Chapter 13

The Automotive GVC: Policy Implications for Developing Economies

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Abstract

This chapter critically reflects on the evolution of the automotive global value chain (GVC) within the context of current global dynamics. It presents a framework for developing countries with automotive industries, or those seeking to establish ones, to assess the implications of different dynamics arising within the sector. These changes include the domination of value chains by a small group of Tier 1 suppliers, the implications of strict environmental and safety standards and, finally, growth in emerging markets and the potential for regional value-chain development. These developments serve to reinforce a focus on the development of technological capabilities. Although the provision of subsidies by governments can facilitate entry into the automotive value chain, over time these aspects become less important than the imperative to develop specific capabilities which create competitiveness.

13.1 Introduction

Automotive production has been the bedrock of manufacturing in many developed economies over the last half century. It has been a key driver of job creation across a wide employment base, encompassing both skilled and semi skilled professions, raising living standards, stimulating economic upgrading, and enhancing productivity through structural change and the development of technology-enhancing externalities. The importance of the industry is increased through its wide range of production processes and the strong multiplier effects it has on associated manufacturing- and service-related sectors. The direct consequence of these dynamics is widespread developing economy support for the development of national automotive industries, in response to growing demand for vehicles among growing middle classes, and as a vehicle for industrialisation and associated per capita income growth.

In some cases (e.g. China, Mexico, Thailand, Turkey) the efforts of developing economy governments to support the industry's growth have been rewarded and resulted in rapidly growing automotive industries that have contributed to the transformation of national economic activity. However, in other cases large sums of scarce public resources have been spent on developing automotive industries, with limited impact. For example, the Australian government recently decided to withdraw support for an automotive industry that was showing signs of continued distress, despite substantial levels of government support. The experiences of many African economies are replete with examples of incipient automotive industries that failed to grow and generate associated multipliers, despite substantial government protection and direct subsidisation.

Consequently, it remains unclear whether or not the automotive industry is worth pursuing as an industrial development driver within developing economies desperate for socio economic upgrading, job creation and national innovation. Historical evidence and global value-chain (GVC) analysis of the industry's present development trajectory are used to support both negative and positive viewpoints.

This chapter reflects on the fundamental question of the automotive industry's suitability for driving industrialisation within developing economies. It analyses GVC dynamics and their consequences for automotive industries in developing economies. The chapter consequently comprises three parts. The first considers major automotive GVC dynamics and their implications; the second, the development challenges facing developing economy policy-makers considering the GVC dynamics explored; and the third, an analysis of the policy lessons from a range of developing economies that are attempting to grow their automotive industries.

13.2 Automotive global value-chain dynamics

The manufacturing portion of the automotive industry is being subjected to profound transformations that have an impact on its global geographical spread, the nature of the products being manufactured, the technology deployed and the financial returns being delivered to the multinational corporations (MNCs) that dominate global production. The implications for developing economies are significant. Worldwide, 80 million vehicles are sold every year. This creates the opportunity for large-scale production and significant capital investments, with the potential to spur economic growth and improve the livelihoods of many workers and their dependents. On the other hand, the global environment is highly competitive and dominated by already well-established developed economy MNCs and a small set of newly emerging competitors based primarily in China and India.

Since the global financial crisis (GFC), which reduced global demand for automotive vehicles precipitously, the global automotive market has experienced a marked recovery. While production volumes of passenger vehicles and light commercial vehicles (LCVs) dropped from 69.4 million units in 2008 to 58.4 million in 2009, a full 16 per cent decrease, medium and heavy commercial vehicles (M&HCVs), including buses and coaches, suffered a slightly less pronounced decline of 13 per cent, with production falling from 3.8 million to 3.3 million units. The decline was quickly reversed in the following year, however, when production exceeded 2007 volumes. Production then continued a steady growth trajectory through to 2015 (OICA 2016).

Positively, the global light vehicle market is projected to exceed 100 million units of aggregate demand by 2020, and the world's leading vehicle manufacturers appear to have largely recovered from the travails of the GFC. Even if global demand were to increase at only 1–2 per cent per year from 2020 to 2035, global demand would reach between 129 million and 149 million units, adding a further 40 million to 60 million units of annual demand. Moreover, much of this growth will be in developing economies. Developed economy markets are effectively being driven by replacement demand.

