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Short/Long-term Prospects for Automobile Demand in Asia

: Income and population growth expected to triple market size over next 30 years

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《Summary》

◆ Asian automobiles sales fell in 2019 for second consecutive year, after it had maintained robust growth for many years. It is highly likely, however, that this does not signify a structural downturn in the market but instead constitutes a temporary decline stemming primarily from deterioration in the financial condition. Indeed, sales in many Asian countries/regions are now bottoming out as they have experienced an improved financial environment with lower interest rates in 2019.

◆ We see the automobile market's underlying tone of expansion is intact when viewed from a long-term perspective. Automobile demand for Asia is expected to continue increasing as income and population levels rise, a major driver being the fact that a growing number of Asian countries have per capita GDP exceeding the "USD5,000 barrier", the milestone for acceleration in automobile sales/ownership.

◆ The rate of automobile ownership in Asia is now quite low, leaving considerable leeway for market expansion. Asia's unique attachment to two-wheeled vehicles, the high population density of urban areas, as well as recent new developments such as car-sharing could inhibit expansion of automobile ownership. Estimates based on certain premises that consider higher income, population growth and unique environment in Asia point to a likely tripling of the Asian automobile market over the next 30 years. China's market will expand conspicuously until 2030, and thereafter the pace of expansion should pick up in India and ASEAN. India's market should grow by more than ten times compared to its current size by 2050, approaching to annual sales of 50 million automobiles.

◆ There remains the risk that Asian automobile demand temporarily worsen again due to economic/financial fragility. However, auto makers should put active efforts into acquiring market share in Asia, since solid growth can be anticipated based on the fundamentals of

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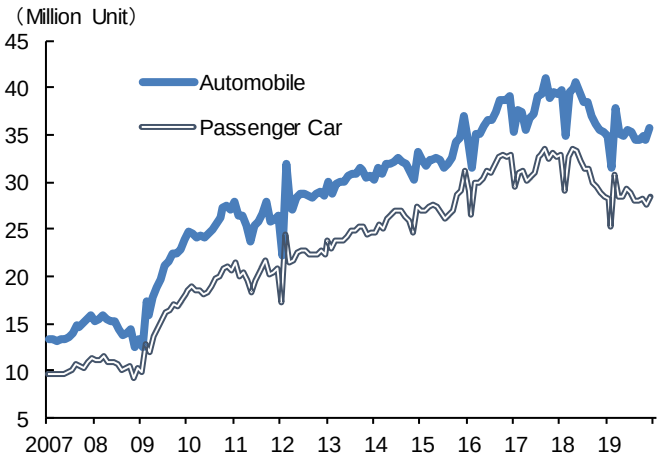
income and population. With environmental concerns in Asia pushing countries to encourage automobile owners to trade in their automobiles for more eco-friendly models, we see Japanese automobile related companies can exploit the opportunity with their technological advantages.

- **This is a English version of "アジア自動車需要の短期・長期展望― 所得増と人口増を背景に市場規模は今後 30 年で 3 倍に ―" in JRI Research Focus (The original version is available at https://www.jri.co.jp/MediaLibrary/file/report/researchfocus/pdf/11523.pdf)**

<1. Introduction >

The Asian automobile market has long enjoyed robust growth, but it has suffered stagnation in 2018 and 2019. The number of automobiles sales in Asia [1] slipped by 0.8% year-on-year (YoY) in 2018, and 2019 likely marked a second consecutive year of negative growth. China's automobile sales declined by 8.1% YoY in 2019, even worse than the previous year's decline of 3.1% YoY, while India saw sales drop substantially by 13.3% YoY. Despite exceptions such as rises in Vietnam and the Philippines, automobile sales were down YoY in almost all countries/regions in 2019. Automobile sales in Asia accounted for 40% of global automobile sales in 2018 (up from 16% in 2005), and the slump in the automobile market over the past two years has put a significant downward pressure on the Asian economic growth.

Figure 1. Auto Sales in Asia
(Seasonal adjusted, annualized)



Source: JRI, based on CEIC data.
Note: The data includes China, Taiwan, Korea, India, Indonesia, Malaysia, Philippines, Thailand, Vietnam.

That said, recent developments offer signs that the market is bottoming out (Figure 1). Although the Asian automobile market has been beset by pessimism, the slump lasting into 2019 could well prove to be a short-term downswing rather than structural stagnation. If the market begins heading toward recovery, it could provide a positive boost to the Asian economy. In this paper, we examine the background to the recent stagnation and the medium to long term prospects for the Asian automobile market.

