

Mission Impossible III: Measuring the Informal Sector in a Transition

Economy using Macro Methods¹

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Abstract

An easy and popular method for measuring the size of the underground economy is to use macro-data such as money demand or electricity demand to infer what the legitimate economy needs, and then to attribute the remaining consumption to the underground economy. Such inferences rely on the stability of parameters of the money demand and electricity demand equations, or at very least on a knowledge of how these parameters are changing. We argue that the pace of change of these parameters (such as velocity) is too variable in transition economies for the above methods of estimating the size of the underground economy to be applicable. We make our point by using Czech and other transition country data from the financial and electricity sectors.

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1. Introduction

In 2000 Friedrich Schneider and Dominik Enste published a major survey of how the underground economy is measured. Most of the essay gave itself over to analysing macro-methods for measuring the underground economy. The macro-method roots out the size of the underground economy from a functional form in which some observable macro variable depends on another observable macro variable and on the unobservable underground economy. The researcher infers the size of the underground economy by manipulating the functional form and plugging into the observable macro-variables information on their levels. For example, the “currency-ratio” method of estimating the underground economy holds that there is a stable ratio of currency in the legal economy to demand deposits and that this ratio enters into an equation relating the size of the underground economy to the size of the official economy. All one need know is the currency ratio in the official economy, then one plugs measured GDP into the above-mentioned relation, and out pops the size of the underground economy. An undergraduate in a first year macroeconomics course could do the exercise in a few minutes.

Schneider and Enste (2000) as well as many other authors catalogued in a recent OECD (2002) handbook on measuring the underground economy are aware of the problems with this method of measuring the underground economy “on the cheap.” The hunter of the underground economy must be confident that the functional relations he postulates between the dependent and independent variables is correct, and he has to believe that the parameter estimates with which he rounds out these equations (such as the ratio of

currency to demand deposits) are accurate and stable. Without such assurance the researcher finds himself measuring with a yardstick that changes in unpredictable ways.

What neither Schneider and Enste, nor any other researchers we are aware of for that matter, do not emphasize is that the instability of parameters used in macro-methods may be such as to throw off estimates of the transition underground economies to the point where such estimates are nearly useless both as indicators of the absolute size of the underground economy, and, more seriously, useless as measures of the change in the size of the underground economy.

Transition economies have many of the characteristics of a developed western economy, such as high education levels, and well-developed infrastructures, but these economies differ from developed western economy that they have gone suddenly from state-planning to a free market. Unlike underdeveloped economies, which might be quite stable, a transition economy's institutions are in a tumble. We shall review in detail two macro methods of estimating the underground sector---the money use and electricity consumption methods---and show that in a transition economy these methods are as reliable as compasses in a world with rapidly shifting poles. In particular

- 1) Money use methods include the currency demand ratio method and currency demand method. Both are nearly useless for transition economies because of intensive financial innovation during transition. The number of financial products liable to affect currency demand grow at a much greater pace in transition economies than they do in mature western economies. One is tempted to infer from the huge growth in currency demand in the Czech and Slovak Republics in the 1990's that the underground economy was booming. We will

show that growth in currency demand was related to factors that had nothing to do with the underground economy.

- 2) Using electricity consumption to measure the size of the underground economy is fraught with difficulties in transition economies where price deregulation, and the introduction of long-overdue technologies move electricity demand in ways difficult to attribute to underground economy growth.

We shall illustrate the above two critiques of macro methods with data from varying transition countries, but principally with reference to the Czech Republic. The Czech Republic is an interesting case because it can be argued that it has largely finished its transition and so that the last twelve years of its economic history supply us with a completed experiment. We focus on the electricity and currency ratio methods because we have assembled detailed information on these sectors. Our plan is to lay bare the assumptions underlying the two methods and then to show why these assumptions have little value for transition economies.

This paper does not pretend to be an exhaustive survey of the validity of all macro methods of measuring the underground economy in transition, but we believe the critiques we level at the electricity and currency ratio methods may be extended to other macro methods.

