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GVCs and Entrepreneurial Activity: The Role of Institutions and Labor Provisions

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GVCs and Entrepreneurial Activity: The Role of Institutions and Labor Provisions[1]

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Abstract

This paper examines the nexus between participation in global value chains (GVCs) and entrepreneurial activity, with particular attention to the moderating role of institutional quality and labor provisions enforced in trade agreements. Using panel data that combine the EORA multiregion input–output tables with World Bank entrepreneurship indicators, the analysis distinguishes between forward and backward GVC participation measures to capture the different channels through which international production linkages influence entrepreneurial dynamics. Preliminary results show that although both forward and backward GVC integration increase entrepreneurial density, backward linkage, measured by foreign value added exported, is more relevant than forward linkages. Furthermore, institutional quality exerts a direct, robust effect on entrepreneurship density and negatively moderates the GVC-driven entrepreneurial activity, signaling a substitution effect. On the other hand, labor provisions exert a direct negative effect on entrepreneurial activity and do not moderate the GVC-driven entrepreneurial dynamics. The findings reveal heterogeneous effects across different income and regional groups.

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1- Introduction

Over the previous decades, the rapid expansion of global value chains (GVCs) amid the "unbundling" of the production process has vivid effects on economic development. While the nexus between GVCs and innovation measures attracts scholars' interest, the former's association with entrepreneurial activity remains understudied. New trade theory highlights different effects of trade interlinkages on firms' entry and exit dynamics. On the one hand, competition and learning through GVCs motivate new entrants with an innovation edge, leading to higher entrepreneurial density. On the other hand, the selection effect of trade not only limits market access but can also drive firm exit, leading to less entrepreneurial density. These trade dynamics raise new questions, particularly for regions with institutional challenges like the Middle East and North Africa (MENA). Furthermore, the increasing number of trade agreements with enforced labor provisions raises the question of the relevance of these provisions to the labor market conditions and, consequently, to entrepreneurial activity. This paper explores the triple influence of GVCs (forward versus backward measures), institutional quality, and labor provisions on entrepreneurial activity across different income and regional groups.

The literature on entrepreneurship highlights different definitions and approaches to exploring the concept. Out of the vast, fragmented definitions, we follow the Schumpeterian definition linking entrepreneurship to innovation by exploring opportunities. Opportunity-driven entrepreneurship, as defined by Acs and Audretsch (1990) and Wennekers et al. (2002), is more prevalent in areas where technology, innovation, and institutional support are strong. On the other hand, necessity entrepreneurship prevails where economic opportunities are limited, and self-employment is a last resort (Cunningham and Lischeron, 1991). On theoretical grounds, economic theory identifies opportunity and necessity entrepreneurship as influenced by contextual factors such as economic growth, market structure, as well as the regulatory landscape in which entrepreneurs operate (Ratten 2023).

Accordingly, GVC-driven competition and learning raise novel questions on how different types of interlinkages influence entrepreneurial dynamics, through the endogenous opening and closing of businesses. Employing the "self-employment" economist's definition of entrepreneurship, GVCs' participation can have a dual impact on the density of entrepreneurial activity. On the one hand, GVCs induce technology and innovation (Eissa and Zaki, 2023), facilitating new entry due to decreased cost and economies of scale. However, GVC-driven pressures can also induce consolidation and exit among less efficient and vulnerable firms. First, vulnerable firms may not be able to face the foreign competition induced by more GVC integration. Second, international trade comes with compliance costs that small firms cannot endure. Hence, the shifting landscape of GVCs has contributed both to the rise in dynamic new entries and, in some contexts, business closures in less competitive businesses.

Focusing on the forward measure of GVCs, more participation enhances entrepreneurship through market access, supplier relationships, and accompanying innovation (Szalavetz, 2020). In this respect, the drive to enhanced entrepreneurship is both opportunity- and necessity-driven (Su et al., 2024). Strong domestic GVC linkages provide greater productivity and support the opening of

innovative new firms (Beverelli et al., 2017). From another angle, GVC forward measures can have a negative association with entrepreneurial activity if domestic firms are narrowly specializing in low-value-added activities (Fischer et al., 2024). This effect is particularly relevant to developing regions like the MENA, and requires strict policies to incentivise absorptive capacities. Although forward interlinkages create opportunities for business expansion, specialization, and integration into high-value stages of global production, they may also prompt exit where competitive pressures cannot be met.

Moving to the backward GVC measures, importing foreign value added for domestic processing introduces technology, knowledge, and high-quality inputs to local markets, often stimulating entrepreneurial entry through the learning effects and productivity enhancements (Eissa and Zaki, 2023). Because of the demand effect, foreign value added absorbed enhances self-employment (Thompson and Zang, 2023). An enhanced level of innovation underscores the role of backward linkages in facilitating entrepreneurship activity. Technological change and innovation opportunities foster entrepreneurship by lowering entry barriers, enabling new products/processes, and raising productivity. Empirical evidence links higher rates of new business formation to investment in R&D, digital infrastructure, and knowledge spillovers, particularly in advanced and knowledge-intensive sectors (Rojas et al., 2024).

Although both measures conceptually lead to entrepreneurial activity, studies on Turkish firms evidence the positive impact of the backward measure solely. Again, the forward measures make firms stuck in low-value-added, unproductive activities (Kılıçaslan, 2019). Because of the contrasting evidence, it is important to study the effect of a combined measure of GVCs to unveil the net effect of both measures. Panel data analyses reveal that while both forward and backward GVC participation generally support dynamic entrepreneurial ecosystems, the net effect depends on sector, market structure, and absorptive capacities (Wang et al., 2022).

Besides GVC integration, entrepreneurial activity is shaped by a broad constellation of determinants, reflecting contextual macroeconomic and institutional factors. The literature confirms that entrepreneurship is multidimensional and driven by the interplay of micro (individual and firm-level) and macro (institutional, policy, and market) determinants (Roman et al., 2018; Sendra-Pons et al., 2022).

Key determinants of entrepreneurial activity include the level of development, institutional quality, and labor market conditions. Mai et al. (2025) empirically analyze the effect of macroeconomic variables on entrepreneurship across 70 economies spanning the years 2003 and 2019. They find that economic resources strongly and positively affect entrepreneurship activity. In that sense, a higher level of development, foreign investments, and trade openness correspond to higher entrepreneurial activity. On the other hand, transaction costs and poor institutional quality translate to lower entrepreneurial density.

Empirical research shows that labor market determinants, creativity, and self-efficacy are robust predictors of entrepreneurial intentions and entry (Arenius and Minniti, 2005). While strong labor provisions and investment in human capital enhance competitiveness, they are negatively associated with necessity-driven entrepreneurship and longevity of entrepreneurial ventures.