Consumers purchase new vehicles as their present vehicles age and when they can afford the purchase of new vehicles. Old consumers exit the market about as fast as young consumers enter the market. Increasing (or decreasing) affluence will shape the value of vehicles purchased, while new vehicle purchases may also be delayed for short periods because of affordability constraints (affecting the predictability of annual sales movements).

Table 13.1 Vehicle ownership ratios in selected developed and developing economies (number of persons in economy per motor vehicle in operation)

Economy type	Selected economies	Vehicle ownership ratio	Economy type	Selected economies	Vehicle ownership ratio
Developed	USA	1.3	Developing	Mexico	3.7
	Australia	1.5		Argentina	4.0
	Italy	1.5		Brazil	6.1
	Canada	1.6		South Africa	6.3
	France	1.7		Thailand	6.5
	Germany	1.8		Turkey	6.5
	United Kingdom	1.8		China	17.1
	Sweden	1.9		India	58.9
	Average	**1.6**		**Average**	**13.6**

Source: Thailand Automotive Institute (2012).

Market demand is, however, largely saturated, as revealed in Table 13.1. The world's developed economies have population to vehicle ownership ratios of 1.3 (USA) to 1.9 (Sweden), while the comparative ratios for developing economies range from 3.7 (Mexico) to 17.1 (China), and a staggering 58.9 for India.

The extent of the opportunity in major developing economies is supported by the expected growth in their 'middle classes'. The Thailand Automotive Institute (2012) presents evidence showing that the middle-class (i.e. vehicle-consuming) population in the Asia-Pacific region will increase from 525 million in 2009 to a projected 3.2 billion in 2030. Conversely, the middle-class population will decline in North America (338 million in 2009 to 322 million in 2030) and will remain relatively stable in Europe (664 million to 680 million). Strong African middle-class growth is also predicted, although off a much smaller base (137 million to 341 million).

Even if conservative estimations for future trends are used – for example, population to vehicle ownership ratios increase as urbanisation, mass commuting systems and environmental considerations gain further traction – there is clearly still massive scope for substantially increased global vehicle consumption, driven by developing economies. The work of Dargay *et al.* (2007) supports this view. They emphasise that the income elasticity of vehicle ownership increases rapidly over the income range of $3,000 to $10,000, when ownership increases at twice as fast as per capita income. Between $10,000 and $20,000, rates of increase reach parity. At income levels above $20,000, ownership decelerates as it reaches saturation level. Based on these distinctions, vehicle ownership in virtually all Organisation for Economic Co-operation and Development (OECD) countries will have reached saturation by 2030, while in Asia it will be at only 15–45 per cent (and in Africa even lower).

The shape of the global market is consequently transforming at an unprecedented rate. In addition to the developed/developing economy market dynamics, the industry is undergoing other transformations, ranging from rapidly evolving vehicle technology, linked to fundamental environmental, safety, infotainment and mobility market changes in developed economies, to burgeoning entry-level vehicle demand in non-traditional developing economy markets. This is driving

a clear bifurcation of global vehicle demand. For example, sports utility vehicles (SUVs) are replacing sedans as the vehicle of choice in low-growth, high-volume developed economies, while demand for other vehicles is growing rapidly in high-growth developing economies as an emerging middle class transitions from using motorcycles and public transport to owning light vehicles.

The major generic global vehicle trends that need to emphasised relate to the following:

