

## Sensitivity Plot of $cy: \{(m_4 + 3 \cdot m_3) \cdot 10^{-4}\}$ - Cycle of Money

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### ABSTRACT

In this work, escape savings are less common than financial liquidity. A factor of ten greater than escape savings is the velocity of financial liquidity. It uses mathematical definitions by the cycle of money and shows the sensitivity plot of  $cy: \{(m_4 + 3 \cdot m_3) \cdot 10^{-4}\}$ . This is an instance where the money cycle and financial liquidity are the same. The results show that the power of the velocity of financial liquidity is substantially larger than the velocity of escape savings (resulting in the same outcome for one, two, or three times higher power), the money cycle and financial liquidity are equivalent. S.M. (Sensitivity Method) is the method that is used. The objective of the methodology is to confirm using the current equation via a case study, with the scope to clarify the money cycle.

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## INTRODUCTION

The removal of various threats to political stability is just the first step in shaping the political environment that will help economic growth. All governments of independent countries, even stable ones, face many political constraints in their actions. The original meaning of the word "politics" was the art of governing. Economic policy deals with the art of governance in the economic sphere, with politics as well as with economic analysis. Bad economic policy can hinder economic growth and bring it to a halt after it has already begun. The concept of take-off often simply means that a country has entered a period of modern economic growth and does not cause much trouble when used in this way. Often, however, the term has been used in a way that implies that once a country begins development will automatically continue, following familiar paths, until that country becomes a modern industrialized state. The problem with this importance is that, once economic growth has begun, its uninterrupted continuation is not automatically assured. Economic growth alone, especially in its early stages, can cause major social and economic tensions, which can undermine the stability necessary for economic growth. The money cycle theoretical pattern serves the economic growth of an economic system considering contemporaneously the form or structure and the economic functionality of the economy.

According to the theory of comparative advantage, nations with varying levels of capital, labor, and natural resources will profit from importing goods from sectors with higher relative production costs and from specializing in those fields where their costs of production will be lower. Additionally, the benefits of trade increase with the degree of variation in the productive resources that different countries possess, and the degree of disparity that exists between rich and poor countries. Extreme situations exist when a nation possesses an abundant amount of a productive resource or factor of production, such as oil or land, making it hard to utilize the resource fully internally. Trade enables the nation to use its excess to purchase necessities by exporting goods it does not need locally. It's unlikely that Saudi Arabia could consume all the oil it produces or Canada all the wheat grown on its vast prairies. Hence, trade is frequently referred to as the investment outlet of the surplus. Because capital resources can only be moved through trade from affluent to poor countries and vice versa, developing countries also gain from trade (Βαλοσαμάκης, 2018).

The money cycle case is examined in this study according to the current body of literature (Challoumis, 2023j): This paper analyses the case of the eviction of savings and the financial cycle. The same procedure applies to savings on enforcement (Arai et al., 2018; Biernaski & Silva, 2018; Brownell & Frieden, 2009; dos Santos Benso Maciel et al., 2020; Ewert et al., 2021; Fan et al., 2020; Kiktenko, 2020; Kreft & Sobel, 2005; Mackean et al., 2020; Rizzo & Throsby, 2006; Sánchez et al., 2020; Shamah-Levy et al., 2019; Turner, 2010). This can happen if the savings return and the savings do not return. As a result, the economic comparison combines market consumption and investment with savings and plays an important role in public and tax policy (Altman, 2012; Arabyan, 2016; Guardino & Mettler, 2020; Haigh, 2020; Kananen, 2012; Muñoz

& Flores, 2020; Ng, 2018; Reeves et al., 2019; Snow, 1988; Williamson & Luke, 2020) Therefore, appropriate tax rates are the key element of appropriate public policy. The following figure illustrates the purpose of the current study.

