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**UK SPPI for Maintenance and Repair of Motor
Vehicles**

ISIC 4520

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Introduction

The aim of this paper is to describe the development and methodology used in the UK price index for maintenance and repair of motor vehicles.

The paper will follow the traditional mini-presentation format for Voorburg papers. Chapter 1 will take a brief look at the classification of this industry and the definitions of services included in the UK index. Chapter 2 will highlight the pricing unit which the price index is conceptually trying to measure. In chapter 3, the paper will take a look at the market conditions within the UK for repair and maintenance of motor vehicles. Chapters 4 and 5 will discuss the standard classification structure used in the UK index and evaluate how this compares to the actual industry. Chapter 6 takes a closer look at how the index aligns with national accounts whilst chapters 7 and 8 will consider in more detail the methodology used in the price index (including a look at the index results). Finally, chapters 9 and 10 will evaluate the comparability of the index with turnover measures and provide a brief summary and conclusion.

It is worth noting at this early stage that the UK Services Producer Price Index (SPPI) for repair and maintenance of motor vehicles is calculated using non-standard methods. During the initial development of the industry it was identified that a source of data already published relevant pricing information that could be utilised in the place of a more traditional method of price collection (such as the regular collection of price data via questionnaires). This data source was a private company and covered price data for the repair and maintenance of vehicles by main UK car dealers and franchises. To calculate the UK SPPI, this source of data was supplemented by price data from the UK Retail Price Index (RPI) to cover repair and maintenance prices at a more localised level (smaller garages etc.).

However, concerns regarding the quality of data received from the third party source led to the UK SPPI for repair and maintenance of motor vehicles being updated in 2008 to be based on component prices collected via the UK RPI.

1. Definition of the service being measured

The maintenance and repair of motor vehicles is classified to industry 45.20 in NACE revision 2.¹

The classification structure as detailed in NACE revision 2 is as follows:

45.20 – Maintenance and repair of motor vehicles

This class includes:

- Maintenance and repair of motor vehicles:
 - Mechanical repairs
 - Electrical repairs
 - Electronic injection systems repair
 - Ordinary servicing
 - Bodywork repair
 - Repair of motor vehicle parts
 - Washing and polishing etc.
 - Spraying and painting
 - Repair of screens and windows
 - Repair of motor vehicle seats
- Tyre and tune repair, fitting or replacement
- Anti-rust treatment
- Installation of parts and accessories not as part of the manufacturing process

This class excludes:

- Re-treading and rebuilding if tyres

The NACE revision 2 classification for this industry aligns perfectly with the 2007 UK Standard Industrial Classification (SIC2007).² The Statistical Classification of Products by Activity (CPA 2008)³ provides a slightly different breakdown of products compared to the NACE/SIC classification (see annex A).

Traditional development of the UK SPPIs will use both the UK SIC 2007 and CPA as a starting point, and try to develop a tailored product classification based on discussions and feedback from industry research. However, at an early stage in this industry development, the SIC classification was deemed fit for purpose.

2. Pricing unit of measure

Within the UK industry of maintenance and repair of motor vehicles the services provided by UK companies tend to be repeatable and well specified. The unit of price measurement can vary depending on which service is being measured, for example the service element of most repairs will be based on a labour cost per hour

¹

<http://circa.europa.eu/irc/dsis/nacecpacon/info/data/en/NACE%20Rev%202%20structure%20+%20explanatory%20notes%20-%20EN.pdf>

² <http://www.statistics.gov.uk/statbase/product.asp?vlnk=14012>

³ <http://circa.europa.eu/irc/dsis/nacecpacon/info/data/en/cpa%202008%20structure.pdf>

whilst other components of repair and maintenance will have a set price for the service that is being provided (for example, the price to repair a punctured tyre or the price to carry out a full car service etc.).

