Roberto Golinelli Riccardo Rovelli

Università di Bologna

ON SUPPORT FOR REFORMS IN POST-COMMUNIST COUNTRIES. WHY IS DEMOCRATIZATION NOT A DINNER PARTY?

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Abstract

How did post-Communist transformations affect people's perceptions of the economic and political systems? We study the changing evaluations of the past and present and expectations of the future through an econometric analysis of about 60,000 interviews in 14 European, post-Communist countries between 1991 and 2004.

We identify the empirical relations of interest on the basis of a simple model of reform reversal, and we define the dependent variables on the basis of factor analysis. We then use two main tools of econometric analysis. First, we estimate a pseudo-panel on 75 country-year clusters, to identify the macro drivers of the "average opinion". We find that on average people appreciate, in the context of a growing economy, more extensive reforms; they dislike "unbalanced" reforms. A deterioration of income distribution and more inflation interact with increasing privatization of economic activity in aggravating nostalgia for the past regime.

Second, we estimate a model based on individual data, to identify how the assessments of the past, present and future are affected by different individual characteristics. Different opinions can be interpreted in the light of a natural characterization of "winners *versus* losers". We also find evidence that individual characteristics exasperate the reaction of different individual types to the macro drivers, beyond the impact that these already have on the average opinion. This points to the fact that different configurations of reforms affect in a different way the evaluations of different groups of individuals.

JEL Classification: O12; O57; P2; P36.

Keywords: Political economy; Post-Communist transformations; Policy responses; Winners and Losers; Analysis of interview data.

Roberto Golinelli [*] Riccardo Rovelli [**]

ON SUPPORT FOR REFORMS IN POST-COMMUNIST COUNTRIES.

WHY IS DEMOCRATIZATION NOT A DINNER PARTY?

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1. Introduction and Motivation

> *"A revolution is not a dinner party, or writing an essay, or painting a picture, or doing embroidery; it cannot be so refined, so leisurely and gentle, so temperate, kind, courteous, restrained and magnanimous." (Mao Zedong, "Report on an Investigation of the Peasant Movement in Hunan", March 1927).*

But what about democracy? In post-Communist countries, the road to democracy includes the setting up of a market economy as an essential ingredient.[1] Is then going along either of these roads akin to a dinner party? The fall of the Berlin wall brought about a new world of hope and opportunities. People gained at the same time freedom of thought, speech and action, and the opportunity to grow rich … shouldn't they just work hard and be happy?

Observers from outside – the present authors included – may perhaps be excused for being surprised that, soon after the start of the post-Communist transformation, people begun to voice their doubts and concerns, rather than their overwhelming happiness. Moreover, these doubts are not fading away as fast as we would like them to do.

Wise political scientists had advised us not to expect that everything should flow smoothly after the start of the transformation. "Because a Communist regime had a non-market command economy run by bureaucrats, post-Communist regimes must create market institutions at the same time as democratic institutions. The simultaneous transformation of polity and economy, and the potentially explosive interaction between the two, makes outcomes uncertain. … The practice of governance in a newly created democracy is a process of trial and error, a search across a terrain for which there is no map. … Change can lead in more than one direction. Only a 'democratic bolshevik' would believe that introducing democratic institutions in place of a Communist regime could immediately produce a stable democracy." (Rose, Mischler and Haerpfer, 1998, p.7).

However, at least in those countries that were closer to the EU, the newly established democracies have proved remarkably stable. It is the foundation of the new market economies that has proved more

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[*] Dipartimento di Scienze Economiche, Università di Bologna. roberto.golinelli@unibo.it

[**] Dipartimento di Scienze Economiche, Università di Bologna and IZA, Bonn. riccardo.rovelli@unibo.it

[1] The opposite would not be necessarily true, as democracy is not a necessary implication of a market economy.

troublesome and has created more disappointments. On the other hand, in those countries that have kept closer ties with the Russian federation even after the dissolution of the USSR, uncertainty appears to be centered even more fundamentally around the characteristics of the political process.

Overall, according to a broad survey conducted in 2007 by the EBRD, almost half of the people interviewed disagreed (and only 35% agreed) with the statement that the economic situation in their country today is better than around 1989, with similar numbers corresponding to the political situation (EBRD, 2007a; see also Guriev and Zhuravskaya, 2009). But why is that? Of course, it may be possible to interpret these (and several other findings of a similar tone) as simple signals of the end of a "honeymoon effect", or as an exercise in the rhetoric of self-deprecation. Or perhaps there might be a rationale for a story of (partial) discontent?

If such a rationale can be tracked down, then it should probably be linked to the evidence of unfulfilled or disappointed expectations, which in turn may be nurtured by experiences of individual failures and defeats. Yet a personal disappointment may become a relevant political factor, as it might explain how a majority that initially supported reforms could turn itself into a majority that opposes their continuation or even demands that they should be reversed. The search for such rationales is what motivates this paper.

This paper

The purpose of this paper is to model and help to rationalize the motivation for the (often negative) attitudes expressed in several thousands of interviews, conducted in 14 post-Communist countries, in the time span from 1991 to 2004. The interviews were initially collected over time and published in separate datasets, as part of the projects of the New Europe, New Russia and New Baltic Barometers conducted by the Centre for the Study of Public Policy (CSPP) at the University of Aberdeen. The original datasets have been coded into a single dataset by Rovelli and Zaiceva (2009). The data we look at are the subjective responses of interviewed individuals to questions on how satisfied they are with the system they live in.

After a very short review of the literature (section 2), in section 3 we propose a simple model to motivate and structure our empirical analysis.

In the second part of the paper (sections 4–9) we present the empirical analysis. We begin with a description of the six responses on which we focus our analysis (section 4). In section 5 we explain how these can be synthesized into two summary measures. In section 6 we introduce a macro pseudo-panel model in order to characterize the macro drivers of these two measures. In section 7 we study the role of the individual determinants of the macro factors. This allows us a first characterization of individual winners versus losers. As we also ascertain that several significant coefficients on the individual determinants are not stable across countries and across time – this opens the way to a more elaborate analysis, in section 8, where individual characteristics interact with macro indicators related to the characteristics of the transitional reforms adopted by each country across time. In section 9 we summarize and discuss our results. Section 10 briefly concludes.

Before engaging the reader in the rest of this paper, however, we think it is worth anticipating one intermediate result from sections 4 and 5, which will influence considerably the structure of the analysis

as well as our conclusions. The statistical analysis of the individual responses concerning the evaluation of the economic and the political systems clearly shows, somewhat to our surprise, that individual opinions tend to be very closely related in these two dimensions. We think that this overlapping of responses is probably due to the fairly general way in which these questions are asked, rather than to the inability of the interviewees to distinguish in principle between the two spheres. In any case, this means that we shall not be able empirically to distinguish between them in this paper, and we leave this task to a follow up paper.

2. Review of the Literature

The theoretical motivation for our paper arises to a large extent from two by now classic papers. The first is Fernandez and Rodrik (1991) – which is so much of a classic that its central idea was clearly foreshadowed by Machiavelli in 1513, in a well know passage on the motives for the difficulty and danger of *"an attempt to introduce a new order of things in any state".* From Fernandez and Rodrik we borrow and elaborate upon the idea that, once introduced, reforms may lose popular support, as the ex post distribution of gains and losses may no longer generate a democratic majority of supporters for reforms.

The second paper is Aghion and Blanchard (1994). Although it is not really a paper in political economy (PE), it nevertheless helps to focus on the stylized facts which ought to be rationalized in a PE analysis of the post-Communist transformation. In particular they identify post-Communist reforms as having to generate a substantial shift of economic activity from the state to the private sector. This transition may be either too fast or too slow, and in either case it might run out of steam as it does not generate a sufficient amount of resources to support itself.[2] This paper has thus opened the way for PE studies, based on the acknowledgement that different configurations of the post-Communist reforms essentially generate different patterns of winners and losers, and may thus be adopted under different configurations of the political process.

The range and depth of the post-Communist transformations has naturally attracted a large number of researchers. The empirical analysis in our work has been inspired in particular by the recent cross-country studies with micro data which have sought to analyze the "unhappiness in transition" (Guriev and Zhuravskaya, 2009; Easterlin, 2008) and the determinants of support for a revision of privatization policy (Denisova et al., 2007).

Rovelli and Zaiceva (2009) provide a comprehensive and updated review of this and of the relevant related literature. We refer readers to this paper for a more detailed analysis of the literature. In addition, in their empirical research, they provide a systematic characterization of winners and losers,

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[2] In particular, if the rate of labor shedding by the state sector is too fast it might actually (i) reduce the speed of restructuring in state firms as workers resist managers' attempts to restructure, (ii) reduce the level of aggregate demand, and also (iii) hinder the speed of job creation in the emerging private sector. This latter result will come about to the extent that higher unemployment translates into higher taxes (and less profits) for newly created firms, which as the only profitable and hence taxable units of the economy bear the entire costs of the unemployment benefits.

and also a comparison of individual attitudes towards the post-Communist transformation across several countries and years.

In this paper, we follow Guriev and Zhuravskaya and Rovelli and Zaiceva in their attempts to uncover the reasons why apparently similar policies adopted across different countries generate quite different levels of popular support. On the other hand our approach to the data is somewhat novel, as we try to fully exploit the tri-dimensional nature of our dataset. One aspect which we seek to highlight is that each reform should not be taken and valued by itself. In almost every instance, a reform is really part of package, together with other potentially complementary reforms. Moreover, each reform or package interacts with the effects of previous and subsequent reforms, and of the old and new institutions. This idea of reform complementarity has been introduced and tested by Braga de Macedo and Oliveira Martins (2008); these authors study the impact of complementarities on the growth rate of transition economies; we apply the same concept to the idea that the costs and benefits of each reform may depend on which package is that reform part of. We discuss this idea in the next section.

3. The Model

We propose a simple model that links together the stylized facts that are relevant to our story. This model has two complementary purposes: to derive interesting, non obvious relations between the variables that we assume to be relevant; and to suggest ways in which we can look at the data and possibly subject the hypothesized relations between variables to some statistical testing.

The model to be sketched below, in particular, is a simple descriptive device to show that under plausible conditions we may observe a certain relation between variables, some of which we characterize as "policies" or "reforms" and others as "outcomes"; and that under other, different but still plausible conditions we might observe an altogether different relation between those same policies and the induced outcomes.

