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## A Short “Second Best” Narrative of the Ukrainian Economy

### Una Breve “Segunda Mejor Opción” de Narrativa de la Economía Ucraniana

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#### Abstract

This article maintains that in our second best world, neither corruption nor the informal sector and political instability can be held responsible for the moderate performance of the Ukrainian economy. Corruption in Ukraine appears to act as “grease in the wheels of the economy”, while informal activities add to the welfare of its people. And, no connection of political instability with economic performance may be contemplated conclusively. The cause of the inefficiency of private and public investment is traced to poor public governance. Massive infrastructure investments can become the remedy (i) in the context of public-private partnerships with the collaboration of the subnational governments, and (ii) in financing the projects through domestic monetary expansion, under a macroeconomic policy viewpoint emphasizing the monetary rather than fiscal side of the venture. The proposed monetary expansion can only work only under the proper multiplier, accelerator, and capital accumulation link. Special care should be taken to improve the industrial organization of the inefficient banking sector.

*Keywords:* Ukrainian economy, Second-best theory, Infrastructure investments, Monetary expansion

#### Resumen

Este artículo manifiesta que en nuestro mundo de la segunda mejor opción, no se puede atribuir ni a la corrupción ni al sector informal y a la inestabilidad política el rendimiento limitado de la economía ucraniana. En Ucrania, la corrupción parece funcionar como “lubrificante para las ruedas de la economía”, mientras las actividades incrementan el bienestar de su pueblo. Además, no se puede contemplar de manera definitiva ninguna conexión entre la inestabilidad política y el rendimiento económico. La causa de la ineficacia de las inversiones particulares y públicas resalen a la gobernación pública ineficaz. Las inversiones masivas en infraestructuras pueden constituir un remedio (i) en el ámbito de partenariados entre los sectores públicos y privados con la colaboración del gobierno a nivel sub-nacional y (ii) financiando los proyectos mediante una expansión monetaria interior, desde un punto de vista de política macroeconómica que se enfoque en el aspecto monetario de la inversión más que en el fiscal. La expansión monetaria propuesta puede funcionar únicamente con el enlace correcto entre multiplicadores, aceleradores y la acumulación de capital. Se debe cuidar en particular de mejorar la organización del sector bancario actualmente ineficiente.

*Palabras clave:* Economía ucraniana, teoría de la segunda mejor opción, inversiones en infraestructura, expansión monetaria

**JEL Codes:** E03, E26, E63, H11, H54, H83, I30, J01, O10, O52, P20

*In own hut - there's own truth, own power, own will*

Taras Shevchenko, 1844, "The Paternal Hut of T. H. Shevchenko in the Village of Kyrilivka"

## **1. Introduction**

The five factors accounting for the moderate performance of the modern Ukraine economy are its corruption, informal sector, political instability, poor public governance, and inefficient private and public investment (see e.g. Hubarieva et al. 2016, Kuzio 2016, Grazhevskaya et al. 2015, Vinnitsuk and Ziukov 2013). Economic performance is deemed to be moderate from the viewpoint of the average performance in Europe and Central Asia as illustrated by Table A1 in the Appendix. Size-wise, corruption, informal sector, political instability, poor public administration, and investment project inefficiency in Ukraine are undeniably in excess relative to OECD standards, indeed. These five phenomena do have their share in the weak performance of Ukrainian economy. Yet, in our second best world, there is "no evil without good" the ancients used to say, and it is argued herein that the "good" outweighs the "evil" for at least the first three of the above five factors as follows.

About corruption, there is one thesis that it is "sand in the wheels of growth" (see e.g. Meon and Sekkat 2005), and there the opposite thesis that it is "grease in the wheels of growth" (see e.g. Beck and Maher 1986, Lien 1986, Huntington 1968, Leff 1964): Simply, graft speeds up investment and subsequently, growth, raising thereby efficiency in the second best world of ill-functioning institutions. Actually, corruption and competitiveness go almost hand in hand in Figure A1 of the Appendix, which corroborates the "grease" viewpoint not only for Ukraine but for other economies as diverse from each other as Russia, Germany, Greece, Japan, China, UK, and Australia are. The presence in general of a positive correlation between corruption and growth is not something new as it has been documented in a number of Asian economies under the term "Asian paradox" (Vial and Hanoteau 2010). We are living in a second best world and we should be hearing its music however unpleasant the sound may be...