In each of the above cases, the pricing method implemented is the collection of repeatable well specified prices. Each service that is included in the basket needs to be well specified so the price determining characteristic is fixed to allow pricing to constant quality. For example, in the collection of periodic prices for the annual service of a motor vehicle, the class of vehicle (in terms of the size – 3 door, 5 door etc.), the vehicle grouping (sports car, family saloon etc.) and age (3-4 years old, 4-5 years old) etc. need to be well specified as each characteristic may have an effect on the price charged.

3. Market conditions and constraints

3.1 Industry size

In 2010, according to the UK Interdepartmental Business Register (IDBR)⁴ there were 34,014 companies classified under the industrial classification of maintenance and repair of motor vehicles (based on the UK SIC2007 classification). The total turnover from enterprises classified to the industry is worth £24 billion to the UK economy.

The majority of the enterprises in the UK market fall within the ‘small business’ category which is defined as those with 0 – 9 employment (at just over 90% of all enterprises). These smaller enterprises will tend to be local garages that predominantly offer services to household customers. However, despite being the largest category in terms of enterprises, this only has a turnover market share of 27%. The ‘largest business’ category (determined as those companies with 300+ employment) accounts for just 0.15% of enterprises but the largest share of turnover (at just under 30%). These larger enterprises will traditionally provide services to other businesses, for example the provision of maintenance and repair to car franchises, national hire fleets etc.

The following table and chart provides a breakdown of the UK repair and maintenance of motor vehicles industry (as defined by enterprise classified to 4520 – SIC2007):

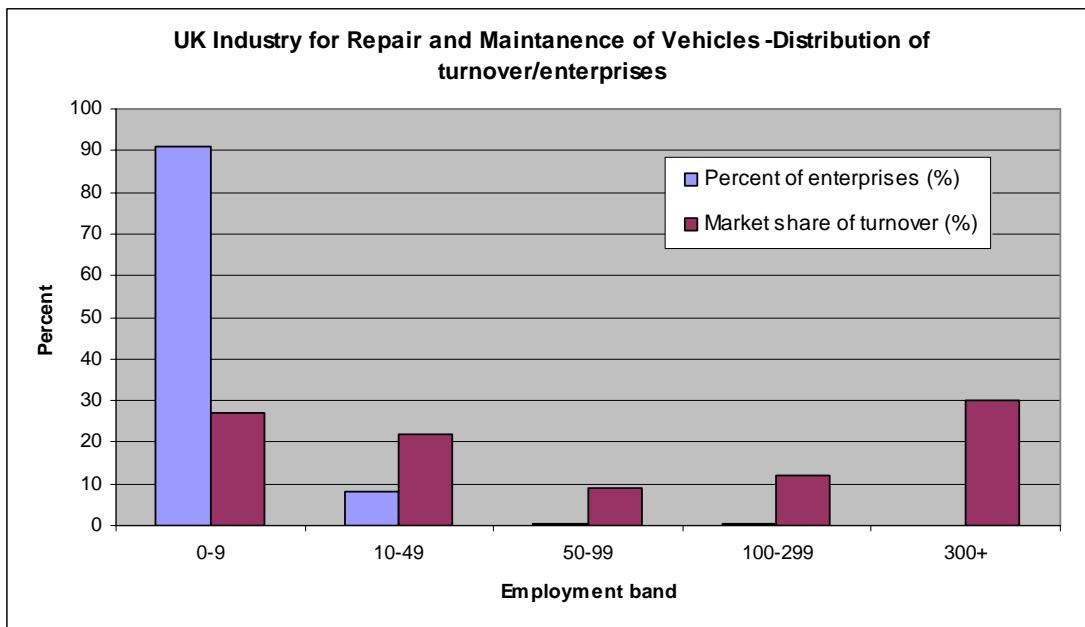
Table 1 – distribution of enterprises and turnover – UK Maintenance and Repair of Motor Vehicles

