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**Estimation of Benefits to Consumers from
Competition in the Market for Automotive Parts**

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Estimation of Benefits to Consumers from Competition in the Market for Automotive Parts

Our ultimate goal is to measure the aggregate amount of economic benefits to consumers from competition in the market for automotive collision parts. As a preliminary step in this analysis, we have estimated the average benefit that consumers receive on individual sales of these parts. However, lacking complete data on the dollar amount of original equipment manufacturer (OEM) part sales, we have not yet been able to quantify the total dollar amount implied by these benefits; though at the end of this report we present a hypothetical example to illustrate what our estimates imply about the amount of total benefits.

Consumers benefit in two ways when Keystone (or another seller of competitive parts) enters the market with a competitive alternative to an OEM part. First, Keystone's price will usually be lower than the OEM's price. We refer to this as the "direct" benefit.¹ Second, Keystone's entry and competition usually results in the OEM reducing its price. We refer to this as the "indirect" benefit.

To allow us to quantify each of these benefits, we used publicly available data on OEM crash part prices, as well as data provided by Keystone on its prices from 2002 to 2007. Using the price data for OEM and Keystone parts, we estimated the following multiple regression model:

$$\ln(\text{OEM real price}) = a_i + b * \ln(\text{years since car model}) \\ + c * \text{Keystone indicator variable} + d * \text{years since Keystone entry},$$

¹ This assumes that the OEM crash parts and the competitive alternatives are of equal quality.

where:

OEM real price is the OEM price deflated by the producer price index for intermediate materials, supplies and components;

\mathbf{a}_i is a vector of fixed effects for each part type (this controls for fixed characteristics common to all parts in a generic group);

Years since car model is defined as the difference between the current year and the first car model year for which the part is used;

Keystone indicator variable is a variable that equals one if that OEM price is subject to competition from a Keystone part in that year, otherwise it equals zero;

and *years since Keystone entry* is a variable that equals the number of years a competitive Keystone part has been available if that OEM price is subject to competition from a Keystone part, otherwise it equals zero.

The “c” coefficient thus is the best estimate of the initial effect of Keystone entry on OEM prices, while the “d” parameter estimates the incremental effect on OEM prices for each additional year of competition from Keystone.² Our best estimate is that the average effect of Keystone’s introduction of competitive alternatives to OEM crash parts is to reduce those OEM part prices by 1.4% each year that the Keystone products are in the market.³

We used these estimated parameters to calculate the average “indirect” benefit per part that faced competition from Keystone. To do this, we first used the regression estimates to project what prices would have been⁴ for OEM parts subject to competition if

² It is easy to see how this might arise: imagine that, absent competition, OEM prices would have risen at 3% per year, but that with competition, they only rise at 2% a year – then, each year the gap between what prices are and what *they would have been absent competition* will increase.

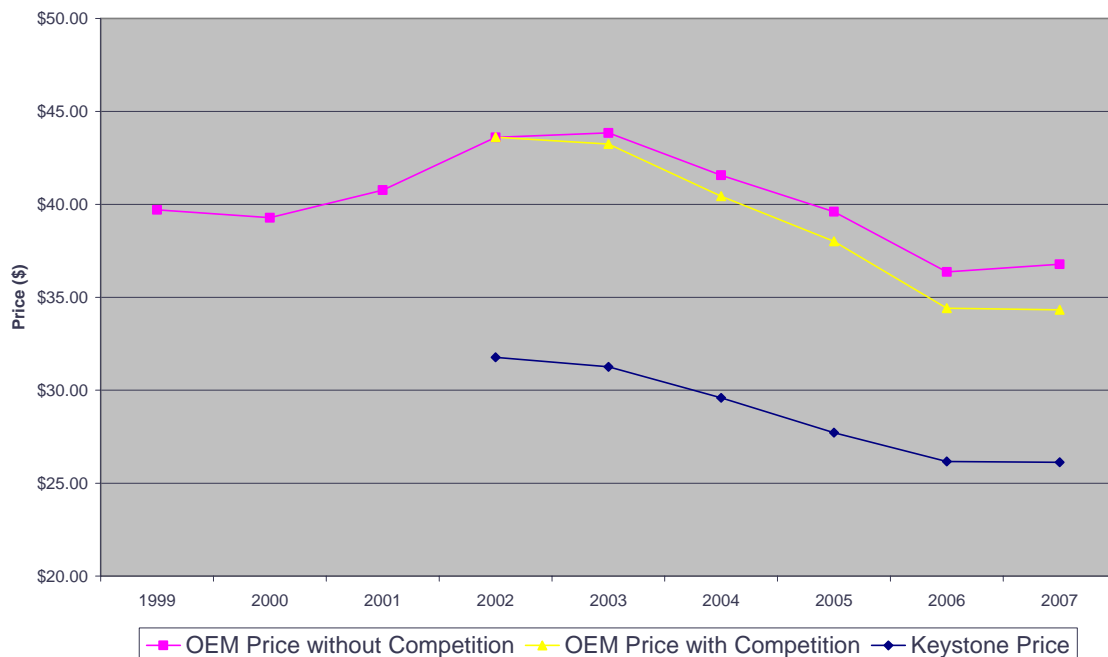
³ Our estimate of the initial effect is statistically indistinguishable from zero.

⁴ The OEM price without competition is calculated as $e^{\ln(\text{OEM price}) - c * \text{Keystone indicator variable} - d * \text{years since Keystone entry}}$.

competition had not existed for those parts.⁵ The indirect benefit to consumers per part is then calculated for each year as the difference between the projected OEM price without competition and the actual OEM price. We estimated that, on average, prices of OEM parts have been reduced by about 8% due to competition, or by about \$18 per part.

