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HIGHER SCHOOL OF ECONOMICS

*Ilya Lokshin, Anastasia Samorodova,
Evgenia Skoptsova*

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Ilya Lokshin¹, Anastasia Samorodova²,

Evgenia Skoptsova³

TOTAL FACTOR PRODUCTIVITY AND SOCIAL COOPERATION: THEORETICAL FRAMEWORK AND TENTATIVE EMPIRICAL ANALYSIS⁴

The paper develops the ideas centered around the proposition that high total factor productivity (TFP) is conducive to social cooperation by drawing the interests of economic and, in more general terms, social agents together. In the first part of the paper, a simple theoretical framework is presented that leads to a typology of social orders which is based upon the stimuli of social agents for cooperation and predation. In the second part, a tentative empirical analysis is conducted (panel-data regression with fixed effects) which provides a crude testimony for the plausibility of the theoretical claim that high TFP is associated with cooperation-fostering institutions. The third part of the paper elaborates on the results of empirical analysis and presents some further hypotheses which are concerned with two quite different subject-matters: on the one hand, with the role of TFP as a possible factor of social cooperation; on the other hand, with the typology of social orders proposed by North, Wallis and Weingast in their “Violence and Social Orders”. The latter theme is integrated in the discussion about TFP, cooperation and predation.

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¹ National Research University Higher School of Economics. Laboratory for Qualitative and Quantitative Analysis of Political Regimes, Researcher; Political Science Department, Lecturer. E-mail: ilokshin@hse.ru.

² National Research University Higher School of Economics. Laboratory for Qualitative and Quantitative Analysis of Political Regimes, Probationer.

³ National Research University Higher School of Economics. Laboratory for Qualitative and Quantitative Analysis of Political Regimes, Probationer.

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Introduction

The analytical focus of this paper is on the connection between total factor productivity (TFP) and political institutions. This investigation is a part of a broader research agenda which seeks to deepen some linkages between the literature on economic growth on the one hand and some insights about different political orders and regimes on the other hand.

Our starting point is the attempt to understand the character of the relationship between TFP and some fundamental political parameters which largely depend on institutional quality. On this stage of research, the analysis is going to be superficial and aims at revealing only the most general patterns. Nevertheless, even this sort of analysis can be of some value.

More concretely, we focus on the connection between TFP and two political variables which are political stability and the rule of law.

The following text is organized as follows: in the first section, we refer to the general theoretical background of the paper and, later, to some concrete theoretical propositions to be tested. In the second section, we conduct simple and preliminary empirical analysis which has to identify the character of the relationships between TFP, political stability and the rule of law. The third section proposes the discussion for the results of empirical analysis in the general framework outlined in the first section.

I. Total factor productivity and the performance of political institutions: a theoretical perspective

i. A general theoretical framework

We begin by a very general statement: the well-being of a society partially depends on its ability to put an end to destructive clashes of interests among its members. Though there may be some important exceptions to this rule, the co-orientation of interests is generally a good thing: *ceteris paribus*, it promotes cooperation and brings about social peace.

This very intuitive notion demands further clarification. For simplicity, let's assume that there are two groups in a society, i and j . The utility function for the group i is $U_i = U_i(a, b, c, d)$, where a and b are variables under control of i while c and d are exogenous variables. The utility

function for the group j is $U_j = U_j(a, b, c, d)$, where c and d are controlled by j while a and b are exogenous. Assume then that both utility functions can be decomposed into two parts in the following way: $U_i = U_i^{pred} + U_i^{coop}$, where U_i^{pred} is the part of the general utility function of the group i which is associated with the *predation* in relation to the group j , and U_i^{coop} is the part of the general utility function which is associated with the *cooperation* with the group j . *Mutatis mutandis*, the same is true for the group j : $U_j = U_j^{pred} + U_j^{coop}$.

Assume the following relations between the input variables and the utility functions:

- 1) $\frac{\partial U_i^{pred}}{\partial a} > 0$ and $\frac{\partial U_i^{coop}}{\partial a} < 0$;
- 2) $\frac{\partial U_i^{pred}}{\partial b} < 0$ and $\frac{\partial U_i^{coop}}{\partial b} > 0$;
- 3) $\frac{\partial U_j^{pred}}{\partial c} > 0$ and $\frac{\partial U_j^{coop}}{\partial c} < 0$;
- 4) $\frac{\partial U_j^{pred}}{\partial d} < 0$ and $\frac{\partial U_j^{coop}}{\partial d} > 0$;
- 5) $\frac{\partial U_i}{\partial c} < 0$ and $\frac{\partial U_i}{\partial d} > 0$;
- 6) $\frac{\partial U_j}{\partial a} < 0$ and $\frac{\partial U_j}{\partial b} > 0$.