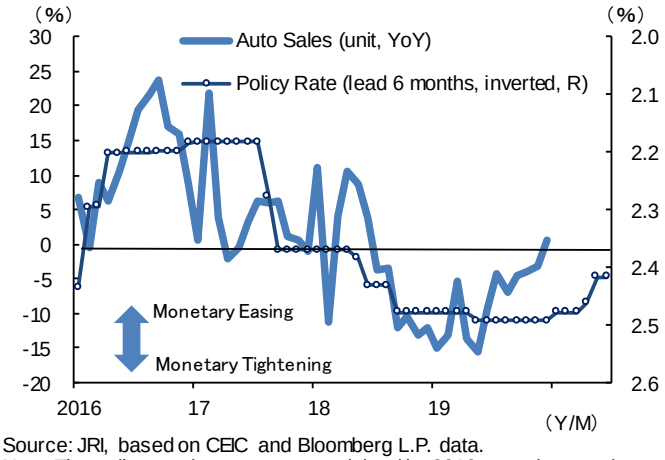
<2. A worsened financial environment rather than a structural downturn primarily to blame >

The declines in Asia's automobile sales from 2018 came as somewhat of a surprise, since Asian market had been seen as a growth market. Various circumstances in individual countries/regions have been identified as elements underlying this decline. In China, among the frequently cited factors were the abolition of tax breaks for small-vehicle sales (which lowered the automobile acquisition tax rate on small vehicles from 10% to 5%) at the end of 2017 and tighter restrictions on issuing license plates as an environmental measure. An economic downturn in local areas also seems to have resulted in lower automobile sales. In India, automobile sales were impacted by pullbacks in purchases due to an upcoming tightening of emissions standards. In the Philippines, the contributing factor was the tax hike (raising the minimum excise tax rate applicable to automobiles from 2% to 4%) that went into effect in 2018.

[1] The annual data is based on figures from the Organisation Internationale des Constructeurs d'Automobiles (OICA), while monthly data is based on national statistics. "Asia" here comprises China, South Korea, Taiwan, India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. This paper primarily defines "automobiles" (excluding two-wheeled vehicles) to include not just passenger cars for household use but also commercial vehicles such as buses and trucks. Definitions for passenger cars/vehicle vary by country, with some including SUVs and pickup trucks as passenger cars). Similar to the widespread household use of pickup trucks in the US, light trucks are not necessarily limited to commercial use in Asia, and it was deemed appropriate to include buses and trucks in calculating automobile ownership rates.

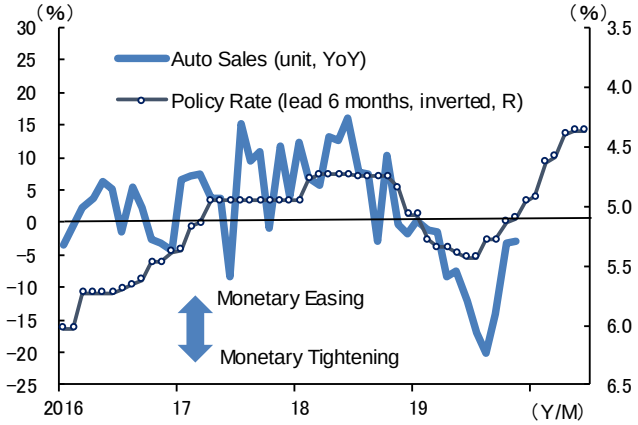
However, we believe the greatest reason that automobile demand dropped across Asia was the adverse financial environment created by tighter monetary policies and credit insecurity in the financial sector. In 2018, for instance, interest rates were raised once each in China and Korea, two times in India, and five or more times in the Philippines and Indonesia. These credit squeezes pushed down automobile sales, albeit with a time lag (Figures 2 and 3). In addition, the Chinese government's deleveraging policies made it more difficult to put together automobile loans. India, too, saw its financial environment worsen in the wake of a series of credit defaults among major non-bank financial institutions from the second half of 2018 onward, as financial institutions became increasingly wary of lending in the face of credit instability in the financial sector. Thailand's central bank imposed stricter requirements on automobile loans out of concern for household debt, which remained high at the start of 2019.

