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## **RICH PEOPLE ARE LESS RECEPTIVE TO TAX AND PRICE CHANGES: SEARCHING THE EVIDENCE OF THE HYPOTHESIS**

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*The main classical tax theory assumption is that all agents are rational, however, it does not hold in the real world. Consequently, this may lead to inefficiencies in the tax models in which consumer's rationality is taken as given. The article contains an attempt to prove that rich people are more rational compared with poor people; nevertheless, they are more attentive to the quality of the goods. Therefore, the rich people are less insensitive to price and tax changes than poor ones.*

**Keywords:** *price, tax, irrational consumer behavior, public economics, utility maximization, attention, inattentiveness.*

**Introduction.** Public economics is based on the assumption that agents are fully optimized, but it is very difficult to find a consumer who will choose the optimal consumption bundle solving utility maximization problem before doing her shopping. A person might display inefficient behavior in each step of the decision-making process which can be explained by nonstandard preferences, incorrect beliefs or systematic biases in decision making (Stefano Della Vigna, 2009). However, all classical economic theories did not take into account possible irrational agent's behavior. The most harmful effect of such scientific omission is the

implications it has on public economy, especially on tax theory. The simplest explanation follows from the fact that taxes are one of the main tools governments use in creating their budgets. According to the classical tax theory, because of rational behavior consumer decreases her purchasing with increase in price by the same level as in case of tax increasing (consumer has the same reaction under price and tax changes). However, in reality, it is not true. An agent reacts more to price changes and has a lower reaction on tax increase. Subsequently, government can earn more because of person's inattentiveness. Therefore, a violation of optimal behavior assumption becomes a hot topic for economists because it raises the question about the efficiency of the classical tax theory models.

In order to recognize accurately the threat level posed, we need to understand how strongly the main assumption about agent's optimal behavior correlates with the tax analysis theory and what is the level of inefficiency caused by the under reaction of the consumers. This could be achieved in the following manner: first of all we need to understand what attention means and how strongly it effects on the optimality of agent's behavior.

**Analysis of recent researches and publications.** The fathers of tax analyses (Pigou (1920), Ramsey (1927), Harberger (1964), Mirrlees (1971) and others) considered agents those who choose the best consumption bundle under full information condition. However, such an assumption is not applicable in real life.

The most useful defining of an attention are provided by psychological literature. The general meaning is that it is one of our human characteristics which allows us to focus on the most important things. In this paper, we assumed that inattentiveness has the opposite meaning of what we understand as attention, thus, the information provided above is an alternative way of explaining what inattentiveness denotes. Having discussed the question of attention, we now need to investigate the problem of consumer's optimal behavior as a main difference of human characteristics between real life person and «economic subject». Moreover, it is the most important factor which causes deviations from classical tax theory. In order to show agent's irrationality we will refer to an empirical experiment which was provided by Raj Chetty, Adam Looney, and Kory Kroft. As a result they shows that people are more willing to buy goods with smaller posted price; even if they will pay more in the end (tax rate is added at the register). This experiment proved the inefficient behavior of consumers. Consequently, this experiment suggests that price-creating system can be a good tool for governments to use in order to increase their tax revenues.

This finding has a significant impact on mainstream ideas about optimal salient taxes. According to Jacob Goldin and his work "Optimal Tax Salience" (2013), salient tax is associated with taxed good's tax-inclusive price. Well known are two main price-creating strategies: the full amount of consumption taxes in the prices

displayed for consumers and pretax price in tags with addition tax payment at the register. First one is more common for European markets and second one refers usually to US markets. Jacob Goldin states that the tax design has a big impact on consumer's behavior: the more prominent the after-tax for the good, the more likely that the person will change his consumption after tax changes. Therefore, salient tax becomes a tool for government regulation.

In order to prove previous statement we will refer to the second experiment, which is made by Raj Chetty, Adam Looney, and Kory Kroft. Their results disprove classical tax theory that price and tax changes have the same effect on agents. They found that changing in price has stronger impact on consumer's behavior than changing in tax (consumer starts to purchase less after price increasing comparing with the same level of increasing in tax). Moreover, this study is one of the examples how inefficiency of optimality assumption can affect the whole theory.

The first who started to think about irrational behavior of consumers was Simon in his pioneering work «A Behavioral Model of Rational Choice» (1955). Eventually, he showed that there is an effect of optimality assumption on the general economic theories (changes in consumer's behavior cause changes in utility maximization problem which leads to changes in a lot of classical economic theories). Therefore, the question about violation of optimality assumption arises.

