Climbing Global Value Chains: Industrial Upgrading in the Mexican Automotive Industry

Dissertation submitted in partial fulfilment of the requirements for the degree of:

MA International Political Economy

King's College London

School of Politics & Economics

Department of European and International Studies

Contents

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1. Introduction

The world economy has become increasingly organised through global value chains (GVCs). Since the 1970s, companies have sought to outsource and offshore their productive capacities in search of lower labour and operational costs.[1] Understood as a "set of value-adding activities involved in the conceptualisation, production and distribution of a particular good or service", GVCs reflect both the globalised and fragmented nature of contemporary industrial production.[2] This trend has been particularly evident in the automotive sector. Traditionally concentrated in the United States (US), Germany, France and Japan, this industry now plays a significant role in several emerging economies.[3] Indeed, the 'slicing up' of the automotive supply chain has led to the growth of notable automotive sectors in Eastern Europe, Latin America and parts of Asia.[4] This dissertation will explore the rise of the automotive sector in Mexico and critically evaluate the country's integration into GVCs as a development strategy, underpinned by a labour-intensive export model.

Integration into GVCs is often promoted as a route to development in academic and policy circles.[5] The offshoring and outsourcing of GVC activities to developing countries is argued to create opportunities for local firms and people. Multinational corporation (MNC) overseas investments are said to produce technological, organisational and knowledge spillovers that improve the capacity of local firms.[6] Through their supply relations with MNCs, local firms can 'upgrade' to higher-value niches of the GVC through learning and technological collaboration.[7] In this sense, development is viewed as a process driven by private-sector investment and measured by a country's ability to create 'value-added' in the supply chain.[8]

[1] Gereffi (2013); Dicken (2011).
[2] Werner et al. (2014), p. 1220.
[3] Sturgeon & Gereffi (2008), p. 303.
[4] Wójtowicz & Rachwał (2014).
[5] Werner et al. (2014).
[6] Contreras et al. (2011); Sandoval & Wong (2005).
[7] Gereffi (2005), p. 171.
[8] UNCTAD (2013).

This dissertation aims to critically evaluate integration into GVCs as a development strategy. It will explore how the offshoring and outsourcing of segments of the automotive GVC has impacted Mexico's prospects for economic development. Through this analysis, it seeks to answer the following research questions: to what extent have opportunities for 'upgrading' been created for local firms in the Mexican automotive sector? Have these opportunities been realised and, if not, why? The research also raises broader queries into the role of the state and the private sector as engines for development, calling into question the GVC literature's MNC-centric view of development.

The research topic is particularly relevant given the centrality of the automotive sector to recent North American trade negotiations. In 2018, US President Donald Trump declared the North American Free Trade Agreement (NAFTA) "perhaps the worst trade deal ever made", blaming it for the mass emigration of automotive jobs and industry over the past three decades.[9] Indeed, whereas the US was home to 83% of North America's automotive jobs in 1990, by 2017 its job share had fallen to 51% (see figure 1).[10] Conversely, Mexico's job share rose from 7% to 42% in the same period.[11] Mexico's transformation into an automotive powerhouse in recent years has led to the sector's reputation as the "jewel of Mexican industrialisation", sparking envy and outrage from its Northern neighbour.[12]

Figure 1: Percentage of North American automotive jobs by country

	US	Canada	Mexico
1990	83	10	7
2017	51	7	42

Source: Asociación Mexicana de la Industria Automotriz (AMIA)

However, this dissertation seeks to dispel the misconception that NAFTA constituted a bad deal for the US and a good deal for Mexico. Guided by a critical interpretation of the GVC

[9] White House (2018).
[10] AMIA (2018).
[11] Covarrubias (2019), p. 338.
[12] Badillo Reguera & Rozo (2019), p. 121.

literature, the paper tells a more complex story of Mexico's insertion into the automotive GVC that has been premised on low wages, high levels of exposure to foreign competition and exclusion from technologically advanced stages of production. While some evidence is initially presented to suggest that opportunities for industrial upgrading have been created, illustrated through two case studies into Mexican firms, further analysis reveals that opportunities have been extremely limited in nature.

The research identifies three factors that have limited industrial upgrading in Mexico's automotive sector. First, it finds that lead firms prefer to work with large-scale foreign suppliers, leaving local Mexican firms marginalised from automotive supply chains.[13] Second, it highlights how power asymmetries within the automotive GVC have enabled lead firms to engage in predatory purchasing practices, which has pushed some local firms to bankruptcy.[14] Third, it notes that Mexico's specialisation in the labour-intensive segments of the automotive value chain has meant local firms are faced with 'technological exclusion' and struggle to break into higher-value production stages.[15] As a result, the overall share of domestic value-added (DVA) is found to be declining in Mexican exports even though more stages of the automotive GVC are now produced domestically.[16]

The paper offers a two-tiered explanation of this paradoxical situation, where DVA is falling despite Mexico producing a rising share of the final export. Initially, it points to certain policy failures in Mexico, such as a lack of investment in research and development (R&D) that would enable firms to improve their technological competency.[17] However, further analysis of the institutional environment identifies a deeper explanation that links the decline in DVA to falling wages.[18] Research drawing upon ethnographic studies of labour relations in Mexico finds that wages are politically determined by a process of collusion between state-controlled unions and MNCs.[19] In the automotive sector, there is a conscious strategy of wage repression at play that allows Mexico to remain an attractive destination for foreign direct investment (FDI).[20] The subsequent abundance of cheap, exploitable labour disincentivises firms in

[13] Cedillo-Campos et al. (2010).
[14] Sturgeon et al. (2008); Contreras et al. (2011).
[15] Crossa & Ebner (2020); Badillo Reguera & Rozo (2019).
[16] Dougherty & Reynaud (2017); Blyde (2014).
[17] Dougherty & Reynaud (2017); OECD (2015).
[18] Chiquiar & Tobal (2019).
[19] Mariano (2018).
[20] Covarrubias (2019).

Mexico from investing in labour-saving technologies, thereby limiting upgrading opportunities and the overall share of DVA in Mexican exports.[21]

The paper will proceed as follows. Section 2 provides an overview of the GVC analytical framework and reviews the literature on Mexico's integration into the automotive GVC. Through the analysis of the literature, I build a theoretical framework that is informed by critical GVC concepts. Section 3 outlines the research methods used and discusses how they relate to the theoretical framework. Section 4 presents the key findings of the research and locates them within the historical context of industrial change in Mexico. Section 5 discusses these findings and critically evaluates Mexico's integration into the automotive GVC as a development strategy, highlighting the crucial role of active industrial policy and sound institutions necessary to ensure that industrial growth yields tangible benefits for the local economy. The final section concludes the dissertation by acknowledging the limitations of the findings and considering their implications for the broader GVC framework.

[21] Crossa & Ebner (2020).

2. Literature review and theoretical framework: GVCs and development

2.1. Definition and origins

The concept of GVCs has gained popularity as a way to analyse the interconnected and fragmented contemporary world economy. Responding to the trends of offshore production and industrial restructuring, scholars developed the GVC framework to account for the rising complexity of globalisation in the neoliberal era.[22]

The GVC approach has its roots in the Global Commodity Chains (GCC) research that emerged in the 1980s. Hopkins and Wallerstein first defined the commodity chain as "a network of labour and production processes whose end result is a finished commodity", invoking the 'chain' as an analytic for understanding the complex relations between actors involved in production processes.[23] GCC scholars adopted a long-term, macro-historic approach to their research and emphasised the unequal nature of exchange between the core and periphery of the world economy.[24]

During the 1990s and early 2000s, the GCC approach was reformulated into the GVC framework. While maintaining a focus on power relations, GVC scholars were increasingly attentive to income distribution across chains. They sought to ground their analysis in measurable economic concepts, such as transaction costs and value-added in trade.[25] This generated more quantitative research in the field, which became explicitly orientated towards policymaking for economic development.[26]

The two core concepts at the heart of GVC analysis are 'governance' and 'upgrading'. Governance refers to the mechanisms of control and coordination that 'lead firms' employ to shape the distributional outcomes of chains.[27] Gereffi and Korzeniewicz's seminal work

[22] Sturgeon et al. (2008); Gereffi (2013).
[23] Hopkins & Wallerstein (1986), p. 15
[24] Bair & Werner (2011).
[25] Havice & Pickles (2019).
[26] Campling & Selwyn (2018), p. 422.
[27] Ibid., p. 424.

introduced the concepts of 'buyer-driven' and 'producer-driven' governance of chains.[28] This distinguished between GVCs that are driven by lead firms with dominant purchasing power, such as supermarkets in buyer-driven agri-food chains, and GVCs driven by lead firms with dominant production power, such as the 11 automotive firms who have near-monopoly control over technologies in the producer-driven automotive chain.[29] The concept of governance therefore serves as a prism through which to investigate power relations between lead firms and subordinate suppliers in GVCs.

