ADVISORY PANEL ON CONSUMER PRICES – TECHNICAL

Measuring changes in used car prices

Purpose

1. There has recently been increased user interest in used car prices and in 2017 Eurostat undertook a review of the approaches taken in EU countries. The paper in Annex A explains the methodology used for the UK index and compares the results with those of other EU countries.

Actions

2. Members of the Panel are invited to:

a) comment on the analysis in Annex A

b) advise whether the methodology for measuring changes in used car prices should be reviewed, and if so, with what priority.

James Tucker
Prices Division, ONS
January 2018

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Annex A – Measuring changes in used car prices

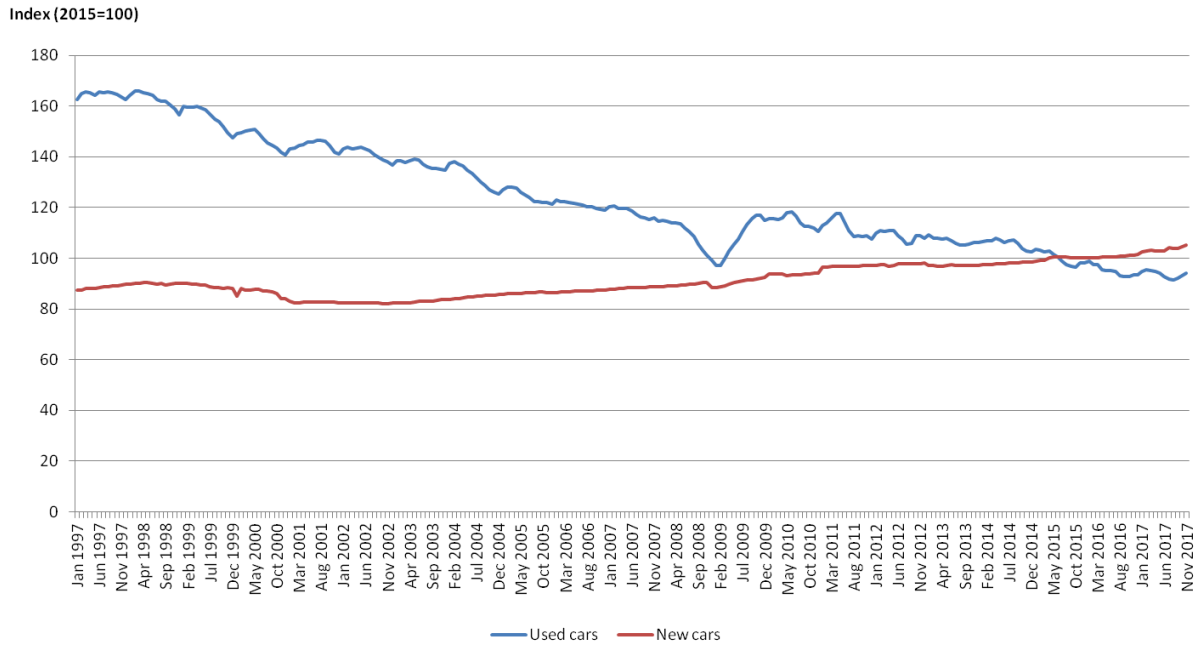
1. Background

Accurate measurement of changes in car prices is a challenging area for consumer price statistics. While producing an index for new cars is comparatively straightforward, for used cars quality adjustments are required to ensure that age and mileage are controlled for throughout the year.

Our methodology for used cars is explained fully in sections 2 and 3. Chart 1 shows that the UK used car index has shown a largely consistent strong downward trend, in contrast to the new cars index, which has shown a modest upward trend. There is a high level of user interest in car prices, perhaps linked to the UK having seen a large growth in car finance in recent years. The range of approaches employed across EU countries, along with divergent price trends, has also prompted Eurostat to review car price index methodology, with a focus on used cars.

This article gives further details of our methodology, and presents the results in the context of other EU countries.

Chart 1: CPI Used and new car prices, UK, 1997-2017



2. Used car index methodology

ONS produces two price indicators for used cars: one for two-year old and one for three-year old cars.
The two indicators are combined (giving equal weight to each) to give a single price index for used cars. The two component sub-indices are constructed identically, using the same sample of cars within any given year. A sample of 35 models of two-year and three-year old cars are priced using

retail prices information from a trade guide. These prices are weighted together according to the corresponding manufacturers' approximate market shares of new car sales two and three years before the current year, using data provided by the Driving and Vehicle Licensing Agency (DVLA).

To compile the index for two-year old cars, the base price for each model in the current year's sample is taken as the price recorded in the January edition of the trade guide for a car registered two years
earlier. For example, the cars adopted for pricing in January 2003 had 2001 'X' registrations. Prices of the same models were then tracked through the year using the trade guide.

3. Quality adjustment

An adjustment is made to the guide prices for February and later months so that the resulting index prices a 'constant quality' sample of models throughout the year. The guide specifies cars which have
been notionally registered in the March and September of each year. The average car of three years old or less is assumed to have covered 1,000 miles a month since its first registration. The January price is taken straight from the guide, but all subsequent months' prices are interpolated in order to ensure that a car with the same age and mileage is priced each month.

