In the context of the global financial crisis, triggered by the subprime mortgage crisis in 2007, Japanese carmakers have suffered from special quadruple accidents: a dramatized Toyota bashing in the USA because of the bankruptcy of GM and Chrysler in 2009; the earthquake in Tohoku as well as the Thailand floods in 2011, both of which disrupted the supply chain of Japanese carmakers; the Chinese anti-Japanese insurrections, caused by the Senkaku Island dispute, which have made difficult their operations in China. In fact, the Japanese vehicle exports dramatically reduced from 6,727 thousand units in 2008 to 3,616 thousand units in 2009, but the oversea production of the Japanese carmakers as a whole relatively well resisted the long-term global recession because it reduced only by 15%, from 11,859 thousand units in 2007 to 10,117 thousand units in 2009. Their domestic operations were also damaged by the earthquake in Tohoku and the 2011 Thailand floods. However, the Japanese Automobile Industry seems returned to its long-run development track in 2012. And our discussion treats this long-run development track.

The landscape of Japanese automobile industry deeply changed in the last two decades, 1993-2012: the rise of Suzuki and the loss of Mitsubishi are remarkable. The main factors affecting the behavior and strategy of carmakers are the long-run stagnation of the Japanese economy, the globalized fierce market competition, and the environmental issues. Under the same constraints, the Japanese carmakers however deploy their differentiated ‘profit strategy’ (Boyer and Freyssenet 2002), based on their own competitive edge and weakness. So, after showing the structural change of Japanese automobile industry from 1993 to 2012 in the first section, we discuss, in section 2, the profit strategy of Japanese carmakers, by defining it as a set of sub-strategies: product strategy, production strategy, regional strategy, and employment strategy, expressed in quantity. Doing so, we discuss the synthetic

* This paper is improved version of the one, presented at the EAEP 25th annual conference in November 7-9th 2013, under the same title.
feature and adequacy of their profit strategy.

1. Structural Change of Japanese Automobile Industry

1.1 Growth Trend of Japanese Automobile Industry

After the financial bubble economy from 1987 to 1991 had burst, Japanese economy suffered from its long-run stagnation for over twenty years. In fact, Japanese economy grew only by an average of 0.84% per year in real term growth rate from 1994 to 2012, whereas the employee income and the operating surplus in real term decreased respectively by an average of – 0.43% and - 0.38% (simple average) per year from 1994 to 2009. This mediocre economic growth was gained only by the increase in the government expenditure (an average of 2.03% per year) and exports (an average of 0.71% per year in net value). As a matter of course, the domestic automobile market had tendency to decrease\(^1\), though slightly, at an average growth rate of – 0.15%, and the domestic production continued to increase by an average of 0.73% per year from 1994 to 2007 because of the growth of exports by an average of 3.0% per year. This stagnation of domestic market naturally has accelerated the globalization of production of carmakers, launched during 1980s: the growth rate of overseas production is 7.04% per year from 1994 to 2007. In a word, the Japanese automobile industry has been pursuing an outward-looking development, as is well known (see the Figure 1). And the preferred region of Japanese carmakers for production has changed from North America to Asia (Thailand, Indonesia, and China among others).

During the first decade of the 21st century, Japanese carmakers drastically increased their production in Asia, which surpassed their production in North America in 2006, and reached in 2012 almost two times as much as the production in this latter region (see the Figure 2). By contrast, their production in North America began to stagnate already in 2005, before the financial crisis, because of which the

\(^1\) For increasing domestic sales, the growth rate of real GDP has to be over 2%, although it was 0.84% per year in 1994-2012. This estimation is obtained by simple linear regression analysis:

\[
DS = -3.41^{***} + 1.77^{***}\text{GDP}
\]

Here, DS means the variation of domestic sales, GDP is the growth rate of real GDP, and *** means \(p < 0.01\). Of course, the adjusted R-squared is 0.46, so that the growth rate of GDP explains only a part of the domestic sales variation.
production was reduced to two-thirds of its 2007 level, and finally has caught up with the 2007 level in 2012. In Europe, which suffered from the global financial crisis more than North America and Asia, Japanese production contracted more than in North America, i.e. by 38% from 2007 to 2009, and remains at three-quarters of its 2007 level even in 2012. On the contrary, their production in Latin America has been increasing, though slowly, during the 2000s, and almost caught up, in 2012, with their production in Europe (1,234 thousand units in Latin America, 1,484 thousand units in Europe).

The global financial crisis, triggered by the American subprime mortgage crisis in 2007, has certainly damaged Japanese carmakers. From 2007 to 2009, their vehicle exports and overseas production have dropped respectively by 44.8% and 14.7%, and their domestic production and sales have reduced respectively at the rate of -31.6% and -13.8%. Without doubt, the fall of exports and overseas production of Toyota, caused by the dramatized Toyota bashing in the USA, contributed much to this poor situation, because Toyota occupied over 50% of Japanese car exports, and almost one-third of Japanese overseas production.

In 2010, the recovery of the domestic production and sales as well as the exports and overseas production was observed, but in 2011, Japan was caught by the Tohoku earthquake and tsunami, and after that, the Thailand floods, both of which have cut off the supply chain on Japanese carmakers beside of economic disturbance: the domestic production, the domestic sales, and the exports reduced respectively at the rate of -12.8%, -15.1%, and -7.8%, whereas the overseas production continued to recover at the growth rate of 1.5%, from 2010 to 2011.

