



CBI
Ministry of Foreign Affairs

CBI Product Factsheet:

Engines and Engine Parts for passenger vehicles in Germany, France, Spain, Italy and the United Kingdom

Introduction

Engines and engine parts are and will likely continue to be a growing market in the 5 biggest economies in the European Union (the EU5), especially in the aftermarket sector. Germany is the largest market with more than €12.6 billion in imports, of which 10% is sourced from developing countries. Germany, France and the UK are showing the biggest growth in terms sourcing from developing countries. Legislation on CO2 reduction has a very high impact on technological improvements. In the next few years, developing country exporters' focus should be on internal combustion and hybrid engine system components and on providing cost-saving and ecofriendly products made of alternative and lightweight materials. In the longer term, market potential will move to new propulsion technologies, such as electric cars and fuel cells.

Product description

Engines in general are used for an infinite number of purposes. This Product Factsheet provides an analysis of the market for engines and engine parts as used in passenger vehicles in the five biggest EU economies: Germany, France, the UK, Italy and Spain (or: EU5 countries).

Engines and their parts are grouped under "Spark-Ignition Reciprocating Piston Engines", "Spark-Ignition Rotary Internal Combustion Piston Engines", "Compression Ignition Internal Combustion Piston Engines" and "Parts suitable for use only with these engines" (HS codes 84073100, 84073210, 84073290, 84073310, 84073390, 84073410, 84073430, 84073491, 84073499, 84079050, 84082010, 84082031, 84082035, 84082037, 84082051, 84082055, 84082057, 84082099, 84099100 and 84099900). We focus on the difference between internal combustion engines, which mainly use diesel and petrol, and (semi) electric engines.

Figure 1: Engines and engine parts



Source: Fotolia/Internet

Product specifications

Quality

The quality of the engine parts used in European vehicles is very high, with consumers paying attention to reliability, followed by durability, fuel consumption and cost of repair. The quality of materials used in the manufacture of spare parts needs to be high to ensure their durability, heat resistance and safety. The supplied parts have to be carefully inspected, as defective parts will be returned.

Materials

Most modern engines are made of aluminium, hardened steel and toughened steel, white-metal (lead and tin mix), bronze faced steel and some rubber components. There is a clear trend towards the use of more lightweight materials (e.g., combination of aluminium and magnesium). Engine spare parts include mainly:

Engine blocks, cylinders and cylinder heads, crankshafts, bearings, pistons, valves, camshafts, gaskets, spark plugs, alternators, oil filters, fans, coils, pumps, connecting rods, intake and exhaust valves, carburettors and air cleaners.

Tip:

- The EU's technical requirements differ per product. To explore the technical requirements of your product, please see the [EU Export Helpdesk](#) and the [International Trade Centre's Standards Map](#)

In general, packaging is determined by the buyer: either the Original Equipment Manufacturer (OEM) or the end user (retailer, or wholesaler in the aftermarket). Returnable packaging is most often used by OEM suppliers, in order to reduce

costs and to improve the efficiency of packaging operations. Returnable packaging is not discarded after use and the empty packaging is recycled by the OEM or by a designated packaging operator. In the aftermarket sector, packaging is typically disposable, as it is discarded after being used just once.

Tip:

- For more information on requirements for packaging and packaging waste, please see the [European Commission](#).

The packaging of engines requires great care. Engines are typically packaged on steel plates and/or on pallets, packed with protective foam and/or plastics transported in wooden or cardboard boxes.

In order to export to the EU, product packaging must comply with EU standards and legislation, for example:

- Wood packaging materials used for transport (including dunnage) ([Directive 2000/29/EC](#)): Europe sets requirements for wood packaging materials such as packing cases, boxes, crates, drums, pallets, box pallets and dunnage (wood used to wedge and support non-wood cargo).
- Another packaging-related directive is the general directive about packaging and packaging waste ([Directive 94/62/EC](#)). This directive stipulates the marking of the kind of packaging material used, and the maximum levels of heavy metals allowed in the packaging material.