Also, about the informal economy in Ukraine, what strikes one from the detailed account of this economy in the doctoral thesis of Onoshchenko (2012) is the large discrepancy between registered and unregistered unemployment. For example, total unemployment in Mykolayiv region was 96018 persons but only 2939 were registered as such in 2010, which attests to the conclusion that: "Informal employment is... an extensively used form of work ... that positively contributes to economic and social development, acting both as an important seedbed for enterprise creation and development and as a primary vehicle through which community self-help is delivered in contemporary Ukraine" (Williams et al. 2007, 402). Indeed, the informal sector is an all-private sector and its composition changes with its size to be meeting the *konjunktur* of the times given the size and content of the public sector. For example, what can one make out of the conclusion drawn from Table A2 in the Appendix that the percent of official firms facing competition from informal firms in high-income non-OECD economies was higher than that in Ukraine in 2013? The informal economy is embedded in any economy as a natural outgrowth of human nature, it competes with the formal economy, and the intensity of the competition depends on the *konjunktur*. It assists rather than retards the performance of the economy, and what really Table A2 captures is not a quantitative difference across regional economies but a qualitative facet of the different states of the economy prevailing in these regions.

Let us next come to the matter of political instability. Prompted by the post-Euromaidan events in East Ukraine, a plausible indicator of this instability would be the terrorism index. The similarity of the pattern of this index with the pattern of the debt-to-GDP ratio on the top of the left-hand side of Figure A2 in the Appendix, is striking but the same holds more or less for other countries presented there. Instead, growth is closely related to the government budget as depicted on the top of the right-hand side of the same Figure. One is thus inclined to infer that to the extent that the budget reflects the instability of the political system regardless the issue of terrorism, political instability does influence the course of economic activity critically. Yet, the same close relationship between annual growth and budget is the case for other countries too, as depicted in the same side of the Figure. Hence, the budget crystallizes all sorts of concerns coming secondarily only out of political instability. And, as Figure A3 shows, the budget does relate to corruption too, which again is not a feature special to Ukraine. As Bardhan (2006, 341) notes: “Even in democratic countries where many top bureaucrats are political appointees, not career civil servants, corruption is sometimes hierarchically organized, so that political and bureaucratic corruption are interlocked.” In sum, political instability in Ukraine is not a factor that can be held critically responsible for the course of the economy.

## 2. The Problem and the Proposed Remedy

Nevertheless, budget considerations prompt immediately the issue of the quality of public governance, since one of the good-quality desiderata is regulation and policymaking encouraging the operation of the market as a means of resource allocation. This has not been the case in Ukraine if one judges based on Figure 1, which shows that whenever the worker has a pay rise, the tax authority comes to appropriate it (Figure 1A) to give it back through the government budget (Figure 1B). This government attitude reflects past, Soviet era practices, and distorts resource allocation, encouraging investment in consumer rather than capital goods (Figure 1C) under increasingly favorable conditions for the investor (Figure 1D). The whole picture is one of a command-economy treatment of the worker and of a neoliberal call to the businessman, especially if one notes the increasing profit margin implied by the comparison of Figures 1A and 1D. Some might argue that this increase is the risk premium accompanying political instability; perhaps, but, there is not instability other than the one the businessman sees to justify profit increase.

Figure 1A: Income (blue line) and Income Tax (dotted line): 2003-2016



Figure 1B: Consumer Spending (blue line) and Government Spending (dotted line): 2003-2016



Figure 1C: Consumer Spending (blue line) and Investment (dotted line): 2003-2016

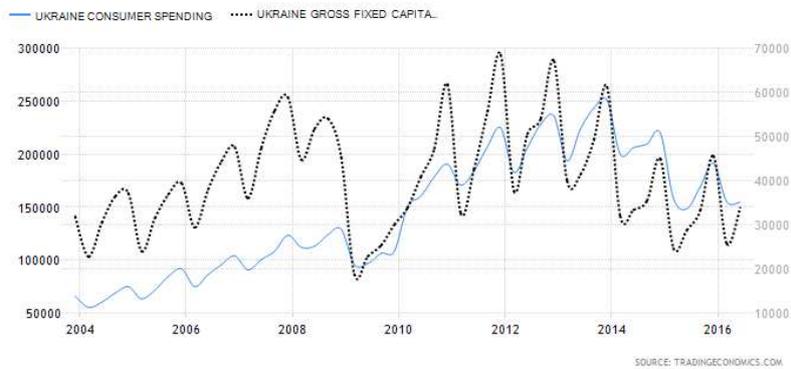


Figure 1D: Investment (blue line) and Corporate Tax (dotted line): 2003-2016



Anyway, the government has to address at least the problem of resource misallocation, which brings up the second of the broad desiderata for good-quality public governance, namely the government’s engagement in public-private partnerships (PPPs) to invest in the massive infrastructure projects needed by Ukraine. This, “reconstruction” task has to be undertaken in collaboration with the regional governments too, to alleviate in addition the regional asymmetries in the country (Kallioras and Tsiapa 2016). Ukraine has to proceed towards that direction “standing on its own feet” for two reasons. First, globalization has made financial investment much more profitable than real investment (Woolley 2010), limited only foreign investment should be anticipated, and if it does come it will not without the restraints implied

by globalization and the subsequent limited usefulness for the national economy (Kramar et al. 2015). And second, reliance on foreign borrowing and international institutions like the IMF, only austerity will bring to the country, which is widely rejected as sound policymaking (Krugman 2015, Fatás and Summers 2015).

