Center for Open Access in Science ▪ https://www.centerprode.com/ojre.html
Open Journal for Research in Economics, 2025, *8*(1), 19-34.
ISSN (Online) 2620-102X ▪ https://doi.org/10.32591/coas.ojre.0801.02019c

Comparative Analysis Between Cost and Bureaucracy – Sensitivity Method

Constantinos Challoumis

National and Kapodistrian University, Athens, GREECE
Faculty of Economics and Political Science

Received: 13 April 2024 ▪ Revised: 27 April 2025 ▪ Accepted: 1 July 2025

Abstract

This paper is about the comparison of cost and bureaucracy in the tax system. The results show that the bureaucracy decreases the tax revenue and the same result is with the costs. The applied methodology is based on the S.M. (Sensitivity Method) where the comparison between the cost and the bureaucracy happens through graphical analysis. The mathematical background and the theory of the money cycle specify the behavior of these variables. The objective of this work is to reveal the interaction between these variables. The scope of the paper is to confirm the behavior of the theory of the Cycle of Money considering these variables.

Keywords: cycle of money, sensitivity method, cost, bureaucracy.

1. Introduction

The money cycle counteracts the variables of the bureaucracy and the cost. The quantification analysis of the sensitivity of the tax system to the cost and bureaucracy is done by the application of the S.M. (Sensitivity Method) (Bergh, 2009; Bourdin & Nadou, 2018; Challoumis, 2020d, 2020a, 2021d; Corti et al., 2020; Ginsburgh & Weber, 2020; Levi, 2021; Ortun et al., 2017; Paes-Sousa et al., 2019; Rumayya et al., 2020; Tvaronavičienė et al., 2018; Urwannachotima et al., 2020; Woody & Viney, 2017; Παπακωνσταντίνου et al., 2013). The background of this method stands on the behavior analysis of mathematical equations. According to bibliography (Challoumis, 2018a, 2018b, 2023g, 2023b, 2023a, 2023i, 2023c, 2023j, 2023k, 2023d, 2023l, 2023e, 2020a, 2023m, 2023o, 2024b, 2024c, 2024a, 2020b, 2021b, 2021a, 2022a, 2022b, 2023h, 2023f). The cycle of money is the theory where the Q.E. method and also the Sensitivity method have been applied (Aitken, 2019; Arai et al., 2018; Biernaski & Silva, 2018; Buonomo et al., 2020; Challoumis, 2018c; Diallo et al., 2021; Fernandez & Raine, 2019; Hasselman & Stoker, 2017; Hyeon Sik Seo & YoungJun Kim, 2020; Kananen, 2012; Khadzhyradieva et al., 2019; Kroth et al., 2020; Leckel et al., 2020; Loayza & Pennings, 2020; Montenegro Martínez et al., 2020; Nielsen et al., 2019; Ruiz et al., 2017; Scholvin & Malamud, 2020; Soboleva I.V., 2019; Syukur, 2020; Taub, 2015; Ustinovich & Kulikov,

Correspondence: Constantinos Challoumis, National and Kapodistrian University, Faculty of Economics and Political Science, Athens, GREECE.

2020; Watanabe et al., 2018). The Sensitivity Method is based on the concept of how sensitive is a variable. To achieve this there are two steps:

- It should be defined as the equation that is under examination, according to the applied theory.
- Following the same concept of the Q.E. method it is the case that one variable is there in the one case, and the other case is omitted. The basic difference between the Sensitivity Method to the Q.E. method is that Sensitivity does not use the generator, to produce random values, but there is each time a condition that should be satisfied.

The S.M. (Sensitivity Method) is plausible to be applied using a combination of mathematics and programming (Challoumis, 2018c, 2021i, 2022c, 2023p, 2023n, 2023q, 2023r, 2023u, 2023t, 2023s, 2024e, 2024d, 2021j, 2021e, 2021c, 2021d, 2021g, 2021h, 2021f, 2022d; Challoumis & Savic, 2024). The quantification of quality data is the concept of the S.M. (the same happens with the Q.E. method, but from a different point of view (Aakre & Rübbelke, 2010; Baker et al., 2020; Blundell & Preston, 2019; Bowling et al., 2019; Brownell & Frieden, 2009; J. N. B. Campos, 2015; Carattini et al., 2018; Díaz et al., 2020; Fan et al., 2020; Fronzaglia et al., 2019; Gocekli & Comertler, 2021; Grabs et al., 2020; Hai, 2016; Liu et al., 2018; Maestre-Andrés et al., 2019; Marques, 2019; OECD, 2017, 2020; Persson & Tinghög, 2020; Silva et al., 2020; TUTER, 2020; Wright et al., 2017).” Then, it is plausible to quantify quality data. In our analysis, this method is used for clarification of the behavior of the impact factor of the global tax revenue.

2. Literature review

The impact factor of tax revenues of countries which are tax heaves, s according to the bibliography (Challoumis, 2018c, 2021j, 2022c, 2023p, 2023n, 2023q, 2023r, 2023u, 2023t, 2023s, 2024e, 2024d, 2021c, 2024f, 2024g, 2021e, 2021i, 2021d, 2021g, 2021h, 2021f, 2022d; Challoumis & Savic, 2024). It is determined as that:

$$s = \frac{k+l}{r+c+t+i} \quad (1)$$

“Therefore, are countries that receive the products that are taxed in different countries. This allocation of profits between profits and losses permits the enterprises that participate in controlled transactions of the transfer pricing activities to maximize their utility. But, contemporaneously the tax revenue from a global view has declined. Then, the loss of tax income from some countries is more than the profits that make the countries which are tax havens. Thereupon, the symbol of s the impact factor of tax revenue from a global view, and there are some coefficients which are $k, l, r, t,$ and c. Thus, the symbol of k is about the impact factor of capital, l is the impact factor about the liability of the authorities on the tax system. The interpretation of the liability is about how unbalanced it is the tax system. The parameter of r is about the risk, the t is about how much trustworthy is the tax system from the view of cost (Arabyan, 2016; Arbel et al., 2019; Camous & Gimber, 2018; J. Campos et al., 2019; Chubarova et al., 2020; de A. Dantas et al., 2018; de Vasconcelos et al., 2019; Farah, 2011; Goldsztejn et al., 2020b, 2020a; Hartz & John, 2009; Herrington, 2015; Islam et al., 2020; Jia et al., 2020; Kartini et al., 2019; Lajas & Macário, 2020; Martinez & Rodríguez, 2020; Marume, 2016; Nash et al., 2017;