In contrast with Simon's explanation, current economic studies give another definition for irrational agent's behavior. Due to Stefano DellaVigna («Psychology and Economics: Evidence from the Field», 2009), consumers deviate from standard theory on each step of their decision-making process because of nonstandard preferences, incorrect beliefs or systematic biases in decision making. However, in order to show that changes in tax have smaller impact on consumer's behavior than price changes, we are particularly interested in agent's inattentiveness.

John Robert Anderson and states that «attention is the cognitive process of selectively concentrating on one aspect of the environment while ignoring other things. Attention has also been referred to as the allocation of processing resources» («Cognitive psychology and its implications (6th ed.)», 2004).

Due to OHIM's (Office for Harmonization in The Internal Market) «Manual of Trade Mark Practice», there are two levels of attention. The high level of attention is paid to the expensive, infrequent and potentially hazardous purchases (cars, diamonds, precious and semi-precious stones and jewelry, financial services, real-estate services (the purchase and sale of property)) or brand loyalty. The low level of attention (the high level of inattention) can be associated with habitual goods (what we are used to buying frequently), thus the price change of such type of products is almost inconspicuous to the consumer.

**Previously unsettled problem constituent.** The problem of irrational agent's behavior now needs to be addressed in relation to the specific characteristics of price-

creation. Concluding what was said above: consumer's inattentiveness can be used for collecting more tax revenues to the budget. Due to Raj Chetty, Adam Looney, and Kory Kroft, it has been established that persons react more after changes in price than changes in tax. In order to prove this statement they provide a second experiment, which is based on the theory of price creation for alcohol. Apart from the excise tax which is included in posted price for such goods, there is a sale tax which is not included, thus this scenario allows estimating the effect of changing in posted price versus changing in sale tax. Therefore, authors found that increasing in excise leads to decreasing in consumption more than the same amount of increase in the sale tax. Such findings give a base to conclude that changing in the posted price has a bigger effect for consumer's purchase than changing in the tax rates.

When thinking about the heterogeneous differences in agent's attention, one interesting question arises: who is more likely to pay more: rich people or poor people? The answer depends on the level of inattentiveness; therefore, the main point of this part is to find out the differences in purchasing behavior between poor and rich people. It is a very difficult task because there is no direct evidence (no one wrote about such difference in given context before). That is why we will provide logical arguments based on which it would be possible to draw a valid conclusion.

**Main purpose of the article.** The finding from the previous experiment is totally opposite than the results of classical tax models that use optimal behavior assumption. Thus, the main purpose of this article is to show dependence between after-tax-price and tax rate changes and to define the differences in purchasing behavior between poor and rich consumers.

**Results and discussions.** Having discussed the question of optimality assumption impact on the classical tax theory, there is no doubt about its correlation. Moreover, violating of one part leads to changes in another. Understanding the problem of under reacting people is very important, while studies on this matter are still evolving, nowadays public economics which are based on classical tax theory might be facing a lot of inefficiencies.

Daniele Passerman (2008) in his article «Job Search and Hyperbolic Discounting: Structural Estimation and Policy Evaluation» provides empirical findings that imply high-wage earning people have a higher self-control level (0.89) compared with low-wage workers (0.4). Therefore, rich people are more self-controlled than poor ones. However, we need to understand what self-control means and how it correlates with attention.

In order to answer the above question, we refer to psychological literature, in the article "The Development of Executive Attention: Contributions to the Emergence of Self-Regulation" which is written by M. Rosario Rueda, Michael I. Posner and Mary K. Rothbart, the authors stated that conscious detection (as a main characteristic of self-control) plays a special role in selecting a target stimulus from

among alternatives and engages attention in a way that resists interference by other signals. Alternatively, attention is one of the main features of self-control. Therefore, they are two tightly bound specifications of agent's behavior. If the person is highly self-controlled, one may conclude that this person is more attentive. Moreover, using Passerman's findings it might be true to say that rich people have higher level of attention than poor people.

Following upon the definition of attention, we should distinguish between two main levels of attention: high (luxury, expensive goods, brands and so on) and low (everyday purchasing goods). Keeping the former classification in mind, we turn our consideration to the article «Competition for Attention» (2013) written by Pedro Bordalo, Nicola Gennaioli and Andrei Shleifer. The main statement of interest in this article is that the firms compete for consumer's attention via their choices of quality and price. For example, in fashion and luxury goods, business class airline seats and financial products, consumers tend to focus on quality rather than prices. On the contrary, in fast food, regular air travel or standard home goods, consumers seem much more attentive to prices. Despite the fact that this finding is quite obvious, it is in fact very useful.