2. Electricity as a Measure of the Underground Economy

The electricity method of measuring the underground economy holds that the underground economy can be measured by using a single economic indicator, namely,

electricity consumption. Daniel Kaufman and Aleksandr Kaliberda (1996) are prominent champions of this method, though as Schneider and Enste (2000) point out Lizzeri was already using this method in 1979. To measure the size of the underground economy in transition countries Kaufman and Kaliberda began with the assumption that in 1989, most of these countries had an underground sector of 12% of GDP. They also assume that electricity consumption reacts with unit elasticity to economic growth. If an economy had GDP of \$100 billion in 1989, then it had an underground economy worth \$12 billion. If electricity consumption economy grew 10% in the next year this must mean the true economy grew by ten 10%. So the true economy's size would be \$123.2 billion in 1990. One would then subtract government estimates of the official economy to get at underground economy size in 1990. A variant on the Kaufmann-Kaliberda method that has gained popularity in recent years is Maria Lacko's (1996, 1998). Lacko also takes electric power consumption as a physical indicator of economic activity, but she focuses on household consumption of electricity, as she believes that household production is the major source of underground activity and that this activity is closely related to overall underground activity. She uses a two-stage regression to estimate the parameters of measurable variables, such as taxes and state-handouts, that might influence the growth of the underground economy. This allows her to rank countries by size of underground economy, but to get the actual size of these underground economies she, as with Kaufman and Kaliberda, needs to postulate some base year in which the size of the underground economy was known, and though her technique relies on an elegant econometric formulation relating electricity demand and the underground sector, she must rely on the assumption of a stable relationship between energy use and the underground economy in order to get an estimate of the underground economy's size.

What is less well-known about her method is that she must also assume stable parameters in the regressions relating electricity consumption and underground activity.

In Table 1 we present Kaufman and Kaliberda's as well as Lacko's estimates of the underground economy for four similar transition economies.

Table 1: Available estimates of the informal sector size for different methods

Period	1990	1991	1992	1993	1994	1995	Method	Source
Czech Republic	6.7	12.9	16.9	16.9	17.6	11.3	Electricity consumption	JKS 1996
	15.2		19.9		15.4		Household electricity Consumption	L1997
Hungary	28	32.9	30.6	28.5	27.7	29	Electricity consumption	JKS 1996
	26.7		34.8		31		Household electricity Consumption	L1997
Poland	19.6	23.5	19.7	18.5	15.2	12.6	Electricity consumption	JKS 1996
	30.8		33		32.8		Household electricity Consumption	L1997
Slovakia	7.7	15.1	17.6	16.2	14.6	5.8	Electricity consumption	JKS 1996
		11.2	14.7		22.3		Household electricity Consumption	L1997

Note: JKS stands for Johnson, Kaufmann, and Schleifer, and L stands for Lacko.

The table above documents that various methods yield diverse results. The variation in the estimates for the electricity consumption method and Lacko method amounts e.g. for Czech Republic to as much as 8,5%, which represents a 120% difference between the estimates.

Time consistency does not hold either. For Slovakia the first method estimates a decreasing evolution of informal sector activities between 1992 and 1995, whereas the second method shows an increasing size.

The differences in estimates consequently yield different rankings of the countries by estimated informal sectors. Table 2 below summarizes the discrepancies.

Table 2: Ranking by size of informal sector for two methods of estimation

Country	1990	1992	1994	Method	Source
Czech Republic	1	1	3	Electricity consumption	J,K,S 1997
	1	2	1	Household el. Consumption	L1997
Hungary	3	4	4	Electricity consumption	J,K,S 1997
	2	4	3	Household el. Consumption	L1997
Poland	2	3	2	Electricity consumption	J,K,S 1997
	3	3	4	Household el. Consumption	L1997
Slovakia	N/A	2	1	Electricity consumption	J,K,S 1997
	N/A	1	2	Household el. Consumption	L1997

The unsettling features of these electricity methods can be summarized as follows:

- Different variants of the method produce significantly different quantitative results for individual estimates.
- For an individual country the time trend of the estimated size of the informal economy differs for different methods used (see Czech Republic).
- Comparing the rankings of countries produced by different methods we find that the qualitative results of different methods vary also significantly.

