Roland Berger
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AUTOMOTIVE

# inSIGHTS

Automotive Competence Center Client Magazine

No. 01_2010

> BRIC at the crossroads
> Interview: Prof. Dr. Klaus Mangold, Chairman of the Committee on Eastern European Economic Relations
> 2025 – How will the automotive industry landscape change?

# inSIGHTS

## Editorial

Dear Reader,

The emerging markets have become the saviors of the global automotive industry. BRIC markets will account for more than 70% of the anticipated growth in 2010. For this reason, our new issue of inSIGHTS focuses on the BRIC automotive markets.

The fast-growing importance of these markets has had a major impact on our own global Automotive Competence Center for the past years. We have substantial dedicated automotive teams in Brazil, Russia, India and China to support our clients in systematically realizing growth potential.

Our local automotive experts provided their insights on the key developments in these important markets.

We wish you insightful reading and welcome your feedback.

Sincerely,

Ralf Kalmbach

## Contents




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# A LOOK AROUND THE WORLD

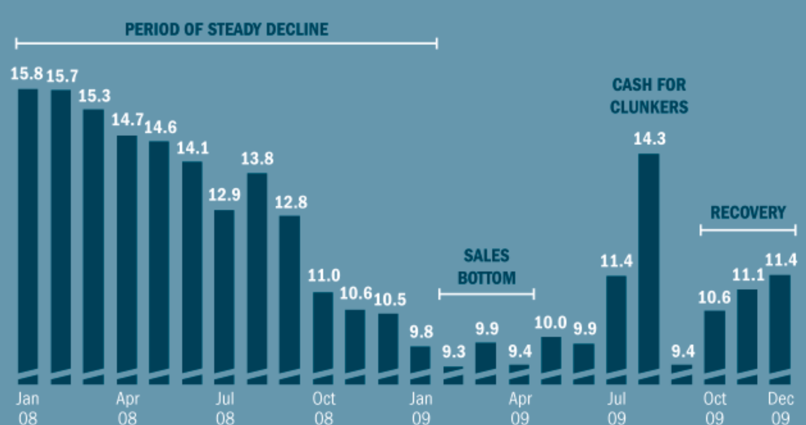
## North American auto industry: Remembering 2009 and looking ahead to a brighter 2010

The new year has brought a sense of cautious optimism to Detroit. The consensus is that the worst has passed for the North American auto sector and that recovery has begun (see figure 1).

Only a few companies were really able to capitalize on the limited market opportunities: Hyundai was the big winner (see figure 2), as the only major automaker to actually increase its US sales in 2009.

Figure 1: **US automotive sales experienced a crippling decline in early 2009 – A slow recovery is currently under way**

US light vehicle sales, SAAR[1)] [million units]




1) Seasonally adjusted annual rate
Source: J.D. Power; Roland Berger

While consolidation and financial woes will continue, most players can move beyond simple survival this year and look forward to the prospect of growth. As such, the auto industry is ready with some of its best products ever, as showcased at this year's Detroit auto show, appropriately themed "What a difference a year makes". Electric vehicles were the most visible departure from the past, displayed in a prominent "Electric Avenue" exhibit. The industry's shift from facing a devastating collapse in 2009 to enabling future mobility in 2010 has made for an exhilarating ride. 2010 will bring some of the first mass-produced electric vehicles to market, including the Chevy Volt, Nissan Leaf and the Toyota Prius Plug-in.

Most auto companies suffered tremendously last year, and none suffered more than GM and Chrysler, who are still recovering from the effects of their bankruptcies. Ford was able to capture market share with superior products and consumer confidence for having foregone a government bailout. As the automotive industry recovers, automakers and suppliers are looking forward to a brighter future. Under renewed and stronger leadership, Detroit's automakers have aggressively focused on reinventing themselves and delivering new portfolios of stylish vehicles with advanced technologies, including a number of electrified vehicles.

### The advent of e-mobility in North America

Few doubt that the current industry's foray into EVs will prove more fruitful than its last attempt in the early nineties – not only because of the technology advancements, but also because of the government's increased influence on the industry and interest in paving the way for electric vehicles and e-mobility.

# A LOOK AROUND THE WORLD

The federal government has recognized the importance of electric vehicles to support its environmental and energy agendas and has stepped up support for the development of zero-emission technologies through various grants and programs. For example, the Advanced Technology Vehicles Manufacturing Loan Program will provide OEMs, battery and electric motor suppliers with USD 25 billion in loans to accelerate the progress of bringing alternative, low-emission vehicles to the market.

However, to enable mainstream adoption of EVs, a more comprehensive regulatory and infrastructure strategy is still needed. Market and cost of ownership incentives for EVs are relatively low in North America due to the minimal fuel tax levels compared with Europe. Furthermore, in a recent study, we found that the readiness for e-mobility on the demand side has yet to be developed in many states, counties and cities. The auto industry faces a true patchwork of markets in North America (see figure 3), as each state has varying levels of incentives and infrastructure to encourage e-mobility.

Not surprisingly, coastal territories lead the way in terms of overall readiness. The geographies with the highest readiness index have e-mobility-friendly regulatory environments and the beginnings of a recharging infrastructure in place. California, for example, receives the highest marks for its supportive regulations, the relatively high number of refueling stations in place and recent partnerships with OEMs, such as Nissan, to promote e-mobility.

The Midwest seems to be a contradiction. Traditional auto-producing states are much less prepared for the rise of e-mobility, at least on the demand side. While this region may be investing in battery plants and retooling factories to produce EVs, it has limited policies in place to encourage customers to buy EVs. Furthermore, the infrastructure and consumer appetite for EVs in the Midwest are well behind those in the coastal regions.

Overall, the ideal environment for mainstream EV adoption is not yet in place. Depending on what policies and initiatives are implemented, local demand for EVs could exceed 10% market share or remain below 2% by 2020.

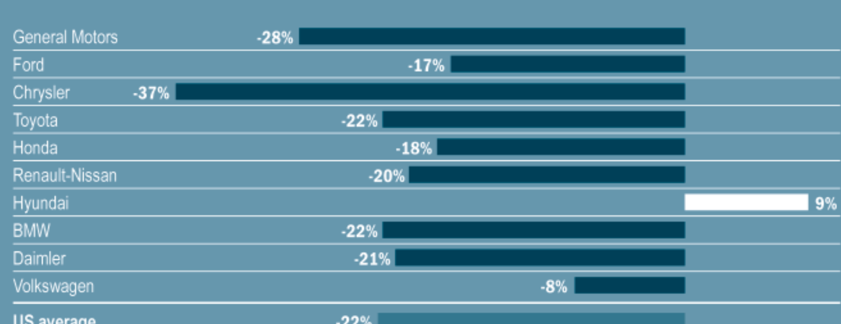
**Cautious optimism and mixed expectations**

The North American automotive landscape has changed dramatically in the past year – there is new hope in Detroit. Freed from many legacy burdens and with active government interest, the domestic auto sector has the opportunity to reinvent itself and take advantage of the enormous potential in e-mobility.

Companies will continue to look to consolidation, joint ventures and other alliances as economies of scale and operational efficiency become increasingly important. The outlook and path to profitability will remain uncertain. Financial distress and access to capital will continue to be a constraint in 2010, placing anxiety around the needs to build up working capital and invest in R&D in response to vital market trends such as $CO_2$, safety and connectivity.

Figure 2: **US automotive sales experienced a crippling decline in early 2009 – A slow recovery is currently under way**

YoY us vehicle sales growth of select OEMs, 2009 vs. 2008 [%]




1) Seasonally adjusted annual rate
Source: J.D. Power; Roland Berger

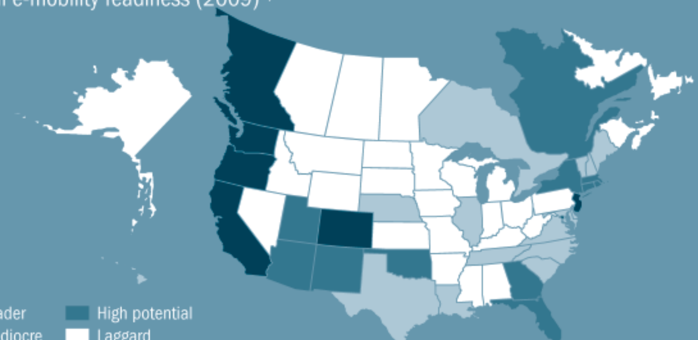
# A LOOK AROUND THE WORLD

New vehicle technologies, especially alternative vehicle power systems, are expected to increasingly dominate the automotive industry. Players are putting great emphasis on moving these new technologies forward and getting their latest products to market. It is looking like EVs will inevitably dominate the future of the North American auto industry, with the first mainstream vehicles available in 2010.

As long as these structural challenges and strategic opportunities are addressed adequately, the North American automotive industry can indeed look forward to a much brighter future and will prosper again.

Figure 3: **E-mobility readiness varies by state based on such factors as regulation, infrastructure, competition and consumers**

Overall e-mobility readiness (2009)[1)]




1) Including DC, not including territories; laggards fall below median, mediocre is third quartile (including median), leaders are above 90th percentile and high potentials make up the rest of the fourth quartile

Source: Roland Berger

Vehicle electrification presents automakers, battery manufacturers and suppliers with the momentous opportunity to redefine the ownership experience for consumers. Not only will this industry shift create new prospects for incumbent players through new products, business models and mobility solutions, but it will also enable participation from the utility and renewable energy sectors.

However, the industry cannot take off in North America without adequate government policies and proper demand-side drivers (e.g. higher fuel taxes).

2010 will be a year of recovery and guarded optimism for the North American auto industry. Nevertheless, much effort must still be expended. Automakers and suppliers must avoid complacency and cannot ignore the inconvenient realities of the restructuring and realignment that remains to be done.

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# A LOOK AROUND THE WORLD

## Japan: A rise in sharing business

The Japanese automotive industry has seen a drastic 20% decline in the past ten years, from 5.8 million new cars sold in 1999 to 4.6 million in 2009. There is no doubt that the recession has been dampening consumer spending. The more fundamental reason for this decrease, however, is that young people are not attracted to buying cars anymore. Consumers are shifting from owning cars to sharing them.

This trend among youth is a critical factor. Figure 1 shows what Japanese university students are interested in now and what their interests were in the past. It is clear that interest in cars is decreasing, with a drop in rank from 7 to 17. It could be concluded from this that cars are no longer an object of either interest or appreciation among young people. These changes in consumer attitudes mean that consumers – especially those living in cities – are no longer purchasing cars unless it is a necessity. Consumers prefer to share cars and use them only when needed rather than actually buying one and keeping it for good.

Figure 2 shows the development of the number of cars in the rental car business. In contrast to new cars sold, these figures are consistently rising. The entry of new types of businesses, such as discount rental cars and car-sharing services, may also have some impact on these figures. This article will present some of the latest cases in the Japanese car-sharing business.

