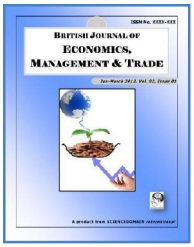

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Impact of Customs Regulation in the Efficiency on International Trade

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Customs clearance is a force step on international trade. The evolution and grow of international trade has made more important and complex the task assigned to customs services. Now day's customs administration is a relevant regulatory operator in international trade and goods movements as facilitator and accelerator of trade. However, the study of efficiency on the public sector is always more complex than the study of efficiency in the private, profit-oriented sector. Due to, the measurement of efficiency in the public services implies a bigger effort in the identification of relevant outputs and inputs. The address questions are: 1. How big is the trade impact caused by customs regulation across countries on economic variables such as efficiency and 2. What measures should be taken in order to achieve the efficiency goal. The aim of this research is focused on determining the relative efficiency of countries customs as a key of international trade considering 4 inputs and 3 outputs for 29 countries through the data

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envelopment analysis (DEA) the findings point out that according to the global technical efficiency which departs from constant returns to scale (CRS), 8 customs houses were efficient. While the scores of the pure technical efficiency (variable returns-to-scale), 14 customs houses were efficient. The efficiency of de CRS efficiency to VRS efficiency increase which is particularly significant.

Keywords: Trade impact; customs, efficiency; international trade; data envelopment analysis; public services; inputs; outputs.

1. INTRODUCTION

A few years ago the role of customs was to be able to enforce regulation tariffs, non- tariffs and administrative regulations for all products that enter or leave the countries, following international trade agreements [1]. However, consumers demand has been changing as international trade with it. Whereby, customs under this trend should be facilitators of foreign trade through the tax and regulatory simplification.

Overall, the role of the customs service is to be a business facilitator, policy adviser and implementer and safety provider. The proper execution of these functions can foster a fair market, ensure timely delivery and reduce costs of international trade, which leads to the competitive advantage of firms and nations in the global value chain [2].

Currently, customs are confronted to a rapidly changing environment: changing patterns of production and consumption intensified international trade, new global threats… In this context, customs play a major role by ensuring a constant balance between protecting society and simplification of trade.

Customs efficiency has a significant impact on reducing cost associated with trade and business performance management, so a close link between competitiveness in international trade and customs can be identified [2]. In the other hand, a poorly function of customs administration may indeed affect the improvements that have been made in other areas related to international trade [1].

In such conditions customs administrations are relevant regulatory operators on international trade and goods movements, with more important roles and complex tasks. Customs administrations are expected to facilitate and accelerate international trade and transport [3].

The main questions of this paper are: 1. how big is the trade impact caused by customs regulation across countries on economic variables such as efficiency and 2. What measures should be taken in order to achieve the efficiency goal. The objective of this research is focused on determining the relative efficiency of countries customs as a key of international trade. This paper is concentrated on research into the relative efficiency of 29 countries Customs Service's organizational units. For this purpose, dimensions of customs service efficiency, and relevant inputs and outputs were identified. Data have been collected from Work Bank data base and the World Customs Organization, and Data Envelopment Analysis is used for the purpose of data processing and quantifying relative efficiency.

2. LITERATURE REVIEW

Every organization that want to stand out or survive the past of the time is looking for be efficient. When we talk about efficiency different concepts pop out. The efficiency defined as the degree of optimization of the result obtained in relation with the resources used [4]. Efficiency as the relationship between goods and services consumed and the goods and services produced; or what is the same, services provided (outputs) in relation to the resources used to such an effect (inputs), [5]. Whereas in the private sector inputs and outputs are expressed in financial terms, identification of inputs and, especially, outputs in the public sector is much more complex [3].

Observing the public sector, *effectiveness*, which can be defined *as capacity to achieve goals*, gains a greater importance than efficiency [6]. In the public services there is no direct correlation between revenues and expenses [7].The political system is oriented primarily to the achievement of goals defined in the political process, regardless of the cost-benefit ratio.