The way infrastructure investments should be conducted – investment that will subsequently attract more private investment in good quality consumption and production goods, weaken corruptive and informal activities “naturally” and not coercively, increase employment, raise tax revenue, and foster political stability – is outlined comprehensively in documents like those by IBRD (2013, 2016), and OECD (2014). This is also the way that the third desideratum for quality public administration would be justified; the way of having efficient top-down methods from the governments to the central and local bureaucracy. The focus herein is to clarify what Ukraine “standing on its own feet” means. It means, first and foremost, that unlike Eurozone countries and at a lesser extent the other EU countries, Ukraine has in its own hands the powerful policy instrument of printing money. It can use this weapon to conduct expansionary monetary policy along the lines prescribed by the pre-WWII Chicago School version of the quantity theory of money as, for instance, is spelled out in DeLong and Summers (2012), and Tavlas (2015). In a few words, investment projects should be financed by issuing domestic currency *Hryvnia* (UAH) for the sake of boosting the spending of the public primarily and only secondarily for the fiscal dimension of the undertaking, (which is the opposite of what Keynesians would suggest). The increased tax base of the subsequent growth will help cover the current deficits in the future.

Also note that the monetary expansion proposed here, is expected to lower interest expenses, which will raise (i) net cash flow and strengthen the financial position of firms, and (ii) the value of the borrower’s collateral and hence, borrowing ability. But, this will be the case only if the banking system is efficient. A healthy bank system is a prerequisite for the success of the proposed policy venture and measures should be taken to better bank industry efficiency, since according to Isik et al. (2016, 1), in Ukraine: “... [the] bias for size causes large banks to suffer from decreasing returns to scale and small banks from idle capacity”. Banks are financial intermediaries, important for the transmission of monetary policy, and can upset the whole reconstruction scheme if they are not in the position to pass money policy changes on to their customers in an efficient manner.

Even so when “...in the absence of trust and functioning capital markets barter is a self-enforcing response to imperfect input and financial markets” as Marin et al. (2000) would caution based on evidence about barter exchange in Ukraine. There ought to be a renewed quantitative mapping of this sector of the informal economy to avoid repeating those pitfalls in the proposed expansionary monetary policy mentioned in Marin et al. (2000). And, of course, quantitative research encompassing all key at least aspects of this policy, including the subject of fiscal multipliers in Ukraine (Mitra and Poghosyan 2015), would be important in developing some standards against which the macroeconomic performance of policy intervention could be measured, because mistakes like those of the IMF when measuring the multipliers in Greece (Blanchard and Leigh 2013) would be highly costly for the country. Macro-econometric models like those by Nikolaychuk and Sholomytskyi (2015), and Stavyt'skyi and Martynovych (2012) can form the basis of more elaborate ones but focusing on the merits of the proposed policy and not on inflation targeting as they currently do, with only a passing concern about the demand-side of the economy.

### 3. Formal Considerations

Formally, following Werner's (2012) approach to the quantity theory equation, let the total nominal money stock,  $M$ , be decomposed into one part used in the official sector of the economy,  $M_f$ , and the remaining part,  $M_u$ , financing informal economy operations so that,

$$M = M_f + M_u \quad (1)$$

Let, also, the price indices,  $P_f$  and  $P_u$ , and outputs,  $Y_f$  and  $Y_u$ , corresponding to these two sectors, be related to  $M_f$  and  $M_u$ , through the behavioral parameters  $k_f$  and  $k_u$ , respectively, as follows:

$$M_f = k_f P_f Y_f \quad \text{and} \quad M_u = k_u P_u Y_u \quad (2)$$

Consequently,

$$M = k_f P_f Y_f + k_u P_u Y_u \quad (1')$$

Coefficients  $k$  are inverses of money circulation velocities, which exceed one and hence  $0 < k < 1$ . Since informal activities are supposed to have to remain hidden from the authorities, financed thereby mostly in terms of cash, the velocity of the circulation of money in the hidden economy is higher than that in the official economy (Tanzi 1983), implying:  $k_u < k_f$ . Inserting (2) in (1), and taking rates of growth,

$$m = \frac{k_f P_f Y_f}{M} (p_f + y_f) + \frac{k_u P_u Y_u}{M} (p_u + y_u) \quad (3)$$

where the lower-case letters (except  $k$ ) denote rates of growth. (3) may be rewritten as follows:

$$m = p_f + y_f + \frac{M_u}{M_f} (p_u + y_u) \quad (3')$$

Suppose now that the inflation rate which is targeted by monetary policy is  $\hat{p}_f$  so that all else being the same for the policymaker who has to operate based predominantly if not wholly on official economy data,  $m = \hat{p}_f + y_f$ . But, when this money growth is inserted in (3'),

$$\hat{p}_f - p_f = \frac{M_u}{M_f} (p_u + y_u) \quad (4)$$

So, if the inflation rate is targeted in response to inflationary pressures in the official economy, then  $\hat{p}_f - p_f < 0$ , which implies deflation/contraction of the informal sector;  $p_u + y_u < 0$ . If, on the other hand, deflation/recession prevails in the official economy and a mild inflation,  $\hat{p}_f - p_f > 0$ , is thought that it will help rekindle the economy, inflation targeting will help rekindle the informal sector as well.