Car sharing, where several members share the ownership of a single vehicle, has been growing rapidly through several new entrants, especially in metropolitan areas of Japan. The top player in automotive leasing, ORIX Auto Corporation, entered the car-sharing business in 2002. It has been increasing its customer base fairly rapidly and currently has a total of 4,500 members. The coin parking industry leader, Park24, bought out car rental company Mazda Rent-a-Car and currently operates a car-sharing business utilizing their 8,000 coin parking lots with a customer base of 3,000 members.

Figure 1: **Ranking of university students' interests**

**Former students (now in 40s/50s)**
Avg. no. of interests: 5.22

| Rank | Product/service | [%] |
|---|---|---|
| 1 | Fashion | 35.7 |
| 2 | Domestic travel | 34.0 |
| 3 | Dining out | 32.0 |
| 4 | Reading | 31.7 |
| 5 | Music | 31.3 |
| 6 | Movies | 27.7 |
| **7** | **Cars** | **27.0** |
| 8 | PC | 25.7 |
| 9 | Foreign travel | 23.7 |
| 10 | Audio | 20.3 |
| 11 | Camera | 19.7 |
| 12 | TV | 17.0 |
| 13 | Animation, manga | 15.7 |
| 14 | Jewelry | 15.0 |
| 15 | Sporting goods | 14.0 |
| 16 | Cosmetics, beauty salon | 12.3 |
| 17 | Watches | 11.3 |
| 18 | Univ. degree, learning | 10.3 |
| 19 | Portable music players | 10.0 |
| 20 | Motorcycles | 9.7 |

N = 300

**Former students (now in 20s/30s)**
Avg. no. of interests: 7.09

| Rank | Product/service | [%] |
|---|---|---|
| 1 | PC | 50.7 |
| 2 | Fashion | 47.7 |
| 3 | Communication devices | 39.7 |
| 4 | Domestic travel | 37.3 |
| 5 | Music | 37.0 |
| 6 | Dining out | 33.7 |
| 7 | Foreign travel | 32.7 |
| 8 | Portable music players | 31.0 |
| 9 | Reading | 31.0 |
| **10** | **Cars** | **25.3** |
| 11 | Movies | 25.3 |
| 12 | Animation, manga | 25.3 |
| 13 | Video games | 25.3 |
| 14 | Camera | 25.0 |
| 15 | Watches | 24.3 |
| 16 | Cosmetics, beauty salon | 22.0 |
| 17 | TV | 18.7 |
| 18 | Jewelry | 18.3 |
| 19 | Univ. degree, learning | 15.0 |
| 20 | Audio | 14.3 |

N = 300

**Current students**
Avg. no. of interests: 8.96

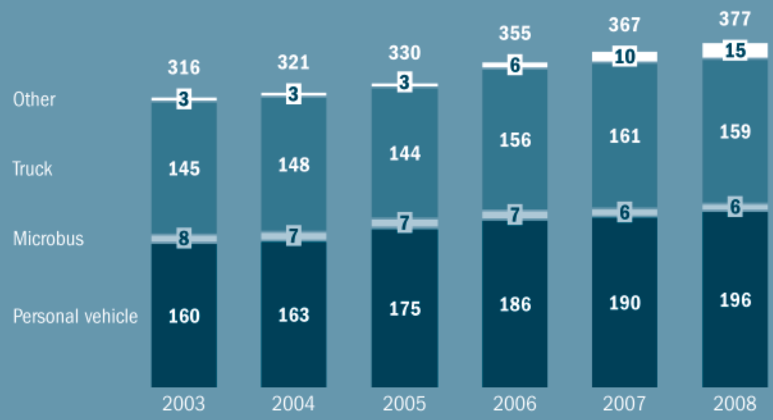
| Rank | Product/service | [%] |
|---|---|---|
| 1 | PC | 62.1 |
| 2 | Fashion | 53.9 |
| 3 | Portable music players | 50.6 |
| 4 | Communication devices | 49.9 |
| 5 | Domestic travel | 44.0 |
| 6 | Music | 43.7 |
| 7 | Reading | 42.9 |
| 8 | Animation, manga | 42.0 |
| 9 | Video games | 38.4 |
| 10 | Dining out | 37.6 |
| 11 | Movies | 35.5 |
| 12 | Camera | 35.0 |
| 13 | Foreign travel | 33.9 |
| 14 | TV | 28.8 |
| 15 | Univ. degree, learning | 27.3 |
| 16 | Cosmetics, beauty salon | 26.2 |
| **17** | **Cars** | **22.8** |
| 18 | Watches | 22.6 |
| 19 | Furniture, interiors | 21.7 |
| 20 | Jewelry | 17.9 |

N = 1,000

Source: JAMA (market research of personal vehicles, 2008)

# A LOOK AROUND THE WORLD

Figure 2: **Domestic rental car market (excluding light cars)** ['000 units]



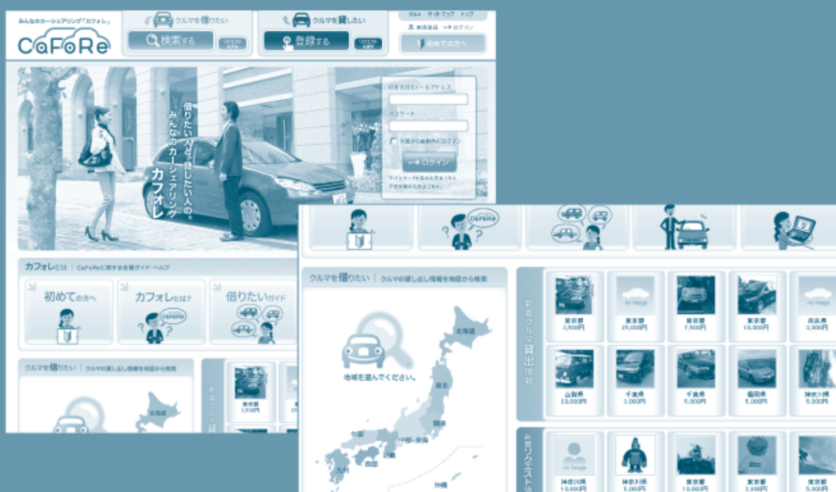

Source: National car rental association (annual car rental/lease report)

Players from other industries, such as condominium development companies, gas stations and convenience stores, have entered car-sharing, too. It is estimated that more than 10,000 people use car sharing in Japan today. The market is expected to grow steadily, with a total of more than 50,000 people using car sharing by 2013. Despite the growing customer base, most car-sharing operators are still in the red in terms of profit.

Primary tasks include both increasing the customer base and retaining customers in order to stabilize the business. Operators will presumably increase their investments in developing and improving the car sharing infrastructure for the future. In this way, car sharing will further penetrate the consumer market.

Recently, a new type of car sharing has been emerging. "CaFoRe" (Figure 3), for instance, is a web-based service that matches up people who are willing to lend their cars with people who want to borrow them. Lenders publish the time frame, area, minimum rental rate, etc., on a website, and borrowers bid on the right to rent the vehicle.

Figure 3: **New type of car-sharing service "CaFoRe"**




Source: CaFoRe website

Lenders can take advantage of the periods during which they don't need their cars, and borrowers can lower their vehicle maintenance costs by borrowing only when they need a car. The service operator charges a commission fee of 10% for lenders and 5% for borrowers, and it now has a customer base of 100,000 members.

Municipalities have also started a unique car-sharing business using electric vehicles. For example, Kanagawa prefecture lends municipal residents electric vehicles that are normally used as state vehicles. These cars are available on weekends and public holidays, when the EV is off duty.

In addition to car sharing, the discount car rental business, which offers used cars as rental cars, has been gaining public attention (figure 4). This business is seen as competition to car-sharing services, since it is just as cheap, or even cheaper, than car-sharing services.

Figure 5 shows a cost simulation by type of ownership, estimated by an established Japanese business magazine. The discount car rental business attracts users who want to use cars even more cheaply and conveniently.

A major discount rental car operator is Nico-nico car rental, which charges just JPY 2,525/12 hours – half the price of normal rental car operators. The Nico-nico car rental business model is quite interesting.

They have increased their branch numbers by networking gas stations all over the country through franchising contracts. They keep prices low by cutting overhead, using gas station employees to hand over vehicles and providing used cars as rental vehicles. Local gas station operators can start this business without any major investment, such as acquiring a new base or hiring new workers. They simply provide several used cars and join the franchise network. There are a lot of gas stations facing serious financial problem in Japan. For them, this business is a ray of hope, giving them supplementary income without high investments.

# A LOOK AROUND THE WORLD

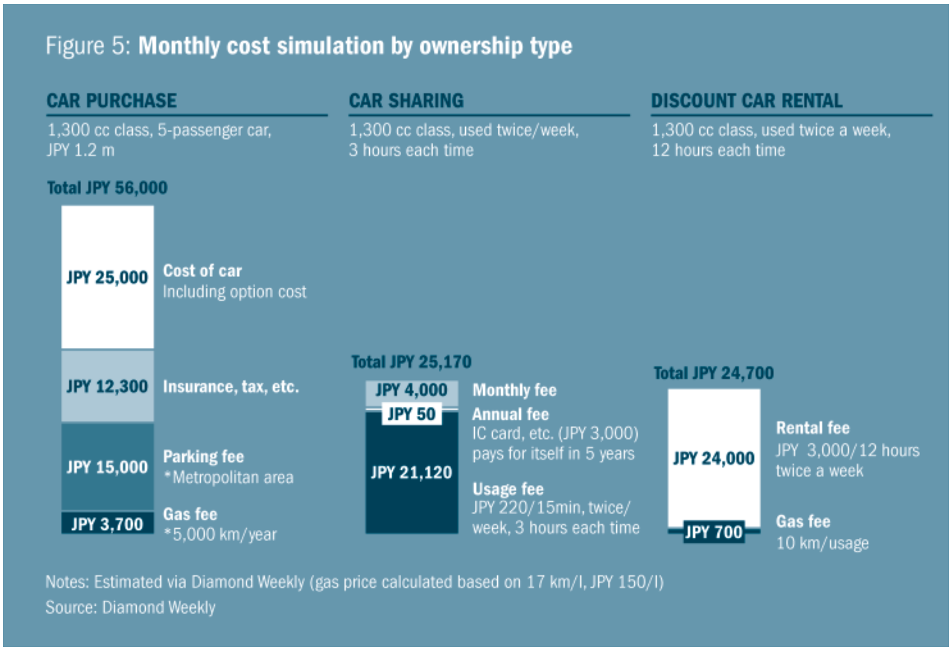
Nico-nico car rental aims to more than triple their branches, from 300 today to 1,000 in two years. Another discount car rental service operator, Itsumo car rental, started up in April 2009 and has already reached 200 stores. This success is the result of concluding franchise contracts, not only with gas stations, but also with used car dealerships and oil changers. They will reach their initial target of 500 stores in just two years – three years earlier than initially estimated. Customers are primarily families and housewives who live in suburbs, and whose main concern is price. Customer retention is high – it is said that half of the customers are repeat customers in many of their branches. According to a survey by Nico-nico car rental, more than 90% of consumers are interested in using discount rental cars.

