

Global Value Chains and International Value Transfers

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February 2026

Introduction

The literature on global value chains is broad in background and scope, but most authors can agree on a few core points: Modern capitalism relies heavily on cross-border production, the international division of labor follows regional specializations, power is distributed unequally between participating firms, and consequently, firms in richer countries realize a high share of total profits. Critical researchers emphasize that sequential production of unfinished goods tends to build on and exacerbate existing inequalities, including international wage differentials and gender inequalities. Heterodox authors in development economics also show that when global value chain integration does lead to technological upgrading, this does not necessarily extend to catching up to the most efficient technologies, nor to social upgrading of wages and labor conditions.

Global value chains are located in new institutional economics and closely relate to Ricardian and neoclassical models of trade, extending the idea of international specialization to pre-existing as well as emerging power imbalances. In most economic and empirical models (as opposed to case studies and network analysis), chains are traced from endpoints in final demand, and value added is defined by the standards of national accounting. This restricts the analysis to large players in consumer or fixed capital sales, but neglects producers of key intermediate inputs, for example in fossil fuel products or semiconductors.

International value transfers in unequal exchange, on the other hand, focus on international competition and differential production techniques. They model and quantify the losses of production in countries with lower average value composition of capital and higher rates of exploitation due to differences between produced labor values and competitive prices set on the world market. In contrast to global value chains, they model international inequalities not as a consequence of non-competitive between-firm relations, monopsonies or imperfect competition, but as the fundamental consequence of international competition itself. International value transfers are rooted in the contradiction between individual production processes and global price setting; they are located between capitals rather than nation-states but produce clear geographical patterns with value giving industries concentrated in the neocolonial periphery and receivers in the imperialist center.

Global value chains and international value transfers approach the same issue of self-reproducing international inequalities, and the resulting dynamic power shifts between capitals and countries, from different directions. While global value chains are rooted in Ricardian and neoclassical models of international trade, international value transfers are an extension of Marxist models of competition to the international level. The former literature fundamentally starts with single between-firm relationships to aggregate international results, while the latter takes the global market as the point of departure to derive between-country and between-capital comparisons. In this paper, we highlight the overlap between the two literatures when understanding geoeconomic shifts, the implications for modeling the economics of imperialism, and the fundamental differences in results.

Empirically, we compare the estimation of international value transfers based on Marxist labor values and production prices with standard measures of global value chain involvement as well as location within the chain. We calculate these indicators for 44 countries and 5 rest of the world regions in 163 industries for the years 1995-2020 in one of the largest datasets of its kind. Our statistical analysis finds a superficial correspondence between industries that receive a below-average share of value added and that are givers of international value transfers, but conclude that global value chain analysis underestimates the impact of global competition on international inequalities.

Commodity Chains, Value Transfers and Value Chains

International production is organized in global commodity chains. Production of both consumption and capital goods is decomposed in small production steps and distributed over multiple countries, consequently, intermediate products cross many borders before they are sold. Importantly, they are sold and bought between firms specializing in one step, often across borders but also within countries. Hopkins and Wallerstein (1977) argue that within these chains, power imbalances express in unequally distributed surplus value between producers, where lead firms with monopoly (producer-driven chains) or monopsony (buyer-driven chains) power gaining at the disadvantage of others within the chain. The concept of realizing surplus value in places where it is not produced grounds the approach in production and exploitation of labor, in the context of international trade and economic power inequalities between core and periphery.

International value transfers (Emmanuel 1972) also analyze the divergence of surplus value production and realization. The literature is based on Marx's transformation from labor values, determined by the socially necessary labor time, and production prices where a general profit rate forms and equalizes between industries. The transformation advantages capital intensive industries, that exploit less surplus labor per unit capital but receive the same profit rate, set in motion value transfers from low value composition of capital (VCC) industries. When production is structurally different between countries due to the structural underdevelopment of the neocolonial periphery by the imperialist center, international value transfers are set in motion by the competitive equalization of profit rates (Shaikh 1980; Işıkara and Mokre 2025). While capital moves relatively freely across borders, workers do not, which stops wage rates from equalizing. Differential national wage rates mean higher rates of surplus value (RSV) in low-wage countries, which set in motion another set of IVTs. International value transfers express

international inequalities due to the existence of capitalist competition on the world market, they correspond to the structural view of commodity chain analysis but manage without monopoly/monopsony power explanations, and center the world market rather than single chains.