Figure 2. Auto Sales and Policy Rate (China, Taiwan, Korea)



Source: JRI, based on CEIC and Bloomberg L.P. data.
Note: The policy rate is an average weighted by 2018 annual auto sales unit. The seven-day reverse repurchase rate is used for China's policy rate.

Figure 3. Auto Sales and Policy Rate (India, ASEAN)



Source: JRI, based on CEIC and Bloomberg L.P. data.
Note: ASEAN includes Indonesia, Philippines, Malaysia, Thailand, Vietnam. The policy rate is an average weighted by 2018 annual auto sales unit.

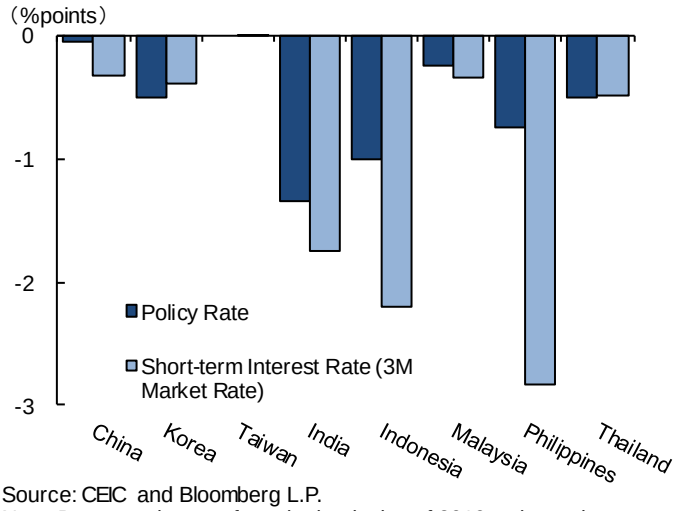
Nevertheless, signs of an improving financial environment have recently become apparent with accomodative monetary condition. Indeed, market interest rates declined in many countries/regions in Asia (Figure 4). In 2019, policy rates were cut five times in India, four times in Indonesia, three times in the Philippines, two times each in Thailand and Korea, and one time each in Malaysia and Vietnam, indicating active efforts to ease credit, notably in Southeast and South Asian countries. In China, too, the new one-year loan prime rate (LPR)[2] just introduced in 2019 was lowered three times but, as these cuts only resulted in a slight drop from 4.31% to 4.15%, they had less of a positive effect on automobile sales than those undertaken by India and ASEAN.

[2] PBoC announced its new LPR quoting method to make it more market-oriented. This is a new benchmark applicable to loans that now serves as a de facto policy rate in China. While the seven-day reverse repo rate used in China for short-term interest rate adjustments via open market operations does correspond to the key interest rate used in many countries' monetary policies, it has seen only a slight decline from 2.55% to 2.50%.

Besides lowering interest rates, India began in July 2019 putting forth several policies to cope with credit instability in the financial sector. In Indonesia, regulations on down payments for automobile loans were eased in December 2019.

These improvements in the financial environment seem to be helping automobile sales in the Asia region move toward recovery. Given the low probability of any imminent tightening and the likelihood that interest rates will remain around their present levels for the time being, we expect low interest rates to underpin automobile sales in Asia.

Figure 4. Year-to-Date Changes in Asia Interest Rates



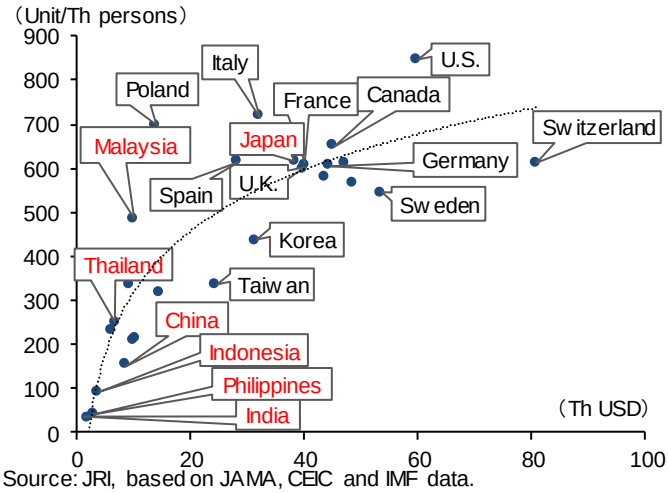
Source: CEIC and Bloomberg L.P.
Note: Data are changes from the beginning of 2019 to the end.