"Car bell", another discount rental car operator, has a different business model than the two mentioned above. They cultivate consumer demand for a source of daily mobility in local areas. They charge JPY 100 per 10 minutes for up to 3 hours, and JPY 100 per 30 minutes thereafter (for compact cars). They operate about 400 stores and recruit non-car-related companies, such as business hotels and estate agents, as their franchisees. They keep running costs low by providing used cars as rental cars. The unique point is that they not only lend their vehicles, but also sell them. They have just 2 stores, located in business districts, but the vehicles are utilized at nearly 100% on weekdays, since they receive many orders from employees of nearby companies. Consumers use Car bell when they need to take a short ride to their clients, for example, as a substitute for taking a taxi. More than 50 companies have expressed an interest in signing franchise contracts with Car bell, and their business will be expanding soon. Car bell aims to create synergy effects by enticing rental car users to buy used cars or car maintenance services.

Figure 4: **Discount car rental players**

| BRAND | NETWORKS | NO. OF STORES | FEE |
|---|---|---|---|
| **Nico-nico car rental** | > Gas stations | > Approx. 300 stores<br>– Plans to expand to 1,000 in 2 years | JPY 2,100/8 hours<br>JPY 2,425/12 hours |
| **Itsumo car rental** | > Gas stations<br>> Oil changers<br>> Used car dealers | > Approx. 200 stores<br>– Plans to expand to 500 stores | JPY 2,730/12 hours |
| **One's car rental** | > Gas stations | > Approx. 130 stores<br>– Plans to expand to 500 stores | JPY 2,625/day (9AM to 8PM) |
| **100 yen car rental** | > Used car dealers<br>– 400 U-car dealers (franchisees of Car bell) | > 10 stores<br>– Plans to expand to 50 stores by March 2010 | JPY 100/10 min. |

# A LOOK AROUND THE WORLD




These discount car rental services all share some common features. For one, they are only supplementary operations, not the main business. For another, additional investment costs are low. Finally, they generate synergy effects with the main businesses. The average monthly revenue of a Nico-nico car rental franchisee is JPY 100,000 to 200,000. Although this may seem quite low, it is sufficient as supplementary revenue for local gas station operators, most of which are mom-and-pop stores.

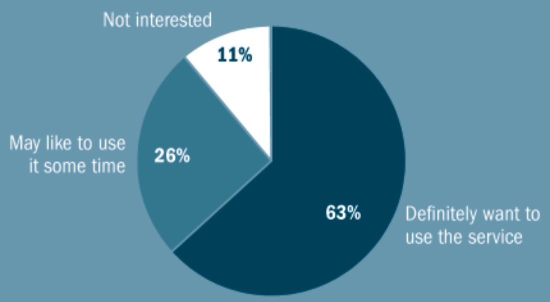
Gas station operators can even expect rental car users to buy gas at their station when returning the vehicle. In contrast, car-sharing operators are mainly large firms that have invested a lot in infrastructure, and yet are running a deficit. For these large car-sharing operators, small discount car rental operators pose a threat to their business.

Car pooling web services have also appeared, though they are still small in size. Notteko! is one such service. It connects people who have a car and want to cut expenses for gas and tolls with those who don't have a car and want a ride (3,000 members as of March 2009). Minna-de-Taxi is another matching site, but it links up people who want to share a ride in a taxi. There are several schemes that simplify the service for users. For example, Minna-de-Taxi has already established a rule for splitting taxi fares. In addition, users are expected to rate each other after the ride.

The above examples show that many new sharing businesses are rapidly expanding in Japan. They will undoubtedly continue their expansion, due mainly to consumers' declining interest in purchasing cars, as well as price considerations. In the Japanese market, the trend is clearly shifting from owning to sharing. It is a common concern that if the sharing business expands, the vehicle sales market will decline.

However, it could be also said that if sharing businesses make cars more accessible to consumers, people will have the opportunity to actually drive cars more often, and this may lead to them purchasing cars. Either way, we must keep an eye on this trend and see where it leads.

Figure 6: **Purchasing intent toward discount car rental service** (N=312)




Source: Nico-nico car rental

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# BRIC AT THE CROSSROADS

## The new engine of global economic growth?

**For the first time in history, a crisis has contributed to the relative improvement of emerging markets compared to established industrial nations. While growth slowed or even declined in all major regions, it appears to have rebounded quickly in emerging markets. The result is a widening gap in growth between emerging economies and established markets. This indicates a realignment of the global economy.**

The idea of Jim O'Neill, Chief Economist of Goldman Sachs, to describe a key growth factor of the world's economy according to the "BRIC" formula in the early 2000s is now more relevant than ever.

Not only have the BRICs a combined ~15% share of the world economy as well as an approx. 40% share of all global gold and hard currency reserves. Moreover, they have demonstrated their aspirations at their first official "BRIC summit" in Yekaterinburg in mid-2009 by suggesting a move away from the dollar's role in global commerce and calling for greater representation of developing countries in global financial institutions.

### The BRIC countries and their 2009/2010 economic situation

With the exception of Russia, the BRIC countries have generally managed to more or less withstand a major downturn and quickly return to solid growth. A key driver for this rebound is domestic demand.

Russia was hit the hardest by the significant downturn in commodity prices and plummeting demand for oil. This is reflected by a sharp decline in GDP of roughly 7.9% in 2009. For 2010, however, the OECD expects a steep recovery of Russia's economy – highlighted by a 4.9% GDP growth forecast. Due to lesser exposure to oil and gas, plus growing domestic demand, Brazil managed to keep its GDP fairly stable.

India (+6.1%) and China (+8.3%) clearly benefited from a significantly growing domestic demand.

Especially China reacted swiftly and announced a stimulus package worth CNY 4 trillion (approx. USD 586 billion) that made up for fewer exports and pushed economic growth with domestic demand.

### The BRIC countries and the automotive industry

BRIC growth is clearly highlighted by developments on local car markets. Compared to 2008, car sales in China jumped 46% to 13.6 million units, thereby overtaking world leader USA and relegating it to second place.

However, Brazil is also posting impressive figures: According to the Brazilian Motor Vehicle Manufacturers Association (Anfavea), 3.14 million vehicles were sold in 2009 – a year-on-year increase of 11.4% that marked the third consecutive record high.

Beginning with Nanjing Automobile's first step in purchasing Rover back in 2005, it was just last year when BAIC acquired Saab's production technology for the 9-5 and 9-3 models. Announced in late 2009, Geely's takeover of Volvo is expected to be closed in the third quarter of 2010 for an estimated sum of USD 1.8 billion.

But not only are the Chinese actively shopping – in 2008, the Indian Tata conglomerate acquired British traditional car maker Jaguar Land Rover from Ford for approximately USD 1.3 billion.

In terms of units sold, Changan is the first Chinese manufacturer to join the group of top 15 automakers worldwide by selling slightly under 1.2 million vehicles in 2009 – just as Audi or BMW.

These developments clearly highlight the ambitions of the BRIC countries – and these ambitions apply not only to the automotive segment, but to all other industries as well.

**Key economic data and car sales**

| COUNTRY/ REGION | GDP GROWTH [%] 2009 | 2010 | POPULATION [million] | GDP 2009 PER CAPITA [USD] | CAR SALES 2009 [m] |
|---|---|---|---|---|---|
| Brazil | 0.0 | 4.8 | 190 | 7,737 | 3.1 [+ 11%] |
| Russia | -7.9 | 4.9 | 142 | 8,874 | 1.5 [-48%] |
| India | 6.1 | 7.3 | 1,186 | 1,033 | 1.4 [+ 19%] |
| China | 8.3 | 4.8 | 1,328 | 3,566 | 13.6 [+ 46%] |
| US | -2.5 | 2.5 | 304 | 46,443 | 10.4 [-21%] |
| Germany | -4.9 | 1.4 | 82 | 39,442 | 3.8 [+23%] |
| **World** | **-0.6** | **4.4** | **6,798** | **~10,000[1)]** | **52.8 [-5.4%]** |

1) Estimates based on 2008 figures

Source: OECD; Goldman Sachs; US Census Bureau; Roland Berger research

### The BRIC countries and their neighboring regions

However, it is not only about the BRIC countries – we need to look at their neighbors too. At the beginning of 2010, a free trade zone between China and the 10 ASEAN states came into effect. With 1.9 billion consumers, this became the largest free trade zone in the world, generating an estimated combined GDP of more than USD 6 trillion. This is not yet an established and integrated economic area (such as the EU), but rather a conglomeration of still-competing countries. Nevertheless, given the fear of recurring crises, these countries are obviously joining forces and showing increasing self-confidence toward the rest of the world.

If – for thought-provoking purposes – we include India, Korea, Japan and Australia in this free trade zone, it becomes apparent where the future will be predominantly shaped. For Brazil and the rest of South America, as well as Russia and the former states of the Soviet Union, similar – but arguably less spectacular – considerations can be made.

### The BRIC countries and the overall risks of the world economy

The financial crisis and its impact on global foreign trade relations has recently shown what globalization truly means today.

Despite all the hope about the BRIC countries' potential, we must bear in mind that on one hand individual chances and risks of these countries require a differentiated view. On the other hand they are embedded into a global economic context which in itself bears substantial risks.

Should the US manage to quickly shake off the impact of the crisis, further financial turmoil could be the result – most likely driven by escalating interest rates. Then again, another recession in the US would also shake the world once more. In any case, it is a question to what extent monetary and interest policies of the leading federal banks are able to effectively neutralize the recently issued substantial stimulus packages.

Whatever development lies ahead, it is yet undeniable that the former "engine" of the world economy – the US-Europe-Japan triad – is slowly but surely being replaced by emerging markets, with the BRIC countries in the lead.

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# BRIC AT THE CROSSROADS

## Brazil – Large growth, even larger potential

**When thinking of automotive growth regions, South America – and especially Brazil – is often forgotten. Yet Brazil has emerged as a major automotive hub, supported by the tenth largest economy in the world. Since 2002, Brazil has experienced a period of economic stability and controlled inflation. It boasts a true democracy, a fiscal surplus and a free-floating currency with free monetary flows in and out of the country.**

Under these prosperous conditions, the Brazilian automotive industry has experienced a period of sustained growth. While sales of passenger vehicles and LCVs barely exceeded 1.3 million vehicles per year until 2002, the industry has grown to 3.0 million in 2009 – an annual growth rate of 13%.

At the same time, Brazil has clearly positioned itself as a major vehicle exporter, supported by a positive exchange rate. In 2006, exports accounted for 32% of the annual passenger/LCV production. Exports have recently declined due to the strength of the Brazilian Real, increasing production cost and the weakness of other South American economies, the main targets for Brazilian exports.