Noland, 2020; Peres et al., 2020; Torres & Riaño-Casallas, 2018; Tummers, 2019). The i is about the requirements of the intangibles (different relation from the intangibles which are proportional to capital). The symbols with the "~" are accordingly the same thing but from the view of the uncontrolled transactions. Thus, the numerator is proportional to the income of taxes, as the investments and the stable tax environments, with a lack of cost enhance the tax income (Acs et al., 2016; Adhikari et al., 2006; Andriansyah et al., 2019; Kanthak & Spies, 2018; Korenik & Wegrzyn, 2020; Kreft & Sobel, 2005; Ladvocat & Lucas, 2019; Nayak, 2019; Ud Din et al., 2016). On the other hand, the denominator is inverting proportional to the tax income, as the risk, the cost, and the unbalance of taxation cause less tax income. Moreover, for $\tilde{s}$:

$$\tilde{s} = \frac{\tilde{k}+\tilde{l}}{\tilde{r}+\tilde{c}+\tilde{t}+\tilde{i}} \quad (2)$$

It is determined the aggregate impact factor of tax revenues, which is symbolized by $\hat{s}$, and is defined by the next equation:

$$\hat{s} = s + \tilde{s} \quad (3)$$

Based on the prior equations it is plausible to proceed to the identification of the behavior of the impact factors of tax revenues in the case of tax heavens and the case of the non-tax heavens. Then, s is a factor that allows the comparison between the controlled with the uncontrolled transactions. Thence is plausible to have a standalone behavior analysis of controlled transactions and a combined behavior analysis between the controlled transactions with the uncontrolled transactions. The next section analyzes the impact factor of tax revenues with the rest impact factors."

This methodology is illustrated below:

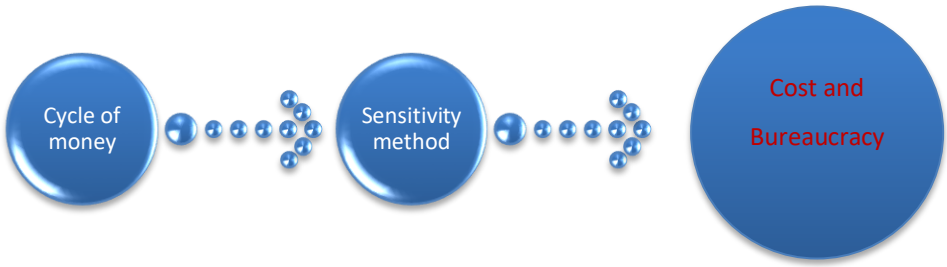

Figure 1. S.M. (Sensitivity Method)

The previous scheme followed the Sensitivity Method to determine the behavior of the global tax revenue in the case that the existence of the cost and the ideal case that this factor is avoided.

3. Results

The cost is in interaction with the impact factor of tax revenues. In this behavioral analysis is determined the model which clarifies the behavior of the impact factor of tax revenues with the existence and with the avoidance of the impact factor of tax sensibility (Challoumis, 2018e, 2018d, 2022e, 2023y, 2023x, 2023w, 2023v, 2023z, 2024h, 2024l, 2024m, 2024j, 2019e, 2024k, 2019a, 2019d, 2019c, 2019b, 2020d, 2020c, 2021k). Then, for the application of the Sensitivity Method:

$$t > l > i > r > k > c \quad (4)$$

Therefore, it is plausible to proceed to a quantity analysis using equations (1), (2), and (4). Therefore, applying the Sensitivity method and choosing the appropriate magnitudes for the coefficient:

Table 1. Compiling coefficients

Factors	Values of s	Values of s'
k	0,4	0,4
i	0.6	0.6
l	0.7	0.7
r	0.5	0.5
c	0.3	-
t	0.8	-
fs	<0.3	<0.3
f_i	<0.3	<0.3

The prior table presents the data that are under examination to be able to compile the model and confirm that the impact factor of cost declines the tax revenue (Challoumis, 2018e, 2018f, 2020d, 2020c, 2021k, 2023v, 2023y, 2023x, 2023aa, 2023ab, 2023ah, 2023ad, 2018d, 2023w, 2023z, 2023ae, 2023af, 2023ag, 2023ac, 2024m, 2024k, 2024h, 2024j, 2019b, 2024l, 2024n, 20240, 2024p, 2019f, 2019d, 2019e, 2019a, 2019g, 2019c).

Therefore, using the Sensitivity Method:

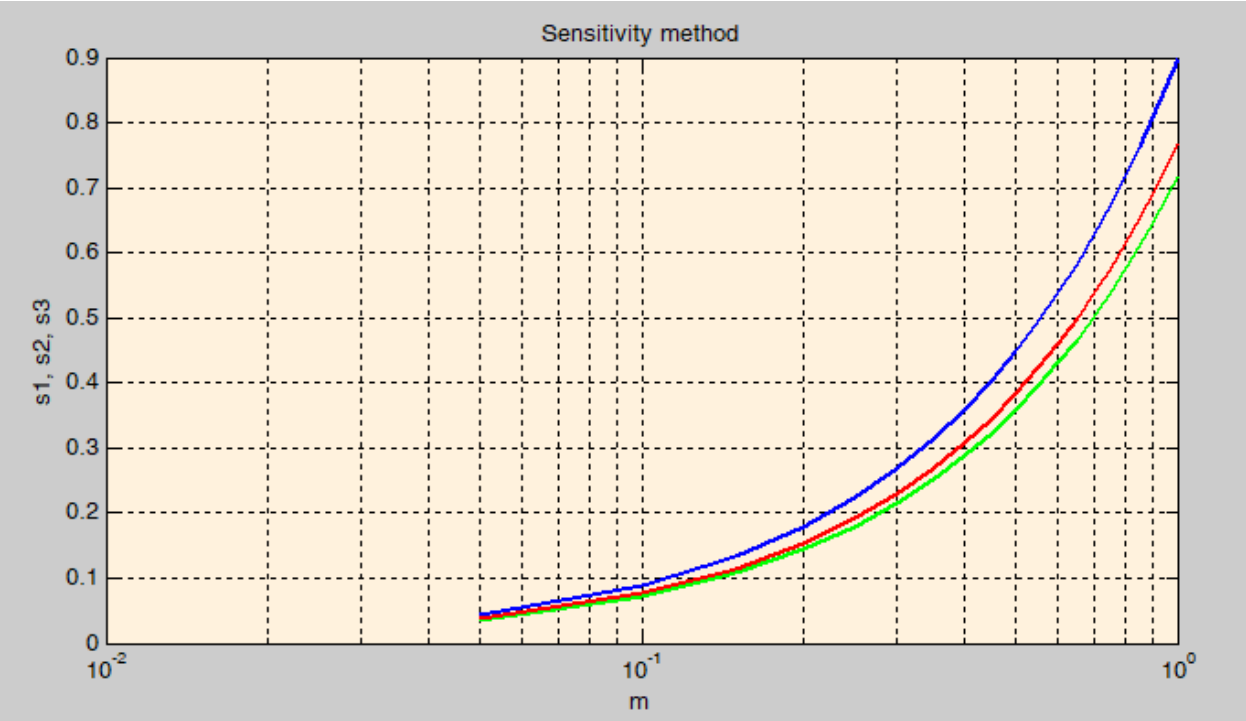

Figure 3. Application of S.M.