Due to increased outsourcing of engine parts, the packaging costs are expected to rise in the coming years.

Figure 2: Packaging of engines and engine parts



Source: Fotolia/Internet

Design

The design of parts is customised to the make and model of the engine (end product). Automotive manufacturers use a platform strategy within a brand but may also use the same or similar engines or engine parts for different brands under the manufacturer's umbrella. The complexity lies in the fact that they all have their own specific part number, so only the expert can identify the commonality. Developments in engine design relate to researching alternative propulsion technologies (e.g. biogas, fuel cells, etc.), the electrification of vehicles, and the increasing of engine power. In general, demand is moving towards high-performance vehicles. Another trend is the reduction of the engine weight. Steel is increasingly replaced with combinations of aluminium and magnesium applications.

Buyer Requirements

Requirements can be divided into:

- (1) musts; these are legal and non-legal requirements you must meet in order to enter the market and
- (2) common requirements; requirements that most of your competitors have already implemented; in other words, the ones you need to comply with in order to keep up with the market.

Musts: The most important requirement for automotive components such as engines is that they comply with the technical standards set by EU legislation in order to guarantee vehicle- and environmental safety.

[Whole Vehicle Type Approval](#) (WVTA) is a certification for various types of motor vehicles and their components, which include agricultural and forestry tractors. The WVTA is valid in all EU Member States and is required when selling any products in the EU. Many automotive components including engines are not approved until the final assembly, in which case certification of individual components is not necessary, although these components will still have to comply with type-approval requirements

Tips:

- Check with your buyer, or with [the approval authority of the country you want to export to](#), what the specific standards are for the parts you are manufacturing.
- Read more about type approval at the [EU Export Helpdesk](#).

The End of Life Vehicles (ELV) Directive aims to avoid environmental pollution during the scrapping process through reducing the hazardous materials used in vehicle production. Vehicles must be designed to facilitate proper dismantling

and recycling (by coding the components) and the use of heavy metals such as lead, mercury, cadmium and hexavalent chromium is prohibited (with the exception of a few applications).

Tip:

- Check if your buyer uses the [International Material Data System \(IMDS\)](#). This is a collective, computer-based data system developed by automotive OEMs to manage environmentally relevant aspects of the different parts used in vehicles. It has been adopted as the global standard for reporting on material content in the automotive industry.

In addition, more legal requirements are stated in our study on [buyer requirements](#). When exporting chemicals, we refer to the [REACH regulation](#). In the EU, buyers are responsible for [CE marking](#), which means that they will have to meet additional requirements on safety, health and environmental protection.

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Common buyer requirements:

Common requirements can be those put in place by the public sector (such as standardisation bodies), or they may be industry-led requirements (such as buyer requirements and private standards). Private standards are on the rise in Europe, and include industry-led (niche) initiatives used to create enhanced quality, traceability and unity in design and dimensional specifications.

In general, standards can focus on quality of the product and production process (including social and environmental issues).

Quality Management: In order to apply for type-approval, production processes need to meet quality management criteria. ISO TS/16949 focuses on the design, development and production of automotive-related products and ISO 9001 is a more general quality standard. Both are accepted as standard requirements and EU buyers and manufacturers often insist on them.

Tips:

- Implement [ISO 9001](#) and [ISO TS/16949](#), as it is a standard requirement of EU buyers.
- Check [our study on buyer requirements](#) in the automotive industry for more information.

The EU has set [binding emission targets for new cars and vans](#). This means that every new car or van sold is permitted a certain amount of CO₂ and NO_x emission. Note that nowadays the pollution levels are only measured in the lab. Recent scandals with respect to real-world pollution levels versus the levels in lab tests led to the introduction of the Real Driving Emissions (RDE) test by the EU in February of 2016. This means that, starting from September 2017, cars sold in the EU must pass an RDE test. Since the emission targets will become stricter on a gradual scale, new cars need to become less thrifty every year. This will lead to increasing demands by OEMs towards their engine suppliers.

Tip:

- Be prepared that the requirements stated by your buyer might become even stricter in the future, in order to comply with binding emission targets.