Even if there were no sign of contradictions in electricity measures of the underground economy we believe this method's assumptions are so unrealistic for transition economies as to be inapplicable to these economies.

The most objectionable feature of these electricity methods that they postulate a one-to-one relation between electricity consumption and GDP. This is stylized-fact gleaned from stable, developed economies where there is a stable sectoral composition of GDP. Each sector has its specific electricity demand for \$1 of the GDP the sector produces. Developed economies have not known the sorts of price fluctuations and massive restructuring of energy-use technologies that economies in transition have known. There are four reasons to believe that the electricity method's assumption of a stable relationship between GDP and electricity use does not apply to transition economies. These reasons can be illustrated with reference to the Czech Republic and several other transition economies.

Consider electricity consumption between 1991 and 1997. Four major changes came upon this sector of the economy:

- 1) *There was a constant reduction in the share of total electricity consumption going to the primary sector*

Table 3 below shows that in transition economies primary sector energy use fell radically during the 1990's whereas measures for the EU, the OECD, and the US show almost no change in primary sector energy use. The challenge this poses for the Kaufmann-Kaliberda method is that in such a shifting environment it is hard to pretend that there is a stable one-to-one relationship between GDP and energy use. Energy use fell in the transition countries listed in Table 3 because these countries decided to move

away from their communist heritage of heavy industrial production. For example, between 1990 and 1997 iron and steel production in the Czech Republic fell from 21 million tonnes to six million tonnes? The drop in industrial production in turn lowered demand for railway transport, which was heavily dependent on electricity. For example, in the Czech Republic in 1990 railways transported 170 billion tonnes of goods whereas trucks carried 173 billion tonnes. In 2001 railways were carrying only 97 billion tonnes whereas trucks were carrying 440 billion tonnes. We may find that in the secondary sector electricity is used to provide services which can actually reduce GDP, such as for example the use of banking machines that replace human treatment at the bank counter.

Table 3. Energy intensity of GDP

	EU			OECD			Czech Republic			Hungary			Poland			USA		
	<i>TFEC</i>	<i>TPES</i>	<i>LAG</i>	<i>TFEC</i>	<i>TPES</i>	<i>LAG</i>	<i>TFEC</i>	<i>TPES</i>	<i>LAG</i>	<i>TFEC</i>	<i>TPES</i>	<i>LAG</i>	<i>TFEC</i>	<i>TPES</i>	<i>LAG</i>	<i>TFEC</i>	<i>TPES</i>	<i>LAG</i>
1989	0.16	0.23	1.00	0.20	0.28	1.21	0.39	0.51	2.18	0.30	0.41	1.75	0.36	0.56	2.39	0.24	0.36	1.53
1990	0.16	0.23	1.00	0.19	0.27	1.20	0.37	0.50	2.16	0.29	0.39	1.72	0.32	0.52	2.25	0.24	0.35	1.51
1991	0.16	0.23	1.00	0.19	0.28	1.19	0.36	0.51	2.18	0.31	0.43	1.85	0.34	0.55	2.35	0.24	0.35	1.52
1992	0.16	0.23	1.00	0.19	0.27	1.20	0.35	0.53	2.32	0.28	0.40	1.76	0.33	0.53	2.31	0.23	0.35	1.54
1993	0.16	0.23	1.00	0.19	0.28	1.20	0.34	0.51	2.22	0.28	0.42	1.82	0.34	0.53	2.30	0.23	0.35	1.52
1994	0.16	0.22	1.00	0.19	0.27	1.22	0.32	0.47	2.13	0.27	0.39	1.76	0.31	0.48	2.15	0.23	0.34	1.54
1995	0.16	0.22	1.00	0.19	0.27	1.22	0.31	0.45	2.04	0.27	0.40	1.79	0.30	0.46	2.08	0.23	0.34	1.52
1996	0.16	0.23	1.00	0.19	0.27	1.19	0.28	0.45	1.99	0.27	0.40	1.76	0.30	0.47	2.07	0.22	0.33	1.47
1997	0.16	0.22	1.00	0.18	0.26	1.20	0.27	0.45	2.04	0.25	0.37	1.70	0.28	0.42	1.92	0.21	0.32	1.47
1998	0.15	0.22	1.00	0.18	0.26	1.19	0.27	0.44	2.05	0.24	0.35	1.63	0.25	0.37	1.72	0.20	0.31	1.43