In 2012, the Japanese automobile industry looks returned to its long-run growth trend. However, there exist a structural change inside of the automobile industry.

1.2 Structural Change of the Domestic Car Market

From 1993 to 2012, the sales of passenger cars are almost stable, though increased by 9% for two decades and fluctuating around 4,349 thousand units, whereas the sales of trucks and bus were reduced to 35% of their 1993 level. So, it is obvious that the shrinking of domestic sales had its cause in slowdown of trucks and bus sales. As for the sales of passenger cars, however, is observed a change in consumer behavior.
First of all, the sales of small cars (cars with displacement of over 660 cc and under and equal to 2000 cc), which accounted for two-thirds of the passenger cars sales in 1993, occupied only 32% of the sales in 2013 (Figure 3). By contrast, the
sales of the cars with over 2000 cc displacement and the kei-cars with displacement of under and equal to 660 cc have doubled during the same period: their share in the passenger cars sales increased respectively from 16% and 18% in 1993 to 31% and 37% in 2013. As if a half of small cars users at the beginning of 1990s were divided twenty years after into those who prefer a luxury cars and those who choose rather a cheaper and economical car reflecting expanding income disparities.

Second, favored by young generations or for family use, the sales of SUV and Minivan have increased during the two decades since 1990, and grown to occupy one-quarter or one-third in the new car registration around 2010 (according to Japan Automobile Dealers Association).

Third and finally, the HV market has taken off during the first decade of the 21st century (see the Figure 4), whereas the EV remains difficult to be sold because of

---

2 The kei-car manufacturers are Suzuki, Daihatsu, Honda, and Mitsubishi. In 2011, Nissan and Mitsubishi founded a joint venture, NMKV, which develops and produces kei-cars for them form 2013. Daihatsu supplies kei-cars to Toyota and Subaru, Suzuki to Nissan and Mazda, and Mitsubishi to Nissan.
lacking charging facilities, limited miles per charge, and lack of consumers confidence on EV. The locomotives of HV market are the Prius, commercialized at first in 1997, and the Aqua, launched in 2011, of Toyota, and the Fit HV of Honda. The Prius, the Aqua and the Fit (not only HV version, but all versions included) are qualified in top three of the most sold cars in 2012, and the accumulated global sales of Toyota’s HV attained 1,219 thousand units by 2012, then for sixteen years. In 2013, not only Toyota but also Honda decided to launch a HV version for every model; Nissan³, of which EV could not meet its expected success, and Mazda decided to develop and commercialize their HV version of the Axela in 2013. In consequence, the sales of HV are going to be accelerated on domestic market. In the medium term, the rival of HV is not EV, but kei-cars, because kei-cars have the fuel efficiency equal to the most efficient HV models, and are cheaper in its price and tax than the HV.

In fine, the Japanese automobile market in 2013 has the three equal segments: segment of larger cars with over 2000cc displacement (segments D and E), segment of small cars with displacement of equal to and under 2000cc, and segment of

³ Nissan has already commercialized the Fuga HV in 2010 (2,015 units were sold in 2012, 1,330 units in 2013), and the Cima HV (1,977 units were sold in 2012, but 808 in 2013). Nissan decided in 2012 to develop and commercialize 15 HV models. But in 2013, its new HV strategy did not run yet.
Kei-cars, with acceleration of HV sales in two first segments, whereas the sales of SUV, including HV versions, fluctuate around 25~30% in the new car registration around 2010.

1.3 Variety of Performance of Carmakers in Japan

Under such evolution of domestic market is hidden the change in market position of Japanese Carmakers (see the Figure 5). In 1993, the market share of Toyota group accounted for 44.4% of domestic sales (all vehicles included in the new car registration), and after Toyota group came Nissan (17.4%), Mitsubishi (11.4%), Honda (8.8%), Suzuki (8.4%), and Mazda (6.4%). In 2013, that of Toyota group recorded 48.6% (including the share of Daihatsu, 2.3%, and that of Subaru, 3.6%), but the ranking of Carmakers after Toyota group has radically changed: Honda (16.0%), Nissan (12.6%), Suzuki (12.2%), Mazda (4.4%) and Mitsubishi (2.3%).

Figure 5: New Passenger Cars Registration by Carmaker, in 1995-2013
Data: JAMA.

---

4 For the precision, remarks below have to be in mind about Toyota group and Subaru. Toyota group consists of Toyota, Daihatsu, and Hino, and Subaru (FHI: Fuji Heavy Industry) is not an official member of Toyota group, so that the official sales volume of Toyota group doesn’t include the sales of Subaru. But as the largest shareholder of Subaru is Toyota (8.69% in 2005, and 16.48% from 2008), and as Subaru has been enforcing its cooperation with Toyota and Daihatsu since 2008, we treat Subaru as a quasi-member of Toyota group.
a result, and beside Toyota group, irresistible top Japanese carmaker, Honda, Nissan, and Suzuki constitute the second group, and Mazda and Mitsubishi, the third group. Apparently, Toyota, Honda and Suzuki have improved their market position, and by contrast, Nissan, Mazda, and Mitsubishi have deteriorated their position. Especially amazing are the rising of Suzuki, and the catastrophic degradation of Mitsubishi.

