CORRUPTION AND BORDER ENFORCEMENT: A SHORT ANALYSIS

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Modelul construit are ca scop de a reda condiţiile în care factorii de decizie din serviciul vamal ar activa în cadrul restricţiilor stabilite. Aceasta este asigurată prin funcţia Cobb-Duglas. Presupunerea rezidă în faptul că serviciul vamal intenţionează de a maximiza numărul persoanelor migrante nelegal, arestate la frontiera de stat. Corupţia, fiind o problemă pentru ţările de tipul Bielorusiei, Ucrainei şi Moldovei, este studiată pentru a cunoaşte ce se va întâmpla cu modelul, în caz dacă o parte limitată din personalul grănicerilor se dovedeşte a fi coruptă.

Introduction

In recent years, a number of authors have stressed the relationship between irregular migration and corruption. The critical variable seems to be the interaction between the governments and organised crime syndicates [1:149]. As syndicates have become more sophisticated and profitable – as a consequence of the higher demand and cost for their services - the capacity and means to corrupt have also grown [3:121].

There is a direct relationship between the regimes that organise and regulate migratory movements, and the scope of irregular migration [5:78]. Corruption is said to be a key element in human smuggling and trafficking because it makes it easier to get the migrants across the borders [1:149]. Consequently, corruption should also be viewed as a crucial cog in the wheel of labour trafficking [4:148]. Without employees at border checkpoints turning a blind eye, often after the payment of a significant sum, this form of organized crime could not proceed [6:55]. Payment of bribes in money, goods, or kind can persuade an official to turn a blind eye to improper documentation or protection against scrupulous checking of vehicles, cargo holders, or vessels holding trafficked migrant workers [4:157].

In the case of the three WNIS countries Belarus, Ukraine and Moldova, there is a lot of anecdotal evidence about corruption in border administration. For example, Uehling points out that Ukraine's ability to address irregular migration has been limited by widely acknowledged but as yet unsubstantiated corruption of consular, border guard, law enforcement and state officials [5:79].

However, actual evidence exists as well. The European Union's Border Assistant Mission to Ukraine and Moldova – EUBAM – notices that even though corruption has decreased in recent years, it is still present [2:13]. The EUBAM has taken measures to improve the situation. For example, at the field level, the EUBAM has been able to advise on improving procedures in order to reduce the opportunities for corruption. The Joint Operation was created, in which border guards and Police have been operating together. The so-called ASYCUDA system was also introduced in order to restrict direct payments made to customs officers. There is also a directive limiting the amount of money to be carried by MDCS officers and prohibiting the use of mobile phones [ibid].

In the following article, I show the conditions under which a hypothetical border guard authority would operate, given predefined constraints and under prevalence of corruption. The assumption is that the border guard service is trying to maximize the number of apprehensions at the state border, Y.

Theoretical model

We assume that the border guard authority's problem is to maximise

$$Y = AK^{\alpha}L^{1-\alpha}$$

subject to a general budget constraint

$$\lambda A + \eta L + \mu K \leq N_1$$

where λ, η and μ are the prices of technological efficiency, labour and capital respectively.

For the experimental step below, and to make the model more realistic, we also add a capital-labour constraint. That is to say, if border guards do not have sufficient equipment, then there will be fewer apprehensions. Thus, capital equipment per border guard must be higher than or equal to some percentage number, so that

$$\frac{K}{L} \geq N_2$$

We now let the possibility of corruption enter the model. The Cobb-Douglas function is rewritten as

$$Y = AK^{\alpha}((1-\delta)L)^{1-\alpha}$$

where (1-δ)L is corruption, defined in the sense that only (1-δ)L of the border guards are actually working. In other words, δ is the level of corruption, where 0≤□≤1. The reduced graphics below maximises the Cobb-Douglas function with respect to the level of corruption, and the budget constraint under a fixed level of corruption. The maximum of the Cobb-Douglas function will be reached at equality in the restriction. Therefore, we can simply pick and then express one of the variables, for example A:

$$A = \frac{N_1 - \mu K - \eta L}{\lambda}$$

Substituting it in the Cobb-Douglas function we get

$$Y = \frac{N_1 - \mu K - \eta L}{\lambda} K^{\alpha}((1-\delta)L)^{1-\alpha}$$

Taking logarithms we come up with

$$\ln Y = \ln(\frac{N_1 - \mu K - \eta L}{\lambda}) + \alpha \ln K + (1-\alpha)\ln((1-\delta)L)$$

The first order conditions are

$$\frac{\partial \ln Y}{\partial K} = \frac{-\lambda\mu}{N_1 - \mu K - \eta L} + \frac{\alpha}{K} = 0$$
$$\frac{\partial \ln Y}{\partial L} = \frac{-\lambda\eta}{N_1 - \mu K - \eta L} + \frac{(1-\alpha)(1-\delta)}{L} = 0$$

With respect to K and L we solve the system

$$-K\lambda\mu + \alpha(N_1 - \mu K - \eta L) = 0$$
$$-\lambda\eta L + (1-\alpha)(1-\delta)(N_1 - \mu K - \eta L) = 0$$

After transformations we get

$$(\lambda\mu + \alpha\mu)K + \alpha\eta L = \alpha N_1$$
$$(1-\alpha)(1-\delta)\mu K + (\lambda\eta + (1-\alpha)(1-\delta)\eta)L = (1-\alpha)(1-\delta)N_1$$

From here it is possible to find K and L.

