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The Impart of Unofficial Dollarization / Euroization on the Choice of Exchange Rate Regime: Lessons for EU Accession Countries

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The Impact of Unofficial Dollarization / Euroization on the Choice of Exchange Rate Regime: Lessons for EU Accession Countries

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Introduction

Forty years ago, Ronald McKinnon (1963) reminded that Robert Mundell (1961) in his seminal paper on optimum currency area (OCA) did not imply identity between national teritory and OCA when factor mobility within countries is low. McKinnon (1963) clarified the distinction between OCA and national teritory further. He definined OCA as an area where flexible exchange rates can be used to reach full employment and external equilibrium, while keeping domestic price level under control. An obvious implication of this view is that countries where full employment, external equilibrium and low inflation cannot be reached simultaneously – if such countries exist, should not be considered optimum currency areas.

Thirty-five years later, McKinnon's (1999) and Mundell's (1999) proposals for fixed or quasy-fixed exchange rates for small and open economies in emerging Europe seemed to be in contrast with economics profession's mainstream. Growing popularity of inflation tagetting and fears of short-term international capital flows («hot money»), led many authors to conclude that flexible exchange rates represent the best monetary regime for European emerging markets (e.g. Masson, 1999; Mishkin, 1999a, 1999b). Fluctuating exchange rate was seen as a vehicle of macroeconomic adjustment as well as a vehicle of prevention against volatile short-term international capital flows. It seemed that there was nothing to be gained by lower exchange rate flexibility.

However, there are at least six reasons why this view has to be reconsidered. Firstly, floating exchange rate can serve as an adjustment mechanism only if a country represents an optimum currency area, which is not always the case. Secondly, exchange rate fluctuations can stimulate short-term capital flows because volatility is a prerequisite for speculation. This means that a stable exchange rate, if credible, can stabilize international capital flows (Dean and Kasa, 2001). Thirdly, Hausmann, Panizza and Stein (2001) have shown that a stable exchange rate can be a solution to the traditional Gordon-Barro central bank's problem if there is a close corellation between nominal interest rates and nominal exchange rate. Fourthly, Krugman (1999) and others[2] revived the idea of the balance sheet channel of monetary transmission, showing that exchange rate changes may lead to adverse macroeconomic adjustments when large share of assets and liabilities are denominated or held in foreign currency. Fifthly, recent research (Fratzcher, 2002) has shown that wide exchange rate intervals in some European countries during last 15 years did not imply lower macroeconomic adjustment costs. Domestic interest rates simply followed foreign ones in a number of countries, as if the exchange rates were not flexible at all. Sixthly, if a country experiences the same macroeconomic shocks as a larger monetary area, it may share the effects of monetary policy in the larger curency area. In other words, this country does not need domestic monetary policy.

Problem of unofficial dollarization / euroization did not play a very important role in this discussion. One possible reason is a belief that currency substitution cannot be measured due to unobservability of foreign cash in circulation (Calvo and Vegh, 1992). However, first estimates of foreign cash in circulation in different countries have been published recently (Feige et. al., 2002; Feige, 2002). It was shown that foreign currency in circulation plays much more important role in some countries than previously thought. The implication is that widely used indicator - share of foreign currency deposits in M3 (e.g. Balino et. al., 1999) -

[2] see Allen et. al. (2002) for the most comprehensive review.

might be misleading for countries where foreign cash in circulation plays an important role. Work of Feige et. al. (2002) also enabled construction of the first «dollarization index», which measures the share of foreign cash and deposits in total domestic and foreign money supply in the country.

Improvement in measurement calls for the reconsideration of a crucial issue: how severe are the limits to domestic monetary policy imposed by unofficial dollarization / euroization? Unofficial dollarization / euroization usually represents an outcome of ineffective past monetary policy which led to high inflation, erruptive exchange rate depreciation and the loss of credibility. On the other hand, if credibility can be rebuilt and dollarization / euroization eliminated or reduced, then a country may develop a strategy to gain more freedom for domestic monetary policy. This is an empirical issue, which may be measured more precisely now, when foreign cash estimates are available.

