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Chapter 7

Optimal Taxation of Consumption in the Scope of Changing Elasticities of Demand: Re-reading Ramsey

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Abstract

Optimal taxation is the taxation that reflects society's choices between the rival goals of equality and economic efficiency, the starting point of which is to maximize social welfare. The optimal taxation of commodity that was launched by Ramsey is based on the rule of inverse elasticity, which holds that the taxation of goods with low elasticities of demand at a higher rate will reduce the loss of efficiency. The criticism of this rule is due to the fact that essential goods to meet basic needs have low price elasticity of demand, while luxury goods have high price elasticity. Under the assumption that consumers are similar, it is argued that the taxation of luxury goods at a lower rate than necessity goods will have a negative effect on tax justice. Changing market conditions thus change the elasticity of demand for luxury goods and necessity goods, and such change makes it necessary to reconsider the basic assumptions of optimal taxation and the criticisms directed at optimal taxation. In this context, the present study will investigate differing elasticities of demand in connection with changing market conditions in the scope of the liberalization of trade. In the light of these investigations, optimal commodity taxes will be reassessed.

Keywords: optimal commodity taxes, Ramsey rule, inverse elasticity, efficiency, equality, demand elasticity

1. Introduction

Tax is the main source of income, which is collected based on the sovereign authority of the government. In this context, taxation is one of the primary political tools that states use in order to obtain economic, social, and political goals. Taxation as a fiscal policy tool allows states to make effective practices in achieving their goals in macroeconomic terms. The role of tax policies in

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the matter of obtaining the aforementioned macroeconomic goals reveals that taxation is one of the effective economy policy tools in the hands of the state. In accordance with the social state approach, taxation emerges as a transfer mechanism. Enabling equality/justice for each individual is accepted to be at the helm of the duties of states toward their citizens.

Citizens belonging to all income groups in a country to be able to benefit from public services within the context of equality and justice principle on the other hand can only be possible by the state to transfer the resource, which is collected from the higher income group via taxation to lower income groups as public services. Within this framework, taxation is the most important element of the transfer mechanism between income groups.

How to design taxes, which are the most important policy tools of the state in reaching the goal of effectiveness and equality, has been comprehensively discussed in the optimal taxation literature. Optimal taxation is a taxation, which reflects the preferences between the society's rivaling aims of equality and economic efficiency and which has maximizing social wealth as the starting point.

In today's conditions, in which the state has asymmetrical information about the individual's social and economic characteristics, the goal of income redistribution can be possible through the use of distortionary taxes. The state can assure income justice by using distortionary taxes only by conceding economic efficiency. Because of this reason, optimal taxation lays emphasis on tax subject, tax rate, and tax base, which will minimize thrashing in securing a certain amount of tax revenue.

In this context, two main studies exist in the optimal taxation literature with regard to tax subject. In his study, Ramsey [1] approached optimal tax subject on the basis of consumption, and in the second fundamental study, Mirless [2] identified revenue as the tax subject. In both studies, ideal tax rates were searched within the context of the determined tax subject.

In the Ramsey approach to optimal taxation, since the needed budget revenue is possible to be obtained only by distortionary taxes under the assumption that it is not possible for governments to resort to lump sum taxes, it will bring along a wealth loss in terms of economic efficiency and will move away from the optimal solution. Within this framework, Ramsey emphasizes on the tax subject and rate that will minimize efficiency loss. In Ramsey approach, it is generally agreed that the government can impose a linear income tax besides commodity tax [3].

Optimal commodity taxation, which was proposed in 1927 by Ramsey and whose theoretical structure has developed through today's modern approaches, is based on the inverse elasticity rule, which claims goods with low demand elasticity to be taxed at a higher rate will reduce efficiency loss, and Corlett-Hauge Rule [4], which claims leisure complement goods that will change the preferences of consumers between working and leisure on behalf of working need to be taxed at a higher rate.

In the inverse elasticity rule suggested by Ramsey, all goods are aimed to be affected equally from taxes by levying taxes at a high rate from goods with low demand elasticity and at a low rate from goods with high demand elasticity.

The most important criticism toward this rule originates from the fact that necessity goods devoted to meet basic needs have low price elasticity of demand, and luxury goods on the other hand have high price elasticity. Taxing luxury goods at a lower rate compared to necessity goods under the assumption that consumers resemble each other is claimed to influence justice of taxation in a negative way.

The assumption that luxury goods have high demand elasticity and necessity goods have low demand elasticity may change when short and long periods are in question and within the context of competition, which is the main incentives of market economy. In assuring the profit maximization, which is the main goal of firms competing in the market economy, their total revenues and demand elasticity for their products are important variables. Firms can increase their total revenues by decreasing the demand elasticity for their products. In this context, firms aim to reduce the vulnerability of the product they produce against price changes.