For the group i , these relations state that, by changing the values of a and b separately, it is impossible to increase both parts of the general utility function. In order to augment predation-related part of its general utility, the group i should increase a , however, it affects cooperation-related part negatively. The increase in b has a positive impact on the cooperation-related utility but it impedes predation. The strategy chosen by the group i correspondingly influences j 's utility function: the increase in a is bad for j , the increase in b is good news.

Mutatis mutandis, the same is true for the group j and its predation-related (c) and cooperation-related (d) variables.

Clearly, in almost all cases it is good for the society as a whole when cooperation is preferred to predation. Hence, those changes in the form of utility functions which make $\frac{\partial U_i^{pred}}{\partial a}$, $\frac{\partial U_j^{pred}}{\partial c}$, $\frac{\partial U_i}{\partial c}$, $\frac{\partial U_j}{\partial a}$ closer to 0 can be regarded as positive. In the same vein, the augmentation of $\frac{\partial U_i^{coop}}{\partial b}$, $\frac{\partial U_j^{coop}}{\partial d}$, $\frac{\partial U_i}{\partial d}$, $\frac{\partial U_j}{\partial b}$ is also welcome.

These changes in the forms of utility functions imply either that the negative linkage in the utility functions of the two groups gets weakened; or that the positive linkage in the utility functions of the two groups gets magnified. Perhaps, the most important possible changes are associated with the decrease in $\frac{\partial U_i^{pred}}{\partial a}$ and $\frac{\partial U_j^{pred}}{\partial c}$ and with the increase in $\frac{\partial U_i^{coop}}{\partial b}$ and $\frac{\partial U_j^{coop}}{\partial d}$ because these shifts in the utility functions raise the chances that groups would pursue the strategy of cooperation rather than predation.

Another interesting case is concerned with the simultaneous change in the form of the utility functions in the opposite directions, for example, for the group i , with the simultaneous increase in $\frac{\partial U_i^{pred}}{\partial a}$ and $\frac{\partial U_i^{coop}}{\partial b}$: *ceteris paribus*, this would mean that the group i may pursue predation via raising a and cooperation via raising b .

This very simple framework certainly can be generalized. One of interesting scenarios is concerned with the integrating into it increasing or diminishing returns: for instance, the change in the utility of a group correspondingly influences its possibility to affect the utility of another group. However, even that simple framework which has been presented above suffices for our following analysis. Before proceeding to TFP it is worth noting some implications of our framework.

The superficial implication is that it makes possible to think in the same, although very general, terms about well-known ideas elaborated in distinct subdisciplines of political economy and political science. For example, particular cases of the changes in the utility functions which decrease stimuli for predation are the following ones: cutting down stakes in the political or economic game⁵,

⁵ Przeworski, A. (1991). *Democracy and Market: Political and Economic Reforms in Eastern Europe and Latin America*. Cambridge: Cambridge University Press. P. 60.

the transition from the constant-sum game to the win-win scenario, lengthening time horizons⁶, focusing on the provision of public goods rather than private goods⁷, etc. As we state in the following subsection, we believe that the increase in TFP can be thought of in terms of this framework as well: it is associated with the increase in $\frac{\partial U_i^{coop}}{\partial b}$ and $\frac{\partial U_j^{coop}}{\partial d}$, thus stimulating actors to choose cooperative behavior.

A slightly more interesting implication is that our framework helps think more systematically about the changes in utility functions which bring about certain configurations of stimuli for predation and cooperation. Consider the Table 1 where only the most interesting cases are labeled.

Table 1. Changes in the utility functions of the groups i and j as factors engendering different types of social order.

		Group j		
		Stimuli for <i>cooperation</i> in relation to both variables c and d increase	Stimuli for <i>cooperation</i> increase in relation to one variable but decrease in relation to another	Stimuli for <i>predation</i> in relation to both variables c and d increase
Group i	Stimuli for <i>cooperation</i> in relation to both variables a and b increase	A move towards social peace		A move towards the social order of unilateral predation
	Stimuli for <i>cooperation</i> increase in relation to one variable but decrease in relation to another		A move towards the social order of limited predation	
	Stimuli for <i>predation</i> in relation to both variables a and b increase	A move towards the social order of unilateral predation		A move towards (quasi)Hobbesian⁸ war

⁶ Olson, M. (1999). Dictatorship, Democracy and Development. *The American Political Science Review*, 87(3), pp. 567-576.

⁷ De Mesquita, B.B. (2013). *The Dictator's Handbook: Why Bad Behavior is Almost Always Good Politics*. New York: PublicAffairs.