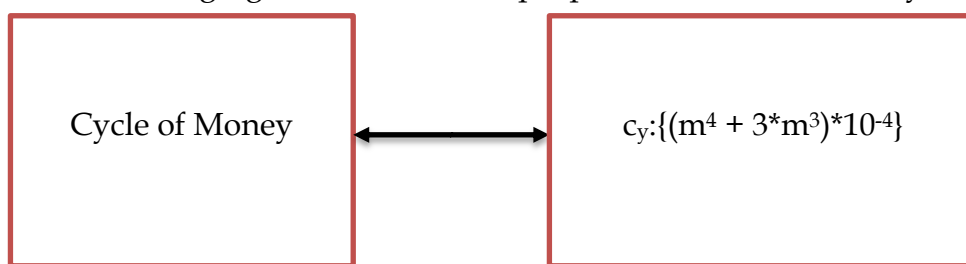


Figure 1: Cycle of money for  $c_y: \{(m^4 + 3 \cdot m^3) \cdot 10^{-4}\}$

When public policy is applied to lower tax rates on uncontrolled transactions and higher tax rates on controlled transactions, the fixed-length principle is met.

## LITERATURE REVIEW

The earliest important theorists of Neoclassical Public Economics defined a public good as one from which every member of society can concurrently obtain a service of the same amount and quality as that which the good as a whole provides once it is established in society. The World Bank views the provision of electricity as infrastructure, along with the provision of water, sewage, communications, roads, bridges, airports, trains, rivers, housing, and urban services. As a result, the term infrastructure describes these fundamental components of social and economic transformation that act as a framework for encouraging economic activity. In the absence of these fundamental components or the support network, productive endeavors can only guarantee existence; they cannot, however, bring prosperity to individuals. As a system to facilitate productive activity, infrastructure actually forms the basis of people's social and economic advancement.

Economic, social, and institutional infrastructure are the three main categories of infrastructure. The term economic infrastructure refers to all the components of economic transformation, such as communication, transportation, and energy, that provide the framework for economic expansion. Abundant transportation and communication options will facilitate the flow of goods from producers to consumers, abundant electrical supply will quicken the speed of productive activity, and so forth. An efficient system of economic development will remain only a distant possibility in the lack of economic infrastructure. Social infrastructure is the foundation of a country's social development process and includes institutions of higher learning, medical facilities, and educational facilities. The main goal of social development is the growth of human resources, which includes the development of both competent workers and robust, productive human beings. (iii) Infrastructure within institutions Institutional infrastructure can be seen as the actual application of rules to the institutional basis of the market economy.

Economic and legal policy is concerned with the institutional infrastructure, which is tasked with the social integration of values function (Βαλοσαμάκης, 2018).

In order to govern transactions and decide how profits and losses are distributed, players must reach agreements. It is appropriate to include the contract modifications in the agreements (Challoumis, 2018c, 2019c, 2023d, 2023u, 2023f, 2023b, 2023q, 2024g, 2024a, 2024l, 2024k, 2020d, 2020b, 2021f, 2021k, 2021a, 2022e, 2022c, 2022b; Challoumis & Savic, 2024): This is why regular inspections by the tax authorities are necessary. Periodically formulating contracts is essential when doing a comparative analysis. Regular inspections of the companies engaged in restricted transactions are a crucial part of the arm's length principle. The cost-sharing structure is then determined by periodically evaluating the companies that act as test subjects. Managing issues pertaining to the taxation of its operations is part of the purview of a controlled transaction firm. Consequently, the arm's length principle must be applied to the firms demands for restricted interactions with the tax authorities. Thus, the businesses engaged in regulated transactions ought to come to a mutually agreeable agreement that permits them to optimize their profits in tax environments with low tax rates and to optimize their expenses in economic scenarios with maximum tax rates.

Additionally, they should be made aware that, subject to the necessary adjustments, companies engaged in limited transactions may also be inspected by tax authorities (Challoumis, 2018g, 2018b, 2023ag, 2023p, 2023ah, 2023ab, 2023g, 2024e, 2019e, 2019f, 2020c, 2020a, 2021d, 2022d, 2023ac, 2023e). Organizations that engage in controlled transactions sometimes do not have access to comparable situations for uncontrolled transactions, and as a result, they proportionally alter their data due to the condition of the proportional adjustments being interpreted as such (Arbel et al., 2019; Hasselman & Stoker, 2017; Hausman et al., 2016; Islam et al., 2020; Jensen, 2020; Menguy, 2020; Oueslati, 2015; Scholvin & Malamud, 2020; Spiel et al., 2018; Tummers, 2019). In other words (Challoumis, 2024a), if the businesses undergoing testing determine that the gains and losses resulting from unregulated transactions are significantly greater or lower than expected, they will use a proportionate comparison to compare the results to their data. For the companies, costs, and profits are associated with the creation of goods and services. In light of the earlier examination:

