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## Do expert reviews really drive demand? Evidence from a German car magazine

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# DISCUSSION PAPER

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# Do Expert Reviews Really Drive Demand? Evidence from a German Car Magazine

July 2014

Ralf Dewenter<sup>a</sup> and Ulrich Heimeshoff<sup>b</sup>

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## Abstract:

A wide range of media provide information on many products based on reviews or expert opinions. A natural question is, whether these reviews and expert opinions have any effect on sales. A small but growing literature in economics and marketing science deals with this issue, by testing the relevance of such product information for goods such as financial instruments, wine, books and movies. However, most of these products have in common that quality is very difficult to measure. It is always also a matter of taste whether these products can be seen as high or low quality goods. Based on a unique dataset, we test whether test scores published in a major German car magazine have significant impact on registrations of new cars in Germany. We find that test scores for certain cars have statistically significant impact on the number of new cars sold by several leading manufacturers on the German car market.

Keywords: Car magazines, Test Scores, Demand

JEL classification: L150, L820

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## 1 Introduction

Consumers' decisions on purchasing certain products largely depend on technical characteristics and the quality of a product (see Lancaster, 1971). Depending on a product's complexity and its price, the difficulty to gather the relevant information varies to a great degree. Customers might try out new fast moving consumer goods frequently, but for durable goods sampling is much harder. In general, customers try to get much more information before buying expensive goods as cars. However, complex goods as cars are difficult to evaluate, as the diversity of the product's components and its longevity makes it hard to compare the characteristics of several cars which might get into the customer's decision space. To some degree a potential buyer might rely on manufacturer's information which leads firms to spend significant budgets on advertising. Consumers are generally aware of the fact that all these information is provided by manufacturers to foster their sales. Therefore, it is natural that consumers try to find other sources of information which can be considered more objective. Magazines, newspapers, and TV shows provide such information for a long time and since the diffusion of internet access went off, the information available to consumers is really hard to quantify.

It is well known that media as car magazines and cinema magazines are sold in large quantities, but the economics and marketing science literature on the effects of expert opinions and test reviews published in such media is rather new and still comparatively small. There is some evidence that expert opinions or reviews in magazines may or may not have impact on consumers' buying decisions (see e.g. Eliashberg and Shugan, 1997; Reinstein and Snyder, 2005, Sorensen and Rasmussen, 2004; and Clement et al., 2008). A different strand of the literature analyzes the effects of reviews on wine demand (see Friberg and Grönqvist, 2012; Hilger et al., 2011; Ashenfelter and Jones, 2013). However, this study differs from the other literature because it utilizes data provided for customers by public agencies which might be more trustworthy to consumers than information provided by profit oriented private entities.

Another strand of the literature deals with financial products. In magazines and newspapers dealing with financial topics, recommendations and evaluations of certain financial instruments have a long tradition. As a result, the literature on recommendations of financial products is significantly larger than on media products and food (see Sirri and Tuffano, 1996; Jain and Wu, 2000; Cronquist, 2004; and Reuter and Zitzewitz, 2006).

Possible effects of expert reviews on sales is also of interest as a growing literature shows that some content in newspapers and magazines is likely to be biased towards medias' advertising customers (see Mullainathan & Shleifer, 2005; Ellman & Germano, 2009; and Gal-Or et al., 2012 for theoretical and Boykoff & Boykoff, 2000; Reuter & Zitzewitz, 2006; and Dewenter and Heimeshoff, 2014 for empirical studies). For this reason, we analyze the impact of car re-

views on new cars' registrations using different techniques by regressing the manufacturers' numbers of new registrations on aggregated tests scores as well as on some controls.

## 2 Data

We collected monthly data on test scores for six major car manufacturers in a leading German car magazine AutoMotor&Sport from March 2001 to December 2007.<sup>3</sup> Our information contains data on test scores for reviews of single cars and comparison tests between cars. The following table provides some descriptive statistics of our variables.