- Increased light vehicle demand to 100 million units over the next four years, with this being driven largely by Asian-dominated developing economy demand. Stagnant M&HCV demand is projected, however, because of lower levels of capital investment globally.
- Changing consumer preferences for light vehicles and M&HCVs, leading to a global bifurcation of demand, with developing and developed economies following different demand trajectories.
- Environmental pressures tied to the rising cost of fossil fuels and legislation regarding emission standards in various major economies. This is changing the product strategies of the world's leading original equipment manufacturers (OEMs) and driving a focus on increasing fuel efficiency across vehicle platforms.
- Replacement of fossil fuel-based internal combustion engines with environmentally sustainable engines; although the future dominant technology is not yet clear, hydrogen fuel cells and electrically powered engines are the two most likely contenders, along with a range of hybrid technologies (at least in the period of transition to full fossil fuel replacement). According to Bloomberg New Energy Finance (2016), 35 per cent of global car sales are estimated to be electric vehicles (EVs) by 2040, with annual sales of 41 million units. By 2040, it is estimated that EVs will account for 25 per cent of the total global car fleet. This increase will be driven by regulatory support and the declining cost of battery packs. The total cost ownership of EVs relative to internal combustion engine vehicles is therefore set to decline significantly.
- Increasing concern for driver, passenger and pedestrian safety in developed economy markets, manifesting in the rapid development of passive and active safety systems. Safety considerations are, however, developing differently across the global vehicle market. In developing economies, the use of passenger vehicles is viewed as inherently safer than the use of motorcycles or three-wheelers, so the safety standards for entry-level small vehicles in these markets are generally minimal. The opposite is true in developed economy markets, where both passive and active safety standards in vehicles have improved substantially over the last few model iterations. In much the same way as environmental standards in vehicles have advanced partly through consumer demand and partly through the setting of ever-tighter government legislation in major developed economy markets, advanced safety features have become basic selling requirements of even entry-level vehicles. The latest safety consideration being tested internationally is the development of autonomously driven, i.e. self-driving, vehicles. Self-driving cars can be divided into two types: semi-autonomous and fully autonomous (BI Intelligence 2015). A fully autonomous vehicle can drive without any input from the driver. It is expected that by 2020, there will be 10 million vehicles on the road with self-driving features. The first fully autonomous vehicles are expected to appear by 2019 (ibid).
- Growing demand for in-vehicle infotainment (and associated global

connectivity) systems. Vehicles are now far more connected to the internet, navigation and smart phones than ever before, while simultaneously capturing swathes of information on vehicle-driving behaviour, fuel consumption and the broader driving environment. This trend straddles both developed and developing economy markets; advanced infotainment systems are extending more rapidly than passive and active safety equipment into entry-level developing economy market models.

The implications of these market developments are profound for the world's OEMs – the lead firms of the automotive industry. At one level, they are struggling to devise effective vehicle platform strategies that permit economies of scale in design and production, while at the same time providing the market with an increased range of vehicle models that are built on these platforms. At the other level, new environmental and safety standards, combined with increasing infotainment demands, are placing substantial pressure on vehicle development and production costs. The consequences of this are captured in an Australian National Productivity Commission report on the Australian automotive industry, which notes 'in the decade to 2010, Toyota added new components and subsystems worth $1400 to its base model Camry, while the Camry's recommended retail price in the United States fell by an average of 1 per cent each year in real terms over the same period' (2013, p. 49).

It also notes that 'McKinsey and Company noted that between 2001–2010, producers in the United States were required to spend an additional $400 per vehicle on components to satisfy increased safety standards' (National Productivity Commission 2013, p. 49). Combined with the global automotive industry's continued production overcapacity, which hovers around 20 per cent, these market developments have placed significant pressure on the financial sustainability of the global automotive industry. The disparity between demand for vehicles and production capacity has substantially undermined the financial returns of MNC OEMs and automotive component manufacturers. This is despite the companies' efforts to rationalise production and standardise platforms. Overcapacity is forecast to reach 25.5 million vehicles in 2019, much of which will reside in Europe. The average net profitability of the world's top ten vehicle assemblers was thus only 3.95 per cent in 2014. While OEMs are in a cycle of growing production and turnover, revenue generation has not necessarily developed in tandem with improved profitability.

Critically, the world's leading vehicle assemblers have transferred these pressures on to their component manufacturers, which in turn have transferred their pressures on to the next tier of suppliers, etc. This has resulted in a fundamentally transformed automotive GVC. Individual OEMs now work closely with a small set of Tier 1 suppliers, which are responsible for manufacturing entire subassemblies and vehicle modules for them; co-ordinating lower-tier component manufacturing activities; and even developing new products in association with the OEMs. This has led to consolidation among the world's leading automotive component manufacturers, which have developed truly global production footprints.

