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# Aggregate Demand Function is not Monotonic: the Loss of Confidence Effect

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**Abstract:** The aim of this article is to show that an aggregate demand function (curve) might not be monotonically decreasing as assumed in economic theory. When a price of a good decreases to some point, the amount demanded stops increasing due to the so called *loss of confidence effect*: a price too low causes consumers' distrust. The existence of this effect was examined via questionnaire research among a small sample of respondents. The main result of this study is that the loss of confidence effect was found indeed, and applied to some 40% of respondents. However, a broader and more sophisticated research on the topic is needed. Results of this study have an impact on microeconomics theory as well on sellers' behavior, as a lower price might not sell more than a higher price.

**Keywords:** demand, demand curve, distrust, loss of confidence, price, quantity demanded.

**JEL classification:** D01

## Introduction

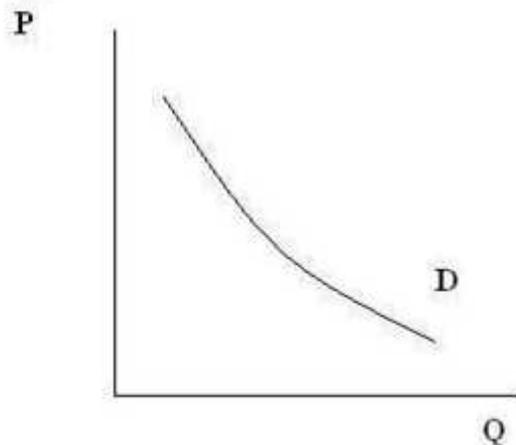
In economic theory it is assumed that the aggregate demand function (curve)  $P = f(Q)$ , which results from adding demand functions of individuals, for a given good is monotonically decreasing and usually convex, see Figure 1. With a decreasing price the amount of a good demanded grows, and vice versa. The domain and the range of  $P = f(Q)$  is supposed to be  $[0, \infty)$ . The same applies to the inverse demand function  $Q = f^{-1}(P)$ .

This Law of Demand is reasonable and rational; however, it might not be true in reality. No matter how the Law of Demand seems obvious, there is no theoretical (in a form of a mathematical proof) or empirical justification of its validity. The same applies to the convexity of  $P = f(Q)$ .

The aim of this article is to show that aggregate demand function (curve)  $P = f(Q)$  is not decreasing over its entire domain in reality, and its typical depiction provided in Figure 1, and also many other textbooks, is incorrect.

To outline the problem imagine a situation, where a consumer wants to buy a plasma TV with certain parameters, and he/she expects to pay something between 200-250 USD. However, a shop-assistant offers a TV satisfying all consumer's parameters for 20 USD only. Should the consumer buy it? The price seems too low. Isn't the TV out of order? Isn't it inferior? The consumer hesitates whether to buy it or not. This situation, when the price of a good is out of an expected price range (more precisely, the price is much lower) by a consumer, is going to be called the *loss of confidence effect* thereafter. But does this effect exist in reality? It can be discovered by asking consumers or observing their behavior. In this paper the former approach was followed.

The organization of this paper is as follows: in section 1 the method of the study is described, in section 2 results are provided, and in section 3 discussion of result is presented. Conclusions close the article.



**Figure 1.** A demand curve.  
Source: Chen (2007).

## 1 The Method

The method of the research was a questionnaire, see Appendix A. Respondents were asked about their age and gender, and then were shown a picture of a tablet (Samsung Galaxy Tab4 10.1VE SM-T533) with its specification. Ten questions of the type: “Would you buy this tablet for (6000, 5000, 4000, 3000, 2000, 1500, 1000, 500, 300 and 100) CZK” with YES or NO answers followed (25 CZK = 1 USD).

The research was carried out among students of School of Business Administration, Silesian University in Opava, in the Czech Republic in 2015.

The total number of respondents was 43; including 34 women and 9 men. 29 of respondents were aged 21-25, 14 respondents were aged 15-20.

Only fully answered questionnaires were processed. From individual responses the aggregate demand function was constructed by adding individual demands.

## 2 Results

Results of the study in the form of the aggregate demand function are provided in Table 1, whilst Figure 2 shows empirically derived inverse aggregate demand function (aggregate demand function is not a function in terms of mathematical terminology).

From the Table 1 and Figure 2 it's clear that the empirically derived aggregate demand curve is not monotonic. The curve is decreasing from 2000 CZK to 6000 CZK as expected by economic theory. However, between 100 CZK and 1500 CZK the curve is increasing, and not decreasing as would theory suggest. The turnover point is 1500 CZK. In this point, the loss of confidence occurred.

Respondents, who answered “YES” for a certain price, and also for all lower prices, can be considered rational. Out of 43 respondents, 58% respondents were rational, 42% irrational.