We estimate international value transfers induced by differential value compositions of capitals (VCC) and those induced by differential rates of surplus value (RSV) separately, then sum them to total IVTs. For VCC-IVTs, we compare labor values calculated as labor hours in direct and indirect production along a Leontief matrix, with production prices where the global average rate of profit is added to labor hours in production as well as in capital. For RSV-IVTs, we compare production prices with a hypothetical price vector where not only profit rates but also wage rates equalize internationally.

Global Value Chains (Gereffi et al. 2005) also analyze the structure of trade and center cross-border division of labor within the new institutional economics framework. Importantly, instead of the (ambiguous) unequal realization of surplus value, GVCs center the distribution of monetary value added along the chain. Empirical indicators of GVCs describe the structure of production without considering power or international relations in the first place. The literature however discusses the importance of GVCs for structural inequalities as well as the potential for their alleviation (production and social upgrading) or alternatively aggravation. Within the literature, the position of one firm within GVCs is estimated by how many steps (and border crossings) precede production (downstreamness), and more importantly, how many steps still lie between production and final sales (upstreamness). Another indicator is the share of production for global value chains, as compared to production within domestic chains or for final demand. A key finding within the GVC literature that relates to the question of surplus value realization in commodity chains is that the end stages of global value chains realize larger shares of value added per output (Antràs and Chor 2018, 145), and a “smile curve” where proximity to both beginnings (low downstreamness) and ends (low upstreamness) of chains go with higher shares of total value added (and the lowest in the middle stages). Originally from the literature of firm-level production stages (often distinguished as pre-fabrication, fabrication and post-fabrication), the hypothesis has also been tested on the industry-country level using input output tables, e.g. for employee compensation (Meng et al. 2020) and value added (Antràs and Chor 2018) per unit output.

We estimate upstreamness as the average number of sales before final demand (Antràs et al. 2012; Miller and Temurshoev 2017), a Wang et al. (2013) GVC position index that measures forward value added per backward value added, while GVC stages (see Figure 1) “Beginning”, “Middle” and “End” are discretizations of upstreamness ($\text{Beginning} > U = 2.5 > \text{Middle} > U = 1.5 > \text{End}$). For GVC shares, backward shares measure foreign value added in total production (Antràs and Chor 2018) while forward shares measure the share of domestically produced value added that crosses at least one border before reaching final demand (Wang et al. 2013), and output produced for cross-border sales. Figure 2 shows the distribution of GVC shares by GVC stages, illustrating that while output and gross operating surplus shares fall with decreasing upstreamness (towards the GVC ends), the relationship with hours worked for cross-border products is almost uniform between stages. Since the units of observation within macroeconomic analyses are industries, the importance of GVC shares is further underlined. The comparison between output, profit and employment GVC shares further illustrates structural distributions along the chain, if for example firms at the end of chains tend to be more profitable, or when firms at the beginning have less labor-intensive production.

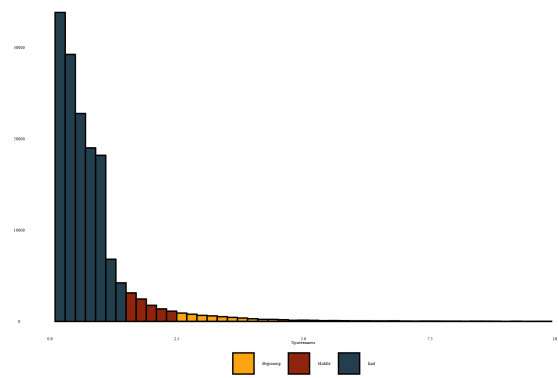


Figure 1: Histogram of Upstreamness values for GVC stages Beginning, Middle and End