Existing impact of dollarization / euroization on effectiveness of monetary policy has important implications for the exchange rate policy. If unofficial dollarization / euroization substantially reduces monetary policy effectiveness and if it is «irreversible», countries with higher currency substitution would have lower costs from early stabilization of exchange rates and / or adoption of euro, because they cannot extract benefits from independent monetary policy accompanied by flexible exchange rate. Policy makers' choice seems to be pretty determined in this case.

Ideal approach to measurement would be to use the uncovered interest parity model in order to estimate the degree of independent movement of domestic interest rates, and then to calculate the corellation between this parameter and unofficial dollarization index. According to this approach, freedom of monetary policy is reflected in the country's ability to move interest rates independently from foreign interest rates. If this ability is lower in countries with higher unofficial dollarization / euroization, it should be interpreted as a sign of strong limits to effectiveness of domestic monetary policy. However, in the last decade or so there have been many structural shocks reflected in interest rates movements in transition countries, so – given the limited lenght of the time series – it is impossible to isolate monetary from structural shocks. Therefore, an alternative approach has been used in this paper. It is assumed that there is a corellation between monetary policy effectiveness and monetary depth. If unofficial dollarization / euroization has a negative impact on monetary depth, one can easily assume that it has a negative impact on monetary policy effectiveness. A channel linking monetary policy effectiveness and monetary depth may work through money multiplier process. For example, if foreign cash partly substitutes for domestic deposits, monetary policy effectiveness would decline.

The first section contains the discussion about measurement of unofficial dollarization / euroization. The second section contains the discussion about problems of measurement of monetary policy effectiveness. In the third section empirical results about links between unofficial dollarization / euroization and effectiveness of monetary policy are presented. The fourth section discusses policy implications.

I. Measurement of Unofficial Dollarization / Euroization

Unofficial dollarization / euroization, in its narrow sense, occurs when foreign currency displaces the domestic currency in some or all of its functions without prior consent of the government. This type of unofficial dollarization / euroization is called narrow, because it takes place within money supply M1. For measuring it, we need to know foreign cash in local circulation (FCC). Foreign currency demand deposits (FCDD) with domestic banks[3] could also be included here, however, it is reasonable to assume that they do not represent an important monetary asset. Following definitions in Feige et. al. (2002) and Feige (2002), money supply M1 defined this way is called effective narrow money (ENM):

$$ENM = M1 + FCC,$$

where M1 is defined as in national monetary statistics. Therefore, narrow unofficial dollarization / euroization can be measured by currency substitution index (CSI) defined as a ratio of foreign cash in circulation and effective narrow money:

$$CSI = FCC/ENM.$$

Foreign monetary assets may also occur in a form of different types of deposits. In literature, it is common to assume that foreign currency deposits represent asset substitution as opossed to currency substitution. However, many foreign exchange deposits may be held for transaction purposes, while on the other hand, asset substitution may go far beyond deposits – e.g. exchange rate linked bonds and the like (Offenbacher, 2002). Also, foreign cash may be used for hoarding, not for transaction purposes. In order to avoid any confusion, no parallel between currency and asset substitution on one hand, and monetary assets and functions of money on the other hand, is drawn here. We will just follow the existing convention in the literature by adding all types of foreign currency deposits (FCD) to the numerator and all types of foreign and domestic deposits (DD) to denumerator of CSI, in order to reach «unofficial dollarization index» (UDI):

$$UDI = (FCC+FCD)/(ENM+FCD+DD)$$

Therefore, «unofficial dollarization index» measures the full extent of currency substitution – both cash and deposit substitution are accounted for.

When countries of CEE are taken into account, dollarization may be a confusing term because of a widespread use of European currencies on the outside borders of Europe. However, the US dollar is still an important part of unofficial parallel circulation in many large countries like Russia and Poland. Therefore, this term is accepted as a convention.

It is important to note that this measure takes no account of resident's foreign currency deposits held abroad. It is not only due to the hardhip in obtaining these data about accounts which are often held illegaly. It is also the principle of account residency, not of account's owner residency, which is applied here. If the second principle should apply, counting

[3] It makes sense to ignore resident's foreign currency demand deposits abroad, because for simplicity we may assume that such deposits, if they are significant (like in Latin America), are held for other non-transactional purposes (savings).

resident's balances held abroad would also imply subtracting non-resident's balances at accounts with domestic banks.

The traditional measure of unofficial dollarization and/or currency substitution, as used for example in Balino et. al. (1999), is:

FCD/(ENM+FCD+DD),

and it takes into account deposit substitution effect only.

