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Institutional quality, GVC participation, and upgrading Evidence from Arab countries using bias-corrected method of moments (1996–2020)

"تأثير جودة المؤسسات على المشاركة والارتقاء في سلاسل القيمة العالمية: دليل تجريبي من الدول العربية باستخدام طريقة اللحظات المصححة للانحياز (1996–2020)"

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Abstract:

This research examines the influence of institutional quality on engagement and advancement within global value chains (GVCs) in six Arab nations—Qatar, Kuwait, Oman, Algeria, Tunisia, and Morocco—over the period from 1996 to 2020. It employs the Worldwide Governance Indicators and the Heritage Foundation freedom indices to assess institutional quality, while also accounting for government expenditure and GDP per capita. Four dynamic panel models are evaluated employing the BC-MM estimator. Research demonstrates that regulatory quality and the rule of law enhance GVC participation via both backward and forward links, whereas government effectiveness and corruption control adversely affect participation. Moreover, financial autonomy correlates with diminished engagement, while GDP per capita and governmental expenditure bolster it, propelling economic intricacy. The findings indicate a necessity for legislative and legal modifications, as well as enhanced public investment, to bolster integration into global value chains in Arab countries.

Keywords: Institutional Quality; Global Value Chains; Participation; Upgrading; Bias-Corrected Method of Moments.

JEL Classification: O43, O14, O11, F61.

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1. Introduction.

Over the past three decades, the organization of industries has changed profoundly, with production and service activities increasingly carried out through global inter-firm networks rather than within a single firm's boundaries (Mudambi et al., 2018). These networks — "global value chains" (GVCs) (Gereffi, 1999) or "global production networks" (Henderson et al., 2002) — link production stages across countries through the exchange of intermediate goods, with the value captured at each stage differing sharply according to its position within the chain (Abdellaoui et al., 2018). Value added along the chain follows the well-documented "smile curve": upstream stages such as R&D and design, and downstream stages such as branding and marketing, capture disproportionately more value than intermediate assembly and manufacturing (Porter, 1985; Elms & Low, 2013). This trade-in-tasks logic (Grossman & Rossi-Hansberg, 2008; Timmer et al., 2014) has since been used to trace functional specialization and value creation along GVCs (Meng et al., 2020; Rungi & Del Prete, 2017; Szalavetz, 2017; Stöllinger, 2021; Kordalska & Olczyk, 2022; Liu et al., 2022). "Upgrading" denotes the process by which firms, sectors, or countries move toward these higher-value activities and expand the share of value they capture (Marchi & Alford, 2022).

Developing and Arab economies face a structural risk of remaining confined to low-value-added assembly and manufacturing segments, while more advanced economies retain the high-value design, R&D, and marketing functions (Gereffi, 2018). Participation in lead-firm-governed GVCs can support learning and upgrading, but doing so requires navigating asymmetric power relations between global lead firms and fragmented local suppliers. Countries' ability to participate and move up the value chain depends on a range of factors — market access, capital mobility, trade policy, and technological capability — among which institutional quality is repeatedly highlighted in the literature as a central determinant.

This study measures the contribution of institutional quality to GVC participation and upgrading in six Arab countries — Qatar, Kuwait, Oman, Algeria, Tunisia, and Morocco — over 1996–2020. Institutional quality is decomposed into its constituent Worldwide Governance Indicators (government effectiveness, regulatory quality, rule of law, control of corruption) and the Heritage

Foundation's economic-freedom sub-indices, rather than treated only as a single composite index, in order to identify which institutional dimensions matter and in which direction. Participation is measured through backward linkages, forward linkages, and overall GVC participation, while upgrading is proxied by the Economic Complexity Index (ECI), which captures the knowledge intensity embedded in a country's export structure using trade, patent, and research-publication data.

Focusing on this group of Arab countries allows the analysis to reflect a shared institutional, cultural, and economic context that differs from the country groups more commonly studied in the GVC literature, and to generate policy recommendations calibrated to the specific institutional challenges facing Arab economies as they seek to deepen their integration into global production networks.

2. Literature review

Empirical work on institutional quality and GVCs falls broadly into two strands: studies treating institutional quality as a composite index, and studies decomposing it into sub-indicators whose effects on participation and upgrading can diverge. Both strands largely agree that institutional quality matters, though findings differ by dimension, by country group, and by whether participation is measured through backward linkages, forward linkages, or overall involvement.