Indeed, higher labor market participation signals job creation and limits the necessity of self-employment. In the same line, unemployment benefits available for longer periods lead to longer periods of unemployment, which pushes starting businesses out of necessity rather than opportunity. In this case, entrepreneurship is weaker, with fewer resources and short-lived (Camarero et al., 2024).

Nowadays, over 80% of preferential agreements incorporate labor provisions to the end of strengthen labor market conditions and human capital. such clauses. Multiple provisions address working conditions, minimum wage standards, and rights, affecting entrepreneurial activity by shaping regulatory environments and supply chain governance. While labor provisions can protect workers, support social upgrading, and create incentives for responsible enterprise, they also raise compliance costs for firms, potentially discouraging entry or accelerating exit for businesses unable to meet new benchmarks. Yet, the literature suggests that when implemented alongside supportive development policies, labor standards can foster stable business environments, reduce informal sector risks, and encourage sustainable business creation in GVC-linked sectors (Barbu, 2018). According to Concregado et al. (2024), the effect of strict labor laws and provisions on entrepreneurship is conditional on regulatory compliance. In that sense, the quality of institutions determines the effect of labor laws on entrepreneurship activity.

Grounding on the reviewed literature, the effect of GVCs integration on the dynamism of entrepreneurship density is underexplored. This paper contributes to the literature in two ways. First, it differentiates between the effects of different GVC measures on entrepreneurial activity. Second, it explores the role of institutions and labor provisions in moderating the GVC effect on entrepreneurial activity. This paper is particularly relevant to developing countries with prevalent labor market challenges, high informality, and poor institutional quality. The findings highlight the positive association between the different GVC measures with a higher magnitude of backward participation in entrepreneurial activity. In addition, labor provisions have a direct negative effect, and regulatory quality is positively associated with entrepreneurial activity. The findings contribute to nuanced policy recommendations that promote trade integration and strengthen labor conditions to foster a more inclusive entrepreneurial climate.

2- Stylized facts

This section presents data patterns in entrepreneurial activity, GVCs, and labor provisions across 181 countries spanning the years 2006 and 2018. Starting with the global average entrepreneurial total density rate. **Figure 1** shows a generally upward and stable pattern of the number of registered firms with limited liability per 1,000 of the population. Over time, the fluctuations are moderate around an average of approximately 70, before rising sharply in 2018. In 2008, the line slightly decreased, reflecting the financial crisis's effect on firm density. On average, the increasing pattern reflects an expansion in entrepreneurial reflecting higher access to markets.

As for the GVC trend, **Figure 2** shows the average of three measures: backward participation, measured by foreign value added exported (FVA), forward participation, measured by domestic value added exported (DVA), and the addition of both (GVC). As presented, all three measures

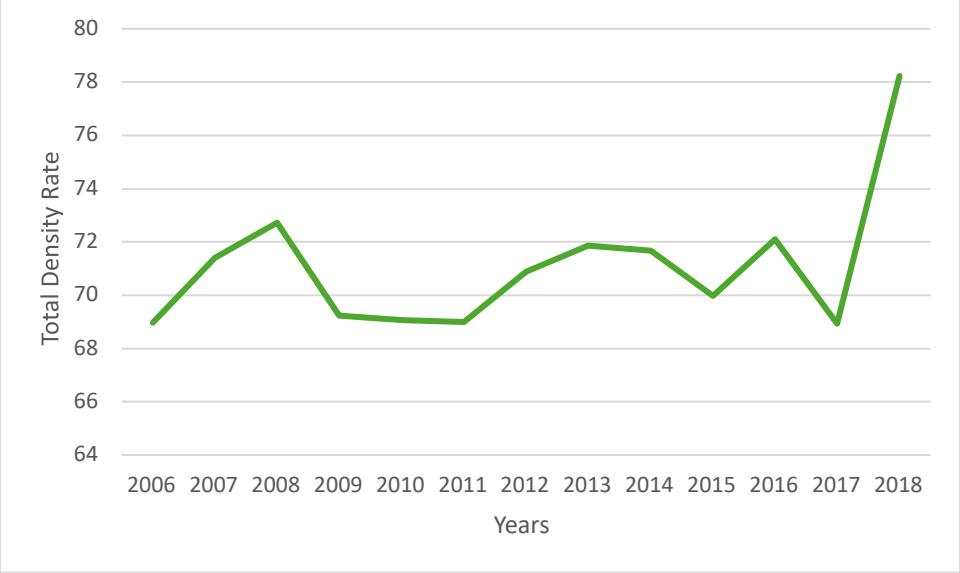
show a moderate and consistent increase between 2006 and 2018. Yet, the global forward participation (DVA) is higher than the global backward participation (FVA). As shown in the figure, the movements of the three measures are gradual and almost parallel, suggesting that both forward and backward GVC linkages expand worldwide over this period.

Over the last few decades, GVCs have become a dominant pattern of economic integration (Casella et al., 2019). The decrease in both communication and trade costs enabled firms to unbundle the production process across different countries (Cigna et al., 2022). Although this unbundling offers new opportunities for firms to connect with global markets, the GVCs' implications for entrepreneurial activity remain underexplored. Exploring this nexus is particularly relevant for emerging economies, where entrepreneurship is a key engine of job creation and economic transformation.

To explore the relationship between entrepreneurial activity and GVCs, both Figures display a combined view of the global trends of GVC participation and entrepreneurial density over time. The figures signal a parallel pattern where both variables show moderate fluctuations from 2006 until the early 2010s, ending the period with an upward movement. The global alignment suggests that deeper integration into global value chains has synchronized with an increase in entrepreneurial activity at the aggregate level. Yet, econometric modelling is necessary to scrutinize and guarantee this association.