<3. Higher automobile demand in Asia expected over the long term>

(1) Breaking the USD5,000 per capita GDP barrier and continuing population growth

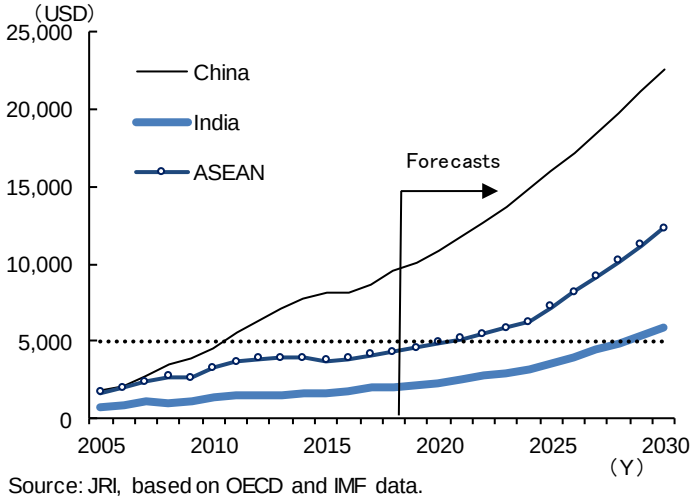
The recent decrease in automobile sales in Asia can thus be attributed to problems in the financial environment, and this should prove a temporary setback as governments adopt policy responses to eliminate these problems. Even looking ahead over a longer time span, it is expected that the expansion of Asia's automobile market will maintain its momentum, pushed along by (1) rising income levels and (2) growing populations.

Figure 5. Motor Vehicle Registered per thousand persons and GDP per capita (2017)



Source: JRI, based on JAMA, CEIC and IMF data.

Figure 6. GDP per capita in Asia



Source: JRI, based on OECD and IMF data.
Note: ASEAN includes Indonesia, Malaysia, Philippines, Thailand,

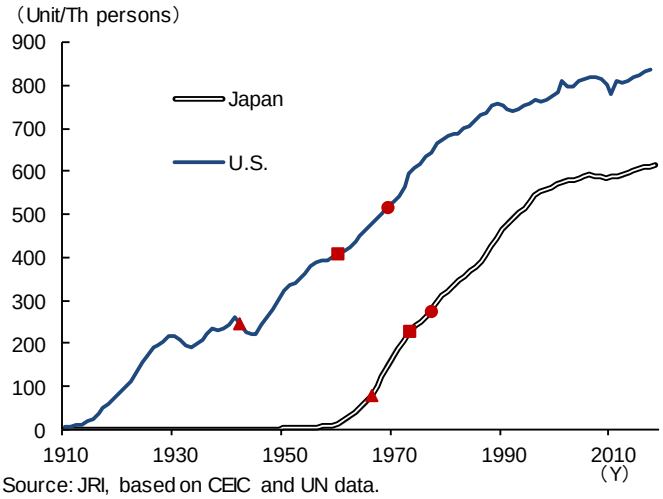
① Income levels to continue rising

Automobiles have still not caught on adequately in many Asian countries/regions, but rising income levels should boost their penetration rate. Automobile ownership rates generally tend to be linked to per capita GDP levels (Figure 5). Estimates based on IMF and OECD forecasts[3] show that Asian countries/regions should see their per capita GDP steadily grow in future (Figure 6).

The penetration rates for durable goods generally trace out S-shaped curves, and it is known that penetration rates climb rapidly as income increases (Ministry of Economy, Trade and Industry (2013)). Research by Dargay, Gately and Sommer (2007) illustrates that the income elasticity of vehicle ownership increases rapidly over the range of USD3,000 to USD10,000 when vehicle ownership increases twice as fast as per-capita income[4].