Upgrading is defined as the process by which firms move from low-value to higher-value activities in GVCs.[30] The concept is rooted in the notion that subordinate firms become increasingly competent and competitive as a result of 'linking up' with lead firms, enabling them to perform higher-value actives.[31] Upgrading tends to be measured in terms of 'value-added' by actors within the chain and is underpinned by an understanding of value as the generation of economic rents.[32] While Havice and Pickles point out that there is no singular definition of value within GVC scholarship, the mainstream literature conforms to a neo-Ricardian understanding of value as the ability to create profits and capture rents.[33] Recent GVC literature differentiates between 'industrial upgrading' of firms and 'social upgrading' of workers rights and conditions, recognising that the former does not automatically lead to the latter.[34] While this paper acknowledges the contested nature of value in GVC literature, its primary objective is to understand how value-added is affected by institutional contexts. It therefore seeks to locate these contested notions of value within the broader context of state policies, MNC operations and union activities.

2.2. GVCs in the policy realm

Over the last decade, multilateral development institutions such as the World Bank, United Nations Conference for Trade and Development and Inter-American Development Bank have adopted GVC analysis. Their resulting policy outputs are often geared towards creating a favourable environment for local firms in developing countries to capture a greater 'slice' of

[28] Gereffi & Korzeniewicz (1994).
[29] Campling & Selwyn (2018), p. 418.
[30] Gereffi (2005), p. 171.
[31] Gereffi (2001), p. 1622.
[32] Kaplinsky et al. (2018).
[33] Havice & Pickles (2019).
[34] Barrientos et al. (2011); Milberg and Winkler (2013).

the GVC.[35] The World Bank, for instance, states that "GVCs provide countries the opportunity to leap-frog their development process", suggesting that by 'linking up' with lead firms, countries (not just local firms) can upgrade by producing more domestic value-added.[36] As a result, scholars argue that GVC analysis has been key to constructing the 'post-Washington consensus', which advocates a role for the state in regulating MNC activities, incentivising FDI and establishing a competitive business environment.[37] Werner et al. point out that participation in GVCs is therefore packaged as a 'third way' between market-led and state-led development models.[38]

In the case of Mexico, various multilateral institutions have promoted integration into GVCs as a route to development. In 2017, the OECD praised Mexico's participation in GVCs for boosting productivity and driving increased sophistication of production. In particular, the automotive sector was hailed "a success story" based on its diminishing rate of imported content in exports (ICE).[39] ICE in the automotive sector decreased from 50% in 2008 to 43% in 2014, revealing that a growing proportion of the final export was produced in Mexico.[40] The fact that this trend is seen as a victory for Mexican development policy indicates that deepening integration into GVCs is often seen as a development goal in itself. Mexican institutions such as ProMexico and Banco de Mexico approach GVCs in a similar way. They note that the rapid expansion of the Mexican automotive sector, which went from the 20th to the 7th largest worldwide producer of cars, represents the success of government policy to attract FDI and stimulate the economy.[41]

2.3. Criticisms and reformulations

However, this linear developmental narrative emanating from policy circles is highly contested by critical or 'second generation' GVC scholars who see the GVC framework as promoting an MNC-centric view of development.[42] Indeed, the role of MNCs is presented in an overwhelmingly positive light in mainstream GVC literature.[43] By focusing on the positive

[35] Werner et al. (2014).
[36] World Bank, "Global Value Chains," World Bank website, accessed 10/08/2020 https://www.worldbank.org/en/topic/global-value-chains
[37] Werner et al. (2014).
[38] Ibid., p. 1239.
[39] Dougherty & Reynaud (2017), p. 14.
[40] Ibid., p. 15.
[41] Promexico (2016); Chiquiar & Tobal (2019).
[42] Bair (2005).
[43] Campling & Selwyn (2018), p. 419.

spillover effects that lead to industrial upgrading, MNCs are portrayed as benevolent conveyers of knowledge and technologies. In reality, both knowledge and technology are tightly controlled by MNCs who lobby for strong intellectual property laws to protect their dominant market positions.[44] Furthermore, this portrayal negates several realities in the automotive GVC in Mexico, as will be developed in empirical detail in section 4, such as the crowding out of local firms by global suppliers.[45] As a result of this positive bias towards the role of MNCs, some scholars have argued that the GVC approach promotes a neoliberal vision of market-led development.[46] Rather than representing a genuine 'third way' between state-minimalist and state-coordinated approaches, the GVC model effectively promotes MNCs as the only viable agents of development.[47] This ideological and political assumption is often not recognised or explicitly stated upfront in GVC scholarship.

Another criticism of the GVC model is that the role of labour and workers is overlooked. As Selwyn points out, workers are conceived as inputs to the chain and broader class relations tend to be excluded from GVC analysis.[48] This reflects the mainstream literature's understanding of value as the generation of economic rents, in contrast to a Marxist reading of value as the product of labour. Even when labour is included in GVC analysis, it is only visible as when it takes the form of collective action and resistance.[49] Labour unions are occasionally cited as actors within the GVC framework when attention is paid to the institutional context of chains, but there is little focus on labour agency at the individual level of decision making. Through their study into the garment industry in India, Carswell & De Neve show how workers' decisions to migrate, change factories and opt for flexible hours constitutes a form of worker's agency that impacts MNC operations and broader chain dynamics.[50] These less visible, everyday forms of agency are often missed by GVC analysis that focuses on labour in relation to trade and production, rather than on workers as individual agents with the power to shape and constrain GVCs. As a result, this paper will not only analyse the role of unions in shaping the Mexican automotive GVC but explicitly look at how the everyday acts of Mexican autoworkers impact firms' ability to create and capture value.

[44] Ibid., p. 418.
[45] Sturgeon et al. (2008); Contreras et al. (2011); Cedillo-Campos & Pérez-Araos (2010).
[46] Neilson (2014).
[47] Werner et al. (2014).
[48] Selwyn (2013).
[49] Carswell & De Neve (2013).
[50] Ibid.

Further to this point, feminist scholars have called for more attention to be paid to the processes that socially construct and reproduce labour power.[51] They point out that production is often treated as a 'black box' in GVC literature, viewed simply as a series of value-adding activities.[52] This overlooks the complex social relations that underpin production and social reproduction processes. Feminist scholarship therefore seeks to open up GVC research to questions of how gender and racial identities, ideologies and assumptions shape transnational production. Similar to the Marxist critique, this highlights the GVC framework's lack of attention to micro-level social differences when tracing the macro divisions of labour.[53]

Building on feminist and Marxist critiques, Bair and Werner propose an alternative approach to GVC research. They point out that research often has an 'inclusionary bias' by focussing on the newest production frontier and analyses the GVC industries that 'boom' in isolation from the ones that decline.[54] As a result, they reformulate the GVC approach from a 'disarticulations perspective' to highlight how *both* inclusion and exclusion from GVCs can impact development.[55] Bair and Werner raise an important point that unevenness of development (both within and between countries) should not be taken as a given, but rather as a subject worthy of study. The disarticulations perspective therefore takes the uneven nature of contemporary transnational production as its starting point, paying close attention to areas of disinvestment as well as investment in GVCs.