At the composite level, GVC integration is generally found to raise export quality and competitiveness (Chikhun & Romanov, 2023; Robu, 2023), though the extent of these gains is mediated by local institutional arrangements and the type of GVC involved (Nadeem et al., 2020). Agnès and Granchet (2022) find that institutional quality — both domestic and that of trading partners — significantly shapes GVC export performance and upgrading trajectories. Openness, a lower administrative burden on business, and active FDI participation are associated with stronger upward participation in developing countries (Xiaobo et al., 2023). Barbero and Rodríguez-Crespo (2020) find a positive institutional-quality effect on both backward and forward participation, slightly stronger for backward linkages, with voice and accountability more closely tied to backward engagement and the rule of law and political stability more closely tied to forward engagement. Similarly, Ge et

al. (2020) and Alhassan et al. (2021) identify regulatory quality, political stability, and the rule of law as key drivers of GVC participation in the Belt and Road and African contexts respectively, while Lwesya (2022) links stronger connectivity and governance to lower trade costs and deeper regional upgrading in East Africa. Doan and Ha (2020) show that political stability's effect is not uniform: it supports backward linkages and overall participation while dampening forward participation.

A second strand links institutional sub-indicators more specifically to value-chain governance and legal certainty. The rule of law is repeatedly identified as central to how GVCs are structured, coordinated, and governed (Ruppert et al., 2021; Alessandrini, 2022; Baars et al., 2016), and shapes social-upgrading trajectories across industries and regions (Christina & Fabian, 2021). Compliance-based governance — firms adhering to lead-firm standards — is a common channel through which participation and upgrading occur (Robu, 2023), and local institutional profiles, including voice and accountability, condition how emerging-market firms engage with GVCs (Jiang et al., 2020). On corruption specifically, anti-corruption efforts are associated with improved participation and progress for developing countries (Tolba, 2022; Cattaneo et al., 2013).

A third strand examines the policy channels through which institutions operate: reducing trade and investment barriers, building transport infrastructure, and supporting innovation and industrial clusters (Hirshhorn, 2015); designing policy for coherence, consistency, and effective implementation (Tijaja & Faisal, 2014; Chung, 2016); and strengthening the trust and teamwork systems that govern supplier relationships in developing-country value chains (Mapanga, 2021). Regulatory reform is identified as a lever for both GVC integration and upgrading (Ponte, 2022), although its effects are not universally positive: trade policy can support upgrading in labor-intensive chains (Gereffi, 2019; Xiaobo et al., 2023), yet product-market regulation is also found to weigh on trade, productivity, and innovation elsewhere, with effects that vary by country group.

Closest to the present study, Alhassan et al. (2021) decompose institutional quality for African countries and find divergent, sometimes opposing effects across its sub-indicators and across

backward versus forward linkages: government integrity, investment freedom, and financial freedom support backward participation, while most of the same components dampen forward participation, and government effectiveness reduces overall participation even as other components support it. This sub-indicator-level heterogeneity — together with the region-specific evidence gap for Arab countries — motivates disaggregating institutional quality into its constituent indicators in the present analysis, and estimating its effects separately on backward linkages, forward linkages, overall participation, and upgrading via economic complexity.

3. Data and Methodology

Institutional quality is measured through two complementary sources. The first is the Worldwide Governance Indicators (WGI) constructed by Kaufmann et al. (2011) and updated in Kaufmann and Kraay (2023) for more than 200 countries since 1996, from which four sub-indicators are used: government effectiveness, regulatory quality, rule of law, and control of corruption. The second is the Heritage Foundation's Index of Economic Freedom, from which four sub-indices are used — economic freedom, trade freedom, investment freedom, and financial freedom — together with government spending as a share of GDP.