⁸ The qualification “(quasi)” is due to the fact that we consider here the move towards the war between two social groups rather than the war of all against all, although it is possible to use the formulation “Hobbesian order” for i and j representing individual agents instead of social groups.

An important feature of this typology is that it goes beyond dichotomic thinking of white and black and fills the big picture with shades of grey: the social order of limited predation and the social order of unilateral predation. The first type of the social order implies that both groups are inclined to predation in respect to one variable under control (or, to put it in a more realistic context, in one social sphere, for instance) but they tend to cooperate in the other sphere. In other words, the social order of limited predation is the mixed social order of intertwined opportunistic and socially beneficial behavior. The social order of unilateral predation is a mixed social order as well but it is emphatically asymmetric: one social group is oriented towards cooperation while another predate.

We will return to this typology of social orders later in this paper in order to immerse it in a richer context and highlight its linkages with other research.

The next section sheds light on the high TFP as a source of cooperative behavior.

ii. Total factor productivity and the stimuli for cooperation

In the previous work, we proposed a sketch of a framework within which two heretofore distinct theoretical perspectives can be linked to each other. One perspective is based on the trade-off between disorder and dictatorship and introduces the notion of the institutional possibility frontier (IPF)⁹. The idea of IPF implies that social institutions can be situated on the continuum between two extrema of dictatorship and disorder and each point on the continuum has an associated level of social losses. For instance, the institutions of independent judges may lead to approximately the same scope of social losses due to the relative proximity to the pole of disorder as the institution of regulatory state due to the relative proximity to the pole of dictatorship. It is implied that the dictatorship-disorder trade-off is more severe in some societies than in others. The other theoretical perspective focuses upon the role of TFP as a parameter underlying long run growth (TFP can be represented as a parameter A in the Cobb-Douglas function). It is possible to associate different social groups with different productivity factors in the Cobb-Douglas function and, further, with different institutional preferences on the dictatorship-disorder continuum. We proposed the Cobb-Douglas function with two types of productivity factors: private capital and public capital¹⁰. Then

⁹ Djankov S., Glaeser E., La Porta R. et al. (2003). The New Comparative Economics. *Journal of Comparative Economics*, 31, p. 595-619.

¹⁰ Lokshin, I. (2015). Total Factor Productivity and the Institutional Possibility Frontier: an outline of a link between two theoretical perspectives on institutions, culture and long run growth. (NRU Higher School of Economics. Series PS "Political Science"); a slightly more elaborated version of the argument can be found in Ахременко, А.С., Локшин И.М., Петров А.П. (2016). Граница институциональных возможностей и производительность общественных систем: к теоретическому синтезу. (DOI: 10.17976/jpps/2016.06.06)

we associated private capital with the interests of capitalists and public capital which should be redistributed for society's needs with the interests of bureaucracy. Capitalists' interests are also held to be inclined towards anarchy, or disorder, while the interests of bureaucracy are held to be closer to the pole of dictatorship. Both social groups have stimuli for opportunistic behavior (to conceal taxes for capitalists and to extract the rent from the stock of public capital for bureaucracy) but they benefit from economic growth as well. Opportunistic behavior and good economic performance cannot be at place simultaneously, hence, both social groups come across the dilemma of what strategy to choose. This situation is outlined as a simple consequential game and it is shown that, among other factors, high TFP makes social groups more oriented towards cooperation and contribution to economic growth rather than to opportunistic behavior. In other words, TFP draws the interests of capitalists and bureaucracy together.

The intuition behind this result is straightforward: higher TFP increases the future return of resources invested in the economy at the present period (another factor which is important for cooperation is long time horizon). So, high TFP makes investment in the future more attractive in comparison to exploiting available possibilities right away. The care for the future economy on the part of one social group turns out to be advantageous for the other group as well because it increases its future possible benefits due to the simple fact that the economy gets larger.

In terms of the framework presented in the previous subsection, higher TFP provides stimuli for cooperative behavior (or, alternatively, undermines opportunistic motivations).

There are some questions which arise in the wake of this observation. What are the possible empirical manifestations of this theoretical observation is among them. How can the linkage between TFP and cooperation be interpreted and empirically tested? We propose two preliminary hypotheses which are based upon two different displays of social cooperation: 1) social peace and stability; 2) the low scope of opportunism on the part of those agents who are in the best position to pursue it. The first display of social cooperation may be measured via authoritative indices of political stability; the second manifestation of social cooperation may be operationalized via the rule of law: the rule of law can be interpreted as the measure of the opportunism on the part of political elites, i.e. those agents who have the best opportunities to predate (economically and/or politically).

In the following section, we run preliminary empirical tests to shed some light upon the linkage between TFP on the one hand and political stability and the rule of law on the other.