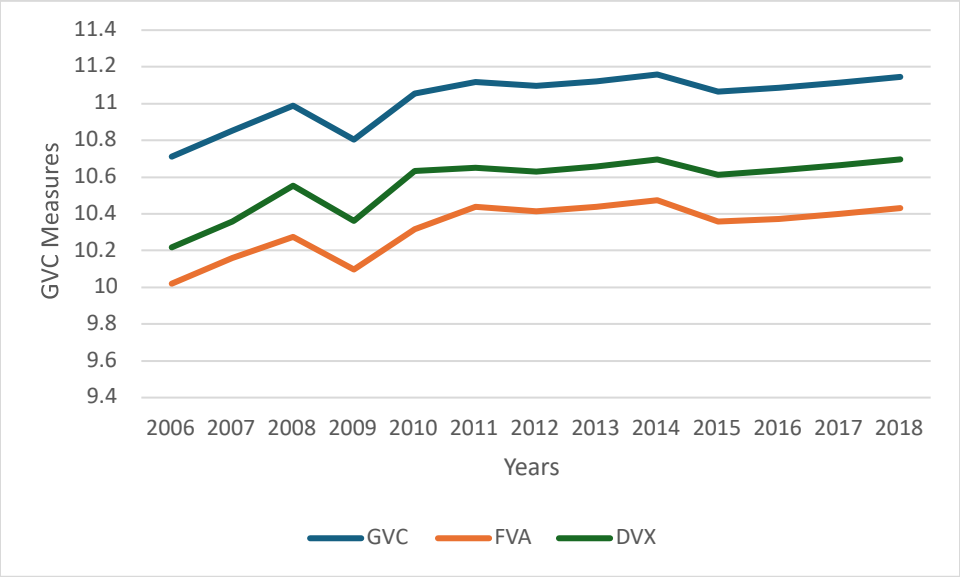
Focusing on income groups' heterogeneity, **Figure 3** shows expected disparities. Similar to innovation measures, entrepreneurship density is clustered in high-income economies with a striking gap compared with preceding income groups. By definition, innovation is spatially concentrated in advanced economies. This fact motivates the role of international interlinkages in knowledge spillover to disadvantaged economies (Tajoli and Felice, 2018; Eissa and Zaki, 2023).

Figure 1: Total Density Entrepreneurship Rate, World Averages, 2006 - 2018



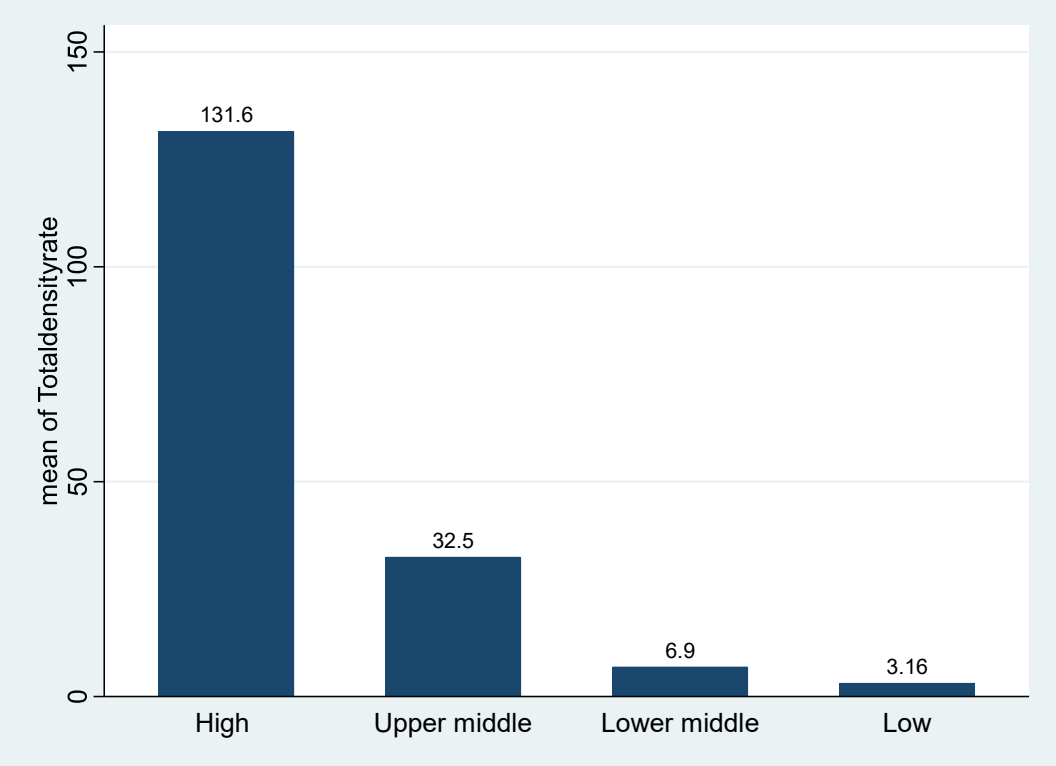
Source: Own construction based on the World Bank Entrepreneurial Activity

