



# Internationalization of Firms: Assessing Liability of Foreignness in China's Electric Vehicle Industry

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## Abstract

**Purpose:** This study evaluates the challenges faced by foreign legacy automakers' joint ventures (FLAJVs) in China's new energy vehicle (NEV) market segment within the context of liability of foreignness (LOF). **Research design, data and methodology:** The research draws on various secondary sources, including reports from the China Association of Automobile Manufacturers, industry reports, external media sources, and the annual reports of VW Group (2019-2023), BYD, and Nio (2018-2023). **Results:** The remarkable speed of China's ascent to market leadership in the NEV segment is attributable to a dual-faceted NEV policy. This policy includes government grants and subsidies designed to bolster the technological capacity of domestic automakers and incentives to encourage consumers to purchase domestic NEVs. These measures have effectively shifted both supply and demand from internal combustion engine (ICE) vehicles to NEVs. Consequently, the market positioning of FLAJVs has weakened due to intense competition from established domestic automakers and new entrants. **Conclusion:** This study demonstrates that FLAJVs are increasingly experiencing the effects of the liability of foreignness, leading to higher costs associated with purchasing regulatory credits and the implementation of costly strategic initiatives to comply with the Dual-Credit Policy (DCP).

**Keywords:** Liability of Foreignness, Internationalization, Strategy, Electric Vehicles, Emerging Markets

**JEL Classification Code:** L50, L51, F88, L21

## 1. Introduction

Early internationalization into the developing Chinese automotive industry by global automakers such as Volkswagen (VW), Peugeot-Citroen, Nissan, Honda, Kia, and Fiat experienced first mover advantage. Access to cheap labor and low production inputs was abundantly available albeit regulation constraint: The government pre-selected and assigned Chinese joint venture (JV) partners to foreign auto-investors (Bals et al., 2013) on an equal equity basis. For example, in 1985, VW partnered with selected partner

Shanghai Autoworks, and in the mid-1990s, Toyota's partner was Tianjin Auto (Ali et al., 2004) as 50/50 joint-venture was the only entry-mode available to foreign automakers to enter China's automotive industry (Bals et al., 2013).

In the international business (IB) literature, these global automakers possess firm-specific assets (FSA) or ownership-and internalized advantages (Dunning, 1979) that compensate for the cost of doing business abroad (CDBA) (Hymer, 1976). There was a glaring asymmetry between global legacy automakers and developing China in

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knowledge-based assets such as technological know-how, managerial and operational competencies, product research and development, efficient production processes (Ali et al., 2004; Bals et al., 2013; Wan et al., 2020; Hayter & Edgington, 2021).

The speed of technological absorption and the competitive pursuit by domestic competitors tend to exacerbate intellectual property appropriation resulting in modified product versions of enhanced quality at lower cost (Zhao et al., 2020; Hayter & Edgington, 2021) is inherent to all industries. For example: VW's components were found in domestic automakers' cars; Toyota entered into a legal dispute on the use of its logo but lost the case, and General Motor (GM) had to contend with a GM look alike of a Chery QQ minicar (Holweg et al., 2009); Sony's patented lithium-ion batteries were modified and found in Build Your Dream's (BYD) products. Despite the patent, like Toyota, Sony lost the intellectual property lawsuit (Zhao et al., 2020), distributorship was dissolved when imitation burners were sold to boiler companies in China's heat pump industry (Curran & Ng, 2018).

In the past two decades, the structural output of China's automotive industry has shifted from internal combustion engine (ICE) to electric-powered vehicles or new energy vehicles (NEV). The production of NEV rose from less than 200,000 units in 2014 to over 9 million units in 2023 (CAAM, 2023). In a similar vein, the competitive structure has leveled in favor of domestic NEV manufacturers with technological capabilities to partake in the NEV production. For example, BYD is the leader in China's NEV market segment akin to global brands and their JV partners that dominated China's ICE market in the 2000s. For example, Shanghai-GM was the largest car producer in China in 2005 (Bennett et al., 2006).

Decades of China's experience in tacit knowledge acquired from international JVs, and the hefty Made in China 2025 investment initiative launched in May 2015 has increased the dominance of Chinese NEV automakers (Yeung, 2018). As early as 2017, a domestic-designed EV model EC-180 overtook Nissan Leaf, and Toyota Prius as the leading selling EV model (Yeung, 2018). Not surprisingly in 2021, Chinese registered hybrid and full electric cars exceeded European registrations by 3 folds at 3.3 million vehicles (Linguerrri, 2023). The policy powered the rise of Chinese NEV automakers' and posed a challenge to FLAJVs. Studies have shown the reducing effect of LOF (Zaheer & Mosakowski, 1997; Pedersen & Petersen, 2002) based on prolonged firms' tenure and learning engagement over time, but limited research has focused on the effect of LOF arising from host-country's increased competence in capability-building that is supported by a well calibrated institutional policy (Hayter & Edgington, 2021).