As markets open to foreign countries, together with the liberalization in trade, magnitude of the market and innovation increases, and this may increase price elasticity of demand by increasing substitution possibility of especially necessity goods [5–7]. On the other hand against this risk, firms try to lower the demand elasticity of their products within the context of the brands they create and by increasing loyalty to these brands [8]. Especially, in product groups including luxury goods such as technological products and automobiles, brand loyalty reduces the sensitivity of consumers to the product's price.

Within this framework, changing market conditions changes demand elasticity of luxury and necessity goods, and this change on the other hand necessitates reassessing basic assumptions of optimal taxation and criticisms against optimal taxation.

2. Optimal taxation

The most fundamental goal of economic and fiscal policies is to maximize wealth. This goal includes quite large sub-goals, such as providing stability, growth, efficient allocation of resources, and fair income distribution. Tax is the primary fiscal tool to be used in reaching the goals in question. Among the tax applications that are under the changing and developing state understanding, what type of taxation is the taxation that serves the goal of wealth maximization is considered in the literature especially in the framework of "Optimal Taxation" theory.

While within classical welfare economics understanding, optimal taxation theory considers taxes as effective tools in assuring resource allocation; new welfare economics' view of utility measurement and impossibility of inter-personal comparisons caused economic area of interest to rotate to Pareto efficiency. This situation focused on substitution effect of taxes, creating efficiency loss and lasted until the study of Mirrlees [2], which targets resolution of equality and efficiency conflict.

In this context, optimal taxation is the taxation that reflects the preferences of the society between equality and efficiency with rivaling goals, and that has social wealth maximization

as the starting point. Within this scope, balance between the goals of justice (equality) in taxation and economic efficiency is tried to be redressed. On the other hand, trade-off between these goals created different approaches to the topic.

Existence of the relevant trade-off depends on the existence and influence of distortionary taxes. In today's conditions, in which the state has asymmetrical information about the individual's social and economic characteristics, the goal of income redistribution can be possible through the use of distortionary taxes. The state can assure income justice by using distortionary taxes only by conceding economic efficiency. Because of this reason, optimal taxation lays emphasis on tax subject, tax rate, and tax base, which will minimize efficiency loss in securing a certain amount of tax revenue.

3. Distortionary taxes and efficiency loss

In general terms, distortionary taxes can be defined as taxes that will influence or change economic decisions of taxpayers. The main reason for distortionary taxation on the other hand is to assure redistribution of revenue, which is one of the fundamental functions of the state and thus to achieve a society structure more egalitarian than the one that could have been achieved via a uniform lump-sum tax [9].

The state, which has a social aim of distributing the tax burden in a fair and balanced way within the scope of fiscal policy, needs distortionary taxes in order to realize this aim. State's complete and absolute knowledge about the characteristics of each individual in the society underlies this need. In this context, use of distortionary taxes is a consequence of the aim to redistribute revenue in a world, where the state knows characteristics of individuals only incompetently [9]. Within this scope, in the assurance of justice (equality), individuals having the same ability to pay will be assumed to be in equal conditions, and same amount of taxes will be taken from them [10].

When different abilities to pay are at stake, the state redistributes revenue in a way to load a greater amount of public expenditures to higher income groups. Different societies may have different preferences on equality and efficiency. These differences bring along different tax systems in practice. Discussions on how progressive tax structure should be in order to enable equality are a result of value judgments about equality. In this context, inequality reduced through progressive tax structure can only be possible by the acceptance of a certain amount of efficiency loss.

According to Diamond and Mirrless [11], administratively, it is not possible for the state to realize its revenue distributer goal on the grounds of social justice and revenue creator goal on the grounds of public finance, through lump-sum taxes. Since lump-sum tax is not appropriate, optimal taxation will only be a taxation that will not impair the efficiency of production. This on the other hand is only possible if the taxation on the final production can be diversified between products at no cost [12].

In the light of these explanations, optimal tax structure is defined as the tax structure, which reflects the preferences of the society between the balance of efficiency loss and equality and

maximizes social wealth. Optimal taxation theory seeks answers basically to the following questions:

(i) On what will the tax be taken from (income-consumption-wealth)?

(ii) If the tax will be taken on consumption, is it going to be at a fixed rate?

(iii) If the tax will be taken on wealth, how will the tax base be? [13]

(iv) In the following parts of this study, optimal taxation will be taken on consumption.

4. Optimal commodity taxes: Ramsey rule

The main topic of discussion in the literature regarding optimal commodity taxes, which are approached under the heading of optimal taxation, is about the proportional structure of the taxes in question. In this context, literature searches which tax rates, single rate or varying, will create optimal results in the construction of optimal commodity taxes. Within this scope, while on one side, there is the view arguing that a single rate tax will not damage market forces and will be synonymous with a fixed rate tax on income [14]; on the other side, optimal commodity taxes within the context of Ramsey and varying rates take place.

Ramsey rule involves taxing commodity and zero capital taxes in the long run [15] for minimizing the deadweight loss. For public choice theory, equilibrium taxes and feasible tax structure apart from Ramsey analysis are important subjects because tax system can cause rent seeking when it is used as an income distribution tool [16, 17].