II. Total factor productivity, political stability and the rule of law: tentative empirical analysis

The aim of this section is to provide the first and tentative empirical analysis of the linkage between variables of interest. The analysis that follows is exceedingly simple. However, tractability is the reverse and positive side of simplicity. Although it is clear that empirical tests which will be conducted below are very limited in their validity, we believe that they cast the light upon the general character of the relationships between TFP and political variables. This is sufficient to draw some tentative conclusions and provide the crude test of the plausibility of theoretical perspective formulated above.

The first topic of our empirical analysis is the role of TFP as a possible predictor of the rule of law. Immediately we come across some serious difficulties: which variables should be controlled for? To answer this question, we should have theories about what brings about sustainable rule of law and what tends to destroy it. Though such theories can be found, the major problem is the difficulties of empirical measurement of the relevant essences as well as their proximity to the rule of law as such. For instance, it is very plausible that corruption demolishes rule of law but, on the other hand, it is hardly possible to draw a line between these characteristics: low corruption may be regarded as an important *aspect* of the rule of law rather than its cause, thus making endogeneity problem practically insurmountable. The same can be argued about some other characteristics of political system, such as government effectiveness or administrative capacity which have a very high correlation coefficient with the measures of the rule of law¹¹.

Against the backdrop of these difficulties, we have chosen the strategy which is both simple and exposed to the serious criticism due to its probable lack of rigor. In what follows, we select only two predictors for the rule of law which, in our opinion, are relatively free from grave suspicions. They are TFP (which is, naturally, of the primary interest for us) and the level of democracy. The possible influence of democracy level on the rule of law is quite obvious: democratic institutions tend to constrain political leaders and bureaucrats and, theoretically at least, make “good behavior” the part of their self-interest¹².

¹¹ Langbein, L., Knack S. (2010). The Worldwide Governance Indicators: Six, One, or None? *Journal of Development Studies*, 46(2), 350–370 pp.

¹² Barro, R. (1973). The Control of Politicians: An Economic Model. *Public Choice*, 25. Ferejohn, J. (1986). Incumbent Performance and Electoral Control. *Public Choice*, 50, 25-50 pp.

We use Polity IV as the index of democracy¹³ and Regulatory Quality from the Worldwide Governance Indicators project as the index for the rule of law¹⁴. The estimates for TFP have been obtained via Long-Memory DEA method; a brief description of the procedure can be found in Akhremenko et al. (forthcoming)¹⁵.

After elimination of countries with no data available on at least one of the variables, our sample consists of 115 countries in the period from 1996 until 2013 (the data for Regulatory Quality in 1997 and 1999 were extrapolated).

Descriptive statistics of the relevant variables is shown in the Table 2.

Table 2. Descriptive statistics

Variable	obs	Mean	Std.Dev.	Min	Max
Rule of Law	2069	-.1084003	.9792546	-2.071994	1.99964
TFP (LMDEA)	2065	.3745391	.2289008	.0666776	1.000193
Polity 2	2063	3.92826	6.158171	-10	10

See Table 3 for the panel-data regression (fixed effects) results.

The results correspond to our expectations: both TFP and the level of democracy are related to the rule of law positively. We will return to the results in order to examine them in more details after the analysis of the linkage between political stability and TFP.

Presumably, there are dozens of factors which may influence political stability. In the analysis that follows, the set of predictors consists of 6 variables: TFP, democracy level, military in politics, corruption, religious tensions and ethnic tensions. It is assumed that, taken together, these variables cover most widespread sources of political instability but do not pave the way for the obvious endogeneity problems (however, it is almost always possible to construct a theory that would indicate such a problem).

¹³ Polity IV. The Systemic Peace. Retrieved from: <http://www.systemicpeace.org/polity/polity4.htm>.

¹⁴ Worldwide Governance Indicators Official Site. Retrieved from: <http://info.worldbank.org/governance/wgi/index.aspx#home>

¹⁵ Ахременко, А.С., Локшин И.М., Петров А.П. (2016). Граница институциональных возможностей и производительность общественных систем: к теоретическому синтезу. (DOI: 10.17976/jpps/2016.06.06)

Table 3. The panel-data regression results (fixed effects) for the rule of law as the dependent variable

Fixed-effects (within)regression	Number of obs	=	2057
Group variable: country	Number of groups	=	115
R-sq: within	= 0.0525	Obs per group: min	= 11
between	= 0.6140	Avg	= 17.9
overall	= 0.5834	Max	= 18
	F (1,1948)	=	53.75
Corr(u_i, xb)	= 0.6709	Prob > F	= 0.0000