Value of this measure approaches to UDI's value as FCC (foreign cash in circulation) converges to zero. Therefore, it is obviously crucial to estimate FCC. The higher it is, the greater the difference between UDI and this traditional measure will be. Details on FCC measurement are presented in Feige et. al. (2002) and Feige (2002). What follows is just a brief review.

Any person or institution carrying accross the US border more than 10,000 USD must report the amount in a Report of International Transportation of Currency or Monetary Instruments (CMIR). CMIR data allowed construction of time series of flows of US dollars to and from different destinations around the world. However imperfect these may be, there are indications that they do not contain systematic one-sided error. In addition, data were adjusted for the effects of Extended Custodial Inventory programme, since FED in 1996 has chosen a few sites around the world for diseminating and collecting USD bills circulating at other continents. This induced a change in the estimated time series. This was corrected in the final estimates for the year of 1999. [4] On top of it, Feige (2002) has taken into account the results of Gallup research[5] on non-US dollar foreign currency holdings in Europe prior to euroconversion, because these estimates proved to be very reliable ex post.

At the aggregate level, estimates seemed to be very reasonable. It has been estimated that 57% of value of US dollar bills is held abroad, while 23% of value of DM bills has been estimated to be in transition countries. Both results were in line with most previous studies and experience.

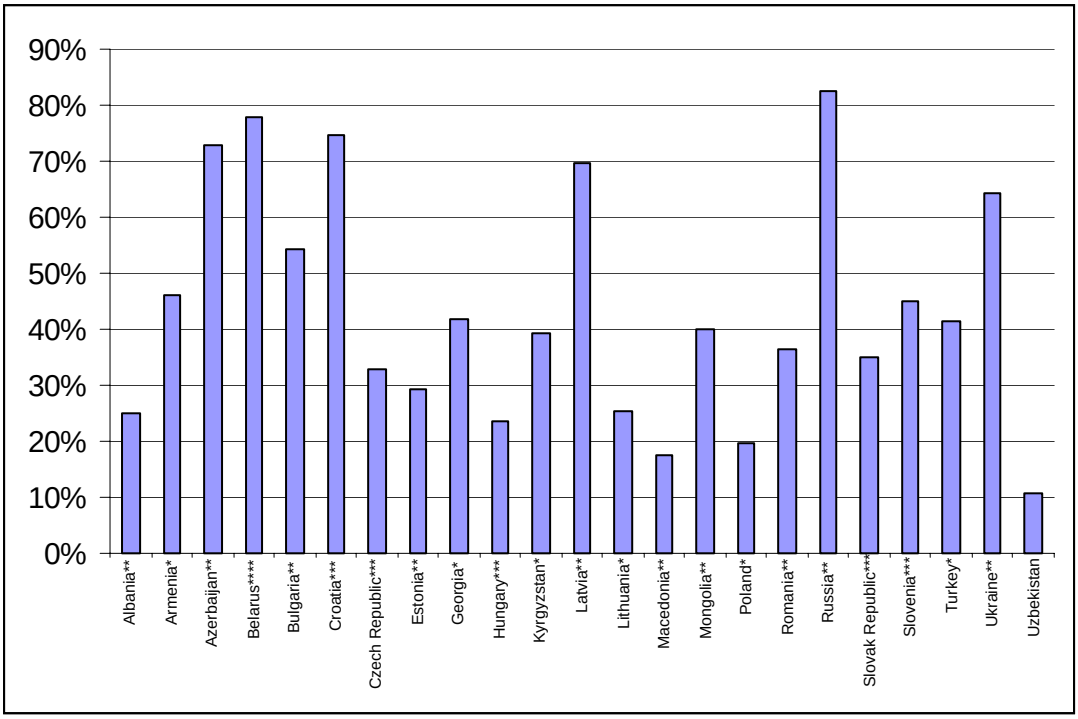
Figure 1 shows unofficial dollarization indices for transition countries, including Turkey.

[4] Different estimates for the same countries in Feige et. al. (2002) and Feige (2002) should be primarily attributed to this correction as well as to different year of estimate – 1997 in Feige et. al. (2002) and 1999 in Feige (2002).