Optimal commodity taxation, which was proposed in 1927 by Ramsey and whose theoretical structure has developed through today's modern approaches, is based on the inverse elasticity rule, which claims goods with low demand elasticity to be taxed at a higher rate will reduce efficiency loss, and Corlett-Hauge Rule, which claims leisure complement goods that will change the preferences of consumers between working and leisure on behalf of working need to be taxed at a higher rate.

As seen in **Figure 1**, tax application may cause a decrease in social wealth by changing price before and after tax. The reason behind this is the decline of production under the amount before tax because of the change in price. Minimization of this efficiency loss, which is also called excess tax burden or deadweight loss (DWL), is the purpose of the tax systems.

Under the assumption that characteristics of individuals can only be known deficiently and thus lump-sum taxes are not applicable, Ramsey searched the tax structure that will minimize efficiency loss (deadweight loss) associated to the collection of a specific amount of tax revenue. Excess tax burden is caused by the reduction in equilibrium quantity because individuals change their behaviors and consume taxed product less. Decrease in the quantity of the product depends on demand elasticity. According to Ramsey rule, tax rate imposed on the good with high elasticity should be lower than the tax rate imposed on the good with low elasticity [18]. In this way, as seen in **Figure 1**, decrease in the equilibrium quantity of goods would be minimized.

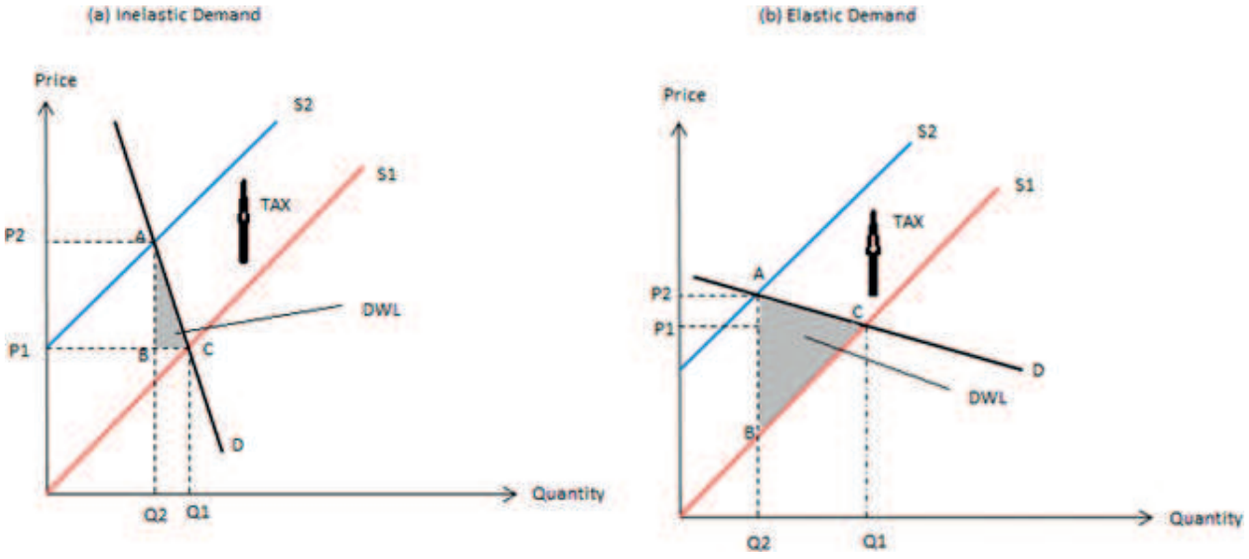


Figure 1. Deadweight loss of taxation. Source: Ref. [44].

Under the assumption that people resemble each other, Ramsey taxes are expressed as the sum of the inverses of supply and demand elasticity.

$$\frac{t}{p} = \mathrm{k}\left(1/n_u^d + 1/n^s\right) \tag{1}$$

In this equation, t represents tax rate per unit, p represents price after tax, n_u^d represents compensated elasticity of demand, and n^s represents supply elasticity [9].

In the inverse elasticity rule suggested by Ramsey, under the assumption that supply curve is finite or, in other words, a horizontal supply curve exists, tax is stated to be inversely proportional to compensated demand elasticity. Accordingly, all goods to be affected equally from taxes are aimed by collecting lower rates of taxes from goods with high price elasticity of demand and higher rates of taxes from goods with low price elasticity of demand.

Within the framework of this purpose, Sandmo [19] expresses that Ramsey rule can be based on the following three hypotheses:

(i) Being able to minimize efficiency loss, which occurs as a result of distortionary taxation, is possible through tax applications with a low substitution effect. Because of this reason, goods with prices that do not create substitution effect are the ideal subject of the tax. In other words, in cases where lump-sum taxes cannot be imposed, commodity taxes with similar effects should be imposed.