Given now the presence of inflationary pressures in Ukraine and its large informal sector, a policy of inflation targeting appears to be the proper one. But, Ukraine is also a country with extensive unemployment, underconsumption, and underinvestment as well. And, the present call for massive infrastructure investments from the perspective of the quantity theory of money to boost consumption demand too, is supported by the following considerations. Let

the expenditure side of  $Y_f$ 's composition be  $Y_f = C + I + G + X$ , where  $C, I$ , and  $G$ , stand for real consumption in the official sector, private investment in the same sector, and government expenditure;  $X$  denotes infrastructure investments under PPPs, separate from private investment and other government outlays. The income side is  $Y_f = C + S + T$ , where  $S$  is saving and  $T$  is taxes. Hence,  $S + T = I + G$ , or letting  $C = cY_f, S = sY_f$ , and  $T = \tau Y_f$ , with  $c + s + \tau = 1$ , so that  $(s + \tau)Y_f = I + G + X \Rightarrow$

$$Y_f = \mu(I + G + X) \quad (5)$$

where  $\mu = 1/(s + \tau)$  is the expenditure multiplier;  $\tau$  is presumably the average tax rate. It follows in turn that,

$$y_f = \frac{\mu I}{Y_f} i + \frac{\mu G}{Y_f} g + \frac{\mu X}{Y_f} x \quad (6)$$

where  $i, g$ , and  $x$ , are the official growth rates of  $I, G$ , and  $X$ , respectively. Letting  $\Phi$  and  $\varphi$  denote capital in the official economy and its growth rate, respectively, identifying  $i$  with  $\varphi$ , and adopting for convenience an accelerator model of private investment,  $I = \sigma \Delta Y_f \Rightarrow I/Y_f = \sigma y_f$ , (6) becomes,

$$y_f = \frac{\mu G g + \mu X x}{(1 - \mu \sigma \varphi) Y_f} \quad (6')$$

Inserting next (6') in (3') yields,

$$m = p_f + \frac{\mu G g + \mu X x}{(1 - \mu \sigma \varphi) Y_f} + \frac{M_u}{M_f} (p_u + y_u) \quad (3'')$$

It is clear that a policy of inflation targeting, setting  $m = \hat{p}_f + [\text{right} - \text{hand side of } (6')]$ , would not change the conclusions reached earlier about the consequences of this policy.

Instead, let us introduce in the discussion public debt, which is defined on the basis of measured quantities, i.e. of official economy quantities. We want debt, of course, to be sustainable so that in line, for instance, with Ley (2010), if the debt is  $D$ , the real interest rate is  $r$ , and primary government-budget-balance change is undesirable, then

$$m = \left( \frac{r - y_f}{1 + y_f} \right) \frac{D}{M} \quad (7)$$

where the values of  $D$  and  $M$  are fixed to those at the time the proposed policy is adopted. It is a policy of a money growth rule regardless the value of  $X$ . A constant money-growth rule would be if  $dm = 0 \Rightarrow$

$$\frac{dy_f}{dr} = \frac{1 + y_f}{1 + r}$$

or, upon inserting (6'),

$$\frac{dy_f}{dr} = \frac{(1 - \mu \sigma \varphi) Y_f + \mu G g + \mu X x}{(1 + r)(1 - \mu \sigma \varphi) Y_f} \quad (8)$$

given the current  $Y_f$ ,  $G$ , and  $X$ , which  $X = 0$  without PPPs. Inserting (6') in (7), yields,

$$m = \frac{r(1 - \mu\sigma\varphi)Y_f - \mu Gg - \mu Xx}{(1 - \mu\sigma\varphi)Y_f + \mu Gg + \mu Xx} \beta \quad (9)$$

where  $\beta = D/M$ , with  $m > r\beta$  for (9) to be positive given positive  $(1 - \mu\sigma\varphi)$  and  $g$  and  $x$ . Consequently,  $dm = 0 \Rightarrow$

$$\frac{dg}{dx} = -\frac{X}{G} \quad (10)$$

Derivatives (7) and (9) are alternative expressions of the money growth rule, which in addition will be a constant growth rule if (8) and (10) hold as well. Equating next (3'') and (9), one obtains that,

$$\frac{M_u}{M_f} = \frac{1}{(p_u + y_u)} \left[ \frac{r(1 - \mu\sigma\varphi)Y_f - \mu Gg - \mu Xx}{(1 - \mu\sigma\varphi)Y_f + \mu Gg + \mu Xx} \beta - \frac{p_f(1 - \mu\sigma\varphi)Y_f + \mu Gg + \mu Xx}{(1 - \mu\sigma\varphi)Y_f} \right]$$