Employment category (size)	Number of enterprises	Percent of enterprises	Turnover £million	Market share of turnover
0-9	30,973	91%	6.4	27%
10-49	2,722	8%	5.3	22%
50-99	178	0.5%	2.1	9%
100-299	89	0.3%	2.8	12%
300+	52	0.2%	6.9	30%
Total	34,014	100%	23.5	100%

Source: *Inter-Departmental Business Register (2011)*

⁴ <http://www.statistics.gov.uk/idbr/idbr.asp>

Figure 1 – Distribution of enterprises and turnover by employment size band (UK Maintenance and Repair of Motor Vehicle industry)



Source – UK Interdepartmental Business register (IDBR)

As can be seen from the above chart, despite being dominated by the smaller enterprises the industry share of turnover is consistently spread across the different sized enterprises.

3.2. Characteristics of the industry/constraints⁵

The UK industry of maintenance and repair of motor vehicles can broadly be thought to cover three sectors – car servicing and repairs, car body repairs and car breakdown/recovery services. Of these three sectors, the largest is car servicing and repairs which tends to be highly competitive due to the large number of service providers located throughout the UK.

Traditionally, for the largest sector of the industry the services will be provided by a wide range of enterprises:

- Franchised car dealers
- Independent garages
- Garage chains and auto centres
- Car body repairs
- Fast-fit centres

Enterprises will suffer from varying market constraints depending on both the nature and size of the enterprise. For example, in the UK new cars are generally sold with a 3 year warranty of which annual maintenance by the car franchise is a condition of sale. Therefore, the franchised car dealers can monopolise this share of the market

⁵ This section lends heavily from the publication 'Keynote Automotive Services, Market Report 2008'.

for all cars less than three years of age. The prices charged by franchised dealers will often be higher than those charged by independent garages.

The UK car industry requires each licensed vehicle (over three years of age) to pass a safety/suitability test each year called the Ministry of Transport test (MOT). This is a lucrative market because garages require official authorisation to issue MOT certificates and this comes at a considerable set up cost (expensive equipment and qualified staff). Therefore these set up costs are likely to be too high for smaller garages so the larger franchises and garages will benefit from this share of the market. The cost of an MOT is set centrally and reviewed each year, however most customers will take their vehicle for an annual service and MOT at the same time meaning those able to offer MOT services will also benefit from the additional maintenance and repair work that comes with this trade.

Independent garages will range from one-man enterprises to large organisations with several outlets. Traditionally, the larger garages and franchises will be able to offer discounts for business contracts (and therefore take most of the business) due to the large volume of cars likely to be covered. The smaller independent garages tend to focus on household trade for older vehicles for a number of reasons. Firstly the smaller garages don't have enough staff to service a business contract, and in some cases they are unlikely to have the latest facilities required to service the newer business fleet cars. It is often the case that the smaller garages already offer competitive prices compared to the larger franchise so further discounts for volume business work are not feasible.

Finally, at the lower end of the market there are fast-fit and auto centres which provide the repair and maintenance service for unscheduled drive in services (i.e. the replacement of tyres, exhausts, brake pads etc.). These enterprises will tend to have a lower cost base than the larger garages due to the relatively simple service being offered and therefore prices can tend to be more competitive to attract custom.

4. Standard Classification Structure and Product Details

As detailed in section 1 above, the UK SPPI for maintenance and repair of motor vehicles is based on the UK SIC2007, which aligns perfectly with NACE Rev.2. The UK only publishes data at the aggregated industrial level for this industry. There are a few small differences in the CPA classification which can be seen in annex A of this paper.