In logarithmic forms, the red line is about the case that there doesn't exist cost, and the blue line is the case that there does exist bureaucracy. The green line is the case

that there are all the variables. It is confirmed by the theoretical background of the theory of the money cycle (or the theory of the cycle of money).

4. Conclusions

This paper examined the case of cost and bureaucracy and how interact with global tax revenue. Then the companies that participate in controlled transactions prefer as expected the tax environments that have unstable law rules and insecure economies. This has an impact on the companies that participate in controlled transactions to be increased in numbers because that way can allocate their profits and losses better. Then, the decrease in cost could rapidly increase the tax revenue. Simultaneously the decrease of bureaucracy increases the tax revenue. Then, the decrease in bureaucracy and cost leads to an ideal case for the money cycle.

Acknowledgements

This research did not receive any specific grant from funding agencies in the public commercial, or not-for-profit sectors.

The author declares no competing interests.

References

Aakre, S., & Rübbelke, D. T. G. (2010). Objectives of public economic policy and the adaptation to climate change. *Journal of Environmental Planning and Management*, *53*(6). https://doi.org/10.1080/09640568.2010.488116

Acs, Z., Åstebro, T., Audretsch, D., & Robinson, D. T. (2016). Public policy to promote entrepreneurship: a call to arms. *Small Business Economics*, *47*(1). https://doi.org/10.1007/s11187-016-9712-2

Adhikari, A., Derashid, C., & Zhang, H. (2006). Public policy, political connections, and effective tax rates: Longitudinal evidence from Malaysia. *Journal of Accounting and Public Policy*, *25*(5). https://doi.org/10.1016/j.jaccpubpol.2006.07.001

Aitken, A. (2019). Measuring Welfare Beyond GDP. *National Institute Economic Review*, *249*(1). https://doi.org/10.1177/002795011924900110

Andriansyah, A., Taufiqurokhman, T., & Wekke, I. S. (2019). Responsiveness of public policy and its impact on education management: An empirical assessment from Indonesia. *Management Science Letters*, *9*(3). https://doi.org/10.5267/j.msl.2018.12.008

Arabyan, O. (2016). Public infrastructure policies and economic geography. *Glasnik Srpskog Geografskog DrustvaBulletin of the Serbian Geographical Society*, *96*(1). https://doi.org/10.2298/gsgd1601093a

Arai, R., Naito, K., & Ono, T. (2018). Intergenerational policies, public debt, and economic growth: A politico-economic analysis. *Journal of Public Economics*, *166*. https://doi.org/10.1016/j.jpubeco.2018.08.006

Arbel, Y., Fialkoff, C., & Kerner, A. (2019). Public policy for reducing tax evasion: implications of the Yule–Simpson paradox. *Applied Economics Letters*, *26*(13). https://doi.org/10.1080/13504851.2018.1537471

Baker, S. D., Hollifield, B., & Osambela, E. (2020). Preventing controversial catastrophes. *Review of Asset Pricing Studies*, *10*(1). https://doi.org/10.1093/RAPSTU/RAZ001

Bergh, J. C. J. M. va. den. (2009). The GDP paradox. *Journal of Economic Psychology*, *30*(2). https://doi.org/10.1016/j.joep.2008.12.001

Biernaski, I., & Silva, C. L. (2018). Main variables of Brazilian public policies on biomass use and energy. *Brazilian Archives of Biology and Technology*, *61*(Specialissue). https://doi.org/10.1590/1678-4324-smart-2018000310

Blundell, R., & Preston, I. (2019). Principles of Tax Design, Public Policy and Beyond: The Ideas of James Mirrlees, 1936–2018. *Fiscal Studies*, *40*(1). https://doi.org/10.1111/1475-5890.12183

Bourdin, S., & Nadou, F. (2018). French tech: A new form of territorial mobilization to face up to global competition? *Annales de Geographie*, *2018*(723–724). https://doi.org/10.3917/ag.723.0612

Bowling, S. J., Boyland, L. G., & Kirkeby, K. M. (2019). Property Tax Cap Policy in Indiana and Implications for Public School Funding Equity. *International Journal of Education Policy and Leadership*, *15*(9). https://doi.org/10.22230/ijepl.2019v15n9a881

Brownell, K. D., & Frieden, T. R. (2009). Ounces of Prevention — The Public Policy Case for Taxes on Sugared Beverages. *New England Journal of Medicine*, *360*(18). https://doi.org/10.1056/nejmp0902392

Buonomo, I., Benevene, P., Barbieri, B., & Cortini, M. (2020). Intangible Assets and Performance in Nonprofit Organizations:A Systematic Literature Review. *Frontiers in Psychology*, *11*. https://doi.org/https://doi.org/10.3389/fpsyg.2020.00729

Camous, A., & Gimber, A. R. (2018). Public debt and fiscal policy traps. *Journal of Economic Dynamics and Control*, *93*. https://doi.org/10.1016/j.jedc.2018.02.009

Campos, J., Braga, V., & Correia, A. (2019). Public policies for entrepreneurship and internationalization: Is there a government reputation effect? *Journal of Science and Technology Policy Management*, *10*(4). https://doi.org/10.1108/JSTPM-04-2018-0044

Campos, J. N. B. (2015). Paradigms and Public Policies on Drought in Northeast Brazil: A Historical Perspective. *Environmental Management*, *55*(5). https://doi.org/10.1007/s00267-015-0444-x

Carattini, S., Carvalho, M., & Fankhauser, S. (2018). Overcoming public resistance to carbon taxes. In *Wiley Interdisciplinary Reviews: Climate Change* (Vol. 9, Issue 5). https://doi.org/10.1002/wcc.531

Challoumis, C. (2018a). Analysis of the velocities of escaped savings with that of financial liquidity. *Ekonomski Signali*, *13*(2), 1–14. https://doi.org/10.5937/ekonsig1802001c

Challoumis, C. (2018b). Identification of Significant Economic Risks to the International Controlled Transactions. *Economics and Applied Informatics*, *2018*(3), 149–153. https://doi.org/https://doi.org/10.26397/eai1584040927

Challoumis, C. (2018c). Methods of Controlled Transactions and the Behavior of Companies According to the Public and Tax Policy. *Economics*, *6*(1), 33–43. https://doi.org/10.2478/eoik-2018-0003

Challoumis, C. (2018d). THE IMPACT FACTOR OF HEALTH ON THE ECONOMY USING THE CYCLE OF MONEY. *Bulletin of the Transilvania University of Braşov*, *11*(60), 125–136. https://webbut.unitbv.ro/index.php/Series_V/article/view/2533/1979.