Four dynamic panel models are estimated for the six Arab countries over 1996–2020, corresponding to backward linkages (DVA, the foreign value added embodied in a country's exports), forward linkages (FVA, the domestic value added embodied in a country's exports), overall GVC participation (GVC, the sum of DVA and FVA as a share of gross exports), and upgrading, proxied by the Economic Complexity Index (ECI). All four models share the same explanatory structure:

$$\begin{aligned} ldva_{it} = {} & \beta_0 + \beta_1 ldva_{i,t-1} + \beta_2\, lgdppercapita_{it} \\ & + \beta_3 lgovernmentspending_{it} \\ & + \beta_4 ltradefreedom_{it} \\ & + \beta_5\, linvestmentfreedom_{it} \\ & + \beta_6 lfinancialfreedom + \beta_7 leconomicfreedom \\ & + \beta_8 lge_{it} + \beta_9 lrq_{it} + \beta_{10} lrl_{it} + \beta_{11} lcc_{it} + \alpha_i + \gamma_t \\ & + \varepsilon_{it} \ldots . (1) \end{aligned}$$

$$lfva_{it} = \beta_0 + \beta_1 lfva_{i,t-1} + \beta_2\, lgdppercapita_{it} + \beta_3 lgovernmentspending_{it} + \beta_4 ltradefreedom_{it} + \beta_5\, linvestmentfreedom_{it} + +\beta_6 lfinancialfreedom + \beta_7 leconomicfreedom + \beta_8 lge_{it} + \beta_9 lrq_{it} + \beta_{10} lrl_{it} + \beta_{11} lcc_{it} + \alpha_i + \gamma_t + \varepsilon_{it} \ldots . (2)$$

$$lgvc_{it} = \beta_0 + \beta_1 lgvc_{i,t-1} + \beta_2\, lgdppercapita_{it} + \beta_3 lgovernmentspending_{it} + \beta_4 ltradefreedom_{it} + \beta_5\, linvestmentfreedom_{it} + +\beta_6 lfinancialfreedom + \beta_7 leconomicfreedom + \beta_8 lge_{it} + \beta_9 lrq_{it} + \beta_{10} lrl_{it} + \beta_{11} lcc_{it} + \alpha_i + \gamma_t + \varepsilon_{it} \ldots . (3)$$

$$lecia_{it} = \beta_0 + \beta_1 Lecia_{i,t-1} + \beta_2\, lgdppercapita_{it} + \beta_3 lgovernmentspending_{it} + \beta_4 ltradefreedom_{it} + \beta_5\, linvestmentfreedom_{it} + +\beta_6 lfinancialfreedom + \beta_7 leconomicfreedom + \beta_8 lge_{it} + \beta_9 lrq_{it} + \beta_{10} lrl_{it} + \beta_{11} lcc_{it} + \alpha_i + \gamma_t + \varepsilon_{it} \ldots . (4)$$

where y_{it} is, in turn, DVA_{it}, FVA_{it}, GVC_{it}, or ECI_{it} for models (1) through (4); α_i is a country fixed effect, γ_t a time effect, and ε_{it} the error term. Because the institutional-quality and economic-complexity variables take negative values, a constant of 3.5 is added to all observations before taking logs, so that the estimated coefficients can be interpreted as elasticities.

The models are estimated using the bias-corrected method of moments (BC-MM) estimator of Breitung, Kripfganz, and Hayakawa (2022), a refinement of the difference-GMM estimator of Arellano and Bond (1991). Difference-GMM instruments the lagged dependent variable with its own higher-order lags, but can yield biased estimates in dynamic panels because the transformed regressors remain correlated with the differenced error term — a problem compounded when an explanatory variable is itself a ratio involving the dependent variable. The BC-MM estimator corrects this small-sample bias while retaining GMM's ability to absorb fixed

and random effects, address cross-sectional heterogeneity, and accommodate autoregressive dynamics with longer lag structures, yielding more efficient estimates than uncorrected GMM.

4. Results and discussion:

Table 1 reports the BC-MM estimates for the four models: backward linkages (DVA), forward linkages (FVA), overall GVC participation (GVC), and the Economic Complexity Index (ECI).

4.1. Backward linkages (DVA)

Regulatory quality has a significant positive effect on backward linkages (0.376), while government effectiveness (−0.173) and control of corruption (−0.639) have significant negative effects. The rule of law's positive coefficient (0.154) is not statistically significant, and financial freedom has a significant negative effect (−0.139); trade freedom, investment freedom, and economic freedom are not significant. GDP per capita (0.334) and government spending (0.014) both have significant positive effects.

