IMPACT FACTOR OF BUREAUCRACY TO THE TAX SYSTEM

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Abstract: This paper is about the sensibility of taxation in the bureaucracy. Therefore, this study is for the impact factor of the tax revenues of the countries which are tax havens subject to the trustworthiness of the tax system. From the view of how much is affected a company that participates in controlled transactions, can obtain the impact of bureaucracy, when there is not that factor with the case that exists in the analysis of transfer pricing. The method of analysis of the impact of bureaucracy in combination with the impact factor of tax revenues is the Q.E. method. It determined the behavior of the tax system subject to bureaucracy.

Keywords: taxes, fees, bureaucracy

1. Introduction

Bureaucracy shall be distinguished at least in the following cases:

Bureaucracy as an organization is a form of organization of an administrative mechanism characterized by fragmentation of labor, the existence of a strict hierarchy, a relatively predictable workflow and a particular culture (Anguera-Torrell et al., 2020; Bento, 2009; Carfora et al., 2021; De Araujo et al., 2020; de Vasconcelos et al., 2019; Kongats et al., 2019; OECD, 2017; Omrani et al., 2021; Taub, 2015; Wu et al., 2019).

Bureaucracy as a functional feature is the operation of an organization in a complex way, with rigid, de-

manding, opaque, impersonal procedures, with unpredictable outcomes and ultimately inefficiency (Challoumis, 2018c, 2019c, 2019e, 2019f, 2020c, 2021f).

The quantification analysis of the sensitivity of the tax system to the bureaucracy is done by the application of the Q.E. method. The background of this method stands on the behavior analysis of mathematical equations. Thus, there we determine two axes to the analysis of the Q.E. method which is:

The analysis of the behavior of the model stands on the scrutiny of the structural characteristics of each model accordingly allowing with that way the extraction of general conclusions about the model which is under examination.

The frequency analysis behavior scrutinizes the behavior of the dependent variables, but from the view of the number of appearances of a variable than another, estimating the impact that one independent variable has with one or more other independent variables.

Therefrom, using the prior two axes of methodology, is plausible to extract conclusions about the behavior of mathematical equations, and how some factors react to changes. Consequently, is plausible the

transformation of quality data to quantity data (Acs et al., 2016; Cascajo et al., 2018; de A. Dantas et al., 2018; Khadzhyradieva et al., 2019; Kreft & Sobel, 2005; Maxwell, 2020; Muñoz & Flores, 2020; Ribašauskiene et al., 2019; Romme & Meijer, 2020; Sikka, 2018; Suslov & Basareva, 2020; Swanstrom et al., 2002). This method is applied for this study for controlled transactions and more precisely in the variables of the impact factor of the tax revenue. The mechanism of Q.E. is based on the dependent variables which are modified for the generator. Thereupon, the generator produces values for the dependent variables (Challoumis, 2018a, 2018b, 2019d, 2019g, 2020b, 2020a, 2021e, 2021b, 2021d, 2021g). The extracted values of the generator permit the creation of values, which are the base for comparisons, and for the scrutiny of mathematical equations (Béland, 2017; Bourdin & Nadou, 2018; Burstein, 2020; de Queiroz & Capelari, 2020; Forson, 2020; Hartz & John, 2009; Jeon et al., 2020; Khan & Liu, 2019; Schwartz, 2019; Waardenburg et al., 2020). Thus, is plausible to quantify qualitative data. In our analysis, this method is used for clarification of the behavior of the impact factor of the global tax revenue (Nowlin et al., 2020)

2. Impact factor of tax revenues

The impact factor of tax revenues of countries which are tax heaves, s according to the "Methods of controlled transactions and identifications of tax avoidance" is determined as that:

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

Therefore are countries that receive the products that are taxed in different countries. This allocation of profits between profits and losses permits the enterprises which 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 much 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 bureaucracy. This means that t examines the case of the sensitivity of the tax system to the bureaucracy. Additionally, the symbol of c is about the cost of enterprises. The symbols with the "~" are accordingly the same thing but from the view of uncontrolled transactions. Thus, the numerator is proportional to the income of taxes, as the investments and the stable tax environments, with a lack of bureaucracy, enhance the tax income. On the other hand, the denominator is inverted and proportional to the tax income, as the risk, the cost, and the unbalance of taxation cause less tax income. Moreover, for $\tilde{s}$ we have that:

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

Since eq. (3) is determined the aggregate impact factor of tax revenues, which is symbolized by $\hat{s}$, and is defined by the next equation:

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

Based on the prior equations we could proceed to the identification of the behavior of the impact factors of tax revenues in the case of tax heavens, and in the case of the non-tax heavens (Challoumis, 2018e, 2018d, 2019a, 2019b, 2021c, 2021a). Then, s is a factor that allows the comparison between the controlled 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 is analyzed the impact factor of tax revenues with the rest impact factors.

3. Determination of bureaucracy

The determination of bureaucracy is established by the impact factor of tax sensibility (the level of bureaucracy). To determine the way that bureaucracy affects global tax revenues, we proceed with the following diversion:

- In the first application of Q.E. methodology are applied all the factors of the global tax revenue,
- In the second application of the Q.E. methodology are applied all the factors are except the factor which is under review.