The Table 1, which shows the increase rate of domestic production, domestic sales of all vehicles and passenger cars and exports of carmakers, and their unconsolidated average of net profit rate from 1995 to 2007, is eloquent about such a vicissitude. Nissan and Mitsubishi reduced their domestic production respectively by 30.8% and 36.3%, and their domestic passenger cars sales by 25.4% and 62.6% respectively. They certainly increased their exports but only by 8.0% and 13.1% for each, so that the exports could not cover the domestic sales loss. Mazda also lost 0.5% of its passenger cars sales, but increased its domestic production by grace of increased exports by 82.3%. By contrast, Toyota, Honda, and Suzuki increased their domestic production and passenger cars sales as well as their exports in this period.

If we see the unconsolidated average net profit rate for 1995-2007, it is obvious that Toyota and Honda marked high profitability (see also Appendix 1). The financial result of Subaru, Nissan and Suzuki could be said mediocre: this poor

### Table 1: Growth of Japanese Carmakers from 1995 to 2007

<table>
<thead>
<tr>
<th></th>
<th>Toyota</th>
<th>Subaru</th>
<th>Nissan</th>
<th>Honda</th>
<th>Mazda</th>
<th>Suzuki</th>
<th>Mits.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prod.</td>
<td>37.2%</td>
<td>13.5%</td>
<td>-30.8%</td>
<td>37.7%</td>
<td>29.2%</td>
<td>41.3%</td>
<td>-36.3%</td>
<td>13.7%</td>
</tr>
<tr>
<td>Sales</td>
<td>18.4%</td>
<td>-28.7%</td>
<td>-25.4%</td>
<td>44.2%</td>
<td>-0.5%</td>
<td>48.9%</td>
<td>-62.6%</td>
<td>-1.0%</td>
</tr>
<tr>
<td>Exports</td>
<td>119.8%</td>
<td>251.1%</td>
<td>8.0%</td>
<td>62.9%</td>
<td>82.3%</td>
<td>102.9%</td>
<td>13.1%</td>
<td>72.8%</td>
</tr>
<tr>
<td>Av. Net</td>
<td>5.6%</td>
<td>1.6%</td>
<td>2.8%</td>
<td>4.53%</td>
<td>-0.21%</td>
<td>1.44%</td>
<td>-7.0%</td>
<td></td>
</tr>
<tr>
<td>Profit Rate</td>
<td>(0.0221)</td>
<td>(0.0119)</td>
<td>(0.0257)</td>
<td>(0.0219)</td>
<td>(0.0315)</td>
<td>(0.0066)</td>
<td>(0.1315)</td>
<td></td>
</tr>
</tbody>
</table>

Data: JAMA, and Financial Reports of carmakers.

Note: Figures in parentheses are standard deviation of the average net profit rate. For the calculation of Nissan’s average net profit rate, the financial result of 1999 was omitted because for this fiscal year, Nissan charged 711 billion yen in provisions for past pension liabilities (276 billion yen), restructuring charges (233 billion yen), accounting changes (114 billion yen), net values loss (65 billion yen), etc (Nissan, Financial Review 1999). It has to be noted the fact that the starting year 1995 was the bottom year for the passenger cars production because of the economic recession after the burst of financial bubble, so that if we took 1993 as the starting year, we would have different figures, often smaller that those in the Table 1. But as the fiscal year for financial statement had changed in 1995, there exist a discontinuity of data before and after 1995. This is why we chose 1995 as starting year.
financial result of Nissan and Subaru comes from their loss of domestic market share, whereas Suzuki’s low profit rate is astonishing if we see the rapid expansion of its operations during this period, but understandable because Suzuki mainly produces and sells kei-cars with low margin. By contrast with above five carmakers, the financial results of Mazda and Mitsubishi are really poor, and the catastrophic state of Mitsubishi is confirmed with an average net profit rate of -7% per year.

Such a change in the positioning of carmakers in Japan must have its cause in their profit strategy.

2. Profit Strategy of Carmakers at the 21st century

Robert Boyer and Michel Freyssenet (Boyer, Freyssenet 2002) determine the profit strategy as a feasible combination of profit sources: economies of scales, diversity of products, product quality, innovation, productive flexibility, and reduction in cost. Without neglecting the effectiveness of their method in characterizing the profit strategy of carmakers, shown in their analysis, we want, in this paper, to characterize the profit strategy by tracing the evolution of operating results of carmakers in 2000-2012, published by the financial statements (Financial Reports) for fiscal year\(^5\) of major six carmakers: Toyota, Nissan, Honda, Suzuki, Mazda, and Mitsubishi. Doing so, and at the cost of qualitative aspects of the profit strategy, we can draw the dynamics of the profit strategy of the carmakers on the basis of confirmed data.