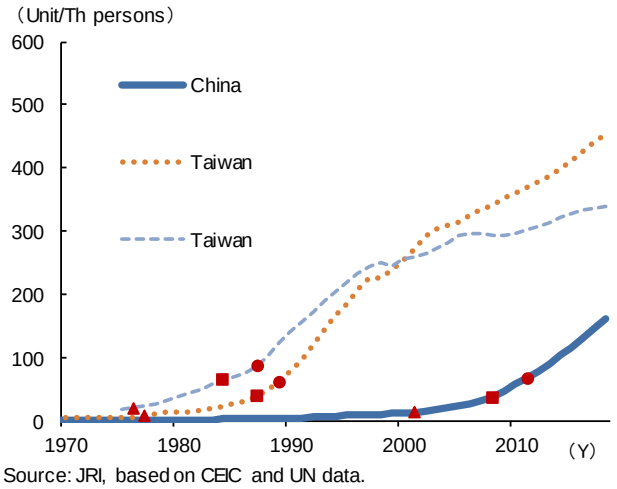
Figures 7, 8 and 9 showing the number of automobiles owned per 1,000 persons in countries/regions reveals no set pattern to penetration. The US had already surpassed 200 automobiles per 1,000 persons (i.e., one person in five owned an automobile) by the 1930s, but its per capita GDP at that time was under USD1,000. Japan's penetration rate began sharply climbing about the time its per capita GDP reached USD1,000 in the latter half of the 1960s[5]. Elsewhere in Asia, China's penetration rate appears to have turned

Figure 7. Motor Vehicle Ownership Ratio in U.S. and Japan



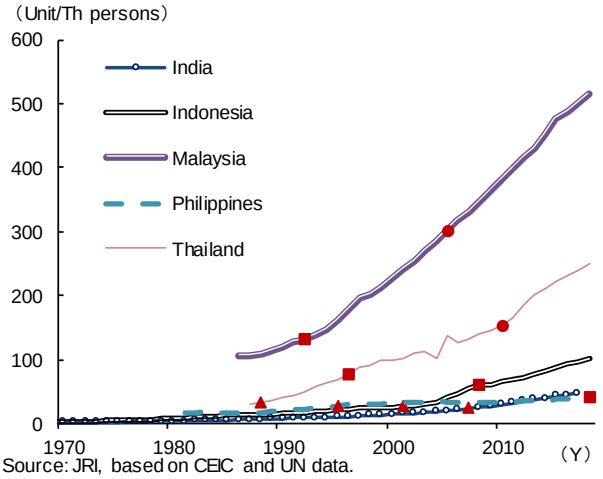
Source: JRI, based on CEIC and UN data.
Note: Filled markers show the year when GDP per capita of the county/region reached over USD1,000(▲), 3,000(■), and 5,000(●).

Figure 8. Motor Vehicle Ownership Ratio in China, Taiwan and Korea



Source: JRI, based on CEIC and UN data.
Note: Filled markers show the year when GDP per capita of the county/region reached over USD1,000(▲), 3,000(■), and 5,000(●).

Figure 9. Motor Vehicle Ownership Ratio in India and ASEAN



Source: JRI, based on CEIC and UN data.
Note: Filled markers show the year when GDP per capita of the county/region reached over USD1,000(▲), 3,000(■), and 5,000(●).

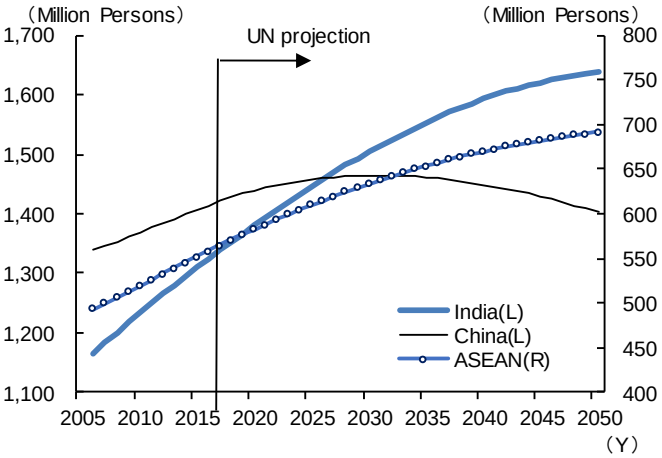
[3] Estimates through 2024 are based on IMF data, while subsequent estimates are calculated using the forecasts up to 2060 in the "OECD Long-Term Baseline Scenario" (OECD Economic Outlook No. 103).
[4] Also, they mention that vehicle ownership increases only as fast as income when income levels increase to the range of $10,000 to $20,000.
[5] Passenger vehicle prices in 1970 (based on retail prices in Tokyo's wards) were approximately one-third the prices in the 2000s, closely following the pattern presented by Dargay, Gately and Sommer (2007) (an acceleration in the penetration rate when per capita GDP hits $3,000).