Table 1: Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min.	Max
New registrations per manufacturer	492	21,229.73	9820.62	5,519	49,210
Points per month per manufacturer	368	31.06	30.74	0	171
Number of tests per manufacturer	368	3.23	3.10	0	18
Average points per test per manufacturer	367	11.37	3.53	0	17
Ifo index of business climate	492	8612.65	3585.55	92	11,309

As AutoMotor&Sport is a biweekly magazine, we aggregated the points scored in car reviews on a monthly basis for every manufacturer. The main reason is the monthly publication of car registrations by the *German Federal Office of Motor Vehicles* (Kraftfahrzeugbundesamt). Furthermore, the number of reviews per manufacturer per month differs significantly. To cope with this problem, we calculated the average number of points per test for each manufacturer for single tests and comparisons. Additionally, we include the *ifo business cycle indicator*, which is published on a monthly basis by one of Germany's leading economic research institutes. This variable controls for variations in new car registrations due to general business cycle fluctuations.

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<sup>3</sup> These manufacturers are Audi, BMW, Mercedes-Benz, Opel, Toyota, and Volkswagen.

### 3 Specification and Results

We present our results for different specifications to explain the effects of test scores on new car registrations in the following table. We estimate static models as well as dynamic models by OLS. Additionally, we estimate a panel fixed effects model with AR(1)-disturbances suggested by Baltagi and Wu (1999) to account for possible autocorrelation in residuals. Dynamic models are better suited to cope with persistence of new car registrations over time (see Wooldridge, 2010: 271-373 on dynamic models). The ifo index controls for general economic conditions, which might influence consumers' decisions to purchase cars. We also include dummy variables for months and years to control for seasonalities and trends. Seasonalities or fluctuations based on advertising campaigns (also referred to as "pulsing campaigns") might have significant effects on new car registrations (see Feinberg, 1992). These effects are captured by monthly dummy variables in our regressions.

Table 2: Estimation Results

New Registrations	Static OLS	Dynamic OLS	Dynamic AR(1)- Disturbances
New Registrations <sub>t-1</sub>	-	0.349 (0.061)***	0.914 (0.019)***
Points per Test	0.037 (0.020)*	0.039 (0.019)***	0.056 (0.021)***
Ifo index	0.011 (0.010)**	0.010 (0.004)*	0.009 (0.005)
Manufacturer Dummies/FE	YES	YES	FE
Month Dummies	YES	YES	YES
Year Dummies	YES	YES	YES
Cons.	9.011***	6.495***	0.348**
Obs.	365	361	355
R <sup>2</sup>	0.91	0.92	0.91

Heteroscedasticity consistent standard errors on parenthesis. \*, \*\*, \*\*\*: Statistically significant on the 10, 5, and 1% level.

We find statistically significant effects of test scores on new car registrations which hold in all specifications. Furthermore, the size of the effect is rather consistent over our specifications. A one percent increase in test scores leads to a 0.04 to 0.06 percent increase in new car registrations. Related to a mean in new car registrations in our dataset of 21,230, this is a significant number. However, compared to the overall number of new registrations for certain manufacturers the numbers are still small, but still it seems that test reviews have a significant impact on

new car registrations.

#### **4 Conclusion**

Customers seek advice for purchasing durable goods in newspapers, magazines, TV shows, and websites. The economics and marketing literature testing whether these expert reviews and tests really effect consumers' decisions is still new and comparatively small. A large portion of the literature is based in media products like books and movies, food products like wine, or financial products. All these goods have in common that their characteristics are hard to measure and their judgment is very subjective. We show that test scores in a leading German car magazine have significant impact on new car registrations. A one percentage increase in test scores leads to a 0.04 to 0.06 percentage increase in new car registrations. As a result, consumers who are interested in purchasing a car do include the new information in their decision-making processes. The major advantage of our empirical study is the use of cars as an example because it is much easier to measure the characteristics of cars than that of other products used in the economics literature so far.



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