During development, the UK used both the UK SIC and CPA to try and develop a further, more suitable list of products for which price data could be collected. This initial research identified that two sources of data could be used to provide an accurate proxy to price for this industry. These sources together covered the majority of the services classified to this industry as laid out in the UK SIC. However, following quality assurance, one of these sources has been removed (the price data provided by a private company) due to data quality issues which now means the UK SPPI for maintenance and repair of motor vehicles is calculated solely using RPI data. The product level data collects prices (approx 1000 each period) for the following product areas:

- Car maintenance and repairs – main franchise (labour per hour)
- Car maintenance and repairs – local dealer (labour per hour)
- Car servicing main franchise
- Car servicing local garage

- Exhaust fitting in fast fit centre
- Brake fitting in fast fit centre
- Automatic carwash
- Roadside recovery service

Below this level will be a range of well specified services which are re-priced each period.

5. Evaluation of standard vs. definition and market conditions

As detailed above, the products covered by the UK price index for maintenance and repair of motor vehicles aligns with the UK SIC/NACE rev.2, however the index specifically does not collect price data for tyre and tune repair, fitting or replacement and anti-rust treatment. It is felt that the definitions used in the UK price index provide acceptable, representative coverage of the industry.

6. National Accounts concepts and measurement issues

The UK National Accounts use deflated gross turnover to derive a volume indicator for this industry. The SPPI for maintenance and repair of motor vehicles is used indirectly to deflate gross turnover that is collected via the UK Monthly Business Survey. The SPPI is used ‘indirectly’ as the national accounts team take the data directly from RPI (remembering the UK SPPI is calculated using RPI data).

7. Pricing method used

As mentioned previously in this paper, the UK SPPI for this industry is calculated using prices from the UK Retail Price Index (RPI). The history behind this decision is not well documented from the initial development back in the early 2000’s. This initial development identified two sources of price data that could be used to calculate a SPPI for the maintenance and repair of motor vehicles. The first source was from a private company that carried out its own survey of prices within the sector. This survey was aimed solely at the larger franchised car dealers and produced monthly price indices covering repairs and maintenance of vehicles and the contract hire price of vehicles (which would also be used to produce a SPPI for contract car hire).

This data was initially supplemented with prices from the UK RPI that covered the maintenance and repair of motor vehicles by smaller independent garages and other sectors of the industry that the private data source did not cover. The two sources were weighted together using a 60/40 split (in favour of the private data source).

Anecdotal evidence from the initial development found that the price mechanisms used in the industry were typically based on repeated and well-specified services (i.e. the maintenance and repair service is traditionally provided on a labour cost per hour basis, supplemented by the cost of parts or any other supplementary requirements such as MOT certificate etc.). There appears to be no real distinguishing difference between the standard hourly labour rate offered to business and private customers, however, volume discounts are traditionally available to allow for economies of scale (so large businesses will typically benefit from a discounted rate). In addition to this, the hourly labour rate can vary depending on the service being provided, so the hourly labour rate for the repair of a vehicle over 10 years old is likely to be different from the rate for the repair of a new model. The industry will tend to review and

amend these hourly rates/service prices at least on an annual basis to remain competitive and to take account of industry price pressures.

Quality assurance of the data being returned by the third party source raised concerns about the quality of the SPPI being derived. A resolution to the quality issue was not forthcoming so the UK SPPI was adjusted to be 100% based on RPI data (incorporating RPI prices from franchised car dealers).

Therefore, the current price method used in the UK SPPI is the direct use of prices for repeated services. These services are well specified in terms of the price determining characteristics and will either be for a defined service (such as the fitting of an exhaust to a specific make and model of car) or for a well defined unit of time (the labour price per hour for a pre-defined service). Note that in each case, the actual cost of parts is NOT included in the service price (unless they cannot be removed). These units of price are collected across the following product areas (number of items in brackets).