Consequently,

$$\frac{\partial(M_u/M_f)}{\partial g} = -\frac{(1+r)(1-\mu\sigma\varphi)Y_f\mu G}{[(1-\mu\sigma\varphi)Y_f + \mu Gg + \mu Xx]^2} - \frac{\mu G}{(1-\mu\sigma\varphi)Y_f} < 0$$

$$\frac{\partial(M_u/M_f)}{\partial x} = -\frac{(1+r)(1-\mu\sigma\varphi)Y_f\mu X}{[(1-\mu\sigma\varphi)Y_f + \mu Gg + \mu Xx]^2} - \frac{\mu X}{(1-\mu\sigma\varphi)Y_f} < 0$$

That is, the negative effect of the proposed policy on the informal economy, capitalizes upon the fact that the financing of public spending deprives this economy of the much needed cash to carry out its transactions, encouraging thereby its contraction regardless the presence of PPPs. And, contrary to inflation targeting, this result is also independent of the phase of the business cycle.

#### 4. Unlocking the Real Deadlock of Ukraine?

As of September 2016, the debt was 556073015 thousand UAH, with  $M_0=292938$  million UAH,  $M_1=489704$ ,  $M_2=1053861$ , and  $M_3=1053690$  UAH (see <http://www.tradingeconomics.com/ukraine/indicators>). So,  $\beta_0=1.898$ ,  $\beta_1=1.1355$ , and  $\beta_2 \approx \beta_3 \approx 0.527$ . Also, as of June 2016,  $y_f=1.4\%$ , and as of October 2016,  $r=14\%$ . Hence, from (7),  $m_0=9.96\%$ ,  $m_1=5.96\%$ , and  $m_2 \approx m_3 \approx 2.77\%$ . Moreover, as of June 2016,  $Y_f=228252$  million UAH and  $G=52282$  million UAH. Therefore, from (9), after some calculations,

$$25762346.74(1 - \mu\sigma\varphi) = - 619959.96\mu g \Rightarrow \mu g = - 41.55(1 - \mu\sigma\varphi) \quad (11a)$$

$$15416824.84(1 - \mu\sigma\varphi) = - 370966.93\mu g \Rightarrow \mu g = - 41.56(1 - \mu\sigma\varphi) \quad (11.b)$$

$$7167569.3(1 - \mu\sigma\varphi) = - 172373.75\mu g \Rightarrow \mu g = - 41.58(1 - \mu\sigma\varphi) \quad (11.c)$$

under  $m_0, m_1$ , and  $m_{2,3}$ . It appears that  $(1 - \mu\sigma\varphi) < 0$ , but inserting any value of the product of  $\mu g$  in a different equation, results always in,

$$\mu\sigma\varphi \approx 1 \quad (12)$$

given the rounding of decimals. And, since  $\mu > 0$ , we have to have from (11) that  $g = 0$ . These are results regardless the value of  $X$ . For example, with  $X > 0$ , (11.a), (11b) and (11c) become,

$$25762346.74(1 - \mu\sigma\varphi) = -619959.96\mu g - 2\mu Xx \quad (11.d)$$

$$15416824.84(1 - \mu\sigma\varphi) = -370966.93\mu g - 2\mu Xx \quad (11.e)$$

$$7167569.3(1 - \mu\sigma\varphi) = -172373.75\mu g - 2\mu Xx \quad (11.f)$$

Solving (11.f) for  $2\mu Xx$ , inserting the result in (11.e), and solving the subsequent expression for  $\mu g$ , yields,  $\mu g = -41.54(1 - \mu\sigma\varphi)$ , which difference with  $\mu g = -41.56(1 - \mu\sigma\varphi)$  owes certainly to rounding. Moreover, inserting  $\mu g = -41.54(1 - \mu\sigma\varphi)$  in (11.d), one obtains that,

$$4605(1 - \mu\sigma\varphi) = -\mu Xx \Rightarrow (\mu\sigma\varphi - 1) = \mu Xx/4605 \approx 0$$

which is again the result given by (12). Would any monetary expansion work along the lines of the previous section? It can be easily shown that the answer will be negative unless the deadlock of (12) is resolved. The fact and only that it is a deadlock, it has to be resolved, anyway. If there is any restructuring of the economy that has to be tackled first, it is this one since it relates to the relationship between the multiplier, the accelerator, and capital accumulation. Of course, (12) turned out to be the case under the particular numbers used, and numbers do change from year to year. But, these numbers might connote some inherent weakness of the economy, which is something that should be double-checked: The focus of policy in general should be to ensure that  $\mu\sigma\varphi > 1$ .