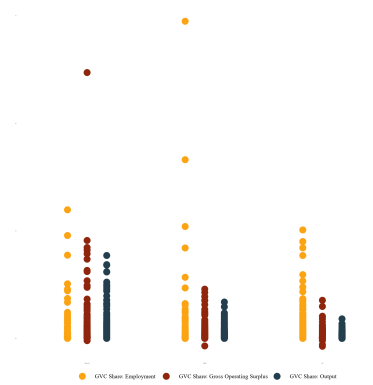


Figure 2: Industrial average GVC Shares (Employment, Gross Operating Surplus and Output) in GVC Stages

IVTs express direct-production price deviations, while surplus profits above the general rate are expressed by market-production price deviations. The structural inequalities at the center of both commodity chain and value chain analysis encompass both directions, while IVTs narrowly center the effects of global competition. As in Işıkara and Mokre (2025), we distinguish the industry categories of production (of goods and services), non-production (finance, insurance and trade), recycling (due to their specific role in environmentally enhanced input-output tables) and non-profit (state-dominated industries, e.g. public administration), Figure 3 shows that GVC intensity is highest in production industries. Standouts are Ireland, Luxembourg, Malta and Taiwan, all four international banking hubs. Figure 4 indicates that positions at the end of global value chains (low upstreamness) go with higher gross operating surplus per hour, but show no smile curve that similarly favor beginning positions. The plots indicate no clear relationship with IVTs, pointing to IVTs capturing value transfers at all stages of internationally divided production. Upstreamness seems to go with higher production-direct price but lower market-production price ratios, which indicates that GVC positions are meaningful when applied to the decomposition of profit rate equalization from surplus profits. Figure 5 plots the distribution of IVTs along discrete GVC stages, and reveal a very narrow distribution of very small transfers at the end, and much larger positive and negative transfers at the beginning and middle stages with a visible left-skewed distribution.

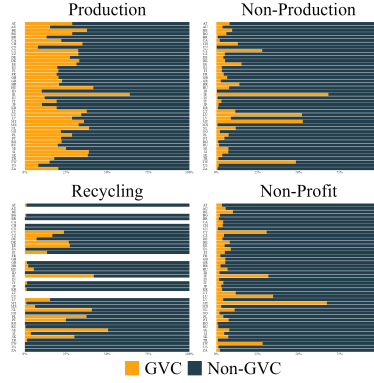


Figure 3: Average GVC Share (Output) per country and industry category

Results

To investigate the relationship between IVTs and GVCs, we estimate a fixed effects panel regression of total, VCC-induced and RSV-induced IVTs on upstreamness, forward and backward GVC shares. We also include squared upstreamness to control for non-linear effects in analogy to the smile curve hypothesis. IVTS and upstreamness are winsorized at percentiles 1 and 99. There is a significant correlation between international value transfers (total, VCC and RSV induced) and upstreamness, with within- R^2 values between 0.04 (VCC) and 0.08 (total) as reported in Table 1. The results are driven by the impact of upstreamness on RSV-IVTs, i.e. industries at the end of global value chains gaining, which points to a meaningful relationship between the international division of labor and differential rates of surplus value. Squared upstreamness has the same sign and significance, but different levels and