The assessment of the performance of the public sector has long been a topic of interest to economists, public administration scholars and management scientists [8] and [9]. Some studies analyzed the productivity of government and compared the productivity of whole public sectors of different countries. That is the case of [10] have carried out an international comparison of public sector efficiency based on the public sector performance (PSP) and efficiency (PSE) indicators. These indicators comprise a composite and seven sub-indicators. Four of them are “opportunity’’ sub-indicators that take into account administrative, education and health outcomes and the quality of public infrastructure and those that support the rule of law and a level playing-field in a market economy. Three other indicators reflect the standard “Musgravian’’ tasks for government: allocation, distribution and stabilization. After defining indicators, the efficiency is measured via the non-parametric frontier technique.

[11] performed a study of efficiency using Free Disposal Hull (FDH) –FDH model has a discrete nature, i.e. the efficient reference point for an inefficient DMU is not chosen as a point on a continuous efficiency frontier, but among the existing DMUs- model based on sixteen countries of European Union, United States and Japan where he used as inputs variables such as health spending, GDP, population, spending on health, spending on public order and security. [12] examined the tax efficiency of twenty countries of the Organization for Economic cooperation and Development (OECD) using as inputs the public expenditure on education (PPA) and public expenditure on health and as output the PISA test performance, death rate and infant mortality and maternal.

Other studies focus on the public sector productivity measurement can also take place at the level of the organization and from a “bottom up’’ or service-user perspective [9]. The World Bank has adopted this approach with regard to assessing some aspects of the effects of regulation with the development of their Doing Business database, where three indicators from the database are particularly relevant to the assessment of public administration quality and productivity.

Some customs administrations have developed some systems to measure efficiency. The European Commission has established its Measurement of Results (MoR) project for the customs services of member states. Work on measuring the results of customs activities performed by member states is underway and the results achieved enable member states to compare their performance to the Community standard and act to improved customs

operations where necessary. [3] focus on research into the relative efficiency of the Croatian Customs Service's organizational units considering the number of employees and cost as inputs and number of customs declarations, public revenues and number of offences as outputs.

3. MATERIALS AND METHODS

The method used in this study is the Data Envelopment Analysis known as DEA, developed by [13] and [14]. The DEA approach has been widely applied to address various decision analysis problems due to its usefulness in evaluating multi-criterion systems and providing improvement targets for such systems. DEA is a non-parametric mathematical programming technique that determines an efficient frontier of the most efficient decision-making units (DMUs) regarding the notion of Pareto optimality and calculates the efficiency of each DMU relative to this efficient frontier based on multiple observed inputs and outputs. An efficiency score of a DMU is generally defined as the weighted sum of outputs divided by the weighted sum of inputs, while weights need to be assigned. To avoid the potential difficulty in assigning these weights among various DMUs, a DEA model computes weights that give the highest possible relative efficiency score to a DMU while keeping the efficiency scores of all DMUs less than or equal to one under the same set of weights [16].

DEA defines the ratio between all weighted relevant outputs and inputs, so it could be presented by following equation [17]:

$$efficiency = \frac{\sum_{r=1}^{s} u_r y_r}{\sum_{i=1}^{m} v_i x_i}$$

Where:

y_r= *amount of output r,*
u_r=*weight assigned to output r,*
s= *total number of output r,*
x_i=*amount of input i,*
v_i=*weight assigned to input i,*
m=total number of input i

Another useful output obtainable from DEA model is reference or lambda weights. Reference weights can be used to identify where along the efficient frontier a particular DMU would be located if that DMU were efficient. Efficient DMUs receive a reference weight of one and for DMUs, which are not efficient, reference weights varying between zero to one are calculated mathematically by DEA model referencing one or more efficient DMUs [18]. These reference weights indicate the proportion of each of these efficient DMUs' criteria values which, when summed together, determine the point of efficiency for the inefficient DMUs being evaluated. In this way, DEA can identify not only how efficient a particular DMU may be, but also provide a benchmark on the non-inferior frontier, where the DMU would be efficient. This benchmark can then be used as a value for negotiation with inefficient DMUs and necessary improvement [19].