Figure 2: GVC Measures, World Averages, 2006 - 2018



Source: Own construction based on the EORA dataset

Figure 3: Total Entrepreneurial Density Rate over income groups on average

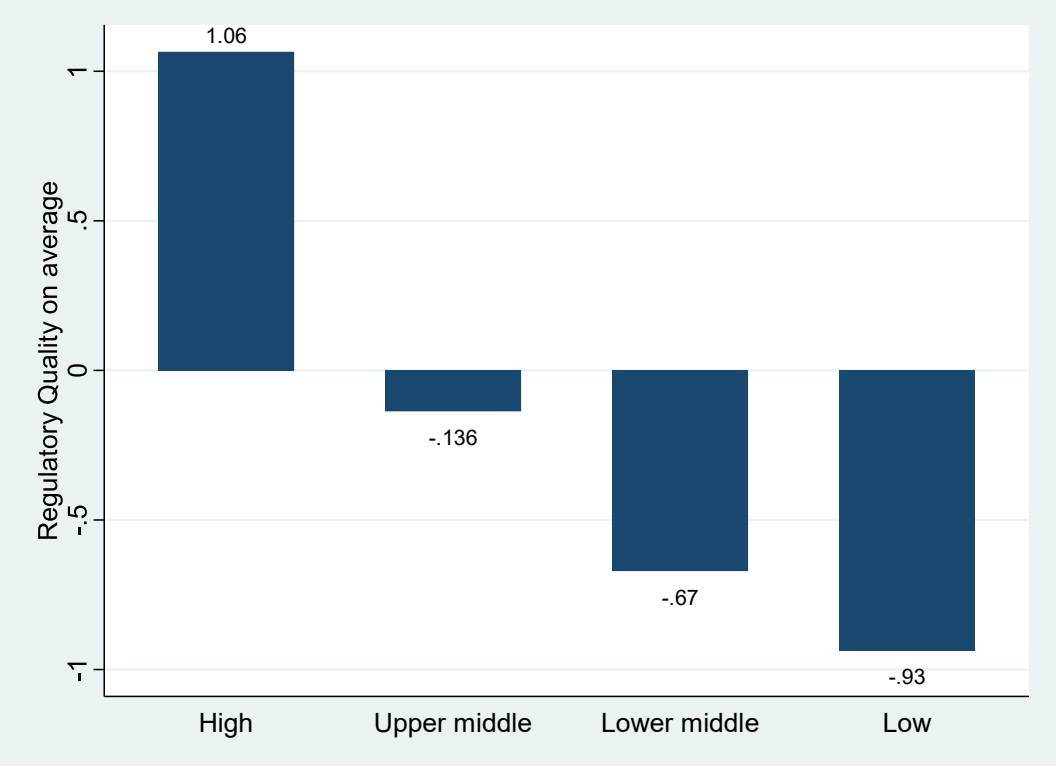


Source: Own construction based on the World Bank Entrepreneurial Activity

As **Figure 4** shows, high-income countries are not only advantaged with high entrepreneurship density due to higher absorptive capacities, but also a strong quality of institutions is clustered in high-income economies. Indeed, poor institutions, corruption, and administrative barriers discourage entry and can accelerate exit, especially in developing and transition economies. Consequently, the cross-regional gap in entrepreneurship density and institutional quality is significant. The question is whether multilateralism and enhanced trade interlinkages play a role in narrowing this innovation and institutional gap.

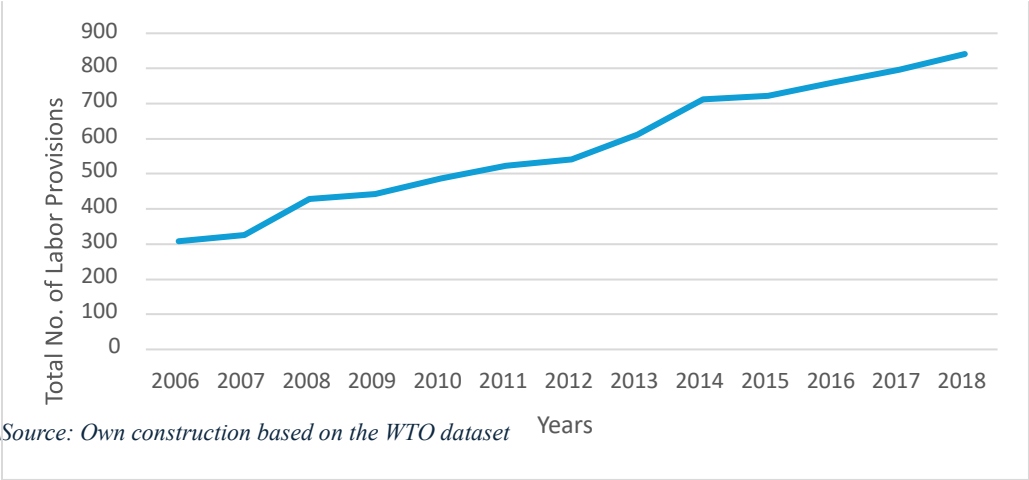
To address the increasing number of trade agreements with labor provisions, **Figure 5** presents a consistently increasing trend of labor-related provisions in trade agreements between 2006 and 2018. The figure displays that labor provisions increase steadily from around 308 in 2006 to 841 in 2018. This rapid rise reflects a major institutional shift in creating international trade regulations, where labor standards, worker protections, and social articles have become increasingly embedded in trade agreements. Labor provisions, such as commitments to core labor standards, decent work conditions, or enforcement mechanisms, influence the incentives and barriers to entrepreneurship. Yet, as presented in the previous sector, the direction of the effect varies according to the driving force on entrepreneurship. Necessity entrepreneurship is associated with weak labor conditions, and enforced provisions can have a declining effect on entrepreneurial density in this case.

Figure 4: Quality of institutions over income groups on average



Source: Own construction based on the World Development Indicators

Figure 5: Labor Provisions in Trade Agreements, 2006 - 2018



Source: Own construction based on the WTO dataset

In summary, the data representations show several consistent empirical conclusions. First, entrepreneurial density has remained, in general, stable but highly uneven across income groups. At the regional front, the concentration is clustered in Latin America, North America, and Europe, which exhibit higher rates than MENA, South Asia, and Sub-Saharan Africa. Second, GVC participation (forward, backward, and total) and labor-related provisions increase over time. Third, trends of GVC integration are parallel to entrepreneurial density. Fourth, institutional quality is highly uneven across income groups.

To guarantee the association and understand the mechanism of the GVCs' effect on entrepreneurial activity, econometric modelling is necessary. The interplay of GVC participation, labor provisions, and entrepreneurial activity raises the question of whether deeper integration into global value chains and the labor provisions in trade agreements influence entrepreneurial dynamism, and whether the effect differs across different income groups and regions.

3- Methodology and data

To econometrically estimate the effect of GVCs on entrepreneurial density, the role of labor provisions and institutional quality, we employ and merge four datasets. First, the World Bank Entrepreneurship dataset includes data on total registered firms spanning the years 2006 and 2018. Second, the EORA database includes forward, backward, and total GVC measures. Third, the World Trade Organization trade agreements datasets include the number of labor provisions across signed trade agreements. Fourth, the World Development Indicators dataset is employed for the institutional quality and the control variables.

The baseline model is estimated as follows:

$$Y_{it} = a_o + a_1 GVC_{it} + a_2 Provisions_{it} + a_3 Reg_{it} + a_4 Z_{it} + \delta_i + \delta_t + \varepsilon_{jt}$$

Where, Y_{it} is the entrepreneurial density measured by the number of registered firms with limited liability per 1,000 of the population in logarithms. While, GVC_{it} is the alternating domestic value added exported, foreign value added exported, and the total GVC. As the literature suggests, the backward linkages to GVCs enhance absorptive capacities and positively affect entrepreneurial density. As for the forward linkages, the effect is conditional. As explained above, developing countries stuck in low-value-added activities may struggle to realize the GVC-driven innovation effect. Moreover, $Provisions_{it}$ is the number of labor provisions enforced in trade agreements. If entrepreneurship is necessity-driven, enhanced labor conditions are expected to exert a negative association. Reg_{it} is the Regulatory Quality Index, which is expected to foster entrepreneurial density. Additionally, Z_{it} is a vector of control variables including country size measured by the population in logarithms, level of development measured by real GDP per capita in logarithms, labor market conditions measured by the employment to population ratio, and access to finance measured by domestic credit to the private sector. Also, trade openness is measured by the aggregate exports and imports share of GDP in logarithms. Adding the trade variable is important to differentiate between final goods trade and the variable of interest. Finally, $\delta_i \; and \; \delta_t$ are country and year fixed effects to control for unobserved heterogeneity.