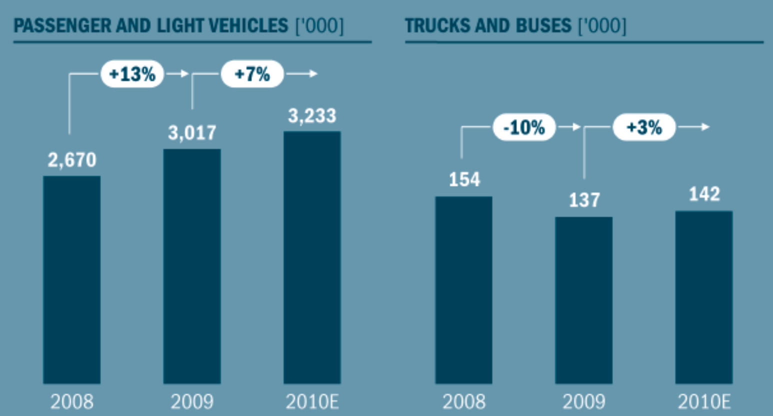
**Brazil in 2009: Mastering the global economic crisis**

In 2009, the industry survived the global financial crises in good shape, with total vehicle sales (cars, light commercial vehicles, trucks and buses) of 3 million vehicles (see figure 1). All of the major passenger vehicle makers managed to maintain or even grow their sales levels from 2008 to 2009.

This positive development in 2009 was supported by the reduction of the automotive IPI tax ("Imposto sobre Produtos Industrializados") for passenger vehicles and LCVs in December 2008 as well as a drop in consumer credit rates. These actions supported consumer confidence and, with their focus on small vehicles (below 1000cc), primarily targeted the lower income class.

Supporting the lower income class is of utmost importance for managing future industry growth. Today, 45% of Brazil's population is in the "C class", with an average income of approx. EUR 300-800 per month – the car buyers of the future. With the economy rising by at least 4-5% per year, this group will grow to over 50% of Brazil's 200 million plus population.

Figure 1: **Brazilian vehicle sales development, 2008-2010**




Source: Anfavea; J.D. Power; Roland Berger

As a result, the industry expects that the current level of 6.9 inhabitants per vehicle will change to Western standards of 1.5-2.0 inhabitants per vehicle.

**Industry growth of 33% until 2015**

It's therefore no surprise that the four market leaders – FIAT, Volkswagen, General Motors and Ford (achieving a combined market share of 75%) – as well as the renowned forecasting institute JD Power are predicting vehicle sales (and production) of well over 4 million vehicles per year. This clearly positions Brazil as the fifth largest automotive production market, ahead of other growth regions such as India or Russia.

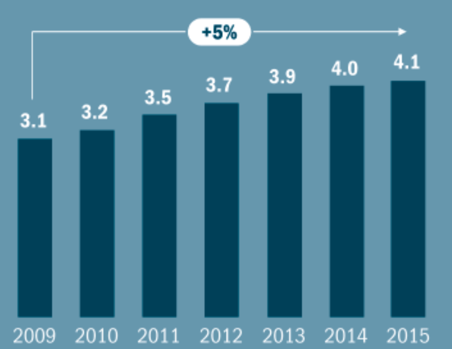
**Strong OEM investments expected**

With an industry currently producing at over 90% capacity utilization, carmakers are currently making huge investments. Volkswagen plans to invest BRL 6.2 billion by 2015, Ford BRL 4.0 billion by 2015, FIAT BRL 1.8 billion in 2010 alone and PSA BRL 900 million. Renault is looking to invest BRL 1.0 billion by 2012.

The scope of these investments also includes automotive R&D. All of the four major car producers (FIAT, Volkswagen, GM and Ford) plus Mercedes-Benz Commercial Vehicles have one of their biggest R&D facilities worldwide in Brazil.

Figure 2: **Long-term vehicle development and national challenges**

**MARKET SALES FORECAST [m units]**




**REQUIREMENTS FOR FUTURE GROWTH**

- Continued economic growth and **consumer credit availability** (especially for entry-level vehicles)
- Further improvement and expansion of national **infrastructure**
- Increased **cost competitiveness** along the entire value chain
- Introduction of a **national agenda** to support the industry's growth
- Further creation of scale, also by **leveraging Brazilian know-how** on a global basis

Source: J.D. Power; IMF; Roland Berger analysis

Similarly, the commercial vehicles industry will continue to grow, driven by infrastructure investments for the soccer World Cup and the Olympic Games, the newly found oil reserves and general economic growth. Local industry executives expect a production volume of more than 200,000 trucks and buses in 2015. With import duties of 35%, the vast majority of these vehicles (both passenger and commercial) will be manufactured domestically.

In addition to spurring capacity expansion by incumbents, the current growth is attracting many new car brands, especially from China and India. Chinese carmaker Chery plans to invest BRL 500 to BRL 700 million in a new car plant with a capacity of up to 200,000 vehicles. That would make it the largest plant for the brand outside China. Other Chinese manufacturers are carefully screening the market and further full-scale entries are expected within the next few years.

Despite this positive outlook and these large-scale investments, many questions remain.

**Suppliers need to match OEM investments**

Suppliers will have to match the OEM's investments over the next years. Many suppliers are still using Brazil as a production hub for exports to Europe and North America, a costly undertaking at the current exchange rates and local production cost. In addition, many suppliers lack local R&D capacity and competence, focusing on application engineering only. Many globally leading suppliers are not yet adequately present in Brazil, and those that are often focus only on a few OEMs. This currently opens Brazil to new entries from China, Korea and India. The Brazilian automotive supplier association SINDIPEÇAS estimates that the share of local production will decrease from 75% in 2007 to less than 65% in 2012.

**Infrastructure not able to manage expected growth**

Anyone who knows Brazil has to wonder where all these additional vehicles will go. Brazil's infrastructure is one of the worst among major automotive producing regions globally and quality paved roads are hard to come by outside the major metropolitan regions. Already today, cities such as São Paulo and Rio de Janeiro (accounting for 65% of the Brazilian vehicle fleet) are suffocating every day under tremendous traffic jams.

Even the latest governmental infrastructure program PAC ("Programa de Aceleraçao do Crescimento"), which will invest BRL 33.4 billion in road infrastructure by 2010, will not be able to overcome the current problems. Additional investments will be required to allow new vehicles on the road and – in combination with investments into the port infrastructure – decrease the logistics costs of Brazilian automotive suppliers and carmakers.

**Brazil lacks cost competitiveness on a global scale**

Another major question is how Brazil will be able to compete against low cost imports, especially from Asia. Producing a vehicle in Brazil is more expensive than elsewhere along almost the entire automotive value chain. For example, even though Brazil is one of the world's largest suppliers of raw materials, material costs are higher than even in the US or Europe, driven primarily by a lack of raw material processing capacity and costly transportation. Labor costs are at least three times higher than in China and rising by 8-9% every year. Corporate taxes are twice as high as in Germany.

As a consequence, it is not surprising that the share of vehicle imports, especially from Asia, is already more than 15% of total car sales despite the high import tariffs. At the same time, exports from Brazil to other South American countries have declined sharply, also hindered by the strength of the Brazilian currency.

**National agenda for the automotive industry required**

If the Brazilian government and the industry do not join forces to improve cost competitiveness quickly, the pressure on the Brazilian industry will rise further. While the three major Brazilian associations (ANFAVEA for vehicle makers, SINDIPEÇAS for suppliers and FENABRAVE representing dealers) help to move the government forward, Brazil lacks a true local player like in China or India. Only clear and coherent cooperation between all partners along the automotive value chain together with the government can succeed in improving Brazil's cost competitiveness.

**OEMs and suppliers need to leverage R&D achievements globally**

The final question concerns Brazil's future role in the global automotive community. Despite all the past and future growth prospects, and despite great progress made in the last decade, Brazil still lacks a vision regarding its positioning in the global automotive community. China has its strong local players plus tremendous growth higher than Brazil's, and is starting to lead in breakthrough technologies such as electrical vehicles. India is developing more and more into an ultra-low-cost development and production hub. And Brazil?

Brazil has more than 50 years' history of automotive development and production. The country has great potential for innovation and is a global leader in many industries such as financial services. Still, Brazil has not itself produced a single major global automotive innovation. Even Flex Fuel, a technology that was developed elsewhere and only perfected in Brazil, has not caught on anywhere outside South America for a multitude of reasons.

Brazil has developed a number of quality but still low-cost platforms and vehicles, none of which have been applied outside the country. Vehicle makers and suppliers need to better utilize and leverage their Brazilian engineering capacity and capability, thus helping the country build additional scale and lower development costs.

**Accelerating the growth**

Automotive growth in Brazil seems a given for the next 5 years. Still, Brazil is failing to live up to its capabilities and potential. With additional investment from the government, increased focus on cost competitiveness and global leveraging of its national capabilities, Brazil can promote its position as a strong global automotive hub. Both OEMs and suppliers should be ready to seize the opportunities down the road.

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# BRIC AT THE CROSSROADS

## Russia – How the crisis has hit the Russian new car market

**The crisis has hit Russia harder than other key car markets worldwide. Only moderate recovery is expected, and the market will move away from imports toward locally assembled cars. International OEMs will continue with their investments to prepare for future growth, while local OEMs will either exit the market or intensify ties with global partners.**

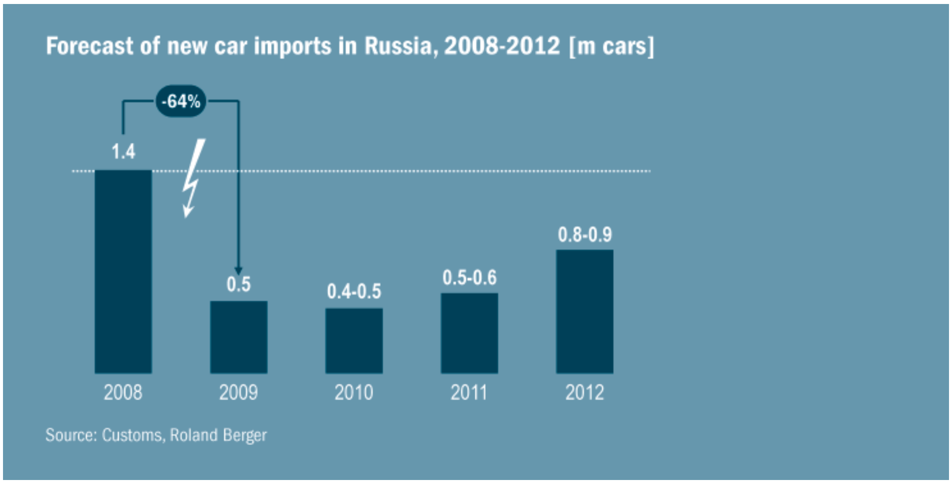
By 2008, Russia had become one of the key car markets worldwide (the fifth largest in the world), with total sales of 2.8 million cars. Prior to the global crisis, prospects were bright, thanks to rising household income and room in the market for more cars (currently, car density is roughly 250 cars per 1,000 inhabitants). If things had continued along this path, Russia would have been well placed in 2009 to overtake Germany as Europe's largest car market. But the impact of the crisis was severe. New car sales fell in 2009 by 46% to 1.46 million units. The government has been slow in taking action to shore up demand – a state program to subsidize interest rates on consumer loans for purchasing locally made cars helped increase sales by just 72,000 units. A program similar to Germany's or America's "cash for clunkers" is to be launched only in March 2010. To make things even worse, in early 2009 the government increased import duties on new cars from 25% to 30%, in a failed attempt to protect local manufacturers. It did not help.