Rule of law	Coef.	Std.Err.	t	P > t	[95% Conf. Interval]	
TFP (LMDEA)	.6593817	.0955261	6.90	0.000	.4720371	.8467263
Polity 2	.0143874	.0018448	7.80	0.000	.0107693	.0180055
_cons	-.4082533	.0367917	-11.10	0.000	-.4804088	-.3360979
sigma_u	.82490282					
Sigma_e	.17072995					
rho	.9589231	(fraction of variance due to u_i)				
F test that all u_i = 0:		F(114, 1940) = 226.55			Prob > F = 0.0000	

As in the previous case, the estimates for TFP are borrowed from the analysis by Akhremenko et al. (forthcoming)¹⁶, democracy level is measured via Polity IV; other variables are drawn from the International Country Risk Guide project. We have multiplied the predictors from ICRG by (-1) to ensure the intuitively clear direction of the relationships between them and political stability¹⁷. The latter is measured through the index Political Stability and the Absence of Violence from the Worldwide Governance Indicators project¹⁸.

After the elimination of countries with the severe lack of data, our sample contains 101 countries (unfortunately, ICRG data does not cover a substantial part of the world; however, most of the excluded countries are small states such as Mauritius or “traditionally” problematic from the point of view of data availability, such as Tajikistan). The time span covered by the data is from 1996 until 2013 (the data for Political Stability and the Absence of Violence in 1997 and 1999 were extrapolated).

¹⁶ Ахременко, А.С., Локшин И.М., Петров А.П. (2016). Граница институциональных возможностей и производительность общественных систем: к теоретическому синтезу. (DOI: 10.17976/jpps/2016.06.06)

¹⁷ International Country Risk Guide Methodology. Retrieved from: <http://www.prsgroup.com/wp-content/uploads/2012/11/icrgmethodology.pdf>

¹⁸ Worldwide Governance Indicators Official Site. Retrieved from: <http://info.worldbank.org/governance/wgi/index.aspx#home>

Descriptive statistics is presented in the Table 4.

Table 4. Descriptive statistics

Variable	obs	Mean	Std.Dev.	Min	Max
Political stability	1815	-.1044633	.9477563	-3.184814	1.668068
TFP (LMDEA)	1809	.3986632	.235164	.0666776	1.000193
Polity 2	1718	4.461583	6.057815	-10	10
Military in Politics	1798	-3.906192	1.733183	-6	0
Ethnic tensions	1798	-4.135197	1.261837	-6	0
Corruption	1798	-2.806452	1.273167	-6	0
Religious tensions	1798	-4.681266	1.297214	-6	-.5

The results of the panel-data regression with fixed effects are shown in the Table A1 (See Appendix A).

As in the previous case, the results do not deviate from what we expected. In all models, TFP is related to political stability positively: the increase in total factor productivity is accompanied by the increase in stability, thus making our theoretical perspective empirically reasonable.

However, the analysis we have conducted so far is too crude and does not allow to make more specific suggestions about the nature of the relationship between TFP and political variables. One way to go a bit deeper is to visualize the connection between TFP and political parameters of interest (Figures 1 and 2; in both cases observations are present which were eliminated in statistical analysis due to the absence of data for specific variables).

What is obvious from the comparison of these two graphs is that TFP is, just as the panel data analysis suggested, positively related to the rule of law and political stability but the nature of this positive relationship is quite different. It might be argued that, *considered as the possible condition for political stability, TFP is rather close to be sufficient but it is hardly necessary*: indeed, there is a substantial number of countries with low TFP rates but fairly high political stability. On the other hand, *for the rule of law TFP seems to be to a high extent both necessary and sufficient condition*.