Data envelopment analysis was initially introduced by [13] Charnes, Cooper and Rhodes in 1978. They proposed the basic DEA model, which was named the CCR model, departing

constant returns to scale (CRS) where a change in the levels of inputs leads to a change in proportional output level. The mathematical formulation for the model developed by [13] is:

$$\max \sum_{k=1}^{s} v_k y_{kp}$$

$$s.t. \qquad \sum_{j=1}^{m} u_j x_{jp} = 1$$

$$\sum_{k=1}^{s} v_k y_{ki} - \sum_{j=1}^{m} u_j x_{ji} \leq 0 \qquad \forall i$$

$$v_k, u_j \geq 0 \qquad \forall k, j$$

where:

$k = 1$ a s
$j = 1$ a m
$i = 1$ a n
y_{ki} = Amount of output *K*produced by DMU*i*
$x_{ji=}$ Amount of input*j* produced by DMU*i*
$v_{k=}$ Weight given by the output *k*
u_j = Weight given by the input *j*.

Banker, Charnes and Cooper modified the CCR model by adding a constraint for the calculation of the variable returns-to-scale (VRS). The new model is called the BCC model [14,15] being this model:

$$\min \theta_k$$

Subject to:

$$\theta_k x_{ik} - \sum_{l=1}^{n} \lambda_l x_{il} \geq 0, \qquad i = 1,2,\ldots,M$$

$$\sum_{l=1}^{n} \lambda_l y_{il} \geq y_{jk}, \qquad j = 1,2,\ldots,S$$

$$\sum_{l=1}^{n} \lambda_l = 1$$

DEA methodology allows to determine CCR and VRS models of efficiency [20]. The main differences between two models are presented in Fig. 1.

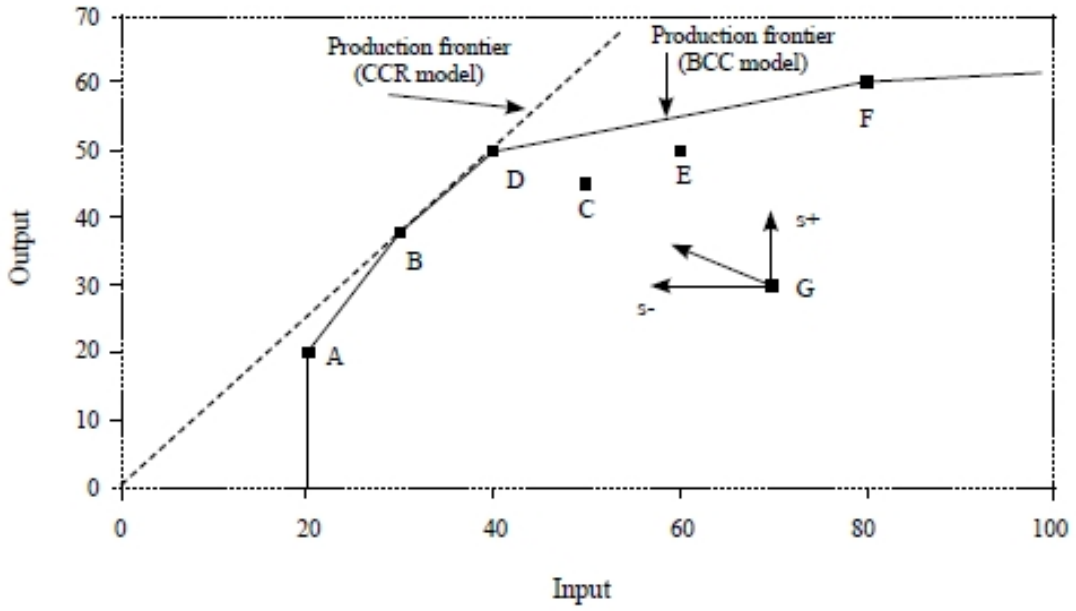

Fig. 1. Differences between CCR and BCC models
Source: Cooper, Seiford and Tone (2006)