(ii) Goods, which will be taxed at high rates, should have a high leisure complementary level.

Elasticity of substitution between goods and leisure lies behind the fact that single rate tax, which does not change the relative prices of goods and will not be different from the lump-sum tax that will be imposed on labor income, is not optimal [14].

However, according to Corlett-Hague Rule, varying tax rates, in which leisure complementary goods that will change the preferences of consumers between working and leisure in favor of working will be taxed at higher rates, serve for the assurance of optimality in commodity taxes. In this context, Diamond [11] proposed leisure complementary goods to be taxed at relatively higher rates intended to the efficiency purpose.

(iii) Tax rates are expected to be inversely proportional with uncompensated own-price elasticity of demand.

The most important criticism toward the Ramsey rule composed of above-mentioned hypotheses is caused by the fact that necessity goods devoted to meet basic needs to have low price elasticity of demand and luxury goods to have high price elasticity. Under the assumption that consumers resemble each other, taxation of luxury goods at a lower rate compared to necessity goods is claimed to influence justice of taxation negatively.

5. Redistribution and Ramsey taxes

Ramsey taxes, which were pointed out in the above section in detail, are criticized because of its current assumptions and negativity they might create in income distribution.

At this point, first main criticism to Ramsey analysis is the assumption that all individuals resemble each other. The fundamental reason for the state to use distortionary taxes instead of lump-sum taxes is to have redistribution goals, which are not possible to attain in another way. In case this assumption is valid, there are no causes of the state for not imposing lump-sum taxes.

Nevertheless, when taxes are imposed within the context of inverse elasticity rule, an equal amount of decrease in demand in all goods will be caused by collecting lower rates of taxes from goods with a high possibility of change in demand amount and at higher rates from goods with a low possibility of change in demand amount; and thus, efficiency loss will be minimized. According to this approach, taxation of necessity goods, which have low compensated demand elasticity and have a large share in the consumer's budget, at a higher rate than luxury goods comes to the fore [9].

Generally, price elasticity of demand for good, which are consumed with the purpose of meeting basic needs, is low, while price elasticity of demand for luxury goods is high. Based on this rule, tax rate to be imposed on basic necessity goods will be high, and tax rate to be imposed on luxury goods will be low. What needs attention here is the assumption that consumers are alike. However, since income distribution and demand for different products will vary, such a rule will create negative results in terms of tax equity especially in developing countries.

Ramsey defended this rule by placing economic efficiency to forefront. Therefore, although theoretically consistent, this analysis becomes contradictive in practice with the influence of socio-political reasons [20].

In short, when Ramsey's suggestion is applied, low-incomers, who relatively allocate majority of their income to necessity goods, have to face a high tax burden. Therefore, a conflict between the goals of decreasing the efficiency cost of tax and equitable tax emerges. Ramsey rule puts forward what needs to be done when efficiency purpose is desired to be pursued. Goal of justice is not within this rule's field of interest [18].

As a result in optimal commodity taxation, Ramsey's analysis requires a careful analysis of: the constraints on taxation; the elasticities of demand and supply; and the structure of the economy [21].

6. Changing demand elasticities

Criticisms done within the context of the basic assumptions of Ramsey taxes' inverse elasticity rule become more serious especially on the topic of income redistribution. Inverse elasticity rule creates a conclusion in line with efficiency but to the detriment of equality by suggesting taxation of necessity goods, which occupy a heavy place in the consumption basket of lower income groups, at a high rate and goods appealing to higher income groups at lower rate depending on demand elasticity.

Besides the assumptions in inverse elasticity rule mentioned above that are subject to criticisms, another topic to be emphasized is whether demand elasticity varies within the framework of macroeconomic and microeconomic variables.

A change that may occur in demand elasticity of luxury and necessity goods may build a fairer structure for the inverse elasticity rule in terms of income distribution, and the above-mentioned taxes criticized in practice within the context of enabling justice in income distribution, which is among the main functions of the state, may be reassessed as part of changing demand elasticity. Under this assumption, in this part, changes in elasticity of luxury and necessity goods that could be created by macrovariables and microvariables within the changing economic conjuncture will be addressed.

6.1. Short- and long-term changing demand elasticity

Existence of substitution possibility is the primary element affecting demand elasticity. Existence of close substitutes for some goods increases price elasticity of the demand in question. As seen in **Figure 2**, since development of substitution opportunities take time, while in short term, price elasticity of demand for many products is low, elasticity may increase in the long term [22]. Durable consumer goods have a different structure compared to other goods in short and long term elasticity. Despite the fact that elasticity differences are observed between terms in these goods as well, price elasticity of demand is more elastic for these goods in the short term, while it weakens in the long term [23].