This reformulation of the GVC framework is useful when applied to the case of Mexico where development has been particularly uneven. While the automotive sector may have boomed over the past two decades, other sectors of the economy have declined. In 1992, for instance, communally farmed land or 'ejidos' were privatised in Mexico during the period of neoliberal restructuring.[56] This led to the mass dispossession of small peasant farmers, with a 70% fall in domestically-produced corn and at least 300,000 people displaced every year.[57] Adopting a macro, world-historic approach, Araghi argues that neoliberal reforms serve as the "visible foot" pushing peasants to move to urban slums, thereby creating a large pool of cheap labour.[58] As will be explored in section 5, industrial development in Mexico has since been premised

[51] Werner (2012).
[52] Ibid., p. 408.
[53] Bair and Werner (2011).
[54] Ibid., p. 1000.
[55] Ibid., p. 1013.
[56] Araghi (2009), p. 138.
[57] Ibid., p. 139.
[58] Ibid., p. 112.

upon the cheap, exploitable labour resulting from rural dispossession.[59] The GVC framework's industry-centred approach thus limits its ability to connect the interrelated stories that both industry and agriculture have to tell in relation to GVCs in Mexico. Taking this into account, section 4 of this paper explicitly locates the rise of the Mexican automotive industry within its macro-historic context.

A final critique of the GVC framework relates to the role of institutions. Coe and Yeung argue that while GVC scholars pay welcome attention to governance relations in the global economy, they often fail to consider how this is shaped by the wider institutional context.[60] The Global Production Network (GPN) framework was therefore explicitly developed to include this.[61] However, while the GPN framework introduces several new concepts in order to analyse the institutional context within production networks, such as 'embeddedness' and 'strategic coupling', MNCs are still conceived as the primary agents of development.[62] Thus, while the lack of attention paid to institutional contexts is a valid critique of the GVC approach, as will be explored throughout this paper, the GPN reformulation remains grounded in some of the same political and normative assumptions as the GVC framework.

2.4. GVCs: a useful framework for analysis?

The above critical perspectives highlight several important shortcomings of the GVC approach as a framework for analysis. First, they call into question the GVC approach's normative assumptions about the positive role of MNCs as drivers of economic development. It is noted that these assumptions are often left unstated in the literature and appear to reflect the neoliberal context in which the GVC framework was formulated. By assuming MNCs are the only valid agents of development, the role of the state, workers and wider institutions is sometimes missed from GVC analysis. Second, the critiques highlight the analytical shortcomings of the GVC framework. Feminist and Marxist scholars point out that the GVC approach struggles to capture the agency of workers (especially at an induvial, non-collectivised level), analyse the role of social relations in production and account for the unevenness of development. These critiques have led to several reformulations of the GVC

[59] Bair and Werner (2011), p. 1001.
[60] Coe and Yeung (2015).
[61] Henderson et al. (2002); Coe et al. (2004); Hess & Yeung (2006).
[62] Selwyn (2013).

framework, including the 'second generation' GVC approach, the disarticulations perspective and the GPN framework.

While acknowledging these limitations, this paper also recognises the methodological advantages of utilising the GVC framework. For instance, the framework's 'meso-level' view of the global economy is able to contemplate both the role of large structures (international trade regimes, macro-economic policies) and small-scale actors (local suppliers and firms).[63] Furthermore, the 'chain' analytic is a useful tool for conducting a wide range of research. By taking the commodity as a starting point and investigating the forward and backward linkages across the chain, GVCs offer an empirically tractable way of analysing the increasingly complex world economy.[64] This enables the GVC framework to produce policy-relevant analysis that appeals to many multilateral institutions.

Based on the above analysis of the literature, this paper will be guided by a theoretical framework that occupies a middle ground between the conceptual limitations and methodological advantages of the GVC approach. While recognising the utility of the chain analytic and 'meso-level' perspective of the global economy, it attempts to overcome some of the GVC framework's shortcomings by explicitly considering the role of the state, labour and institutions in shaping the automotive GVC in Mexico. This will allow the research to take government, workers and MNCs seriously as economic actors with agency over the development process. The paper will also locate industrial restructuring in Mexico within its macro-historical context and consider *both* upgrading and downgrading trajectories in an attempt to overcome the narrow focus and linear developmental narrative of first generation GVC literature.

[63] Sturgeon et al. (2008).
[64] Werner et al. (2014).

3. Research methods

GVC analysis can be approached in many ways. Bernstein and Campling note that GVC research has "no common purpose, object of analysis, theoretical framework or methodological approach".[65] Nevertheless, there is a tendency for GVC scholars to draw on international trade data to assess whether industrial upgrading has occurred.[66] One measure frequently used is the 'upstreamness' of a country's exports. The upstreamness of an export refers to the number of stages away it is from final consumption.[67] For example, raw cocoa would be an upstream export whereas processed chocolate would be more downstream. If a country's imports are more upstream than its exports, this generally indicates that the county is importing intermediate goods that it processes for export.[68] We can ascertain how many GVC stages are performed domestically by calculating the difference in upstreamness between imports and exports based on data from input-output tables (such as the OECD Inter-Country Input-Output and the World-Input-Output Database).[69] This allows scholars to analyse the level of a country's integration into GVCs.

Looking at the upstreamness of exports alone, however, does not necessarily indicate that a country is creating or capturing more value in the production process.[70] In this paper, I therefore analyse both upstreamness and the share of DVA embodied in Mexico's exports. While DVA is also calculated using input-output databases, this indicator allows us to measure the value Mexico is adding from its participation in GVCs (rather than simply measuring the extent of its participation).[71] Looking at the upstreamness of Mexico's automotive exports in conjuncture with the share of DVA provides a broader picture of the country's overall export and industrial performance.

While these two measures of international trade will help to assess whether industrial upgrading has occurred, solely analysing trade data has its limits. As Saad-Filho points out, the level and composition of exports is not a robust indicator of development.[72] It is possible, for example, that a rise in exports can be a response to economic growth rather than the engine

[65] Bernstein and Campling (2006), p. 240.
[66] Gereffi (2014), p. 11.
[67] Chiquiar & Tobal (2019), p. 2.
[68] Ibid., p. 3.
[69] Timmer et al. (2015).
[70] Chiquiar & Tobal (2019), p. 2.
[71] Timmer et al. (2015); Gereffi (2014).
[72] Saad-Filho (2014).

for it.[73] Furthermore, looking at trade in terms of value-added implicitly rests on a neoclassical economic understanding of value as the ability to create profits and capture rents.[74] As discussed, however, value is a contested concept in GVC literature and industrial production entails more than a series of value-adding activities. Quantitative trade data that focuses on upstreamness and DVA can therefore only reveal part of the story behind Mexico's integration into the automotive GVC.

To complement this quantitative analysis, my research draws on a range of qualitative data sources. I have consulted ethnographic studies of labour relations in Mexico to gauge a deeper understanding of the social relations that underpin production.[75] My research is also informed by blog posts and news articles that document workers' struggles in the automotive sector.[76] While these secondary sources are also subject to the biases and prejudices of their authors, they provide a diverse array of perspectives from which to analyse industrial development in Mexico. This allows the paper to take a variety of actors seriously as agents of development and to locate the rise of GVCs within the historical context of Mexican industrialisation efforts. Furthermore, qualitative analysis offers an insight into the institutional context in Mexico, which plays a significant role in shaping the country's industrial production and social relations. Drawing upon a mixture of qualitative and quantitative data thus provides a more comprehensive insight into industrial development in Mexico, although the paper recognises that this data is neither perfect nor neutral.