Corporate social responsibility (CSR) and the extent to which buyers expect a certain level of social and environmental performance is becoming increasingly important. Bigger EU companies have developed their own CSR policies and require their suppliers (and their sub-suppliers) to conform to these. Signing a supplier code of conduct is often a prerequisite. These codes of conduct generally cover compliance with local laws, protection regarding workers' health and safety, respecting basic labour rights and also business ethics. The implementation of an environmental management system is often a requirement for core suppliers.

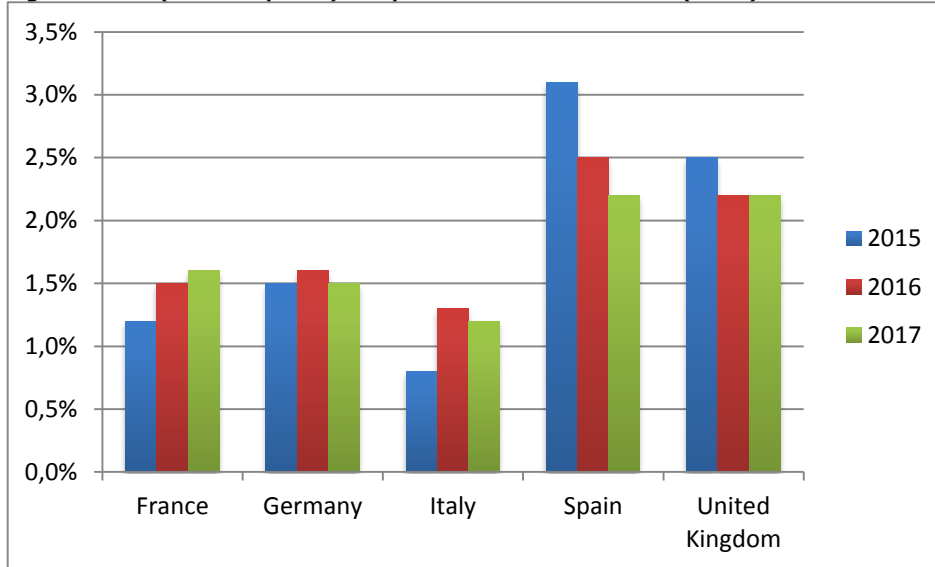
Tips:

- The leading car producers publish their CSR policies and supplier code of conduct on their websites. An Internet search for these may give valuable insight into assessing your company's performance by comparison.
- Implement an environmental management system, such as [ISO 14001](#), as it is a common requirement.

Macroeconomic statistics

The national Gross Domestic Products (GDPs) of EU5 countries saw an average growth of 1.1% in 2014. The International Monetary Fund (IMF) predicts an average GDP growth of 1.8% in EU5 countries between 2015 and 2017. The GDP growth factor is an important economic indicator and therefore a predictor for the production of as well as the demand for engines and engine parts.

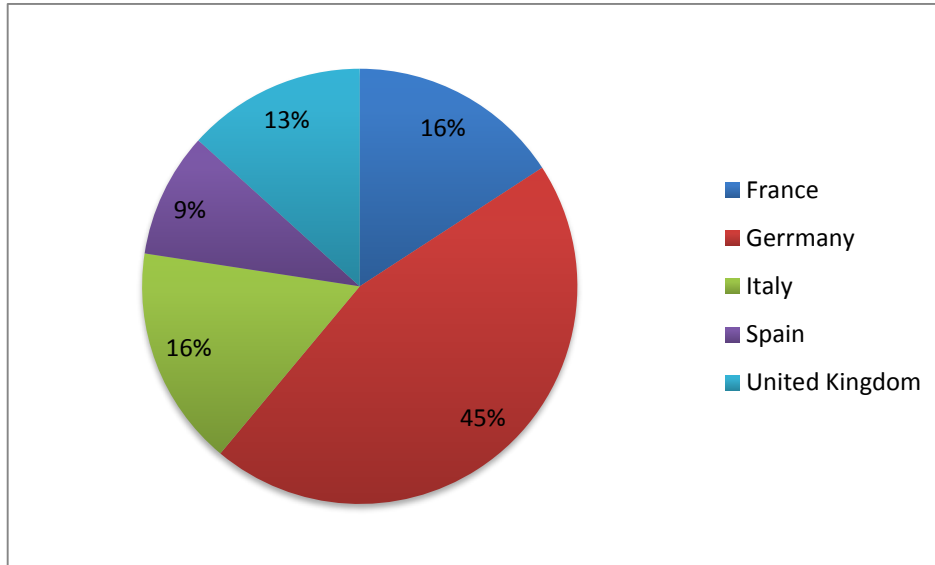
Figure 2: GDP (constant prices) Compound Annual Growth Rate (CAGR) forecast for 2015 - 2017 in EU5