Sales at Avtovaz fell by 45%, and GAZ stopped car manufacturing completely (including the old Volga and new Siber models based on the Chrysler Sebring), as did Izh Avto. Clearly, imports have suffered most. But international OEMs have not halted their investment projects in Russia. PSA, VW and Hyundai are completing the construction of their CKD facilities, Renault is expanding its plant in Moscow and Nissan has started operations in St. Petersburg. It has become obvious that to sell cars successfully in Russia, you have to assemble them locally to avoid the risks associated with pure imports. Overall, 2009 was the darkest year in the history of the Russian car market. This was true for almost every country in the world, but the scale of volatility and uncertainty in Russia is unmatched. Sales are likely to stagnate in 2010 followed by a modest recovery, according to Roland Berger's forecasts. However, a return to 2008 levels is unlikely within the next five years. The market will recover, but all players in the market will have to adapt to a changed environment.

### Impact on car retail in Russia

During the boom years for car sales in Russia, car retailers struggled to find enough space for new dealerships and expanded at breathtaking speed. This led to the emergence of large dealer groups similar in size to their Western counterparts. Many of them are now in trouble.

1) According to before crisis data
Source: Roland Berger




They will have to rethink their "catch me if you can" strategy, focusing instead on making their current operations more efficient. During this period of enormous growth in the Russian car market, several large dealer groups emerged. These companies focused mainly on key markets such as Moscow, St. Petersburg and a few other large cities. Originally concentrating on just one brand, they are now in the process of becoming multibrand car villages modeled on US car dealer centers. And these dealerships are vast.

In the top 5 dealer groups, annual new car sales per dealership peaked at 1,800-2,000 units, with Rolf in the lead selling some 2,900 units. In crisis-stricken 2009, this average was still 1,000-1,100 units. Understandably, dealers paid only moderate attention to auxiliary businesses such as parts and accessories or used car sales, and did not necessarily try to retain post-warranty service clients. Dealer groups invested in new retail facilities and businesses critical for securing supplies, such as logistics (e.g. trucks for transporting cars) and compounds. OEMs, in light of growing sales and in an attempt to promote brand awareness among new customers, insisted on much stricter corporate identity standards than in the saturated markets of Western Europe. But dealer groups have followed this approach willingly, as they wanted to capture the scarce good locations in urban areas.

**Now the situation has changed dramatically**

Many players are heavily indebted and are struggling to restructure debts or sell operations partly or completely. Those that avoided heavy investments, or invested their own resources, are still in trouble and are now facing the rather uncertain challenge of drastically improving performance and efficiency throughout the whole value chain. At the same time, relatively healthy groups are looking around to acquire some facilities or competitors. But there have been no major deals in the market so far.

**To summarize, the current trends in Russian car retail are:**

> Expected consolidation of the market and exit of small or over-indebted players
> Diversifying the portfolio into other businesses such as used car sales, developing 3Plus service programs, utilizing existing logistics facilities e.g. with spare parts, restructuring car brand portfolio
> Emergence of quick service chains for post-warranty cars: some dealer groups are actively looking into investing in this
> Completing the transfer of distribution business to OEM's own national sales companies (the most recent ones were Hyundai/Kia and Mitsubishi in 2009)
> OEMs should carefully monitor the situation to avoid deterioration of the sales network due to the bankruptcy of weak dealers

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# BRIC AT THE CROSSROADS

## India – Becoming a Global Hub for Small Cars

**India is rapidly evolving into a hub for small cars — covering design, manufacture and export. OEMs and component makers need to review their India strategy to address this opportunity.**

India's passenger car industry is evolving in a unique way – driven by economic growth, rising incomes and a large number of mid income households aspiring to own a car.

As shown in figure 1, domestic sales of cars grew at 11% annually from 1 Mn in 2006-07 to 1.50 Mn in 2009-10. Exports grew at over 30% per year to cross 0.40 Mn (95% hatchback). Thus the total sales of cars (domestic plus exports) reached 1.9 Mn in the current year.

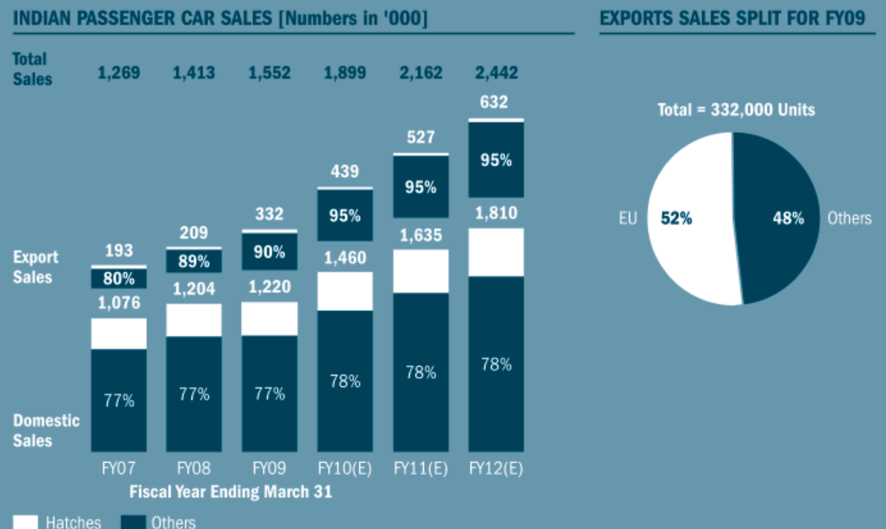
The notable feature about domestic car sales in India is that over three fourths are hatchbacks. This is driven by tax breaks for small cars (defined by engine size and length) and the purchasing power of customers. Exports too are predominantly hatchbacks — Suzuki's Splash and Alto and Hyundai's i10 and i 20. Nearly half the exports are to Europe — conforming with applicable emission and safety norms.

With India likely to cross 8% GDP growth from 2010-11 onwards, domestic car sales are expected to grow at 10 to 12% per year reaching about 2.5 Mn in 2015. Exports too are likely to grow to about 1 Mn as Europe and other countries develop a liking for fuel efficient, low cost cars that comply with all regulations.

The preponderance of hatchbacks is likely to continue in future for several reasons. First, the ramping up of Tata Nano will increase volumes at the entry level. Second, the higher tax rate for larger cars and sedans will continue. Third, larger cars may have to use hybrid or electric propulsion technologies thereby further increasing the price differential from hatchbacks.

Thus, over the next ten years, India is likely to evolve into possibly the worlds largest single market for hatchbacks. It will certainly be the biggest car market focused on hatchbacks. Even as this happens, the vehicles will grow increasingly sophisticated in terms of features eg. safety, comfort, fuel efficiency and emissions.

Figure 1



The car market in India is dominated by three major players (Maruti Suzuki, Hyundai and Tata Motors) who hold about 80% share collectively. All three of them have profitable operations – Maruti Suzuki reported EBIT/Sales ratio in excess of 12% during the last five years (except for a dip to 7% in 2008-09). The remaining 20% of the market is accounted by most other international brands – Ford, GM, Toyota, Honda, Fiat, Skoda and now VW. Several OEs have announced plans for specially designed small cars for India and international markets e.g. Toyota Etios, Ford Figo, GM Beat and Nissan-Renault. Apart from establishing manufacturing facilities (figure 2), major players are increasingly setting up design centers for small cars and components in India.

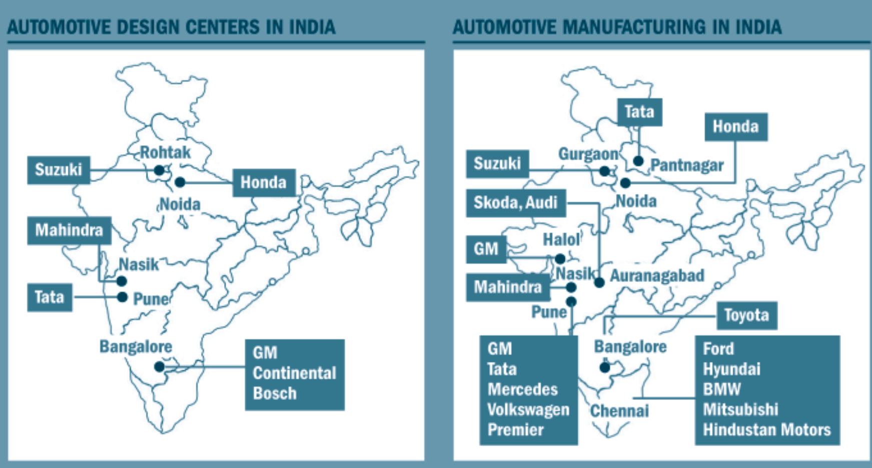
Clearly, India is evolving rapidly – with manufacturing, design and component capabilities focused on small cars. This creates opportunities which no global leader in this field can ignore or afford to miss.

Premium car makers can import cars to seed the nascent Indian market and ride future growth – but from a low base.

Component manufacturers could address the demand for next generation technology parts relating to turbocharged IC engines, safety, light-weighting, interiors, emission reduction etc. They could also create capabilities for frugal engineering to meet aggressive target costs from OEs. Lastly, they could source small car components or parts for their global requirements.

As India's car market evolves, all global OEMs and component makers will have to review their India strategy. Some major players have already announced plans to make India their base for the design, manufacture and export of small cars and components. Early movers will be better positioned to reap the benefits as India becomes a global hub for small cars.

**Figure 2**




Global OEMs could design and manufacture low cost cars/hatchbacks using India's cost and skill advantages for the large domestic market and export. Also, they could source design, engineering and components for global use.

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# BRIC AT THE CROSSROADS

## China – Is China's smart approach to boosting the automotive market in 2009 going to continue through 2010 and beyond?

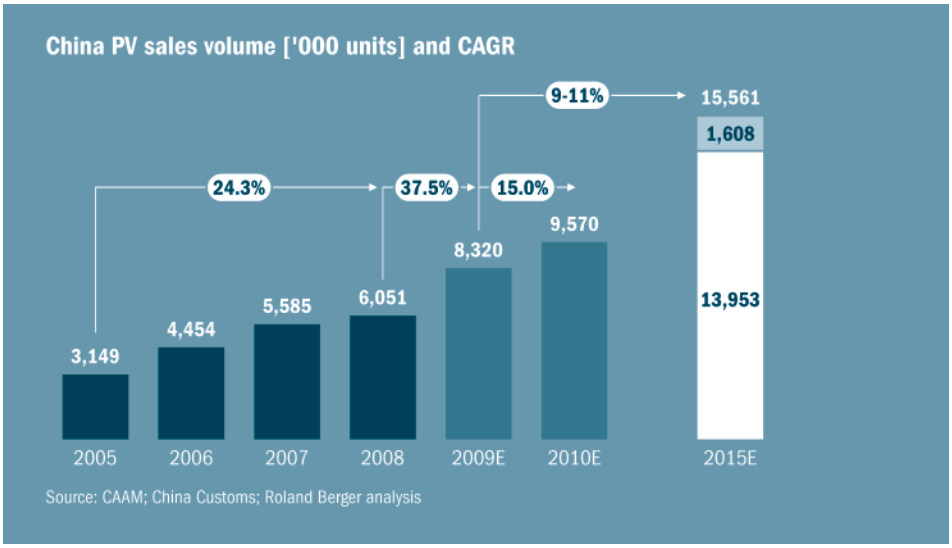
**In contrast to declining automotive markets in the rest of the world, the Chinese passenger vehicle market grew by more than 37% in 2009. Key reasons are a very smart governmental incentive policy, low vehicle penetration of 48 cars per 1,000 people, the release of pent-up demand following the financial crisis plus increasing disposable income. These figures are unlikely to last through 2010 and beyond, and potential policy changes are adding another layer of uncertainty. Therefore, market players should integrate the possibility of a fast-changing environment into their risk assessments and develop the right tools for quick adjustments.**

**Automotive market from China's perspective**

The global financial and automotive crises also affected the Chinese market, but the automotive crisis only for the end of 2008 and beginning of 2009. After a significant drop in growth to "just" 8% in 2008, the growth of the passenger vehicle sales soared above 37%, up to more than 8.3 million units in 2009.