Challoumis, C. (2018e). The Keynesian Theory and the Theory of Cycle of Money. *Hyperion Economic Journal*, *6*(3), 3–8. https://hej.hyperion.ro/articles/3(6)_2018/HEJ nr3(6)_2018_A1Challoumis.pdf.

Challoumis, C. (2018f). The Role of Risk to the International Controlled Transactions. *Economics and Applied Informatics*, *2018*(3), 57–64. https://doi.org/I https://doi.org/10.26397/eai1584040917

Challoumis, C. (2019a). The arm's length principle and the fixed length principle economic analysis. *World Scientific News*, *115*(2019), 207–217. http://www.worldscientificnews.com/wp-content/uploads/2018/11/WSN-115-2019-207-217.pdf.

Challoumis, C. (2019b). The cycle of money with and without the escaped savings. *Ekonomski Signali*, *14*(1), 89–99. https://doi.org/336.76 336.741.236.5

Challoumis, C. (2019c). The Impact Factor of Education on the Public Sector and International Controlled Transactions. *Complex System Research Centre*, *2019*, 151–160. https://www.researchgate.net/publication/350453451_The_Impact_Factor_of_Education_on_the_Public_Sector_and_International_Controlled_Transactions.

Challoumis, C. (2019d). The Issue of Utility of Cycle of Money. *Journal Association SEPIKE*, *2019*(25), 12–21. https://5b925ea6-3d4e-400b-b5f3-32dc681218ff.filesusr.com/ugd/b199e2_dd29716b8bec48ca8fe7fbcfd47cdd2e.pdf.

Challoumis, C. (2019e). The R.B.Q. (Rational, Behavioral and Quantified) Model. *Ekonomika*, *98*(1), 6–18. https://doi.org/10.15388/ekon.2019.1.1

Challoumis, C. (2019f). Theoretical analysis of fuzzy logic and Q. E. method in economics. *IKBFU's Vestnik*, *2019*(01), 59–68.

Challoumis, C. (2019g). Transfer Pricing Methods for Services and the Policy of Fixed Length Principle. *Economics and Business*, *33*(1), 222–232. https://doi.org/https://doi.org/10.2478/eb-2019-0016

Challoumis, C. (2020a). Analysis of the Theory of Cycle of Money. *Acta Universitatis Bohemiae Meridionalis*, *23*(2), 13–29. https://doi.org/https://doi.org/10.2478/acta-2020-0004

Challoumis, C. (2020b). Impact Factor of Capital to the Economy and Tax System. *Complex System Research Centre*, *2020*, 195–200. https://www.researchgate.net/publication/350385990_Impact_Factor_of_Capital_to_the_Economy_and_Tax_System.

Challoumis, C. (2020c). The Impact Factor of Costs to the Tax System. *Journal of Entrepreneurship, Business and Economics*, *8*(1), 1–14. http://scientificia.com/index.php/JEBE/article/view/126.

Challoumis, C. (2020d). The Impact Factor of Education on the Public Sector – The Case of the U.S. *International Journal of Business and Economic Sciences Applied Research*, *13*(1), 69–78. https://doi.org/10.25103/ijbesar.131.07

Challoumis, C. (2021a). Chain of cycle of money. *Acta Universitatis Bohemiae Meridionalis*, *24*(2), 49–74.

Challoumis, C. (2021b). Index of the cycle of money - The case of Belarus. *Economy and Banks*, *2*.

Challoumis, C. (2021c). Index of the cycle of money - The case of Greece. *IJBESAR (International Journal of Business and Economic Sciences Applied Research)*, *14*(2), 58–67.

Challoumis, C. (2021d). Index of the Cycle of Money - The Case of Latvia. *Economics and Culture*, *17*(2), 5–12. https://doi.org/10.2478/jec-2020-0015

Challoumis, C. (2021e). Index of the cycle of money - The case of Montenegro. *Montenegrin Journal for Social Sciences*, *5*(1–2), 41–57.

Challoumis, C. (2021f). Index of the cycle of money - The case of Serbia. *Open Journal for Research in Economics (OJRE)*, *4*(1). https://centerprode.com/ojre.html.

Challoumis, C. (2021g). Index of the cycle of money - The case of Slovakia. *S T U D I A C O M M E R C I A L I A B R A T I S L A V E N S I A Ekonomická Univerzita v Bratislave*, *14*(49), 176–188.

Challoumis, C. (2021h). Index of the cycle of money - The case of Thailand. *Chiang Mai University Journal of Economics*, *25*(2), 1–14. https://so01.tci-thaijo.org/index.php/CMJE/article/view/247774/169340

Challoumis, C. (2021i). Index of the cycle of money - The case of Ukraine. *Actual Problems of Economics*, *243*(9), 102–111. https://doi.org/10.32752/1993-6788-2021-1-243-244-102-111

Challoumis, C. (2021j). Index of the cycle of money -the case of Bulgaria. *Economic Alternatives*, *27*(2), 225–234. https://www.unwe.bg/doi/eajournal/2021.2/EA.2021.2.04.pdf

Challoumis, C. (2021k). The cycle of money with and without the enforcement savings. *Complex System Research Centre*.

Challoumis, C. (2022a). Conditions of the CM (Cycle of Money). In *Social and Economic Studies within the Framework of Emerging Global Developments, Volume -1, V. Kaya* (pp. 13–24). https://doi.org/10.3726/b19907

Challoumis, C. (2022b). Impact Factor of the Rest Rewarding Taxes. In *Complex System Research Centre*. https://doi.org/10.2139/ssrn.3154753

Challoumis, C. (2022c). Index of the cycle of money - The case of Moldova. *Eastern European Journal of Regional Economics*, *8*(1), 77–89.

Challoumis, C. (2022d). Index of the cycle of money - the case of Poland. *Research Papers in Economics and Finance*, *6*(1), 72–86. https://journals.ue.poznan.pl/REF/article/view/126/83.

Challoumis, C. (2022e). Structure of the economy. *Actual Problems of Economics*, *247*(1).