$$u = s(zf + \tilde{z}d) \tag{1}$$

$$z = |\tilde{z} - 1| \tag{2}$$

With respect to any approach that leads to the  $s$ , the symbol  $u$  represents the impact factor of the comparability analysis. For a coefficient,  $z$  stands for one of the values between 0 and 1. How the method affects the  $s$  (using the optimal method rule) determines what value could be received. One meaning of  $z$  is the cost associated with producing things, while another meaning of  $d$  is the cost associated with distributing those goods. (Challoumis, 2019g, 2019a, 2023m,

2023w, 2023h, 2023c, 2023y, 2023ai, 2023i, 2024c, 2024m, 2021h, 2021e, 2021c, 2023v, 2023s, 2023n, 2023l, 2023z). It is possible to determine the following equations using Eqs. (1)-(2):

$$u_c = zf + \tilde{z}d \quad (3)$$

$$b = (p - u_c) * j_1 \quad (4)$$

When applying the arm's length principle to controlled transactions, the amount of taxes that should be paid to the corporations is represented by the symbol  $b$  in the previous equation. The amount of taxes that can be saved by allocating profits and losses is denoted by the symbol,  $u_c$ . Furthermore, the coefficient for the tax rate is  $j_1$ . Following that, the arm's length principle example is illustrated by Eq. (5). Furthermore, concerning the principle of fixed length,

$$v = p * j_2 \quad (5)$$

The taxes that are due to the regulated transaction enterprises in the implementation of the fixed length principle are indicated by the symbol  $v$  in the preceding equation. (Blundell & Preston, 2019; Challoumis, 2018c; Dancygier & Laitin, 2014; Dollery & Worthington, 1996; Fronzaglia et al., 2019; Grabs et al., 2020; Jeon et al., 2020; Laplane & Mazzucato, 2020; Mancuso & Moreira, 2013; Saleem et al., 2017). In the case of the fixed length principle, then,  $j_2$  is a coefficient for the rate of taxes:

$$v \geq b \quad (6)$$

Under the fixed length concept, the tax for businesses involved in transfer pricing controlled transactions is greater than, or at least equivalent to, the tax under the arm's length principle. Thus, the enterprises of controlled transactions can address problems arising from profit and loss allocation by using the fixed-length approach. As a result, the consequences of transfer pricing on the overall tax revenue may be faced by the tax authorities. The fixed length approach allows for the recovery of worldwide tax revenue tax losses resulting from transfer pricing control transactions (Challoumis, 2018a, 2019d, 2024b, 2024i, 2024j, 2024h, 2019b, 2021j, 2021g, 2023o, 2023r, 2023t, 2023j, 2024n). The goal is to prove that the cycle of money has a high value when the velocity of financial liquidity is one power greater than the velocity of escape savings.

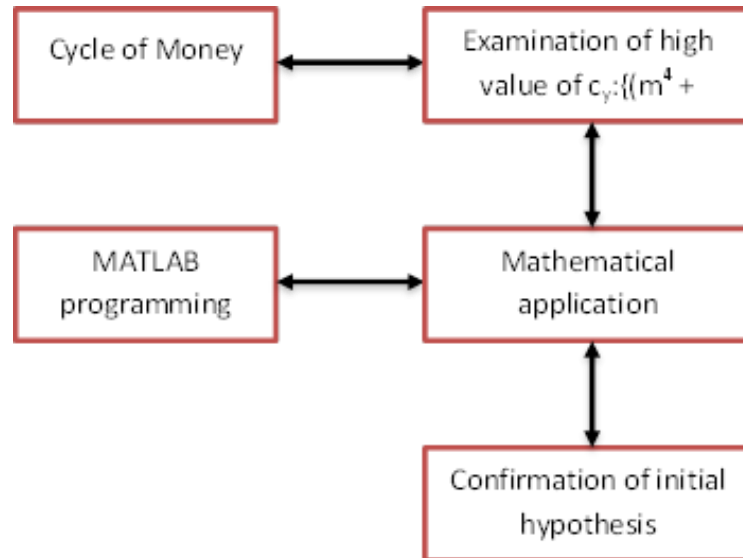


Figure 2: Diagrammatic presentation

The process that verifies the first hypothesis is diagrammatically determined in Figure 2.