## 5. Concluding Remarks

To get rid of “oligarchs” (cf. financial elite), corruption, and twilight economy, is a simple but big “word” that only ... those who can’t hear the music of the dance can utter. These are phenomena innate in every market social economy; and when something upsets the habitual course of socioeconomic life, they adjust accordingly. So, if one wants to contribute one’s opinion on ways to improve the political economy of Ukraine, one will be honest by proposing means that would not upset this economy even further as a quest for a “shock therapy” against corruption and underground economy would engender. These should be means that would make these two phenomena to just fade away with a little help from the state, but not abruptly. And, this is the mentality under which this short narrative of the Ukrainian economy was prepared.

Especially careful one has to be when the matter comes down to oligarchs. The Bolsheviks cracked down on financial elites brutally and the result was the *номенклатура* out of which the oligarchs supposedly sprung up (sic). And, unfortunately, the involvement of elites in economics and politics is a universal phenomenon, nowadays, not special to Ukraine, Russia, and the rest of Eastern Europe. Here, in this article, we took a view of this involvement from the viewpoint of corrupt oligarchs, as a factor with which the urgency of expansionary economic policy would have to come at terms temporarily to get the country moving. Mobilizing the financial elite towards this direction as well, it is hoped that economic progress will be increasingly marginalizing rent-seeking on the part of those in this elite who engage in such practices. Even more important for the government is to make oligarchs and the people see that corrupt statesmen with low level of law compliance is not the social norm.

This is a very difficult task because people, individually, only slowly revise their impressions about societal norms even if developments in this “front” tend to falsify them (Nagdy and Roser 2016).

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## APPENDIX

Table A1: Ukraine vs. Europe and Central Asia

	1990	2000	2015
GNI per capita, Atlas method (current US\$): UKR	1,610	700	2,620
Europe & Central Asia	9,710	12,397	24,147
GNI per capita, PPP (current international \$): UKR	6,930	3,700	7,810
Europe & Central Asia	11,280	15,765	29,477
Inflation, GDP deflator (annual %): UKR	16.3	23.1	40.2
Europe & Central Asia	5.8	3.8	0.9
Gross capital formation (% of GDP): UKR	27	20	15
Europe & Central Asia	25	23	20
Time required to start a business (days): UKR	...	40	7
Europe & Central Asia	...	42	10
Tax revenue (% of GDP): UKR	...	14.1	18.3
Europe & Central Asia	18.3	20.2	19.5

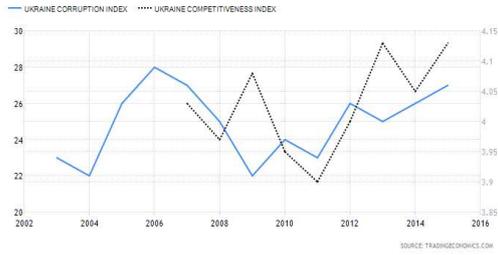
Source: World Development Indicators database

Table A2: Percent of firms competing against unregistered or informal firms

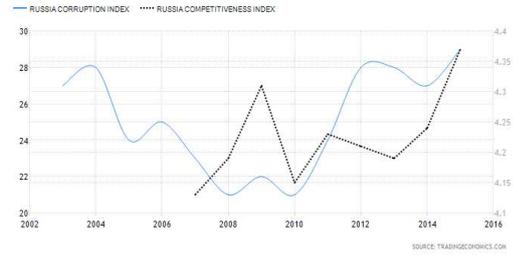
Ukraine	50.1
Eastern Europe & Central Asia	39.1
High income: non-OECD	56.0
High income: OECD	34.2
Middle East & North Africa	42.6
Sub-Saharan Africa	65.5
South Asia	41.1
East Asia & Pacific	53.2
Latin America & Caribbean	61.9
All Countries	52.2

Source: World Bank; <http://www.enterprisesurveys.org/data/exploretopics/informality>

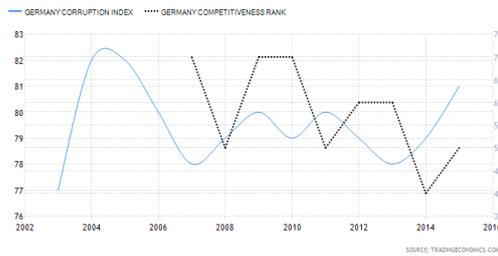
Figure A1: Corruption Index and Competitiveness Index (dotted line): 2003-2016:  
Source: tradingeconomics.com