Background

Consider a country which has embarked in a post-Communist transformation, to become a market economy. In particular we focus on the decision to adopt one reform, and on the consequences of this adoption. Although reforms are necessary to increase aggregate output, in practice they may succeed or fail. In either case, nature may help or not, and in our story we assume that if a reform is adopted, and then also succeeds, and also nature helps, then output will increase and people will surely be happy with it (and with their government).

The reform process goes this way:

- Citizens vote for or against reform (a tremendous simplification!).
- If a majority votes for reforms, it is adopted (another tremendous simplification).
- An adopted reform may succeed or fail to work as expected. We think here of the "internal" reasons for success: Is the design of the reform correct? Did reformers take into account or correctly anticipate the consequences of the incentive effects induced by their reform? Did they

take into account all the necessary mechanisms required to make a reform work? For instance, has the relevant information been correctly dispersed? Are the needed "reform watchers" (policemen, tax officers, lawyers, etc.) up to their tasks?

- Finally, nature may also be of help or unhelpful. Here we think of some other variables in the scenario, which the reformers cannot act directly on. For instance there can be an earthquake or a financial crisis or a negative technology shock …

Three caveats need to be mentioned at the outset. First, as argued above, as a reform may involve many decisions of a potentially complementary nature, reforms may become quite complex. Hence when we name a single "reform" (e.g. privatization) in fact we may refer to the whole "reform package" that goes (or should ideally go) along with it (e.g. to include a reform of laws governing corporate finance and financial markets and intermediaries, and possibly also an insurance system for displaced workers, as well as rules related to capital and income flows across borders, and so on).

Second, we shall not focus on the processes of voting (neither the citizens' vote to nominate their representatives in the parliament or their prime minister; nor the elected politicians' vote to adopt or reject reforms). Instead, for the purpose of this model and given the data which we want to examine in its light, here we simply focus on the characterization of the different fractions of the population which would or would not agree with the proposal to first adopt and then continue or reverse a reform.

Finally, we simply focus on the consequences of reforms once adopted, not on the choice or competition between alternative reform proposals or platforms.[3]

Characterization of reforms and of their effects.

A reform is a re-organization of existing institutions. It is not necessarily costly (in budgetary terms) but it may involve some direct costs (for instance, if it requires construction of some infrastructures or the employment of reform-related officers) or also some indirect costs (for instance, if some costly complementary reform – e.g., in order to provide insurance or subsidies to workers displaced by the main reform – is also enacted).

Such costs need to be financed, and will reduce (due to increased taxation) the net gains accruing to those who benefit from the reform. Before we discuss how this happens, we need to characterize incomes before and after the reform.

We assume that reforms increase the dispersion of incomes, hence worsen the income distribution, as measured e.g. by an increase in the Gini coefficient. This is because in case of a successful reform the income of the "winners" increases more, relatively to that of the "losers".

In Table 1 we provide a simple example of the possible outcomes of a given reform to different groups in the population.

Table 1 about here

[3] In a forthcoming companion paper we shall also study the impact of reforms on voting intentions.

To understand Table 1, consider a reform which may or may not be adopted: R = 0; 1. If adopted, it then may succeed or fail: S = 0; 1. Failure vs. success may be due to either the design of the reform package (see above) or to entirely uncontrollable events. To some extent a better (or more cautious) and costlier design of the reform package may reduce the failures due to nature; but in practice we can still attribute some failures to bad design, and others to bad luck. However, as we do not enter here into the details of reform design, we do not pursue further the distinction between the two types of failures.

The number of workers in the public vs. private sector is respectively: $1-\psi$; ψ. We assume that adopting a reform (R=1) coincides with an increase in ψ, and that this consequence is the first and main characterization of a reform package.

A worker in the private sector may be a winner or loser, with respective probabilities: α; $(1-\alpha)$. In the formalization below, we assume α to be constant, as this is sufficient to generate results of interest. In practice, it should be acknowledged that α is conditional on both individual characteristics and on whether the reform fails or succeeds. We do not formalize this dependency here,[4] in order to keep the model at its simplest. However, in the empirical analysis in the next section we take into account explicitly of the fact that α may in fact be dependent both on individual characteristics and on the state of the economy.

Income of private sector workers is conditional on S both for winners and for losers:

For winners, net income after taxes is:	$Y^\circ + G - \tau$	if S = 0 (reform fails)
	$Y^\circ + 2\,G - \tau$	if S = 1 (reform succeeds)
For losers, income including subsidy is:	$Y^\circ - G + \sigma$	if S = 0 (reform fails)
	$Y^\circ + \sigma$	if S = 1 (reform succeeds)

We assume $G > 0$ (see below, also for the characterization of taxes τ and subsidies σ for private sector workers).

We also assume that workers in the public sector do not pay taxes nor receive a subsidy (although their income may include an element of the latter, which we do not model here). However we assume that public sector workers receive a small externality ($\varepsilon>0$) which is positive or negative depending on whether the reform fails or succeeds. This ensures that they will not oppose continuation of a reform even if the reform is successful but involves only a limited number of private sector workers (that is, if $\psi < 1/2$).

A "reform package" consists of an increase in ψ and a simultaneous decision on τ and σ. The expected income of a worker, if no reforms are adopted, is:

$$E(Y \mid R=0) = Y^\circ \qquad (1)$$

[4] This extension is straightforward, although it would increase the complexity of assessing whether any given reform is democratically desirable.

This is so independently of the state of the economy and of the characteristics of the worker. The expected income of a worker, conditional on adoption of a reform, and also respectively on failure or success of the reform, is:

$$E(Y \mid R=1; S=0) = (1 - \psi)(Y^\circ - \varepsilon) + \psi(1-\alpha)(Y^\circ - G + \sigma) + \psi\alpha(Y^\circ + G - \tau) \quad (2.a)$$

$$E(Y \mid R=1; S=1) = (1 - \psi)(Y^\circ + \varepsilon) + \psi(1-\alpha)(Y^\circ + \sigma) + \psi\alpha(Y^\circ + 2G - \tau) \quad (2.b)$$

Thus the expected income of a worker, conditional on adoption but unconditional on the outcome of the reform, is:

$$E(Y \mid R=1) = (1 - \psi) Y^\circ + \psi(1 - \alpha)[p Y^\circ + (1 - p)(Y^\circ - G) + \sigma] + \psi\alpha[p(Y^\circ + 2G) + (1 - p)(Y^\circ + G) - \tau] \quad (3)$$

where p is the probability that an adopted reform succeeds.

Although in generable it would be desirable to allow for intertemporal balancing of the government budget, it is not done here. Thus we take into account only a static government budget constraint, which ex post is: $\tau N_W = \sigma N_L$, where N_W, N_L is the number of private sector workers which are respectively winners and losers. Given our assumptions the constraint may be rewritten as:

$$\sigma = \tau\alpha / (1-\alpha) \quad (4)$$

where $\alpha/(1 - \alpha)$ is the ratio of winners to losers (i.e. of those who pay taxes to those who receive a subsidy).

From inspection of eq. (3) and making use of eq. (4) we observe that expected income after reform increases with:

- α (probability of being a winner)
- p (probability of reform succeeding)
- ψ (“extent” of reform)

The last statement is true only if the following condition holds: $\alpha + (\alpha - 1)(1 - p) > 0$ (5)

This is a reasonable condition for a reform to be worthwhile, and thus we assume that it is satisfied.

Also notice that a natural limit for the tax (and correspondingly for the subsidy) is that those which pay tax should not be made worse off relative to those who receive a subsidy. Hence e.g. for $\alpha = ½$ this requirement implies that $\tau_{max} = -\sigma_{max} = G$. More generally (and barring more complex, contingency-based tax rules) inspection of eq. (2.a) suggests that this limit should take the form:

$$0 < \tau \leq G \quad (6)$$

Reform adoption

We assume that a reform is “democratically desirable” if implementation of the whole reform package is expected to increase the expected incomes of a majority.[5]

[5] In general, democratic decision making need not imply Pareto efficiency. However, by simultaneously and appropriately choosing β, τ and σ (the latter two parameters possibly contingent on individual characteristics),

First assume that there is no a priori distinction between citizens. Hence ex ante everyone faces a probability $1 - \psi$ that ex post they will continue to be a worker in the public sector (or in a SOE), a prob. ψ (1-α) that they will become a private sector "loser" and $\psi\ \alpha$ that they will become a private sector "winner".

If we also assume risk neutrality, then a condition for a strict majority to be in favor of reforms is simply that:

$$E(Y \mid R=0) < E(Y \mid R=1)$$

Inspection of eqs. (3) and (4) shows that this is satisfied if: $0 < (1 - \alpha)(1 - p)\ G + \alpha\ (1 + p)\ G$, which in turns reduces to:

$$G > 0\ , \qquad (7)$$

which has an obvious interpretation. Hence, under the stated conditions, a reform satisfying $G > 0$ will always be desirable in a democratic poll.

Reform reversal

We now study conditions under which a reform may be repudiated. To this purpose, it is heuristically useful to distinguish between two types of reform (and also of the government which proposes reforms[6]). For any given chosen ψ (the "extent" of reform) we call a reform package:

- "strictly liberal", if $\sigma = \tau = 0$ (no mechanism for social insurance is provided)
- "social democratic", if $\sigma > 0$ and $\tau > 0$.

If the reform, once adopted, succeeds, then eq. (2.b) shows that:

- In case of a strictly liberal reform then everyone is at least as well off as before, and a fraction ($\alpha\ \psi$) of the working population will be strictly better off;
- In case of a social democratic reform) then everyone is at least as well off as before, and a fraction $\psi\ >\ \alpha\ \psi$ of the working population will be strictly better off.

In either case, we assume that a poll would confirm the ex post democratic desirability of the reform. Hence, if a decision to continue the reform is required, then it will be taken and the reform will be continued.

However, we might at the same time also observe a change in the governing majority (or coalition). This will be the case, in particular, if the reform is perceived to benefit too small a number of citizens (as it might be the case with a strictly liberal government, since by assumption $\alpha\ \psi < \psi$): in this case we might

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democratic decision making could in principle reach Pareto efficient outcomes. Also note that the formalization that follows is compatible with democratic decision making, but not necessarily contingent on it. A non democratic government may also adopt a reform (possibly the same), and then the public opinion on the reform could still be assessed on the basis of this formalization.