The direct consequence of this development has been the substantial scaling up of the world's leading component manufacturers over the last decade. The world's largest automotive component manufacturer is Robert Bosch of Germany, which generated $44 billion in sales to OEMs alone in 2014 (Automotive News 2015). The other mega Tier 1 suppliers to OEMs are Magna (Canada), with $36 billion in sales to OEMs; Continental (Germany), $34 billion; Denso Corporation (Japan), $32 billion; Aisin Seiki (Japan), $28 billion; Hyundai Mobis (South Korea), $27

billion; and Faurecia (France), $25 billion. Combined, these seven Tier 1 suppliers generated $226 billion in sales to OEMs alone (i.e. excluding global aftermarket sales). While the automotive GVC remains dominated by MNC OEMs (Toyota, Volkswagen, General Motors, Ford, etc.), this domination is now being managed in association with a core set of MNC Tier 1 component manufacturers that have a similar global profile to their OEM customers.

13.3 Global policy context

The automotive industry's substantial growth in recent decades has been spurred by the development of GVCs and the dispersed production footprints of MNC producers. While a general reduction in automotive trade barriers (for both vehicles and components) has been encouraged by the establishment of the World Trade Organization (WTO) in 1995, policy developments in recent years have served to both promote and hinder industry trade, with implications for investment decisions of major automotive OEMs looking to capture market share. It is also important to emphasise the direct role of national governments in supporting the automotive industry during and after the GFC. These interventions included market stimulation initiatives (tax rebates, generous trade-in allowances on old cars) to support demand recovery in domestic markets; the provision of direct financial support to OEMs and component manufacturers (lay-off allowances for workers placed on short time, the provision of loans); and, finally, direct equity purchases (e.g. the US federal government's purchase of equity in General Motors and Chrysler[2]).

Identifying the individual support elements provided to national industries is less important than recognising the vast support provided over the crisis. Governments in both developed and developing economies, including the MNCs' host countries, were clearly galvanised into 'saving' the automotive industry, in recognition of its importance to their economic prosperity. The central importance of the automotive industry to new or continued industrial development appears well understood by a large swathe of the economies with sizeable or emerging automotive industries. This has created a tension in respect of trade dynamics. The seemingly inevitable slide towards greater trade liberalisation within the industry has at best lost momentum, and at worst slowly been reversed. Global trade policy is, however, only one policy dynamic that needs to be understood in respect of global automotive policy developments.

Automotive homologation is the process of certifying vehicles or components in vehicle manufacture, in line with various statutory market regulations. Homologation standards apply to all vehicle types, particularly in the areas of environmental protection and safety. For vehicles to be exported and sold, it is necessary that they have the correct approvals in line with the official standards of the destination economy. These homologation requirements have become more demanding, because of a growing emphasis on safety and environmental protection in developed (and some developing) markets. This has major implications for OEMs and component manufacturers attempting to access international markets. Increasingly stringent homologation trends in respect of vehicle fuel efficiency, safety standards and environmental emissions can create non-tariff barriers to entry to certain markets by raising the costs and requirements for entry.

The major environmental standards that need to be adhered to by the global automotive industry are typically set in the United States, the European Union and Japan. Major developing economies typically have lower environmental requirements, although there

is likely to be increasing alignment in future, as leading developing economies tighten their legislation and align requirements with their major trading partners.

One of the major reasons for the substantial growth in automotive trade relates to the general reduction in vehicle and component tariffs across most developed and developing economies. While it is still one of the most protected industries globally, tariffs have generally reduced in line with the WTO requirements that bind most countries. One of the direct outcomes of lower tariffs is the development of GVCs. OEMs and their major component manufacturers are less inclined to produce in national or regional silos. Lower tariffs have enabled the increased trade of automotive materials (specialist steels and plastics), automotive components at different tiers (e.g. Tier 2 - forgings, castings, mouldings, machined components etc.; and Tier 1 - subassemblies and modules, replacement parts), as well as completely knocked-down kits and fully assembled vehicles. This is supported by most economies having lower tariffs on components than on fully assembled vehicles. Vehicle production consequently has a global footprint, both in the trade of completed vehicles and in respect of components at each link of the automotive GVC.