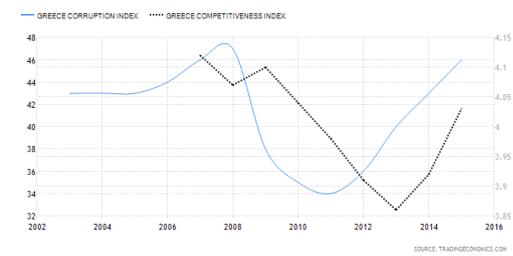
Ukraine



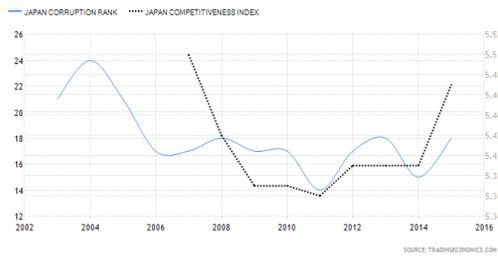
Russia



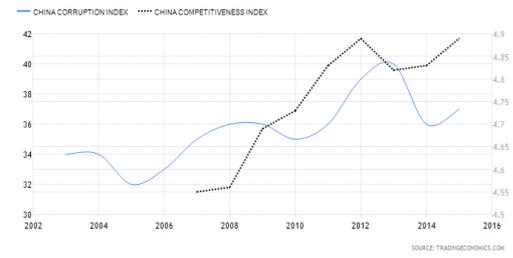
Germany



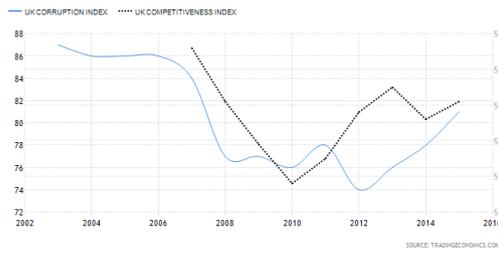
Greece



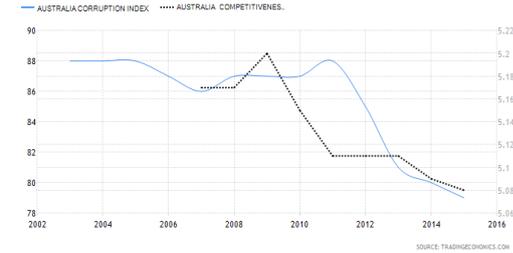
Japan



China

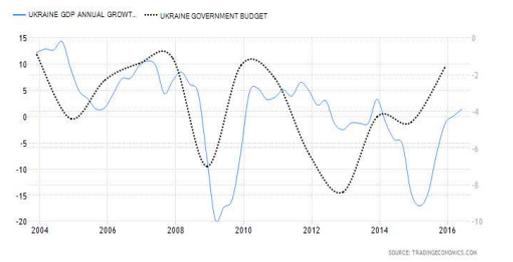
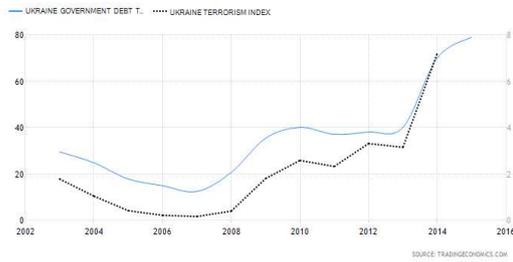


United Kingdom

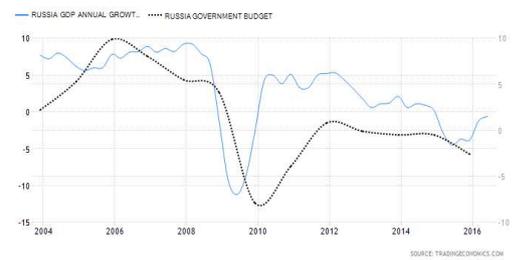
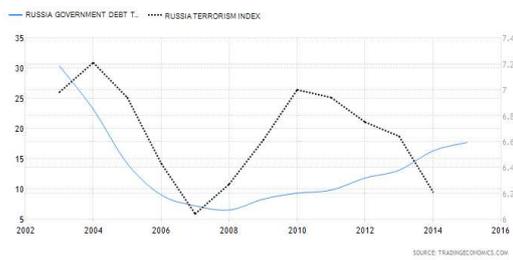


Australia

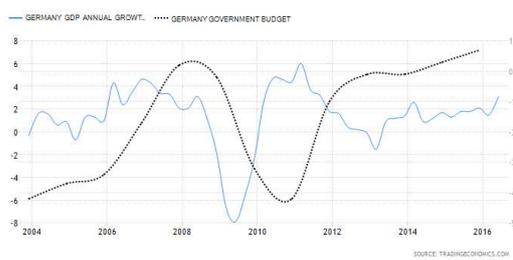
Figure A2: Terrorism Index (dotted line) and Debt-to-GDP ratio (left-hand column) and Government Budget (dotted line) and GDP Annual Growth (right-hand column): 2003-2016  
 Source: tradingeconomics.com