Table 1: Outputs for estimating models of participation and scaling in GVCs according to the -generalized moment method of corrected bias

Variable	DVA	FVA	GVC	ECI
lagged-dependent variable	0.769***	0.797***	0.793***	0.738***
GDP per capita	0.334***	0.285***	0.336***	0.004
Government Spending	0.014**	0.043***	0.035***	0.024***
Trade Freedom	-0.002	0.112*	-0.0161	0.047
Financial Freedom	-0.139***	-0.126**	-0.157**	0.005
Economic Freedom	0.038	-0.246	0.043	-0.241
Investment Freedom	-0.049	-0.053	-0.051	-0.0001
Government effectiveness	-0.173**	-0.571***	-0.197***	0.033
Regulatory quality	0.376**	0.451**	0.425**	0.083
Rule of law	0.154	0.523***	0.201	0.030
Control of corruption	-0.639***	-0.726**	-0.694***	-0.155
Constant	1.758***	1.807***	1.228*	0.873

*** Significant at the level of 1%,** significant at the level of 5%,* significant at the level of 10%.

Source: STATA 17.0 Outputs

4.2. Forward linkages (FVA)

Regulatory quality (0.451) and the rule of law (0.523) both have significant positive effects on forward linkages, as does trade freedom (0.112). Government effectiveness (−0.571) and control of corruption (−0.726) again show significant negative effects, and financial freedom is significantly negative (−0.126). GDP per capita (0.285) and government spending (0.043) are significant and positive; investment freedom and economic freedom are not significant.

4.3. Overall GVC participation

The pattern for overall participation mirrors the two linkage models: regulatory quality (0.336) has a significant positive effect, while government effectiveness (−0.197), control of corruption (−0.694), and financial freedom (−0.157) are significant and negative. The rule of law, trade freedom, investment freedom, and economic freedom are not statistically significant. GDP per capita (0.336) and government spending (0.035) again have significant positive effects.

4.4. Economic complexity (ECI)

Only government spending has a significant positive effect on economic complexity (0.024); none of the institutional-quality sub-indicators, GDP per capita, or the freedom indices are statistically significant in this model.

4.5. Discussion

Regulatory quality and the rule of law emerge as the institutional dimensions most consistently associated with deeper GVC participation, with a larger effect on forward than on backward linkages. Predictable, well-enforced regulatory and legal frameworks lower the risks associated with trade and investment, protect property and intellectual-property rights, and reduce transaction and compliance costs — all of which make a country more attractive to lead firms seeking reliable suppliers and, at a later stage, make locally produced goods more competitive in export markets. Trade freedom reinforces this channel for forward linkages specifically, by

lowering tariff and non-tariff barriers and widening market access for exporters.

The negative coefficients on government effectiveness and control of corruption, by contrast, appear to reflect short-run adjustment costs rather than a durable disincentive to GVC engagement. Three mechanisms plausibly explain this pattern in the Arab countries studied. First, stricter and better-enforced anti-corruption rules raise compliance costs, which can be particularly burdensome for smaller firms and can temporarily discourage GVC engagement. Second, where informal or corrupt arrangements had previously lubricated business transactions, their removal disrupts existing linkages before more transparent channels are established — consistent with a "grease the wheels" interpretation of the corruption–participation relationship. Third, anti-corruption enforcement that breaks up domestic monopolies can redirect firms toward newly opened domestic competition rather than international engagement, at least in the short run.

Financial freedom's negative effect on participation is consistent with capital being redirected toward more profitable opportunities outside GVC-linked production, or with better-financed firms substituting local supply chains and technology for imported inputs — both of which reduce measured backward or forward linkages even as they may reflect a maturing economy.

Finally, GDP per capita and government spending are robust positive drivers of participation and the only significant drivers of economic complexity, particularly when spending is directed at infrastructure, education, and R&D: these investments ease logistics and supply-chain integration, stimulate innovation, and give domestic producers the scale and competitiveness needed to enter and move up within global value chains.

5.Conclusion:

This study examines the effect of institutional quality on GVC participation and upgrading in Qatar, Kuwait, Oman, Algeria,

Tunisia, and Morocco over 1996–2020, using backward linkages, forward linkages, overall participation, and economic complexity as outcomes, estimated via a bias-corrected method-of-moments dynamic panel approach.

Regulatory quality and the rule of law consistently support deeper GVC participation, primarily by reducing investment and trade risk and building the market confidence and predictability that make Arab economies more attractive trading partners. Open trade policy and active participation in trade agreements reinforce this channel for forward linkages. Government spending and GDP per capita are the main drivers of upgrading, underscoring the importance of public investment — especially in infrastructure, education, and R&D — for raising economic complexity alongside participation.

