX + FVA) / Gross\ Exports$	
Corruption Index	Measures the extent to which public power is exploited for private gain, including petty and grand corruption and elite capture of state resources	https://www.govindicators.org

Economic Freedom	Overall index published by the Heritage Foundation covering rule of law, government size, regulatory efficiency, and open markets (scale: 0–100)	https://www.heritage.org/index
Trade Freedom	Composite measure of the absence of tariff and non-tariff barriers affecting imports and exports of goods and services	
Investment Freedom	Assesses restrictions imposed on investment flows. Score of 100 represents ideal investment freedom	
Financial Freedom	Measures banking efficiency and independence from government control in the financial sector, evaluated across five areas of financial regulation	
Government Spending	Level of government expenditures (consumption and transfers) as a percentage of GDP	https://databank.worldbank.org/
GDP per Capita	GDP at buyers' prices divided by midyear population, expressed in current US dollars	

Appendix 2: Backward Linkages (FVA) Model Estimation Results

Bias-corrected estimation

Iteration 0: $f(b) = .00182725$ Iteration 1: $f(b) = 1.401e-06$ Iteration 2: $f(b) = 1.790e-12$ Iteration 3: $f(b) = 2.996e-24$

Group variable: panel

Time variable: year

Number of obs = 154

Number of groups = 6

Fixed-effects model

Obs per group: min = 24

avg = 25.66667

max = 26

(Std. err. adjusted for clustering on panel)

lfva	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
lfva L1.	.8036045	.0837732	9.59	0.000	.6394121	.9677969
lgdppercapita	.2735067	.1233531	2.22	0.027	.0317391	.5152743
lgovernmentspending	.0394305	.0149842	2.63	0.009	.010062	.068799
ltradefreedom	.0205185	.0398812	0.51	0.607	-.0576471	.0986842
lfinancialfreedom	-.0964816	.0789237	-1.22	0.222	-.2511691	.0582059
leconomicfreedom	.0914729	.2546613	0.36	0.719	-.4076542	.5905999
linvestmentfreedom	-.0044323	.053124	-0.08	0.934	-.1085534	.0996887
Corp	.1454359	.0751402	1.94	0.053	-.0018361	.292708
_cons	-.3616829	.7402584	-0.49	0.625	-1.812563	1.089197

Source: STATA 17.0 Output

Appendix 3: Forward Linkages (DVA) Model Estimation Results

Bias-corrected estimation

Iteration 0: $f(b) = .00099046$ Iteration 1: $f(b) = 1.259e-07$ Iteration 2: $f(b) = 3.097e-15$ Iteration 3: $f(b) = 2.016e-29$

Group variable: panel

Time variable: year

Number of obs = 154

Number of groups = 6

Fixed-effects model

Obs per group: min = 24

avg = 25.66667

max = 26

(Std. err. adjusted for clustering on panel)

ldva	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
ldva L1.	.7583363	.04488	16.90	0.000	.670373	.8462995
lgdppercapita	.3469898	.0678866	5.11	0.000	.2139345	.480045
lgovernmentspending	.011662	.0055598	2.10	0.036	.0007649	.0225591
ltradefreedom	-.0547868	.0316422	-1.73	0.083	-.1168044	.0072307
lfinancialfreedom	-.1113686	.0519122	-2.15	0.032	-.2131146	-.0096227
leconomicfreedom	.2845059	.1793044	1.59	0.113	-.0669242	.635936
linvestmentfreedom	-.0137742	.0356218	-0.39	0.699	-.0835916	.0560432
Corp	.149186	.0349424	4.27	0.000	.0807002	.2176717
_cons	-.0751596	.8130432	-0.09	0.926	-1.668695	1.518376

Source: STATA 17.0 Output

Appendix 4: GVC Participation Index Model Estimation Results

Bias-corrected estimation

Iteration 0: $f(b) = .00160221$
 Iteration 1: $f(b) = 3.838e-07$
 Iteration 2: $f(b) = 3.692e-14$
 Iteration 3: $f(b) = 3.859e-28$

Group variable: panel

Time variable: year

Number of obs = 154

Number of groups = 6

Fixed-effects model

Obs per group: min = 24

avg = 25.66667

max = 26

(Std. err. adjusted for clustering on panel)

lgvc	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]	
lgvc L1.	.7866218	.0530133	14.84	0.000	.6827175	.890526
lgdppercapita	.3460238	.0925628	3.74	0.000	.164604	.5274437
lgovernmentspending	.0325008	.0045788	7.10	0.000	.0235265	.0414752
ltradefreedom	-.0804174	.0359851	-2.23	0.025	-.1509469	-.0098878
lfinancialfreedom	-.1280054	.0845791	-1.51	0.130	-.2937775	.0377666
leconomicfreedom	.3335256	.2708411	1.23	0.218	-.1973131	.8643644
linvestmentfreedom	-.0119212	.0493304	-0.24	0.809	-.108607	.0847645
Corp	.1553306	.0483204	3.21	0.001	.0606244	.2500368
_cons	-.7977557	.9570108	-0.83	0.405	-2.673462	1.077951

Source: STATA 17.0 Output

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