The base (January) price for each model in the sample of notional two-year old cars is taken directly from the January issue of the guide based on the registration plate first issued two years earlier. Using the 2003 example, in January a 2001 X plate was adopted. The required month's price after January for a two-year old car was interpolated between those quoted for a 2001 'X' and 2002 '51' of the same model. In February, the price was 11/12 of the 2001 'X' plus 1/12 of the 2002 '51'. In March, the respective weights were 10/12 and 2/12 and so on (see table below). By January 2004 the 'two-year old' car which was first priced with a 2001 'X' registration plate will have turned into a 'two-year old' car with a 2002 '51**'** plate. Similarly, a 'three-year old' had changed from a 2000 'W' to a 2001 'X'
registration. The 2001 'X' car which entered the sample of two-year old cars in January 2003 transferred to the 'three-year old' sample for pricing during 2004.

The following example shows how the interpolation for a two-year old car was carried out in 2003. The standard mileages assumed by the trade guide (in thousands) are indicated in parentheses.

January 2003		2001 X(22)			
February	11/12	2001 X(23)	+	1/12	2002 51(11)
March	10/12	2001 X(24)	+	2/12	2002 51(12)
April	9/12	2001 X(25)	+	3/12	2002 51(13)
May	8/12	2001 X(26)	+	4/12	2002 51(14)
June	7/12	2001 X(27)	+	5/12	2002 51(15)
July	6/12	2001 X(28)	+	6/12	2002 51(16)
August	5/12	2001 X(29)	+	7/12	2002 51(17)
September	4/12	2001 X(30)	+	8/12	2002 51(18)
October	3/12	2001 X(31)	+	9/12	2002 51(19)
November	2/12	2001 X(32)	+	10/12	2002 51(20)
December	1/12	2001 X(33)	+	11/12	2002 51(21)
January 2004		2002 51(22)			

4. Comparison with EU countries and trade used car indices

Eurostat have identified highly divergent results across EU member states, prompting them to further investigate the methods used. The most common pattern is in line with UK trends, with most countries showing a flat or slight upward trend for new cars, and a strong downward trend for used cars, with the strength of this trend being highly variable. The UK figure of -3.0% annually is slightly weaker than the mean of the countries included in the study (-6.0%, see Table 1).

Table 1: Annual average price changes for new and used cars in 25 countries (Source: Eurostat)[1]

	New cars	Used cars
UK	1.7	-3.0
France	2.2	-0.3
Switzerland	-1.0	-2.5
Portugal	0.6	-1.9
Netherlands	1.4	-1.8
Germany	0.7	1.1
Finland	-0.3	-2.4
Cyprus	-1.9	-4.0
Malta	-0.3	0.7
Estonia	0.6	-15.9
Hungary	2.5	-3.3
Bulgaria	-0.9	-15.9
Poland	2.3	-23.8
Croatia	3.3	-17.0
Czech Republic	-2.5	-5.2
Slovakia	-1.5	-13.2
Sweden	-0.5	-0.1
Luxembourg	1.4	-1.4
Slovenia	-0.4	-8.0
Latvia	-1.3	-2.4
Lithuania	0.5	-4.0
Belgium	0.8	.
Italy	1.7	.
Norway	0.9	.
Denmark	-0.6	.
Mean	0.3	-6.0
Std. dev.	1.4	6.7

1. The time periods used for each country vary depending on data availability

The Eurostat analysis concludes that used car methodologies should be improved across Europe. Guidance exists on an approach to adjusting for age and mileage, although it is apparent that a wide range of methods are employed by national statistical agencies. The guidance recommends calculating depreciation factors for each model of car at the beginning of the year, which would involve a significant additional data collection. It is also likely that this would not be compatible with our approach of using trade guide prices, as it involves collecting a sample of 'actual' car prices

which would need to be from a different source. There is no clear evidence to demonstrate that this method results in a more suitable index in the UK.

CAP HPI (a company specialising in car valuation data) produce a used car index that tracks the values of 3 year old cars with 60,000 miles. Although the full dataset and methodological detail is not publically available, this also shows a downward trend.

5. Economic factors

So far, this paper has considered methodological issues, but the climate in the used car market should also be considered. For example, there have been reports of there being a glut of used cars on the market, acting to drive prices down. An increased popularity of leasing might partly explain this, which would likely result in a larger volume of used cars on the market as the leases expire, in turn placing a downward pressure on prices.

6. Conclusions

The downward trend for used cars could be viewed as counterintuitive, particularly in the context of the slight increasing trend for new cars. The fact that the UK is broadly in line with EU trends and not at the extreme ends of the distribution is encouraging, although it does not provide unequivocal evidence that our quality adjustments for age and mileage result in an accurate reflection of price movements. Consistency with an external source also provides validation, but further analysis, access to data and a better understanding of the methodology would be needed to ensure that the approach is comparable to ours.

Undertaking a review at this stage would be a significant resource investment, both in terms of methodological work and data collection. Taken together with the results for other EU countries and potential economic explanations, we propose that a review is not undertaken at this point. Instead, we should closely follow international developments and further work by Eurostat, and contribute where possible to development of best practice.