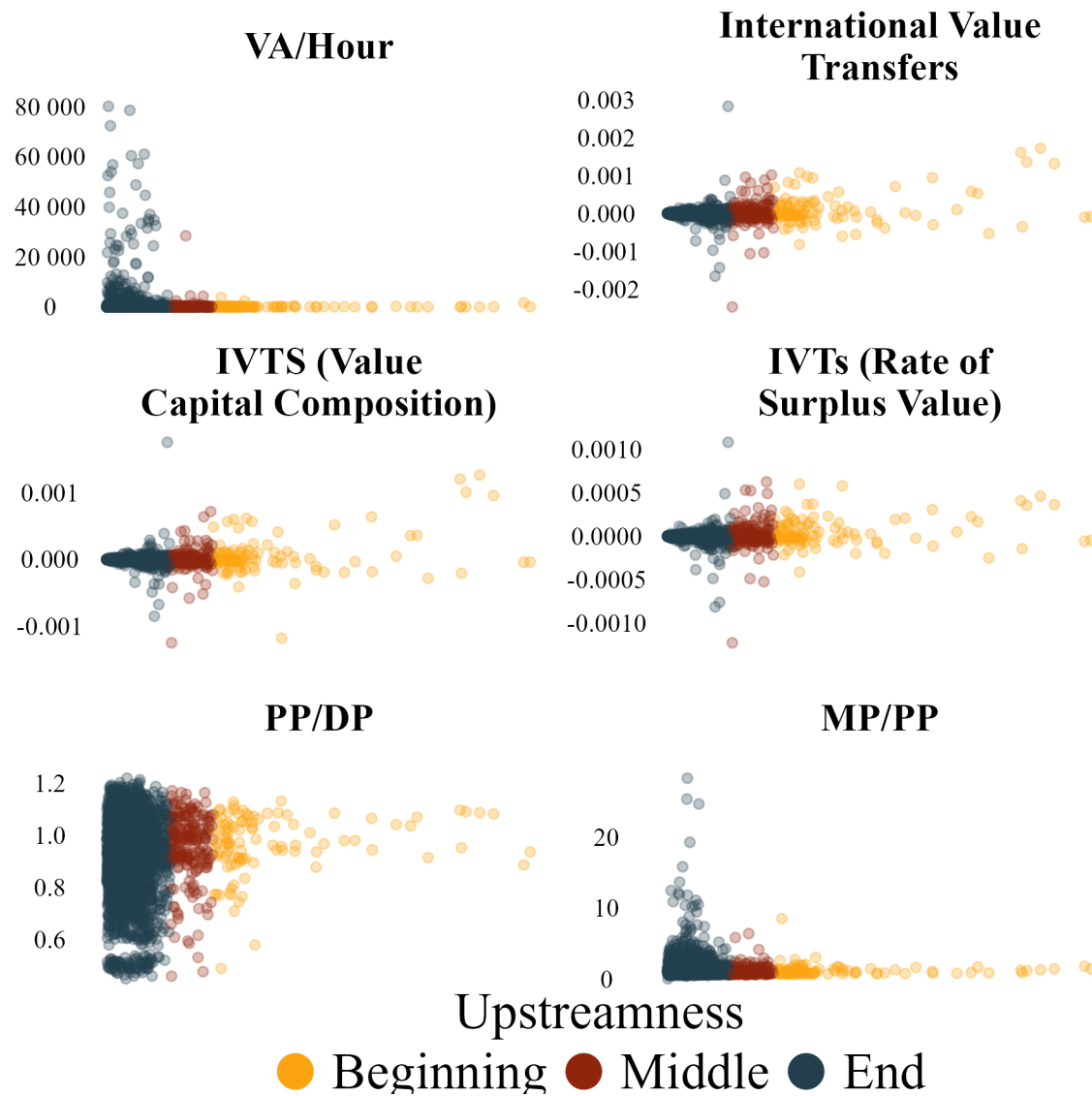


Figure 4: Upstreamness and value added per hour, international value transfers (total, VCC- and RSV-induced), production-direct price and market-production price ratios.

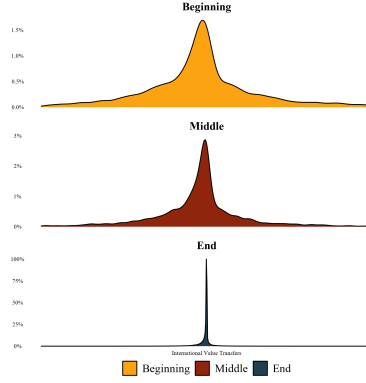


Figure 5: International value transfers at the beginning, middle and end stages of GVCs.

increased R^2 values point to a non-linear relationship. At the same time, higher forward and backward GVC share go with more negative value transfers. However, within- R^2 values are substantially smaller (below 0.02 for total, VCC and RSV-induced transfers), the regression points to correlation rather than explanatory power.