Government effectiveness and control of corruption show a negative short-run association with participation, plausibly reflecting adjustment costs as informal arrangements are displaced by more transparent institutions rather than a durable disincentive to GVC engagement. Financial freedom is also negatively associated with participation, potentially reflecting a reallocation of capital toward opportunities outside GVC-linked production.

Taken together, the results confirm that institutional quality affects GVC participation unevenly across its sub-indicators, and that regulatory and legal reform — rather than governance or anti-corruption reform in isolation — offer the most direct lever for deepening Arab countries' integration into global value chains. Policymakers should prioritize regulatory and rule-of-law reform alongside trade facilitation to raise participation, sequence anti-corruption and governance reforms to manage their short-term adjustment costs, and sustain public investment to support both participation and upgrading.

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53. https://www.heritage.org/index/investment-freedom (Visit: 05/06/2024)

54. https://www.heritage.org/index/trade-freedom (Visit: 05/06/2024)

7.Appendices:

Appendix 1: Study variables and data sources

Variable	Definition	Source
Forward linkages – domestic value added in exports (FVA)	Value added in a country's exports that is locally manufactured; measures the domestically produced intermediate inputs used to generate export output.	worldmrio.com/unctadgvc
Backward linkages – foreign value added in exports (DVA)	Value added in a country's exports that is manufactured abroad; measures imported intermediate inputs used to generate export output (known as "VS" in the technical literature).	worldmrio.com/unctadgvc
GVC participation index (GVC)	Sum of forward and backward linkages, expressed as a share of gross exports: GVC = (DVX + FVA) / Gross Exports.	worldmrio.com/unctadgvc
Economic Complexity Index (ECI)	Measures the relative knowledge intensity of an economy or product, estimated from trade, patent, and research-publication data; a stronger predictor of future growth than trade-complexity measures alone.	oec.world; atlas.cid.harvard.edu; ourworldindata.org
Regulatory quality	Government's capacity to formulate and implement sound policies and regulations that enable private-sector development.	Worldwide Governance Indicators (govindicators.org)
Government effectiveness	Quality of public services, civil-service capacity and independence from political pressure, and quality of policy formulation.	Worldwide Governance Indicators
Rule of law	Extent to which agents trust and abide by the rules of society, including contract enforcement, property rights, the police and courts, and the incidence of crime and violence.	Worldwide Governance Indicators
Control of corruption	Extent to which public power is exercised for private gain, including petty and grand corruption and elite capture of the state.	Worldwide Governance Indicators
Economic freedom	Heritage Foundation index covering rule of law, government size, regulatory efficiency, and open markets across 184 economies; scored 0–100 as the average of its sub-components.	heritage.org/index
Trade freedom	Composite measure of the absence of tariff and non-tariff barriers, based on the average trade-weighted tariff rate and the incidence of non-tariff barriers.	heritage.org/index
Investment freedom	Assesses restrictions on investment; scored from an ideal of 100, with deductions for each restriction identified.	heritage.org/index
Financial freedom	Measures banking efficiency and independence from government control, based on state intervention in finance, market development, credit allocation, and openness to foreign competition; scored 0–100.	heritage.org/index
Government spending	Government expenditure, including consumption and transfers, as a share of GDP.	heritage.org/index

Source: Prepared by researchers based on the databases referenced in the table

Appendix 2: Backlinks Model Estimation Results.

ldva	Coefficient	Robust std. err.	z	P>|z|	[95% conf.	interval]
ldva						
L1.	.7691952	.0393681	19.54	0.000	.6920351	.8463553
lgdppercapita	.3341064	.0623366	5.36	0.000	.211929	.4562838
lgovernmentspending	.0146008	.0072181	2.02	0.043	.0004536	.028748
ltradefreedom	-.0025775	.0612515	-0.04	0.966	-.1226283	.1174734
lfinancialfreedom	-.1391278	.0370061	-3.76	0.000	-.2116584	-.0665972
leconomicfreedom	.0387284	.190957	0.20	0.839	-.3355404	.4129973
linvestmentfreedom	-.049401	.0315384	-1.57	0.117	-.1112152	.0124132
lge	-.1729622	.0812892	-2.13	0.033	-.3322862	-.0136383
lrq	.3760266	.1561905	2.41	0.016	.0698989	.6821542
lrl	.1544726	.1537605	1.00	0.315	-.1468924	.4558376
lcc	-.6394517	.20689	-3.09	0.002	-1.044949	-.2339548
_cons	1.758655	.6804966	2.58	0.010	.424906	3.092404