[6] We are assuming a political system where each party has a "natural" constituency, so that its preferred policies are always targeted at such a constituency.

observe a shift from a strictly liberal to a social democratic government notwithstanding the success of the reform.

If however the reform, once adopted, fails, then we observe from eq. (2.a) that:

- In case of a strictly liberal reform then a fraction $(1 - \alpha\,\psi)$ of the working population will be strictly worse off.
- In order to reduce that fraction (and thus to induce a larger share of the population to confirm the reform) it would have been necessary to have adopted a "wise" social democratic reform, that is a policy of taxes and subsidies such that:

  $$\sigma > G > \tau > 0\,. \qquad (8)$$

  The first inequality is required to ensure that the "private sector losers", which make up a fraction $\psi\,(1 - \alpha)$ of the working population, are better off relative to the benchmark income Y°; the second is needed to ensure that the private sector winners, which make up a fraction $\psi\,\alpha$, are taxed by less than they have gained from the reform (hence will hopefully continue to support it).

  Notice that, given eq. (4), condition (8) may only be granted if:

  $$\alpha > ½ \qquad (9)$$

  that is if the winners outnumber the losers.

- On the other hand, as an alternative example, we might consider a leftist (i.e. "extremist" social democratic) government. This government may wish to fully compensate the losers even at the risk of making the winners worse off. In this case, condition (9) would be neglected and condition (8) may be replaced by:

  $$\sigma > G = \tau > 0 \qquad (8')$$

  In this case, a fraction $\psi\,(1 - \alpha)$ of the population will end up with a higher income (although we still refer to them as the "private sector loser". Of course, we cannot exclude that this fraction actually amounts to a "democratic majority", and accordingly this policy may well be adopted in a world of partisan policies!

Summing up

We may now sum up. Under the conditions that we have characterized, a reform will always be adopted.

- If it succeeds, the population will continue to support it. In this case, if the reform has been introduced by a strictly liberal government, we might either see a continuation of the same cabinet, or a shift to a more social democratic majority (possibly a coalition).
- If it fails, and no measures have been taken to compensate the private sector losers (by a strictly liberal government), then a majority of the population will continue to support the reform only if the private sector winners outnumber the rest of the population, that is if: $\alpha\,\psi > ½$.
- If it fails, and sufficient compensation measures have been taken (a "full reform package", adopted by a reform-minded social democratic government), then a majority of the population will continue

to support the reform only if those still in the public sector are a strict minority and if there are enough resources to compensate the private sector losers without discontenting too much the winners, that is if: $\psi > ½$ and $\alpha > ½$. If either condition fails, the reform cannot be saved.

- Alternatively, again in case of failure, a leftist government may wish to more than fully compensate the private sector loser, by excessively taxing the (theoretical) winners.[7]

Table 2 below helps to focus on these different outcomes.

Table 2 about here

Finally, this framework may also help to rationalize one reason why liberals might want to embark in a more "extensive" reforms (= a reform with a higher ψ) than a social democratic government may want This is because, to be sure that a reform is supported even in case of failure, a liberal government must be sure that $\psi \alpha > ½$, whereas a social democratic government will be safe just with $\psi > ½$. This might induce a liberal government to select a more extensive reform.[8]

Empirical implications

The model sketched above suggests that, whenever a reform is adopted then we should observe an increase in the dispersion of incomes, which may be accompanied by a contemporaneous increase of average income levels (depending on the greater or lesser success of the reform). To take care of the worsening income distribution a reform package may or may not include some measures of ex post redistribution between winners and losers.

Depending on both factors (the success or failure of the reform, and particularly the design of the reform package, and thus the existence and size of possible redistribution effects) a majority of the people will express their satisfaction with the reform, and possibly vote for continuation; alternatively, they might prefer to stop or reverse the process of reforms, or they might decide to continue with the reform but change the government majority in order to get the benefits of the reform distributed onto a larger share of the population.

[7] Notice that the framework which we have adopted in this exposition is clearly biased towards the fact that social democratic policies stand a wider change of success, as by construction they distribute benefits onto a larger majority of the population, both in the case of success and of failure. To be fair to a more liberal position, we should acknowledge that a policy which concentrates more resources on the winners may generate a faster growth of incomes and thus ultimately generate more resources. This feature could be added to our framework at the price of somewhat greater complexity.

[8] Notice that a social democratic government could additionally decide to tax the winners also in order to compensate the public sector workers. This is a plausible policy option, and its consequences could easily be computed in the present framework. We neglect it to keep the exposition more compact.

In the empirical analysis which is presented below, we explore the relevance of both *individual* and *systemic* determinants of individual satisfaction or dissatisfaction. In particular, as we explain in more detail in the next sections, we select as potential explanatory variables:

- a set of macro-institutional indicators, which describe both the extent and characteristics of the reforms adopted during the post-Communist transformation and the state of the macro economy. These variables are meant to measure the extent of the reform process (ψ in the model above), the dispersion or complementarity of that process, and the macroeconomic context and consequences of those reforms.
- a large set of individual characteristics, which are potentially related to the ex post distribution of benefits and costs of the reforms, which we use to identify (subjective) "winners" and "losers" from the reform process.

We shall also explore (thus going beyond the modelization presented above, but following on form its main thread) the possible interactions between the two sets of determinants.

4. The NEB surveys and the six basic response variables

The data

In this paper we use both micro and macro data. The former are individual survey data, merged from waves of the New Europe Barometer, New Russia Barometer and New Baltic Barometer, which are representative surveys of the populations in 14 transition countries, consistently collected over time by the Centre for the Study of Public Policy (CSPP) at the University of Aberdeen and the Paul Lazarsfeld Society, Vienna. Ten countries in the sample became members of the EU with the 2004 or 2007 enlargements (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia), Croatia is currently a EU candidate, while three countries are members of the CIS (Belarus, Russia and Ukraine). Each survey round contains a large number of common questions, in particular questions on individual opinions about the past and present economic and political systems. Hence the set of available surveys constitutes a unique dataset that allows meaningful cross-country comparisons across 1991-2004. This dataset has been constructed by and is extensively documented in Rovelli and Zaiceva (2009).

In conjunction with these individual data we also use macro-economic and institutional variables, in particular variables measuring the spread and intensity of transitional reforms. The data sources are listed in the Appendix.

The six basic responses

In the New Europe Barometer (NEB) surveys, individuals from fourteen countries are asked questions about how the economic and the political systems work in their countries, looking distinctly at the past (i.e. Socialist), current, and future (i.e. in next years time) situations. Table 3 synthesizes the phrasing of the six questions, and reports the corresponding names of the coded answers.

Table 3 about here

The variables corresponding to the responses to the questions listed on Table 3 can be seen as different ways to evaluate the past, present and future situations by different individuals (i) located in different countries (c) and points in time (t) (with gaps). Therefore we characterize these observation as: $y_{i,c,t}$. In Table 4 we report the number of individuals who have given a response to the six questions in each country and year.

Table 4 about here

As it is clear from Table 4, not all countries have been surveyed in each available year. Overall we have 89 country-year cells. 1993 and 1995 are the only years in which all countries were surveyed, and then again in 2004, except for Croatia. Altogether these three (out of nine) years cover almost half of the whole sample of 102,368 observations. Each country covers 5-7% of the sample, with the exceptions of Russia (with a sample size almost twice that of the other countries) and Croatia (where only four waves of interviews have been done, resulting in an overall sample size almost half that of the other countries).

In Table 5 we report the main statistical features of the six variables of interest. Out of a total of 102,368 interviews, the share of non-response varies between 5-15% of the interviews (see the second row of numbers). Non responses are more frequent for the two questions about the future.

Table 5 about here

We may also note that while the sample means of the six variables are widely different (with a surprising negative mean response to PRESEC), the corresponding standard deviations are remarkably close to each other.

In Table 5, in order to better understand the sources of heterogeneity by country and over time, we first compute the means and standard deviations for each of the 89 country-year clusters counted in Table 4; we then decompose their variability between countries and over time in three parts: the share explained by differences in country means or standard deviations ("country effect"), the share driven by a time-varying (macro) drift common to all countries ("time effect"), and the residual share, which captures idiosyncratic factors.

As far as the means of individual responses by country-year are concerned, the country effect is always the main determinant of the heterogeneity in the responses about the past and the present, while the idiosyncratic effects account for the largest shares of variability in those about the future. The same is true for the standard deviations, although the residual effects are in general larger for all the six variables. The drifts over time of both the means and standard deviations of the individual responses are instead not particularly relevant.

Since the heterogeneity of responses across countries is quite large and tends to dominate the overall variability, it is important to account for this dimension in any reliable statistical analysis. On the other hand, it would be quite difficult to summarize and model the variability of the six variables of interest in fourteen countries along only a few years. However we can exploit the strong correlation between the six basic response variables within each country-year cluster. The simple correlation matrix between these variables is reported in Table 6, from which two conclusions may be drawn: first, the two responses concerning evaluation of the past regimes are strongly correlated with each other, but not with the other four variables, and *vice versa* the four response variables concerning the present and the future are strongly correlated with each other, and not with those concerning the past.

Table 6 about here

In short, the block of the two responses about the past does not significantly covariate with the block of the four ones about present/future. However, we need to check the robustness of this finding across the 89 country-year clusters. We check this by inspection of Figures 1 and 2. Figure 1 plots the nine correlation coefficients in which at least one of the two variables is either PASTEC or PASTPOL (corresponding to the first two columns of the correlation matrix in Table 6), and Figure 2 plots only the correlations of responses concerning the present and/or the future (corresponding to the last four columns of Table 6).

Figures 1 and 2 about here

Results are strikingly clear, with rare exceptions: the correlation structure which emerges from Table 6 is remarkably stable both within each country and over time, as the *only* set of coefficients that are clearly different from zero in Figure 1 is that which involves the correlation between PASTEC and PASTPOL, and on the contrary *all* the blocks in Figure 2 report (with minor exceptions) non-zero coefficients between the responses on the present and the future. This in turn suggests that we may use statistical methods to reduce the dimensionality of the six groups of individual responses, as we describe in the next section.