[73] Ibid., p. 69.
[74] Kaplinsky et al. (2018); Havice & Pickles (2019).
[75] Mariano (2018).
[76] Industriall website, accessed 10/09/2020 http://www.industriall-union.org/

4. Findings

4.1. The rise of the Mexican automotive industry

Distinct approaches to industrial development have dominated various stages of Mexico's history. Like much of Latin America, Mexico has shifted between state-led and market-led development models over the past century.[77] One aspect that has remained relatively constant, however, has been the country's entanglement with the US. Indeed, the US and Mexican automotive sectors have been intertwined from the offset when, in 1925, the first assembly plant was opened by Ford in Mexico City.[78] For much of the twentieth century, the Mexican automotive sector was dominated by the Detroit 'Big Three' (General Motors, Ford and Chrysler) and was centred on the assembly of imported parts manufactured in the US 'Rust Belt'.[79] Four decades later, in 1965, the Border Industrialisation Program permitted companies to export auto parts to Mexico duty-free so long as the final good was exported back to the US.[80] This opened Mexico's northern border states to swathes of foreign investment from US companies, laying the foundation for the 'maquiladora' programme.[81] Mexico's 'maquila' plants specialised in the labour-intensive assembly of US-manufactured components, creating a dependency on US imports in sectors prone to industrial fragmentation.[82]

From the 1960s, however, the Mexican government under President Lopez Mateo began gearing the economy towards a model of import-subsidised industrialisation (ISI).[83] This strategy aimed to reduce import dependency and bolster national production, especially in manufactured or 'secondary' goods.[84] During the ISI era, Mexico enforced strict rules of origin (ROOs) and imposed high tariffs on imported goods in order to protect domestic industry. ROOs stipulated that in the automotive sector, for example, at least 60% of a car's content must be sourced from local suppliers.[85] These policies led to a situation where over 95% of consumer goods were supplied by Mexico's domestic industry during the 1960s.[86] While ISI was therefore a clear attempt to tackle Mexico's dependency on imports, it also represented a

[77] Werner et al. (2014).
[78] Contreras et al. (2011), p. 1016.
[79] Crossa & Ebner (2020), p. 5.
[80] Sklair (1993), p. 91.
[81] Bylde (2014), p. 502.
[82] Akers Chacón et al. (2006), p. 115.
[83] Ward (1997), p. 23.
[84] Green (2003), p. 23.
[85] Crossa & Ebner (2020), p. 5.
[86] Green (2006), p. 74.

broader ideological shift in Latin America. Foreign trade and investment were seen as barriers to Mexican industrialisation and the state was viewed as a crucial actor in promoting economic development.

The state-led development model that delivered stable growth rates of between 3% and 4% during the 1960s came into crisis during the 1970s.[87] The restrictions placed on trade, alongside extreme fluctuations in commodity prices, led to a steep decline in Mexico's foreign exchange earnings.[88] The country therefore borrowed heavily to finance its industrialisation agenda, laying the groundwork for what would develop into the Third World debt crisis.[89] Indeed, when Mexico became the first of many developing countries to default on its debt in 1982, the ISI model was widely discredited.[90] In its place formed a distinct vision of export-oriented industrialisation (EOI), underpinned by a belief in market-led development and a set of neoliberal policies packaged into a structural adjustment programme. The programme, which was attached as a condition of the International Monetary Fund's bailout, removed restrictions on trade, opened Mexico's borders to unfettered FDI and reigned in the "excessive, even suffocating, role of the state".[91]

The move towards EOI was crystallised by the signing of NAFTA in 1994. The agreement further liberalised trade by eliminating tariffs on vehicles so long as 62.5% of the content was locally sourced from the US, Mexico or Canada. [92] This set the stage for the rapid expansion of Mexico's automotive sector, as the country became a low-cost entry point to the vast North American market. In 2017, the automotive sector accounted for 20% of Mexico's manufacturing GDP and 25% of Mexico's total exports, compared to just 3% of total exports in 1980.[93] Over 1 million Mexicans are currently employed the industry, representing the single largest source of manufacturing employment in the country.[94] While the Detroit 'Big Three' have continued to offshore segments of the automotive GVC to Mexico to take advantage of lower labour costs, European and Asian manufacturers have also increased their market presence. The number of assembly plants in Mexico doubled from 10 to 20 between 2008 and 2019, and 90% of those new investments have been from European and Asian

[87] Chang (2010), p. 73.
[88] Ward (1997), p. 25.
[89] Korner & Knight (1986).
[90] Cypher & Dietz (1997), p. 173.
[91] Ward (1997), p. 19.
[92] Sturgeon et al. (2017), p. 88.
[93] INEGI's Economic Information Bank at http://www.inegi.org.mx/sistemas/bie/
[94] Covarrubias (2019), p. 325.

companies.[95] As a result, the Mexican automotive industry has not only grown enormously in size and capacity, but has become increasingly international with German and Japanese companies using the country as a platform to enter the North American market. The spectacular rise of the Mexican automotive industry by way of integration into GVCs must therefore be understood within this historic context of a shift to from ISI to EOI and a belief that the market would serve as an engine for development, rather than the Mexican state.

4.2. Opportunities for industrial upgrading

Mexico's integration into the automotive GVC under an EOI model over the past two decades has had far-reaching consequences for the local economy. For one, the automotive sector has grown to become the dominant national manufacturing industry.[96] It has overtaken and displaced other industries like electronics and appliance manufacturing, enabling Mexico to become the 4th largest exporter of cars worldwide.[97] Furthermore, trade data shows that since the signing of NAFTA, Mexican automotive exports have become increasingly downstream.[98] In 1994, just 6.3% of the automotive GVC was produced in Mexico and production was concentrated in the assembly of auto parts.[99] By 2017, the country was producing 27.2% of the GVC and was increasingly involved in the vehicle's final assembly.[100] This points to both a quantitative and qualitative shift in Mexico's automotive exports. It highlights that more stages of the production process are now being realised in Mexico, consistent with the trend of increased offshoring and outsourcing from automakers over the past 25 years. Indeed, the automotive sector accounted for over 25% of Mexico's total FDI between 1999 and 2016, showing the country to be a hotspot for MNC investment.[101] Notable projects have recently included a $2 billion investment by Nissan to construct a multiple platform plant in Aguascalientes and a $1.2 billion investment by Toyota to build an auto part design and manufacturing facility in Guanajuato.[102]

When analysing the spectacular growth of the automotive industry in Mexico, a crucial question for GVC scholars is: have these investments created opportunities for local firms? As

[95] Ibid., p. 328.
[96] Mariano (2018), p. 128.
[97] Covarrubias (2019), p. 323.
[98] Chiquiar & Tobal (2019), p. 22.
[99] Ibid., p. 23.
[100] Ibid., p. 23.
[101] Badillo Reguera & Rozo (2019), p. 13.
[102] Sturgeon et al. (2017), p. 90.

discussed, first generation GVC literature predicts that a process of industrial upgrading takes place whereby local suppliers become increasingly competent and able to perform higher-value activities. In Mexico, two case studies of local suppliers stand out from the automotive industry that at first appear to confirm this hypothesis.

Kinematics

The firm Kinematics was founded by a professor from the University of Sonora in Northern Mexico.[103] The company specialises in industrial design and mainly undertakes consultancy work with clients in the manufacturing sector.[104] Kinematics began its working relationship with Ford in 2000 when the Ford Hermosillo plant contracted its services to respond to an unforeseen technical problem installing car seats in the Ford Fiesta.[105] Upon successfully resolving the problem, trust grew between the local supplier and the MNC that resulted in further contracts to redesign the manipulator used to install the car seats.[106] Through its 'linking up' with Ford, Kinematics grew from a company of 6 employees to one of 135 and has expanded into more technically complex niches of industrial design.[107] For instance, the firm won an international tender to design and manufacture a new manipulator that was capable of installing a hybrid battery used in the Ford Fiesta model.[108] The company has therefore been able to improve its position as a local supplier for the automotive cluster, seemingly confirming the narrative that MNC investments help local actors to 'climb' GVCs.