Data source: IMF 2015, World Economic Outlook Database

The total national GDP value for the EU5 countries together was estimated at about €9.5 trillion in 2014. Germany is the largest market in the EU5 with a GDP of €2.91 trillion accounting for a share of almost one third of the total GDP and with by far the strongest manufacturing base of all EU5 countries (€670 billion in 2014). Germany is followed by France and the UK, each representing roughly one fifth of the GDP value and 15% of the total manufacturing value for the five countries. France and the UK are followed by Italy, with a GDP value of €1.6 trillion and a manufacturing value of €242 billion. With a 2014 GDP of almost €1 trillion and a manufacturing value of €138 billion, Spain is the smallest of the five economies.

Figure 3: Relative national manufacturing value 2014 in EU5 countries



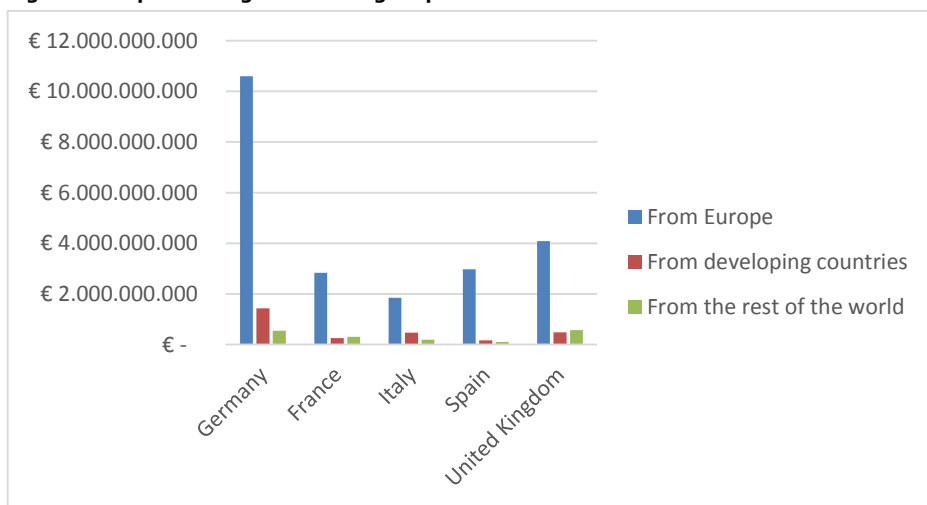
Data source: IMF 2015, World Economic Outlook Database

Trade Statistics

Imports and exports

EU5 imported roughly €26.9 billion worth of engines and engine parts in 2014. Germany alone represents more than 46% of the imports with an import value of €12.6 billion in 2014. It is followed by the UK with €5.1 billion and France with €3.4 billion. The imported engines and engine parts are mainly shipped from within the European Union (83,1%), while 16.9% is imported from elsewhere. The import of engines and engine parts has grown by a CAGR of 3.4% between 2010 and 2014.