## METHODOLOGY

The objective of the methodology is to confirm using the current equation via a case study, that the money cycle confirmed. The scope is to analyze the current equation. With the term methodology, we denote the philosophy of the research process. This includes the assumptions and values that guide the research and the criteria and conditions used by the researcher to interpret the data and reach specific conclusions. The methodology deals with the analysis of the logical substance of the methods and their critical study, that is, with the investigation of any interconnection with certain theoretical assumptions. But it also deals with the simple description of specific methods and techniques (socialpolicy.gr, 2013). All social research is epistemologically based on theoretical presumptions, which are either overtly or covertly motivated by values and value judgments. S.M. (Sensitivity Method) has applied to this research. The current method is applied to study the behavior of the money cycle on the current equation (Challoumis, 2018d, 2018c, 2018h, 2018e, 2019f, 2019e, 2019g, 2020d, 2020a). The amount collected in taxes is equivalent to what the businesses could have saved if the taxes had not been paid. A previous study in mathematics defines the definitions (Challoumis, 2018h, 2018d, 2018c, 2018e, 2019g, 2019f, 2019e, 2020d, 2020a): Each situation is handled differently when it comes to the administration of these savings. The advantages of the businesses could thus be handled quite differently, with regard to how they are stored or taxed (Challoumis, 2018f, 2018i, 2023k, 2023a, 2024d, 2024f, 2021i, 2021b, 2022a, 2023af, 2023aa, 2023ae, 2023x, 2023ad). According to the notion of the money cycle, an economy is strong when savings are high and robust when taxes are high (Bartels, 2005; Béland, 2017; Bowling et al., 2019; Carfora et al., 2021; John, 2018; Kalambokidis, 2014; Ladvocat & Lucas, 2019; Leckel et al., 2020; Maestre-Andrés et al., 2019; Mohindra, 2007; Smętkowski et al., 2020; Ustinovich & Kulikov, 2020)

This choice needs to be made by dividing the funds into the categories of non-returned (also known as escaped) and returned savings (also known as enforcement savings). Below, the following equations are shown for the purposes of this analysis:

$$\alpha = \alpha_s + \alpha_t \text{ or } \frac{1}{v} + \alpha_t \quad (7)$$

$$x_m = m - a \quad (8)$$

$$m = \mu + \alpha_p \quad (9)$$

$$\mu = \sum_{i=0}^n \mu_i \quad (10)$$

$$\alpha_p = \sum_{j=0}^m \alpha_{pj} \quad (11)$$

$$c_m = \frac{dx_m}{dm} \quad (12)$$

$$c_\alpha = \frac{dx_m}{da} \quad (13)$$

$$c_y = c_m - c_\alpha \quad (14)$$

The escaping savings scenario is represented by the  $\alpha$  variable. This indicates that certain savings are either not coming back into the economy or do so gradually. The  $\alpha_s$  variable represents the scenario in which transfer pricing operations result in savings that are lost. The variable  $\alpha_t$  denotes the possibility of escape savings from any economic activity, not just transfer pricing operations. The variable of  $m$  symbolizes the financial liquidity in an economy. The variable  $\mu$  represents the level of consumption within an economy. The variable  $\alpha_p$  represents the savings from enforcement that come from small and medium-sized businesses and citizens. An economy's level of financial liquidity is represented by the variable,  $x_m$ . The variable  $c_m$  represents the growth or decrease in the velocity of financial liquidity. The variable of  $c_\alpha$  symbolizes the velocity of escape savings. Therefore, the variable of  $c_y$  symbolizes the term of the cycle of money. As a result, the money cycle reveals the degree of an economy's dynamic and resilience.