5. Two summary measures of individual responses

Since our main interest is to explain the differences in the individual responses on the merits of the political and economic systems, it is appropriate to focus the empirical analysis on those combinations of responses which concentrate the largest variability of the individual responses (see Anderson, 1974, p.272-273). These orthogonal linear combinations of more variables are statistically defined as the principal components of the individual responses. As implicitly suggested by Table 6, we will see that a very large share of the individual variation of responses can be summarized by only the first *two* principal components.

Alternatively, the aim of summarizing the variability of many observed individual responses in few variables can be seen as that of measuring the common factors underlying all these observations. The broad idea of factor analysis is to obtain estimates of latent variables which lay behind the individual responses, and which can be measured only indirectly by using the observed response variables, readily available from the surveys.

Micro factors. More formally, we introduce the following notation. Let **X** = (PASTEC, PRESEC, FUTEC, PASTPOL, PRESPOL, FUTPOL)' be a matrix where the questions are in different rows, and the observations (answers) are in columns (each individual answer refers to a country at a given point in time).[9] Defining as $\mathbf{x_{i,c,t}}$ the vector of **p** standardized responses (in our case **p = 6**) by the **i**-th individual in country **c** at time **t**, we can express it as a linear function of **k** latent factors:

$$x_{i,c,t} = \Lambda_c f_{i,c,t} + \varepsilon_{i,c,t} \quad , \qquad \text{for } c = 1, \ldots, 14 \tag{10}$$

where $\mathbf{\Lambda_c}$ is a country-specific $\mathbf{p \times k}$ matrix of factor loadings ($\mathbf{k < p}$), $\mathbf{f_{c,t,i}}$ is the $\mathbf{k \times 1}$ vector of orthogonal latent factor scores (i.e. the common factors), and $\boldsymbol{\varepsilon}_{\mathbf{c,t,i}}$ is a **p**-vector of uncorrelated idiosyncratic disturbances, i.e. **p** judgment-specific factors assumed uncorrelated with the common factors **f** .

Although principal components and factor analysis are different multivariate methods,[10] principal components can be seen as one of the alternative approaches to estimate the factor loadings matrix $\mathbf{\Lambda_c}$ and to extract factor scores that, in large samples and/or with communality (i.e. the sum of the squared factor loadings) close to one, should be very similar to those extracted with genuine factor analysis approaches.

In order to assess whether the similarities of the scores imply the robustness of the findings of this paper to the use of alternative approaches, we extracted factors by using three main extractors: principal components factoring, principal factoring, and maximum likelihood factoring. In doing that, we always applied orthogonal varimax rotations to the loadings matrix in order to obtain a parsimonious and more interpretable representation of $\mathbf{\Lambda_c}$, i.e. with few large loadings and as many as possible near-zero loadings.

In order to estimate the number of latent factors at the level of each country, Table 7 reports, along six columns, the ordered eigenvalues $\boldsymbol{\lambda}_\mathbf{j}$ (**j** = 1, 2, ..., 6) of the empirical covariance matrix of the six standardized response variables. The structure of the results by country is remarkably similar: following the Kaiser-Guttman's "eigenvalue greater than one" rule,[11] we find that **k = 2** for all countries. For this reason, in the last column of Table 7 we report the cumulative proportion of the overall variation

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[9] Since the second moments of the variables depend on their scale, it is customary to first standardize by country each variable in **X** to have mean zero and standard deviation one within each country.

[10] In order to reconstruct the six variables of interest, factor analysis requires to specify the model of equation (10) with the introduction of stochastic disturbances, while principal components analysis assumes that there are no disturbance terms, and thus it can be considered a sort of deterministic factor analysis.

[11] It can be shown that components with eigenvalues greater than one embody variances greater than the average.

explained by the first two principal components (variation "share" for k=2), which is remarkably high, always in the 66-75% range.

Table 7 about here

In the following, we shall use the two factors scores by country, henceforth $\mathbf{f1}_{cti}$ and $\mathbf{f2}_{cti}$, extracted with the principal components factoring. In general, all the results of this paper are robust to the use of the other two extraction techniques, principal and maximum likelihood factoring.[12]

In order to summarize the meaning of $\mathbf{f1}_{cti}$ and $\mathbf{f2}_{cti}$, we can rely on R^2 from regressions at the country level of each response variable against one factor at a time (either $\mathbf{f1}_{cti}$ or $\mathbf{f2}_{cti}$); the higher is R^2 of each regression, the most relevant is that factor to explain the response variable. Notice that this measure contains the same information as the specific factor loading. [13]

Figure 3 shows the map of the R^2 of 168 regressions (2 factors times 6 response variables times 14 countries), sub-divided into six panels (one for each response variable)[14]; each panel reports along the y-axis the R^2 of the country-level regressions of a response variable against $\mathbf{f1}_{cti}$, and along the x-axis the R^2 of the regressions against $\mathbf{f2}_{cti}$.

Figure 3 about here

A strong, consistent pattern emerges from all these panels. For those in the first column, the responses about the past (PASTEC and PASTPOL) are strongly related to $\mathbf{f2}_{cti}$, with an R^2 on the x-axis of about 0.80, while they are almost unrelated to $\mathbf{f1}_{cti}$, with R^2 on the y-axis always close to zero. Symmetrically in the other four panels, the responses about the present or future (PRESEC and PRESPOL; FUTEC and FUTPOL) exhibit the opposite pattern, that is a very strong relation with $\mathbf{f1}_{cti}$ and almost no relation with $\mathbf{f2}_{cti}$.

Accordingly, we suggest that the two factors can be respectively interpreted as:

$\mathbf{f1}_{c,t,i}$ summarizes the individual responses about the present and the future, in both the economic and political dimensions. We shall refer to this as the "forward factor".

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[12] All unreported and only mentioned results in this paper are available upon request from the authors, together with the corresponding procedures to implement them.

[13] In fact, when regression procedures are used to estimate the six correlations of each factor with either response variable, it can be shown that R^2 of these regressions are equal to the squared of the corresponding factor loadings. Further, the sum of the two R^2 for the two response variables is equal to their communality, as the two corresponding factor scores are orthogonal.

[14] In the first (second) row of plots there are the variables referring to the economic (political) situation, the three columns of plots are ordered from left to right by the timing of the question: past, present and future.

$\mathbf{f2}_{c,t,i}$ summarizes the individual responses about the past, in both the economic and political dimensions. We shall refer to this as the "backward factor".

Given the assumption that Λ_c is fixed over time, $\mathbf{f1}_{c\,t\,i}$ and $\mathbf{f2}_{c\,t\,i}$ are extracted by putting together all surveys for the same country. Therefore, within each country, they *(a)* have mean zero and standard deviation one, and *(b)* are uncorrelated with one another.

These features are relevant for our study. First, as we shall explain below, we will focus on these two factors as the dependent variables at the center of our analysis. Second, by focusing on how the country averages of each country change from year to year (around the full-sample mean of zero) we may obtain a preliminary information about how each country-factor changes through time. Third, as the two factors are uncorrelated with each other, we may map up to two interpretable summary dimensions for the responses of each individual, which are distinguishable in reference to the time horizon (forward vs. backward) but not to their "object" (such as economy versus policy or ideology). Fourth, since the two factors are uncorrelated, the set of potentially explanatory variables relevant to the first factor should not include variables relevant to the explanation of the second factor, and *vice versa*.

Before we move on, it is useful to ask how to interpret one crucial aspect of this result: in fact, we were surprised to find that the statistical analysis of individual responses should indicate so clearly (first in the correlation analysis of Table 6 and Figures 1 and 2, and then in the factor analysis of Table 7 and Figure 3) that individual opinions on the evaluation of the economic and the political systems are so closely related. We believe that this unexpected overlap of responses may be due to the fairly general way in which these questions have been phrased, rather than to the inability of the interviewees to distinguish in principle between the two spheres. In any case, this implies that we are not able to distinguish between these two dimensions in this paper, hence we shall leave this task to a next paper.

Macro factors. We now proceed to define the macro factors $\mathbf{F1}_{ct}$ and $\mathbf{F2}_{ct}$, which correspond to the aggregation of individual factors in the country dimension. We thus define them as the unconditional means by country of the individual factors $\mathbf{f1}_{c,t,i}$ and $\mathbf{f2}_{c,t,i}$, that is:

$$Fa_{ct} = \frac{\sum_{i=1}^{N_{ct}} fa_{cti}}{N_{ct}} \qquad (11)$$

where a = 1, 2 identifies the two factors, and $\mathbf{N}_{c\,t}$ is the total number of responses in country **c** to the **t**-th wave of the survey.

The evolution over time and for each country of $\mathbf{F1}_{c\,t}$ and $\mathbf{F2}_{c\,t}$ (and of the respective standard deviations) is plotted in Figure 4.

Figure 4 about here

In order to ascertain whether there is a systematic drift over time in the two factors, we also computed the country means of $\mathbf{f1}_{c,t,i}$ and $\mathbf{f2}_{c,t,i}$ for the two periods, before and after 1997, and tested whether the change occurring between the two periods is significantly different from zero. The relevant data and test statistics (allowing for different variances, since the means in each sub-period are computed over different numbers of individuals) are reported in Table 8, and the change is also plotted in Figure 5. (Note that overall we now have only 81,649 usable observations, as non responses reduce the available sample by about 20%).

Table 8 about here

Figure 5 about here

From Table 8 we note that, for all countries taken together, the means of both **f1** and of **f2** significantly increase from the first to the second period. More in detail, the change in **f1** is positive in 9 out of 14 countries, which suggests that in most countries a more favorable assessment of the present and future situation is given in the second period. However, this is even more so for the mean of **f2**, where we observe only one negative change (in Belarus), which suggests an overall tendency in most other countries to re-assess more positively the Communist experience as time moves forward. Figure 5 clearly shows that in a relative majority of countries (7 out of 14) there is on average a positive revision over time of both responses concerning the past (the backward factor) and the present and future (the forward factor).

6. The macro drivers of the macro factors

In this section we report the results of our search for the main determinants (drivers) of the two "macro" factors $\mathbf{F1}_{ct}$ and $\mathbf{F2}_{ct}$ defined in equation (11), that is the country averages of the first two micro factors.