Source: STATA-17.0 Program Outputs

Appendix 3: Results of Estimation of the Forward Linkages Model.

lfva	Coefficient	Robust std. err.	z	P>|z|	[95% conf.	interval]
lfva						
L1.	.7975736	.0702743	11.35	0.000	.6598386	.9353086
lgdppercapita	.2859119	.1087968	2.63	0.009	.0726741	.4991496
lgovernmentspending	.0430318	.0139633	3.08	0.002	.0156642	.0703994
ltradefreedom	.1124723	.0577874	1.95	0.052	-.000789	.2257336
lfinancialfreedom	-.1268365	.0517591	-2.45	0.014	-.2282825	-.0253904
leconomicfreedom	-.2462206	.2036686	-1.21	0.227	-.6454036	.1529625
linvestmentfreedom	-.0531057	.0421068	-1.26	0.207	-.1356335	.0294222
lge	-.570775	.1309812	-4.36	0.000	-.8274934	-.3140567
lrq	.4513072	.184332	2.45	0.014	.0900231	.8125914
lrl	.5232265	.1836918	2.85	0.004	.1631972	.8832557
lcc	-.7260937	.2879968	-2.52	0.012	-1.290557	-.1616303
_cons	1.806876	.4078344	4.43	0.000	1.007535	2.606216

Source: STATA-17.0 Program Outputs

Appendix 4: GVC Participation Model Estimation Results.

lgvc	Coefficient	Robust std. err.	z	P>|z|	[95% conf.	interval]
lgvc						
L1.	.7930523	.0459884	17.24	0.000	.7029166	.883188
lgdppercapita	.3369341	.0821235	4.10	0.000	.1759751	.4978932
lgovernmentspending	.0359018	.0064084	5.60	0.000	.0233415	.048462
ltradefreedom	-.0161486	.0680986	-0.24	0.813	-.1496193	.1173222
lfinancialfreedom	-.157192	.0674147	-2.33	0.020	-.2893223	-.0250616
leconomicfreedom	.0439248	.2468624	0.18	0.859	-.4399166	.5277662
linvestmentfreedom	-.0516253	.0362002	-1.43	0.154	-.1225764	.0193258
lge	-.196642	.0701906	-2.80	0.005	-.334213	-.0590709
lrq	.4250779	.1825373	2.33	0.020	.0673114	.7828444
lrl	.2010193	.1713613	1.17	0.241	-.1348426	.5368812
lcc	-.6945876	.2293549	-3.03	0.002	-1.144115	-.2450601
_cons	1.228419	.6956883	1.77	0.077	-.1351054	2.591943

Source: STATA-17.0 Program Outputs

Appendix 5: Results of the Economic Complexity Model Assessment.

lecia	Coefficient	Robust std. err.	z	P>|z|	[95% conf.	interval]
lecia						
L1.	.7381089	.0917573	8.04	0.000	.558268	.9179498
lgdppercapita	.0041904	.0160126	0.26	0.794	-.0271937	.0355745
lgovernmentspending	.0245076	.0094107	2.60	0.009	.006063	.0429521
ltradefreedom	.0476751	.0415606	1.15	0.251	-.0337822	.1291324
lfinancialfreedom	.0052999	.0432954	0.12	0.903	-.0795576	.0901573
leconomicfreedom	-.2414185	.2134527	-1.13	0.258	-.6597781	.1769412
linvestmentfreedom	-.0001723	.020746	-0.01	0.993	-.0408337	.040489
lge	.0335482	.1294031	0.26	0.795	-.2200772	.2871735
lrq	.0835181	.0680467	1.23	0.220	-.0498511	.2168872
lrl	.0304366	.1160845	0.26	0.793	-.1970848	.2579581
lcc	-.1552997	.1152973	-1.35	0.178	-.3812784	.0706789
_cons	.8734132	.6704052	1.30	0.193	-.4405568	2.187383

Source: STATA-17.0 Program Outputs