The industry's global production footprint and global supply-chain linkages have placed huge cost pressures on manufacturers throughout the GVC. This is due to the transparency that OEMs have when sourcing components, and hence their ability to target pricing levels for components and subassemblies for vehicles based on the best-cost locations for those products globally. Prices have consequently been driven down throughout the supply chain. Component manufacturers also typically sign price-down performance contracts with OEMs over the duration of the lifecycle of the products they supply, placing substantial pressure on them.

Preferential trade agreements within and between markets have also had a significant impact on the location and structure of automotive production. Preferential market access provides OEMs with a significant cost advantage in major markets, so regional and bilateral trade agreements have shaped the global automotive manufacturing space. Key in this regard have been free or preferential trade agreements providing access to the US and European markets. This has led to expanding production in locations such as Mexico (for the USA), and Poland, Slovakia, the Czech Republic and Hungary (for the EU). Regional emerging markets have begun to provide similarly attractive opportunities for OEMs, e.g. ASEAN[3] (the Association of Southeast Asian Nations) and Mercosur[4] (Mercado Común del Cono Sur).

Sturgeon *et al.* (2009) highlight two important features of the automotive industry in terms of regional location and integration. The first is that OEMs, and therefore parts production, have historically been located close to end markets, largely because of political sensitivities. They note that 'market saturation, high levels of motorisation and the tendency of automakers to "build where they sell" have also encouraged the dispersion of final assembly, which now takes place in many more countries than it did 30 years ago' (p. 9). Secondly, they note that a distinctive feature of the automotive industry is its strong regional structure. They argue that global integration has developed alongside regional-scale patterns, due to the need for customisation of centrally designed vehicles, albeit assembled from parts manufactured in various geographical locations dependent upon production factor costs. The result is the development of local, national and regional value chains within a globalised organisational structure. It is consequently necessary to examine the automotive GVC from a regional perspective.

13.4 Developing economy policy lessons

Developing economies with existing automotive industries (or even aspirations of developing an automotive industry) have been responding to these market growth opportunities, and to the major vehicle trends evident, by shifting their trade and industrial policy frameworks. The positions taken by economies include maintaining non-dynamic, low-value industries (Egypt, Kenya), attempting to establish new industries from scratch (Nigeria), aggressively protecting domestic production through the imposition of elaborate new trade barriers (Brazil), supporting exports (India) and building new productive capabilities for local/regional/global supply (Morocco, Thailand, Mexico, Turkey). Using an adjusted version of Dunning's (1980) investment terminology, which considers the underlying reasons for FDI globally, both market-seeking and efficiency-seeking considerations clearly underlie how developed and developing economies have attempted to position themselves within the automotive GVC. Where economies have sizeable present or potentially large future vehicle markets, significant protection is currently being provided to OEMs operating in, and selling their products into, the domestic market. Economies that fall into this category are Thailand, Malaysia, India, Mexico, Nigeria and Brazil. An extension of this market-seeking support framework is the aggressive focus of many economies on establishing either bilateral or multilateral trade agreements that provide preferential market access to adjacent or proximate markets. The principal beneficiaries of this approach are economies adjacent to, or within, developed economy trading blocs (e.g. Mexico into the North American Free Trade Agreement [NAFTA], and Slovakia, Morocco and Turkey into the EU), as well as those economies within regional developing-market constellations (Brazil into Mercosur, Thailand and Malaysia into ASEAN). China has its own unique development trajectory driven by the scale and growth potential of its own domestic market.

At the same time, developing economies are also looking to develop competitive production capabilities. These asset-enhancing policies appear to be most focused on the realisation of scale economies, product specialisation and incorporation into MNC GVCs. The economies that have driven this approach most aggressively include Thailand, Morocco, Turkey, Slovakia and Mexico. Often operating in conjunction with domestic market protection or regional market extension policies, asset support is focused on securing significant sunk capital in the domestic automotive industry (in the form of investment grant support, provision of tax credits linked to investment levels and the provision of discounted/free bulk infrastructure) and the development of associated skills and technical capabilities that are attractive to MNC investors (testing, engineering, technical infrastructure).