Challoumis, C. (2023a). A comparison of the velocities of minimum escaped savings and financial liquidity. In *Social and Economic Studies within the Framework of Emerging Global Developments, Volume - 4, V. Kaya* (pp. 41–56). https://doi.org/10.3726/b21202

Challoumis, C. (2023b). Capital and Risk in the Tax System. In *Complex System Research Centre* (pp. 241–244).

Challoumis, C. (2023c). Chain of the Cycle of Money with and without Maximum and Minimum Mixed Savings. *European Multidisciplinary Journal of Modern Science*, *23*(2023), 1–16.

Challoumis, C. (2023d). Chain of the Cycle of Money with and Without Maximum Mixed Savings (Three-Dimensional Approach). *Academic Journal of Digital Economics and Stability*, *34*(2023), 43–65.

Challoumis, C. (2023e). Chain of the Cycle of Money with and without Minimum Mixed Savings (Three-Dimensional Approach). *International Journal of Culture and Modernity*, *33*(2023), 22–33.

Challoumis, C. (2023f). Comparisons of the Cycle of Money Based on Enforcement and Escaped Savings. *Pindus Journal of Culture, Literature, and ELT*, *3*(10), 19–28.

Challoumis, C. (2023g). Comparisons of the cycle of money with and without the mixed savings. *Economics & Law*. http://el.swu.bg/ikonomika/

Challoumis, C. (2023h). Currency rate of the CM (Cycle of Money). *Research Papers in Economics and Finance*, *7*(1).

Challoumis, C. (2023i). Elements of the Theory of Cycle of Money without Enforcement Savings. *International Journal of Finance and Business Management (IJFBM)Vol. 2No. 1, 2023*, *2*(1), 15–28. https://journal.multitechpublisher.com/index.php/ijfbm/article/view/1108/1202.

Challoumis, C. (2023j). FROM SAVINGS TO ESCAPE AND ENFORCEMENT SAVINGS. *Cogito*, *XV*(4), 206–216.

Challoumis, C. (2023k). G7 - Global Minimum Corporate Tax Rate of 15%. *International Journal of Multicultural and Multireligious Understanding (IJMMU)*, *10*(7).

Challoumis, C. (2023l). Impact factor of cost to the tax system. *Ekonomski Signali*, *18*(2), 12.

Challoumis, C. (2023m). Impact Factor of Liability of Tax System According to the Theory of Cycle of Money. In *Social and Economic Studies within the Framework of Emerging Global Developments Volume 3, V. Kaya* (Vol. 3, pp. 31–42). https://doi.org/10.3726/b20968

Challoumis, C. (2023n). Index of the cycle of money: The case of Costa Rica. *Sapienza*, *4*(3), 1–11. https://journals.sapienzaeditorial.com/index.php/SIJIS

Challoumis, C. (2023o). Index of the cycle of money - The case of Canada. *Journal of Entrepreneurship, Business and Economics*, *11*(1), 102–133. http://scientificia.com/index.php/JEBE/article/view/203.

Challoumis, C. (2023p). Index of the Cycle of Money - The Case of England. *British Journal of Humanities and Social Sciences*, *26*(1), 68–77.

Challoumis, C. (2023q). Index of the cyclee of money - The case of Ukraine from 1992 to 2020. *Actual Problems of Economics*.

Challoumis, C. (2023r). Maximum mixed savings on the cycle of money. *Open Journal for Research in Economics*, *6*(1), 25–34.

Challoumis, C. (2023s). Minimum Mixed Savings on Cycle of Money. *Open Journal for Research in Economics*, *6*(2), 61–68. https://centerprode.com/ojre/ojre0602/ojre-0602.html.

Challoumis, C. (2023t). Multiple Axiomatics Method and the Fuzzy Logic. *MIDDLE EUROPEAN SCIENTIFIC BULLETIN*, *37*(1), 63–68.

Challoumis, C. (2023u). Principles for the Authorities on Activities with Controlled Transactions. *Academic Journal of Digital Economics and Stability*, *30*(1), 136–152.

Challoumis, C. (2023v). The Cycle of Money (C.M.) Considers Financial Liquidity with Minimum Mixed Savings. *Open Journal for Research in Economics*, *6*(1), 1–12.

Challoumis, C. (2023w). The Cycle of Money with and Without the Maximum and Minimum Mixed Savings. *Middle European Scientific Bulletin*, *41*(2023), 47–56.

Challoumis, C. (2023x). The cycle of money with and without the maximum mixed savings (Two-dimensional approach). *International Journal of Culture and Modernity*, *33*(2023), 34–45.

Challoumis, C. (2023y). The Cycle of Money with and Without the Minimum Mixed Savings. *Pindus Journal of Culture, Literature, and ELT*, *3*(10), 29–39.

Challoumis, C. (2023z). The cycle of money with mixed savings. *Open Journal for Research in Economics*, *6*(2), 41–50.

Challoumis, C. (2023aa). The Theory of Cycle of Money - How Do Principles of the Authorities on Public Policy, Taxes, and Controlled Transactions Affect the Economy and Society? *International Journal of Social Science Research and Review (IJSSRR)*, *6*(8).

Challoumis, C. (2023ab). The Velocities of Maximum Escaped Savings with than of Financial Liquidity to the Case of Mixed Savings. *International Journal on Economics, Finance and Sustainable Development*, *5*(6), 124–133.

Challoumis, C. (2023ac). The Velocity of Escaped Savings and Maximum Financial Liquidity. *Journal of Digital Economics and Stability*, *34*(2023), 55–65.

Challoumis, C. (2023ad). The Velocity of Escaped Savings and Velocity of Financial Liquidity. *Middle European Scientific Bulletin*, *41*(2023), 57–66.

Challoumis, C. (2023ae). Utility of cycle of money with and without the enforcement savings. *GOSPODARKA INNOWACJE*, *36*(1), 269–277.

Challoumis, C. (2023af). Utility of Cycle of Money with and without the Escaping Savings. *International Journal of Business Diplomacy and Economy*, *2*(6), 92–101.

Challoumis, C. (2023ag). Utility of Cycle of Money without the Escaping Savings (Protection of the Economy). In *Social and Economic Studies within the Framework of Emerging Global Developments Volume 2, V. Kaya* (pp. 53–64). https://doi.org/10.3726/b20509

Challoumis, C. (2023ah). Velocity of Escaped Savings and Minimum Financial Liquidity According to the Theory of Cycle of Money. *European Multidisciplinary Journal of Modern Science*, *23*(2023), 17–25.

Challoumis, C. (2024a). Approach on arm's length principle and fix length principle mathematical representations. In *Innovations and Contemporary Trends in Business & Economics*.