For each part that Keystone offers, we then calculated the direct benefit as the difference between the actual OEM price and the Keystone price. On average, we estimate that Keystone's automotive part prices are about 26%, or \$53, lower than the prices of the OEM parts they compete against. See Graph 1 and Graph 2 below for simulations of the effect of Keystone entry on OEM part prices based on the above calculations.

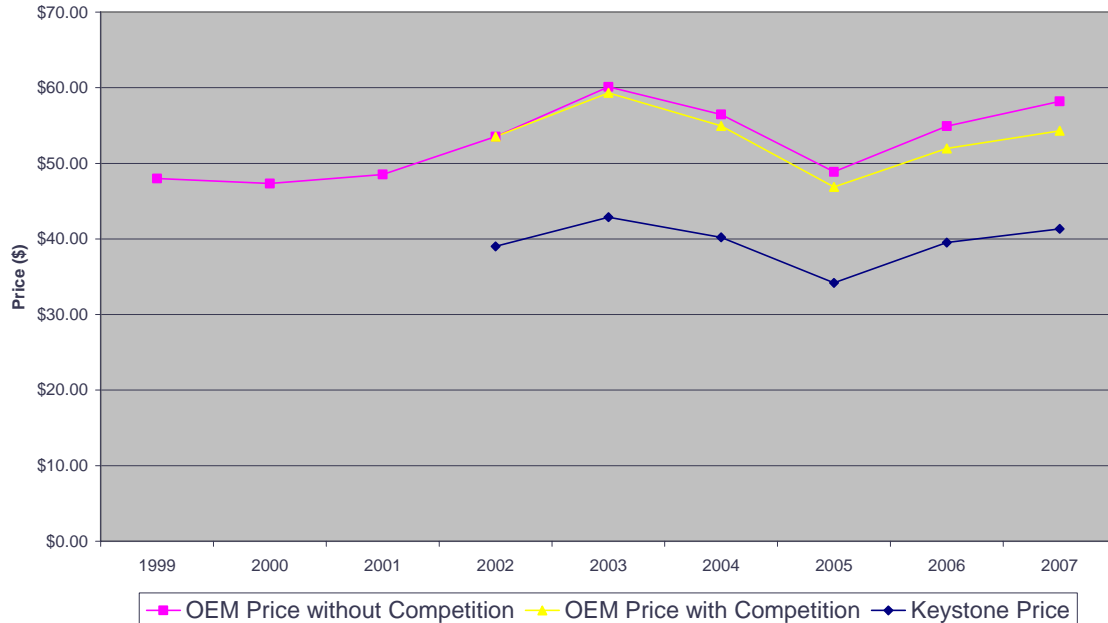
Graph 1. Simulated Effect of Competitive Entry on a "RT Headlamp door"
(prices deflated by PPI for Intermediate materials, supplies and components)



⁵ Our model assumes that Keystone was the first competitor to OEM for each part. To the extent that other suppliers entered before Keystone, we will have underestimated the benefits from competition.

Graph 2. Simulated Effect of Competitive Entry on a "LT Headlamp assy sealed beam"

(prices deflated by PPI for Intermediate materials, supplies and components)



Since we do not yet have data on the dollar volume of sales by OEMs, we have for now only calculated the average benefit per part for OEM and Keystone sales. Note that the total benefit to a consumer of a Keystone part will equal the amount by which the Keystone price is lower than the OEM price plus the difference between the actual OEM price and what that price would have been absent Keystone's entry; *i.e.*, a customer of Keystone receives "direct" and "indirect" benefits as we have defined them. See Table 1 below for summary of benefits per part.

Table 1. Average Per Part Benefits due to Competition
(per part that faces competition)

<u>Year</u>	<u>Direct Benefits</u>		<u>Indirect Benefits</u>	
	<u>% Price Difference</u>	<u>\$ per Part</u>	<u>% Price Difference</u>	<u>\$ per Part</u>
2005	28.7%	\$55.77	7.9%	\$16.51
2006	26.0%	\$51.98	8.5%	\$18.24
2007	24.7%	\$50.71	8.7%	\$18.97
Total	26.4%	\$52.76	8.4%	\$17.93

To illustrate the aggregate size of these benefits, we have constructed a hypothetical example. We assumed that the total size of the market for automotive parts is \$16 billion a year, of which 74% are from sales of OEM parts and 11% are from sales of newly manufactured alternative parts. Finally, we assumed that two thirds of OEM parts sold face competition. All sales of alternative, newly manufactured parts will then have both “direct” and “indirect” benefits associated with them, and all sales of OEM parts for which there is a competitive alternative will have “indirect” benefits associated with them. See Table 2 below for a summary of these benefits.

Table 2. Aggregate Annual Benefits from Competition*

<u>Market Segment</u>	<u>Assumed Sales</u>	<u>Direct Benefits**</u>	<u>Indirect Benefits</u>	<u>Total Benefits</u>
OEM (faces competition)	\$7,893,333,333	\$0	\$723,492,226	\$723,492,226
OEM (no competition)	\$3,946,666,667	\$0	\$0	\$0
New, Alternative	\$1,760,000,000	\$631,728,555	\$161,319,213	\$793,047,767
Total, New Parts	\$13,600,000,000	\$631,728,555	\$884,811,439	\$1,516,539,993

* Based on hypothetical sales figures

** Assumes that the percentage direct benefit would be the same for all sellers of alternative parts as measured for Keystone

Ultimately, given these assumptions about the size and make-up of the market for automotive parts, we would estimate that consumers receive aggregate benefits of around one and a half billion dollars a year due to competition in the market for automotive parts.