As described below, we expect that these impressive figures will decrease in 2010 to around 15% p.a., equal to passenger vehicle sales of 9.6 million cars. For up through 2015, we estimate that sales will grow by approximately 9-11% p.a., leading to overall passenger vehicle sales of over 15.5 million units.

The main short- to medium-term driver for the skyrocketing growth in 2009 was the incentive and subsidy policy of the Chinese government, which considers the local automotive industry to be a key pillar of their GDP targets. Therefore, in January 2009 they reduced the sales tax from 10% to 5% for small displacement engines (below 1.6 L), valid for one year. In addition, they subsidized the replacement of 3-wheelers and light trucks with combustion engines under 1.3 L in rural areas with approx. RMB 5 billion until the end of last year. What's more, a "cash for clunkers" plan was introduced in June 2009, which supported the replacement of cars "older than 1996" that do not meeting emission standards with up to RMB 6,000 per car.



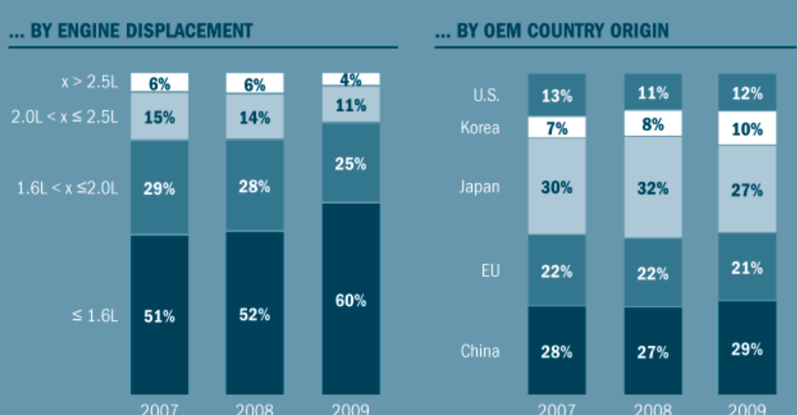
**Automotive incentive plan in China, 2009 vs. 2010**

| | POLICIES/REGULATIONS 2009 | POLICIES/REGULATIONS 2010 |
|---|---|---|
| **Purchase tax reduction** | > **Time frame:** Jan 2009-Dec 2009<br>> **Vehicle type:** Passenger cars with engine displacement ≤1.6 L<br>> **Policy:** Reduce vehicle purchase tax from 10% to 5% | > **Time frame:** Jan 2010-Dec 2010<br>> **Vehicle type:** Passenger cars with engine displacement ≤1.6L<br>> **Policy:** Raise vehicle purchase tax from 5% to 7.5% compared to 2009 |
| **Subsidies in rural areas** | > **Time frame:** Mar 2009-Dec 2009<br>> **Vehicle type:** 3-wheeled vehicles or light trucks with engine displacement ≤1.3 L<br>> **Policy:** RMB 5 bn will be subsidized for car purchases in rural areas: 10% of the total amount up to RMB 5,000 per vehicle | > **Time frame:** Jan 2010-Dec 2010<br>> **Vehicle type:** 3-wheeled vehicles or light trucks with engine displacement ≤1.3 L<br>> **New policy:** Remains the same as for 2009 |
| **Scrap incentive plan** | > **Time frame:** Jun 2009-May 2010<br>> **Vehicle type:** Used small/mid-sized trucks and some types of mid-sized passenger cars, and those no longer meeting government emission standards<br>> **Policy:** RMB 3-6,000 for each vehicle | > **Time frame:** Jan 2010-Dec 2010<br>> **Vehicle type:** Same as in 2009<br>> **New policy:** Raised subsidy range from RMB 3-6,000 to RMB 5-18,000 per vehicle "older than 1996" |

Source: Roland Berger analysis

All three policies have already been extended through December 2010 with some minor adjustments. For example, the sales tax has now been cut only to 7.5% instead of 5%. On the other hand, the cash for clunkers incentives have been increased up to RMB 18,000 per vehicle, while subsidies and the budget for rural areas are the same as last year. The policies have had quite an impact. First of all, automotive market growth was accelerated despite the global crisis and contributed significantly to China's GDP target of over 8.5%.

**Market share ...**




Source: CAAM; vehicle registrations; Roland Berger analysis

# BRIC AT THE CROSSROADS

At the same time, environmentally friendly and low-emission cars with combustion engines below 1.6 L gained 8% market share, accounting for 60% of the total sales volume at the end of 2009.

This supported the efforts and targets of China to reduce the pollution caused by the roughly 60 million cars on the market. Third, Chinese OEMs were able to gain an additional 2% in market share, due to a portfolio of smaller-engine cars, fitting the government policy.

The government therefore indirectly assisted the local players in this very competitive market. Korean players also benefited from the subsidies for consumers and gained an additional 2% share of the sales volume.

In contrast, Japanese players were hit very hard. They lost 5% of their sales share, but will recover in 2010/ 2011 by introducing new models that meet the policy requirements.

The key question is whether or not the market momentum of 2009 will last through 2010. To examine this issue, we teamed up with market experts and some of our clients in China to evaluate the influence of 2 main short-term and 4 long-term drivers for those two years:

> The short-term "Incentive policies" are nearly comparable for both years, but the impact of the "Pent-up consumer demand" from the financial crisis in 2008/ 2009 was already exhausted in 2009

> The sales impact of the two long-term drivers "Disposal income" and "Price decrease trend" will be less positive in 2010: growth of disposable income will slow down and the large price discounts introduced in the crisis will vanish, especially in the luxury car segment

**Impact assessment of short- & long-term levers for PV sales in 2009/2010**

| | KEY DRIVERS | DESCRIPTION | ASSESSED IMPACT 2009 | ASSESSED IMPACT 2010 | COMMENTS |
|---|---|---|---|---|---|
| Short-term | 1 Incentive policies | > Sales tax reduction effectively increases sales of vehicles with small displacement<br>> Contribution to sales growth from scrappage incentive plan with impact on old vehicles | | | > Sales tax cut to 7.5% in 2010, favoring engines <1.6L<br>> Scrap incentive increase up to RMB 18,000 |
| Short-term | 2 Release pent-up demand | > Consumer confidence rebounds as macro-economy recovers | | | > Pent-up demand during financial crisis was released in 2009<br>> Decreasing impact in 2010 |
| Long-term | 3 Disposable income | > Expected 10-11% growth rate up to 2010<br>> Correlates to 97.5% of PV sales (01-08) | | | > Still significantly increasing<br>> Strong demand in Tier 3/4 cities |
| Long-term | 4 Vehicle penetration | > Current car penetration in China: 48 per 1,000 persons vs. 765/1,000 in US & 546/1,000 in GER | | | > Stable driving factor with limited short-term difference |
| Long-term | 5 New car launches | > New car launches: 90 in 2007, 88 in 2008 and 89 already launched in H1 09 | | | > Helped increase 09 sales<br>> More new launches expected to be announced in 2010 |
| Long-term | 6 Price trends | > General trend of 4%-5% yearly price reduction<br>> Larger discount from dealers, esp. during economic downturn | | | > Price reduction trend will continue<br>> Current dealer discounts during crisis will dry up |

Source: Roland Berger analysis

Impact low to high

> In addition, "New car launches" will have a significant impact on car sales, but the overall number is expected to remain the same in 2010 with more than 90 launches

> On the other hand, "Vehicle penetration" in China of 48 cars per 1,000 people is still very low compared to mature markets, such as the US with 765/1,000 or Germany with 546/1,000. In the future, this demand will result in significant higher growth rates compared to other global markets

All this means that the overall market growth rate for passenger vehicle sales in China is expected to decrease to 15% in 2010.

Up through 2015, the long-term market drivers will further push overall growth, leading to the above-indicated CAGR range of 9-11%. Therefore, China is a very promising market for local as well as international automotive players.

But as 2009 has shown, the very young Chinese car market and consumers can be significantly influenced over the short term. This contrasts with the long planning timelines and strategies of the automotive industry.

Players have to integrate this possibility into their scenario planning/risk assessments and need to develop the right tool set to be able to adjust in a flexible way to sudden market changes.

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# 2025 – HOW WILL THE AUTOMOTIVE INDUSTRY LANDSCAPE CHANGE?

## Insights into how megatrends will lead to significant changes and their consequences for all automotive stakeholders

**Preview of Roland Berger Strategy Consultants' ongoing global study of the automotive industry**

The automotive industry has always been more foresighted than other industries due to the central role of innovation, the required investment budgets and the length of product lifecycles. Turbulences and downturns among formerly successful players over the past month have once again demonstrated the importance of anticipating future developments. Nevertheless, many automotive stakeholders are still overestimating the impact of the next two to three years, while underestimating the power of managerial decisions to determine success or failure in 2025.

Considering different economic, societal and technological scenarios and evaluating their impact will help automotive decision makers better anticipate the requirements they will have to face in the future.

Roland Berger Strategy Consultants has challenged a number of commonly assumed megatrends that will have a significant impact on automotive players in the coming decades.