In light of this phenomenon, the trajectory of incumbent global automakers' ownership of unique FSAs such as global brand, R&D, production, marketing, technology, know-how and innovation, financial capital, information technology and global value chain network tend to be challenged. In particular, established FLAJVs are competing with domestic automakers that are subsidized financially and infrastructurally on the one hand, and having to comply to the strict NEV production and sale regulation on the other. Thus, domestic NEV automakers enjoyed cost-advantage, and in the realm of the IB literature, benefits enjoyed by domestic NEV automakers but not available to foreign firms is a source of liability of foreignness (Zaheer, 1995; Mezas, 2002).

As such, this study assesses the sources of LOF faced by FLAJVs in the emerging NEV market against the backdrop of institutional change that shapes the supply and demand of NEV. This in turn, strengthened China's domestic NEV automakers' leadership. Specifically, this study examines the existence of the sources of LOF in relation to China's evolving automotive industry in 3 stages: industrialization stage; WTO entry; and post-WTO entry, followed by the literature review, methodology, discussions, contribution to theory and practice, and finally, conclusions.

## 2. Evolution of China's Automotive Industry

China's early industrialization process was largely pivoted to the automotive industry. In 2002, as a new member of WTO, its industrial policy of lowering or removing tariffs accelerated foreign automakers' entry into China and enticed incumbents to expand their existing capacities (Holweg et al., 2009). For the purpose of this study, the sources of LOF are examined in relation to the 3-stage development of China's automotive industry: China industrialization and LOF, China WTO entry and LOF and world's second largest economy and LOF.

### 2.1. China's Industrialization and LOF

Although the automotive industry was identified as one of the pillars of economic growth in the 80s, growth remained stagnant into the late 1990s. The capital-deficit industry was mostly state-owned enterprises (SOEs) and were challenged by lack of technological knowledge and processes to drive product development to compete in the world market (Ali et al., 2004). In 1998, China's automotive production and sales performance were meagre compared to German VW, French-Japanese Renault-Nissan, American Ford and GM. Production output was below 40% and consumption was lesser than 20% compared to foreign brands. Taken together, the domestic industry giants such as

Yiqi, Dongfeng, and Shanghai Auto were at a competitive disadvantage to compete with Toyota, VW, Ford and GM that were already in China (Ali et al., 2004; Holweg et al., 2009). This implies the FSAs of these foreign firms were valuable, rare, inimitable, and non-substitutable (VRIN) (Collis & Montgomery, 1995). As such, negating the effect of possible LOF arising from domestic competition.

Since, domestic automakers were mostly SOEs, its regulatory environment served to protect them. The domestic market was protected by high import tariffs and non-tariff barriers. There was a 50-50% JV requirement and local JV partners were assigned to foreign automakers wanting to do business in China. For example, the 50/50 SAIC-VW is a JV between Shanghai Automotive Industry Corp (SAIC) and German VW, and SAIC was a JV partner with GM (Ali et al., 2004). As a result, the protectionist measure aims to reduce the incidence of localness (LOL) since local partners could leverage foreign partners' expertise (Perez-Batres & Eden, 2008) and LOF (Zaheer, 1995) of foreign partners due to localized JV operation. However, foreign automakers did not have exclusivity over their local partner, as SAIC partnered with GM as well. Thus, it tends to give rise to LOF. For example, local automakers' learning from different foreign automakers increases their competitive competency to develop and market their own brand of vehicles, foreign automakers had to contend with imminent threat of strategic development disclosure to other foreign automakers (Ali et al., 2004).

It is clear that in preparation of China's WTO entry, the automotive industry was experiencing uncertainty toward the level of competition as elucidated in Ali et al.'s study (2004) of SAIC-SW and Yiqi, a large-sized SOE. In the SAIC-SW JV, SAIC's managers viewed that their local knowledge would not be useful to VW, since VW has a broader choice of local partners and could import lower or non-tariff materials after China's WTO entry. Thus, facilitating VW's expansion independently to leverage their technological and brand advantage. At this stage, the effect of LOF was moderated by the FSAs of foreign automakers. Managers from SAIC-SW and Yiqi viewed increased competition regardless of nationality after WTO entry. This is interesting because it implies that FLAJVs were facing threats of LOF despite localized operations to reduce the effect of LOF.

## 2.2. China's WTO Entry and LOF

As China deepens its trade and investment connection with the world, further liberal reforms were implemented to encourage vehicle production as well as consumption. Its New Automotive Policy (NAP) was inclusive benefiting global FLAJVs and domestic automakers. One core change was that foreign automakers could choose their own JV

partner of varying share of equity instead of being assigned a JV partner by the government on an equal equity basis. As a result, German BMW chose Brilliance Auto Group as it was not a JV partner with other foreign automakers. By doing so, it reduced its LOF against technology spillage to other global competitors (Holweg et al., 2009). The NAP enabled an efficient automotive value-chain by allowing low or zero tariff on imported vehicles and auto parts. At this point, domestic automakers were encouraged to establish independent product research and development (R&D) toward producing locally designed vehicles, and to ultimately become global brands, and to reach the level of global competitiveness (Holweg et al., 2009).