[5] The reported results were blown up by factor five at the basis of US research experience (people naturally tend to admit manifold lower amounts than they actually hold).

Figure 1

Unofficial Dollarization Indices - 1999



Source: Feige (2002)

It seems reasonable to group countries into three categories. First, low unofficial dollarization / euroization countries with UDI up to 25% are: Albania, Hungary, Macedonia, Poland and Uzbekistan. Second, moderate to high unofficial dollarization / euroization countries with UDI between 25% and 50% are: Armenia, Czech Republic, Estonia, Georgia, Kyrgisztan, Lithuania, Mongolia, Romania, Slovenia, Slovakia and Turkey. Third, very high unofficial dollarization / euroization countries, where more than half of total money supply is held in foreign currency (UDI greater than 50%) are: Azerbaijan, Belarus, Bulgaria, Croatia, Latvia, Russia, Ukraine.

Out of 13 existing or near-future candidates for EU in our sample, only Hungary, Poland, Albania and Macedonia belong to the group with relatively low unofficial dollarization / euroization. What are the implications of these results for the conduct of monetary policy?

II. Measuring Freedom of Domestic Monetary Policy

Theoretical and practical intuition points to the conclusion that dollarization / euroization sets strong limits over conduct of monetary and exchange rate policy. There are at least four arguments for that. Firstly, high degree of dollaization / euroization can be taken as an indication that a country is not an optimum currency area. This means that it cannot use domestic monetary and exchange rate policy to obtain low unemployment, stable prices and external equilibrium simultaneously (McKinnon's definition – recall the Introduction). Secondly, high degree of dollarization / euroization means that the base for extracting seigniorage is low (actually, foreign monetary base has been imported), which may reduce political interest for domestic currency and monetary policy. Thirdly, high degree of dollarization / euroization is usually a consequence of a past policy mistake (e.g. hyperinflation) which may have irrevocably destroyed policy makers' credibility. Fourthly, high degree dollarization / euroization is an indication of a very high elasticity of substitution between different denominations of assets, which may lead to large portfolio shifts induced by small changes in assets prices (one of the most important being the exchange rate). Since portfolio shifts can alleviate policy intentions, «optimum» fluctuations in assets' prices may be lower in high elasticity environment. Can these arguments be tested? For answering this question, one needs to measure the effectiveness of monetary policy and analyse how it is related to unofficial dollarization / euroization.

There are three ways how to measure effectiveness of monetary policy. One way is to estimate monetary policy reaction function, i.e. to look at parameters which measure the impact of output gap and inflation deviations on interest rates (Clarida, Gali, and Gertler, 1999). Another way is to look at corellation between foreign and domestic interest rates based on uncovered interest parity theory – UIP (Fratzcher, 2002). Uncovered interest parity model is:[6]

$$i_t = \alpha + \sum_{j=0}^{J}\left(\beta_j i_{t-j}^{US} + \chi_j i_{t-j}^{EU} \right) + \sum_{s=0}^{T-t}\left(\delta_s \Delta e_{t+s}^{US} + \phi \Delta e_{t+s}^{EU} \right) + \varepsilon_t ,$$

where i stands for nominal interest rate and e stands for spot exchange rate. The key point is to estimate β's and χ's. If these parameters are low, then there is a room for domestic monetary policy reflected in domestic interest rates movements which do not depend on foreign interest rates and exchange rate changes.

Both approaches say nothing about the actual impact of monetary policy on output and/or prices. They just look at how intermediary monetary targets behave, given the information on output gap, inflation gap, and/or foreign interest rates movements. Therefore, it is hard to conclude about policy effectiveness by watching movements of intermediary targets. From that, we can conclude only about the necessary condition for effectiveness, which is the freedom of the central bank to act. However, this is the measurement of potential

[6] See also Fratzcher (2002).

effectiveness, not of the true monetary policy outcomes. And if we are measuring potential effectiveness of monetary policy, than the third approach may be employed.

Third approach is an attempt to find a relation between unofficial dollarization / euroization and monetary depth (e.g. M3/GDP). This approach assumes positive link between monetary depth and monetary policy effectiveness. So, if higher unofficial dollarization / euroization leads to lower monetary depth, then it may also lead to lower effectiveness of monetary policy. Rationale behind it is pretty intuitive, resting upon the idea of monetary transmission: lower intermediation may lead to imperfect transmission of monetary policy impulses through the banking system. For example, if foreign cash substitutes for domestic deposits, deposit multiplication will be weaker than in an environment without unofficial dollarization / euroization.