## RESEARCH RESULT

The current section examines the following equations. The purpose is to show that the one-time higher magnitude of the velocity of financial liquidity compared to escape savings gives a high cycle of money. Case study analysis of  $c_y$ :

$$c_m = (m^4 + 4 * m^3) * 10^{-4} \quad (15)$$

$$c_a = 10^{-4} * m^3 \quad (16)$$

$$\log c_m = \log[(m^4 + 4m^3) * 10^{-4}] \quad (17)$$

$$\log c_a = \log(m^3 * 10^{-4}) \quad (18)$$

Based on Eq. (14) - (18):

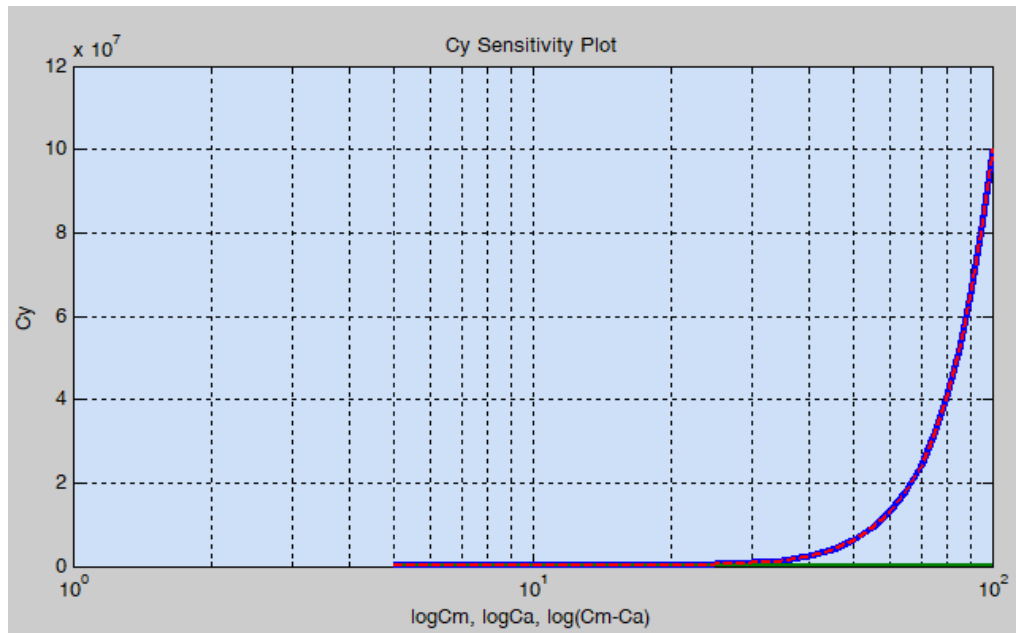


Figure 3:  $c_y = f(\log c_m, \log c_a)$

Whereas the blue line represents the velocity of financial liquidity, the red line represents the money cycle. The strong correlation between financial liquidity and the money cycle is evident due to the tremendous power of financial liquidity's velocity.

## DISCUSSION

The previous graph makes it clear that the money cycle increases exponentially when the velocity of financial liquidity exceeds the escape savings. The importance of an order of magnitude of financial liquidity secures that the cycle of money is at its higher level, according to  $c_y = (m^4 + 4 * m^3 - m^3) * 10^{-4} = (m^4 + 3 * m^3) * 10^{-4}$ .

From prior research, the result is the same as in the case that there  $c_a = 10^{-4} * m$  or  $c_a = 10^{-4} * m^2$ . It makes no difference how many times greater it is compared to the financial liquidity velocity; the result is always the same. Since financial liquidity's velocity is far higher than escape savings' velocity (with the same result for one, two, or, three-times higher power), the money and financial liquidity cycles are also the same.

## CONCLUSIONS AND RECOMMENDATIONS

The Sensitivity Method (S.M.) has been used in this study. Methodology refers to the research philosophy, guiding assumptions, values, and criteria used to interpret data and reach conclusions, analyzing methods' logical substance and investigating their connection with theoretical assumptions. The current results of money cycle show the importance of financial liquidity. The present approach is used in order to investigate how the money cycle behaves using the current equation. Therefore, larger companies can transfer their economic activities and move to higher-tech sectors, such as factoring, thanks to their



excellent financial liquidity rather than exceeding smaller enterprises in terms of economic activity. This shows the appropriateness of the economic structure

### ADVANCED RESEARCH

In restricted transactions, cost-sharing arrangements and comparative analysis depend on routine contract formulation and inspections. The arm's length concept must be used by controlled transaction firms to handle tax-related matters. Businesses can optimize profits and expenses in tax settings with low and maximum tax rates by reaching a mutually accepted arrangement. The money cycle fixes these issues. Numerous equations might be examined using the same principle in order to uncover various scenarios, which makes the current work and methodology very applicable.

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