Although competitive pressure was imminent after China's WTO membership, China was an important market generating revenues and profits for international automakers. For example, in 2004, 6% and 11% of GM's sales and profits respectively were attributable to China, making China its second largest market after the USA. As a result of robust earnings like GM, existing foreign automakers such as Toyota, Daimler Chrysler, Ford, and VW expanded their capacity in China. American Ford Motors was a latecomer in the Chinese market and was able to capture its value and profit creation in China. In addition, these JVs accounted for 90% of total passenger vehicle sales in 2004 (Holweg et al., 2009). Then, the current reality indicated the net effect of growth of these foreign automakers suggesting that the LOF was offset by their FSAs (Nachum, 2003). In terms of domestic automakers' competitive threats, they were lacking resources to develop R&D expertise and were prohibited to enter the automotive industry (McCaleb, 2015). Thus, they have to rely on their foreign JV partners or license providers to produce vehicles.

Technology assimilation by JV partners involves a mastery of complex products, processes or systems (UNCTAD, 2010). It is possible that the sources of LOF were beginning to emerge in 2004. Two state-owned enterprises (SOEs): First Auto Works (FAW) and Changan Automobile were manufacturing their own vehicles, and privately owned Chery and Geely were small automakers manufacturing economy vehicles targeting at the lower-end market (Holweg et al., 2009). By 2006, domestic automakers such as Chery, Brilliance, BYD, and Geely's share of the market stood at 26% (McCaleb, 2015). This phenomenon indicates an implicit response by the domestic automakers to the NAP. Thus, increasing the competitive landscape as FLAJVs had to contend with increased domestic competitors that have lower cost-structure and low-price offerings.

At the same time, the government adopted an aggressive approach to develop and promote China's R&D capabilities and domestic companies (McCaleb, 2015). For instance, its R&D expenditure accelerated from a mere \$12.7b in 2000

to \$103b in 2010 (Hout & Ghemawat, 2010). Although small in comparison to the US, the R&D expenditure gap is narrowing. As early as 2006, the government had sought to implement new policies to capture technology from foreign multi-national enterprises (MNE), including electric vehicle firms (McCaleb, 2015; Hout & Ghemawat, 2010).

### 2.3. World's Second Largest Economy and LOF

In 2010, China replaced Japan to become the world's second largest economy (Lin, 2011). According to the World Investment Report 2010, transnational companies (TNC) were identified to be the catalytic tool to enable sustainable business expansion and practices to help developing economies toward green products, processes, and services, to reduce the world greenhouse gas (GHG) emission (UNCTAD, 2010). In addition, it asserted that GHG emission from passenger cars was estimated to reach over 60% of the transport sector's emission by 2030. Thus, the report necessitated the need to introduce fuel-efficient, electric hybrid or lighter vehicles. The report stated that China subsidized the development of alternative-energy vehicles for three years (\$1.5b) and cut the sales tax for vehicles with engines below a certain threshold (i.e., 1.6 liters).

Its accession to the WTO has brought its foreign investment policy and domestic policy into the fold in the area of environmental protection. It is well acknowledged that China's ambition at the start of its industrialization is to increase its domestic technological prowess through its mandatory local partner policy for foreign investors entering into the country and the government continuous drive to empower domestic automakers to be technologically competent in the form of supply (producers) and demand (consumers) subsidies in the new energy vehicle segment.

Today, China has made significant progress in its technological ranking. For example, total worldwide patent filing for EV technology has gradually increased between 2010 and 2014, but a dramatic increase from 2015 to 2018. By 2018, the number of patent filings reached almost 45,000 as compared to around 25,000 in 2015, an increase of almost 2 folds. In terms of the leading brand of patent ownership between 2002 and 2022, Toyota held the first place. Three out of the top 5 rankings were Japanese, and American Ford ranked 4<sup>th</sup> (GlobalData, 2022). In 2015, China surpassed the US as the leading market for NEV in the world constituting around 30% of global share.

In light of China's global leadership in the EV's industry, it begs the question of what is the extent of LOF faced by FLAJVs in China?

### 3. Literature Review

Zaheer (1995) attributes the causes of LOF to four sources: "costs directly associated with spatial distance; firm-specific costs based on a particular company's unfamiliarity with and lack of roots in a local environment; costs resulting from the host country environment; costs from the home country environment" (Zaheer: 343). Thus, foreign firms tend to experience LOF in the host country that often caused them to perform less well than local competitors and to have a lower chance of survival (Zaheer, 1995).