III. The Results

Attempts to estimate uncovered interest parity based on monthly or quarterly data failed due to hardships in proper isolation of effects of structural changes in transitional banking systems. On top of it, capital mobility regulation was changing frequently during transition, which may have also contributed to the estimation problems. Therefore, interpretation of the results critically depends on the assumption / belief, that the freedom and effectiveness of monetary policy are somehow associated with monetary depth. Estimation strategy was to look for association between unofficial dollarization / euroization and monetary depth at the basis of cross-country data. The hypothesis is that this link is negative.

Many empirical studies revealed positive link between GDP per capita and monetary depth (Levine, 1997). Therefore, GDP p.c. in nominal USD was also used on the explanatory side of the equation. This variable was constructed as three year (1998, 1999, 2000) average at the basis of the World Bank's World development database (WDI). (http://devdata.worldbank.org). Average is centered around 1999 because this is the year of measurement of UDI.

UDI was used from two pieces of research. Feige (2002) estimated UDI for 23 transition countries, including Mongolia and Turkey (Figure 1), and Feige et. al. (2002) estimated UDI for a wider sample of countries, including some Asian and Latin American economies. Besides UDI and GDPp.c., two binnary variables were added on the list of explanatory candidates. The first variable (LA) equaled one for Latin American countries. The purpose of this variable was to control for (possibly) higher monetary depth in the sub-sample of countries where market economies functioned before 1990. The second binary variable (C_S) equaled one for Slovakia and Czech Republic because the two countries shared the same history in the common federation under communism. Their high indicators of monetary depth were largely administratively induced i.e. inherited at the beginning of transition due to tranferr of the former common central bank assets and liabilities onto commercial banks' balance sheets.

Dependent variable was monetary depth defined as liquid liabilities to GDP ratio (for simplicity, it is labled M3/GDP). In order to ensure methodological comparability of the variable, it was taken from a unique source – A New Database on Financial Development and Structure designed by Beck, Demirguc-Kunt and Levine (1999) for the World Bank. The latest observation (but not earlier than 1995) from this database was taken as an indicator of

monetary depth. Since some of the countries were missing, the sample was finally reduced to 21 country: Belarus, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania, Russia, Slovakia, Turkey, Ukraine, Argentina, Costa Rica, Indonesia, Israel, Peru, Saudi Arabia and Venezuela. Sample is dominated by transition countries, but is not regionally homogeneous. Data used in the estimation are shown in the Annex and the results are shown in the table below.

Table 1: Estimation Results (t-values in parentheses)

	Equation no. 1	**Equation no. 2**	**Equation no. 3**
Dependent variable	M3/GDP	M3/GDP	M3/GDP
Constant	0.382 (3.83)***	0.289 (4.49)***	0.305 (4.77)***
GDP p.c.	0.000025 (2.50)**	0.000028 (4.50)***	0.000028 (4.67)***
UDI	-0.329 (-1.95)*	-0.237 (-2.23)**	-0.239 (-2.31)**
C_S		0.414 (5.43)***	0.398 (5.29)***
LA			-0.076 (-1.37)
Rsquared	0.426	0.790	0.812
F	6.687	21.364	17.320
Jarque Berra	4.389	1.219	1.787

* significant at 10% level
** significant at 5% level
*** significant at 1% level

Results show the existence of a negative link between currency substitution and monetary depth on a cross-country basis. Sign and significance of the parameter are robust, but when the effect of former Czechoslovak data is captured by the binary variable, the size of the impact decreases somewhat (but the value of t-test increases). Since binary variable which equals one for Latin American countries is not significant, we may conclude that history of market economy makes no difference in this respect.

It is very important not to take these results too far in making conclusions. Serious limits come from low data quality, sample size, and the lack of time dimension in the data. Empirical analysis should be refined in the future, mainly thorugh extension of the sample both in time as well as in the number of countries. However, these data point out that there may be limits to effectiveness of monetary policy set by unofficial dollarization / euroization.