Challoumis, C. (2024b). Estimations of the cycle of money without escape savings. *International Journal of Multicultural and Multireligious Understanding*, *11*(3).

Challoumis, C. (2024c). Impact Factors of Global Tax Revenue - Theory of Cycle of Money. *International Journal of Multicultural and Multireligious Understanding*, *11*(1).

Challoumis, C. (2024d). Index of the cycle of money – the case of Switzerland. *The Index of the Cycle of Money: The Case of Switzerland. J. Risk Financial Manag. 2024, 17, 135. Https://Doi.Org/10.3390/Jrfm17040135*, *17*(4), 1–24. https://doi.org/https://doi.org/10.3390/jrfm17040135

Challoumis, C. (2024e). Minimum escaped savings and financial liquidity in mathematical representation. *Ekonomski Signali*, *19*(1).

Challoumis, C. (2024f). Rewarding taxes on the cycle of money. In *Social and Economic Studies within the Framework of Emerging Global Developments* (Vol. 5).

Challoumis, C. (2024g). Rewarding taxes on the economy (The theory of cycle of money). *International Journal of Multicultural and Multireligious Understanding (IJMMU)*, *11*(3).

Challoumis, C. (2024h). Synopsis of principles for the authorities and controlled transactions. *Pindus*.

Challoumis, C. (2024i). Synopsis of principles for the authorities and controlled transactions. *SEPIKE*.

Challoumis, C. (2024j). The cycle of money - Escape savings and the minimum financial liquidity. *International Journal of Multicultural and Multireligious Understanding (IJMMU)*, *11*(4).

Challoumis, C. (2024k). The cycle of money - Minimum escape savings and financial liquidity. *International Journal of Multicultural and Multireligious Understanding (IJMMU)*, *11*(5).

Challoumis, C. (2024l). The impact factor of Tangibles and Intangibles of controlled transactions on economic performance. *Economic Alternatives*.

Challoumis, C. (2024m). THE INFLATION ACCORDING TO THE CYCLE OF MONEY (C.M.). *Economic Alternatives*.

Challoumis, C. (2024n). Velocity of the escaped savings and financial liquidity on maximum mixed savings. *Open Journal for Research in Economics*, *7*(1).

Challoumis, C. (2024o). Velocity of the escaped savings and financial liquidity on minimum mixed savings. *Open Journal for Research in Economics*, *7*(2).

Challoumis, C. (2024p). Velocity of the escaped savings and financial liquidity on mixed savings. *Open Journal for Research in Economics*, *7*(2).

Challoumis, C., & Savic, M. (2024). Rational and Behavioral economics. *Ekonomski Signali*, *19*(1).

Chubarova, T., Maly, I., & Nemec, J. (2020). Public policy responses to the spread of COVID-19 as a potential factor determining health results: A comparative study of the Czech Republic, the Russian Federation, and the Slovak Republic. *Central European Journal of Public Policy*, *14*(2). https://doi.org/10.2478/cejpp-2020-0008

Corti, I. N., Roldán, C. D., & Benito, S. M. R. (2020). Fiscal pressure and fraud, predisposition to pay taxes and personal satisfaction in Spain. *Revista Espanola de Investigaciones Sociologicas*, *172*. https://doi.org/10.5477/cis/reis.172.101

de A. Dantas, G., de Castro, N. J., Dias, L., Antunes, C. H., Vardiero, P., Brandão, R., Rosental, R., & Zamboni, L. (2018). Public policies for smart grids in Brazil. *Renewable and Sustainable Energy Reviews*, *92*. https://doi.org/10.1016/j.rser.2018.04.077

de Vasconcelos, F. de A. G., Machado, M. L., de Medeiros, M. A. T., Neves, J. A., Recine, E., & Pasquim, E. M. (2019). Public policies of food and nutrition in Brazil: From Lula to Temer. *Revista de Nutricao*, *32*. https://doi.org/10.1590/1678-9865201932e180161

Diallo, S. Y., Shults, F. L. R., & Wildman, W. J. (2021). Minding morality: ethical artificial societies for public policy modeling. *AI and Society*, *36*(1). https://doi.org/10.1007/s00146-020-01028-5

Díaz, M. L. A., Ordoñez, F. A. R., & Muñoz, R. A. T. (2020). Open innovation and public policies in developing countries. *International Journal for Quality Research*, *14*(3). https://doi.org/10.24874/IJQR14.03-09

Fan, Y., Yang, S., & Jia, P. (2020). Preferential Tax Policies: An Invisible Hand behind Preparedness for Public Health Emergencies. *International Journal of Health Policy and Management*. https://doi.org/10.34172/ijhpm.2020.139

Farah, M. F. S. (2011). Public policy and public administration. *Revista de Administracao Publica*, *45*(3). https://doi.org/10.1590/S0034-76122011000300011

Fernandez, M. A., & Raine, K. D. (2019). Insights on the Influence of Sugar Taxes on Obesity Prevention Efforts. In *Current Nutrition Reports* (Vol. 8, Issue 4). https://doi.org/10.1007/s13668-019-00282-4

Fronzaglia, M. L., de Moura Júnior, Á. A., Racy, J. C., & Vartanian, P. R. (2019). Possible Effects of Economic Public Policies Implemented in Brazil after the Financial Crisis of 2008 on Foreign Direct Investment. *Theoretical Economics Letters*, *09*(08). https://doi.org/10.4236/tel.2019.98176

Ginsburgh, V., & Weber, S. (2020). The Economics of Language. *Journal of Economic Literature*, *58*(2). https://doi.org/10.1257/JEL.20191316

Gocekli, S. G. B., & Comertler, N. (2021). On "The Human" and behavioral economics. *Contemporary Issues with Multidisciplinary Perspectives on Social Science*, 37–47.

Goldsztejn, U., Schwartzman, D., & Nehorai, A. (2020a). Public policy and economic dynamics of COVID-19 spread: A mathematical modeling study. *PLoS ONE*, *15*(12 December). https://doi.org/10.1371/journal.pone.0244174

Goldsztejn, U., Schwartzman, D., & Nehorai, D. A. (2020b). Public policy and economic dynamics of COVID-19 spread: A mathematical modeling study. In *medRxiv*. https://doi.org/10.1101/2020.04.13.20062802

Grabs, J., Auld, G., & Cashore, B. (2020). Private regulation, public policy, and the perils of adverse ontological selection. *Regulation and Governance*. https://doi.org/10.1111/rego.12354

Hai, D. . (2016). Process of Public Policy Formulation in Developing Countries. *Public Policy*, *C*.