Taking account of disposable data, the profit strategy of the firm \(i\) \((S_i)\) is determined by a set of four sub-strategies:

\[
S_i = (s_{pi}, s_{qi}, s_{ri}, s_{li})
\]

2.1 Sub-strategies
a) Product Strategy: \(s_{pi}\)

In this set of strategies, \(s_{pi}\) means the product strategy of the firm \(i\), and \(s_p\) is

---

\(^5\) The fiscal year \(n\) consists of twelve months from April of the year \(n\) to March of the year \(n+1\).
defined as a set of the variables: \( s_p = (v_{SV}, v_K, v_M, v_{HV}, v_{EV}) \). \( v_j \) represents the increasing weight of a product \( j \in (SV, K, M, HV, EV) \) in the sales of all products: SV (standard gasoline vehicles) means the vehicles with displacement of over 660 cc; K represents gasoline-powered kei-cars, M says imported cars, HV and EV are hybrid vehicles and electric vehicles. That is, \( v_j \) is calculated as below:

\[
v_j = \frac{p_{j,2012}}{\sum p_{k,2012}} - \frac{p_{j,2000}}{\sum p_{k,2000}} \quad j, k \in (SV, K, M, HV, EV)
\]

For example, \( p_{j,2012} \) means the sales volume of product \( j \) in 2012, so that \( v_j \) means the increment of the weight of sales of product \( j \) in the whole sales from 2000 to 2012. Calculation made, using the data obtained from the financial reports of carmakers and published by JAMA, gives the results shown in the Table 2 below.

 Obviously, the shift in sales from SV to HV is confirmed at Toyota and Honda. Astonishing in these results is Nissan’s case: the loss of SV sales is almost compensated by the sales of kei-cars and imported cars, and the sale of the EV remains slow. The results of Suzuki is surprising too, because the shift in sales from kei-cars to SV is clear, although Suzuki is the number one producer of kei-cars, supplying those to Nissan and Mazda, of which the SV sales are sluggish. The shift in sales from SV to imported cars is observed also at Mitsubishi, which reduced sales of SV and kei-cars, and increased sales of imported cars and EV.

<table>
<thead>
<tr>
<th></th>
<th>( V_{SV} )</th>
<th>( V_K )</th>
<th>( V_M )</th>
<th>( V_{HV} )</th>
<th>( V_{EV} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOYOTA</td>
<td>-31.4%</td>
<td>1.4%</td>
<td>0.4%</td>
<td>29.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>NISSAN</td>
<td>-28.1%</td>
<td>19.1%</td>
<td>6.7%</td>
<td>0.6%</td>
<td>1.7%</td>
</tr>
<tr>
<td>HONDA</td>
<td>-20.7%</td>
<td>14.4%</td>
<td>-1.3%</td>
<td>20.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>SUZUKI</td>
<td>5.5%</td>
<td>-5.7%</td>
<td>0.2%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>MAZDA</td>
<td>-9.3%</td>
<td>9.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>MITSUBISHI</td>
<td>-8.9%</td>
<td>-0.1%</td>
<td>6.5%</td>
<td>0.0%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

b) Production Strategy: \( s_{qi} \)

The production strategy indicates the direction of the development of the domestic production (DP) and overseas production (OP) of each carmaker, so that the production strategy of a carmaker \( i \) is determined by the vector \( s_{qi} = (q_{DPi}, q_{OPi}) \), where \( q_j \) represents the annual growth rate of DP or OP, calculated for the period
2000-2012, as below:

\[ q_j = \left( \frac{j_{2012}}{j_{2000}} \right) \left( \frac{1}{12} \right) - 1 \]

\( j \in (DP, OP) \)

Therefore, the vector \( s_{qi} = (q_{DPi}, q_{OPi}) \) neglects the itinerary of the variables from 2000 to 2012. From the calculation of the data given by the financial reports of the carmakers emerge the three groups, which have a characteristic feature in their production strategy, as in the Figure 6.

The first group consisted of Toyota, Mazda, and Suzuki has been keeping or increasing their domestic production, and increased overseas production more than domestic production. The second group comprised of Nissan and Honda has shifted their production from domestic production to overseas production. And the third group, only Mitsubishi, has reduced both, the domestic production as well as overseas production.

However, the itinerary of their overseas operations was influenced by the economic turbulence in 2008-2012, and some changes of direction are observed as shown in the Figure 7.

The itinerary of Toyota is eloquent: Toyota increased both of its exports and overseas production until the fiscal year 2006; from 2007 to 2009, its overseas operations returned almost the same way suffering from the global financial crisis as well as Toyota

\[ \text{Figure 6: Production strategies} \]

\[ \text{Figure 7: Itinerary of Overseas Operations} \]

Data: Financial Reports of the carmakers.
Notes: the unit of two axes is thousand vehicles. The years noted are fiscal years, so that the year 2000 means a year from April 2000 to March 2001.
bashing in the USA; after 2009, Toyota has decreased its exports though its overseas production has caught up the 2006 level: 4,422 thousand units in 2012 against 4,424 thousand units in 2006. By contrast, Nissan (N), Honda (H), and Suzuki (S) have, roughly speaking, reduced their exports, and reinforced their overseas production. Mazda (MZ) and Mitsubishi (MT) constitute two anomalous cases since 2006. Mazda has given its priority to exports than to overseas production, although increase in its exports remains modest. Mitsubishi has lost both of exports and overseas production from 2000 to 2008, and then recovered slightly both of them. Except Mazda and Mitsubishi struggling for convalescence, the global financial crisis has certainly enforced the Japanese carmakers to further promote their global production strategy by decelerating exports.