Figure 4: Import of engines and engine parts in the EU5 in 2014

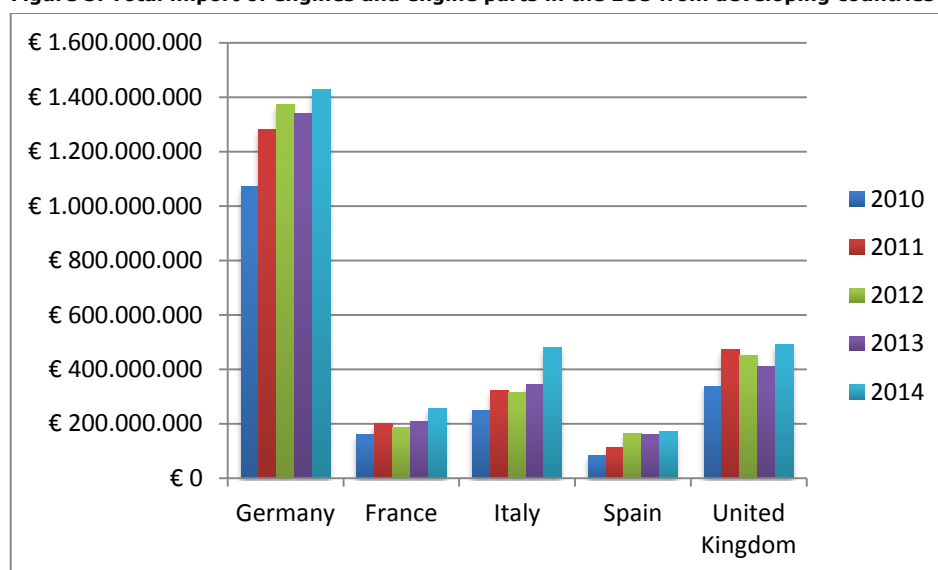


Datasource: Eurostat, 2016

Imports of engines and their parts from developing countries to EU5 represented almost €2.8 billion (10.5% of total) in 2014 and have grown by a CAGR of 10.4% between 2010 and 2014. Germany, the UK and Italy import the most in absolute terms, together accounting for almost 85% of developing country engine imports with €1.4 billion, €492 million and €479 million respectively. Import from Spain and Italy showed the greatest growth. These countries showed a CAGR of respectively 20.4% and 17.6%, demonstrating a great opportunity for developing countries.

The biggest developing country exporters of engines and engine parts to EU5 countries are Turkey (€1.1 billion), China (€499 million), Brazil (€363 million) and India (€280 million), together accounting for more than 80% of engine imports from developing countries to EU5. The engine imports from these four countries have more than doubled in the last five years. Out of these countries, only imports from Brazil decreased between 2013 and 2014. For the future, suppliers from developing countries can expect increasing volumes, but growth is far from linear. For example – the UK's CAGR of import from developing countries fluctuated between -9.2% and +40.0% between 2010 and 2014. Because of these dynamic markets, suppliers from developing countries should spread their risks or be able to easily adapt their production capacity.

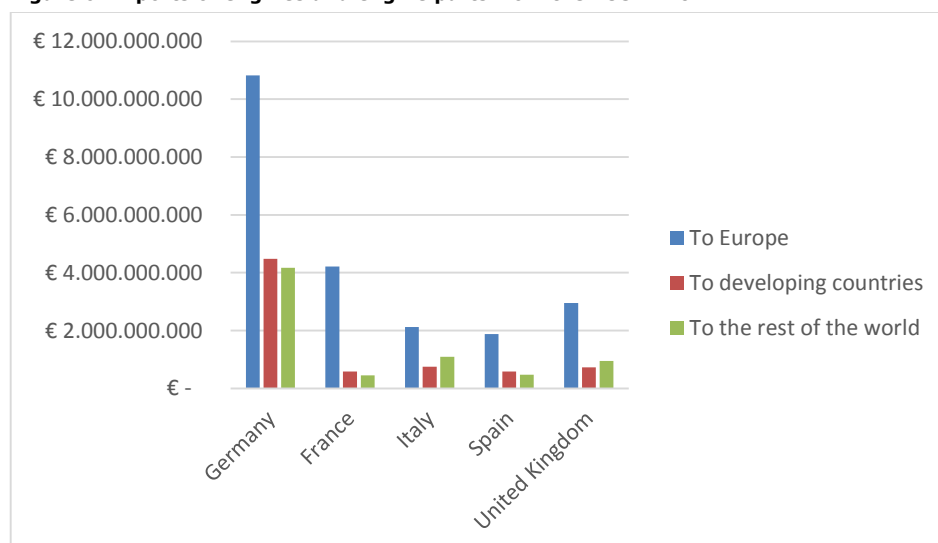
Figure 5: Total import of engines and engine parts in the EU5 from developing countries