To mitigate these costs, the international business literature comprises an array of theories to address the LOF faced by MNEs in host countries. The resource-based and internalization theories (Penrose, 1959; Buckley & Casson, 1976; Ying et al., 2013) contend that firms' core competencies in their resources and capabilities are their superior firm-specific assets (FSAs), that could offset the causes of LOF arising from costly agency opportunism in terms of proprietary loss over organizational assets such as technology, patents, copy rights, trademarks (Talay & Cavusgil, 2009). To do so, MNEs preferred to set up foreign subsidiary in order to protect these assets (Wei et al., 2005).

Similar to the resource-based and internalization theories, the eclectic paradigm examines the international involvement of MNEs by looking at the inter-relationship between trade and production. It seeks to explain the ownership (O) advantage which is internal to firms and the location (L) advantage which is external to firms; and how they could become more salient and enhance MNEs' competitiveness when they adopt internalization (I-advantage). In essence, internalization is the MNE's capability to arbitrate between the transaction costs of engaging the services in the foreign market and the organization costs of managing a firm (Coase, 1937; Dunning, 2002).

The internationalization theory posits that the sequential internationalization process of exporting tends to enable foreign firms to learn and be familiarized with the host country's business and social environments (Johanson & Vahlne, 1977) to reduce LOF. The deficit of local knowledge manifested in LOF could be compensated via joint-venture with local partners (Li & Yeung, 1999; Talay & Cavusgil, 2009). Over time, firms face the threat of competing with their own partners as their local partners increase their inward experiential learning gained from the foreign partnership (Deng, 2009; Luo et al., 2011). The interplay between knowledge acquisition by foreign firms and knowledge absorption by local firms is a double-edged sword. On the one hand, partnerships seek to reduce LOF but exposure of knowledge transfer to local firms tends to increase LOF at the same time (Li & Yeung, 1999).



Institutional theory posits that the “rules of the game” define the structures, norms, and routines shaped organizational processes to attain social fitness in a constrained environment composing of regulative authorities, customers, competitors, suppliers, public interest groups, and media and so on (North, 1991; Scott, 1995). This evolving institutional change in the host-country presents a source of LOF when increasing effort is paramount to comply with the rule of law (North, 1991; Zaheer, 1995; Eden & Miller, 2004). As such possessing superior FSAs does not necessarily lead to reduced LOF. For example, in Kong et al.’s study (2023), it was found that MNEs’ participation in public-private partnership projects were less likely to survive in developing economies because of potential increased costs relating to possible conflicts with public stakeholders, additional compliance was needed to avoid environmental and social issues violation (Hymer, 1976).

Foreign firms that are protected by their FSAs and favorable host-legislation against LOF upon entry and subsequently tend to face LOF as they enter new market segments or increase their product portfolio (Ng & Curran, 2020). The competitive strategy of foreign firms is evolving as it requires strategic responses to the changing conditions of the host competitive environment that could lead to LOF challenges. For example, unfamiliarity arises when new learning is necessary to learn about consumer tastes and developing networks to serve new segment of customers (Hayter & Edgington, 2021).

Early literature on the cost of doing business abroad (CDBA) as an inevitable cost necessary to learn about host-country’s business environment and risks encompassing its government, society and its culture of doing things. Differences between home- and host country’s business environments could give rise to discrimination or preferences of foreignness within the local operating context (Hymer, 1976). In comparison, national or local firms tend to benefit from easy access of information and have a more nuanced understanding of the changing environment conferred by their localness. In other words, the LOF literature converges to Hymer’s (1976) conceptualization of the CDBA.

Weighing on the tenure of firms and returns on learning, another stream of research posits that LOF can be reduced over time (Zaheer & Mosakowski, 1997; Pedersen & Petersen, 2002) as firms develop new advantages such as knowledge and experience gained as the tenure in the host country increases over time (Johansson & Vahlne, 1977, 2006, 2009). Suggestions by Zaheer and Mosakowski (1997) were a generalization of the host country’s positive response (environment) toward foreign firms based on their tenure. They did not take the economic actors and stakeholders into considerations. In real life context, the host environment

involves various economic actors and stakeholders which could have an impact on foreign firms’ LOF in either direction over a period of time. For example, competition from local economic actors would mean increased difficulties and higher LOF regardless of foreign firms’ tenure (Wan et al., 2020; Ng & Curran, 2020; Hayter & Edgington, 2021).

## 4. Methodology

This study assesses the consumption trajectory of the passenger car, i.e., the ICE and the NEV segments. It uses secondary data to assess the LOF faced by global firms operating in the NEV market in China. Statistics and industry updates of the automotive industry are drawn from the China Association of Automobile Manufacturers (CAAM). The impact of the automotive DCP since its implementation on April 1, 2018 on industry players is gathered through press releases and industry reports.

