

**The Vanishing Barter Economy:  
A Test of the Virtual Economy Hypothesis?  
Reply to Barry Ickes' Comment<sup>1</sup>**

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In this reply I would like to focus on two points raised by Barry Ickes' comment on my paper "Trust versus Illusion: What is driving Demonetization in the Former Soviet Union?" Ickes claims that I cannot test the virtual economy hypothesis (VEH) because of inappropriate data and a flawed testing procedure. Let me take each argument in turn.

**Inappropriate Data:**

Ickes argues that by using Ukrainian data rather than data on Russia I cannot test the VEH. Unlike Russia, Ukraine is not energy abundant and therefore one should not expect that Ukrainian industry is subsidized by scarce imported energy. Because of this difference in comparative advantage in energy (particularly oil and gas) between Russia and Ukraine one cannot expect the sectoral pattern of cross subsidies to be the same in Ukraine and Russia.

My test of the VEH proceeds in three steps of which only the last step depends on Russia and Ukraine to have a similar pattern of comparative advantage. First, I ask whether any cross subsidization across sectors can be identified and the test finds no systematic value transfer across sectors. So if Ukraine differs in its comparative advantage, the test should still find cross subsidization across sectors even if the subsidizing sector will not be energy but some other sector.

Second, I ask whether the value transfer of the value creating sector to the value destructive sector is more pronounced when the sector receiving the transfer is less efficient. According to the VE argument we expect this to be the case, because less efficient sectors will need a bigger hidden subsidy in order to pretend to produce value added. The test finds no statistically significant relation between the size of the value transfer and the efficiency of the sector.

Third, I ask whether it is the energy sector which subsidizes the manufacturing sector as the VEH for Russia claims. Here is where Ickes' comment bites. If Ukraine is not energy abundant like Russia we should see a different sectoral pattern of cross subsidies in Ukraine compared to Russia. Therefore, using Ukrainian data to test the VEH might indeed be misleading.

**Why Ukraine is not different**

But Ukraine is not as different as Ickes suggests. Although Ukraine has no natural resources in oil and gas, Russia depends in its gas and oil exports on Ukraine's pipelines. 90 percent of Russian gas exports are transported through the pipelines of Ukraine. Russia pays for the use of Ukraine's pipelines with gas. The barter deal of Russian gas in exchange for Ukraine's pipeline services covers 40 percent of Ukraine's total demand for gas. In addition, Ukraine

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was stealing a huge amount of Russian gas (720 million USD) going through Ukraine's pipelines which made Russia to consider avoiding Ukraine altogether and to build a new pipeline. Furthermore, Ukraine has accumulated a huge amount of gas arrears vis a vis Russia (of 2 billion USD). Russia depends also in its oil exports on Ukraine's pipelines, but less so than in its gas exports.

The mutual dependence between Russia and Ukraine can be clearly seen from Table 1. Whenever Russia increased the oil price for Ukraine (which happened in 1996 from 51.5 USD/T to 71.2, an increase of 38 percent), Ukraine increased the transit tariff for Russian gas (from 0.65 USD/tcm/1000 to 1.75 USD/tcm/1000, an increase of almost 170 percent). Thus, the terms of trade of the Russian oil/Ukraine pipeline service deal shifted in Ukraine's favor, lowering the effective price of Russian oil that Ukraine paid. Unfortunately, prices for Russian oil to Ukraine are not available after 1997. However, the table still shows that Ukraine lowered the transit tariff for Russian gas in 1998 when Russian oil prices fell and increased the transit tariff again in 2001 when world oil markets boomed.

Table 1 Mutual Dependence: Russian Oil for Ukraine Pipeline Services

	Unit	1994	1995	1996	1997	1998	1999	2000	2001
transit tariffs for Russian gas	USD /tcm/1000 km	0,65	0,65	1,75	1,75	1,09	1,09	1,09	1,44
oil prices for Ukraine	USD/T*	-	51,5	71,2	71,4	-	-	-	-
oil prices for ROW	USD/T*	-	74,2	92,8	102,6	76,9	67,9	139,7	-

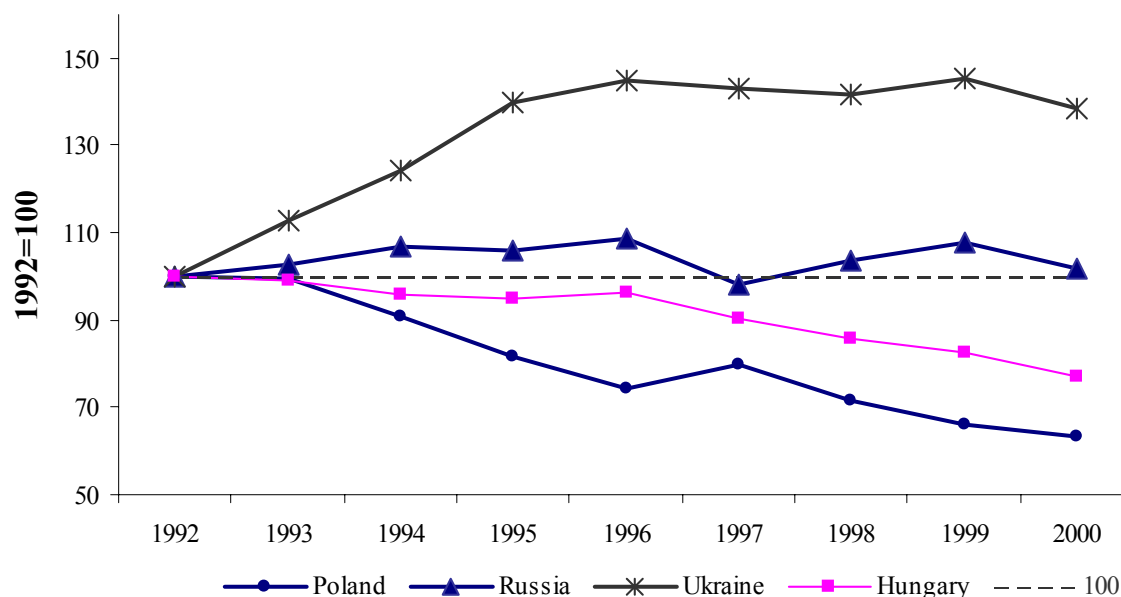
Sources: Energy Information Administration, USA; Ministry of Finance, Ukraine