At this point, the most basic example is the price elasticity of demand for oil changing in short and long terms against OPEC cartel shock in 1970s. Sudden price increase experienced in the so-called period was received with highly inelastic price elasticity of demand at a level that

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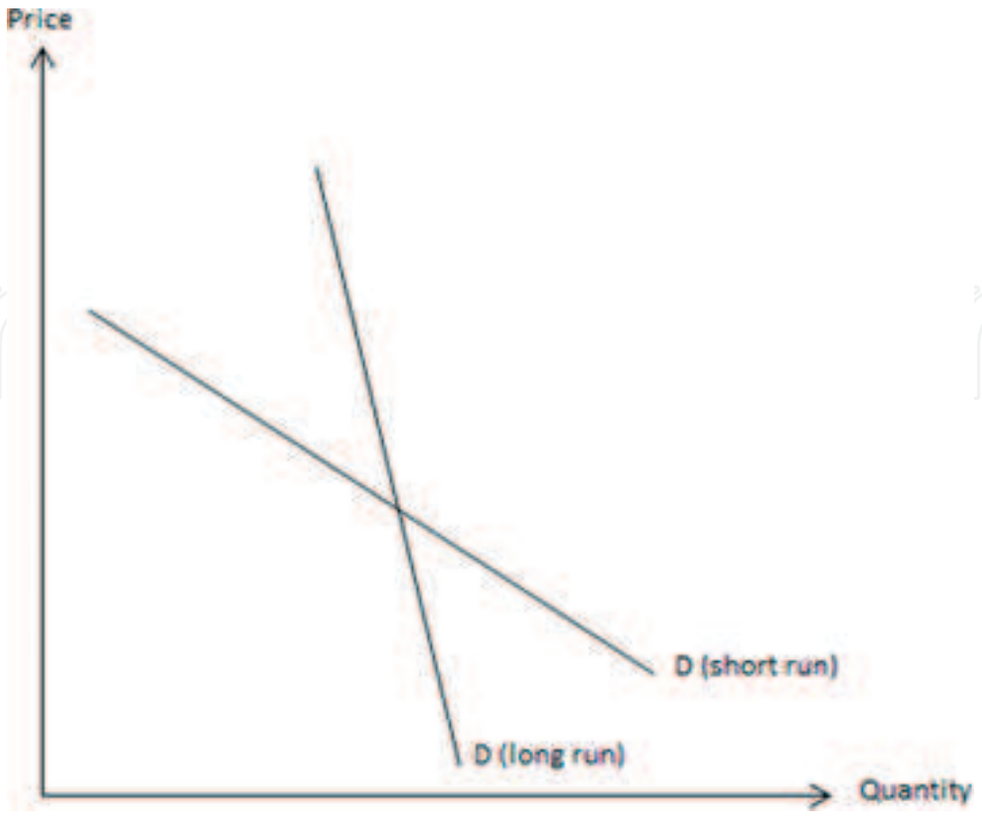


Figure 2. Changing demand elasticity.

did not cause a change in the amount demanded in the short term; however, fuel efficient solutions with the technology developed in the long term allowed price elasticity of demand to increase.

In this way, short and long term price elasticity of demand for products with substitutes that need time to be developed may differ. Because of this reason, although goods with low price elasticity of demand are advised to be taxed at higher rates in Ramsey taxes within the tax structure that will not damage efficiency, in the long term, price elasticity of demand for many goods including necessity goods increases. In such a case, since tax rates will decline as part of increased elasticity, it will be difficult to achieve the budget revenue planned in the beginning without negatively affecting efficiency.

6.2. Commercial liberalization and changing demand elasticity

Criticism of Ramsey taxes, which will be applied within the scope of the inverse elasticity rule because luxury goods have high demand elasticity and necessity goods have low demand elasticity, because of its elasticity assumptions may change as part of competition, which is the main abettor of market economy today. Total revenue and demand elasticity for products are important variables in providing profit maximization, which is the principal purpose of firms competing in market economy.

Firms can increase their total revenues by decreasing the demand elasticity for their products. In this context, firms aim to decrease the vulnerability of the products they produce against

price changes. Thus, they can increase their total revenues by raising product prices [24]. Yet, together with the increased competition, efficiencies [25, 26] increase, and together with liberalization, market size [27] increases.

Especially, liberalization in commerce influences export and import performances of industries, declines in tariffs cause scale increases [28], and thus, competition escalates [29]. As supported by quite a few studies, high protectionism in commerce leads firms to produce under optimal scale, and output increases to be negatively affected [30].

Commercial liberalization on the other hand allows the tariff structure to soften, large-scale firms to rise together with the increase in competition, and output levels of small-scale firms to rise [29]. Diversity increased in the market structure that grew by this means enhances the substitution opportunity between goods and thereby increases price elasticity of demand. By this way, the scale that increased through liberalization and competition raises diversity of goods and services and therefore their substitutability and serves for the increase of price elasticity of demand of all necessity and luxury goods.