c) Regional Strategy: $s_{ri}$

The regional strategy in this paper is explained by a set of the growth rates of regional production of carmakers. So, the regional strategy of a carmaker $i$ is defined by $s_{ri} = (r_{JPi}, r_{NAi}, r_{EUi}, r_{ASI})$, where JP means Japan; NA, North America; EU, Europe; AS, Asia, and $r_{ji}$ is calculated by the average growth rate of regional production from 2005 to 2012\(^6\) as below, and the calculation gives the Table 3.

$$r_j = \left( \frac{r_{j2012}}{r_{j2005}} \right)^{\frac{1}{7}} - 1 \quad j \in \{JP, NA, EU, AS\}$$

<table>
<thead>
<tr>
<th>Carmaker</th>
<th>Japan</th>
<th>North America</th>
<th>Europe</th>
<th>Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOYOTA</td>
<td>-1.2</td>
<td>0.5</td>
<td>-9.0</td>
<td>10.2</td>
</tr>
<tr>
<td>NISSAN</td>
<td>-3.5</td>
<td>-2.6</td>
<td>7.0</td>
<td>25.2</td>
</tr>
<tr>
<td>HONDA</td>
<td>-4.9</td>
<td>3.0</td>
<td>-1.5</td>
<td>11.0</td>
</tr>
<tr>
<td>SUZUKI</td>
<td>-1.2</td>
<td>0.0</td>
<td>0.0</td>
<td>9.6</td>
</tr>
<tr>
<td>MAZDA</td>
<td>-0.5</td>
<td>-0.3</td>
<td>0.0</td>
<td>17.4</td>
</tr>
<tr>
<td>MITSUBISHI</td>
<td>5.2</td>
<td>8.5</td>
<td>20.7</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Data: Financial reports of the carmakers.

\(^6\) The limitation of the years taken into account comes from the disposability of data: Honda and Suzuki give the data on overseas production by region in their financial reports only from 2005.
From 2005 to 2012, Toyota lost its production somewhat in Japan and considerably in Europe, but increased it in Asia (Thailand, Indonesia, and China among others), and its production in North America increased slightly despite of the Toyota bashing. Nissan rapidly increased its production in Asia (especially in China) and in Europe, but reduced it in Japan and North America as if Nissan sifted its priority from Japan and North America to China and Europe. As for Honda, the tendency is alike to Toyota, but in a different magnitude: Honda reduced its production in Japan and in Europe, and reinforced its presence in North America, and more than there, in China. By contrast, Suzuki operates mainly in Japan and India, and expanded its production in India where Suzuki is the number one carmaker. Mazda, losing its production in Japan and North America (no presence in Europe), could augment its production in Asia (Thailand and China). Mitsubishi shows its difficulties by loosing its production in Japan, North America, and Europe, and its only hope for survival comes from improvement in Asian productive operations.

d) Employment Strategy: $S_{li}$

The global deployment of production might lead to the reduction of the domestic employees because of the localization of production. However, whether it goes with the substitution of domestic employment with overseas employment or not depends on the production strategy of the carmakers. In order to verify it, is calculated the employment vector $\left(l_{JP}, l_{OV}\right)$, where $l_{JP}$ represents the growth rate of the unconsolidated number of employees of a carmaker, whereas $l_{OV}$, that of its consolidated number of employees from 2000 to 2012, both of which doesn’t include the temporary employees. Therefore, $l_{OV}$ doesn’t mean the exact number of overseas employees: it contains also the employees of consolidated companies in Japan. But the long series of overseas employment of carmakers are lacking, so we have to use the consolidated number as proxy variable of overseas employment. Doing so, we can see not the exact feature, but at least its tendency of increase in overseas employment due to globalization of their production. This notice done, the employment vector shows the increase or decrease of the domestic and overseas employment in 2012 with respect to those in 2000. The Figure 8 shows the variety of
employment strategies, which resemble, as a matter of course, the Figure 6 about the production strategies, except Mazda’s case.

From 2000 to 2012, Toyota and Suzuki increased both of their domestic and overseas employments: Toyota augmented its domestic employees by 5%, and its overseas employees by 77%; Suzuki, respectively by 28% and 120%. By contrast, the substitution between domestic and overseas employments is observed at Honda and Nissan: Honda reduced its domestic employees by 16%, and increased its overseas employment by 94%; Nissan decreased its employees in Japan by 23%, but created its overseas employment much less than Honda, Toyota and Suzuki. Different from these four carmakers, Mazda reduced its overseas employees, and increased its domestic ones, whereas Mitsubishi lost its domestic and overseas employments, as its activities in 2012 were reduced to a half of the 2000 level.