Integración Robótica y Mantenimiento Industrial (IRMI)

Another case study that appears to support the GVC hypothesis of industrial upgrading is the IRMI Group. The company was founded by five Mexican engineers who each owned their own micro-business and decided to merge to become the IRMI Group in 2003.[109] Like Kinematics, IRMI's first relationship with a lead automotive firm was Ford. Several of the company's founding engineers had previously worked for Ford and leveraged their professional

[103] Contreras et al. (2012), p. 1019.
[104] Kinematics webpage, accessed 20/08/20 https://www.kinematicsmfg.com/about-kinematics-manufacturing/
[105] Lara et al. (2004), p. 8.
[106] Ibid.
[107] Sandoval & Wong (2005), p. 23.
[108] Ibid., p. 1021.
[109] Carrillo et al. (2010), p. 35.

relationships with plant managers to win an initial contract for maintenance work on stamping and wielding equipment.[110] Since its inception, however, IRMI's capabilities have grown to cover more technically advanced areas such as process automation and electro-mechanical installations in car and trucks.[111] It began supplying its services to other lead firms, such as Toyota, and to an array of large suppliers. The company began with 17 employees and within four years had grown to a team of 340 with various departments, reflecting its broad range of technical capabilities.[112]

4.3. Limits to Industrial Upgrading

At first glance, the examples of Kinematics and IRMI seem to suggest that industrial upgrading has indeed occurred through MNC relationships with local suppliers. However, further analysis of these two case studies suggests that there are acute limits to these upgrading opportunities in Mexico's GVC.

Marginalisation of local firms

In many ways, Kinematics serves as the archetypal case study for industrial upgrading within GVCs. Through its supply relationship with Ford, the company won contracts to supply increasingly complex industrial design services in the car seat installation sector and beyond.[113] As a result, it expanded its technological capabilities, captured higher rents, grew its business and expanded into new markets.[114]

However, Kinematics' success story has not been mirrored in the Mexican car seat sector more broadly. In fact, this segment of the automotive GVC has been dominated by large foreign suppliers such as Visteon, Delphi and Lear Corporation – all US-based MNCs.[115] Visteon and Delphi are spin-offs from Ford and General Motors respectively, while Lear Corporation was originally founded as a manufacturer of welded metals for automotive assembly in Detroit.[116]

[110] Ibid.
[111] Contreras et al. (2012), p. 1019.
[112] Carrillo et al. (2010), p. 35
[113] Lara et al. (2004), p. 7.
[114] Sandoval & Wong (2005).
[115] Cedillo-Campos et al. (2010).
[116] Sturgeon et al. (2008), p. 305; Lear website, accessed 30/08/20 https://www.lear.com/Site/Company/History.aspx

In Mexico, Lear has historically been one of Ford's largest supplier.[117] While the company began by supplying car seats and components, it has now grown to supply Ford models with the entire interior design (flooring, doors, dashboards and roof systems).[118] The process of consolidation of large-scale suppliers has meant that a handful of MNCs have effectively cornered the market in key segments of the automotive supply chain, such as auto parts and interior design.[119]

This phenomenon has led to the crowding out of smaller firms and local suppliers in Mexico, rather than creating opportunities for them.[120] In the case of Kinematics, the Mexican firm was only initially called in by Ford to respond to an emergency technical issue.[121] Since then, the company's services have only been required to cover niche areas that Ford's multi-national suppliers do not cover. While Kinematics has grown from 6 to 135 employees, this expansion pales in comparison to Lear's growth from 1 plant in 1994 with 400 employees to 45 plants today with 56,000 employees.[122] The opportunities for growth and upgrading in the automotive GVC in Mexico therefore seem to have been captured by multi-national suppliers, rather than local firms.

The preference for using large, foreign suppliers over Mexican firms can be witnessed across the supply chains of all major automakers. In the automotive GVC, lead firms produce technically complex vehicles that comprise over 10,000 individual components, each manufactured based their own specifications, materials and dimensions.[123] Lead firms therefore seek highly competent and technologically sophisticated suppliers that can provide multiple products and services across the chain.[124] In Mexico, US automakers like General Motors and Ford have maintained strong supplier relationships with the new companies created from spinning off their internal parts divisions (Visteon and Delphi).[125] In addition, Nissan, Honda and Scania also source the vast majority of their inputs from non-Mexican suppliers (see figure 2). In 2010, Nissan only sourced 35% of its supply chain from Mexican companies, while Honda and Scania used as little as 30% and 10% respectively.[126] The

[117] Lara et al. (2005).
[118] Ibid., p. 6.
[119] Sturgeon et al. (2008), p. 304.
[120] Feenstra & Kee (2007); Sturgeon et al. (2008); Contreras et al. (2012).
[121] Contreras et al. (2012), p. 1019.
[122] Lear website, accessed 30/08/20
http://www.cfomaquiladoras.org/english%20site/lear_en_mexico.en.html
[123] Lara et al. (2005), p. 2.
[124] Sturgeon et al. (2008), p. 305.
[125] Ibid.
[126] Cedillo-Campos et al. (2010), p. 202.

preference for using foreign suppliers in the automotive GVC has meant that many smaller Mexican firms have been side-lined. For instance, small and medium enterprises, which comprise 48% of Mexican automotive firms, are estimated to participate in only 1% of the automotive value chain.[127] This trend of marginalisation runs contrary to the GVC literature's narrative of industrial upgrading for local suppliers.

Figure 2. Origins of inputs in the Mexican automotive GVC

	Mexico	USA & Canada	Outside NAFTA
Nissan	35%	30%	35%
Honda	30%	60%	10%
Scania	10%	0%	90%

Source: data adapted from Cedillo-Campos et al. (2010)

Predatory supplier switching

In addition to marginalising local suppliers in favour of multinationals, lead automotive firms also engage in purchasing practices that can be damaging for local firms. The most notable example of this is predatory supplier switching, whereby lead firms re-open tenders in attempt to secure a lower cost supplier after the necessary engineering work has been completed.[128] This practice means that once a specification for a particular auto part has been developed, the lead firm then break ties with the supplier in search of a cheaper option. Such predatory purchasing practices are common in the automotive GVC because chains are coordinated by relatively few extremely powerful lead firms.[129] As there are only 11 significant automakers that coordinate GVCs, lead firms have enormous purchasing power.[130] They use this leverage over suppliers to demand lower prices and faster speed to market.[131] This has led a number of scholars to characterise the automotive GVC in Mexico as "hypercompetitive", as powerful lead firms drive costs as low as possible.[132]

[127] Ibid., p. 203.
[128] Sturgeon et al. (2008), p. 308.
[129] Sturgeon et al. (2008); Carreto Sanginés et al. (2019); Crossa & Ebner (2020).
[130] Sturgeon et al. (2008), p. 308.
[131] Gereffi et al. (2005).
[132] Cedillo-Campos et al. (2010), p. 193; Crossa & Ebner (2020), p. 7.