After estimating the baseline effect of GVC participation on entrepreneurial density, we extend the model in **Five** ways. First, we address the heritability of the effect across different income groups. As the literature suggests, the GVC knowledge spillover effect is higher at lower absorptive capacities (Eissa and Zaki, 2023). Second, we test the heterogeneity of world regions to identify which regions benefit more. Third, we explore the moderating effect of labor provisions in trade agreements by interacting the number of provisions in trade agreements signed by the country at a given year with the different GVC measures. Fourth, we examine the moderating effect of the quality of institutions by interacting it with the GVC measures. At last, we investigate whether the effect of GVC on entrepreneurial activity operates through an innovation channel by formally testing the mediating role of patent activity.

In the revised version of the paper, we will account for GVCs' endogeneity by using a two-stage least squares instrumental variables approach. In particular, the GVCs can be affected by the vibrant business environment pronounced in high entrepreneurial density. Accordingly, the causal effect is unguaranteed. In this robustness check, we employ the absolute difference between the quality of the institutions of the country and that of the main trading partner. The rationale behind this instrument pertains to the fact that the institutional gap enhances GVCs but is unrelated to the entrepreneurial environment in the country. In addition, we will explore the different effects on firms' new entry to evidence the selection effect of trade integration. The combined dataset includes 180 countries spanning the years from 2006 to 2018. **Table 1** presents the variables' definitions and sources.

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Table 1: Variables' Definitions and Sources

Variable Name	Definition	Source
Entrepreneurial Density	Total number of registered firms with limited liability per 1,000 working-age people (ages 15–64)	World Bank Entrepreneurial Dataset
FVA (Foreign Value Added embodied in exports)	Backward GVC measure	EORA dataset
DVX (Domestic Value Added in foreign countries' exports)	Forward GVC measure	EORA dataset
GVC	FVA + DVX	EORA dataset
Regulatory Quality	The ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	World Development Indicators
GDP per capita	In Purchasing Power Parity	World Development Indicators
Population, total	The number of all residents	World Development Indicators
Trade (% of GDP)	Sum of exports and imports of goods and services as a percentage of GDP	World Development Indicators
Employment to population ratio, 15+, total (%)	Proportion of the working-age population that is employed.	World Development Indicators
Domestic credit to private sector (% of GDP)	Financial resources provided to the private sector by financial corporations.	World Development Indicators

Source: Own elaboration

4- Empirical Results

This section analyzes the effect of different GVC measures on entrepreneurial activity while considering income group and regional heterogeneity, and the moderating role of labor provisions and institutional quality, along with investigating the innovation mediating effect.

1. Baseline Model

Table 2 presents the baseline results showing a positive effect of GVC measures on the total density of entrepreneurial activity. The results indicate that GVC integration, when measured through Foreign Value Added (FVA) "backward GVC measure" and overall GVC participation, has a positive and statistically significant effect on entrepreneurial density. In particular, a 1% increase in backward GVC linkages corresponds to a 0.22% increase in entrepreneurial density. However, the coefficient on Domestic Value Added (DVX) remains insignificant. This suggests that entrepreneurship benefits more from international production linkages that embed foreign inputs rather than purely domestic upstream contributions. Our results match the literature that backward GVCs transmit foreign knowledge and substitute for domestic innovation inputs (Zeng et al., 2025; Eissa and Zaki 2025; Eissa and Zaki 2023). Also, FVA captures exposure to global knowledge, technologies, and market access, which lowers entry barriers for new firms. In contrast, DVX may reflect more traditional or upstream activities with limited spillovers to new business creation.

Among the controls, institutions, level of development, country size, domestic credit, and trade openness all exhibit strong positive effects, highlighting that entrepreneurship thrives in environments with better institutions, higher demand, and easier access to finance. Aligning with the literature, trade openness incentivizes entrepreneurial activity (Rahman et al., 2023). Yet, after a certain threshold, the effect flips to negative due to excessive competition (Salange et al., 2024). Conversely, labor provisions show a consistently negative and significant coefficient, suggesting that stricter labor regulations may discourage firm entry, particularly in contexts where compliance costs are high relative to firm size. In other words, since labor provisions in trade agreements correspond to better labor market conditions, they are negatively associated with the decision to open one's own business. This finding aligns with the literature, which evidences a positive association between strong labor unions and self-employment. In particular, weaker labor conditions raise the probability of self-employment of blue-collar workers by 53% (Kim et al., 2025).

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Table 2: Baseline GVC effect on entrepreneurial density

Ln Density	(1) Ln FVA	(2) Ln DVX	(3) Ln GVC
GVC	.217***	.032	.24***
	(.042)	(.054)	(.058)
Ln Labor Provisions	-.096***	-.094***	-.097***
	(.026)	(.026)	(.026)
Regulatory Quality	.191***	.208***	.196***
	(.035)	(.035)	(.035)
Ln GDP per Capita	.344***	.435***	.329***
	(.078)	(.082)	(.081)
Ln Population	.303**	.359***	.287**
	(.118)	(.122)	(.12)
Ln Trade Openness	.255***	.267***	.27***
	(.05)	(.05)	(.05)
Ln Emp to Pop	-.011	-.013	-.006
	(.127)	(.129)	(.128)
Ln Domestic Credit	.128***	.126***	.129***
	(.026)	(.027)	(.026)
Constant	-10.003***	-9.232***	-10.197***
	(2.224)	(2.254)	(2.244)
Observations	936	936	936
R-squared	.677	.667	.674
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

2. Income Group Heterogeneity

Because the effect can vary in accordance with the income group, **Table 3** presents the results while interacting the GVC measures with income groups. As presented, in reference to high-income countries, the interaction results across income groups reveal a highly uneven effect of GVC participation on entrepreneurship. The positive and significant coefficients for upper-middle-income and low-income countries suggest that GVC integration plays a stronger role in stimulating entrepreneurial activity at these stages of development. Yet, the magnitude is highest for low-income countries. Although low-income economies have the lowest average of entrepreneurial density, the GVC-driven self-employment is highest compared to higher-income levels. The particular relevance of GVCs to knowledge spillovers to low-income countries aligns with the literature, which evidences that the lower the absorptive capacity, the higher the GVC knowledge spillovers index (Eissa and Zaki, 2023). In essence, in lower-income contexts, GVCs may act as an entry point into global markets, allowing small firms to integrate into production networks without the need for full industrial capabilities. Similarly, in upper-middle-income countries, firms are better positioned to benefit from knowledge and technology spillovers. By contrast, the insignificant or negative coefficients for high-income and lower-middle-income groups point to more nuanced dynamics. In high-income economies, entrepreneurship may already be driven by innovation and domestic capabilities rather than GVC participation. Overall, these findings emphasize that the benefits of GVCs are conditional on the level of economic development and the capacity to absorb external linkages.