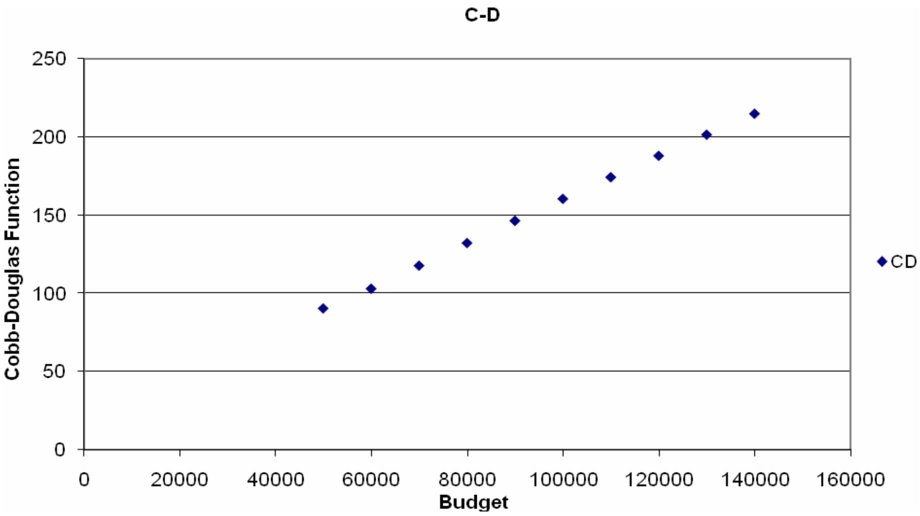
Experimental step

Using hypothetical values, the model can be tried out using Microsoft Excel's Solver. As an example, if we apply the following values

λ	η	μ	A	K	L	N_1	δ	α
100	100	100	650	260	390	130000	0,1	0,4

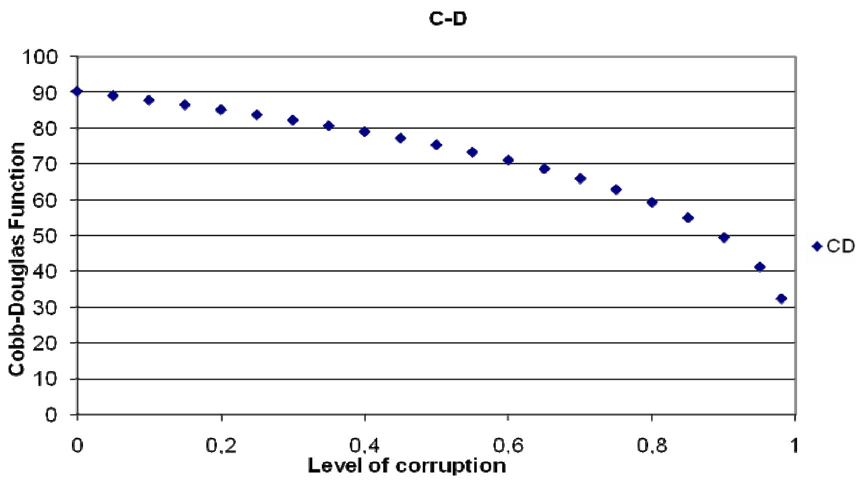
then the log of the Cobb-Douglas function, expressed as "=LOG(D2)+I2*LOG(E2)+(1-I2)*LOG((1-H2)*F2)", would take the value 5,306. Equivalently, the C-D function itself, expressed as the EXP of this value, would be 201,56. The budget constraint is constructed in Excel in a straight-forward way: λ *A + η*L+ μ*K. The capital-labour constraint, K/L, is equal to 0,67. In the given case, we let N_2 be equal to 0,05. Finally, using the following hypothetical numbers for the border guard service's yearly budget and the corresponding values of the Cobb-Douglas function, we come up with a table and a graph:

N_1	C-D
50000	90,3413
60000	102,9767
70000	117,7303
80000	132,2085
90000	146,4502
100000	160,485
110000	174,3362
120000	188,0227
130000	201,56
140000	214,9609



As can be expected, the bigger is the budget, the higher is the number of border apprehensions. In the same manner, picking various values for □, the relationship between corruption and border arrests looks as follows:

δ	C-D
0,0	90,3413
0,1	87,89477
0,2	85,23812
0,3	82,32325
0,4	79,08202
0,5	75,41278
0,6	71,15288
0,7	66,01404
0,8	59,39516
0,9	49,58036
0,95	41,38741
0,98	32,59676



Concluding discussion

In this article, a first few steps towards the modelling of corruption in border guard authorities have been taken. Under constraints and prevalence of corruption, I have shown how a rational border guard authority should choose the optimal quantity of inputs in order to maximise the production of border apprehensions.

There are ways in which this model could be further developed into a complex one. For example, a much necessary and very realistic constraint to include would be the fact that border guards and equipment have to be distributed along the entire state border. In order to formulate such a model, one approach would be to deal separately with each and every oblast, allocating to them a part of the total budget and resources. From this, an accumulated macro model could then be constructed. Of course, such an approach would require considerably more complicated mathematics.

In addition, there are other constraints that could be experimented with. For example, in the above model, it would be an easy task to include the influence of political or juridical constraints. One idea would be to imagine that human rights groups or (inter)national legislation would have an influence over the border guard authority's agenda, so that it cannot conduct its operations with maximum efficiency. This means that A would be lower than or equal to some defined number, N_3.

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