Source: International Energy Agency, Energy Balances of OECD Countries (Paris: OECD, 2000), See also Key World Energy Statistics 2003

TFEC (Total Final Energy Consumption) in toe per USD 1,000 of GDP using 1990 prices and purchasing power parity

TPES (Total Primary Energy Supply) in toe per USD 1,000 of GDP using 1990 prices and purchasing power parity

LAG - Ratio of TPES for a given country and the same value for the EU

2) *Industry was rapidly finding new ways of reducing its energy consumption by adopting innovative production techniques.*

When a sector of the economy is moving quickly to change its technology, one can no longer believe in a one-to-one link between electricity consumption change and GDP change. One may well find a fall in electricity consumption is associated with a rise in GDP, if, for example, the steel industry adopts more efficient smelting techniques that produce more output of a higher grade, with less energy. Using electricity methods one would find that the underground sector has shrunk, even though nothing need have changed in the underground sector. We have no direct measure of the adoption of more efficient production techniques. Instead we present Table 4 which shows that even though Czech electricity output was increasing, noxious emissions dove.

Table 4. Waste and electricity production

Year	SO2 (kT)	NOx (kT)	CO (kT)	Dust (kT)	Production of Electricity (TWh)
1980	2148	731	894	1267	53
1985	2161	795	899	1015	58
1990	1876	742	891	631	63
1991	1776	725	1101	592	61
1992	1538	698	1045	501	59
1993	1419	574	967	441	59
1994	1278	434	1026	355	59
1995	1091	412	874	201	61
1996	946	432	886	179	64
1997	700	423	877	128	65
1998	443	413	767	86	65
1999	269	390	686	67	65
2000	266	400	650	56	73
2001	251	332	649	54	74

Source: Czech Statistical Office, Ministry of Environment

The noxious emissions noted above come from electricity generation and industrial production. Part of the dive in pollution came from the Czech parliament's adoption of EU environmental regulations far ahead of the prescribed deadlines. It might be argued that environmental compliance leads to less efficient methods of producing electricity, but this ignores that in the period above the Czech Republic transformed itself into a net exporter of electricity. This means that industry was producing more output with less electricity.

3) *Households at first increased then decreased their demand for electricity.*

Households play a special part in Lacko's analysis. She maintains that an important part of informal activities are carried out in households. Washing clothes for cash, cooking for small foodstands, drilling, sawing, lighting and heating for workers in a basement or a garden shed all have to be powered by electricity. We believe it is reasonable to expect that in transition economies the household sector's contribution to the underground economy would be high. Setup costs for household production are low. Before large-scale private industry could put up its towers and factories and spread its networks, the household sector powered transition economies.

It is daring to leap from the above observation to the conclusion that the electricity consumption of households is a good proxy for their underground activity. During the early 1990's, citizens of the Czech Republic massively converted from heating with domestic coal ovens to heating with gas and electricity. Czechs also began to invest heavily in durables such as refrigerators, washing machines, dishwashers, televisions, and home computers. These upgrades to domestic life may account for the part of the rise in household consumption of electricity during transition period. Table 5 indicates different patterns of price liberalization of electricity, gas or heating. The steep rise in

electricity prices in 1997 may account for the downward trend in electricity consumption later on. None of these changes in the way households reorganized themselves need have anything to do with the growth of the underground economy. Lacko's method cannot cope with these rapid structural changes because of its iron adherence to the belief in a one-to-one relation between legitimate GDP growth and electricity consumption.