Table 3: Income Group Heterogeneity

Ln Density	(1) Ln FVA	(2) Ln DVX	(3) Ln GVC
High*GVC	.092	-.146**	.069
	(.066)	(.067)	(.076)
Upper middle*GVC	.136**	.345***	.237***
	(.058)	(.064)	(.062)
Lower middle*GVC	-.027	.088	.025
	(.066)	(.076)	(.073)
Low*GVC	1.098***	1.588***	1.544***
	(.097)	(.154)	(.127)
Ln Labor Provisions	-.067***	-.071***	-.067***
	(.024)	(.025)	(.024)
Regulatory Quality	.098***	.15***	.107***
	(.033)	(.033)	(.033)
Ln GDP per Capita	.269***	.313***	.231***
	(.073)	(.079)	(.076)
Ln Population	.12	.226*	.105
	(.11)	(.115)	(.111)
Ln Trade Openness	.14***	.223***	.172***
	(.048)	(.048)	(.047)
Ln Emp to Pop	.023	.115	.069
	(.127)	(.128)	(.127)
Ln Domestic Credit	.127***	.113***	.124***
	(.024)	(.025)	(.024)
Constant	-5.136**	-5.952***	-5.433***
	(2.088)	(2.123)	(2.087)
Observations	936	936	936
R-squared	.732	.712	.73
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

3. Regional Heterogeneity

Table 4 illustrates the regional analysis, which further refines this picture by showing that the impact of GVC participation varies substantially across geographic contexts. Positive and significant effects are observed in East Asia and the Pacific and Sub-Saharan Africa, while South Asia exhibits a strong negative relationship. The positive coefficients in East Asia are consistent with the region's well-established role in global production networks, where firms benefit from dense supplier linkages, export-oriented strategies, and supportive industrial policies. According to the World Bank, firms leverage "Complex GVCs" (crossing multiple borders) to gain technology spillovers and move from assembly to high-value design (World Bank, 2020). In Sub-Saharan Africa, the positive effect reflects early-stage integration, where even limited participation in GVCs can generate meaningful opportunities for new firm entry. Consequently, GVCs allow SMEs to "leapfrog" by specializing in specific tasks without needing to build entire industries, raising firm-level productivity (IMF, 2018). Also, in African economies, GVC firms -likely benefiting from labor provisions- employ more skilled workers (Shepherd, 2013). In contrast, the negative coefficients for South Asia suggest that GVC participation may be concentrated in sectors with limited entrepreneurial spillovers or dominated by large incumbents, leaving little room for new

entrants (Batool & Taguchi, 2025; Lopez-Gonzalez, 2017). The insignificant results for regions such as MENA and Latin America point to intermediate cases where GVC participation exists but does not translate effectively into broad-based entrepreneurial activity, which could be due to institutional or structural bottlenecks.

Table 4: Regional heterogeneity

Ln Density	(1) Ln FVA	(2) Ln DVX	(3) Ln GVC
East Asia & Pacific*GVC	.155**	.008	.185**
	(.073)	(.074)	(.082)
ECA*GVC	.087	-.014	.061
	(.075)	(.081)	(.08)
LAC*GVC	-.114	-.161	-.137
	(.102)	(.12)	(.113)
MENA*GVC	-.04	-.152	-.152
	(.101)	(.1)	(.103)
South Asia*GVC	-.313***	-.417***	-.383***
	(.09)	(.098)	(.096)
Sub-Saharan Africa*GVC	.186**	.356***	.272***
	(.075)	(.093)	(.084)
Ln Labor Provisions	-.109***	-.099***	-.11***
	(.026)	(.026)	(.026)
Regulatory Quality	.137***	.155***	.136***
	(.035)	(.035)	(.035)
Ln GDP per Capita	.44***	.547***	.433***
	(.081)	(.084)	(.084)
Ln Population	.34***	.433***	.366***
	(.129)	(.127)	(.128)
Ln Trade Openness	.229***	.21***	.228***
	(.049)	(.05)	(.049)
Ln Emp to Pop	.01	-.011	.05
	(.134)	(.133)	(.133)
Ln Domestic Credit	.122***	.109***	.117***
	(.026)	(.026)	(.026)
Constant	-10.938***	-10.407***	-11.669***
	(2.43)	(2.36)	(2.411)
Observations	936	936	936
R-squared	.694	.689	.694
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Standard errors are in parentheses
*** p<.01, ** p<.05, * p<.1*

4. Labor Interaction with GVC

As evidenced, labor provisions in trade agreements and self-employment move in an opposite direction. Yet, it is important to analyze whether the former moderates the positive effect of GVCs. **Table 5** introduces the interaction between GVC participation and labor provisions, providing

further insight into the institutional channels shaping this relationship. While the direct effect of GVC participation remains positive (particularly for FVA and overall GVC), the interaction terms are consistently insignificant across all specifications. Unlike the positive interaction between women empowerment provisions and backward GVCs on female entrepreneurship in the literature (Gawal et al., 2025), the labor provisions' moderating effect on overall entrepreneurship is insignificant. In other words, the negative impact of labor provisions appears to operate independently rather than altering the way GVC participation influences firm entry.

Table 5: GVCs' interaction with labor provisions

Ln Density	(1) Ln FVA	(2) Ln DVX	(3) Ln GVC
GVC	.217***	.045	.243***
	(.042)	(.055)	(.058)
Ln Labor Provisions	-.052	-.023	-.036
	(.061)	(.063)	(.062)
GVC*Labor Provisions	-.003	-.005	-.004
	(.004)	(.004)	(.004)
Regulatory Quality	.19***	.205***	.193***
	(.035)	(.035)	(.035)
Ln GDP per Capita	.338***	.422***	.321***
	(.078)	(.083)	(.082)
Ln Population	.301**	.355***	.285**
	(.118)	(.122)	(.12)
Ln Trade Openness	.255***	.266***	.269***
	(.05)	(.05)	(.05)
Ln Emp to Pop	-.008	-.009	-.002
	(.127)	(.129)	(.128)
Ln Domestic Credit	.126***	.125***	.127***
	(.026)	(.027)	(.026)
Constant	-9.926***	-9.212***	-10.148***
	(2.227)	(2.253)	(2.244)
Observations	936	936	936
R-squared	.678	.668	.674
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

5. Institutions' Interaction with GVC

Although the regulatory quality is consistently positively associated with entrepreneurial activity, it is important to explore its moderating effect. As the literature suggests, poor regulatory quality reduces both entrepreneurial quantity and quality (Audretsch et al., 2023). Yet, the question of its moderating effect on GVCs is not yet explored. So, this part of the analysis highlights the critical role of institutional quality in shaping the GVC–entrepreneurship nexus. In **Table 6**, we present the results of interacting GVCs with regulatory quality. While the direct effect of GVC participation remains positive and significant for FVA and overall GVC, the interaction between GVC and regulatory quality is negative and statistically significant across all models, with a net positive effect on entrepreneurial activity. The results suggest substitutability between foreign knowledge and the competition effect, incentivizing entrepreneurship activity and regulatory

quality. These results are optimistic for developing countries with low-quality institutions. Opening the doors of GVCs can compensate for their poor regulatory quality when it comes to new businesses and self-employment. Taken together, these findings point to a substitution effect between domestic institutional strength and external integration through GVCs, where each can support entrepreneurship, but their combined effect is less than additive.