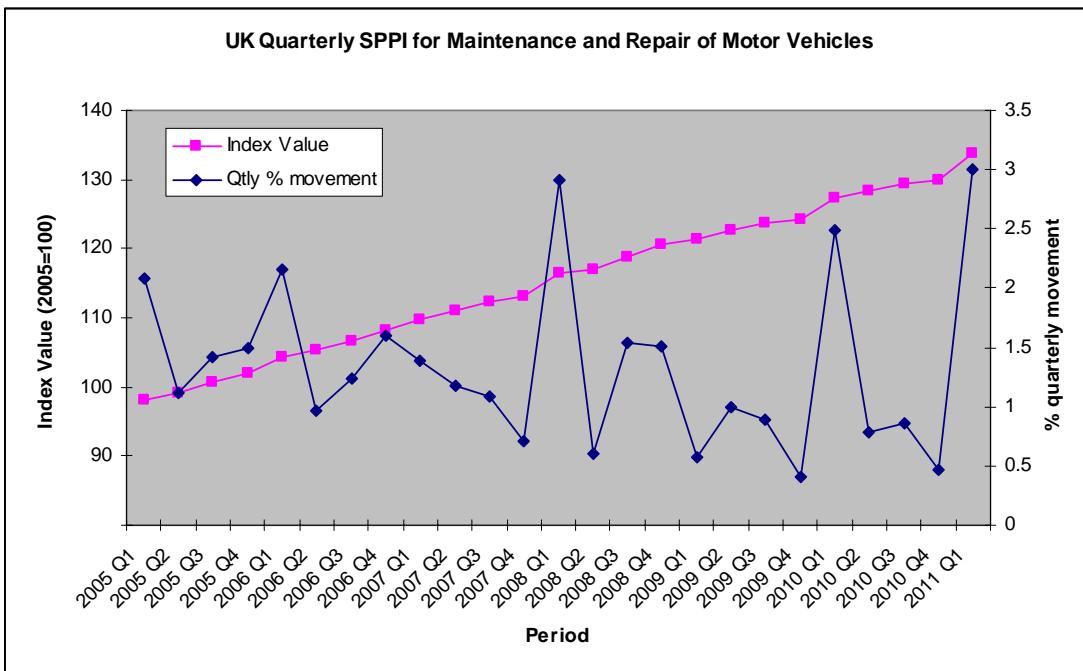
Table 2 – product detail and number of items collected

Product	No of items collected
Car maintenance and repairs – main franchise (labour per hour)	109
Car maintenance and repairs – local dealer (labour per hour)	203
Car servicing main franchise	211
Car servicing local garage	108
Exhaust fitting in fast fit centre	113
Brake fitting in fast fit centre	113
Automatic carwash	122
Roadside recovery service	21

The UK SPPI is based on the quarterly average of RPI prices. Conceptually, there is an argument that the RPI is missing the discount element of business-to-business prices. In addition, the price collected by RPI includes taxes as these prices represent the actual price paid by a consumer as opposed to the price actually received by a business which is required for output price indices. However, these issues have been deemed less important in comparison to the quality of price data that is collected for the RPI in this industry. The repairs and maintenance price index is used as a deflator in the UK National Accounts, although they use the RPI directly as opposed to the SPPI version. More generally this raises an interesting discussion point regarding the use of CPI/RPI price data as a proxy for output prices.

The following chart shows the index history for the UK SPPI (since the current base of 2005=100). As can be seen, prices in the industry have steadily increased quarter on quarter. The average price for services in this industry is now 35% higher than in the base period of 2005. The evidence behind these price movements suggests the increases reflect genuine market pressures (such as annual increases in staff costs etc.).

Figure 2. UK Quarterly SPPI for Maintenance and Repair of Motor Vehicles (index values and quarterly percentage movement)



8. Quality Adjustment methodologies

As detailed already, the UK SPPI for maintenance and repair of motor vehicles is published using a quarterly average of the monthly UK RPI for the industry. As such, the RPI guidelines for quality change are followed.

In all cases, the price collected for the price index should reflect a fixed basket of goods and services; however, products often disappear or are replaced with new versions of a different quality. When these situations arise, one of the following methods is adopted:

- Direct comparison
- Direct quality adjustment
- Imputation

Direct comparison – if there is another product that is directly comparable, then this product will be chosen to replace the old product. This can be described as replacing like-for-like and any price change is treated as genuine (and not quality). This type of quality adjustment method is unlikely to be used for the maintenance and repair of motor vehicles index.