By the way, it is not sure whether the substitution between domestic and overseas employments has been strategically pursued by Honda and Nissan. In fact, Figure 8 does not show the reason why they reduced their domestic employment. In order to find plausible factors, which led or obliged them to reduce their employees, we tried quantitative analyses, of which the results are shown in the Table 4 (see Appendix 2 about details). In the case of Nissan, the main factor, which explains the reduction of domestic employment, is the variation of unconsolidated net profit rate\(^7\). This leads us to a hypothesis that its poor profitability of domestic operations, especially of its

\[^7\] About Nissan, we could not find any significant correlation between the variation of domestic employment and the variation of other variables than net profit rate: domestic production, exports and domestic car sales.
domestic sales (an average of -2.5% a year in 1994-2012), obliged Nissan to reduce its domestic operations and then employees. In the case of Honda, its domestic employment is influenced by the variation of domestic vehicles production with a lag of two years. And when we use the variation of exports and domestic cars sales in the place of that of domestic production, it gives also statistically significant positive coefficients of explanatory variables (see the equation HONDA4 in the Appendix). From these estimations could be deduced a hypothesis that the slowdown of domestic production, provoked by that of domestic car sales and exports, led Honda to adjust its employees downward.

Both companies, then, have pursued profitability or production volume in expanding overseas operations: flight to an extraverted growth, in a sense.

---

8 A simple manipulation of the estimated equation gives $\hat{L}_t = 0.486(\pi_t - 0.0864)$, where $\hat{L}$ means the variation of domestic employment, so that the net profit rate of over 8.7% is needed to keep its employees. However, such result could not be understood without other information, managerial and quantitative, we cannot cope with here.

9 As the adjusted R-squared is low, the estimated equation does not have explanatory adequacy. But, the coefficient of exports with a lag of two years is statistically significant with p < 10%, that of domestic car sales being significant with p < 5%.

10 The average variation of domestic employment, domestic car and motorcycle productions in 1994-2012 is respectively – 1.3%, -0.8% and -9.0%. And a simple calculation based on the estimated equation gives $\hat{L}_t = 0.0864(\hat{Q}_{t-2} - 0.120)$, so that it turns out that 12% of the domestic production with a lag of two years is needed to keep its employees.
2.2 Synthesis of the Profit Strategy and its adequacy of Carmakers

As the four strategies were examined, we want here to bring them together in order to get a synthetic feature of the profit strategy, deployed by the Japanese carmakers (see the Table 5).

Toyota seems achieving a successful balanced and sustainable globalization strategy. The shift of its products from standard vehicles to HV is successful; Toyota has been increasing its overseas production, especially in North America and Asia, without damaging its domestic production and then its domestic employment (production of over 3,000 thousand units in order to keep its about 70,000 employees). Certainly, its production in Japan and Europe has decreased from 2005 to 2012. The lost in domestic production is mainly due to the reduction of exports to North America, and the slow sales on domestic market, but these exports and sales are on the way to catch up to their 2005 level after difficult three years. The only problem in its global strategy resides in Europe in long recession, where its production in 2012 was only two thirds of the 2005 level, and about half of the 2007 level.

Nissan’s profit strategy looks incoherent. Nissan believed in vain a successful sales of its EV, the Leaf, and as a matter of fact, it has increased the sales on domestic market of kei-cars, supplied by Suzuki and Mitsubishi, and of imported cars, the March (the Micra in Europe) produced in Thailand, in order to compensate the slow sales of standard gasoline vehicles and for cost competitiveness (production in low wage cost regions). Because of its modest sales on the domestic market,

Table 5: Synthetic Feature of the Profit Strategy of Carmakers

<table>
<thead>
<tr>
<th>TOYOTA</th>
<th>$S_p$</th>
<th>$S_q$</th>
<th>$S_r$</th>
<th>$S_t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>NISSAN</td>
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<td>SV</td>
<td>OV</td>
<td>JP</td>
</tr>
<tr>
<td>HONDA</td>
<td>HV, SV, M</td>
<td>OV</td>
<td>JP</td>
<td>NA, AS</td>
</tr>
<tr>
<td>SUZUKI</td>
<td>SV, K</td>
<td>JP, OV</td>
<td>India</td>
<td>JP</td>
</tr>
<tr>
<td>MAZDA</td>
<td>M, EV</td>
<td>SV, K</td>
<td>JP, OV</td>
<td>AS</td>
</tr>
</tbody>
</table>

Note: Only the variables changed at a rate larger than 1% in absolute value are listed.
Nissan had to revise its product strategy and decided to develop and commercialize HV models in 2012, and its own kei-cars developed in 2013 by a joint venture with Mitsubishi and produced by this latter; its sales of HV remains poor in 2013, with only 2,138 units of the Fuga HV and the Cima HV. The globalization of its production has been carried out at the cost of domestic production and employment, and its preferred regions are Europe and China (and also Mexico, where its production volume is higher than in the USA), though European operations do not bear expected fruits (regional profit rate was 0.2% in 2012). Therefore, Nissan’s profit strategy seems producing the cars where the wage and salary costs are low for improving its cost competitiveness at the cost of domestic production and employment.