Data source: Eurostat 2015

EU5 is a net exporter of automotive engines and engine parts. In 2014, it exported €36.2 billion worth of these. Germany is by far the largest exporter of engines and engine parts among the EU5 countries, with more than €19 billion in exports (comprising a 53.7% share of all EU5 engine and related parts exports). It is followed by France with €5.3 billion (14.5% share of the total) and the UK with €4.6 billion (12.8% share of the total). The export market is subject to developed countries, as more than 80% of the exports end up sold in Western and Eastern Europe and in countries like the United States, Russia, Japan and South Korea.

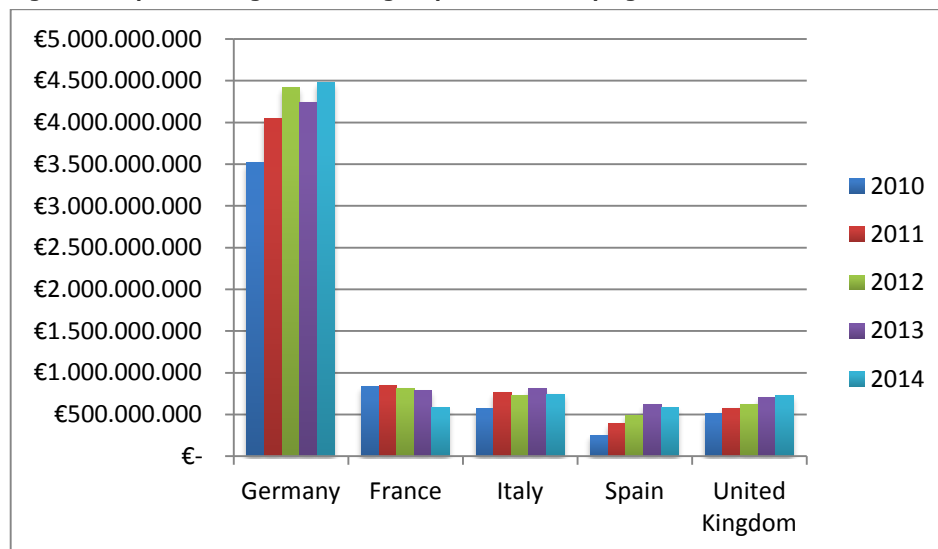
Figure 6: Exports of engines and engine parts from the EU5 in 2014



Datasource: Eurostat, 2016

Although export of engines and engine parts to developing countries has been growing by a CAGR of 5.8% between 2010 and 2014, the growth is declining. The main reasons for the reduced export growth are the reduced economic growth in some of the major developing countries and the intensified global competition. Whereas the CAGR was 16.5% between 2011 and 2010, the number dropped to -0,6% between 2013 and 2014. The export to developing countries declined for France in particular with a negative CAGR of 25.7% between 2013 and 2014. Turkey, China, and Mexico are the largest importers from EU5 countries and together account for €4.2 billion or 58.8% of exports to developing countries.

Figure 7: Exports of engines and engine parts to developing countries



Data source: Eurostat 2015

For more information on automotive trade statistics, read our study [on the demand for automotive products in the European market](#).