Annual reports of VW between 2019 and 2023 were reviewed to capture its China’s joint venture operating performance and its strategic initiatives to meet the policy requirements. Volkswagen is chosen because it was the first foreign automotive brand to enter China before its industrialization. It has over 40 years of China’s experience and China continues to be its single largest market in the world. As such, what are the imminent sources of LOF faced as it navigates its strategies to meet the evolving institutional environment in China?

Annual reports from two domestic automakers were analyzed: BYD and Nio between 2018 and 2023 to identify the government grants and subsidies received as well as the sale of automotive regulatory credits.

## 5. Discussions: China’s Paradigm Shift from ICE to Electric Vehicles

### 5.1. Rise of China in the NEV market segment

According to the China Association of Automobile Manufacturer’s (CAAM) statistics, production and sale of NEVs started in 2012, with a mere sale of 20,000 NEVs which was below 1% representation of the total passenger car sales (Table 1). The same year, the proposal to implement the three-step strategy for the industrialization of electric vehicles spreading over 3 phases was officially included in the 12<sup>th</sup> Five-Year Plan for EV Development (Wu et.al., 2021). SAIC, a state-owned enterprise took the lead as the biggest investor to commit to building the electric vehicle (EV) industry chain amounting to \$6 billion. This included the construction of SAIC Technology Center,

research and development of high-end EV model Rowe 950, and infrastructure construction of EV. It also launched more than 10 EV models in 2012 and set a target to achieve 1000 vehicle sales (CEVIR, 2012).

The 2012 proposal and the implementation of DCP played a role in increasing the share of NEV sales. At the

end of 2023, NEV sales dominated the passenger car segment and stood at 53% (Table 1). In 2009, BYD was the largest EV battery manufacturer (Tang, 2009), and now the world leader in NEV global production and sales. In 2022, China accounted for 65% of global NEV sales (Wyk, 2023).

**Table 1:** China Automotive Sales by Market Segments between 2020 and 2023 (units)

Sales of Passenger Cars (Units)	2004	2023	2022	2021	2020	2012
Internal Combustion Engine (ICE)	5,000,000	17,015,000	17,015,000	18,148,000	18,932,000	15,980,000
New Energy Vehicle (NEV)		9,048,000	6,548,000	3,334,000	1,246,000	20,000
% of NEV/Total PCs		53%	38%	18%	7%	0%
Total	5,000,000	26,063,000	23,563,000	21,482,000	20,178,000	16,000,000

Note: CAAM. (2004, 2012, 2020-2023).

## 5.2. The Dual-Credit Policy (DCP)

The DCP was announced in 2017 and came into effect a year later. It pegged the production of NEV against the production of ICE vehicles (Wu et al., 2021). For example, in 2020, automakers had to produce 12 NEVs for every 100 ICE vehicles. This ratio increased annually to 14%, 16%, and 18% till 2023. Automakers that do not meet this requirement, will accumulate negative automotive regulatory credits (ARC). However, they are allowed to even out the disequilibrium in the credit trading market by buying from automakers which have excess ARC to sell (Li et al., 2018).

In 2023, BYD ranked first and Tesla (US-owned subsidiary) was second in NEV units sold. Notably, Tesla's sales units were substantially lower than BYD by 27%, indicating BYD's large and strong market position. Eight domestic automakers were among the top 10 and six were privately owned, and four produced and sold NEV exclusively. The only FLAJV among the top 10 NEV sales was SAIV-GM Wuling (Table 2). On the other hand, China's passenger car retail sales in 2023 (Table 3) implies an intense competition that the FLAJVs are facing. FAW-VW ranked second and its passenger car retail sales (ICE and NEV included) were 30% lower than BYD). It appears that FLAJVs were producing a greater percentage of ICE than NEV as the majority did not make it to the top 10 of NEV sales (Table 2). The implications from the weaker sales performance are: high cumulation of negative automotive regulatory credits that would impact their operating profit; stronger demand in ICE models than NEV; limited NEV models for consumers to choose from; Chinese government policy of encouraging ownership of value for money domestic NEV through easy access to financial credit, subsidy and tax exemption are threats. As such, their brand leverage and market share are challenged by the cost and sale advantages that are exclusive to domestic automakers.

**Table 2:** China Top 10 Retail Sales in NEV

Market Share	Brand	2023 (units)
35%	BYD - Private	2,706,075
7.81%	Tesla	603,664
6.26%	GAC Aion (SOE)	483,632
6.07%	Geely (private)	469,427
5.92%	SAIC-GM Wuling	457,848
4.98%	Changan (SOE)	384,915
4.86%	Li Auto (private NEV)	376,030
3.06%	Great Wall (private)	236,856
2.07%	Nio (private NEV)	160,038
1.86%	Leapmotor (private NEV)	144,155

**Table 3:** China Top 10 Retail Sales in Passenger Cars

Ranking	Brand	2023 (units)
1	BYD	2,706,075
2	FAW-VW	1,846,617
3	Geely	1,412,415
4	Changan	1,372,199
5	SAIC-VW	1,231,433
6	GAC-Toyota	9,010,227
7	SAIC-GM	870,011
8	Chery	811,230
9	FAW-Toyota	802,095
10	Great Wall	760,091

Note: Zhang (2024).