In section 3 we developed the idea that reforms are identified by their "extent", which ultimately impinges on ψ, defined as the share of the private sector, and on the "packaging" of reform (which was defined there as the set of ancillary or accompanying reforms, which are meant either to facilitate the smooth working of the main reform, or to insure or compensate the "losers"). We also argued that the success or failure of a reform may depend on several factors, among which is the possibility of adverse macro events, which may be due to the reforms themselves or be entirely exogenous. Hence, in the same spirit of that section, we select here the following potential determinants for the two macro factors which we have identified:

- the first and the second moment of the set of nine EBRD transition indicators ($\mathbf{TI}^{m}_{ct}$ and $\mathbf{TI}^{v}_{ct}$ respectively)[15];
- a vector $\mathbf{MAC}_{ct}$, which includes the following four macroeconomic variables: growth rate of GDP, inflation rate, unemployment rate, Gini index of the distribution of earnings;

[15] All the results reported below are robust to the use of the Herfindhal concentration index of the nine EBRD indicators instead of the standard deviations TI^{v}_{ct} . See the Data Appendix for the data sources.

- the GDP share of the private sector, $\mathbf{PS_{ct}}$;

The general empirical functional form is assumed to be a distributed-lags panel model with two-way (country μ_c and time τ_t) fixed effects. Given that we have extracted individual factor scores at the country level, it is appropriate to use the fixed effects (within) estimator, as it ignores the variation between countries, with which we cannot deal in the context of this section. In addition, Verbeek and Nijman (1992) show the consistency of the within estimator in pseudo panels like ours, where the number of individuals per cohort (cell) is very large (see the counts in Table 4).

We also assume that the determinants identified above may also interact in a number of ways, as exemplified in equation (12) below:

$$\begin{aligned} Fa_{ct} = {} & \mu_{ac} + \tau_{at} + \alpha_a(L)\ [TI^m_{act}(1+\beta_{am}\ MAC_{ct})] \\ & + \gamma_a(L)\,[TI^v_{act}(1+\beta_{av}\ MAC_{ct})] \qquad \text{for } a = 1, 2 \qquad (12) \\ & + \varphi_a(L)\,[M^d_{act}(1+\beta_{ap}\ PS_{ct})] + \phi_a(L)\,PS_{ct} + \varepsilon_{act} \end{aligned}$$

Where: $\alpha(L)$, $\gamma(L)$, $\varphi(L)$ and $\phi(L)$ are polynomials in the lag operator up to the second order; the β parameters measure the interaction effects; and we have introduced possible interactions between the Transition Indicators ($\mathbf{TI^m_{ct}}$ and $\mathbf{TI^v_{ct}}$) and the macroeconomic variables ($\mathbf{MAC_{ct}}$), and between the latter and the share of the private sector, $\mathbf{PS_{ct}}$. Notice that the parameters of equation (12) are specific to each of the two factors.

The random shocks ε_{act} with a = 1, 2 are assumed to be independently distributed over time, but possibly heteroskedastic; for this, we adjust the fixed-affects standard error panel estimates to account for general heteroskedasticity, see White (1980).

After a general to specific search[16], the following final model emerges from the reduction of equations (12) using the available data (note the change in notation, as the α now refer to the coefficients in the equation for the first macro factor, and the β to the second factor):

$$\begin{aligned} F1_{ct} = {} & \mu_{1c} + \tau_{1998} + \alpha_1\,[TI^m_{ct} \times GDPgrowth_{ct}] + \alpha_2\,[TI^m_{ct} \times Unemployment_{ct}] \\ & + \alpha_3\,[TI^v_{ct} \times GDPgrowth_{ct}] + \varepsilon_{1ct} \qquad (13) \end{aligned}$$

$$F2_{ct} = \mu_{2c} + \tau_{1996} + \beta_1\,Gini_{ct-2} + \beta_2\,SP_{ct} + \beta_3\,[Inflation_{ct-2} \times SP_{ct}] + \varepsilon_{2ct} \qquad (14)$$

Table 9 about here

[16] Results on the test for parameter restrictions, which lead from the general specification of eqs. (12) to the model of eqs. (13)-(14), are not reported but are available on request. However, we observe that the limited number of observations in the time dimension (only about six waves of interviews per country on average) may have weakened the efficiency of the testing procedure.

Estimation results are reported in Table 9, and may be summarized as follows:

i. The determinants of the two factors are completely different. This is to be expected, as F1 and F2 are by construction orthogonal.

ii. Especially for F1 (the forward factor, eq. 13) the *interaction* effects are largely dominant. That is, the "average opinion" expressed by the individuals interviewed in each country and time is influenced by the *interaction* between the state of reforms (average and variance of the reform indicator and the state of the macro economy (GDP growth and unemployment).

iii. All the interaction effects for F1 are correctly signed: in particular, α_3 is significantly *negative*, pointing to the negative effect of not exploiting the *complementarity* of reforms.

iv. F2 (the backward factor) is explained by those macroeconomic variables which are likely to affect negatively the welfare of the losers (and thus positively their *nostalgia* for the past): the worsening distribution of earnings, the increasing share of the private sector, and the interaction of the latter with the inflation rate, which is also likely to affect negatively those who do not benefit from earnings their incomes in the private sector. At the same time, it is quite logical to find that these opinions are unaffected by variables which measure directly the state of the reforms.

v. Note that in the equation for F2 both Gini and Inflation enter with a 2-year lag.[17]

7. The micro factors: a preliminary identification of winners and losers

We now begin to analyze the determinants of the factor scores $\mathbf{f1}_{cti}$ and $\mathbf{f2}_{cti}$ using individual data. In this case we can use the full data set of individual observations (see below) and also a new set of explanatory variables, which define the individual characteristics of the respondents. The first preliminary micro analysis is thus based on the following model:

$$fa_{cti} = \delta_{act} + \sum_{j=1}^{17} \beta_{ajc}\, ie_{jcti} + \varepsilon_{acti} \quad , \quad for\ a = 1, 2 \qquad (15)$$

Where: $\mathbf{f1}_{cti}$ and $\mathbf{f2}_{cti}$ have been previously defined;

δ_{act} are the county-year intercepts;

$\mathbf{ie}_{jcti}$ are binary variables equal to 1 if the $\mathbf{i}^{th}$ respondent in country **c** in year **t** has the $\mathbf{j}^{th}$ characteristic (see below), with j = 1, 2, ..., 17;

β_{ajc} are parameters that measure the effect of the $\mathbf{j}^{th}$ characteristic on factor score **a** in country **c**;

ε_{acti} are random shocks to factor scores, assumed to be unrelated with the individual characteristics.

Table 10 shows the composition of the individual characteristics in the whole sample. The available observations, after excluding non responses,[18] have been reduced to 61,616 (whereas 81,649

[17] Lags are defined as the number of solar years before the relevant survey year.

observations where available for the extraction of the factor scores **f1** and **f2**, see Table 8). We have (arbitrarily) identified a "reference individual", who is characterized as follows:

(i) income level in the 2nd or 3rd quartile; (ii) age between 40 and 50 years, (iii) older than 18 years in 1991; (iv) male, (v) married, (vi) living in a big town, (vii) with only secondary or vocational education, (viii) employed; (ix) not belonging to an ethnic minority in the Baltic countries .

We then identified 17 other characteristics that may render a single respondent different from this reference individual. See Table 10, columns 2 and 3, where we have grouped together characteristics of a similar nature (for instance: those which refer to the level of education, *etcetera*). Whether one characteristic belongs or not to the "reference" individual is indicated in the third column.

Table 10 about here

Given that equations (15) entail the estimation of a huge number of parameters (75 country-year intercepts δ_{act} and 227 coefficients β_{ajc} for each factor)[19], we chose to summarize the main results in two figures, one for the intercepts and the other for individual effects respectively. In particular, Figure 6 shows the relationship between the country-year unconditional means of the two macro factors (**F1** and **F2**) and the corresponding intercepts δ_{1ct} and δ_{2ct}; the panel on the right is relative to **F2** (the backward factor) and that on the left is about **F1** (the forward factor).

Figure 6 about here

If all individual characteristics did not significantly affect factor scores, the R^2 of equations (15) would be zero, the conditional and unconditional means would coincide, and all points in Figure 6 would be found on the bisector line of the second and third quadrants. The more dispersed are the points around that line, the larger is the R^2 of equations (15). A visual inspection of Figure 6 suggests that: *(a)* the scatter-plot for **f1** is less dispersed than that for **f2**, therefore the explanatory capacity of the individual characteristics is larger for the backward than for the forward factor; *(b)* given the strong linear correlation between conditional and unconditional means,[20] the intercepts of equations (15) can be

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[18] Non responses typically occur in reference to income levels (see also the next footnote).

[19] The number of country-year intercepts is lower than the 89 clusters which were available for f1 and f2 (see Table 4, Figure 4 and the macro analysis in Section 6) because in 14 surveys the questions about income levels were not asked. As far as the effects of individual characteristics on factor scores are concerned, there are 14 countries × 16 characteristics (=224 parameters), plus the minority effect (which has been estimated only for the three Baltic countries).

[20] They are respectively 0.960 for **f1** and 0.894 for **f2**.

explained by the macro drivers which have been identified in (13)-(14) in Section 6. This second observation is quite important for our modeling strategy, and we shall come back to it below.

As regards the effects of the 17 individual characteristics listed in Table 10, their estimates are reported in Figure 7. In each of the 17 panels, the data points refer to the country estimates of β_{jc} , that is of the effect of that characteristic (labeled by country code) on factors **f1** (on the vertical axis) and **f2** (horizontal axis), respectively. To help focus on the most relevant cases, we only plot those estimates of β_{jc} in the case that at least one of the two effects (on **f1** and **f2)** is at least 10% significant.[21]

Figure 7 about here

We observe that in 6 of the 17 panels more than half of the countries are absent: this means that the corresponding individual characteristics are <u>not</u> relevant for either factor in those countries. In fact, Figure 7 plots 150 significant estimates (data points) over a total of 227. Out of these 150 cases, in 102 cases the estimates of β_{jc} have effects of *opposite* sign on **f1** and **f2**. The remaining 48 cases report a characteristic that has a significant effect with the *same* sign on both **f1** and **f2**. Thus we observe that, even if the factor scores are by construction orthogonal at the country level, in two thirds of the cases they are affected by the same individual characteristic with an opposite sign. To visualize whether the effect of a characteristic is positive or negative for each country and on each factor, we have drawn horizontal or vertical lines corresponding to the null effect. Absence of a horizontal (vertical) line in the panel for one individual characteristic implies that in all the 14 countries all the effects on **f1** (**f2**) have the same sign. On this criterion (and remembering that we have plotted only data points where at least one of the country effects is 10% significant):

- **3** individual characteristics have the same sign on **f1** for all countries. These are: low income (negative); being younger than 18 in 1991 (positive); housewife (positive)
- **7** characteristics have the same sign on **f2** for all the countries. These are: high income (a negative effect), young age (negative), female (positive), single (negative), only elementary education or less (positive), university degree (negative), ethnic minority (positive, only in the Baltic countries)

All these effects have the intuitively right sign, although we may observe that the effects of individual characteristics are relatively more homogeneous across countries for the backward factor than for the forward factor.