IV. Conclusion: On Policy Lessons

Recent attempts to measure unofficial dollarization / euroization in transition countries have shown that the phenomenon is widespread. In some transition and Latin American countries,

foreign monetary assets dominate over domestic monetary assets, which should be interpreted as a clear indication that the country is not an optimum currency area. This finding poses questions about the effectiveness of monetary policy in the described monetary environment.

Present degree of currency substitution is not necessarilly a consequence of policy mistakes made during the transition. Currency substitution may be persistent, and in some cases it may be irreversible due to network externalities in the usage of currency (Dowd and Greenaway, 1993; Feige et. al., 2002).

Neither theory, nor policy seem to have clear-cut answers to such cases where strong limits to domestic monetary policy exist. For example, EU has the same stance towards newcomers as it had toward countries like Greece, Portugal and Ireland. Policy makers tend to overlook significant structural and historical monetary differences between the former candidates, now members of EMU, and present candidates for EU. These differences are reflected in the level of unofficial dollarization / euroization, which is much higher in new candidate countries. Though there are large differences between them, one cannot rule out the possibility that there are countries in this group which may be better-off if they could adopt euro as a legal tender earlier.

Three groups seem to be emerging out of the candidate or future-candidate (plus Turkey and Croatia) cluster of countries. The first group consists of EU accession foreruners who have low currency substitution. These are Poland and Hungary. Current EU stance is best suited for these two countries which may still extract some benefits from exchange rate adjustment mechanism. Elasticity of substitution between different assets seems to be rather low and the attainement of policy credibility seems to be easier in these countries than elswhere. While this is not a guarantee that these countries may enjoy benefits from exchange rate fluctuations, at least there are no strong arguments against some degree of exchange rate flexibility.

The second group of countries comprises Czech Republic, Estonia, Lithuania, Romania, Slovenia, Slovakia and Turkey. These countries have relatively high unoficial dollarization / euroization (between 25% and 50%). However, if we believe the regression result, which shows that the negative impact of currency substitution is not substantial, it is hard to expect that these countries will have a lot to complain regarding exchange rate policy which they have to comply with on their road to monetary union. They may have no substantial benefits from the exchange rate fluctuation, but they cannot have a lot of harm from it either. In other words, they may have no large benefits from fixing the exchange rate or early adoption of euro.

This leaves us with the third group, comprising Bulgaria, Croatia and Latvia. These countries have currency substitution of Latin American type. In comparison to Hungary and Poland, these countries have 50 percentage points higher currency substitution on average. Such difference must have significant real effects in terms of lower monetary policy effectiveness. Elasticity of substitution between different denominations of monetary and financial assets may be so high that even a small exchange rate change may induce a large portfolio shift with uncertain wealth effects. Furthermore, even small exchange rate volatility may induce a self-fulfilling speculation. Taking into account that the seigniorage argument is weak in such circumstances, one may assume that these countries may prefer earlier adoption of euro since they may see no benefit arising from exchange rate flexibility.

Of course, policy is a matter of reality. Three countries taken together have 15 million inhabitants and they produced 38 billion USD GDP in 2000. It is very hard to expect a radical shift of the European policy (towards tolerance for early adoption of euro) because of three relatively insignificant European countries which are not in the first vawe of accession candidates.

Annex: The Data

	UDI	GDPp.c.	M3/GDP	LA	C_S
Belarus	0.78	1260	0.125	0	0
Croatia	0.75	4600	0.294	0	0
Czech Republic	0.33	3594	0.711	0	1
Estonia	0.29	3644	0.26	0	0
Hungary	0.24	4599	0.404	0	0
Latvia	0.7	2764	0.242	0	0
Lithuania	0.25	1226	0.167	0	0
Poland	0.2	4507	0.354	0	0
Romania	0.36	1211	0.217	0	0
Russia	0.82	1679	0.166	0	0
Slovakia	0.35	3712	0.74	0	1
Slovenia	0.45	9631	0.358	0	0
Turkey	0.41	2974	0.267	0	0
Argentina	0.69	7904	0.217	1	0
Costa Rica	0.41	4092	0.398	1	0
Indonesia	0.21	623	0.498	0	0
Israel	0.18	17040	0.821	0	0
Peru	0.54	2141	0.228	1	0
Saudi Arabia	0.36	7321	0.491	0	0
Venezuela	0.09	4500	0.187	1	0
Ukraine	0.69	699	0.119	0	0

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