\*) Unit Values

A country's ability to export gas and oil requires both a natural resource in oil and gas and a pipeline which minimizes transport costs to export markets. Russia has the natural resource, Ukraine offers the cheapest cost of transport for this natural resource. Although Ukraine has no comparative advantage in oil and gas it has a comparative advantage in transporting gas and oil from Russia. Ukraine has always exploited its monopoly position by bargaining for cheap gas and oil from Russia after the disintegration of the former Soviet Union (FSU). Due to its geographic advantage, Ukraine continues to have cheap oil and gas even after its separation from Russia (Russia charges Ukraine an oil price which is 30 percent lower than for the rest of the world (ROW), see Table 1).

The availability of cheap energy in Ukraine can be seen also in Figure 1 which shows that Ukraine's energy consumption per GDP (which includes oil, gas electricity, and coal) is higher than in Russia and has increased after the collapse of the FSU, while it has remained constant or has declined in Russia and other smaller Central European Countries.

Figure 1 Energy Consumption to GDP  
(BTU per GDP at 1995 USD prices)



Source: Energy Information Administration, USA

To sum up, because of the availability of cheap energy in Ukraine after the collapse of the FSU the pattern of value transfer across sectors, if it is taking place at all, can be expected to be similar between Ukraine and Russia. Thus, it is quite appropriate to test the VEH with Ukrainian data.

Ukraine and Russia are strikingly similar along another dimension: the pattern of barter over time. After an explosive growth from 8 percent in 1994 to around 60 percent in 1998 barter and non-cash transactions have declined since 1998 by around 30 to 40 percent in both countries (see Marin and Schnitzer 2002). What explains this striking similarity in the time pattern of barter in these two countries? Why was barter exploding before 1998 and vanishing after the financial crisis of August of 1998? Russia is an oil exporter, Ukraine is an oil importer. The ruble depreciated by about 50 percent after the August financial crisis, while the hryvnia showed only a modest decline. The strong devaluation of the exchange rate and booming world oil markets have both been argued to have contributed to the vanishing barter economy. However, the different behavior of the exchange rates and in the importance of oil in these two countries suggests that some other force must be at work to explain the striking similarity in the time pattern of barter.

Is the VEH a candidate explanation? To construct an argument for the vanishing barter economy along the lines of the VEH one has to find a reason why in 1998 the energy producers stopped providing subsidies to the manufacturing sector. Is it because the energy producers had less money available? Or because manufacturing firms suddenly started to create value in 1998? The booming world oil markets and the associated increase in rents of the energy sector should have made it easier rather than more difficult for this sector to transfer value to the rest of the economy. Why then has barter started to decline in 1998? The VEH does not seem to offer an answer.

In order to find an answer for the decline in barter we have to turn to the financial sector. One common feature between Ukraine and Russia that the VEH does not touch upon is the financial sector. Russia and Ukraine are the transition countries with the lowest level of bank intermediation (see Huang, Marin, Xu 2002). Banks practically did not lend to the real sector and firms used barter trade to finance production. Banks financed the government budget instead. With the collapse of the treasury bills market after the August 1998 crisis banks lending behavior changed drastically. They stopped to finance the government budget and have started to lend to firms. Huang, Marin, Xu (2002) argue that the financial crisis of 1998 helped these economies to get out of a banking development trap which explains why barter has dropped and why output has recovered in Russia and Ukraine for the first time since the fall of communism.

### **Flawed Testing Procedure**

Ickes claims that the empirical test is flawed because it rests on how accurately I separate purchases from sales in barter transactions. How can I distinguish buyers and sellers in barter deals when both sides of the transaction involve goods? I thought about this question quite a bit when I was designing the questionnaire. But when the questionnaire was tested in a pilot among a few firms, this turned out to be a non issue. Firms seldom had a problem to separate the sale from the purchase in a barter deal. The reason is that typically buying firms faced payment difficulties. The selling firm in fact gave a trade credit to the buyer. Therefore, there was a time delay between the “sale” and the “goods payment” in more than 50 percent of the barter transactions. The time period between the “sale” and the “goods payment” varied between 1 and 7 month in barter transactions in transition countries and between 6 month and 10 years in barter contracts in international trade (see Marin and Schnitzer (2002) for barter as trade credit). Because of this separation in time between the sale and the purchase in barter contracts (barter is a trade credit which is repaid in goods rather than cash) the firms involved in the deal (and we researchers) could easily identify the seller (the firm which gave a trade credit) and the buyer (the firm receiving the trade credit). This way, we could avoid an arbitrary classification of sellers and buyers which is Ickes main concern.

### References:

H. Huang, D. Marin, Ch. Xu (2002), Financial Crisis, Economic Recovery, and Banking Development in Former Soviet Union Economies, Centre for Economic Policy Research, Discussion Paper No 3734, London.

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