upward in 2008 when per capita GDP surpassed USD3,000, but the rate in Thailand stagnated at a level of less than 200 automobiles per 1,000 persons despite per capita GDP having exceeded USD3,000 in 1996. Indonesia and the Philippines recorded low penetr ation rates of 100 and 42 units per 1,000 persons respectively[6] even after passing the USD3,000 mark. In light of the experiences of Korea and Taiwan, whose penetration rates rose when per capita GDP topped USD5,000 in the 1980s, it would seem the per capita GDP threshold in Asia is not USD3,000 but rather about "USD5,000" (Figures 8 and 9). As projected in Figure 6, ASEAN and India seem likely to attain per capita GDP of USD5,000 by 2030. More specifically, Indonesia should reach this level in 2022, the Philippines in 2025, Vietnam in 2026, and India in 2029, and this should accelerate automobile penetration in Asia considerably in the 2020s.

② Population growth to continue in India and ASEAN

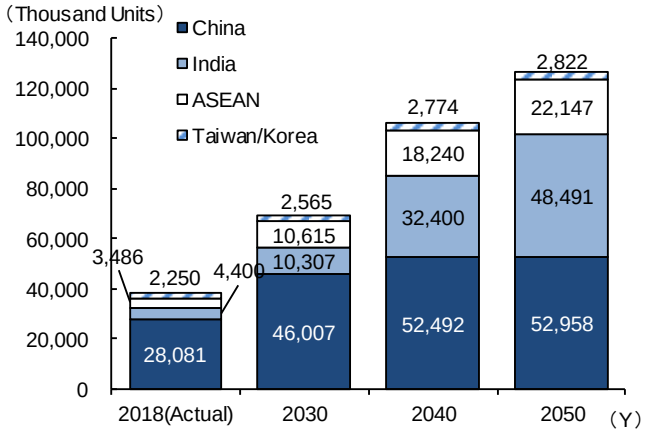
In addition to a climbing penetration rate, a burgeoning population should also support the expansion of Asia's automotive market. China and the rest of North Asia are expected to see a downturn in population, while the populations of many of the countries of Southeast and South Asia will likely continue to swell. UN projections hold that the population of ASEAN will go from its current 580 million to about 700 million by 2050, while that of India will climb from 1.37 billion to about 1.6 billion by 2050. Notably, India's population is expected to catch up to China's in 2027 and become the largest in the world (Figure 10).

Figure 10. Population Trends in Asia



Source: JRI, based on United Nations "World Population Prospects 2019"
Note: ASEAN includes Indonesia, Malaysia, Philippines, Thailand,

Figure 11. Forecasts for Motor Vehicle Sales



Source: JRI estimates, based IMF, OECD, UN, OICA
Note: ASEAN includes Indonesia, Malaysia, Philippines, Thailand, Vietnam. Data are estimated by GDP per capita from IMF/OECD, UN population projection, and estiimated auto sales units per person (see Appendix).

[6] However, Malaysia proved to be an exception in Asia as its ownership rate shot up quickly after its per capita GDP surpassed $3,000, and it has maintained a high automobile penetration rate despite per capita GDP now being around $10,000. It is plausible that the ownership rate was underpinned to a degree by the supply of low-priced automobiles made widely available through government incentives in the "National Car Project" that began in the 1980s.

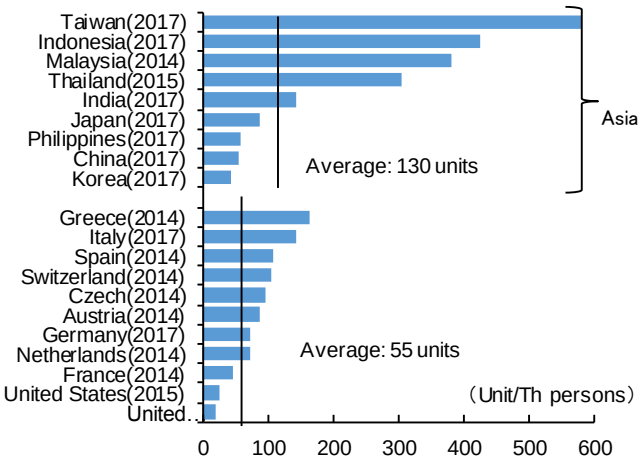
(2) Market scale to triple over the next 30 years

From our estimation model that takes into account the accelerating increase in ownership rates alongside increases in income and population levels (see Appendix), the Asian automobile market is projected to swell by more than three times over the next 30 years (Figure 11). Automobile sales stood at 38 million in 2018, but this figure will expand to 126 million. China should see sales continue to rise until 2030 but peak out thereafter, while India and ASEAN become the driving forces in the market through 2050. India alone could see sales of 48 million automobiles in 2050, more than ten times its 2018 level, putting it within sight of becoming a 50 million-vehicle market.