It is clear that FLAJVs face challenges in calibrating their production between ICE and NEV models to meet the policy requirement (Sun & Munroe, 2021; Tabeta, 2021; Fox, 2022; McMorrow et al., 2023). Furthermore, they have to plan infrastructurally to accommodate the NEV into their existing facilities through expansion or construction of new facilities or finding new local JV partners. Such projects are cost-bearing and specific to foreign firms in this case as they are not funded by the host-government (Hymer, 1976; Mezas, 2002).

### 5.3. Developmental Strategy of BYD and VW Group JV in China

The year 2012, set the stage for strategic preparation and action by domestic automakers in China. Private domestic NEV automakers had a head start in research and development toward technological innovation. For example, BYD the leading domestic automaker which is also in the handset and photovoltaic businesses, one of its NEV model, E6 was adopted by the central government in its effort to promote NEV, thus legitimizing BYD’s status during the infancy stage of the NEV industry (BYD, 2012). This preferential treatment is the source of LOF where discriminatory action favors local actors (Hymer, 1976).

As for FLAJVs, SAIC-VW launched the VW Jetta Hybrid and the eco-up models, Audi A6 and A8 hybrid. Two VW’s JV partners planned to increase their environmentally friendly vehicles through expansion of its existing manufacturing plants. As shown in Table 1, the uptake of NEV was not significant as it accounted for only 7% in 2020, possibly due to Covid-19 pandemic. However, in 2021, the share of NEV sales in the passenger car segment rose to 18% and almost trebled in 2023 (Table 1).

Although the sum of each investment was not disclosed in VW Group’s annual reports, the nature of its investment pertains risks and possible irreversibility, that tends to be the source of LOF (Table 4). However, in VW Group’s press release in April 2024, it was stated that it was committing EUR 2.5 billion for local development in the JAC-VW Anhui province to “further increase the pace of innovation” (VW, Press release, April 2024). Just this investment, represents 11% of VW Group global operating income (VW Group AR 2023). Table 4 depicts various strategic initiatives undertaken by VW Group China to meet the DCP from 2017 till 2023. It illustrates the strategic effort and emphasis required to increase its technological innovation surrounding the components of NEV, developing new NEV models, and expanding or increasing production capacities and facilities, and restructuring its operations such as creating a CARIAD subsidiary to compete with domestic automakers and enable faster response to the needs of the Chinese market (Hayter & Edgington, 2021).

**Table 4:** Strategic Initiatives to meet China Dual Credit Policy (DCP) by VW Group China

2017	New JV with JAC (Anhui Jianghuai) for e-mobility, develop, produce and sell EV, develop and produce EV components. Construction of a plant and R&D Center,
2018	New Foshan and Qingdao plants
2019	SAIC-VW Anting plant
2020	Increased stake of JAC Anhui from 50% to 75%
	New JV partner battery supplier Gotion High Tech (26%) to produce electric drive components

2021	New Modular electric drive matrix (MEB plant in JAC Anhui Jianghuai)
	VW Anhui first battery system plant
	CARIAD Team branch in China, develop sustainable, convenient, connected, safe automotive experience for the customers of our Group brands
2022	CARIAD China Subsidiary formed systematically driving software development and digitalization
	Expansion of the energy supply network with charging JV China Academy of Meteorological Sciences (CAMS) more than 1000 stations with more than 9000 charging points
2023	newly established VW China Technology Company (VCTC) is the new center for development, innovation and procurement for intelligent, fully connected electric vehicles (ICV)
	New technological framework agreement with Xpeng to jointly develop ICV.
	Audi and SAIC expanded their agreement to jointly develop ICV.

Note: Compilation by author using VW Group annual reports between 2017 and 2023.

The strategic initiatives require additional capital and human resources, thus impacting operating profit. Since the implementation of China’s DCP in April 2018, VW Group China’s joint ventures’ performance between 2019 and 2023 was examined as illustrated in Table 4. Overall, the JV’s operating profit declined by 41% in 2023 from 2019 or an equivalent of 22% drop of operating profit per vehicle from \$1000 to \$785 in 2023. This decrease signifies substantial increase in operating costs between 2019 and 2023. Thus, implying an increase in LOF by VW Group China’s JVs and possibly including other foreign firms in an effort to balance between deploying resources to meet the policy requirement on the one hand, and improving profits on the other.