Retooling of household appliances is not the only reason for shifts in household demand for electricity. The 1990's brought large fluctuations in energy prices as the following table shows:

Table 5. Growth rate (in percent) of household price indexes

Indexes	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Electricity	69.7	0.0	5.1	9.0	12.0	14.8	15.3	44.1	0.0	15.1
Natural gas	126.7	0.0	6.5	10.0	10.5	15.2	15.2	47.6	0.0	15.1
Other heating (coal, etc.)	216.1	3.2	25.5	16.5	17.3	10.3	34.4	22.0	2.9	4.3

Source: Czech Statistical Office, Authors' computations

- 4) *Weather*. Sharp swings in electricity consumption can arise in times of extreme weather. While this is not a critique of the Lacko method that applies solely to transition economies, we wish to point this out as a general weakness of the Lacko method. Consider Table 6 below which shows average temperatures and domestic energy consumption in the Czech Republic over the period 1997-2001.

Table 6. Consumption of electricity and average temperature in winter months

Czech Republic	1997	1998	1999	2000	2001
Energy (GWh)	48007	47486	46800	47958	49906
Average winter temperature	1.68	1.8	1.64	2.8	0.68

Hungary	1997	1998	1999	2000	2001
Energy (GWh)	10042	9679	9737	9792	10130
Average winter temperature	2.9	3.96	3.52	4.54	2.14

Poland	1997	1998	1999	2000	2001
Energy (GWh)	121311	121172	119624	121354	122166
Average winter temperature	0.52	0.18	1.06	2.36	-0.18

Source: Local Statistical Offices and Institutes of Hydrometeorology, Authors computations
 Note: CR, PL total energy consumption, HU household consumption

The 1997 figures for domestic energy consumption came during an abnormally cold winter. The low figures for domestic consumption came during an abnormally warm winter. It would be hard to argue that such variations in energy consumption have anything to do with variations in the size of the informal sector. For longer periods than shown in the above table we get the following significant correlations between temperature and energy use during the period 1994-2001: -0.55 for the Czech Republic, -0.73 for Hungary, -0.31 for Poland.

3. Monetary approach - Currency Ratio and Currency Demand Methods

As mentioned earlier, researchers have applied the currency ratio and money demand methods to measure the size of the informal sector. Almost all these studies however focus either on developing countries or on developed countries. We are aware of no single study which would have used currency methods to estimate the size of the underground economy in transition countries. Perhaps researchers are aware of the weakness of currency methods, or perhaps they have not got around to applying this method to transition economies. Whatever their reasons, we believe such an effort would be as misplaced as are efforts to measure the size of the underground economy by electricity methods. To understand our misgivings about currency methods we must first have a look at how they work.

The currency ratio method, whose current popularity can be dated back to Gutmann (1977) measures the size of the underground economy by starting with the following simple relationship

$$\frac{Y_I}{Y_O} = \frac{C_I}{C_O + D}$$

Where Y_I represents total output of informal sector, Y_O output of official sector (O and I subscripts denote “official” and “informal”), C denotes total currency (i.e. $C=C_O+C_I$), and $D=D_O$ denotes total demand deposits equal to demand deposits in official economy since the method assumes that in informal economy there are no transactions in demand deposits. What the above equation says is that the ratio of the size of the informal to the formal economy is equal to the ratio of the monies used in either economy. No demand

deposits appear in the informal economy because of the lack of a banking sector there. The problem in getting at the size of the informal economy from the above equation is that we have no information on how currency is divided between the sectors. We can play with the above equation to give the following:

$$Y_I = Y_O \frac{C - k_O D}{k_O D + D}$$

where k_O is the ratio of currency in the official economy C_O to demand deposits D in official economy. Notice what this transformation has achieved. We know total currency C and demand deposits D , as we know the size of the official economy Y_O . All we need to get at Y_I from the above equation is an estimate of k_O . In order to obtain estimate of k_O one has to assume that in some initial period the size of informal economy is zero, and therefore that observed total currency equals currency in official sector. Such an assumption allows us to calculate k_O in the initial period. We then assume that this ratio is constant for the years that follow.