For estimation of automobile sales in this paper, we assume that ownership ratios in Asian countries/regions will reach saturation level when they rise to the average number of automobiles owned per 1,000 persons in 2018 in Korea and Taiwan (396 automobiles, about 60% the European/American average). In other words, the estimates conservatively presuppose that ownership rates in Asian countries/regions will only rise to Taiwan's or Korea's present levels. Once per capita GDP breaks through the "USD5,000 barrier", automobile ownership rates in Asia should move up over the medium term, but it would be premature to conclude that these automobile ownership rates would then climb to European or American levels. The number of automobiles owned per 1,000 persons in the US had already reached 300 in 1949, exceeding the simple average of 230 in Asia (excluding Japan) at present. Japan itself surpassed this level in 1974, demonstrating its ability to achieve a significantly high ownership rate at an early stage. Automobiles became firmly rooted in the very structure of society in Europe, the US and the rest of the developed world, but it seems unlikely that similar automobile societies will emerge in Asia. Indeed, automobile ownership rates have stagnated in Taiwan and Korea despite their relatively high per capita GDP over USD20,000.

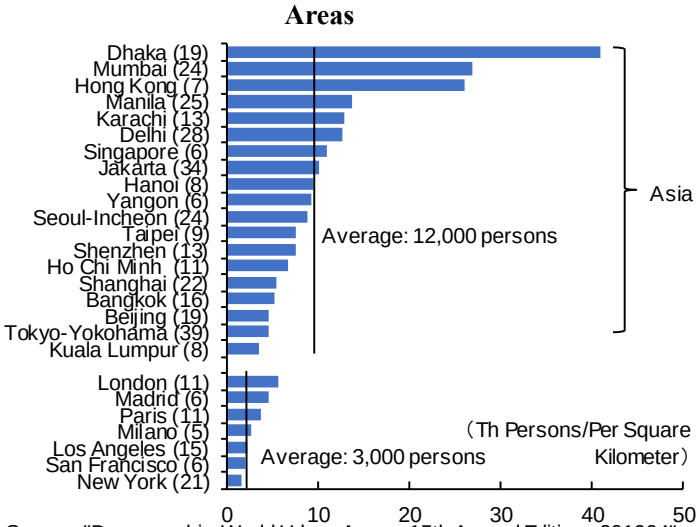
This can be attributed to Asia's distinctively (1) high motorcycle ownership rates and (2) densely populated cities. With regard to the former, Taiwan actually leads Asia in the widespread use of motorcycles and other two-wheeled vehicles (Figure 12). While there is a certain status associated with automobile ownership that cannot be fully translated to motorcycles, motorcycles more than adequately compensate for this as a convenient

Figure 12. Motorcycle Ownership Ratio



Source: JRI, based on JAMA, CEIC, IMF
Note: The numbers in parenthesis indicate the year when the data was measured.

Figure 13. Population Density in Major City Areas



Source: "Demographia World Urban Areas, 15th Annual Edition: 201904"
Note: Data include major city and its area (more than 5 million residents). The numbers in parenthesis are population (million).

means of transport. It is probably for this reason that so many low and medium income households in Asia do not own automobiles. Population density is another key point (Figure 13). The serious traffic congestion in Jakarta, Indonesia and some other Asian cities constitutes an obstacle to spread the use of automobiles.

Moreover, the new trend away from "ownership" and toward "sharing" that is embodied in car sharing and ride sharing could stand in the way of higher ownership rates. The impact could be especially strong in countries such as China where rapid progress has been achieved in making more advanced services available. As the automobile industry undergoes the "once-in-a-century transformational period," close attention should be paid to the risk of a downturn stemming from such structural changes in society and industry.