Table 6: Institutions' interaction with GVC

Ln Density	(1) Ln Density	(2) Ln Density	(3) Ln Density
GVC	.207***	.048	.237***
	(.042)	(.054)	(.057)
Regulatory Quality	.659***	.745***	.713***
	(.112)	(.113)	(.114)
GVC*Regulatory Quality	-.033***	-.038***	-.035***
	(.008)	(.008)	(.007)
Ln Labor Provisions	-.076***	-.067**	-.074***
	(.026)	(.026)	(.026)
Ln GDP per Capita	.35***	.441***	.338***
	(.077)	(.081)	(.08)
Ln Population	.359***	.427***	.35***
	(.117)	(.121)	(.119)
Ln Trade Openness	.242***	.258***	.259***
	(.049)	(.05)	(.049)
Ln Emp to Pop	.051	.029	.045
	(.126)	(.127)	(.127)
Ln Domestic Credit	.133***	.131***	.133***
	(.026)	(.026)	(.026)
Constant	-10.954***	-10.681***	-11.369***
	(2.21)	(2.241)	(2.229)
Observations	936	936	936
R-squared	.685	.677	.682
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

6. Innovation-Mediated Effect of GVCs

Moving to the next part in the analysis, which aims to test whether innovation acts as a mediating channel linking GVC integration to entrepreneurship. Innovation is measured using residents' patent applications as an indicator of knowledge creation. Methodologically, the analysis proceeds in two stages: first, a fixed-effects panel framework following the Baron and Kenny approach is used to explore the presence of a potential mediation structure; second, a bootstrap-based mediation test is employed to directly assess the statistical significance of the indirect effect. This dual approach allows for a more rigorous evaluation of whether GVC participation affects entrepreneurship through innovation, or whether the relationship operates primarily through alternative direct channels.

The mediation analysis yields contrasting insights depending on the estimation approach. Firstly, the fixed-effects (FE) regressions in **Appendix (2, 3, 4)**, following the Baron and Kenny framework, suggest the presence of a potential mediation mechanism. In particular, for both total

GVC participation and its components, the results indicate statistically significant relationships between GVC measures and entrepreneurial activity, as well as between innovation (patents) and entrepreneurship. For example, in the case of FVA and total GVC, both the direct effect and the coefficient on patent activity in the final equation are statistically significant, which would conventionally be interpreted as evidence of mediation.

On the other hand, this conclusion is not supported when applying a more accurate bootstrap-based mediation test. The bootstrap results in **Appendix (5, 6, 7)** consistently show that the indirect effect is statistically insignificant across all specifications (FVA, DVX, and total GVC)**.** This indicates that the product of the two paths (GVC → innovation, and innovation → entrepreneurship) is not distinguishable from zero, despite the significance of individual coefficients in the FE regressions.

The difference between the two approaches reflects a well-known limitation of the Baron and Kenny methodology, which relies on sequential significance tests rather than directly evaluating the mediation effect. In contrast, the bootstrap approach provides a direct and distribution-free test of the indirect effect, and is therefore more reliable in finite samples.

To conclude, the FE results suggest a mediation pattern consistent with the Baron and Kenny framework. Also, the results suggest that GVC participation has a positive and statistically significant direct effect on entrepreneurial activity. However, the bootstrap analysis reveals that innovation does not constitute a statistically significant transmission channel, and this relationship does not operate through innovation channels. So, the impact appears to be driven by alternative mechanisms, such as market access, production linkages, labor market dynamics, or input availability.

So far, the results evidence a positive association between GVC participation, particularly the backward and overall measures, and entrepreneurial activity. Because of the incentivizing competition with GVC participation, firms innovate and enter the market with the edge of carving a unique product and service. New trade theory suggests an increase in the number of firms with enhanced trade integration. Yet, the selection effect in our work is still blurred. In the coming version of this work, we will analyze the GVC effect on new firms. On average, the total density of entrepreneurial activity increases with higher backward linkages to GVCs, but focusing on the opening effect of firms is enlightening and echoes necessary policy recommendations to contain the adverse social effects of GVC integration. In addition, we will explore the non-linearity of the effect by integrating a squared term of GVC measures. Again, because the causal effect is unguaranteed, we will use instrumental variables techniques to control for endogeneity. As the literature suggests, digitalization can foster both entrepreneurial activity due to decreased costs and GVC integration due to the facilitating communication (Szalavetz, 2020).

5. Conclusion

New trade theories endorse a dual effect on firm performance. On the one hand, the global integration induces firm performance through the scale effect (Krugman, 1992). On the other hand, vulnerable firms may not be able to sustain their market positions after market integration and will be forced to exit the market (Melitz, 2003). In parallel to the conceptual framework of the selection

effect elucidated model, empirical studies show the contracting effect of international trade on vulnerable and smaller firms (Christen et al., 2025).

This dynamism may lead to new business creation and growth, especially in export-oriented sectors. Indeed, a strong domestic value chain foundation is associated with higher rates of business survival and sectoral upgrading. In addition, resilient GVC serves as a buffer against external shocks and fosters a business climate conducive to entrepreneurship. Yet, unapt labor market conditions -like prevalent informality- pose persistent challenges. In this paper, we study the direct effect of GVC measures forward versus backward) on firms' entry and exit dynamics. In addition, we explore the moderating role of institutions and labor provisions in trade agreements across different income and regional groups.