3.1 Choice of DEA Model, the Selection of the Input and Output and Efficiency Assessment

From the literature review and the descriptions of the main customs functions described it is possible to recognize the economic and social purpose of the customs service, i.e. by meeting the main functions, customs services achieve their outcome that represents an impact on society of a particular public sector activity [21].

Customs service uses inputs similar to those of other organizations. In general, human and financial resources, assets and information can be highlighted [3].

When creating the model for the assessment of efficiency using DEA methodology, it is necessary to take into account several elements. In this study, these elements are the orientation of the model, differences in returns-to-scale that DEA models assume and the number of analyzed inputs and outputs. Anyway, in order to obtain reliable results, it is necessary to know the characteristics of business processes of the analyzed DMUs.

At the beginning, it is necessary to define the orientation of the model, i.e. make a choice between input, output or input-output (mixed) oriented models. Given the needed rationality in using inputs, for this research, the most suitable are input-oriented models. In addition, because of the present financial and economic situation of most of the countries, rationalization of inputs is the most suitable option.

DEA models assume constant (CRS) or variable (VRS) returns-to-scale. It is not possible to determine reliably which models are more suitable before the analysis, because the real characteristics of returns-to-scale are not known. This is the reason why authors of DEA recommend the application of both, constant and variable returns to-scale models. When the results of both models coincide to a large extent, it is proper model that assumes constant

returns-to-scale. Otherwise, a more suitable model is that which assumes variable returns-to-scale [18].

One of the limitations of DEA is the total number of inputs and outputs that can be included in the analysis. Specifically, it is advisable for the number of analyzed DMUs to be at least three times greater than the sum of inputs and outputs included in the analysis [22]. Therefore, one of the main problems is the selection of relevant inputs and outputs that depict the best way the business processes of the analyzed DMUs. Based on previously conducted research, for this study the following inputs and outputs were selected:

3.1.1 Inputs

- Number of employees. Human resources are the basis for building strategy of organization, and all other resources arise from their activities [23]. Their skills, capabilities, quality and ethics are among the most important determinants of organizational efficiency, including customs services. In other words, human resources are the basis of the administrative capacity of every customs system, and they are the most important and unavoidable factor that affects all aspects of customs service's organization [3].
- Cost. Financial resources are needed to achieve the preconditions for the purchase of necessary assets and other material resources and the recruitment of human resources in customs service.
- Number of customs agencies. Assets and material resources are constituted by different kinds of buildings and equipment.

Number of documents required. In the knowledge society information is a very important input. The basis on which to obtain quality information is a quality information system capable of collecting and processing large amount of data in order to select those that are important for the direction of the customs service's resources. However this not necessarily implies the use of extensive paper works that ends as bureaucratic ballast.

3.1.2 Outputs

- Collected public revenues. Although customs revenues are decreasing due to the liberalization of international trade and reduction of tariffs, customs service's still retain an important role in financing public needs. Therefore, measuring revenue leakages gives information to customs services about effectiveness and efficiency in collecting taxes.

- Volume of the international trade and value of the international trade. Participation in international trade has become one of the key factors in the international competitiveness of nations and customs. Conditions in the business environment in past decades have changed under the influence of the relevant growth of trade volume (as the result of elimination of tariffs and other barriers to trade, i.e. consequence of trade liberalization), growth of trade complexity (under the influence of globalization, many different countries organize production of commodities, and many of them have concluded treaties that regulate international trade flows), increased speed of trade (information technology and technological development) in general allow the application of "just in time'' production, which requires fast and seamless cross-border movement of goods [24].