Predatory supplier switching has had a highly destructive impact on local suppliers in Mexico. Following the 2008 global financial crisis, increased pressure from lead firms to lower costs led to a wave of bankruptcies among local suppliers to the automotive supply chain.[133] One such supplier was IRMI, which filed for bankruptcy in 2009.[134] After five prosperous years that saw the company grow and diversify, Ford broke ties with the supplier in an effort to lower its electro-mechanical maintenance costs.[135] According to Contreras et al., "Ford insisted on redefining the conditions of the outsourcing partnership already established to the point that it became unbearable for the supplier".[136] Following the company's bankruptcy, only one of the original five engineers that started the business in 2003 continued working in the automotive sector supplying basic maintenance services for welding equipment.[137]

The IRMI case study illustrates two important points. First, it shows that power asymmetries in the automotive GVC give lead firms recourse to predatory purchasing practices that harm local firms. Far from creating opportunities for local suppliers to upgrade, pressure from lead firms to drive down prices in hypercompetitive conditions has resulted in bankruptcies.[138] Second, the case study highlights the flaws of the GVC's narrative of industrial upgrading as a linear development path. As illustrated by IRMI, both upgrading and downgrading trajectories are at play in the automotive GVC.[139] While 'linking up' with Ford initially helped the firm to upgrade to higher-value activities in the chain, predatory supplier switching also forced the company to dissolve and returned one engineer to a lower-value activity of maintaining welding equipment. Therefore, Mexico's insertion into the automotive GVC has not been a straightforward case of upgrading, but rather a multi-faceted process involving upgrading, downgrading and the marginalisation of local suppliers.

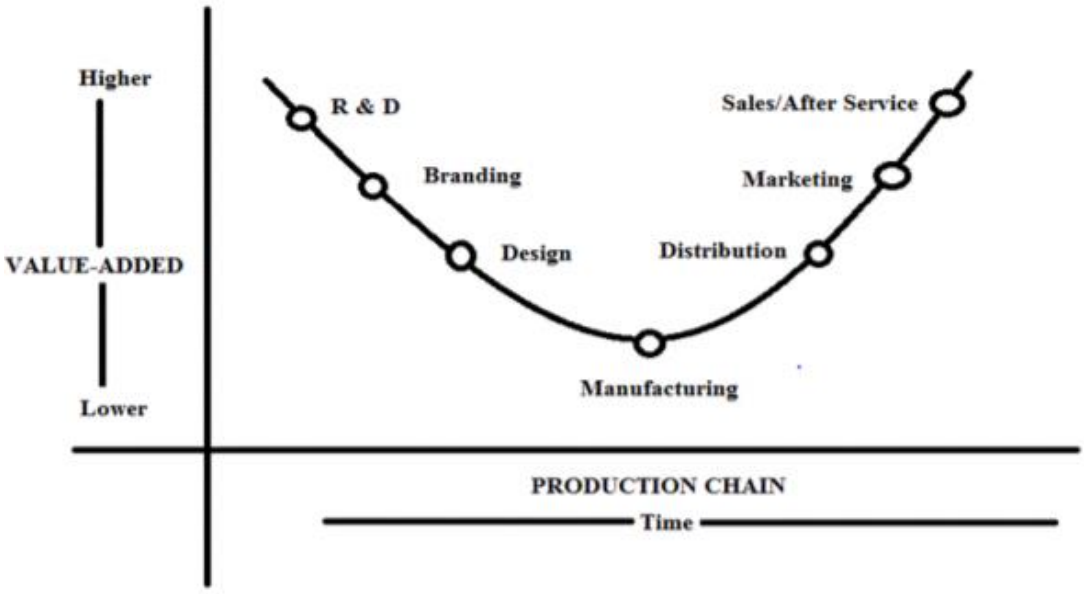
Technological exclusion

Another factor that limits upgrading opportunities for local firms is that only low-technology, labour-intensive GVC activities are conducted in Mexico. Mexico's automotive industry is

[133] Sturgeon et al. (2008), p. 309.
[134] Carrillo et al. (2010), p. 35.
[135] Ibid.
[136] Contreras et al. (2012), p. 1019.
[137] Ibid., p. 1019.
[138] Cedillo-Campos et al. (2010).
[139] Contreras et al. (2012).

highly specialised in the manufacturing and assembly of auto parts, such as wire harnesses and seat parts.[140] These are the lowest value segments of the GVC, as illustrated by the so-called 'smile curve' (see figure 3).[141] GVC scholars developed the 'smile curve' to illustrate the relationship between value-added and stages of production. The highest-value production activities are often found at the most upstream and downstream ends of the value chain.[142] For the automotive GVC, these would be the initial R&D and vehicle design at the upstream end and marketing/sales at the downstream end of the chain.[143] In Mexico, while more GVC stages are now being produced in the country, these stages have remained concentrated in the middle of the production chain in areas such as manufacturing and assembly.[144] These are the most labour-intensive, lowest value-added segments of the automotive value chain.

Figure 3. The GVC 'smile curve'



Source: Mudambi (2008)

The concentration of Mexico's automotive industry in auto parts and assembly means that it has little involvement in the innovation process behind the vehicle it manufactures.[145] Cypher and Delgado Wise refer to this as a situation of 'technological exclusion', highlighting the

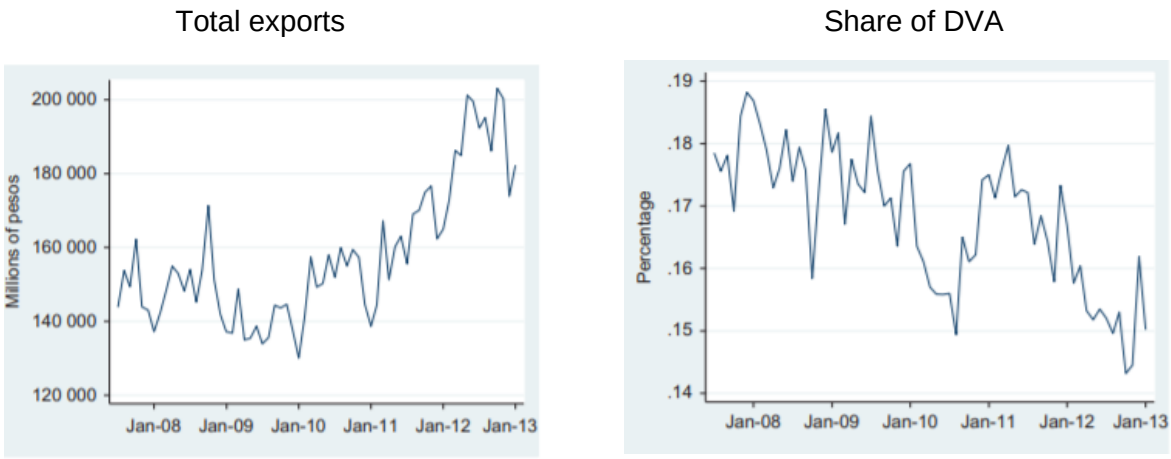
[140] Crossa & Ebner (2020), p. 4.
[141] Mudambi (2008), p. 709.
[142] Ibid.
[143] Dougherty & Reynaud (2017).
[144] Blyde (2014).
[145] Covarrubias (2019); Crossa & Ebner (2020); Cedillo-Campos et al. (2010).

restrictive nature of Mexico's participation in the high-value segments of the GVC.[146] Indeed, the high-value R&D and design stages of the North American automotive GVC are firmly rooted in Detroit, US. Contrary to the trend of outsourcing and offshoring witnessed in other parts of the chain, vehicle design has become evermore concentrated in the 'Detroit design cluster' in recent years.[147] This is partly because large global suppliers have relocated to the city to facilitate their interaction with key automakers. In 2005, 34 out of the 50 largest global suppliers had their regional headquarters in Detroit for this purpose.[148] Unless they are able to open offices in Detroit, local Mexican firms are therefore largely excluded from co-design and technical collaboration projects with lead firms that comprise the highest value. This creates a significant barrier for local firms trying to upgrade within the automotive GVC.

As a result of Mexico's specialisation in the low-technology, labour-intensive segments of GVCs, the share of DVA embodied in Mexican exports has been falling in recent years.[149] Between 2007 and 2013, the overall share of DVA fell from 18% to 15% despite significant growth in exports (see figure 4).[150] Data specific to the automotive industry shows that manufacturing value-added for vehicles and auto parts followed a similar downward trajectory, falling by over 50% between 2003 and 2016.[151] This trend is at odds with the narrative that the automotive industry is Mexico's most 'successful' manufacturing sector. If industrial upgrading were occurring, Mexico's share of DVA would be expected to rise as local firms move into higher-value nodes of the chain.[152] On the contrary, however, the data suggest that Mexican firms are now producing a lower share of value-added than in previous years. This key finding reveals that while Mexico is creating a higher share of the final product, it is capturing a lower share of its overall value.