In particular, two groups of characteristics (level of income and education) have uniform and clearly interpretable effects in almost all the countries: the poorer and less educated individuals give a negative score on the forward factor, and a positive score on the backward factor: they are unhappy about the present, not hopeful for the future, and nostalgic of the past. The opposite is true for the richer and more educated individuals. Also, those who are unemployed tend to answer in the same way as the

[21] Depending on White's (1980) residuals heteroskedasticity test results, parameters significance is measured using either OLS or heteroskedastic-consistent standard errors.

poorer and less educated individuals, while students usually answer in the same ways as the group which they hope to join (the higher income earners and more educated people).

Although the effects of age and cohort are not clear cut, younger people tend to give more negative response about the past, whereas the average response on the past of those who were younger than 18 years in 1991 is more mixed. However, this cohort is in general quite positive in all countries about the present and the future.

As regards the location of residence, those who live in villages tend to give a more positive evaluation of the past. On the other hand, those living in cities are negative about the past (except for Latvia), but are quite divided across countries in their evaluations of the forward factor.

Overall these results largely confirm those found by Rovelli and Zaiceva (2009) in respect of the characterization of winners and losers, despite the fact that their dependent variables were defined quite differently from ours.

Finally, we look at the constancy over time of the estimated parameters β_{jc}. To this purpose we estimate an extension of model (15) in which the country-year dummies δ_{ct} are allowed to interact with all the 17 individual characteristics $\mathbf{ie}_{jcti}$:

$$fa_{cti} = \delta_{a\,ct} + \sum_{j=1}^{17} \beta_{ajc}\, ie_{jcti} + \sum_{j=1}^{17} \gamma_{ajct}(\delta_{ct} \times ie_{jcti}) + \varepsilon_{acti} \qquad \textit{for } a = 1, 2 \qquad (16)$$

The null hypothesis of parameter constancy over time implies that, for factor **a** in country **c** and for the **j**–th individual characteristic:

$$\gamma_{jct} = 0 \ , \ \text{for} \ \forall t \, , \ t = 1, \ldots, T_C - 1.$$

where $\mathbf{T_c}$ is the number of years in which country **c** has been surveyed. This would give us a set of 17 restrictions for each factor and country. However, to obtain a more presentable set of test results, we chose to jointly test all the restrictions within each of 7 homogeneous groups of characteristics.[22] The p-values for these test statistics are reported in Table 11. The table has two panels, the upper one for the outcomes of the test on the equations for **f1**, the lower for **f2**; each panel reports 87 results (6 groups times 14 countries plus the 3 tests for minorities in the Baltic countries). Results of for the same group are reported along the rows; a final row tests the null that all groups are jointly stable, that is :

$$\gamma_{jct} = 0 \ , \ \text{for} \ \forall t \, , \ t = 1, \ldots, T_C - 1; \ \text{and for} \ \forall j \, , \ j = 1, \ldots, 17.$$

[22] We have used the same 9 groups as in Table 10, further collapsing the age and cohort and the gender and marital status groups. Also note that, when appropriate, inferences are based on a variance-covariance matrix robust to general heteroskedasticity.

Table 11 about here

Overall, the null hypothesis is 10% rejected 37 (40) times out of 87 in the **f1** (**f2**) equation. The significance level was chosen to allow for possible inefficiency in estimation due to the model over-parameterization. Looking at the results, parameters instability for both the **f1** and **f2** equations is mainly due to "place of residence", "gender/marital status" and "level of income", while the other characteristics tend to be stable over time. Looking at countries, the outcomes can be grouped in two clusters. The first cluster includes those countries that were not part of the USSR (with the exclusion of Bulgaria): here rejections of stability occur only few times; and then almost always the rejection applies to the equation for the backward factor. In the second cluster (formerly USSR countries plus Bulgaria) instability is more pronounced, and it affects equally both factors.

The main point to be learned from the exercise conducted in Table 11 is that the finding of some instability in the parameter estimates which are relative to certain individual characteristics may indicate that the reason why a characteristic may affect differently the evaluation of the forward or of the backward factor could be related to changes in some "systemic" characteristic of the post-Communist transformation: for instance, people living in small villages might give a better evaluation of the economic transformation as the benefits of transition spread out, after some time, also to the rural areas. In the next section we explore these potential interactions between individual (micro) and systemic (macro) characteristics.

8. Macro drivers of micro factors: exploring the interactions

The evidence of time instability in the estimated effects of a number of personal characteristics on the micro factors **f1** and **f2** has alerted us to the possibility that this might be due to the non-inclusion of interaction effects between the micro and macro (or systemic) variables. In this section we implement such interactions in our model.

As we noted in the previous section, there is a remarkably strong correlation between the country-year averages of **f1** and **f2** (which we defined respectively as $\mathbf{F1}_{ct}$ and $\mathbf{F2}_{ct}$ – see equation 11) and the estimated parameters δ_{act} (that is, the country-year intercepts in equations 15): the simple correlation coefficients are both in the range of 0.90.[23] This fact is evident from both panels of Figure 6. To understand formally the origin of this correlation, we may substitute equation (16) into equation 11, to obtain:

[23] See footnote 20.

$$Fa_{ct} = \frac{\sum_{i=1}^{N_{ct}} \left(\delta_{act} + \sum_{j=1}^{17} \beta_{ajc}\, ie_{jcti} + \sum_{j=1}^{17} \gamma_{ajct} \left(\delta_{act} \times ie_{jcti} \right) + \varepsilon_{acti} \right)}{N_{ct}}$$

$$= \delta_{act} + \sum_{j=1}^{17} \left(\beta_{ajc} + \gamma_{ajct}\, \delta_{act} \right) \frac{\sum_{i=1}^{N_{ct}} ie_{jcti}}{N_{ct}} + \frac{\sum_{i=1}^{N_{ct}} \varepsilon_{cti}}{N_{ct}} \qquad (17)$$

We may further define: $IE_{jct} = \frac{\sum_{i=1}^{N_{ct}} ie_{jcti}}{N_{ct}}$ and $E_{jct} = \frac{\sum_{i=1}^{N_{ct}} \varepsilon_{jcti}}{N_{ct}}$,

where IE_{jct} is the proportion of individuals with characteristic **j** in each single country-year. Using these definitions, we can rewrite equation (17) more simply as:

$$Fa_{ct} = \delta_{act} + \sum_{j=1}^{17} \left(\beta_{ajc} + \gamma_{ajct}\, \delta_{ct} \right) IE_{jct} + E_{ct}. \qquad (18)$$

From equation (18) we observe that any discrepancy between the average factor score $\mathbf{Fa_{ct}}$ and the corresponding estimate of $\boldsymbol{\delta_{ct}}$ must be explained by (i) the change in the average values of the average characteristics $\mathbf{IE_{jct}}$; (ii) the time-drift $\boldsymbol{\gamma_{jct}}$ of the coefficients on those same characteristics; (iii) the size of the variation which is left on average unexplained in each country-year in equations (15). Of course, as we remarked above, the high correlation between the $\mathbf{Fa_{ct}}$ and $\boldsymbol{\delta_{act}}$ implies that overall the discrepancies to be explained are quite small, hence presumably also hard to detect.

On the basis of equation (18), we can now observe that the "macro" estimates of $\mathbf{F1_{ct}}$ and $\mathbf{F2_{ct}}$ (see equations 13 and 14 and Table 9) may in effect be interpreted as more "parsimonious" estimates of $\boldsymbol{\delta_{1ct}}$ and $\boldsymbol{\delta_{2ct}}$. This also suggest that the estimates in Table 9 might be biased, due to the omission of relevant variables (those which appear in equation 18). The risk of bias would be greater, the higher the correlation between:

$$\left(\beta_{ajc} + \gamma_{ajct}\, \delta_{ct} \right) IE_{jct}$$

and the "macro" variables introduced in equations (13) and (14) .

To explore these issues, we run a number of regressions for $\mathbf{Fa_{ct}}$ in which, as suggested by equation (18), the specification of equation (13-14) is augmented with the inclusion of $\mathbf{IE_{j,c,t}}$ and with the interactions between these terms and the macro variables. In order to be able to do this despite the scarcity of the degrees of freedom in the time dimension, we have to impose the following restrictions in the

estimation of equation (18): $\beta_{ajc} = \beta_{aj}$ and $\gamma_{ajct} = \gamma_{aj}$. This is tantamount to assuming that the effects of the average characteristics IE are "poolable" across countries and over time.[24] Conditional on the validity of these untestable restrictions, we can estimate a version of equation (18) "augmented" with the inclusion of the average individual characteristics.

We do not report the results of this estimation (they are available on request) but focus on the main finding: the parameter estimates of the macroeconomic drivers of the equation (13-14) are very similar to those of the corresponding variables in the augmented version of equation (18). In other words, adding average individual characteristics does not appreciably alter the parameter estimates of the macro drivers of equations 13-14, as reported in Table 9.

Comforted by this finding, in the last part of this section we describe two further specification tests, which we run on the micro data. The first one is based on the following "general" model:

$$fa_{cti} = \delta_{act} + \sum_{j=1}^{17} \beta_{ajc}\, ie_{jcti} + \sum_{j \in S} \lambda_{ajc}\,(Z_{ct} \times ie_{jcti}) + \varepsilon_{cti} \qquad (19)$$

This model supplements the specification of the micro model of equation (15), allowing for a limited number ($S < 17$) of interaction terms of individual characteristics with the macro drivers.