For the purposes of this study, inputs and outputs of customs houses from 2012. 2012 was the year when the economies start to grow after been hit by the world financial crisis. The data recollected for the inputs and outputs was obtained from the [24,25,26,27,28].

4. RESULTS AND DISCUSSION

Technical scores (CRS and VRS) and scale efficiency have been estimated in an input-oriented model. The Table 1 shows that, according to the global technical efficiency, which departs from constant returns to scale (CRS), 8 customs houses were efficient. While the scores of the pure technical efficiency (variable returns-to-scale), 14 customs houses were efficient. The efficiency of de CRS efficiency to VRS efficiency increase which is particularly significant. This gives rise questions on the role played by the effect of the variable returns to scale in the inputs behavior of customs houses.

Table 1. Efficiency scores: CRS, VRS and SE

DMU	CRS	VRS	SECRS/VRS	Rank	Type
Argentina	0.70	0.73	0.97		increasing
Australia	0.94	0.96	0.97		decreasing
Chile	0.93	**1.00**	0.93	1	decreasing
China	**1.00**	**1.00**	**1.00**	1	constant
Costa Rica	0.71	0.83	0.85		increasing
Hong Kong	0.98	**1.00**	0.98		**increasing**
India	**1.00**	**1.00**	**1.00**	1	constant
Indonesia	0.53	0.58	0.91		increasing
Panama	**1.00**	**1.00**	**1.00**	1	constant
Singapore	**1.00**	**1.00**	**1.00**	1	constant
Sweden	0.68	**1.00**	0.68		**increasing**
Switzerland	0.96	**1.00**	0.97		decreasing
Thailand	0.56	0.65	0.86		increasing
Venezuela	0.36	0.52	0.69		increasing
Belgium	0.78	0.90	0.87		increasing
Brazil	0.88	0.88	1.00		increasing
Canada	0.77	0.86	0.89		increasing
Denmark	0.79	0.94	0.84		increasing
France	0.82	**1.00**	0.82		decreasing
Germany	**1.00**	**1.00**	**1.00**	1	constant
Italy	0.60	0.73	0.82		increasing
Japan	0.78	0.83	0.94		increasing
Korea	**1.00**	**1.00**	**1.00**	1	constant
Mexico	0.65	0.80	0.81		increasing
Russian Federation	**1.00**	**1.00**	**1.00**	1	constant
Spain	0.96	**1.00**	0.96		decreasing
Turkey	**1.00**	**1.00**	**1.00**	1	constant
United Kingdom	0.78	0.84	0.93		increasing
United States	0.65	0.82	0.79		increasing

Source: Author´s calculation

The customs with lowest scores of efficiency were Venezuela with 0.36 score, followed by Indonesia with 0.53 score in the first analysis (CRS) and with scores of 0.52 and 0.58 scores respectively at the second analysis (VRS), meaning that they should be able to attain the

same level output using only 52 and 58 per cent of the inputs they are currently using. The average value of scale efficiency is 0.91 in the model. The average scores are quite high indicating a strong efficiency among customs houses.

It should be noted that although some customs houses show values of efficiency some of the them shows a type of diminishing performance (the increase of a factor generates an increase of minor proportion to the initial increase). For example, Chile, Switzerland, France and Spain custom houses show a diminishing performance.

At the opposite some customs houses do not show efficiency of any type but the increase of a factor generates an increase of major proportion to the initial increase as it is the case of the customs houses as Argentina, Costa Rica, Indonesia, Thailand, Venezuela, Belgium, Brazil, Canada, Denmark, Italy, Japan, Mexico, United Kingdom and United States.