6.3. Market size, innovation, and changing demand elasticity

In one of the first studies investigating the relationship between market size and innovation, Griliches [31] put forward in 1957 the existence of a significant relationship between technological change and technological adaptation and profitability and market size. In other studies analyzing different sectors following this study, a significant relationship between market size and innovation and innovation elasticity was exhibited [32–34]. In this context, the innovation process, which improves as market size grows, increases price elasticity of demand by supporting the increase of product range [35].

In the light of these analyses, macroeconomic variables, such as short and long term structures, commerce liberalization and competition, market size, and innovation, affect and change the price elasticity of demand for luxury and necessity goods. This change generally reveals itself as the increase of price elasticity of demand for goods. This macrochange of demand elasticity in both luxury and necessity goods composes a risk for firms in microterms. On the other hand against this risk, firms try to decrease the demand elasticity for their products by creating brands and increasing loyalty to these brands [8].

Brand loyalty decreases the sensitivity of consumers to the prices of products especially in product groups such as technological products and automobiles. At this point, it is useful to mention about brand loyalty as a microvariable effective on price elasticity of demand.

6.4. Brand loyalty and changing demand elasticity

While price elasticity of demand increases as part of macrovariables, this increase in elasticity requires different precautions to be taken, since it would negatively influence profit maximization goal. One of the fundamental elements for the firms to obtain their profit maximization goal is to be able to increase total revenue with price increases they gathered by decreasing substitutability opportunities and price elasticity of demand for their products [24]. Within this scope, primary methods for dropping price elasticity of demand for the firms' products at microlevel are creating or strengthening brand loyalty.

According to Palumbo and Herbig [36], brand loyalty, which has different definitions in literature, is in the most general sense a situation, in which consumers continuously tend to seek and purchase only a certain brand even when competitor businesses offer lower prices and sales promotions.

Brand loyalty to be also high in high-priced products [37] leads the consumer, whose brand loyalty increased, to be less sensitive to price changes. Firms, with a purpose of increasing market share and profitability, try to reduce the vulnerability of their products against substitution opportunities and price changes by raising loyalty to their brands. Within this framework, a close relationship between market share and purchase possibilities of brand loyal consumers, who do not respond to price changes, is in question [38].

Brand loyalty provides some advantages to firms against competition. These advantages can be listed as follows:

- Creating brand loyalty decreases an important amount of advertising and promotion costs [39]. Together with the fall in costs, consumers loyal to brand will be loyal to the brand and not be sensitive to price changes as long as they resolve problems they experience about the product.
- Brand loyalty ensures competitive advantage to businesses. It builds a large entrance barrier to new entrant businesses. These barriers lower price elasticity of demand by complicating substitution of products firms produce.
- Brand loyal consumers do not oppose to pay a higher price for the products and services the business offers, and this increases the profitability of the business in short and long term.
- They do not abandon the brand immediately after they experience a negative situation about the brand.

All these advantages enabled by brand loyalty on the other hand serve price elasticity of demand for the product to fall.

Brand loyalty with regard to Ramsey taxation has importance especially in terms of decreasing price elasticity of demand for luxury goods. Brand loyalty to be high especially in luxury goods [40] drops price elasticity of demand to the so-called goods by weakening substitution possibilities and thus weakens the sensitivity of consumers of luxury goods the price changes of these goods.

All these macrovariables and microvariables change price elasticity of demand for luxury and necessity goods as part of differential tax rates in optimal commodity taxes. Additionally, they give way to Ramsey's inverse elasticity rule to be re-evaluated as part of criticisms it receives about income distribution. At this point, price elasticity of demand for luxury and necessity goods rises depending on short and long term effect, commercial liberalization, and increased competition and innovation, which are all macroeconomic variables.

Thus, demand elasticity of necessity goods, which have a large share in the consumption spending of lower level income groups, increases as part inverse elasticity rule; and therefore, tax rates decrease in line with the increase in elasticity. A decline in the tax rate, which the lower income level group will be exposed to as part of inverse elasticity rule, may create a more agreeable result in income distribution.

The influence microvariables have on price elasticity of demand on the other hand is important especially for luxury goods. Firms, aiming to increase their total revenues by reducing demand elasticity for their products, have the purpose of decreasing the vulnerability of their products against price changes. Since brand loyalty, which is one of the primary microvariables firms use within this framework, is high especially in luxury goods as mentioned above, it affects price elasticity of demand for the goods.

Created brand loyalty prevents change in consumer preferences by reducing substitution possibilities of luxury goods and decreasing price elasticity of demand. By this way, in a tax that will be applied as part of inverse elasticity rule, luxury goods will be subject to high-rate taxes because of low demand elasticity. And therefore since aforementioned goods share in the consumption basket is very low for lower level income groups and high for higher level income groups, effect of this taxation, which is applied by considering elasticity, might be positive on income distribution.