A key lesson drawn from these experiences is that securing an initial automotive investment, and then sustaining it, has required a combination of market access and asset-based government incentives that have assisted in supporting the establishment of a viable automotive industry production space. Where a government has withdrawn this support, as is the case in Australia, the industry's production presence in the economy has been substantially reduced. Where government support has been well structured, and targeted at building industrial capabilities in partnership with leading international OEMs, substantial production capacity has been created. The examples that stand out in this regard are Thailand, Turkey, Mexico, Slovakia and, more recently, Morocco. All investments are by their nature market-seeking insofar as a market is always required for manufactured products. In the context of policy development, however, a narrower definition of market-seeking

investment is used: an investment is made because of preferential market access, as opposed to an investment driven by the clear competitive manufacturing advantage created through the capital deployed in the economy. Based on this definition, a sustainable automotive policy framework can be created based on two key variables:

1) the domestic/regional market advantage secured from investing in an economy, with increased market depth encouraging import replacement; and

2) the competitive capabilities secured in an economy by the investment, with a high level of dynamic capability (process and/or product) encouraging further investment in the economy, and increasing the attraction of the economy as an export base.

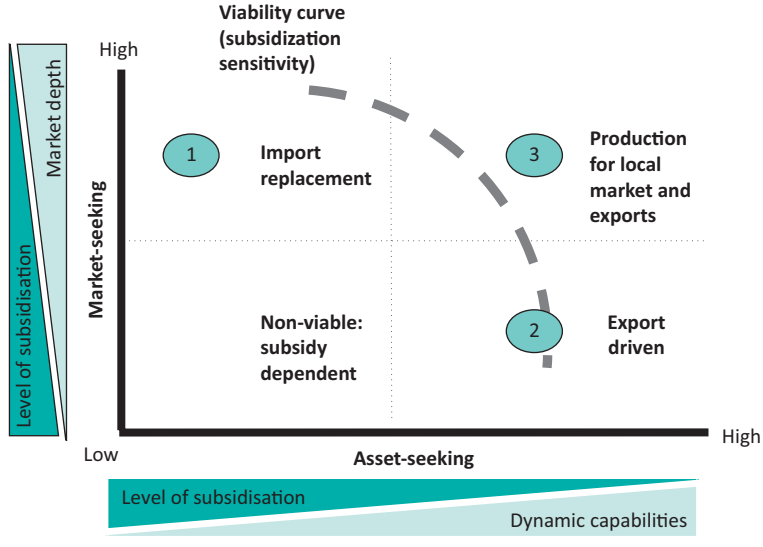
Based on this categorisation, it is then possible to consider a two-by-two automotive industry viability matrix for an economy, as in Figure 13.1. The framework essentially identifies viable automotive spaces as based on import replacement, driven by exports or, ideally, a combination of the two. The framework also identifies an unfeasible quadrant, termed 'Non-viable: subsidy dependent'. The automotive industry's sensitivity to subsidy reduces based on a dynamic interplay between market- and asset-related benefits derived from an investment. So, as markets deepen (locally/regionally), and as competitive capabilities develop, automotive industries require less subsidy from the national and/or regional/local governments of the economies in which they are located.

The basic investment (and associated production) narrative that emerges from the framework for developing economy automotive producers appears to largely follow four stages:

1) **Attracting** an initial OEM investment that is sufficiently meaningful to build a centre of gravity for a future automotive industry. This investment is generally very heavily incentivised.

2) **Securing** the initial OEM investment, by following through on the establishment of required skills, bulk infrastructure supply, required support institutions etc. Key to this stage is proving the competitiveness of the initial investment made, thereby encouraging production for markets beyond the confines of the domestic market.

Figure 13.1 Defining a sustainable automotive policy framework



3) **Deepening** OEM investments, through the expansion of the initial investment and/or the attraction of additional OEM investments. This stage represents the development of an actual automotive industry, as opposed to simply an incentive-induced anchor automotive investment, or set of automotive investments. Morocco appears to be entering this phase, while Thailand and Turkey have already moved through it. This appears to be the phase in which the Malaysian automotive industry has been 'trapped'. Its highly protected market (until recently) enabled the development of an uncompetitive national automotive industry that was never able to develop deep capabilities, with both national OEM 'champions' manufacturing globally uncompetitive products. This also appears to be the position in which South Africa is trapped, although it is arguably for the exact opposite reason from that observed for Malaysia. In South Africa's case, it would appear as if local/regional market depth has been an insufficient driver for industry development, placing too much importance on the development of deeper dynamic capabilities, a process that has not yet sufficiently occurred.