**Table 5:** Volkswagen's China Joint Ventures from 2019 and 2023 (Post April 1, 2018 Dual Credit Policy)

Year	2023	2022	2021	2020	2019
Operating profit \$ millions	2,405	3,009	2,776	3,305	4,060
<b>Thousands of vehicles</b>					
Deliveries	3,236	3,185	3,305	3,849	4,234
Sales	3,065	3,122	3,042	3,577	4,048
Production	3,072	3,160	2,949	3,575	3,948
Operating profit per vehicle sold	784.53	963.86	912.61	923.84	1,002.87
<b>Percentage change YOY</b>					
Operating profit	-20.09%	8.39%	-15.99%	-18.60%	-12.26%
Deliveries	1.60%	-3.63%	-14.13%	-9.09%	0.64%
Sales	-1.83%	2.63%	-14.96%	-11.64%	-1.29%
Production	-2.78%	7.15%	-17.51%	-9.45%	-4.08%
Operating profit per vehicle sold	-18.61%	5.62%	-1.22%	-7.88%	-11.11%

Note: VW Group Annual Reports (2019-2023).

Behind the backdrop of China's DCP, is a series of government grants and subsidies to support domestic automakers and domestic consumers to purchase domestically produced NEVs. Domestic consumers purchasing NEV from foreign automakers were not subsidized. In this instance, impeding FLAJVs the opportunity to increase sales revenue. Product research and

development, infrastructural and construction costs surrounding NEVs were financially supported by both the central and local governments in the form of grants and subsidies. Take BYD as an example, governments funding had been consistently received from \$19m to \$640m in 2023 (Table 5).

**Table 6:** BYD Company Ltd: Government Grants and Subsidies

BYD Company Ltd	2023	2022	2021	2020	2019	2018	2012
Government grants and subsidies (\$ millions)	\$640.00	-	\$313.50	\$233.81	\$236.52	\$323.11	\$19.34

Source: BYD Annual Reports (2012, 2018-2023).

As a result of the grants and subsidies that were captured in BYD's profit and loss statement, Table 6 depicts BYD's operating profit between 2019 and 2023. Contrary to the operating profit of VW Group China's JVs (Table 5), the operating profit of BYD rose substantially year-on-year except for 2019 and 2021. On average, it was a 3-digit percentage increase (Table 7).

**Table 7:** BYD Company Ltd: Operating Profit from 2019 and 2023 (Post April 1, 2018 Dual Credit Policy)

Year	2023	2022	2021	2020	2019
Operating Profit \$ millions	5,161.86	2,919.63	625.76	953.27	336.72
Percentage Change YOY					
Operating Profit	76.80%	366.57%	-34.36%	183.10%	-44.57%

Note: BYD Annual Reports (2012, 2018-2023).

Negative ARC automakers not only have to incur extra costs to buy credits, they were discouraged to produce ICE vehicles (Wu et al., 2021) as they could not sell any vehicle until the negative credits were zeroed out (Kang, 2021). The biggest winners from the sale of automotive regulatory credits were domestic automakers BYD and Nio, and Tesla (US) which produces and sells only NEVs (Sun & Munroe, 2021; Tabeta, 2021; Fox, 2022; McMorro, 2023). SAIC-VW, FAW-VW, JAC-VW, Dongfeng Motor, FAC-Honda, SAIC-GM and Changan-Ford had accumulated the highest negative ARC. As a matter of fact, it was estimated that FAW-VW was paying up to \$55 million to reinstate their credit status in 2020 (Tabeta, 2021). The cost per ARC has been escalating from \$42 -70, and \$300-425 (Kang, 2021) to about \$700 in 2021 (Tabeta, 2021).

On the other hand, BYD's positive credits in 2020 were worth \$350 million. Unlike Nio (Table 8), BYD did not disclose separately the amount of automotive regulatory credits sold. Nio was newly incorporated in 2014 and was not profitable according to the 2023 annual report. However, they were gaining from the sale of the ARC. Nio received government grants and subsidies as well but they were not reported separately in the annual reports. Instead, it was offset against research and development costs. Thus, could

not compare the amount received against those of BYD's (Table 7).

**Table 8:** Sale of Automotive Regulatory Credits by Nio Inc.

Automotive Regulatory Credits (\$millions)	2023	2022	2021
Nio Inc.	\$1.47	\$9.32	\$71.54

Note: Nio Annual Reports (2021-2023).

As illustrated above, automakers such as BYD and Nio that meet the policy requirement and trade their credit surpluses could see significant increase in their earnings. Tesla, the only foreign-owned EV company, was estimated to earn \$390 million in 2021 in ARC (Tabeta, 2021). Other credit surplus domestic automakers besides BYD and Nio, were Guangzhou Automobile Company (GAC) and Jianghuai Automobile Company (JAC).