We estimate a second regression with production-direct, market-production and market-direct price ratios as dependent variables, with the same independent variables upstreamness, forward and backward GVC shares with results reported in Table 2. All three independent variables have positive impacts on production-direct price ratios, but negative coefficients for market-production and market-direct price ratios. Squared upstreamness has the same sign, but in the process untransformed upstreamness is no longer significantly different from zero. Low R^2 values between 0.008 and 0.013 point to low explanatory power. Production-direct price ratios go with higher upstreamness, forward and backward GVC shares.

Table 1: Fixed effects panel regression of international value transfers on upstreamness and forward GVC share in production.

	IVTs	IVTs	IVTs	IVTs (VCC)	IVTs (VCC)	IVTs (VCC)	IVTs (RSV)	IVTs (RSV)	IVTs (RSV)
Upstreamness	1.87e-5*** (1.52e-6)	5.15e-6*** (1.02e-6)		7.64e-6*** (7.86e-7)	3.21e-6** (9.72e-7)		1.1e-5*** (9.12e-7)	1.95e-6* (7.44e-7)	
Upstreamness Square		5.44e-6*** (7.97e-7)			1.78e-6** (5.27e-7)			3.65e-6*** (5.69e-7)	
Forward GVC Share			-5.99e-6*** (3.46e-7)			-2.55e-6*** (2.85e-7)			-3.44e-6*** (1.85e-7)
Backward GVC Share			-1e-5*** (8.26e-7)			-3.48e-6*** (5.03e-7)			-6.55e-6*** (4.75e-7)
Fixed-Effects: Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
S.E.: Clustered Observations	by: Year 78,237	by: Year 78,237	by: Year 78,237	by: Year 78,237	by: Year 78,237	by: Year 78,237	by: Year 78,237	by: Year 78,237	by: Year 78,237
R2	0.08175	0.09007	0.01292	0.03437	0.03658	0.00542	0.06960	0.07875	0.01181
Within R2	0.07978	0.08812	0.01080	0.03299	0.03520	0.00400	0.06784	0.07700	0.00994

Table 2: Fixed effects panel regression of international value transfers on position within global value chains and GVC shares in production.

	IVTs	IVTs (VCC)	IVTs (RSV)
Beginning	0.0001*** (1.58e-5)	2.11e-5 (1.11e-5)	9.37e-5*** (1.19e-5)
Middle	5.86e-5*** (5.63e-6)	1.07e-5** (3.69e-6)	4.79e-5*** (4.46e-6)
Forward GVC Share	-5.92e-6*** (2.96e-7)	-3.28e-6*** (1.59e-7)	-2.64e-6*** (1.67e-7)
Backward GVC Share	-4.44e-6*** (4.81e-7)	-1.97e-6*** (3.06e-7)	-2.47e-6*** (2.31e-7)
Beginning x Forward GVC Share	-4.3e-5** (1.25e-5)	9.71e-6 (1.06e-5)	-5.27e-5*** (9.8e-6)
Middle x Forward GVC Share	-1.3e-5** (3.83e-6)	8.04e-6** (2.64e-6)	-2.1e-5*** (3.69e-6)
Beginning x Backward GVC Share	-0.0001*** (1.8e-5)	-1.17e-5 (1.31e-5)	-9.85e-5*** (1.2e-5)
Middle x Backward GVC Share	-6.51e-5*** (9.55e-6)	-1.06e-5 (6.18e-6)	-5.45e-5*** (5.89e-6)
Fixed-Effects:			
Year	Yes	Yes	Yes
S.E.: Clustered	by: Year	by: Year	by: Year
Observations	78,237	78,237	78,237
R2	0.11162	0.03694	0.12732
Within R2	0.10971	0.03556	0.12567

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