< 4. Conclusion >

As noted above, more factors inhibiting wider use of automobiles are present in the developing countries of Asia than in developed countries, but the Asian automobile market is expected to expand far into the future, particularly in India and ASEAN. As recent circumstances have evidenced, however, the Asian automobile market could also face instability in future. Sharp interest rate hikes in several countries seem to have triggered the deterioration in the financial environment that led to a temporary slowdown, but these interest rate hikes were almost certainly unavoidable steps taken to defend local currencies. Even now, there are more than a few Asian countries that will have no choice but to resort to tightening credit, regardless of economic situation or inflation trends, in order to keep their own currencies from dropping too far vis-à-vis the US dollar if the US raises interest rates. This economic/financial fragility could bring about instability in Automobile market on future occasions. However, because the fundamentals of income and population are nonetheless expected to produce growth in Asia automobile market, automobile-related companies will unquestionably need to focus active efforts on acquiring shares in the Asian market.

With air pollution and other environmental problems becoming more serious, environmental measures have taken on greater importance in Asia, and countries/regions are increasingly encouraging consumers to trade in older automobiles for those with better environmental performance. Japan's automobile-related companies possess advanced eco-friendly technologies that will help ensure they remain highly competitive in this market.

< Appendix: Estimation for Automobile Sales >

● Firstly, we estimate automobile ownership ratio by the Gompertz function (Figure 14):

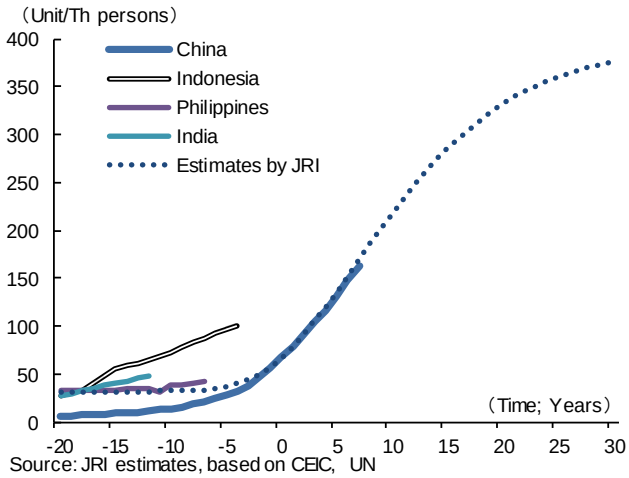
$y = K\gamma^{e^{-\beta t}}$,

y: number of automobiles owned per 1,000 persons, K: saturation level, t: time, γ, β: estimated parameters (the parameters are estimated by minimizing errors from the average automobile ownership ratio in Asian countries/regions (excluding Japan))

● Then, we extrapolate the number of automobiles sales per person by the correlation with the automobiles ownership ratio (Figure 15).

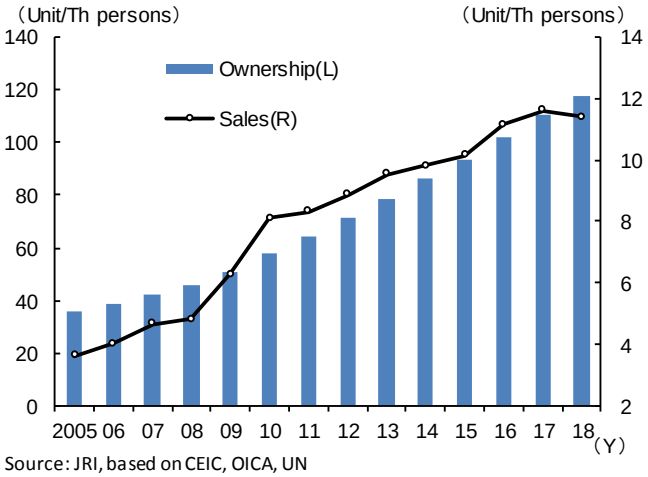
● The long-term forecasts for automobiles sales units (Figure 11) are derived from the estimated automobiles sales units per person multiplied by UN's population projections (Figure 10).

Figure 14. Motor Vehicle Ownership Ratio and Estimates



Source: JRI estimates, based on CEIC, UN
Note: Year = 0 is the year when GDP per capita of the county/region reached over USD5,000.

Figure 15. Relationship between the Ratios of Ownership and Sales



Source: JRI, based on CEIC, OICA, UN
Note: The data includes China, Taiwan, Korea, India, Indonesia, Malaysia, Philippines, Thailand.

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