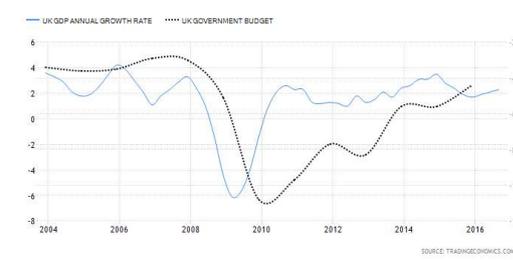
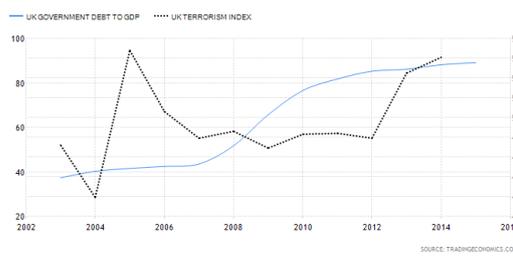
Ukraine



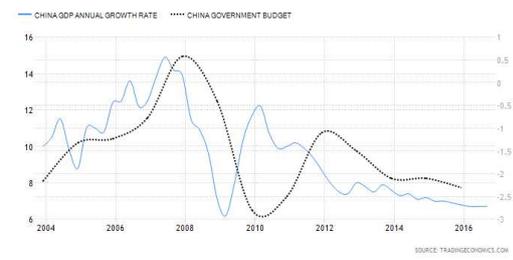
Russia



Germany



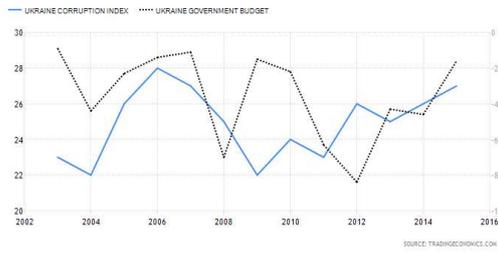
United Kingdom



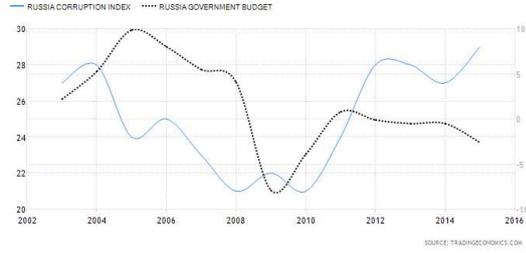
China

Figure A3: Corruption Index and Government Budget (dotted line): 2003-1016

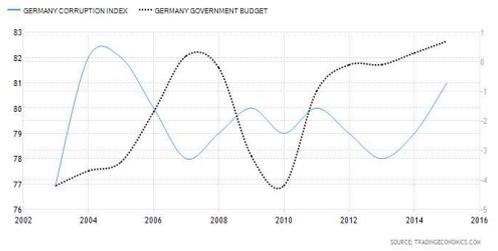
Source: tradingeconomics.com



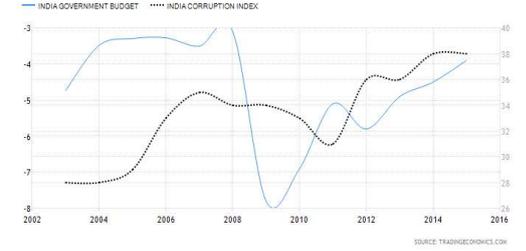
Ukraine



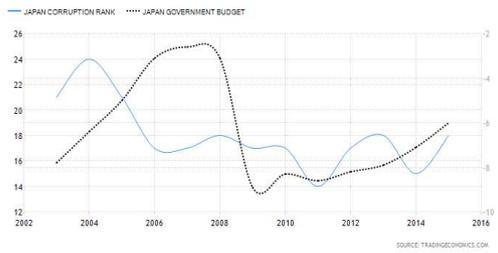
Russia



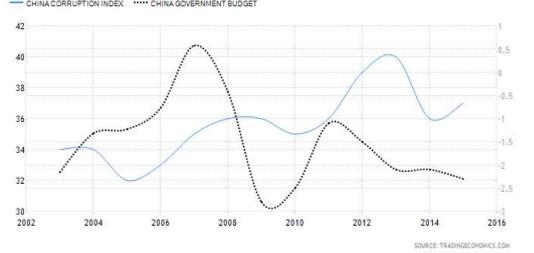
Germany



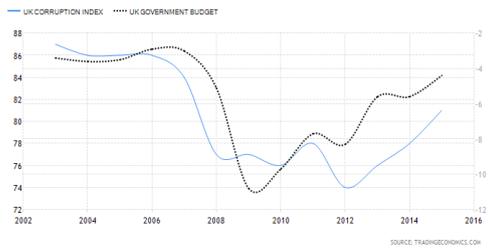
India



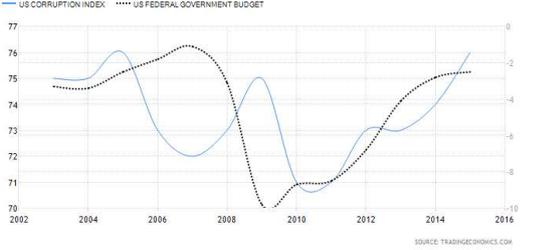
Japan



China



United Kingdom



USA