Honda is the most globalised Japanese carmaker (Mair 1994), taking root in North America as for the car production and sales (42% in volume of global production and 51% in value of global sales in 2012), and in Asia about the motorcycle production and sales (84% in volume and 50% in value of global sales in 2012). Concerning the product strategy of passenger cars, Honda follows Toyota by reinforcing the HV business on the domestic market. As its main problem resides in Japan: Honda lost domestic sales by 18% from 2002 to 2012, the product strategy focused on HV and kei-cars is important to regain market share. As a whole, its profit strategy could be characterized as a successful and sustainable globalization strategy, but this, at the cost of domestic employment until 2012. The success of the Fit HV and a new kei-car model (minivan N BOX) in 2012 is expected to reverse this tendency: its sales volume increased from 503 thousand units in 2011 (civil year) to 745 thousand units in 2012, and 763 thousand units in 2013.

By contrast, Suzuki has been pursuing an idiosyncratic but successful localization strategy as a carmaker, because its main production bases are found in Japan and India11. Certainly, Suzuki reduced somewhat the domestic production from 2005, but in the long run, increased successfully its domestic and overseas productions, respectively by 41% and 193.3%, and employments from 1995 to 2012. So, its profit strategy runs very well, though its profit rate is low (an average of

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11 In 2012, Suzuki produced about 75% of its overseas production in India (1,173 thousand units), and more than in Japan(1,044 thousand units).
1.44% a year in 1994-2012), and Suzuki can be considered as the most succeeded carmaker in the past two decades, catching up the second group consisting of Honda and Nissan. As for the motorcycle business, sales of motorcycles represent around 10% of all sales in value, and as Honda, its main market is Asia (80% of sales, but 64% in East-Asia). The main problem of Suzuki stems from the acquisition of 19.89% of its stocks by Volkswagen AG, largest shareholder, with which Suzuki planned at first in 2009 to cooperate, but in the end, refused it in 2011 in order to assure its managerial independence. The repurchasing of its stocks held by Volkswagen AG constitutes a central challenge to the management.

Different from above four carmakers, Mazda and Mitsubishi are on the way to reconstruction of their business.

Mazda increased modestly its domestic and overseas production from 2000 to 2012, but it was profitable only nine years (1998-99 and 2001-2007) in the past two decades, that is, 1993-2012: half of the years, then, were in deficit. Being under the control of Ford until 2010, Mazda seems not be able to deploy its own coherent and fruitful profit strategy. After 2010, where Ford reduced its share from 33.38% in 2007 (13.78% in 2008, 10.98% in 2010) to 3.5% (2.1% in March 2013), Mazda strives to reconstruct its business around the product strategy based on the “sky-active technology” to commercialize economical gasoline-powered cars, and on operations in Asia because its sales in Asia (Thailand and China among others) are increasing. Doing so, Mazda looks escaped from its difficulties in 2012, recording the 1.5% of consolidated net profit rate against – 5.3% in 2011 (unconsolidated profit rate was 0.7% and -9.1% respectively). But, the profit strategy of Mazda is vague, the reason for which resides in its cooperation with other Japanese carmakers. Though it has been licensed HV technology by Toyota and launched the Axela HV in 2013, and decided to produce cars for Toyota in its Mexican plant, Mazda is placed in a complex situation: Mazda and Nissan mutually supply some of their vehicles; the kei-cars sold by Mazda are produced by Suzuki, and the Medium size truck of Mazda are supplied by Isuzu.

For Mitsubishi, its loss of the domestic and overseas productions and sales is critical, and Mitsubishi has difficulty to overcome such catastrophic situation caused by the complete loss of its brand value in Japan due to its cover-up of products defects bringing on mortal accidents. Although Mitsubishi bets its future on sales of
EV and on its south-eastern Asian operations, the sale of EV doesn’t bear fruit as expected at least in 2013, and whether the increase of its sales in south-eastern Asia can save Mitsubishi or not is not easy to say. In anyway, Mitsubishi doesn’t have another choice than to bet on the sale of EV and the sales in Asia, or it is going to disappear, even though the management doesn’t imagine such a future, by enforcing its cooperation with Nissan. In any way, the coherent and hopeful profit strategy doesn’t exist at Mitsubishi until 2013.

At the end of this synthesis, it would be better to explain, even with a few words, the situation of Subaru and Isuzu of which we did not examine profit strategy.

Subaru suffered from slowdown of the domestic sales of both standard gasoline engine cars and kei-cars since 1993 with the shrinking unconsolidated net profit rate, which became critical already in 2004, before the financial crisis, and reduced to -8.6% in 2008. Meanwhile, Toyota became the top shareholder of Fuji Heavy Industry (Subaru) with 8.69% of its equity in 2005, and 16.48% since 2008 after GM sold out in 2005 the shares of Fuji H.I. it had acquired in 1999. Therefore, Subaru has decided in 2009 to specialize in production of standard passenger cars and SUVs by withdrawing from kei-car manufacturing, and to cooperate in product development and production with Toyota Group (successful product development and production of the 86 for Toyota and the BRZ for Subaru, for example). Doing so, Subaru can concentrate its financial and human resources on R&D and production of standard passenger cars and SUVs to remarkably improve its profitability (see Appendix 1).