The preliminary results show an association between forward and backward GVC measures on entrepreneurial density, with a higher effect of the latter. Since entrepreneurial activity is an innovation measure, the findings align with the literature, evidencing the effect of knowledge spillovers of backward GVC integration. In addition, the effect is more pronounced at lower income groups with middling absorptive capacities. Higher entrepreneurial activity that is necessity-driven is associated with a negative association with labor market conditions. As our results suggest, there is a negative direct association between labor market variables (employment to population and labor provisions in trade agreements). Yet, labor provisions do not interact with GVC measures. On the other hand, regulatory quality is positively associated with entrepreneurial activity, with a negative interaction with GVC. The dampening effect suggests a substitution effect between foreign interlinkages and institutional quality. In other words, complaints accompanied by GVCs can compensate for the poor institutional quality in developing countries in incentivising entrepreneurship. Last but not least, the GVC effect on entrepreneurial activity does not operate through innovation channels, but depends more on labor market rigidity, which helps in having one's own business.

In the next version of this work, the empirical strategy will account for endogeneity, investigate the effect on new firms, and explore the effect of the extensive margin of labor provisions. From a policy standpoint, the paper highlights the importance of trade and institutional policies, central drivers of entrepreneurial activity and firm dynamism.

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Appendix

(1) Descriptive statistics:

Appendix 1: Descriptive statistics

Variable	No. of observations	Mean	Std. Dev.	Min	Max
Ln Density	1338	3.192	1.439	.093	7.787
Ln FVA	1807	13.442	4.405	0	20.59
Ln DVX	1807	13.759	4.408	0	20.342
Ln GVC	1807	14.355	4.526	0	21.11
Ln Labor Provisions	2353	.899	.942	0	3.091
Regulatory Quality	2327	.043	.947	-2.548	2.252
Ln GDP per Capita	2262	9.455	1.16	6.755	11.889
Ln Population	2301	15.613	2.148	9.216	21.062
Ln Trade Openness	1997	4.391	.493	3.103	6.095
Ln Emp to Pop	2132	4.033	.222	3.045	4.482
Ln Domestic Credit	2020	3.663	.894	0	5.722

(2) FE Approach (Baron and Kenny):

Appendix 2: FE Approach using FVA

	(1) Ln Density	(2) Ln Patent	(3) Ln Density
Ln FVA	.217***	.02	.244***
	(.042)	(.173)	(.058)
Ln Labor Provisions	-.096***	.024	-.037
	(.026)	(.073)	(.024)
Ln Patent			-.036***
			(.011)
Regulatory Quality	.191***	-.398***	.099***
	(.035)	(.116)	(.037)
Ln GDP per Capita	.344***	1.165***	.286***
	(.078)	(.232)	(.088)
Ln Population	.303**	1.795***	-.307**
	(.118)	(.413)	(.143)
Ln Trade Openness	.255***	-.113	.053
	(.05)	(.15)	(.056)
Ln Emp to Pop	-.011	-.727	-.01
	(.127)	(.462)	(.146)
Ln Domestic Credit	.128***	.511***	.157***
	(.026)	(.102)	(.032)
Constant	-10.003***	-34.282***	.926
	(2.224)	(7.958)	(2.728)
Observations	936	1000	716
R-squared	.677	.167	.669
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

Appendix 3: FE Approach using DVX

	(1) Ln Density	(2) Ln Patent	(3) Ln Density
Ln DVX	.032	-.11	.215***
	(.054)	(.209)	(.075)
Ln Labor Provisions	-.094***	.025	-.042*
	(.026)	(.072)	(.024)
Ln Patent			-.036***
			(.012)
Regulatory Quality	.208***	-.397***	.103***
	(.035)	(.116)	(.037)
Ln GDP per Capita	.435***	1.235***	.262***
	(.082)	(.253)	(.099)
Ln Population	.359***	1.855***	-.433***
	(.122)	(.429)	(.157)
Ln Trade Openness	.267***	-.118	.06
	(.05)	(.15)	(.056)
Ln Emp to Pop	-.013	-.758	.019
	(.129)	(.466)	(.149)
Ln Domestic Credit	.126***	.503***	.152***
	(.027)	(.102)	(.033)
Constant	-9.232***	-33.831***	3.496
	(2.254)	(7.679)	(2.751)
Observations	936	1000	716
R-squared	.667	.167	.664
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

Appendix 4: FE Approach using GVC

	(1) Ln Density	(2) Ln Patent	(3) Ln Density
Ln GVC	.24***	.176	.402***
	(.058)	(.23)	(.078)
Ln Labor Provisions	-.097***	.025	-.041*
	(.026)	(.072)	(.024)
Ln Patent			-.038***
			(.011)
Regulatory Quality	.196***	-.399***	.101***
	(.035)	(.116)	(.036)
Ln GDP per Capita	.329***	1.087***	.165*
	(.081)	(.249)	(.095)
Ln Population	.287**	1.743***	-.455***
	(.12)	(.418)	(.147)
Ln Trade Openness	.27***	-.111	.057
	(.05)	(.15)	(.056)
Ln Emp to Pop	-.006	-.704	.031
	(.128)	(.463)	(.146)
Ln Domestic Credit	.129***	.522***	.169***
	(.026)	(.102)	(.032)
Constant	-10.197***	-35.257***	1.679
	(2.244)	(7.834)	(2.689)
Observations	936	1000	716
R-squared	.674	.168	.674
Country FE	Yes	Yes	Yes

Year FE	Yes	Yes	Yes

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

(3) Bootstrap Approach:

Appendix 5: Bootstrap Approach using FVA

command: med_fe
_bs_1: r(indirect)
_bs_2: r(direct)
_bs_3: r(total)

	Observed	Bootstrap		Normal-based	
	Coef.	Std.Err.	z	P>z	[95%Conf.	Interval]
_bs_1	-0.001	0.018	-0.040	0.968	-0.036	0.034
_bs_2	0.244	0.128	1.900	0.058	-0.008	0.495
_bs_3	0.243	0.127	1.920	0.055	-0.005	0.491

Appendix 6: Bootstrap Approach using DVX

command: med_fe
_bs_1: r(indirect)
_bs_2: r(direct)
_bs_3: r(total)

	Observed	Bootstrap		Normal-based	
	Coef.	Std.Err.	z	P>z	[95%Conf.	Interval]
_bs_1	0.004	0.017	0.240	0.812	-0.029	0.037
_bs_2	0.215	0.177	1.220	0.224	-0.132	0.561
_bs_3	0.219	0.183	1.190	0.233	-0.141	0.578

Appendix 7: Bootstrap Approach using GVC

command: med_fe
_bs_1: r(indirect)
_bs_2: r(direct)
_bs_3: r(total)

	Observed	Bootstrap		Normal-based	
	Coef.	Std.Err.	z	P>z	[95%Conf.	Interval]
_bs_1	-0.007	0.024	-0.280	0.780	-0.054	0.041
_bs_2	0.402	0.176	2.280	0.022	0.057	0.746
_bs_3	0.395	0.181	2.190	0.029	0.041	0.749