Market trends and opportunities

Product related trends and opportunities

- *The struggle between internal combustion engines, hybrid and electric engines will not be over anytime soon.* In 2014, internal combustion and hybrid engines still dominated the market. One important factor in the struggle between combustion versus electric engines is the price of oil. The prognosis for 2016 is that oil prices will remain low, which will work in favour of combustion engines. In the longer term, the demand for electric engines is expected to rise slowly but this growth will still depend on country-specific subsidies, loading infrastructure and vehicle price.
- *Engine manufacturers and parts suppliers should focus on CO₂ reduction.* Around the world, but especially in Europe, the demand for cleaner engines is growing as a result of binding emission targets. CO₂ reduction is the most important issue in engine manufacturing. Suppliers able to produce engine parts that help lower CO₂ emission have great opportunities in the European market.
- *The greatest opportunities for these components lie in the engine parts that are subject to wear, such as oil pumps, flywheels, injection system parts, power take-offs and exhaust system parts.*
- *Approach the local automotive parts wholesalers or the OEMs.* The easiest way to market your products would be to approach the local automotive parts wholesalers or the OEMs and/or component/systems suppliers with a subcontracting offer. Contacts can be made at trade fairs; which are generally good places to network with OEMs and parts and components suppliers.

Market-related trends and opportunities

- *The OEM market as well as the aftermarket offer opportunities.* Although the European automotive market is expected to stagnate in the short/medium term due to an already very high density of car ownership, there are still opportunities to be explored by developing country exporters in the OEM market as well as in the aftermarket sector (including new spare parts and overhauled components).
- *Germany is the biggest and most attractive market for automotive engines and parts.* This is largely because the country is a major automotive hub and has managed to keep most of its manufacturing activities at home. Engines

and parts originating from developing countries constitute one-tenth of German imports and the general trend has been that this share is on the rise.

For more information on automotive market trends, read our study [CBI Market Trends](#)

Price

Apart from the distribution of new parts, the aftermarket for automotive parts also encompasses a lively distribution of used or overhauled parts and components. Pricing depends on the supply chain positioning. The aftermarket, in particular, is very discount-driven and has varied mark-ups at each distribution step, and for different parts and components. Due to large variation in types and models of parts, it is difficult to provide a general overview of engines prices, but it is possible to provide some insight into margins imposed by different players in the supply chain. Based on the margin ranges, developing country suppliers selling to the Tier 3 supplier in the OEM supply chain could price their products at between 64% and 81% of the OEM delivery price. The differences in price of branded spare parts will not be great among the various countries. Those players who are present in several European countries have largely harmonised their prices; any differences in pricing may occur because of different logistics and local costs. In the Original Equipment segment, the price is set by 4+ year contracts, which usually include a 3-5% price reduction each year after the first year. In the aftermarket, the prices are negotiated every year.

OEM supply chain	Margin
Tier 1 supplier delivering to OEM	7-9%
Tier 2 supplier delivering to Tier 1	7-17%
Tier 3 supplier delivering to Tier 2	11-27%
Aftermarket Original Equipment Supplier (OES)	Margin
Tier 1 delivering to OEM for OES sales through approved service chain	11-32%
Tier 1 delivering to OEM for OES sales through independent outlets	11-27%
OEM delivering OES parts through its approved service chain	26-67%
OEM delivering OES parts through independent outlets	31-42%

Tip:

- In order to better ascertain prices of specific products and models, you should talk directly to wholesalers and local experts. The only way to gain information about products or materials within specific markets is with inside information.

Main sources

- [OECD](#) – good source for macroeconomic and industry-specific information
- [CLEPA](#) - European association of automotive suppliers
- [ACEA](#) - European automobile manufacturers association
- [EY](#) - Automotive information - Automotive information – good source on automotive information
- [Inovev](#) - Worldwide automotive knowledge platform that offers free-of-charge and fee- based content
- Trade fairs are a good place to network, to meet buyers and to promote your company. The most prominent agricultural machinery trade fairs in Western Europe are: [Hannover Messe](#) - World's leading trade fair for industrial technology taking place in Germany; [Internationale Automobil-Ausstellung](#) (every year) – German automotive trade fair; [Barcelona Motor Show](#) (once every two years) – Spanish automotive trade fair; [British International Motor Show](#) (organised by SMMT once every two years); [Paris Motor Show](#) (once every two years) – French automotive trade fair and [Bologna Motor Show](#) (every year) – Italian automotive trade fair.



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