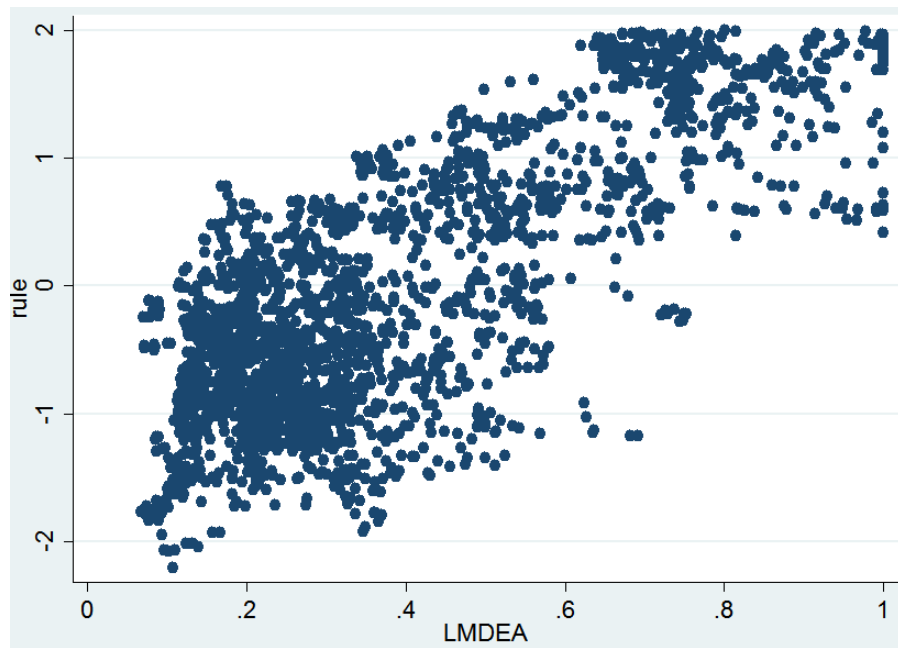


Fig. 1. TFP and the rule of law: scatter plot (country-years as individual observations)

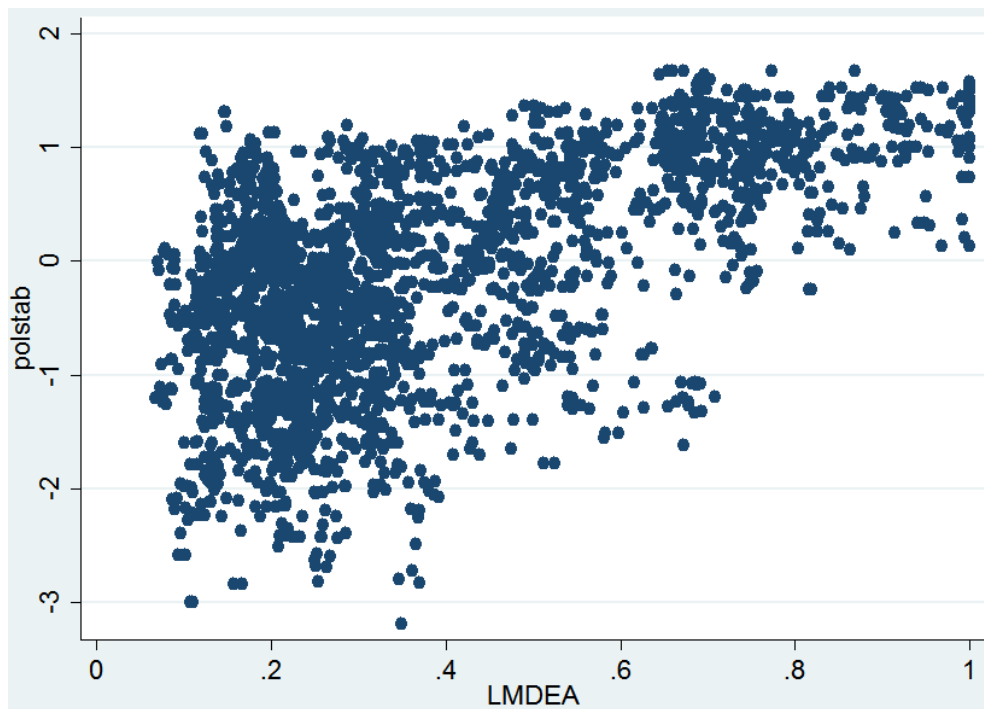


Figure 2. TFP and political stability: scatter plot (country-years as individual observations)

The question arises: what are the countries which combine low rates of TFP with pretty high stability? A very crude but precisely thanks to that even more revealing way to identify them is to establish somewhat arbitrary thresholds for “low TFP” and “high political stability”. Let’s assume that “low TFP” rates vary between 0 and 0.4 while “high political stability” starts with 0.8. This is

the list of countries which satisfy both criteria at the same time: Benin 1996; Bhutan 2002-2006, 2009-2013; Botswana 1996-2013; Cape Verde 1996-2013; Mauritius 1996-2008, 2011-2013; Mongolia 2001-2005; Maldives 2005; Namibia 2007-2013; St. Lucia 2013; St. Vincent and Grenadines 2009-2013; Uruguay 1999-2000, 2006-2013. What is interesting about this list is that it consists primarily of democracies: Polity IV does not provide data for Maldives, St. Lucia and St. Vincent and Grenadines but among 8 countries left in the list 7 were acknowledged as democracies in the relevant periods (with the minimum rating for Namibia of 6 points), and the only exception, which is Bhutan, can be regarded as a flawed democracy for the period 2009-2013 (with 3 and 5 points on the Polity IV scale). Thus, it is quite plausible to suggest that democracy might be regarded as an alternative path to political stability – if TFP is not high enough and does not condition closeness of interests among different social groups.