The situation of Isuzu, the main Japanese diesel engine vehicle manufacturer, is complicated. After undergone difficult years (see Appendix 1), Isuzu has decided to abandon the sale of passenger car (the Aska, supplied by Honda) in 2002\textsuperscript{12}, and to cease the production of SUVs in 2005 in order to specialize in truck and bus manufacturing. In the meantime, its cooperative businesses with GM (since 1991) and Subaru about North American operations (since 1987) were dissolved respectively in 2006 and in 2005; it has began to cooperate with Hino, truck and bus manufacturer of Toyota Group, by founding a joint-venture J-BUS for supplying buses to both companies; Toyota has become its fourth

\begin{footnotes}
\item[12] Shimizu (2009) has committed an error in writing "Isuzu had specialized in truck and bus manufacturing since 2002 after renouncing the production of SUVs in Japan" (p. 86). I have corrected here my fault based on the *Financial Reports* of Isuzu Motor.
\end{footnotes}
largest shareholder in 2008 by acquiring large part of shares (5.89%) GM sold out, so that their technical cooperation was previewed in the field of diesel engine and alternative fuels development. As the positive effect of this business restructuring, Isuzu has succeeded in regaining its profitability from 2006 on. However, the strategy of Isuzu looks vague and confused. First of all, Isuzu cannot completely throw out any cooperation with GM, because making its overseas sales through GM sales network. In addition, Isuzu keeps mutual supply agreement with Nissan, and supplies truck to Mazda. Unlike Subaru, these business relations of Isuzu make it difficult to enter Toyota Group.

4. Concluding Remarks

As shown in the section 1, Japanese automobile market was almost stable for twenty years since 1993 because of long run stagnation of Japanese economy, but has met deep structural change: slowdown of the car sales of the low segments (A, B, C), increase in the sales of kei-cars and passenger cars of higher segments (D, E), and diffusion of HV. So, it looks very natural for carmakers to revise their product strategy and to pursue profitability in overseas operations. However, the strategic behavior of carmakers is different from one another, because their profit strategies, defined by a set of sub-strategies: product strategy, production strategy, regional strategy and employment strategy, are ‘firm-specifics’, reflecting their competitive edge and weakness, and differentiate their profitability, which makes adequate or penalize the profit strategy they deploy. Our quantitative analyses in section 2, using the data published by the Financial Reports of the carmakers, brought out successful strategies of Toyota (successful balanced and sustainable globalization strategy), Honda (successful and sustainable globalization strategy), and Suzuki (successful localization strategy). By contrast, any coherent and adequate strategy could not be found at Nissan, Mazda, and Mitsubishi. Subaru and Isuzu constitute another case, because they regained profitability by revising their profit strategy.

As above, so-called ‘Japanese style management’ is already out of mode, in the business circles as well as in the academic community in the 21st century. In fact, Freyssenet et al. (1998), Freyssenet et al. (2003), and Freyssenet (2009) explain the variety of evolutionary trajectory of world carmakers, therefore of Japanese carmakers, and Boyer and Freyssenet (2002) theoretically synthesized such
researches by defining ‘productive models’ in order to show the plurality of successful ‘productive model’ in the middle of the boom of ‘Lean Production’ as ‘one best way’ management. About Japanese carmakers, these research results draws the individual and differentiated feature in evolutionary trajectory, globalization strategy, and strategic behavior of Toyota (Shimizu 1998; 2003; 2009), Nissan (Hanada 1998, Kumon 2003; Stevens and Fujimoto 2009), Honda (Mair 1998; Shimokawa 2003), Mazda (Heller 2009), and Mitsubishi (Shimizu and Shimokawa 1998). However, studies on Japanese carmakers were not exhaustive, and there was any comparative study, except Jetin (2003) about comparison of internationalization of Japanese carmakers and European carmakers, and Jetin (2009) about that of internationalization strategies of world carmakers, based on statistical analyses. Among these achievements, Boyer and Freyssenet (2002) characterized the representative profit strategies in a qualitative way, but lucking quantitative arguments, whereas Jetin (2003, 2009) have shown the difference in firms behavior based on the comparison of commercial revenues productive revenues, production volume, workforce, total assets, exports, overseas operations, etc., but the characterization of strategic behavior of Japanese carmakers was out of research subject. So, we believe our attempt to define quantitatively the profit strategy and strategic behavior of Japanese carmakers, though in a naïve way, can contribute to advance the comparative research of firms strategy and behavior in combining qualitative and quantitative analyses, taken into account other variables.

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Mair, A. (1994) Honda’s Global Local Corporation, Houndmills,


APPENDIX 1: Net Profit Rates of Japanese Carmakers

Data) Financial Reports of Each Company.
APPENDIX 2: Factors, which affected the domestic employment of Nissan and Honda

<table>
<thead>
<tr>
<th>Equations</th>
<th>NISSAN1</th>
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<th>NISSAN3</th>
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<td>0.995</td>
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Notes: PROFIT means unconsolidated net profit rate; PROD, variation of domestic production; EXPORTS, variation of exports, SALES, variation of domestic car sales; MPROD, variation of domestic motorcycle production; OPROD, variation of overseas car production; PRODCTT, variation of car productivity.

We show only the estimated equations, of which Adjusted R-squared and coefficient of the variables and constant are significant, though Adjusted R-squared is not sufficiently high, especially of the equations HONDA 3 and 4. The variable PRODCTT in the equations NISSAN1, HONDA1 and HONDA2 is calculated as variable of the quotient of production volume of passenger cars divided by the number of employees, so that there exists multicollinearity.