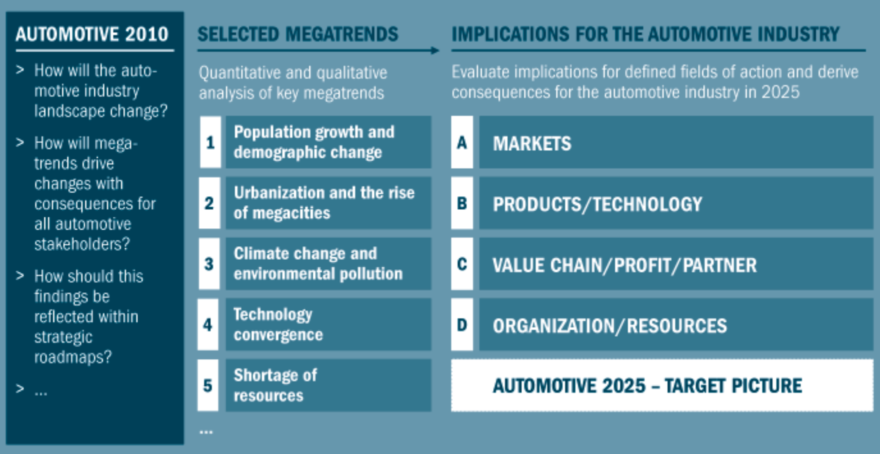
These trends and their implications for products, markets, value chains and organizations must be better reflected in the current strategic roadmap of all OEMs and suppliers. In this preview, we focus on four selected trends and their implications for the automotive industry over the coming decades. We base the information on the findings of our ongoing global study of the automotive industry "2025 – How will the automotive industry landscape change?" The study is a joint production by Roland Berger Strategy Consultants and Amrop Partnership, one of the leading executive search companies in the world, and is due to be released in 2010.

**Trend 1: Population growth and demographic change**

In the next 15 years, the world's population will grow to 8 billion, up 16% from its current level. Of this total, 84% (approx. 7 billion people) will be living in developing or emerging countries, an increase from approx. 6 billion today.

At the same time, annual population growth around the world will decline to an average of 0.9% in 2025. There will be enormous regional differences here between developing and developed countries.

**Automotive 2025 study – Approach**




Source: Roland Berger

India, for example, will see minimal slowdown, while annual population growth in China will fall to 0.3% by 2025. Countries such as Japan, Germany, Italy and even Russia will shrink significantly in terms of population between now and 2025.

Life expectancy will continue to increase. The median age will rise globally from approx. 29 today to approx. 33 in 2025 (43 in the developed world, approx. 31 in less-developed countries). By then, almost 30% of the population in the developed world will be over 60 years old. Asians will be, on average, five years younger than North Americans and ten years younger than Europeans.

For the automotive industry, this development will lead to a major shift of almost one-third of the world's car demand from West to East.

**Trend 2: Urbanization and the rise of megacities**
Between now and 2025, both the number and the percentage of people living in cities will increase dramatically, from more than 3 billion today to more than 4 billion in 2025, or from 51% to 57% of the total population. The level of urbanization will remain much higher in the developed world than in developing countries: in 2025, 80% of all people in developed countries will live in cities, up from 75% today. In developing countries, the average urbanization rate will be 53% in 2025, compared with 45% today.

The number of megacities – cities with more than 10 million inhabitants – will grow to 27 by 2025, with two-thirds of them in Asia alone. The largest cities by then will be Tokyo (with approx. 36 million inhabitants), Mumbai (approx. 26 million), Delhi (approx. 22 million), Dhaka (22 million) and São Paulo (approx. 21 million).

For the automotive industry, this trend will lead to a shift of vehicle segment shares toward smaller city cars with new powertrain technologies.

**Trend 3: Climate change and environmental pollution**
Average global temperatures are expected to rise by 0.5 to 1.5 degrees Celsius between now and 2030. The past 25 years have seen an overall increase in temperatures of 0.4 degrees, with greater incidence of extreme weather events in recent years.

Levels of greenhouse gases such as carbon dioxide ($CO_2$), methane and nitrous oxide in the environment have increased by 70% in the last 35 years. Even without additional emissions, the concentration of $CO_2$ in the environment will continue to rise from its current level of 383 parts per million (ppm) to more than 430 ppm in 2030 due to inertia in the system. In fact, a 40% increase in annual $CO_2$ emissions is expected by 2030 unless new government regulations are introduced.

The global automotive industry will be confronted with much more restrictive emission targets. New powertrain and mobility concepts are needed to reduce $CO_2$ emissions.

**Trend 4: Technology convergence**
Nanotechnology, biotechnology, information technology and cognitive science – often referred to together as "NBIC" – are set to converge. New applications within the next 10 to 20 years are expected to improve individual and group efficiency, for example by enhancing human/machine interfaces and providing highly effective communication techniques. Other applications will allow controlled manipulation of structures on the molecular level, leading to the emergence of new materials and man-made machines operating on a microscopic level.

But even on more conventional ground, performance of electronics, software and telecommunications technology will continue to advance rapidly, in terms of processing speed, miniaturization, cost and functionality. Technology will permeate every realm of life, bringing increased connectivity and electronically enhanced human and machine capabilities or "mechatronics". The primary areas of innovation will be machine control and intelligence, telematics, information and service provision, entertainment and user interfaces.

# 2025 – HOW WILL THE AUTOMOTIVE INDUSTRY LANDSCAPE CHANGE?

The availability of innovative and superior technology is a key prerequisite for facing future challenges. The main challenge will be to combine and integrate such technology in a competitive and affordable concept.

### Implications for the automotive industry

**Field of action A: MARKETS**
Market developments through 2025 will differ significantly in line with population growth and demographic factors. This means that automotive stakeholders must anticipate the shift in importance among different regions in their business strategy. At present, Europe is a key region for the automotive industry, but the focus will shift to India, China, Brazil and SEA.

Since customer requirements vary considerably in these regions due to differences in e.g. wealth, infrastructure and population density, this will add further complexity to the automotive world. Automakers must adjust their product/technology strategy accordingly (see field B) and reconsider their value chain/partnering approach (see field C) and prepare for the change in organization/resources (see field D).

**Field of action B: PRODUCTS/TECHNOLOGY**
To master the strategic challenges of tomorrow, companies must develop an innovative product and technology portfolio. We identified four strategic fields that have a significant impact even on today's product innovations.

#### Emission reduction
Action in the area of emission reduction is mainly driven by government targets for $CO_2$ emissions and fuel efficiency. We are likely to see still tighter regulations for emission targets, such as 95 g/km in the EU in 2020 and similar levels for the US and Japan, and harsher penalties, tax incentives and subsidies to promote fuel-efficient technology. End customers will show growing environmental awareness, but their willingness to pay for green technology is likely to remain limited.

Technology innovations to reduce emissions toward zero levels will focus mainly on powertrain technology, including fuel consumption reduction, exhaust cleaning technology, hybrids and electric vehicles. Downstream, a radically different infrastructure for charging vehicles will evolve.

#### Safety and security
Safety innovations are driven by increased traffic density and the number of road fatalities. Although personal safety is an important purchase criteria, customers will continue to show only limited willingness to pay for it, especially when it comes to mandatory features. Most passive safety features and driver assistance systems such as lane-assist, adaptive cruise control and blind spot detection will thus become must-haves in the vehicle – as airbags did years before.

We expect to see new opportunities created by innovative active safety systems and integrated active and passive components that provide tangible customer value and are easy to use.

#### Comfort and convenience
As people grow older and become more prosperous and the amount of time they spend in the vehicle increases, their need for comfort and convenience also grows.

Ergonomically designed boarding, loading and seating solutions for seniors will see increasing demand, for example. New approaches to connectivity and communication will also be required.

Automakers must effectively manage the complexity resulting from the increasing number of electronic devices and functions inside the vehicle. Tomorrow's vehicles will be enabled to communicate with their situational environment. With advanced sensors, wireless connectivity, positioning technology and enhanced information about the environment being integrated into existing automotive technology, cars are becoming increasingly intelligent, adaptive and autonomous.

#### Affordability
In 2025, the developing world will account for 84% of the total global population. This represents huge sales potential. Automakers must design and develop new products to suit customer requirements in these markets. Indeed, the demand for budget mobility solutions will not be limited to developing countries, but will also play a key role in developed markets.

# 2025 – HOW WILL THE AUTOMOTIVE INDUSTRY LANDSCAPE CHANGE?

Affordability translates primarily into the need to offer low-cost cars and new products and business models. Product costs must therefore be further reduced by means of modularization, standardization, sourcing strategies and a clear focus on features with real, tangible value for customers.

**Field of action C: VALUE CHAIN/PROFIT/PARTNER**
Future high investments in new products and technologies and the development of new markets and customers will push collaboration and new partnership models between current competitors. Alliances and networks will become more important than ever – also leading to further consolidation of the automotive landscape.

The demand to secure access to limited resources will result in greater vertical integration along the entire value chain, including raw material, component and system suppliers and vehicle manufacturers.

Product innovations in "green" and "safe" products require a number of technically innovative components and systems. This will lead to the market entry of new "non-automotive" players, such as cell manufacturers, network operators and telecommunications providers. In addition, new business models will appear in the area of mobility services and concepts.

**Field of action D: ORGANIZATION/RESOURCES**
Mastering the above challenges will be no easy task, particularly within the required timeframe and with restricted budgets. As a result, the ability to achieve excellent deliverables in flexible, temporary, cross-company project teams will be a key success factor. Therefore, the importance of HR in enterprises to identify and recruit the "right" talent and train and motivate employees will increase further in future – this will be the case also in the "new" markets abroad.

Our ongoing study of the automotive industry "2025 – How will the automotive industry landscape change?" takes a closer look at both the megatrends and their impact on the industry. It includes insights from a wide range of industry experts on key markets, products, technologies, business models and related HR strategies. It also outlines a number of possible future scenarios and presents our practical recommendations for automotive stakeholders.

Sources: IPPC, Stern Report, International Energy Agency, Institute of Energy Economics, National Science Foundation, United Nations, World Bank, UN Habitat, United Nations Population Division, city mayors, Roland Berger.

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# PROF. DR. KLAUS MANGOLD – INTERVIEW

## "Growth will be back in 2010"

**Prof. Dr. Klaus Mangold**
Chairman of the Committee on
Eastern European Economic Relations

**1. How strong was the impact of the historic downturn on the Eastern European and Russian economies?**

Although the crisis actually started in the US, Eastern Europe was hit harder than any other region in the world. The crisis led to huge amounts of capital being pulled out of the region; oil, gas and steel prices decreased; currencies came under pressure. By the end of 2008, Eastern Europe had gone almost overnight from a nearly ten-year economic boom, with gross domestic product growing an average of 7% per year, into a deep recession. Ukraine and the Baltic states were hit particularly hard. Russia saw its GDP fall by nearly 8%. German trade with the region fell by around 30%. On the positive side, however, we can say today that international aid prevented entire domestic economies in Eastern Europe from crashing. Russia had saved up healthy financial reserves in the good times, which gave the region room to maneuver in order to safeguard the banking system and to set up economic programs.

**2. What is your perspective on the pace and degree of economic recovery of the Eastern European and Russian economies?**

Growth will be back in 2010. We are expecting Russia to grow at least by 3.5%, for example; the optimists are even talking about 5% or more. That, of course, depends on raw material prices, which have recovered significantly in recent times. Russia may well become the region's growth driver again, pulling countries as for example Ukraine, Belarus and Kazakhstan with it. Southeastern European countries such as Romania, Serbia and Bulgaria will find things harder; but, here too, the peak of the crisis is already behind us, and moderate growth is possible. What really matters is that the suffering from the crisis is used to finally realize the economic reforms that countries have been procrastinating about: they need to continue consolidating the banks and push ahead with building up broad-based, less crisis-prone SMEs.