Relatively efficient customs houses appear in the reference set of relatively inefficient customs houses. So, frequency of occurrence in the reference set can be considered as indicator of whether the customs house is a model for other customs houses. Particularly, if a relatively efficient customs house is not a member of any reference set, that means that it is relatively efficient, but it does not appear as a model that should be achieved by the other customs houses. On the other hand, a higher frequency of occurrence in the reference set means a higher probability that it is an example of a good performance. Therefore, Fig. 2 shows the frequency of relatively efficient in the reference set of relatively inefficient customs houses.

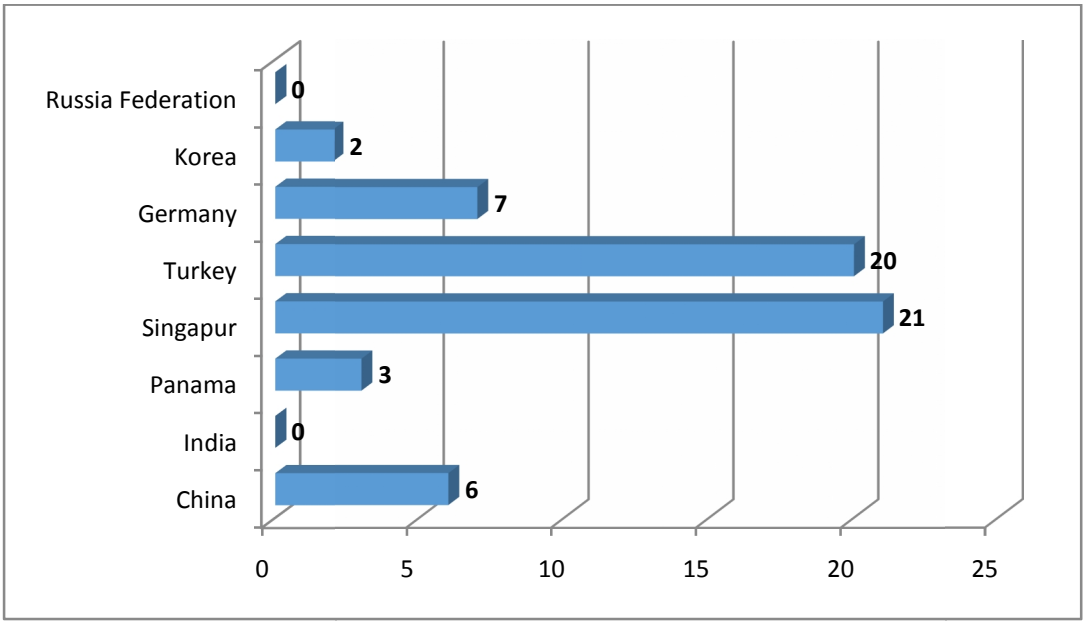

Fig. 2. Frequency in reference set
Source: Author´s calculation

After examining occurrences in inefficient customs houses' references set, it can be concluded that customs houses of Singapore. Turkey, Germany and China are the most

frequent DMUs in the reference set. This means that mentioned customs houses are models of efficient performance and their scores are targets for the inefficient.

Analyzing the frequency set by input and output individually it can be observed which countries are the most used as reference by variable and which countries could be observed as a role model by country. In the case of Mexico as we can observed in Table 2 Singapore is a good role model for number of customs, while Sweden is a good example for customs expenses and Turkey for the employment of human resources.

Table 2. Frequency in reference set by inputs and outputs

Unit name	Customs number{Input}	Customs expenses {Input}	Humans resources{Input}	Papers {Input}	Taxes {Output}
Argentina	Germany	Singapore	Sweden	Turkey	
Australia	Germany	Chile	China	Singapore	Turkey
Belgium	Germany	Singapore	Sweden		
Brazil	Panama	Singapore	Turkey		
Canada	Germany	Singapore	Sweden	Turkey	
Costa Rica	Singapore	Sweden	Turkey		
Denmark	Germany	Singapore	Sweden		
Hong Kong	Singapore				
Indonesia	Singapore	Turkey			
Italy	Singapore	Turkey			
Japan	Singapore	Turkey			
Mexico	Singapore	Sweden	Turkey		
Switzerland	Singapore	Turkey			
Thailand	Singapore	Turkey			
United Kingdom	Singapore	Turkey			
United States	Singapore	Turkey			
Venezuela	Singapore	Turkey			

Source: Author´s calculation

With regard to the question addressed of what measures should be taken in order to achieve the efficiency goal? The Table 3 shows a final analysis by country of each one of the inputs and outputs used dived in three stages: the actual value of the input/output, the target value, and the improvements that need to be done.