Within this scope, while justice in income distribution is served on one hand, a certain budget revenue of optimal taxation goal is achieved through taxing goods with low demand elasticity at a high rate, and this goal is achieved without damaging any economic decisions or in other words without spoiling economic efficiency. Both inverse elasticity rule and leisure complementary goods, which will change preferences of consumers between working and leisure in favor of working, to be taxed at higher rates play a role. The fact that luxury goods are mostly substitutes of leisure lead to this conclusion.

Beginning from this century, labor market and accordingly preferences between leisure and working started to change. In this context, leisure industry has boomed. In many societies, leisure was equalized with luxury goods such as motor sports and traveling and became a symbol of postmodernity [41].

Thus, luxury goods have been effective in the change of the decision for working as a complementary of leisure. While luxury goods with a declined price elasticity of demand as part of brand loyalty are taxed at a higher rate with regard to inverse elasticity rule; at the same time, preferences of individuals in favor of working were strengthened by imposing taxes on leisure complementary goods and thus raising the cost of leisure.

Keeping in mind that criticisms Atkinson and Stiglitz [42, 43] made with regard to differential consumption taxes in terms of economic efficiency, the assumption that the single rate consumption tax will result efficiently in terms of optimal taxation, and under the agreement that other assumptions of Ramsey rule remain the same, demand elasticity of necessity and luxury goods, which changed with the influence of macrovariables and microvariables, will be able to serve in enabling the aimed public revenue without contradicting justice in income distribution under inverse elasticity rule.

7. Conclusion

On the basis of an imperative tradeoff between equality and efficiency assumption, optimal taxation literature which claims that egalitarian redistribution policies of the state will create negative

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results oppose redistribution policies of the state because of equality-efficiency dilemma. The main starting point on this topic is not being able to enable a certain budget revenue goal via lump-sum taxes because of the asymmetrical information between state and individual and the need for distortionary taxes. In this context, one of the propositions for resolution in the literature is optimal commodity tax application.

In optimal tax application with the aim of efficiency, discussion of single rate or differential tax application is in question.

Ramsey's study on optimal commodity taxes, which suggest goods to be taxed inversely proportional with price elasticity of demand, is one of the primary studies in the literature. While Ramsey rule basically proposes goods with low price elasticity of demand to be taxed at higher rates, its purpose is to preserve individuals' decisions about the consumption of goods with increasing prices unchanged as part of low elasticity, or in other words, a deadweight loss or wealth loss not to be formed in the economy. This rule, in which economic efficiency concern dominates, faces the biggest criticism because of the unjust distribution emerging as a result of the assumption that all individuals resemble each other.

With the inverse elasticity rule, Ramsey suggests necessity goods, which occupy a large share in the consumption basket of lower income groups, to be taxed at higher rates and goods, which appeal to higher income groups, to be taxed at lower rates due to demand elasticity. What is important in this context is whether price elasticity of demand for goods change or not as part of macrovariables and microvariables.

Price elasticity of demand for luxury and necessity goods rises depending on short and long term effect, commercial liberalization, and increased competition and innovation, which are all macroeconomic variables. On the other hand, since brand loyalty, which is the leading microeconomic variable, is high especially for luxury goods, it affects price elasticity of demand for the aforementioned goods.

Additionally, luxury goods to be taxed at higher rates under the assumption that they are leisure complementaries may affect the decisions of individuals on behalf of working. In this context, the criticisms brought about by Ramsey's rule in terms of economic efficiency at the differential taxation, it can be seen that the rule of inverse elasticity on equality can be reconsidered.

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References

[1] Ramsey F. A Contribution to the theory of taxation. The Economic Journal. 1927;**37**:47-61

[2] Mirrlees JA. An exploration in the theory of optimum income taxation. The Review of Economic Studies. 1971;**38**:175-208

[3] Golosov M, Tsyvinski A. Designing optimal disability insurance: A case for asset testing. Journal of Political Economy. 2006;**117**:257-279

[4] Corlett WJ, Hague DC. Complementarity and the excess burden of taxation. Review of Economic Studies. 1953;**21**:21-30

[5] Barron JM, Umbeck JR, Waddell GR. Consumer and competitor reactions: Evidence from a field experiment. International Journal of Industrial Organization. 2008;**26**:517-531

[6] Hummels D, Lugovskyy V. International Pricing in a Generalized Model of Ideal Variety. Mimeo: Purdue University; 2008

[7] Tybout J. Plant- and firm-level evidence on the 'new' trade theories. In: Choi EK, Harrigan J, editors. Handbook of International Trade. Oxford: Basil-Blackwell; 2003. pp. 388-415

[8] Bucklin RE, Gupta S, Siddarth S. Determining segmentation in sales response across consumer purchase behaviours. Journal of Marketing Research. 1998;**35**:189-198

[9] Stiglitz JE. Economics of Public Sector. 3rd ed. New York: WW Norton & Co; 2000. 848 p

[10] Musgrave R. ET, OT and SBT. Journal of Public Economics. 1976;**6**:3-16

[11] Diamond PA, Mirrlees JA. Optimal taxation and public production I-II. American Economic Review. 1971;**61**:261-278