This hypothesis should be thought of against the backdrop of Figure 1 which shows quite clearly that there are no countries with fairly high rule of law but low TFP. In other words, *we may suggest that democracy may be considered as an alternative path to political stability but hardly to the rule of law.*

Are these tentative conclusions theoretically plausible?

III. TFP, democracy and social orders: further hypotheses

From the point of view of our theoretical perspective, the positive linkage between TFP and political variables are not surprising. But are there any theories which could help to explain a somewhat ambiguous role of democracy?

We believe that the answer is “yes”. In fact, these theories are well-known. Although they are certainly not identical (otherwise we should have been thinking about *a* theory, not theories), they can be regarded as mutually complementary.

To begin with, there are theories which provide explanations for the not-so-strong connection between democracy and the rule of law. The first group of these theories is immersed in the transition paradigm (from authoritarianism to democracy); these theories claim that some democracies have poor rule of law performance due to their transitional character and the very fact that democratic institutions have not had enough time to institutionalize and become ‘the only game

in town”¹⁹. It is these theories which highlight the curvilinear relationship between democracy and different aspects of state capacity (including the rule of law or at least some aspects of it) and point out that the not-yet-consolidated democracies are even less impressive at their administrative capacity than consolidated autocracies²⁰. This conclusion is also commensurate with the observation that full and consolidated democracies (exactly those which have the highest points on the state capacity and the rule of law) are at the same time economically prosperous (thus, their good performance may be attributed to economic factors rather than the quality of democracy).

The second group of these theories which is, perhaps especially interesting in the light of our conclusions from the previous section, focuses upon the tension between democratic and liberal components of contemporary liberal democracy. The rule of law is, generally speaking, the heritage of the liberal tradition but it is not implied automatically by political institutions which realize democratic component. Probably, the most evident manifestation of the said tension is populism which is emphatically democratic by definition but can be fairly illiberal²¹. But there is another “type of regime” which can be even more relevant for our discussion: a kind of hybrid regime where democratic institutions, primarily elections, function relatively well, but they do not constrain politicians and bureaucracy effectively. The failure to discipline public officials through regular, free and competitive elections may be a systematic feature of certain regimes or regime types. The relevant examples may be “delegative democracy”²², “feckless pluralism”²³ and those regimes which rely heavily on the clientelistic linkages between politicians and voters.

The overarching idea of this discussion is that fairly good-functioning democratic institutions are compatible with poor rule of law performance.

On the other hand, it is natural to regard democracy as the way to resolve social conflicts or at least mitigate them, thereby engendering political stability. It is true that democracy is not always successful at that, and the well-known case of the Weimar Germany illustrates that almost perfectly. However, democracy, to say the least, tries to make the way in which social conflicts are dealt with more civilized²⁴. The minimal conception of democracy defended by Adam Przeworski is founded

¹⁹ Linz, J., Stepan, A. (1996). *Problems of Democratic Transition and Consolidation: Southern Europe, South America and Post-Communist Europe*. Baltimore: Johns Hopkins University Press. P. 5.

²⁰ Bäck, H., Hadenius A. (2008). Democracy and State Capacity: Exploring a J-Shaped Relationship. *Governance: An International Journal of Policy, Administration, and Institutions*, 21(1).

²¹ Abts, K. Rummens, S. (2007). Populism versus Democracy. *Political Studies*, 55, 405–424 pp.

²² O’Donnell, G. (1994). Delegative Democracy. *Journal of Democracy*, 5(1), 55-69 pp.

²³ Carothers, T. (2002). The End of Transition Paradigm. *Journal of Democracy*, 13(1), 6-21 pp.

²⁴ Kitschelt, H., Wilkinson, S. (2007). *Patrons, Clients, and Policies. Patterns of Democratic Accountability and Political Competition*. Cambridge: Cambridge University Press.

upon the idea that democracy prevents conflict solving through bloodshed²⁵. Overall, it is hardly surprising that democracy *per se* (even in the absence of auxiliary conditions) may lead to political stability.

Now we may return to some ideas outlined in the first section. First, it is reasonable to identify political stability with the strategy of cooperation on the part of the agents. The absence of the rule of law indicates that politically privileged agents are engaged in rent-extraction; generally, the lack of the rule of law may be considered as the sign of rent-seeking in economic sphere because political power is quite often abused in order to obtain additional economic benefits. Thus, we may identify two spheres of social interaction: political and economic.

Let's say that in both spheres strategies of cooperation and predation are available: in the political sphere, predation corresponds to the use of violence as the way to resolve conflicts; in the economic sphere, predation corresponds to rent-extraction. Any combination of these strategies constitute a certain "social order". Thus, it is possible to outline a simple typology (Table 6).

Table 5. Types of social orders engendered by different combinations of predation and cooperation in political and economic spheres: a single group perspective.