As for the individual characteristics to be used, we chose $S = 9$, selecting those that gave evidence of parameter instability in the time dimension (see Table 11 and the comments to it in section 7). The characteristics which we have selected are thus: ie1, ie2, ie6, ie7, ie8, ie9, ie10, ie11, ie12 (see Table 10 for their definitions); they correspond to those relative to income levels, education, location of residence, gender and marital status.

As for the macro drivers, which are summarized by the vector Z_{ct} in equation (19), we chose the following two pairs (see Table 9):

- Equation for **f1**: $TI^m \times$ GDP growth ; $TI^v \times$ GDP growth.
- Equation for **f2**: SP $\times$ Gini ; SP $\times$ Inflation.

[24] For this experiment to be statistically sound, we must address other auxiliary issues. First, coherency between the aggregate variables $\mathbf{Fa}_{ct}$ and $\mathbf{IE}_{jct}$ on one side, and their micro counterparts on the other side, requires that we compute the aggregates as averages of only the 61,616 observations which have been used in the estimation of the micro model of equations (15). Second, since the model is based on averages of individual data, we estimate the parameters using GLS instead of OLS, by weighting the data with the number of individual observations entering each country-year average. Third, to prevent highly inefficient estimates due to the curse of dimensionality (as these estimates are run on a sample of only 75 country-year observations), we augment the model (13-14) by adding the effects of the **j** characteristics one at a time. This is strictly correct under the assumption that the $\mathbf{IE}_j$ regressors (for **j** = 1, 2, ... 17) are unrelated to each other. Inspection of the correlation matrix of the $\mathbf{IE}_j$ variables broadly supports this assumption.

Note however that in the specification of equation (19) the country-year fixed effects δ_{ct} are still directly included. Accordingly, we can interpret model (19) as a statistical proxy of the ideal model, where δ_{ct} would have been replaced by country specific macro variables.

Table 12 shows a summary of the estimation results of model (19), for all countries except Croatia (for which we have too few waves of interviews, see Table 4). Given the huge number of estimated parameters (more than 600), we decided to aggregate λ_{jc} in 4 groups, λ_{jg}, defined (on the basis of criteria which were pre-defined with respect to the estimation of the model) as follows:

- NEAR includes the neighbors to the EU-15: the Czech and Slovak Republic, Hungary, Poland and Slovenia;
- CIS include Belarus, Ukraine and Russia;
- BALTICS includes Estonia, Latvia and Lithuania;
- ALL includes 13 countries (all those in the previous groups plus Bulgaria and Romania).

The estimates of λ_{jg} and their significance are reported in the top panel of Table 12. Estimates are computed with the mean-group estimator (MGE), i.e. the average estimate of the point estimates of the countries within each group. MGE gives consistent estimates of the "common effect" of the interactions of the individual characteristics with the macro drivers, independently of the poolability parameter estimates between those countries. However, if the country parameters are poolable (i.e. they are not significantly different across countries within each group), the MGE consistently estimates the unique "pooled" parameter; if they are not poolable, the MGE estimates the common effect for all countries belonging to that group, after the depuration of the stochastic components of each individual country. For this reason, we also present in the lower panel of Table 12 the p-values of the corresponding poolability tests across countries within each group of the parameters λ_{jg}.

Table 12 about here

Before commenting on the results reported in Table 12, we introduce the second specification test. This is based on the following model:

$$fa_{cti} = \mu_{ac} + \phi\, z^{*}_{act} + \sum_{j=1}^{17} \beta_{ajc}\, ie_{jcti} + \sum_{j \in S} \lambda_{ajc}\,(z_{ct} \times ie_{jcti}) + \varepsilon_{acti} \quad (20)$$

With respect to (19), in equation (20) we assume that $\delta_{ct} = \mu_c + \phi\ z^{*}_{ct}$, that is we substitute the specific country-year intercepts with the same macro variables which were included in the equations (13-14), and are summarized by the vector z^{*}_{ct}. To prevent problems due to collinearity, also in this case we need to assume and accordingly to impose that the effects of z^{*}_{ct} on f1 and on f2 are also

"poolable", that is such that the parameter ϕ r is the same for all countries within each group. The estimation results are reported in Table 13, and follow the same format of Table 12.

Table 13 about here

We now comment comparatively on the results reported in Tables 12 and 13. As the model of equation (19), on the basis of which we have produced the estimates of Table 12, is statistically more efficient, we expect that the tests on the poolability of the same parameter across different countries should give more restrictive results in Table 12 than in Table 13, and this is indeed the case. However, when we consider the parameters which are the same time significantly different from zero (thus pointing at a significant micro-macro interaction effect) *and* also poolable in the same group of countries, the difference in the number of these parameter between the two table is not so large, as summarized in the box below:

	Eq.19 (Table 12)	Eq. 20 (Table 13)
No. of significant (at least 10%) parameters		
Equation for f1	23	25
Equation for f2	21	20
No. of significant & also poolable parameters		
Equation for f1	10	6
Equation for f2	10	8

As we have just observed, the model in Table 13 is statistically less efficient. However, since it is based on a selection of macro drivers which is strictly consistent with the specification of the interaction effects that are included in both equations (20) and (19), it is probably less likely to signal the significance of an interaction effect which is in fact only spuriously proxying for the effect of the macro driver. In fact we can see that equations (20) produce a smaller number of parameters which are at the same time poolable and significantly different from zero. From this point of view, the more reliable results are those where significance and poolability of a parameter would be confirmed in both tables.

Given this note of caution, we now comment in detail on those parameters which appear as "significant and poolable" from either Table:

- (Table 12, eq. for **f1**) Being in the **high income** quartile, which already has a positive effect *per se* on f1 in almost all countries (see Figure 7), has a further positive effect when interacted with **TI^m× Growth rate**. This suggests that high income earners approve in particular the adoption of more extensive reforms. This is true for the five countries in the NEAR group and for the BALTICS ...
- (Table 12, eq. for **f1**) … and in addition, in the BALTICS, **low income** earners (who already dislike f1 relatively more) are further disappointed by more extensive reforms (that is, we observe a negative interaction with **TI^m× Growth rate**).
- (Table 12, eq. for **f2**) **Low income** earners (who already have on average a better appreciation of the past, reflected by a higher score for f2, see Table 7) are further reinforced in their nostalgia

when they observe a higher value of **PS × Gini** , that is higher inequality and a larger size of the private sector in the current economic system). This is true in the NEAR group.

- (Table 12, eq. for **f2**) In the BALTICS, instead, **low income** earners (who already have on average a better appreciation of the past, reflected by a higher score for f2, see Table 7) seem less nostalgic when they observe a higher inflation (**PS × Infl**). This is puzzling, as we cannot explain it.
- (Table 13, eq. for **f1**) Being in the high income quartile interacts negatively with the **TI^v× Growth rate,** that is the standard deviation of reform indicators times the growth rate. This suggests that it is high-earners that mostly dislike the lack of complementarity in the process of adopting reforms. This is true for the NEAR group and for the CIS.
- (Table 13, eqs. for **f1** and for **f2**) In the BALTICS, gender issues appear especially relevant. **Females** are particularly negatively affected by the lack of complementarity in reforms (**TI^v× Growth rate**), and their nostalgia for the past is reinforced when they observe a higher inflation (**PS × Infl**).
- (Tables 12 and 13; eq. for **f2**) The condition of those **divorced** and **widowers** did not appear especially significant (in respect of either f1 or f2) from the analysis reported in Figure 7. However, as we noted in the comments to Table 11, the associated parameter is highly unstable in time, hence we explore her its interactions with macro terms. The result is that this condition interacts positively with a deterioration in the distribution of incomes (**PS × Gini**) in increasing the nostalgia for the past in ALL countries.
- (Table 12; eq. for **f1**) Being single in most countries is in generally associated with a higher than average score for f1 (Figure 7). However the interaction with has a negative sign (which would imply a negative appreciation for faster reforms), while that with **TI^v× Growth rate** has a positive sign, which implies a positive appreciation for less coordination in the reform process. These results appear some what paradoxical, and are not confirmed in Table 13.
- (Table 12; eq. for **f2**; Table13, eq. for **f1**) Living in a **village** increases nostalgia for the past in the BALTICS when inflation is high (while living in a **city** has the opposite effect in the same countries); also, being a **villager** increases support for the present system in the CIS when reforms are sped up.
- (Tables 12 and 13; eqs. for **f1** and **f2**) Low education (at most **elementary**) is in general associated to a lower factor score for **f1** (Figure 7); this is further reinforced if reforms are sped up (**TI^m× Growth rate**) in the group of NEAR countries. In the eq. for **f2**, it reduces nostalgia for the past in the BALTICS as **inflation** goes up (Table 12, puzzling!) and as the current **income** distribution worsens (Table 13, also puzzling!)
- (Tables 12 and 13; eqs. for **f1** and **f2**) The opposite effects in general apply to those with **university** education, but they tend to apply for ALL countries, except for the CIS, and they do not generate any puzzles: those with **university** education give a higher score to **f1** if reforms step up (**TI^m× Growth rate**, ALL countries) and a lower score if the dispersion of reforms worsens ((**TI^s× Growth rate**, BALTICS). In the equation for **f2** and for the BALTICS a worsening income distribution (**PS × Gini**) and higher inflation (**PS × Inflation**) increase nostalgia for the past of the university graduates, while the opposite happens in the CIS, which is again puzzling.

Overall (and having confined our comments to the "significant and poolable" effects) we found the large part of them to be quite plausible and easily explainable in terms of our explanatory models. On the other hand we must acknowledge that, empirically, these results are rather delicate. It is quite unusual to find in the literature other models which are capable of taking into account such detailed interactions between macro effects (including transitional reforms and their complementarity) and individual characteristics. We must stress that these interactions add only marginally to the (already quite satisfactory) explanatory power of our model, which is essentially based on the role of macro and reform variables and of individual characteristics. Hence the results in this section should only be viewed as a (possibly somewhat fancy) supplement to those discussed in the previous sections.

9. A summing up

In this section we summarize the main empirical steps, described in detail in the previous sections, together with their main results.

Dependent variables. In sections 4 and 5 we show that the six basic responses from about 80,000 interviews conducted in 14 post-Communist countries since 1991 convey subjective information and judgments that can to a large extent be summarized in two orthogonal factors, $\mathbf{f1}_{cti}$ and $\mathbf{f2}_{cti}$, which we respectively term the *backward* and *forward* factor.