Guttman's currency ratio-method has a close ally in Tanzi's (1983) currency-demand method. The essence of this method is to estimate a money demand equation using convention variables and to include variables that would be related to the underground economy, such as the level of taxes and the complexity of the tax system. One then calculates the percentage of variation in money demand explained by these non-conventional variables in order to get at how much money is being used by the underground economy. To get at the size of the underground economy one then multiplies this underground money demand by the velocity of money. Here the key assumptions are of a constant velocity of money and of proper specification of the money demand equation.

Both currency methods described above have problems that parallel electricity methods. The assumption of a base year when the size of the underground economy was known, combined with the assumption of the constancy of some parameter seem like *deja vue* from the researches of Kaufmann and Kaliberda (1996) and Lacko (1997).

Is there a base year for any transition economies, in which we have data on currency and demand deposits in an economy without an informal sector? The answer is an unequivocal “no.” Researchers are frank about this limitation of the currency ratio method and see it as a major obstacle to measuring the level of the informal sector. Problems of estimating the informal sector using money-methods are compounded when we consider that the currency-demand deposit ratio and velocity are bound to be very unstable for transition economies. Instability in money demand is due to catch-up effects in the banking sector of transition economies. Many previously non-existent financial services and products find their way to market in a brief time. The pace of financial innovation may be much higher (though the level is no more advanced) than in developed economies. Financial innovation can destabilize money demand as these forces buffet the motives for holding cash. To see this more clearly, consider the following. In the pre-transition period a handful of state-owned savings and loans type banks made up the banking sector. Due to a lack of competition the scope of banking services was very limited. Following transition foreign banks entered financial markets and introduced competition. Competition narrows the gap between the level of financial services provided in transition and developed economies. Obviously, some products such as cheques were never introduced in transition countries, as they were already outdated and superceded by credit and debit cards. .

Money demand in transition countries can also change for the following reasons:

1) A lack of credit is a feature of early transition economies and forces people to hold cash. As credit widens (see Table 7 showing the growth in credit cards), cash holdings fall. There is also a commercial side to the instability in money demand. Bank failures during transition can force agents to change their cash-holding strategies towards holding increasing amounts of cash. At the same time transition economies experience great ups and downs in taxes. These taxes will in turn move people either to transact in cash to avoid their obligations to government.

Table 7: Year to year increases in the number of EC and MC (credit&debit cards)

Countries	96/95	97/96	98/97	99/98	00/99
Czech Rep.	58%	48%	33%	29%	129%
Hungary	149%	85%	70%	30%	24%
Poland	467%	143%	76%	153%	54%
Slovakia	31%	22%	13%	54%	31%
Total EC/MC	15%	18%	20%	13%	13%

Source: EC and MC statistics, authors' computation

2) At times the real interest rate was negative in several transition countries, including in the Czech Republic. A negative interest rate can force people out of demand deposits into cash holdings.