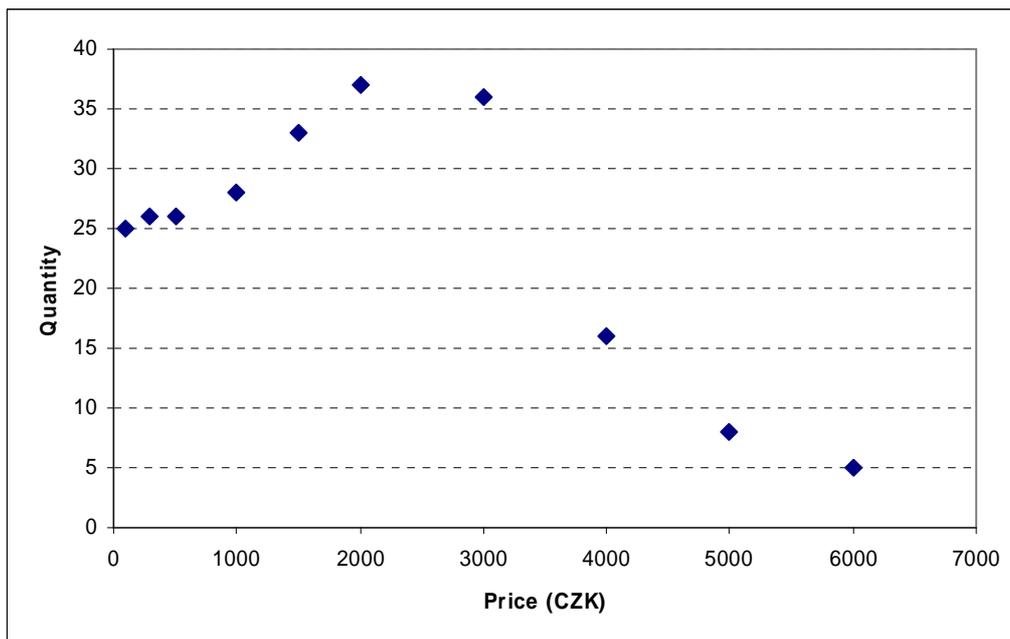
Rationality of respondents with regard to their gender and age is shown in Figure 3. Because of a small sample, the differences between men and women, and between older and younger students, were not statistically significant at 0.01 level. Nevertheless, 42% of irrational

respondents (and potential consumers) means the loss of confidence effect cannot be neglected.

**Table 1.** Empirically derived demand function.

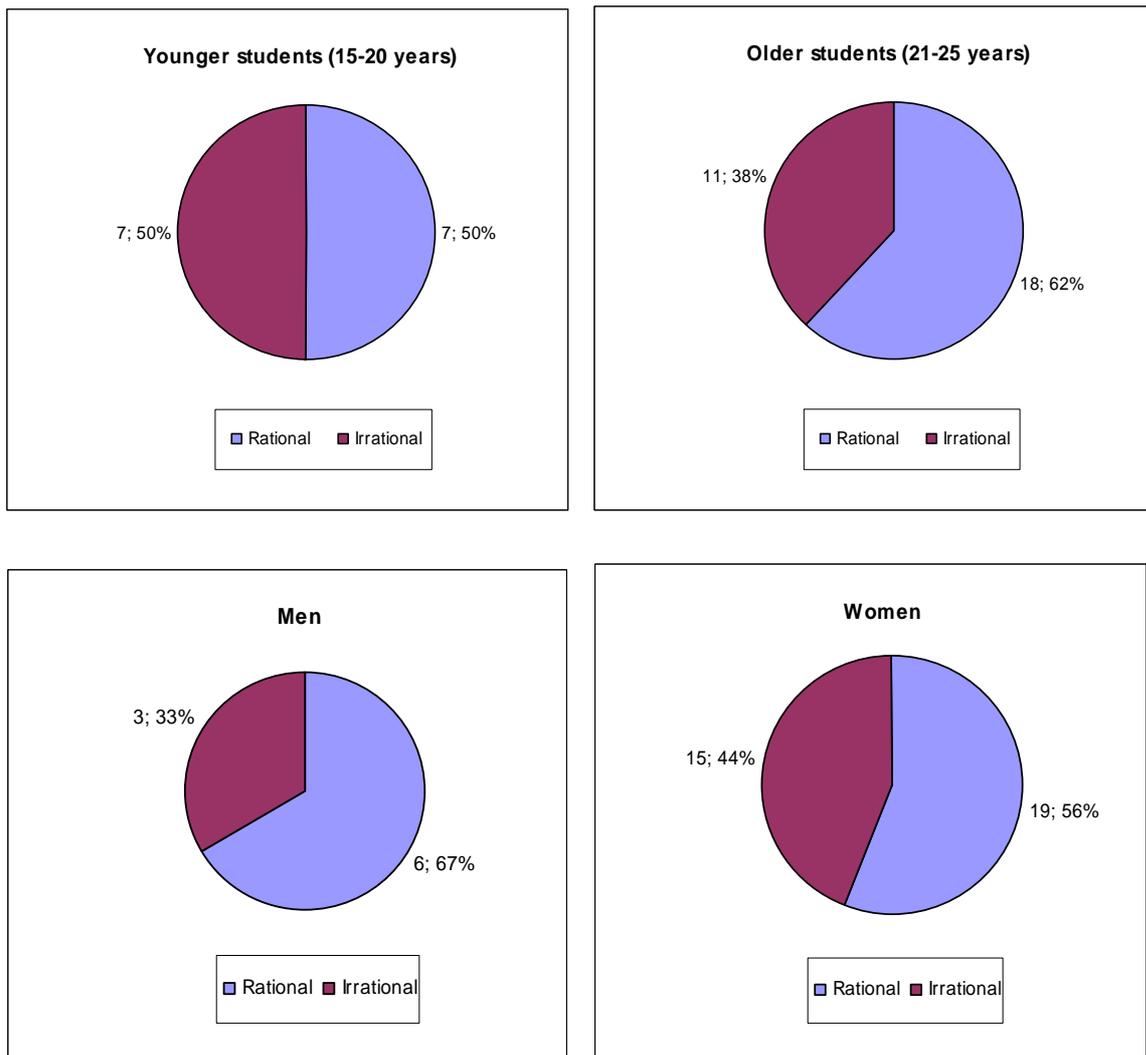
<b>Price (CZK)</b>	<b>Quantity demanded</b>
6000	5
5000	8
4000	16
3000	36
2000	37
1500	33
1000	28
500	26
300	26
100	25