**3. What are the key risks and opportunities?**

A crisis is not the worst time to invest: local currencies have been devalued against the euro, acquisition opportunities are good, wages and rents are falling. German companies, which traditionally invest over the long term and continuously, have maintained a strong presence in Central and Eastern Europe. Despite the crisis, German direct investment in Russia still increased in 2009, for example, and a survey published by the Committee on Eastern European Economic Relations shows that German companies are planning to keep on investing billions in the region in 2010. The main uncertainty is that a potential credit squeeze could put the brakes on consumption and corporate investment in Eastern Europe. Moreover, soaring government expenditure needs to be reined in again since it would hamper economic growth in the long run.

**4. What is your perspective on the current situation and potential of the Eastern European and Russian automotive industries?**

Automotive industry sales fell dramatically in most countries in Central and Eastern Europe. Only in Russia, new vehicle sales decreased by 49% in 2009. Avtowaz, Russia's largest manufacturer and still the market leader, had to face a decrease in vehicles sales of approximately 50% and had to lay off more than 30,000 staff. Other Russian manufacturers such as GAZ and Kamaz suffered setbacks too. There were several reasons why demand fell: import duties on new vehicles in Russia were increased up to 30%; interest rates rose; credit was tight; and the ruble was devalued, although it has risen again since. As a result, the crisis in the Russian automotive market also hit foreign producers. Finally it was the manufacturers already producing on the Russian market that prevented the collapse from worsening. Despite selling less than the year before, Volkswagen, for example, expanded its market share by 50%, thanks to its plant in Kaluga. Nevertheless, the Russian automotive market is still huge, counting 231 vehicles per 1000 residents at present. But I do not expect the old sales figures to return until 2014.

**5. What is your assessment of the opportunities for European, American and Asian car manufacturers and suppliers in Eastern Europe and Russia?**

Of course, Russia is the most interesting market due to its size and the still enormous backlog of catching up with motorizing in Eastern Europe. The entire Russian automotive industry needs to be thoroughly modernized. Only technology partnerships with Western companies can help, like those which exist already between Renault and Avtowaz, Daimler and Kamaz or Sollers and Fiat as well as the one Opel and GAZ have been considering in the past year. Unit costs in Russia are still higher than in Western Europe, because production volumes are relatively low. In the medium term, however, locating production in Russia is the only way forward. The most urgent task still is to establish a viable supply industry in Russia. German suppliers in particular should consider their involvement here.

**6. What are the key opportunities for the Eastern European and Russian automotive industries in Western Europe and beyond?**

First of all, Russian manufacturers need to do their homework in order to modernize their production and organizational structures thoroughly and adapt to international competition. Only then one can consider expanding abroad. There is already a considerable demand of Russian commercial vehicles on the markets of the former Soviet Union as well as in some developing countries. Russian cars, on the other hand, can hardly compete with foreign products on their domestic market. Nevertheless, things could be different here, as the example of Dacia shows. With a sound, but at the same time cost-effective vehicle, the Romanians have succeeded not only in maintaining their traditional markets, they have even taken a share of Western markets and helped Renault increase its share in the global market. Meanwhile, 17% of all vehicles sold by Renault come from Dacia. Global demand for low-price cars is going to rise in the upcoming years, opening up new opportunities for Russian and Eastern European car makers.

# HOW TO COORDINATE INTERNATIONAL ACTIVITIES IN THE AUTOMOTIVE INDUSTRY

## Joint study by ESCP Europe and Roland Berger Strategy Consultants

Automotive manufacturers and suppliers face intense global competition. As a result, optimizing a company's international value chain represents a decisive success factor. The key levers in designing the cross-border value chain are (1) choosing the locations where specific activities are carried out and (2) coordinating the geographically dispersed activities. Even though manufacturers and suppliers have been steadily expanding their international activities in recent years, they have only partially focused on how to manage them properly. However, automotive managers have repeatedly pointed out that international activities need to be coordinated more efficiently. Therefore, the Department of International Management and Strategic Management at ESCP Europe Campus Berlin and Roland Berger Strategy Consultants are conducting a joint study on the appropriate way of coordinating international value activities.

The objective of the study is to develop recommendations for coordinating development, production and marketing activities of automotive companies by identifying best practices throughout the industry. It will not only be worked out which mechanisms are particularly well suited to coordinate certain functions, but it will also be taken into account how the mechanisms have to be adapted to increasingly internationalized activities. Furthermore, it will be analyzed how additional factors, for instance a company's competitive strategy, affect the optimum choice of coordination mechanisms. The study's findings will help automotive manufacturers and suppliers to improve the coordination of their activities and thus help to resolve a current management problem.

**Core questions**

> How do coordination mechanisms differ between various functions?
> How does the use of coordination mechanisms change when activities become increasingly decentralized?
> Which coordination mechanisms are particularly efficient when coordinating specific functions, taking the respective geographic distribution into account?
> What other factors influence the choice of coordination mechanisms?

Questionnaires will be sent to executives in management accounting and general management positions at all German automotive companies between March and April 2010. If you are a member of the study's target group, you may have already received the questionnaire or you will receive it in the next few days. If you did not get any questionnaire but would like to participate in the study, we will be very pleased to provide you with one. Please send us an E-Mail (philipp.grosche@escpeurope.de).

We would be very grateful if you could spare about 25 minutes to answer our questions and send back the completed questionnaire until 30th April 2010. You will directly benefit from your participation in the study: In return for your support, we will send you a detailed report of the study's results including valuable recommendations on how to coordinate your international activities successfully.

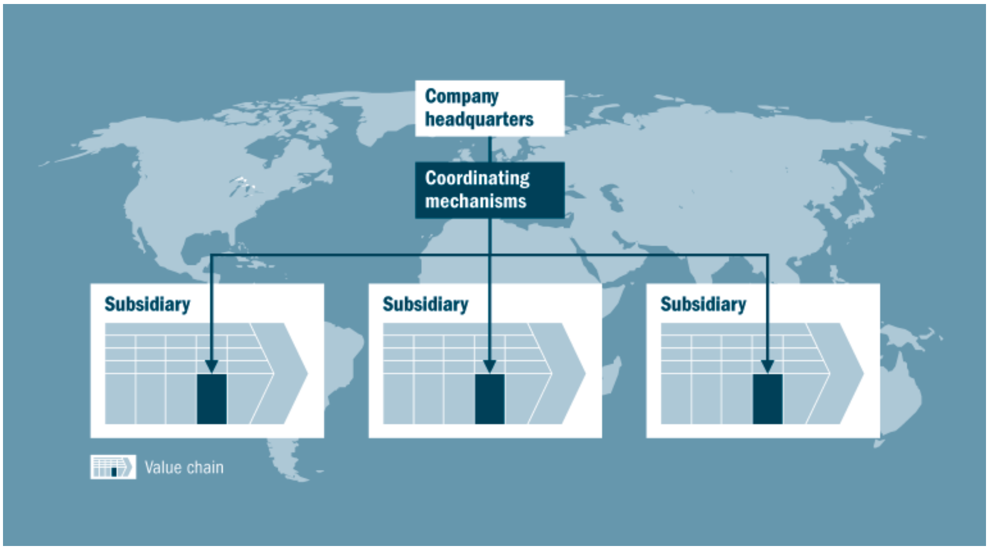
The study is being conducted by Dr. Wolfgang Bernhart (Roland Berger Strategy Consultants), Prof. Dr. Stefan Schmid and Dipl.-Kfm. Philipp Grosche (both ESCP Europe Campus Berlin). If there is more information you would like to receive, Dipl.-Kfm. Philipp Grosche will be happy to help (Telephone: 030-32007-193, Telefax: 030-32007-107, E-Mail: philipp.grosche@escpeurope.de).

**Project partners**

The Department of International Management and Strategic Management, headed by Prof. Dr. Stefan Schmid, is among the most renowned International Management departments in Germany. The department's teaching and research activities have a strong practical component. Evidence of the productivity and quality of research conducted is provided by numerous publications in national and international journals and by the department's regular participation in international conferences. Central to its activities are international research projects of practical relevance, such as this project with Roland Berger Strategy Consultants. For more information see www.escpeurope.de/imsm.

ESCP Europe (formerly ESCP-EAP European School of Management) has campuses in Paris, Berlin, London, Madrid and Torino. With five independent locations in five European countries, the transnational programs of ESCP Europe provide not only training in theoretic and practical business issues, but also an intensive intercultural experience. ESCP Europe is regularly ranked among the top business schools worldwide and is particularly well regarded in terms of its international character and practical orientation.

The German campus in Berlin is one of only two business schools in Germany which have been recognized by all three major international accreditation agencies – AACSB, AMBA and EQUIS. ESCP Europe was founded in 1819 in Paris, thus being the oldest business school in Europe.



# BOOKS & STUDIES

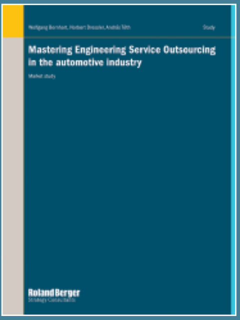
**Mastering Engineering Service Outsourcing (ESO) in the automotive industry – Market survey**

The Engineering Service Outsourcing (ESO) market is growing steadily and offers flexibility and cost-saving potential for Original Equipment Manufacturers (OEMs) and Original Equipment Suppliers (OESs). While certain domains (e.g. body/interior) will not see major growth rates, powertrain and electronics/electric (E/E) are the fastest-growing segments for outsourcing.

Both vehicle manufacturers and suppliers are facing increasing pressure on development costs and must leverage engineering outsourcing to benefit from gains in flexibility and efficiency. Emerging market players, in particular, provide the right assets, in terms of both a low-cost engineering workforce and the mastery of low-budget vehicle design concepts.

**Interested in the study?**
**Contact: dana_rehfuss@de.rolandberger.com**

Due to a steep learning curve, they are now increasingly advancing into the high-end segment, and also urging established market players to engage in low-cost engineering. We at Roland Berger have examined with a market survey amongst leading automotive managers major trends and successful business practices in engineering outsourcing. Based on our findings we have formulated comprehensive insights and recommendations for both, the OEM/OES as well as the Engineering Service Provider side.




## FAMOUS CARS
## BMW 3.0 CSL Coupé

This car was part of the E9. Between 1968 and 1975, a total of about 30,000 were produced. The first 3.0 CSL coupés were produced for motorsport purposes in 1971. These touring cars served to follow up on BMW's success with the BMW 02. The name CSL (Coupe Sport Leichtbau) describes the car quite well: the lightweight coupés initially didn't improve on the performance of the 3.0 CS, but thanks to rigorous methods for keeping the weight down, an empty vehicle weighed in at just 1165 kg and could go from 0 to 100 km/h in just 7.4 seconds. The first series comprised of 169 of these most of them upgraded and used for racing. The one shown here was made in November 1971 and delivered to be converted into a Group 2 competition car. This car has been rebuild to the original competition standards, the engine (3.5 l, around 330 horsepower), chassis and body correspond to the specifications of the BMW Motorsport Group 2 of 1972. This car is absolutely unique and cannot be found on the market.

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