Hartz, S., & John, J. (2009). Public health policy decisions on medical innovations: What role can early economic evaluation play? *Health Policy*, *89*(2). https://doi.org/10.1016/j.healthpol.2008.05.011

Hasselman, L., & Stoker, G. (2017). Market-based governance and water management: the limits to economic rationalism in public policy. *Policy Studies*, *38*(5). https://doi.org/10.1080/01442872.2017.1360437

Herrington, C. M. (2015). Public education financing, earnings inequality, and intergenerational mobility. *Review of Economic Dynamics*, *18*(4). https://doi.org/10.1016/j.red.2015.07.006

Hyeon Sik Seo, & YoungJun Kim. (2020). INTANGIBLE ASSETS INVESTMENT AND FIRMS' PERFORMANCE: EVIDENCE FROM SMALL AND MEDIUM-SIZED ENTERPRISES IN KOREA. *Journal of Business Economics and Management*, *21*(2), 421–445.

Islam, A., Rashid, M. H. U., Hossain, S. Z., & Hashmi, R. (2020). Public policies and tax evasion: evidence from SAARC countries. *Heliyon*, *6*(11). https://doi.org/10.1016/j.heliyon.2020.e05449

Jia, M., Liu, Y., Lieske, S. N., & Chen, T. (2020). Public policy change and its impact on urban expansion: An evaluation of 265 cities in China. *Land Use Policy*, *97*. https://doi.org/10.1016/j.landusepol.2020.104754

Kananen, J. (2012). International ideas versus national traditions: Nordic economic and public policy as proposed by the OECD. *Journal of Political Power*, *5*(3). https://doi.org/10.1080/2158379X.2012.735118

Kanthak, L., & Spies, D. C. (2018). Public support for European Union economic policies. *European Union Politics*, *19*(1). https://doi.org/10.1177/1465116517740638

Kartini, D. S., Mulyawan, R., & Muradi, M. (2019). Public Policy Pragmatism on Special Economic Zone in Tanjung Lesung, Pandeglang Regency. *MIMBAR : Jurnal Sosial Dan Pembangunan*, *35*(1). https://doi.org/10.29313/mimbar.v35i1.4283

Khadzhyradieva, S., Hrechko, T., & Smalskys, V. (2019). Institutionalisation of behavioural insights in public policy. In *Public Policy and Administration* (Vol. 18, Issue 3). https://doi.org/10.5755/J01.PPAA.18.3.24726

Korenik, D., & Wegrzyn, M. (2020). Public policy timing in a sustainable approach to shaping public policy. *Sustainability (Switzerland)*, *12*(7). https://doi.org/10.3390/su12072677

Kreft, S. F., & Sobel, R. S. (2005). Public policy, entrepreneurship, and economic freedom. In *Cato Journal* (Vol. 25, Issue 3).

Kroth, D. C., Geremia, D. S., & Mussio, B. R. (2020). National school feeding program: A healthy public policy. *Ciencia e Saude Coletiva*, *25*(10). https://doi.org/10.1590/1413-812320202510.31762018

Ladvocat, M., & Lucas, V. (2019). REGIONAL DISPARITIES, PUBLIC POLICIES AND ECONOMIC GROWTH IN BRAZIL. *Revista Baru - Revista Brasileira de Assuntos Regionais e Urbanos*, *5*(2). https://doi.org/10.18224/baru.v5i2.7687

Lajas, R., & Macário, R. (2020). Public policy framework supporting "mobility-as-a-service" implementation. *Research in Transportation Economics*, *83*. https://doi.org/10.1016/j.retrec.2020.100905

Leckel, A., Veilleux, S., & Dana, L. P. (2020). Local Open Innovation: A means for public policy to increase collaboration for innovation in SMEs. *Technological Forecasting and Social Change*, *153*. https://doi.org/10.1016/j.techfore.2019.119891

Levi, S. (2021). Why hate carbon taxes? Machine learning evidence on the roles of personal responsibility, trust, revenue recycling, and other factors across 23 European countries. *Energy Research and Social Science*, *73*. https://doi.org/10.1016/j.erss.2020.101883

Liu, N., Liu, R., Huang, J., & Chen, L. (2018). Pollution, happiness and willingness to pay taxes: The value effect of public environmental policies. *Problemy Ekorozwoju*, *13*(1).

Loayza, N., & Pennings, S. M. (2020). Macroeconomic Policy in the Time of COVID-19 : A Primer for Developing Countries. *World Bank Research and Policy Briefs*, *147291*.

Maestre-Andrés, S., Drews, S., & van den Bergh, J. (2019). Perceived fairness and public acceptability of carbon pricing: a review of the literature. *Climate Policy*, *19*(9). https://doi.org/10.1080/14693062.2019.1639490

Marques, E. C. L. (2019). Notes on networks, the state, and public policies. *Cadernos de Saude Publica*, *35*. https://doi.org/10.1590/0102-311x00002318

Martinez, M. C. V., & Rodríguez, M. C. M. (2020). Public policies of electronic governance and corruption in Mexico. *Public Policy and Administration*, *19*(3). https://doi.org/10.5755/J01.PPAA.19.3.27769

Marume, S. B. M. (2016). Public Policy and Factors Influencing Public Policy. *International Journal of Engineering Science Invention*, *5*(6).

Montenegro Martínez, G., Carmona Montoya, A., & Franco Giraldo, Á. (2020). Models for public health policy analysis reported in scientific publications. In *Gaceta Sanitaria*. https://doi.org/10.1016/j.gaceta.2019.11.007

Nash, V., Bright, J., Margetts, H., & Lehdonvirta, V. (2017). Public Policy in the Platform Society. In *Policy and Internet* (Vol. 9, Issue 4). https://doi.org/10.1002/poi3.165

Nayak, B. S. (2019). Reconceptualising Public Private Partnerships (PPPs) in global public policy. *World Journal of Entrepreneurship, Management and Sustainable Development*, *15*(3). https://doi.org/10.1108/WJEMSD-04-2018-0041

Nielsen, T. D., Holmberg, K., & Stripple, J. (2019). Need a bag? A review of public policies on plastic carrier bags – Where, how and to what effect? *Waste Management*, *87*. https://doi.org/10.1016/j.wasman.2019.02.025

Noland, M. (2020). Protectionism under Trump: The China Shock, Deplorables, and the First White President. In *Asian Economic Policy Review* (Vol. 15, Issue 1). https://doi.org/10.1111/aepr.12274

OECD. (2017). OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2017. *OECD Publications*.