This methodology is illustrated below:
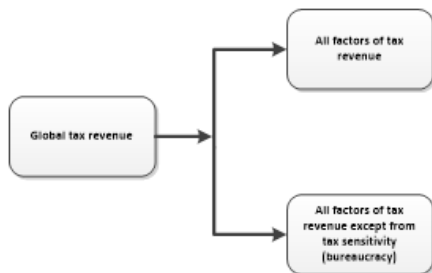
Figure 1: Steps of Q.E. application

The previous scheme is shown the methodology followed by the Q.E. method to determine the behavior of the global tax revenue in the case that we have the existence of the bureaucracy and the ideal case that this factor is avoided.

4. Impact factor of tax revenues on the bureaucracy

The bureaucracy 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. All the necessary equations have been referred to in the previous sections, except for one condition. Then, for the application of the Q.E. method we use the following condition, which is:

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

Consequently, is plausible to proceed to a quantitative analysis using eq. (1), (2), and (4). Thence, applying the Q.E. method and choosing the appropriate magnitudes for the coefficient, we have that:

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	0.3
t	0.8	-
fs	<0.3	<0.3
fs_i	<0.3	<0.3

Table 1: Compiling coefficients

The generator of this procedure is based on the coefficients of the previous table. Thereupon, the factors have an upper limit of 1, and a lower limit of 0. Should, be notified that s and $\tilde{s}$ are plausible to receive values greater than one as their mathematical structure allows this. After 461 iterations extracted the next diagrams:
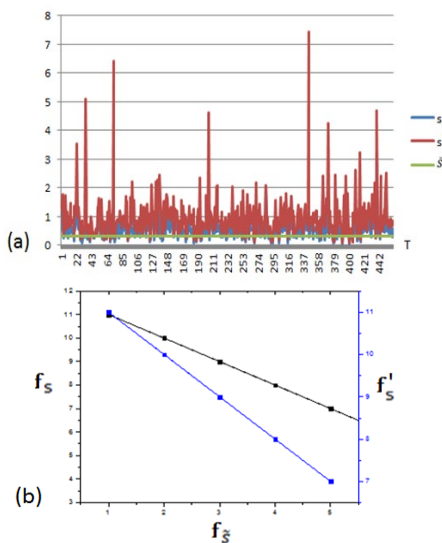
Figure 2: (a) Impact factors of s (series 1) and s' (series 2), (b) frequencies of s adn s'

In the previous scheme, we used the $\tilde{s}$, which here is common for the tangibles and the intangibles. Then s (blue line) is symbolized the case that we have the impact factor of t which symbolizes the sensitivity of the tax system (existence of increased bureaucracy). With s' (red line) is symbolized the case that we have the absence of the impact factor of sensitivity of the tax system, t. Then in the case of s we have an unstable tax system, and with s' we have a stable tax system, with a high bureaucracy. Then, when there exists a tax system that is characterized by increased bureaucracy (blue line) the tax revenue is decreased. In the case that there we have avoided the impact factor of tax sensitivity (bureaucracy) the tax revenue from a global view is increased rapidly. Moreover, in diagram (b) of figure 2, we obtain that the frequency of the f_s (black line), where used the impact factor of t, we have more companies that participate in controlled transactions, than in the case of f_s' (blue line) where the tax system has a lack of bureaucracy.

Thereupon, we obtain as we expected that the bureaucracy causes a decrease in global tax revenue, and increases the number of companies that participate in controlled transactions.

5. Conclusion

This paper examined the case of bureaucracy and the way that interacts with global tax revenue. Then the companies which participate in controlled transactions prefer as expected the tax environments which have no unstable law rules and insecure economies. This has an impact on the companies which participate in controlled transactions to be increased in numbers because that way can allocate better their profits and losses. Then, the decrease in bureaucracy could rapidly increase the tax income from a global view.

Appendix

The following programmed is used for the current results:

```
%Q.E. method Constantinos
Challoumis 2017 (c)(r)All
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q=0;
while q<10
q=q+1;
count=0;
counts=1;
counts51=1;

while count<10
if rand()<9
    t=0.8*rand();
end
if rand()<9
    l=0.7*rand();
end
```

```
if rand()<9
    i=0.6*rand();
end
if rand()<9
    r=0.5*rand();
end
if rand()<9
    k=0.4*rand();
end
if rand()<9
    c=0.3*rand();
end

s=(k+l)/(r+c+t+i);
s5=(l+l)/(r+c+i);

s_tilda=0.3;
    count=count+1
    if s<0.3 %it is one
limit for comparison above
than this we think s_tilda,
but is not the same one as
s_tilda
        %and it is used as
meter to compare all the
different
        %counts1,counts2,....
        counts=counts+1;
    else
        counts1=counts1+1;
    end

    if s5<0.3
        counts51=counts51+1;
    else
        counts53=counts53+1;
    end

%to the first compile must
omit ;tec
end
tec=[count,counts51,t,l,i,r
,k,c,s,s5,s_tilda;tec];
end
```

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