[146] Cypher & Delgado Wise (2012).
[147] Sturgeon et al. (2008), p. 315.
[148] Ibid.
[149] Blyde (2014).
[150] Ibid.
[151] Badillo Reguera & Rozo (2019); INEGI accessed 03/09/20 https://www.inegi.org.mx/temas/pibval/default.html#Herramientas
[152] Gereffi et al. (2005).

Figure 4. Mexican automotive export growth and DVA decline 2008 - 2013



Source: Blyde (2014)

5. Analysis and explanation

So far, this paper has found limited evidence to support the hypothesis that industrial upgrading has occurred as a result of Mexico's integration into the automotive GVC. Although some evidence was initially found to suggest that opportunities for upgrading had been created, as illustrated by the cases of Kinematics and IRMI, further analysis revealed that these opportunities were limited in nature. Three main limitations to industrial upgrading have been identified. First, lead firms' preference for foreign, large-scale suppliers has led to the marginalisation of local Mexican firms. Second, power asymmetries within the automotive GVC have enabled lead firms to engage in predatory purchasing practices, which has ultimately led to bankruptcies and downgrading for local suppliers. Third, Mexico's specialisation in the labour-intensive, low-value segments of the automotive value chain has meant that local firms are faced with 'technological exclusion' and are unable to move into higher-value production stages. As a result of these limitations, DVA is found to be declining in Mexican automotive exports. In the following chapter, I seek to explain why Mexican firms are capturing less value despite producing more of the final commodity.

5.1. Policy failures: limited support for technological innovation

One explanation for why industrial upgrading has been so limited in Mexico is that policy leavers are at fault. In particular, the shift away from an ISI model of state-led development and the relative lack of industrial policy in Mexico since the 1980s has meant that local firms receive limited support for technological innovation.[153] An emerging consensus in mainstream GVC scholarship suggests that differences in shares of DVA depend on levels of investment in intangible assets (sometimes referred to as knowledge-based capital).[154] The highest-value production stages identified by the GVC 'smile curve', such as design and marketing, require managing complex systems, technologies and non-codified knowledge.[155] To prosper in these sectors, firms must therefore have access to intangible assets such as software, R&D and intellectual property.[156]

[153] OECD (2013); Dougherty & Reynaud (2017).
[154] Vrh (2018); OECD 2015; Humphrey & Memedovic (2003).
[155] Dougherty & Reynaud (2017), p. 19.
[156] Ibid., p. 20.

The Knowledge Economy Index, developed by the World Bank to measure the level of a country's development towards a knowledge economy based on access to these intangible assets, scored Mexico the lowest out of all 37 OECD countries.[157] A significant contributing factor to this has been a lack of investment in R&D; Mexico has the lowest per capita R&D expenditure in the OECD and spending has been stagnant for the past 15 years.[158] For comparison, Mexico spends just 3% of what the US spends on R&D, helping to explain why vehicle design is clustered in Detroit and not Mexico City.[159] Without resource to R&D centres, computerised information and cutting-edge technologies, local firms struggle to 'climb' the automotive value chain. This in turn limits DVA in exports, leading to the paradoxical situation where Mexico is creating more of the vehicles it exports, but capturing less of the value. The failure of industrial policy to provide firms with access to intangible assets in Mexico has therefore served as a barrier to industrial upgrading.

5.2. Institutional context: state-controlled unions and falling wages

A further explanation for the limited upgrading that has occurred in the automotive sector centres on a broader critique of the institutional environment in Mexico and the dynamics of competitive capitalism. Here it is noted that falling share of DVA in Mexican exports is correlated to another striking trend in the Mexican economy; falling wages.[160] Between 1975 and 2015, the wage income share fell significantly from 40% to 28%.[161] This means that wages have decreased in comparison to other income sources (such a capital income, for example). In the automotive sector specifically, workers earned on average $3.95 per hour in 2007, $3.60 in 2013 and $2.30 in 2019.[162] In contrast, the average US autoworker receives over 10 times this amount, earning on average $26.50 in 2019.[163] Therefore, despite the impressive growth of the Mexican automotive sector over the last decade, autoworkers have experienced a significant wage decrease.

This trend has placed Mexican wages among the five lowest in the world.[164] The monthly wage for an autoworker of $314 fails to cover the basic cost of food for the average Mexican family,

[157] Chen & Dahlman (2006); Andrews & Criscuolo (2013).
[158] Crossa & Ebner (2020), p. 16.
[159] Ibid., p. 6.
[160] Blyde (2014), p. 503.
[161] Ibarra & Ros (2019).
[162] Covarrubias (2019), p. 336.
[163] Ibid., p. 333.
[164] Marinaro (2018), p. 129.

which was estimated to be $417 per month in 2017.[165] Furthermore, there is a gendered dimension to falling wages. Wright argues that through the gendered construction of the Mexican 'obrera' (female labourer) as a 'disposable woman', physically hunched over and exhausted from work, her perceived value is diminished although she continues to provide valuable labour to the firm.[166] The devaluation of labour in Mexico has therefore not been uniform across all social groups, despite the trend of falling wages being observable throughout the economy.

While the phenomenon of falling Mexican wages is often attributed to macroeconomic factors like productivity growth, another factor is at play in the automotive sector. In this industry, wages are politically determined through a process of negotiation between the state, unions and firms.[167] 'Employer protection unions' have been set up by the Mexican government to bargain directly with MNCs on issues regarding wages and working conditions.[168] The state-controlled unions are run by unelected officials who sign 'protection bargaining agreements', which are legally enforceable and recognised by the National Arbitration Board.[169] These agreements are signed prior to factories opening and set wages at a level deemed attractive to foreign investors in Mexico.[170] Workers are unambiguously excluded from the negotiating process and typically begin their employment without knowing that an agreement exists or that they are officially unionised.[171] The undemocratic and untransparent nature of Mexican automotive unions enables them to collude with foreign capital to repress workers' rights and wages.

As a result of the institutional set up, whereby workers are automatically enrolled in state-controlled unions that collude with MNCs to push down wages, autoworkers organise clandestinely to arrange illegal strikes.[172] In recent years, Mexico has witnessed a wave of spontaneous 'wildcat' strikes and labour stoppages. Notable cases include strikes in Honda (2013), Mazda (2015) and Delphi (2015) plants, where workers have demanded pay increases, paid overtime, and the right to create independent unions with democratically elected leaders.[173] In addition, Mariano notes that autoworkers engage in everyday forms of resistance,

[165] Crossa & Ebner (2020), p. 14.
[166] Wright (2006).
[167] Marinaro (2018); Covarrubias (2019); Crossa & Ebner (2020).
[168] Marinaro (2018), p. 128.
[169] Ibid., p. 129.
[170] Covarrubias (2019), p. 336.
[171] Marinaro (2018), p. 134.
[172] Ibid., p. 133.
[173] Crossa & Ebner (2020), p. 16.

such as absenteeism, slowing down production and breaking machinery.[174] Despite the growing incidence of strikes and workers resistance, the Mexican government under former President Enrique Peña Nieto declared Mexico free of strike action for six years in 2017.[175] The government's refusal to recognise wildcat strikes provides MNCs in the automotive sector with little incentive to acquiesce to workers' demands or increase wages.