Taking for example the case of Mexico, the Table 3 shows in order to achieve efficiency (keeping the same number of outputs) costs are necessary to cut down the number of these by 19 percent; take down the total expenses by 26 percent and even reduce the number of employees from 14,992 to 12, 028 employees.

There are several targets that need to be apply toward efficiency, but as we can observe in Table 3 there isn´t a common strategy for all the customs due to each country has different problems to solve if each country wants to have a better customs administration which lead eventually an even better performance at global markets.

Table 3. Actual, target and slacks analysis by inputs and outputs

Unit name	Score	Actual customs number {I}	Actual customs expenses {I}	Actual Human resources {I}	Actual doc numb {I}	Actual revenues {O}	Actual trade vol {O}	Actual trade value {O}	Target Customs number {I}	Target customs expenses {I}	Target Human resources {I}	Target doc numb {I}	Target revenues {O}	Target trade vol {O}	Target trade value {O}	Slacks Customs number {I}	Slacks customs expenses {I}	Slacks Human resources {I}	Slacks doc numb {I}	Slacks revenues {O}	Slacks trade vol {O}	Slacks trade value {O}
Argentina	72.51	3	2.55	14995	3	22.85	191.5	292.6	2.175	1.266	10873	2.175	22.85	211.3	332.3	0	0.197	0	0	0	0.022	0.034
Australia	96.43	2	1.4	14994	3	22.85	169.2	383	1.929	1.35	14459	2.519	22.85	254.1	383	0	0	0	0.047	0	0.094	0
Belgium	90.2	2	1.15	14996	2	20.1	131.1	256.8	1.804	1.037	13527	1.416	21.69	187.5	267.3	0	0	0	0.049	0.063	0.063	0.009
Brazil	88.15	3	2.49	14996	2	21.33	201.4	432.7	2.545	1.226	13219	1.763	21.34	318.8	432.7	0.017	0.327	0	0	5E-04	0.13	0
Canada	86.33	2	1.42	14987	2	20.1	109.9	174	1.727	1.136	12938	1.727	20.1	175.1	265.4	0	0.03	0	0	0	0.072	0.078
Costa Rica	83.07	3	2.53	14363	2	19.85	201.6	214.4	2.145	1.131	11931	1.661	22.37	201.6	297.9	0.058	0.328	0	0	0.1	0	0.071
Denmark	93.96	2	1.07	14465	2	20.1	130.6	218	1.879	1.005	13592	1.306	22.41	194.1	271.2	0	0	0	0.072	0.092	0.07	0.045
Hong Kong	100	2	1.03	14994	1	24.37	182.6	219.8	2	0.9	14159	1	24.93	215.5	284.5	0	0.044	0.056	0	0.022	0.036	0.055
Indonesia	57.86	5	2.47	14990	5	21.54	158.1	358.7	2.563	1.429	8672	2.688	24.13	234.1	385.5	0.055	0	0	0.026	0.104	0.084	0.023
Italy	72.94	4	1.66	14990	4	20.1	102.2	225.8	2.331	1.211	10935	1.992	24.46	226.4	343.8	0.098	0	0	0.116	0.174	0.138	0.101
Japan	83.11	3	1.28	14991	4	23.22	137.1	198.3	2.174	1.064	12460	1.523	24.68	221.2	315.8	0.053	0	0	0.225	0.059	0.093	0.1
Mexico	80.23	4	2.37	14992	2	19.87	140.3	205.9	2.042	1.14	12028	1.605	19.87	177.3	265.2	0.194	0.257	0	0	0	0.041	0.051
Switzerland	99.56	4	1.12	12800	2	24.72	174.3	272.1	2.145	1.036	12744	1.435	24.72	220.3	310.6	0.306	0.027	0	0.069	0	0.051	0.033
Thailand	64.99	5	2.04	14994	5	19.26	211.5	348.9	2.453	1.326	9744	2.359	24.29	230.5	365.8	0.133	0	0	0.111	0.201	0.021	0.014
United Kingdom	83.59	3	1.27	14934	3	22.89	120.6	174.7	2.172	1.062	12483	1.516	24.69	221.2	315.3	0.056	0	0	0.124	0.072	0.112	0.12
United States	81.76	3	1.33	14942	4	19.45	135.1	184.6	2.199	1.087	12216	1.598	24.65	222.1	320.3	0.042	0	0	0.209	0.208	0.096	0.116
Venezuela	52.12	6	2.9	14997	8	15.99	141.3	288.5	2.651	1.512	7817	2.952	24.01	237	401.2	0.079	0	0	0.152	0.32	0.106	0.096