Direct quality adjustment – this is the preferred method of dealing with replacement products or changes in quality. An attempt is made to place a value on the quality change so the item base price can be adjusted accordingly, however, this method can be very difficult to implement in practice for the maintenance and repair of motor vehicles industry.

Imputation – If no information is available to quantify a difference in quality then assumptions must be made to adjust for the quality. Effectively, this method applies the average change in the aggregate index to the new products base price to ensure that bringing in the new specification has no effect on the index for the specification change period.

9. Evaluation and comparability with turnover/output measures

The UK Office for National Statistics collects both short term (via a monthly business survey) and long-term (via an annual business survey⁶) turnover data which covers the maintenance and repair of motor vehicles industry.

The comparability between the data collected for turnover and SPPI is fairly high. Both sets of data are published according to the UK SIC2007 classification of the industry so will therefore align at this level. The data collection for the turnover survey is carried out via a sampled survey of enterprises classified to the industry on the UK IDBR. There is a slight difference in the collection of data for the price survey. In effect no enterprises are selected for traditional inclusion in the price survey as the price collection is carried out by a third party. For example, a representative set of garages, franchised dealers etc. are selected and price collectors visit these businesses to collect prices for well defined services each period.

Both the regular turnover and price data are used in the production of the UK quarterly Index of Services⁷. The volume indicator for this industry is derived by deflating gross turnover using both the aforementioned sources.

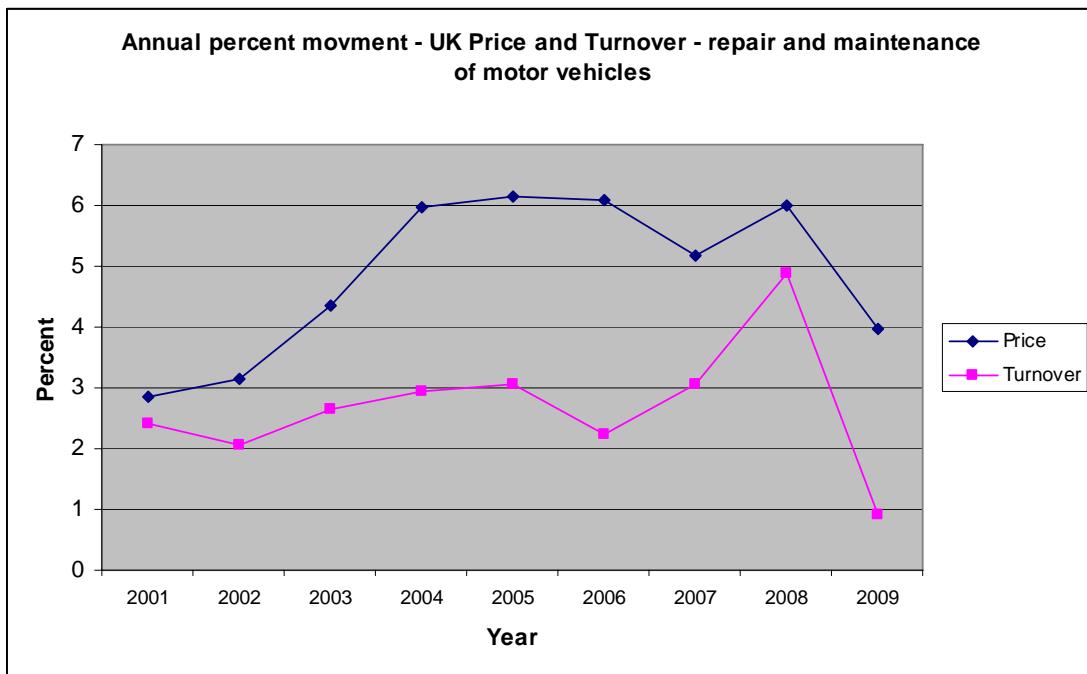
The following chart shows that the overall annual movement for both the turnover and price data in the UK follows a similar path during the period 2001-2009 (note 2009 is the latest period annual turnover data is currently available):