Even in cases where firms do agree to meet workers' demands, results have either been limited or failed to materialise entirely. In 2014, 1,200 workers went on strike in the Fiat-Chrysler Group plant Teksid Hierro de México to demand increased pay and the right to establish an independent, democratically elected union.[176] During the strike, the Mexican Confederation of Workers (CMT) – the official 'employer protection union' – is reported to have sent over 100 representatives to attack and intimidate strikers.[177] As media attention began to grow around the incident, Fiat-Chrysler Group formally accepted the workers' demands. They agreed to pay workers for the strike hours, reinstate dismissed workers, allow employees to elect a union via secret vote and review wages with the newly created union.[178] However, less than one year later the company reneged on the deal by re-signing the protection bargaining agreement with the CMT, dismissing over 200 workers involved in the strike and blacklisting them from jobs elsewhere.[179]

This highly repressive and exploitative institutional context has contributed to the decline in Mexican autoworkers' wages in recent years. As a result, firms draw on an increasingly cheap, large pool of labour that makes Mexico a primary location for the most labour-intensive segments of GVC production. Crossa and Ebner point out that, due to the wide availability of cheap labour, firms are not incentivised to invest in labour-saving technologies that might foster innovation or improve the technical competencies of local firms.[180] The institutional context that helps to drive wages down in Mexico is therefore crucial to understanding the barriers to upgrading within the automotive GVC and the phenomenon of falling DVA.

[174] Mariano (2018), p. 133.
[175] Ibid., p. 133.
[176] Ibid., p. 135.
[177] Ibid., p. 134.
[178] 'Los Mineros victory at Teksid', Industriall, accessed 3/9/20 http://www.industriall-union.org/los-mineros-victory-at-teksid
[179] 'Unfair dismissals at troubled auto plant', Industriall, accessed 3/9/20 http://www.industriall-union.org/unfair-dismissals-at-troubled-auto-plant
[180] Crossa & Ebner (2020), p. 15.

5.3. Final analysis: climbing GVCs as a route to development?

The analysis of Mexico's automotive sector shows that integration into GVCs can produce complex and contradictory results for the local economy. On the one hand, Mexico's integration into GVCs has led to the boom of the country's automotive sector. Mexico now exports more vehicles than ever and produces an increasing share of the final vehicle it exports.[181] The industry is also the largest manufacturing sector in the country, employing more than 1 million autoworkers.[182] Empirical research has found some evidence to suggest that opportunities for industrial upgrading have been created, where local firms like Kinematics and IRMI have upgraded to higher-value activities in the GVC as a result of 'linking up' with lead firms.[183]

On the other hand, Mexico's integration into the automotive GVC has been far from a straightforward process of industrial upgrading. Beyond some initial opportunities for local firms being created, evidence to suggest that industrial upgrading has been widely realised in the sector is limited. The research has found that trends of marginalisation, downgrading and technological exclusion are predominantly at play.[184] As a result, DVA has fallen in recent years despite the remarkable growth of automotive exports.[185] This has led to a paradoxical situation where Mexico finds itself evermore integrated into the automotive GVC without having actually 'climbed' it.

What does this tell us about climbing GVCs as a development strategy? First, it suggests that development is not a linear process as implied by the first generation GVC literature. As we have found in the case of Mexico, upgrading, downgrading, stagnation, marginalisation, and exclusion have all occurred within the automotive sector. Local companies do not solely experience industrial upgrading, but rather follow various trajectories at different times during their integration into GVCs. Second, the research reveals that development trajectories are influenced by power asymmetries within GVCs. The governance structure of the automotive GVC, where a small number of lead firm have a huge amount of purchasing power, has given rise to predatory purchasing practices in Mexico. This has created 'hypercompetitive' conditions that have resulted in marginalisation, downgrading and even bankruptcy for some

[181] Chiquiar & Tobal (2019).
[182] Covarrubias (2019), p. 325.
[183] Contreras et al. (2012); Sandoval & Wong (2005); Carrillo et al. (2010).
[184] Covarrubias (2019); Marinaro (2018); Crossa & Ebner (2020).
[185] Blyde (2014).

local firms. Finally, the above analysis suggests that the state is still an important actor in the development process. In Mexico, the distinct lack of state-led industry policy and investment in intangible assets has handicapped local firms' ability to upgrade to high-value, high-technology niches of the GVC. Moreover, the state has been complicit in forging an institutional environment that represses labour and pushes down wages. State-controlled unions collude with MNCs to ensure that labour costs continue to fall and play an active role in exploiting and intimidating workers. While the MNC-centric view of development put forward by the GVC framework is therefore useful in facilitating the analysis of power structures in international production, the role of the state, institutions and labour is also vital to understanding the relationship between GVCs and development.

6. Conclusion

This paper has explored how offshoring and outsourcing segments of the automotive GVC to Mexico has impacted the country's prospects for economic development. In particular, it has investigated the extent to which opportunities for industrial upgrading have been created and realised in the Mexican automotive industry. The research has been guided by a theoretical framework informed by a critical interpretation of the GVC literature. While the dissertation has employed the core concepts of upgrading and governance, the conceptual limitations of the first generation GVC literature have been acknowledged. Indeed, I have attempted to overcome these limitations by explicitly analysing the role of the state, labour and the institutional context in my analysis of the automotive sector. This has allowed me to conceive of development as a non-linear process and identify actors that drive and influence this process beyond MNCs.

A key finding of this paper is that upgrading opportunities for local firms have been extremely limited. Although some evidence was initially found to suggest that opportunities had been created, as exemplified by experiences of Kinematics and IRMI, a deeper analysis into these firms revealed that upgrading had in reality been limited. The research has identified three primary obstacles to industrial upgrading. First, lead firms' preference for foreign, large-scale suppliers has led to the marginalisation of local Mexican firms. Second, power asymmetries within the automotive GVC have enabled lead firms to engage in predatory purchasing practices, which has led to downgrading for some local suppliers. Third, Mexico's specialisation in the labour-intensive segments of the automotive value chain has meant that local firms are faced with 'technological exclusion' and struggle to break into higher-value production stages. As a result of these limitations, the share of DVA is found to be declining in Mexican automotive exports.

I have offered a two-tiered explanation of these findings. Initially, I explored the idea that policy leavers are to blame for Mexico's limited industrial upgrading. The absence of strong industrial policy under the neoliberal regime in Mexico has led to a lack of investment in intangible assets such as software and R&D that enable firms to upgrade. Moreover, further analysis into the institutional environment in Mexico identified a deeper explanation that links falling DVA to wage repression. Research drawing upon ethnographic studies of labour relations in Mexico finds that wages are politically determined by a process of collusion between state-controlled unions and MNCs. This strategy has consciously pushed down wages

in order for Mexico to remain a competitive, attractive destination for FDI. The subsequent availability of cheap, exploitable labour has disincentivised firms from investing in labour-saving technologies that might improve the technological competencies of local firms, thereby limiting upgrading opportunities and overall DVA.

Although these findings have been based on a range of qualitative and quantitative sources, the above conclusions should not be overstated. While I chose to closely analyse two case studies of Mexican firms (Kinematics and IRMI), the research did not draw on extensive micro-level firm data from local suppliers across the entire automotive sector. The analysis would be made more robust from studying a broader range of local suppliers and collating country-wide data on the economic performance of firms and their interactions with MNCs over the past 25 years. This remains an avenue for future potential research.

Nevertheless, the tentative conclusions I have drawn from my findings have considerable implications for understanding the relationship between GVCs and development. On the one hand, they reaffirm the view within GVC scholarship that governance structures play an important role. In Mexico, power asymmetries in the producer-driven automotive chain have given rise to predatory purchasing practices that limit the ability of local firms to upgrade. On the other hand, however, the research highlights the conceptual limitations of upgrading as a linear development process. By emphasising the multiple trajectories at play in the automotive sector, it suggests a need for the GVC framework to accommodate the multi-faceted experiences of local suppliers who experience downgrading, marginalisation and exclusion, as well as upgrading. Furthermore, the research calls into question the utility of the GVC framework's MNC-centric view of development by highlighting the important the role of the state, workers and institutions in Mexico. Only when these actors are taken seriously and ascribed agency will the GVC approach offer a robust way of conceptualising economic development.

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