Source: Author´s calculation

4. CONCLUSION

The purpose of this study has been to estimate the characteristics of technical and scale efficiency of the customs for 29 countries. DEA methodology has been adopted in order to construct an efficient boundary against which to measure the degree of efficiency of the involved units.

This methodology does not require a uniform reduction of all inputs, as in the standard model. Instead, this method minimizes the distance friction for each input and output separately. As a result, the reductions in inputs and increases in outputs necessary to reach the efficiency frontier are smaller than in the standard model.

The results of our study can be summarized as follows:

1) The level of the global technical efficiency is equal, on average, to 83%, the level of pure technical efficiency on average is 89 %. This means that the same levels of output could be provided using around the 83 - 89% of the original amount of input.
2) According with the result obtained of scale efficiency on average the scores is 91%, what shows the necessity of reduction of inputs for most of the economies.
3) These results also show the similar degree of performance on the economies considerate for this study.
4) It also important remarks the type of performance that the countries had according to the analyzed indicators. As it is the case of some countries with a low efficiency score but with an increasing performance, or at the opposite behavior countries with an efficient score but with a decreasing performance. These results point out the importance on the improvement of the inputs used.
5) Examples of good performance for most of the countries analyzed are the customs houses from Singapore and Turkey. These leads to look closer the strategies and politics implemented in these countries related to customs administration.

The aim of the study concerns the identification of the strength and weaknesses in customs houses of 29 countries, not only in order to know which customs houses performance is efficient and which not. But also to guide through these study the behavior of the public administration in these matter. However, it is necessary to be careful with the judgment and conclusions that can be drawn from the results. The comparison between the outcomes with the targets settled will determinate if performance is satisfactory. The scope of this study is just a comparative analysis of the activity conducted by the customs houses as a key of international trade.

There are several points where the research has placed its emphasis that deserve further studies. The analysis indicates that the organizational structure of some Customs Administration is inadequate. This stems from the fact that if particular customs houses reduced their inputs to the desirable level, their existence would not be possible, because in particular cases, projected inputs are so low that they could not ensure fulfillment of main customs houses' tasks. Thus, future research should focus on finding and proposing a more adequate organizational structure.

Contemporary circumstances in which customs service's operating imply new challenges at global markets. From the initial, primarily fiscal role, customs services in developed and most other countries, have transformed, or are in the process of transformation into organizations with broader and still very important tasks.

In addition, further efforts should be focused on the quantification of undetected irregularities and the size of tax evasion. Besides the possibility of obtaining a more reliable assessment of efficiency, "the detecting of the undetected'' provides an opportunity for quality risk assessment and eventually for increasing overall efficiency and effectiveness.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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