## 6. Contribution to Theory and Practice

My study supports the assertion that foreign firms experienced LOF in the face of evolving institutional change (North, 1991; Zaheer; 1995; Eden & miller, 2004). The FSAs of firms that protect them against LOF in the initial entry, tend to be challenged in different market segments (Ng & Curran, 2020). In this case, the competitive strengths of FLAJVs in the ICE vehicle market segment did not sustain in the emerging NEV market segment. My study shows the FLAJVs' faced by FLAJVs due to the strategic initiatives by the Chinese government through the dual-credit policy that favors domestic NEV automakers. The LOF literature postulates that learning and tenure tend to mitigate LOF. My study shows that FLAJVs' performance was lacking behind domestic NEV automakers. Instead, local JV partners' learning from the JV enabled them to compete directly with their JVs with foreign automakers. Thus, learning captured by local partners became a threat.

My study also elucidates that in the absence of institutional forces, domestic automakers would not have



the opportunity to leapfrog their operating performance. For example, BYD acknowledged in their 2012 annual report that the increased supportive policies of the government as well as the financial fluidity by the China Development Bank, would be a catalyst of strong growth in NEV (page 6). In this instance, these exclusive benefits to domestic automakers were denied to foreign firms implying a source of LOF (Mezias, 2002). Similarly, Nio's 2023 annual report (page 13) provided for potential price competition when the consumer subsidy phased out at the end of 2022.

In terms of practical implications, one of the factors that FLAJVs face difficulties in complying with the DCP, is that their JV partners have their own domestic side of the business of producing and selling their own brands as well as partnering with other global automakers. For example, as seen in Table 3, SAIC is partnering with both VW and GM, so is FAW partnering with VW and Toyota. Several threats are deduced from this business operating principles: 1) less commitment by Chinese JV partners as they tend to focus their effort to build their own brands, 2) threat of product technology leakage to other foreign automakers' JVs and 3) learning from the foreign JV's product development process could be used for their own brands. Since China has allowed 100% foreign-owned subsidiary in the automotive industry in 2022, the FLAJVs China should re-evaluate this market condition to strategically plan to convert to wholly foreign-owned subsidiaries (WFOS). In this case, avoiding agency opportunism as FLAJVs have substantial local and technological knowledge to operate in the NEV market independently.

## 7. Conclusions

The extent of LOF faced by FLAJVs was analyzed through the lens of the evolution of China's automotive industry. Mandatory JVs with pre-selected local partners enabled local partners' learning. Due to non-exclusivity, local partners could serve more than one foreign partner, there is a tendency of risk in potential disclosure of intellectual property to other foreign competitors in China. Taken together, the FSAs of FLAJVs were competitive in the initial stage of China's industrialization albeit some unfair advantages that are deemed to be sources of LOF.

By and large, China's early start in implementing vehicle policy in 2010 to beef up domestic NEV technology has been successful. Home-grown NEV automakers were leading the ranking in NEV unit sales, and BYD being the global leader. Although foreign legacy automakers had a head start in NEV technology; they have not been able to keep pace with the strict DCP to successfully compete in the NEV market. Other smaller domestic NEV automakers were

performing better than them and were among the top 10 in retail unit sales.

In response to the changing institutional environment, FLAJVs engaged in costly strategic initiatives that were financed from their cashflows or external borrowings to compete with domestic NEV automakers. Besides, FLAJVs faced pressure from local and global media when their capabilities are compared to domestic NEVs that tend to erode and undermine their existing competencies.

A key conclusion in this research is that while FSAs and localized presence in the form of JVs are LOF mitigating factors, it is critical to be aware of their vulnerability in China's context. In particular industry with high entry barriers could be supported by government grants and subsidies denied to foreign firms, to ease the entry of new entrants and compete with existing foreign firms. Moreover, it would be wrong to expect that technological prowess and brand recognition will continue to be sustainable competitive advantages in the new global context, where emerging market actors are increasing their presence at home and abroad, as in the case of BYD's expansion into many emerging markets (Bradsher, 2024).

### 7.1. Limitations

My study focuses on examining only VW Group JVs in China to ascertain the sources of LOF faced in the NEV industry by comparing it with the performance of BYD, the global leader in NEV industry. The secondary data is mainly from their annual reports, press releases, government related agencies for statistical data to illustrate the extent of NEV production, deliveries and sales. Inference of data is limited to the extent of the company's strategic material disclosure in their annual reports qualitatively and quantitatively. The author believes that such work can nonetheless complement the existing studies focusing on the paradigm shift of China's automotive industry toward NEV that has leapfrogged performance in the world, especially overtaking the global position of the global legacy automakers.

### 7.2. Further Research

Since BYD is the global leader in the NEV market and is expanding aggressively in Southeast Asia (SEA), investigating their LOFs in their internationalization process will add a new dimension of understanding the extent of LOF faced by the global leader originating from an emerging market, China.

Comparative studies between the US and SEA countries in their internationalization process could shed light of the differences in LOF faced by BYD in the US and the developing SEA markets.

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