4) **Developing** the automotive component manufacturing supply chains behind OEM investments (and broader value-chain services), and hence value-adding activities within the broader automotive industry. This represents the stage where an advanced automotive ecosystem develops, with the commensurate economic multipliers that automotive production can bring to a local (and broader national) economy. Mexico, Thailand and Turkey appear to have progressed the most in relation to the development of such an ecosystem. Interestingly, Australia had an advanced (albeit high-cost) automotive production ecosystem, and yet chose to exit the industry.

Developing economy automotive policies clearly need to be sensitive to the stages of development of their existing/incipient automotive industries. Attracting an OEM in the initial stages of the development of an automotive industry requires a clear market rationale (domestic or regional market opportunity), while policy will shift significantly when considering more established developing economy automotive industries that are looking to move up the value chain and develop their competitive capabilities. The support provided to the Thai and Turkish automotive industries provides potentially critical lessons for developing economies looking to develop their automotive industries:

1) provide substantial support for greenfield and brownfield plant investment, in the form of generous corporate income tax benefits based on the quantum of the investment made, or over a particular timeframe;

2) provide substantial support for asset-enabling activities, in the form of incentives for training/skills development, industrialisation (testing), research and development (R&D) and industry-specific infrastructure;

3) align domestic market taxation and regulatory requirements with local production capabilities and specialisation (e.g. Turkey's requirement that OEMs invest in dealership networks before being able to sell even small volumes in the domestic market; and Thailand's domestic market tax structure, which effectively ensures a market bias for locally produced LCV derivatives and eco cars); and

4) co-ordinate upgrading support for the automotive industry (e.g. the Thailand

Automotive Institute), often working in close collaboration with selected anchor investors.

In Thailand and Turkey, government support is less focused on attracting investments from entirely new industry players, and more focused on deepening existing automotive activities, particularly in those areas that the government (working in collaboration with industry) has identified as strategically important to supporting sustainable industry development. In Thailand, this support has clearly been driven by an Automotive Masterplan (which Malaysia has recently mimicked through its establishment of a National Automotive Plan), while in Turkey the increasing skills and technology base of the local industry gives the context for support, hence the support for R&D and technologically advanced infrastructure. In all three cases (Thailand, Turkey and recently Malaysia), there is also a clear focus on deepening capabilities in specific areas of product specialisation. These cases contrast with Morocco, which is still focused on securing its new automotive industry. Support in Morocco appears to have been focused on mitigating investment risk by providing advanced automotive infrastructure and large-scale skills development support for investors, alongside substantial grant support and the attraction of additional OEM and Tier 1 investments to create a functioning automotive ecosystem upon which further deepening support can then be provided.

Clearly, each developing economy needs to follow its own automotive industry development path, with policy being largely temporary. However, as argued in this chapter, an understanding of automotive GVC dynamics should frame policy, particularly in relation to market- and asset-developing requirements, and the associated opportunities and challenges that emerge. Lessons from successful developing economies reveal that Dunning's approach to understanding FDI has relevance to understanding the potential for automotive industry development within developing economy contexts (Dunning 1980). Ignoring the automotive industry's base scale and technology requirements will probably result in policy failure, or at least substantial subsidisation costs for developing economies; but carefully crafted policy that deepens asset capabilities over time, while simultaneously improving access to markets (especially local and regional), has the potential to support the development of high-value automotive industries that contribute to the socio economic development of developing economies.

Notes

1 Chairman, B&M Analysts.
2 This equity was subsequently sold back into the private sector. The US government effectively provided liquidity to the US automotive industry through its strategic acquisition of GM and Chrysler shares, and recovered its investment once the firms had stabilised their operations, secured sufficient liquidity to operate their global businesses and gained sufficient private sector interest in their share capital. In the case of GM, this related to the sale of shares to institutional investors; for Chrysler, it involved the sale of additional shares to Fiat, which then took majority control of Chrysler.
3 Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam.
4 Brazil, Argentina, Paraguay, Uruguay, Venezuela.

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