OECD. (2020). OECD Economic Surveys: Thailand 2020. In *OECD*. https://doi.org/https://doi.org/10.1787/ad2e50fa-en

Ortun, V., Lopez-Valcarcel, B. G., & Pinilla, J. (2017). Tax on Sugar Sweetened Beverages in Spain. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3004464

Paes-Sousa, R., De Andrade Schramm, J. M., & Pereira Mendes, L. V. (2019). Fiscal Austerity and the health sector: The cost of adjustments. *Ciencia e Saude Coletiva*, *24*(12). https://doi.org/10.1590/1413-812320182412.23232019

Peres, M. F. P., Oliveira, A. B., Sarmento, E. M., Rocha-Filho, P. S., Peixoto, P. M., Kowacs, F., Goulart, A. C., & Benseñor, I. M. (2020). Public policies in headache disorders: Needs and possibilities. *Arquivos de Neuro-Psiquiatria*, *78*(1). https://doi.org/10.1590/0004-282X20190144

Persson, E., & Tinghög, G. (2020). Opportunity cost neglect in public policy. *Journal of Economic Behavior and Organization*, *170*. https://doi.org/10.1016/j.jebo.2019.12.012

Ruiz, J. C., Jurado, E. B., Moral, A. M., Uclés, D. F., & Viruel, M. J. M. (2017). Measuring the social and economic impact of public policies on entrepreneurship in Andalusia. *CIRIEC-Espana Revista de Economia Publica, Social y Cooperativa*, *1*(90).

Rumayya, Rammohan, A., Purwono, R., & Harymawan, I. (2020). The local economy and Re-election of incumbent district leaders in Indonesia. *Heliyon*, *6*(5). https://doi.org/10.1016/j.heliyon.2020.e04098

Scholvin, S., & Malamud, A. (2020). Is Brazil a Geoeconomic Node? Geography, Public Policy, and the Failure of Economic Integration in South America. *Brazilian Political Science Review*, *14*(2). https://doi.org/10.1590/1981-3821202000020004

Silva, S. E., Venâncio, A., Silva, J. R., & Gonçalves, C. A. (2020). Open innovation in science parks: The role of public policies. *Technological Forecasting and Social Change*, *151*. https://doi.org/10.1016/j.techfore.2019.119844

Soboleva I.V. (2019). Instrumental support for the implementation of the state antimonopoly policy. *Actual Problems of Economics*, *12*(222).

Syukur, M. (2020). Insentif Pajak terhadap Sumbangan Covid-19 dari Perspektif Relasi Hukum Pajak Indonesia dengan Hak Asasi Manusia. *Jurnal Suara Hukum*, *2*(2). https://doi.org/10.26740/jsh.v2n2.p184-214

Taub, R. (2015). New Deal Ruins: Race, Economic Justice, and Public Housing Policy. *Contemporary Sociology: A Journal of Reviews*, *44*(4). https://doi.org/10.1177/009430611558848 7x

Torres, S. H. Á., & Riaño-Casallas, M. I. (2018). Public policy for safety and health at the worksite: The Colombian case. In *Revista Gerencia y Politicas de Salud* (Vol. 17, Issue 35). https://doi.org/10.11144/Javeriana.rgps17-35.ppss

Tummers, L. (2019). Public Policy and Behavior Change. *Public Administration Review*, *79*(6). https://doi.org/10.1111/puar.13109

TUTER, C. (2020). PERSEPSI MASYARAKAT TERHADAP ISU PAJAK LINGKUNGAN DI KABUPATEN KEPULAUAN SIAU TAGULANDANG BIARO (SITARO). *Jurnal Ekonomi Dan Bisnis Airlangga*, *30*(1). https://doi.org/10.20473/jeba.v30i12020.1-13

Tvaronavičienė, M., Tarkhanova, E., & Durglishvili, N. (2018). Sustainable economic growth and innovative development of educational systems. *Journal of International Studies*, *11*(1). https://doi.org/10.14254/2071-8330.2018/11-1/19

Ud Din, M., Mangla, I. U., & Jamil, M. (2016). Public Policy, Innovation and Economic Growth: An Economic and Technological Perspective on Pakistan's Telecom Industry. *THE LAHORE JOURNAL OF ECONOMICS*, *21*(Special Edition). https://doi.org/10.35536/lje.2016.v21.isp.a16

Urwannachotima, N., Hanvoravongchai, P., Ansah, J. P., Prasertsom, P., & Koh, V. R. Y. (2020). Impact of sugar-sweetened beverage tax on dental caries: A simulation analysis. *BMC Oral Health*, *20*(1). https://doi.org/10.1186/s12903-020-1061-5

Ustinovich, E., & Kulikov, M. (2020). National projects, socio-economic policy and public equilibrium. *Social'naja Politika i Social'noe Partnerstvo (Social Policy and Social Partnership)*, *6*. https://doi.org/10.33920/pol-01-2006-01

Watanabe, C., Naveed, K., Tou, Y., & Neittaanmäki, P. (2018). Measuring GDP in the digital economy: Increasing dependence on uncaptured GDP. *Technological Forecasting and Social Change*, *137*. https://doi.org/10.1016/j.techfore.2018.07.053

Woody, W. D., & Viney, W. (2017). A History of Psychology: The Emergence of Science and Applications, Sixth Edition. *A History of Psychology: The Emergence of Science and Applications, Sixth Edition*, 1–599. https://doi.org/10.4324/9781315544403/HISTORY-PSYCHOLOGY-WAYNE-VINEY-WILLIAM-DOUGLAS-WOODY

Wright, A., Smith, K. E., & Hellowell, M. (2017). Policy lessons from health taxes: A systematic review of empirical studies. In *BMC Public Health* (Vol. 17, Issue 1). https://doi.org/10.1186/s12889-017-4497-z

Παπακωνσταντίνου, Α., Κανάββας, Λ., & Ντόκας, Ι. (2013). Οικονομία & μικρές επιχειρήσεις. *Ινστιτούτο μικρών επιχειρήσεων*.

Appendix

```
% Sensitivity Plot of Cycle of money (C)(R)2024 Constantinos Challoumis
m=0:0.05:1;
k=0.4*m;
l=0.7*m;
j=0.6*m;
r=0.5*m;
c=0.3*m;
t=0.8*m;
w=r+c+t+j;
p=r+c+j;
q=r+t+j;
s1=k+l/w*m;
s2=k+l/p*m;%the multiplication is made to avoid constant by the division
s3=k+l/q*m;
i=0;

plot(m,s1,'green',m,s2,'blue',m,s3,'red')
grid on
title('Sensitivity method')
xlabel('m')
ylabel('s1, s2, s3')

while (s1(i)>s1(i+1))
   i=i+1;
end

m(i)
s1(i)
```


C O A S