3) Artis and Lewis (1974) argue that in the UK in 1974, due to the changes in the banking regulations brought about by the *Competition and Credit Control Act*, the currency to demand deposit ratio changed in ways that are hard to measure. The same must be true of transition countries where regulations were in a greater flux than they were in the UK. Many transition countries changed their

regulations quite frequently, slowly introducing deposit insurance (with changed upper limits for the amount insured). A prominent example is the change in the minimum reserve requirements in the Czech Republic as Table 8 shows:

Table 8. Czech Republic Minimum Reserve Requirement Rates 1992-2002

	Rates (percent) effective by:									
	10/92	2/93*	7/93	8/94	8/95	8/96	5/97	8/98	1/99	10/99
Demand deposits	9	9-12	9	12	8.5	11.5	9.5	7.5	5	2
Time deposits	3	3-4	3	12	8.5	11.5	9.5	7.5	5	2

* Lower rate was used for banks with deposits up to 25 billion CZK, otherwise the higher rate was applied. Source: CNB, Monetary indicators.

- 4) Almost all transition countries succumbed to banking crises in the 1990's. The loss and return of depositor confidence was bound to at first raise, and then depress the currency to demand deposit ratio in ways that are hard to measure. We can state that during two years (starting in the second half of 1995, ending in 1997) Czech banks saw an exodus of deposits, which can be attributed to a lack of trust in banks, after several bank failures. After several central bank interventions, the credit of banks was restored, and withdrawn money appeared in deposits again (giving an enormous rise in annual savings ratios in 1997 or early 1998).

To get a feeling for the volatility of currency to demand deposit ratios, consider Figure 1. The pattern of currency to demand deposit ratios is strikingly diverse for the transition countries. Whereas in the Czech and Slovak Republics the ratio increases with time, in Hungary and Poland the time trend is ambiguous. In the case of Poland the ratio is significantly volatile. In contrast, the figures for France and Canada, countries that are out of their transitions, are very stable. This supports the argument against the applicability of the macro method to transition economies. Especially in case of Hungary and Poland it is clear that volatility in the currency to demand ratio is not explainable alone by a surge in the informal sector but rather by shocks in the monetary and financial sectors.

Special attention should go to trends in the Czech and Slovak Republics. The time trends of both countries seem to be very close to each other, with a shock in Slovakia in 1995, which caused a temporary decrease of cash usage. In 1995 Slovakia introduced officially monitored cash registers in order to eliminate tax evasion and consequently fatten state coffers. Such a regulatory change is likely to show up in temporarily lower demand for cash while the participants in informal economy accommodate this shock.

Figure 1 - Currency to Demand ratios, Visegrad countries, France and Canada

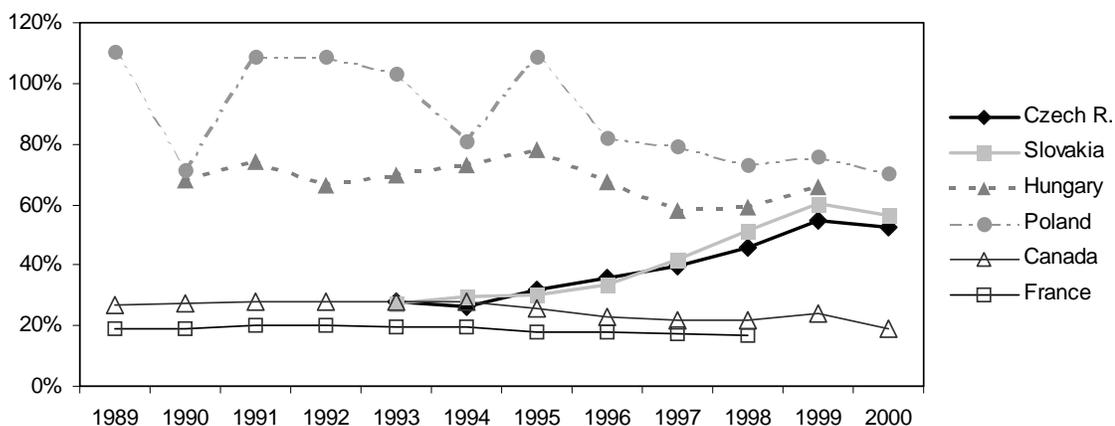


Table 9: Currency to demand deposits ratio (in percentage points)

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Czech Republic					29.2	27.2	33.5	37.5	39.9	46.1	54.7	52.6	44.8
Hungary	94.2	70.1	76.6	67.7	72.4	74.1	79.0	68.1	58.5	59.7	67.0	59.2	59.7
Poland	114.4	72.7	109.9	109.9	103.4	80.9	109.6	82.1	79.2	72.9	76.2	70.5	73.6
Slovakia					27.7	29.6	30.5	33.6	41.8	51.4	60.1	56.4	56.0

Source: IFS database. [C=currency outside domestic banks]

Conclusion

Measuring the underground economy is one of the last great frontiers of economics.