*Source: author*



**Figure 2.** Inverse of empirically derived demand function.

*Source: author*



**Figure 3.** Rationality of respondents with regard to their gender and age.  
*Source:* Author.

### 3 Discussion

The reason why the Law of Demand might not hold in its entire domains is that humans are not rational. The literature on human cognitive bias and its effects on decision making is vast and growing quickly every year, see e.g. Dvorsky (2013), Munger (2015) or Tversky and Kahneman (2007). For the situation described in this paper anchoring effect, extreme aversion or status-quo effect may apply.

Customers buying a certain good (or service) have their own expectations of an appropriate price based on their previous experience and knowledge. If the real price is close to their expectations, or slightly below it, they are likely to buy the product. A price significantly higher than an expected one will probably discourage them from a purchase. On the other hand, much lower price might leads to customers' confusion. Why is it so cheap? Does it have some flaw? Is it out of order? Is its quality acceptable? Generally, this situation occurs when a cognitive structure of an individual is in a conflict with reality.

When respondents of this study faced tablet's price which were too low, they refused to respond "yes", though they had answered "yes" for a larger price (for the same item). This behavior can be considered irrational, as it reflects respondents' distrust.

## **Conclusions**

The aim of this paper was to demonstrate that the demand function presented in microeconomics theory might not be decreasing (or convex) in reality because of irrational behavior of customers, who distrust prices that are far too low.

Similar doubts might be raised over the supply function. It is usually depicted monotonically increasing and convex, though the evidence for such behavior is weak as well, especially near the zero.

## **References**

- Chen, C.-H. (2007). MIT Principles of Microeconomics: lectures, available from: <http://ocw.mit.edu/courses/economics>.
- Dvorsky, G. (2013). 12 cognitive biases that prevent you from being rational. Available from: <http://www.kellogg.northwestern.edu/faculty/uzzi/htm/papers/12%20cognitive%20biases%20-%20io9%20-%202013.pdf>.
- Munger, C. (2015). 25 Cognitive Biases – The Psychology of Human Disjudgment. Available from: <http://25cognitivebiases.com/>
- Tversky A., Kahneman, D. (2007). Judgment Under Uncertainty: Heuristics and Biases.

APPENDIX A

**The questionnaire**



**Samsung Galaxy Tab4 10.1VE SM-T533,16GB Wifi Black**

Gender:        MALE        FEMALE

Age: 15-20    21-25    26-30    31-35    36-40    41-45    46-50    51-55    56-60    61 and more

Would you buy the product for 6000 CZK?	YES	NO
Would you buy the product for 5000 CZK?	YES	NO
Would you buy the product for 4000 CZK?	YES	NO
Would you buy the product for 3000 CZK?	YES	NO
Would you buy the product for 2000 CZK?	YES	NO
Would you buy the product for 1500 CZK?	YES	NO
Would you buy the product for 1000 CZK?	YES	NO
Would you buy the product for 500 CZK?	YES	NO
Would you buy the product for 300 CZK?	YES	NO
Would you buy the product for 100 CZK?	YES	NO

Thank you for your answers!