[12] Munk KJ. Welfare Effects of Tax and Price Changes Revisited. School of Economics and Management Economics Working Paper. University of Aarhus. 2008;**2008**:3

[13] Şen H, Şağbaş İ. Vergi Teorisi ve Politikası. 2nd ed. Ankara: Kalkan Ofset; 2016. 512p

[14] Sorensen PB. The theory of optimal taxation: What is the policy relevance? International Tax and Public Finance. 2007;**14**:383-406

[15] Chamley C. Optimal taxation of capital income in general equilibrium and infinite lives. Econometrica. 1986;**54**:607-622

[16] Buchanan JM. Public Finance in Democratic Process. Chapel Hill: University of North Carolina Press; 1967

[17] Buchanan JM. Taxation in fiscal exchange. Journal of Public Economics. 1976;**6**(1-2):17-29

[18] Savaşan F. Piyasa Başarısızlığından Devlet Başarısızlığına Kamu Ekonomisi. 6th ed. Bursa: Dora Yayıncılık; 2016. 399p

[19] Sandmo A. A Reinterpretation of elasticity formulae in optimum tax theory. Economica. 1986;**54**:89-96

[20] Pınar A. Maliye Politikası. 2nd ed. Ankara: Naturel Kitap; 2006. 369 p

[21] Stiglitz J. In praise of frank Ramsey's contribution to the theory of taxation. The Economic Journal. 2015;**125**:235-268

[22] Lipsey RG, Courant PN, Ragan CT. Economics. 12th ed. New York: Addison-Wesley; 1999. 840 p

[23] Pindyck R, Rubinfeld D. Microeconomics. 8th ed. New York: Pearson; 2013. 768p

[24] Perreault WD, Cannon JP, McCarthy EJ. Essentials of Marketing. 13th ed. New York: The McGraw-Hill; 2012. 654 p

[25] Galdon-Sanchez JE, Schmitz JA. Competitive pressure and labor productivity: World iron-ore markets in the 1980s. American Economic Review. 2002;**92**:1222-1235

[26] Nickell SJ. Competition and corporate performance. Journal of Political Economy. 1996; **104**:724-746

[27] Syverson C. Market structure and productivity: A concrete example. Journal of Political Economy. 2004;**112**:1181-1222

[28] Head K, Ries J. Rationalization effects of tariff reductions. Journal of International Economics. 1999;**47**:295-320

[29] Tybout J, Melo J, Corbo V. The effects of trade reforms on scale and technical efficiency: New evidence from Chile. Journal of International Economics. 1991;**31**:231-225

[30] Caves R. Scale openness and productivity in manufacturing. In: Caves R, Krouse L, editors. The Australian Economy: A View from the North. Sydney: The Brookings Institution; 1984

[31] Griliches Z. Hybrid corn: An exploration in the economics of technological change. Econometrica, 1957;**XXV**:501-522

[32] Acemoglu D, Linn J. Market size in innovation: Theory and evıdence from the pharmaceutıcal industry. The Quarterly Journal of Economics. 2004;**119**:1049-1090

[33] Lakdawalla D, Sood N. Incentives to innovate. In: Oxford Handbook of the Economics of the BioPharmaceutical Industry. New York, NY: Oxford University Press; 2012

[34] Hansen RW, Grabowski HG, Lasagna L. Cost of innovation in the pharmaceutical industry. Journal of Health Economics. 1991;**10**:107-142

[35] Desmet K, Parente SL. Bigger is better: MARKET size, demand elasticity and innovation. International Economic Review. 2010;**52**:319-333

[36] Palumbo F, Herbig P. The multicultural context of brand loyalty. European Journal of Innovation. 2000;**3**:116-124

[37] Tranberg H, Hansen F. Patterns of brand loyalty: Their determinants and their role for leading brands. European Journal of Marketing. 1986;**20**:81-109

[38] Dyson P, Farr A, Hollis NS. Understanding, measuring, and using brand equity. Journal of Advertising Research. 1996;**36**:9-21

[39] Blackston M. The qualitative dimension of brand equity. Journal of Advertising Research. 1995;**35**:2-7

[40] Denoue M, Saykiewicz JN. Brand loyalty as a tool of competitive advantage. Journal of Management and Business Administration Central Europe. 2009;**17**:36-45

[41] Campo S, Hamada T, Barbiroli G, Sassen S, Masini EB, Nkwi PN, Sichone O, Momoh A. Social and Economic Development. United Kingdom: Encyclopaedia of Life Support Systems. EOLSS Publishers/UNESCO; 2010

[42] Atkinson A, Stiglitz JE. The design of tax structure: Direct versus indirect taxation. Journal of Public Economics. 1976;**6**:55-75

[43] Atkinson A, Stiglitz JE. Lectures in Public Economics. New York and London: McGraw-Hill Book Company; 1980

[44] Available from: http://ppt-online.org/28345/10/03/2017

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