This is not a bold statement, but rather, a lament. Nearly a thousand years ago the Norman conquerors of England did away with the Danegeld and replaced it with a tax based on the Domesday book. The “book” was a catalogue of the tax base of England. The Domesday book is, in the minds of the authors of the present work, one of the reasons for which England grew to be a powerful and just nation. A proper measurement of the tax base allows governments to distribute evenly and efficiently the burden for financing public projects. Economies in transition have no Norman

conquerors that would insist on establishing an efficient system of taxation. There can be no will to spread taxes evenly if there is no reliable measure of who pays taxes and who evades these taxes.

“Macro” measures of tax evasion suffer two flaws. They do not finger who it is that evades, and they do not provide a consistent and reasonable estimate of the magnitude of evasion. Economists understand that everything has a price and that talk is cheap. Macro estimates of the underground economy are cheap-talk. An undergraduate student wishing to finish his term-paper on tax evasion can, using macro techniques, trot out estimates of the underground economy with a few keystrokes on his computer. We hope to have shown that macro estimates of the underground economy rely on assumptions that are ungrounded for mature economies and wildly unrealistic for transition economies.

Our critique is not original. Practitioners of macro-methods for estimating the underground economy understand that their estimates rely on the realism of their model and on the constancy of their assumptions about key parameters in their model. We have shown that assumptions about key parameters in macro models, such as the velocity of money and the structure of electricity demand, are doubtful for mature economies and metaphysical for transition economies. Measuring the underground economy in transition economies may be an impossible task. We believe that a more fruitful avenue for research is to identify not how much is evaded, but to identify who evades. Surveys of evaders, such as the present authors have championed, are costly, but may reveal to governments how to squelch evasion, even if governments do not know the magnitude of evasion.

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She has a new book out, *Mission Economy: a moonshot guide to changing capitalism*. Mazzucato was briefly an economic adviser to the UK Labour Party under Blair. The mission for overcoming the COVID pandemic has already shown which sector has taken the risks and which will gain the rewards- as did the Apollo mission. Mazzucato reckons that a fundamental reappraisal of the role of the public sector is required that goes beyond the traditional "market failure" framework derived from neoclassical welfare economics to a "market co-creating" and "market-shaping" role. "It is not about fixing markets but creating markets". An easy and popular method for measuring the size of the underground economy is to use macro-data such as money demand or electricity demand to infer what the I. Suggested Citation: Suggested Citation. Hanousek, Jan and Palda, Filip, *Mission Implausible lii: Measuring the Informal Sector in a Transition Economy Using Macro Methods* (May 2004). Available at SSRN: <https://ssrn.com/abstract=552124> or <http://dx.doi.org/10.2139/ssrn.552124>. Jan Hanousek (Contact Author). Some methods for estimating the informal sector, and characterizing the cyclical behavior thereof, from Ceyhun Elgin, Ayhan Kose, Franziska Ohnsorge, and Shu Yu (2019). Source: Elgin, et al. (2019). In advanced economies, the size of the informal sector has declined to about about 18% of official GDP, using the MIMIC method. Across Latin America, most people work in the informal economy. Lockdowns condemn those people to hunger in crowded households. I never see their leaders/unions interviewed in the media, except for in Bolivia where the MAS govt listened to people & didn't impose such measures. 12:52 PM Mar 23, 2021. Lockdowns can work in rich countries that can pay people to sit at home.