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Impact Factor of Capital Using the Sensitivity Method

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Abstract

This paper is a special issue about the sensibility of taxation in the capital, that is based on the Sensitivity Method. Therefore, it has been done a study for the impact factor of the tax revenues of the countries that are tax havens subject to the trustworthiness of the tax system. From the view of how much is affected the companies that participate in controlled transactions, can obtain the impact of capital, when there is not that factor with the case that exists in the analysis of transfer pricing. It determines the behavior of the tax system subject to the capital.

Keywords: *Cycle of Money; Sensitivity Method; Capital*

Introduction

The quantification analysis of the sensitivity of the tax system to the capital is done by the application of the the 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, 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.

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:

$$s = \frac{k+l}{r+c+t+i} \tag{1}$$

“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 is 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 capital (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). This means that t examines the case of the sensitivity of the tax system to the capital. Additionally, the symbol of c is about the capital of enterprises. The symbols with the “~” are accordingly the same thing but from the view of the uncontrolled transactions (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). Moreover, for $\tilde{s}$:

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

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

$$\hat{s} = s + \tilde{s} \tag{3}$$

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 methodology of the Sensitivity Method to determine the behavior of the global tax revenue in the case that the existence of the capital and the ideal case that this factor is avoided.

Results

The capital 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 (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: Compiling coefficients

Factors	Values of s	Values of s'
k	0,4	-
i	0.6	0.6
l	0.7	0.7
r	0.5	0.5
c	0.3	0.3
t	0.8	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 capital increases 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, 2024o, 2024p, 2019f, 2019d, 2019e, 2019a, 2019g, 2019c).

Therefore, using the Sensitivity Method:

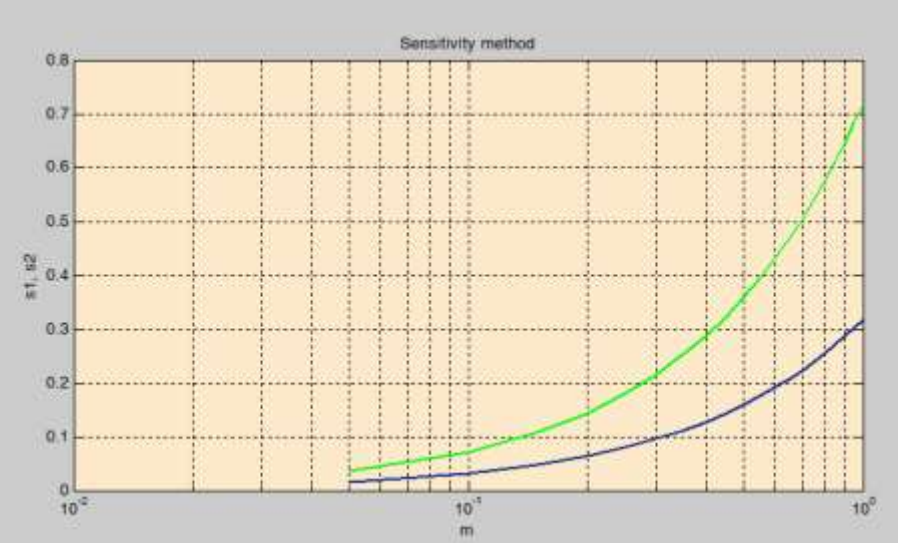

Figure 3: Application of S.M.

In logarithmic forms, the blue line is about the case that there doesn't exist capital, and the green line is the case that there does exist capital. It is confirmed by the theoretical background of the theory of the money cycle (or the theory of the cycle of money) that capital increases tax revenue.

Conclusions

This paper examined the case of capital and the way it interacts 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 capital increase could increase the tax income.

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;

p=0.6*m+0.5*m+0.3*m+0.8*m;

s1=k+l/p*m;

s2=l/p*m;

i=0;


plot(m,s1,m,s2)

grid on

title('Sensitivity method')

xlabel('m')

ylabel('s1, s2')


while (s1(i)>s1(i+1))

   i=i+1;

end


m(i)

s1(i)
```

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