		Rent-extracting	
		Yes (predation)	No (cooperation)
Use of violence to resolve social conflicts	Yes (predation)	(Quasi) Hobbesian war Unilateral predation	Limited predation ("benevolent autocracy")
	No (cooperation)	Limited predation (democracy with poor rule of law performance)	Social peace Unilateral Cooperation

²⁵ Przeworski, A. (1999). A Minimalist Conception of Democracy: A Defense. In Democracy's Value. Cambridge: Cambridge University Press.

It is obvious that the types of social orders in the Table 6 are labelled like those in the Table 1: thus we have tried to establish the link between the general theoretical framework outlined in the first section and our more recent discussion of TFP and democracy.

The identified types of social order may be compared to those singled out by Douglass North, John Wallis and Barry Weingast²⁶. The limited access order is, by and large, similar to the order of unilateral predation from our typology if the latter is interpreted in the following manner: one group has a privileged position which is manifested in the very fact that it chooses to predate while the same behavior is not the option for another group – maybe, because predation would be too costly in the light of imminent negative sanction from the predating group (that implies that the group of predators is significantly more powerful).

The open access order is similar to the order of social peace in our typology: open access may be a sign, a precondition, or a result of cooperative strategy which is the most beneficial for the main groups in society (it is worth noting that in North et al.'s theory open access extends primarily to political and economic spheres).

Unlike North et al., we have not singled out the foraging order or any clearly analogous social order. However, even in their theory this order plays a marginal role and is not very important in the contemporary era. What is important is that our typology generalizes that by North et al. because it is not limited to two very significant but clearly ideal-typical types of social order. Indeed, (quasi)Hobbesian war should be more aptly named the type of social *disorder* but nevertheless it fills a significant niche in the typology. Against the background of North et al.'s theory, our most important claim is about different subtypes of the order of limited predation. In terms compatible with the language of North et al., this order could be named “the social order of compromised access”: the idea behind this label is that there is the partially open access (“partially open” in terms of sphere of activity rather than a part of a society) and quite often it is expected to be the result of a social compromise of some sort. We believe that the identification of this kind of social order may be useful for making North et al.'s typology more realistic.

However, our main focus in this paper is not on the typology of social orders *per se* but on the possible role of TFP and, to a lesser extent, democracy in bringing about positive changes. Our theoretical perspective on TFP suggests that higher TFP increases stimuli for cooperation. We have

²⁶ North, D., Wallis, J., Weingast, B. (2009). *Violence and Social Order. A Conceptual Framework for Interpreting Recorded Human History*. Cambridge: Cambridge University Press.

also obtained some tentative empirical results which are compatible with this claim. These results have led us to another hypothesis: in some instances, democracy can be conducive to, or a sign of, limiting predation independently of TFP. However, TFP seems to be more universal in its function than democracy because high levels of TFP are presumably sufficient to limiting predation in both senses tested: they are associated with high political stability as well as good rule of law performance. It may be the case that productive and affluent society is a more reliable foundation for social harmony and cooperation than democracy. The latter, however, may pretend to be the second best thing even if it does not cause economic growth. These hypotheses constitute a decent agenda for the future research.

Appendix A

Table A1. The panel-data regression results (fixed effects) for the political stability as the dependent variable

Fixed-effects (within)regression	Number of obs	=	1696
Group variable: country	Number of groups	=	96
R-sq: within	= 0.1462	Obs per group: min	= 11
between	= 0.6686	Avg	= 17.7
overall	= 0.6078	Max	= 18
		F (1,1948)	= 45.50
Corr(u _i , xb)	= 0.3929	Prob > F	= 0.0000

Rule of law	Coef.	Std.Err.	t	P > t	[95% Conf. Interval]	
LMDEA	1.087429	.1798327	6.05	0.000	.7346958	1.440163
Polity 2	.0102462	.0039051	2.62	0.009	.0025866	.0179059
Military in Politics	-.0437391	.0153025	-2.86	0.004	-.0737543	-.0137239
Ethnic tensions	-.147814	.0144803	-10.21	0.000	-.1762164	-.1194115
Corruption	-.041759	.0124678	-3.35	0.001	-.0662139	-.017304
Religious tensions	-.0583496	.0154694	-3.77	0.000	-.0886921	-.0280072
_cons	-1.748001	.1162186	-15.04	0.000	-1.975959	-1.520044
sigma_u	.53890343					
Sigma_e	.28121222					
rho	.7859786	(fraction of variance due to u _i)				
F test that all u _i = 0:			F(95, 1594) = 43.17	Prob > F = 0.0000		

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Anastasia Samorodova

National Research University Higher School of Economics. Laboratory for Qualitative and Quantitative Analysis of Political Regimes, Probationer.

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