⁶ See

<http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=15361&Pos=&ColRank=1&Rank=256>

⁷ <http://www.statistics.gov.uk/statbase/product.asp?vlnk=9333>

Figure 3 – Annual percentage movement in UK price and turnover data for the maintenance and repair of motor vehicles industry (2001-2009)



Source – UK Office for National Statistics

10 Summary

The UK derives a SPPI for the maintenance and repair of motor vehicles from external sources. Historically this was based on both the UK RPI for maintenance and repair of motor vehicles and a private third party source, however, following quality concerns the index is now based solely on the RPI data.

The UK industry for maintenance and repair of motor vehicles is dominated, in terms of enterprises, by the 0-9 employment size band. However, in terms of turnover, the larger enterprises (over 300 employment) has the largest share at 30%.

Conceptually, the SPPI should measure output prices. However, it has been deemed acceptable to use the RPI price measure as a proxy for this industry. The RPI represents price charged to private individuals and will not accurately reflect any discounts for businesses or fleets. Discounts will also be included in the RPI if they are available to all potential customers. The RPI data will also include taxes as it is collected at purchaser's prices.

11. References

Baxter J (2008) *Automotive Services Market Report 2008*, Key Note Limited: Middlesex.

Annex A

Table 3 – Maintenance and Repair of Motor Vehicles – Overview of the different classification systems considered during UK development:

UK Standard Industrial Classification 2007	NACE Revision 2	CPA 2008
45.2 Maintenance and Repair of Motor Vehicles	45.2 Maintenance and Repair of Motor Vehicles	45.2 Maintenance and Repair of Motor Vehicles
45.20 Maintenance and Repair of Motor Vehicles – this class includes	45.20 Maintenance and Repair of Motor Vehicles – this class includes	45.20 Maintenance and Repair of Motor Vehicles
Maintenance and repair of vehicles: Mechanical repairs Electrical repairs Electronic injection systems repair Ordinary servicing Bodywork repair Repair of motor vehicle parts Washing and polishing etc. Spraying and painting Repair of screens and windows Repair of motor vehicle seats	Maintenance and repair of vehicles: Mechanical repairs Electrical repairs Electronic injection systems repair Ordinary servicing Bodywork repair Repair of motor vehicle parts Washing and polishing etc. Spraying and painting Repair of screens and windows Repair of motor vehicle seats	45.20.1 Maintenance and Repair of cars and light goods motor vehicles 45.20.11 Ordinary maintenance and repair services (except electrical system, tyre and body repair) of cars and light motor vehicles 45.20.12 Electrical system repair services of cars and light goods motor vehicles 45.20.13 Tyre repair services, including wheel adjustment and balancing of cars and light goods vehicles 45.20.14 Body repair and similar services (door, lock, window, repainting, collision repair) of cars and light motor vehicles
Tyre and tube repair, fitting or replacement	Tyre and tube repair, fitting or replacement	45.20.2 Maintenance and repairs of other motor vehicles
Anti-rust treatment	Anti-rust treatment	45.20.21 Ordinary maintenance and repair services (except electrical system, tyre and body repair) of other motor vehicles
Installation of parts and accessories not as part of the manufacturing process.	Installation of parts and accessories not as part of the manufacturing process.	45.20.22 Electrical system repair services of other motor vehicles 45.20.23 Body repair and similar services (door, lock, window, repainting, collision repair) of other motor vehicles 45.20.3 Car-washing, polishing and other similar services 45.20.30 Car-washing, polishing and other similar services

The shaded box indicates no-coverage in the UK index based on UK SIC 2007