By combining the main ideas mentioned above it is not difficult to see the connection and provide the logical chain: we showed that rich people are more attentive (they have higher level of attention) therefore, it might be true that in purchasing they pay more attention to the quality of the good than for price. On the contrary, poor people are less attentive; they put more attention on the price for goods than for the quality. These findings are directly applicable in real life. The person who has enough money worries more about the quality of good that he purchases, but those persons who have low incomes are thinking about each single dollar in order to manage their budget till the next salary. Therefore, it is easily seen that the initial position stipulated in my paper holds to be correct.

Following upon the discussion about impact of optimal behavior assumption on classical tax theory, where the conclusion is that under irrational behavior the changing in price has the bigger impact on consumers than changing in tax- it should be noted that such results might be true for poor people. Subsequently, rich people are not attentive to price changes especially for everyday purchasing goods, therefore, for this segment of the population the classical tax theory will not work at all, due to the fact that the rich are not sensitive to price and sale tax changes.

**Conclusions and further researches directions.** The novel finding of this position paper is that rich people are found to be more rational. However, because of mainstream results in the field of behavioral economics, there are two types of attention which are associated with the level of consumers' optimal behavior; I have attempted to show that rich people are interested more in the quality of goods than in price.

Moreover, it was shown that the agent's behavior may have a direct impact on classical tax theory. Subsequently, Millrees theorem that increasing the tax level decreases the consumers purchases by the same level as increasing in price, which is based on the optimality assumption is violated. Beyond all question, the reason for this is the irrational behavior of consumers. Therefore, summarizing the statement that rich people pay more attention to quality, it might be true that this segment of the population is not sensitive to the price or tax changes, since such people are interested in quality and react to quality changes. Eventually, it is the reason to conclude that in case of rich consumers, the theorem about tax and price changes is destroyed. However, in case of poor people, the current findings work: increasing in price has bigger effect then increasing in tax.

The outcome of this research might bring a gain for both sides of the market. Firstly, consumers can find out that such simple feature as inattentiveness can be a tool for firms and government for increasing their welfare, as a result, decreasing the consumer surplus. Therefore, this information may help agents to understand economic tricks and prevent them from deception. Secondly, firms might estimate the consumer's taste more accurately: everyday goods' production firms should be oriented on price policy and luxury goods' production firms should pay more attention to the quality of their goods. In this case the matching between consumers' interests and firms' supply might increase dramatically. Therefore, it may cause an increase in firms' profits.

The problem of irrational consumer's behavior has become a popular question which is asked by scientists from different fields of studying and public economy is not an exception. The optimality assumption plays one of the main roles in the tax system, the main task of which is to maximize wealth in the economy, while at the same time attempting to maximize agents' utilities. Therefore, it was shown in this position paper that classical theories do not describe accurately what happens in real life in the context of price and tax changes impact on agent's purchasing decisions.

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**БАГАТІ ЛЮДИ МЕНШ СПРИЙНЯТЛИВИ ДО ЗМІНИ ПОДАТКІВ І ЦІН:  
ПОШУК ДОКАЗІВ ГІПОТЕЗИ**

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*Одним із ключових положень, на яких базується класична теорія податків є припущення, що всі агенти раціональні, проте, воно не виконується в реальному світі. Отже, це може призвести до неефективності податкових моделей, в яких раціональність споживача приймається як даність. Стаття містить спробу довести, що багаті люди більш раціональні у порівнянні з бідними; вони більш уважні до якості товарів, ніж до зміни ціни. Таким чином, багаті люди менш чутливі до зміни ціни товару і закладених у ньому податків ніж бідні.*

***Ключові слова:** ціна, податки, ірраціональна поведінка споживачів, публічна економіка, максимізація корисності, чутливість.*

**БОГАТЫЕ ЛЮДИ МЕНЕЕ ВОСПРИИМЧИВЫ К ИЗМЕНЕНИЮ НАЛОГОВ И ЦЕН: ПОИСК  
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*Основным допущением классической теории налогов является предположение, что все агенты рациональны, однако, оно не выполняется в реальном мире. Следовательно, это может привести к неэффективности налоговых моделей, в которых рациональность потребителя принимается как данность. Статья содержит попытку доказать, что богатые люди более рациональны в сравнении с бедными; они более внимательны к качеству товаров, нежели к изменению цены. Таким образом, богатые люди менее чувствительны к ценовым и налоговым колебаниям нежели бедные.*

***Ключевые слова:** цена, налоги, иррациональное поведение потребителей, общественные экономика, максимизация полезности, внимание, невнимательность.*