These variables (or their macro averages, defined as the averages within each of 89 country-year clusters) are our dependent variables.

Notice that we extract factors (based on three different methods) on a country basis – but consistently obtain the same results for all countries. As we argued before, we were initially surprised to find that factor analysis did not allow us to distinguish between responses concerning the economic *versus* the political systems. We believe that the unexpected overlap of responses in these two dimensions is due to the fairly general way in which the questions were phrased in the interviews, rather than to the inability of the interviewees to distinguish in principle between them, and we leave it to further research to enquire in more depth on this aspect.

Macro drivers. In section 6 we identify the main drivers of the two macro factors $\mathbf{F1}_{ct}$ and $\mathbf{F2}_{ct}$, through the specification of a pseudo panel, where the main units of estimation are the 89 country-year clusters (which in the process of estimation will be reduced to 75). On the basis of the theoretical model in section 3, and following a general-to-specific specification search, we find that:

- The forward factor (which relates to judgments about the present and the expected future state of both the economy and polity) is modeled by the *interaction* between the state of reforms (average and variance of the reform indicator) with the state of the macro economy (GDP growth and unemployment). These effects are significant and correctly signed according to our expectations. In particular the negative sign of the term including the variance of the reform indicator suggests that there is widespread dissatisfaction with reforms that do not exploit the right "complementarities"

along the process of transformation, thus confirming (in the domain of subjective evaluations) the hypothesis of Braga de Macedo and Oliveira Martins (2008).

- The backward factor (which relates to judgments about the economy and polity in the socialist system) is instead explained by those macroeconomic variables which are likely to affect negatively the welfare of the losers (and thus positively their *nostalgia* for the past): the worsening distribution of earnings, the increasing share of the private sector, and the interaction of the latter with the inflation rate, which is also likely to affect negatively those who do not benefit from earnings their incomes in the private sector

Micro analysis: winners and losers. In section 7 we analyze the determinants of the forward and backward factor scores $\mathbf{f1}_{cti}$ and $\mathbf{f2}_{cti}$. We select (arbitrarily) a "reference individual" on the basis of seven characteristics, and then identify 17 other characteristics (modeled as binary variables) that may render a single respondent different from this reference individual. We use these characteristics as dependent variables in the regressions for both factors.

For each factor we estimate 75 country-year intercepts (which reflect the average factor scores of the reference individuals in each country-year cluster), and as for the "slope" parameters we obtain 150 cases where a characteristic is significant for at least one factor, over a total of 227 estimates for each factor. Main results are:

- Two groups of characteristics (level of income and education) have uniform and clearly interpretable effects in almost all the countries: the poorer and less educated individuals give a negative score on the forward factor, and a positive score on the backward factor: they are unhappy about the present, not hopeful for the future, and nostalgic of the past. The opposite is true for the richer and more educated individuals.
- Those who are unemployed tend to answer in the same way as the poorer and less educated individuals, while students usually answer in the same ways as the group which they hope to join (the higher income earners and more educated people).
- The effects of age and cohort are not clear cut, but younger people tend to give a more negative response about the past. The average response on the past of those who were younger than 18 years in 1991 is more mixed, although this cohort is in general more appreciative in all countries about the present and the future.
- Those who live in villages in general report a more positive evaluation of the past. Those living in the big cities are negative about the past (except for Latvia), but are quite divided across countries in their evaluations of the forward factor.

We also look at the stability of the coefficients related to these characteristics across time. We expect to find some sign of instability, as that would indicate that an individual characteristic may affect differently the evaluation of the forward or of the backward factor as a function of possible changes in some "systemic" characteristic of the post-Communist transformation, for instance because some reforms have been adopted or changed at some point in time.

In fact we find that parameters instability in both the **f1** and **f2** equations is mainly due to "level of income", "place of residence" and "gender/marital status", while the other characteristics tend to be more stable over time. We use this evidence to identify those characteristics for which we want to explore the possibility of significant interactions with macro or reform terms.

Interactions between macro drivers and individual characteristics. As we show in detail in section 8, conditional on the assumption that the effect of an average individual characteristic (in each country-year) on the macro factor **F1** or **F2** is "poolable" across countries and over time, we ascertain that adding average individual characteristics to the macro equations of section 6 does not appreciably alter the previous parameter estimates of the macro drivers.

This finding (which we do not report in detail) legitimates further specification tests, which we run on the micro data. These tests consist in adding to the specification of the micro model (section 7) a limited number (which we chose equal to 9) of interaction terms of individual characteristics with the macro drivers. Given the huge number of parameters now estimated (more than 600), we decide to aggregate the interaction coefficients $\boldsymbol{\lambda_{jg}}$ in 4 country groups (NEAR, which includes the neighbors to the EU-15; CIS; BALITCS; ALL), which we estimate consistently using the mean-group estimator. Considering the parameters which are the same time significantly different from zero (thus pointing at a significant micro-macro interaction effect) *and* also poolable in the same group of countries, we find evidence of several interaction effects. In particular we report here only the interactions linked to income levels:

- NEAR and BALTICS. Being in the **high income** quartile, which already has a positive effect *per se* on **f1** in almost all countries, has a further positive effect when interacted with **TI^m× Growth rate**. This suggests that high income earners approve in particular the adoption of more extensive reforms.
- BALTICS. **Low income** earners (who already dislike f1 relatively more) are further disappointed by more extensive reforms (that is, we observe a negative interaction with **TI^m× Growth rate**).
- NEAR. **Low income** earners (who already have on average a better appreciation of the past, reflected by a higher score for f2) are further reinforced in their nostalgia when they observe a higher value of **PS × Gini** , that is higher inequality and a larger size of the private sector in the current economic system.
- NEAR and CIS. Being in the high income quartile interacts negatively with the **TI^v× Growth rate,** that is the standard deviation of reform indicators times the growth rate. This suggests that it is high-earners that mostly dislike the lack of complementarity in the process of adopting reforms.

There are several other significant interaction effects (most of which are of the expected sign, although a few are also puzzling to interpret, see section 8).

In general these results point to the conclusion that the relations between policies and reforms on the one hand and subjective outcomes (which measure the satisfaction with the current regime and plausibly also the support for the current government) may often be non linear, as they may depend on the design of reforms, on the "packaging" of reforms, on external factors that may condition their success or failure and on the ex post distribution of benefits and losses.

10. Conclusions

The empirical analysis presented in this paper has brought us to two broad types of conclusions.

First, the "average opinion" which emerges from several thousands of interviews conducted between 1991 and 2004 in 14 post-Communist countries in Europe (and which we have analyzed via the estimation of a pseudo panel over 75 country-year clusters) is clearly influenced by the progress achieved in the process of reforms, and in particular it is negatively affected by possible inconsistencies in that process (which we model with the variance of the reform indicators). In addition, some aspects of the current system increase nostalgia for the past: these are a worsening distribution of income and an increase in inflation, which are seen to interact with the increasing privatization of economic activity.

Second, differences between the respondents, which we model in reference to 17 individual characteristics, clearly correspond to differences in opinions about the past, present and future of the economic and political systems. These differences can be interpreted, in our view, in the light of a plausible characterization of "winners *versus* losers". Belonging to either group is essentially linked to relative income and education levels, although age and gender as well as other demographic characteristics are also relevant. In addition, we document in section 8 that the same individual characteristics also exasperate the reaction of different individual types to the macro drivers, beyond the impact that these drivers have on the average opinion.

These results in our view bear very general but clear policy implications. The relations between the policies adopted in post-Communist transformations and subjective outcomes (which measure the satisfaction with the current regime and plausibly also the support for the current government) are certainly non-linear, but nevertheless quite robust. Reforms do matter, not only for how the economic and political systems work, but also for how people *perceive* that the system works. Inconsistent reforms generate more discontent, and some aspects of the transformation process are clearly felt to inflict more damage than benefits on some segments of the population. Broadly speaking, this paper finds support for the idea that the reform process should be balanced in order to exploit possible complementarities between reforms, and that it should aim not only towards growth but also towards social inclusion.

This research has also opened up the way for several follow ups, which could be accomplished by exploring more in depth the pattern of responses to the interviews on which our micro data are based.

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Data Appendix

Individual (survey) data

Sources: New Europe Barometer (waves I-VII), New Russia Barometer (waves I-XIII) and New Baltic Barometer (waves I-VI).

These data have been produced by the Centre for the Study of Public Policy, University of Aberdeen/University of Strathclyde, sponsored by the Austrian Federal Ministry of Science and Research, Austrian National Bank and Paul Lazarsfeld Society (Vienna), as well as by the Centre for the Study of Public Policy, Bank of Sweden, Tercentenary Foundation, Economic and Social Research Council, MacArthur Foundation (Chicago), and supplied by the UK Data Archive. The data are Crown copyright. The original data creators, depositors or copyright holders, and the UK Data Archive bear no responsibility for the present analysis or interpretation of these data.

The following data were obtained directly from the UK Data Archive:

Rose, R., New Europe Barometer I-V, 1991-1998 [computer file]. Colchester, Essex: UK Data Archive [distributor], October 2005. SN: 5241.

Rose, R., New Europe Barometer VI, 2001 [computer file]. Colchester, Essex: UK Data Archive [distributor], October 2005. SN: 5242.

Rose, R., Mishler, William, New Europe Barometer VII, 2004-2005 [computer file]. Colchester, Essex: UK Data Archive [distributor], July 2007. SN: 5243.

Rose, R., New Russia Barometer, 2000-2001 [computer file]. Colchester, Essex: UK Data Archive [distributor], November 2003. SN: 4550.

Rose, R., New Russia Barometer XIII, 2004 [computer file]. Colchester, Essex: UK Data Archive [distributor], August 2007. SN: 5700.

The data listed above have been coded into a single dataset as described by Rovelli and Zaiceva (2009).

Macroeconomic variables and reform indicators:

Unemployment rate. *Source*: EBRD. (For Belarus: IMF International Financial Statistics; for Estonia in 1990 and 1991 and for Ukraine: World Development Indicators, http://econ.worldbank.org/)

GDP growth rate. GDP per capita PPP (constant 2000 international USD, annual rate of growth)). *Source*: World Development Indicators.

Inflation. GDP deflator (annual rate). *Source*: World Development Indicators.

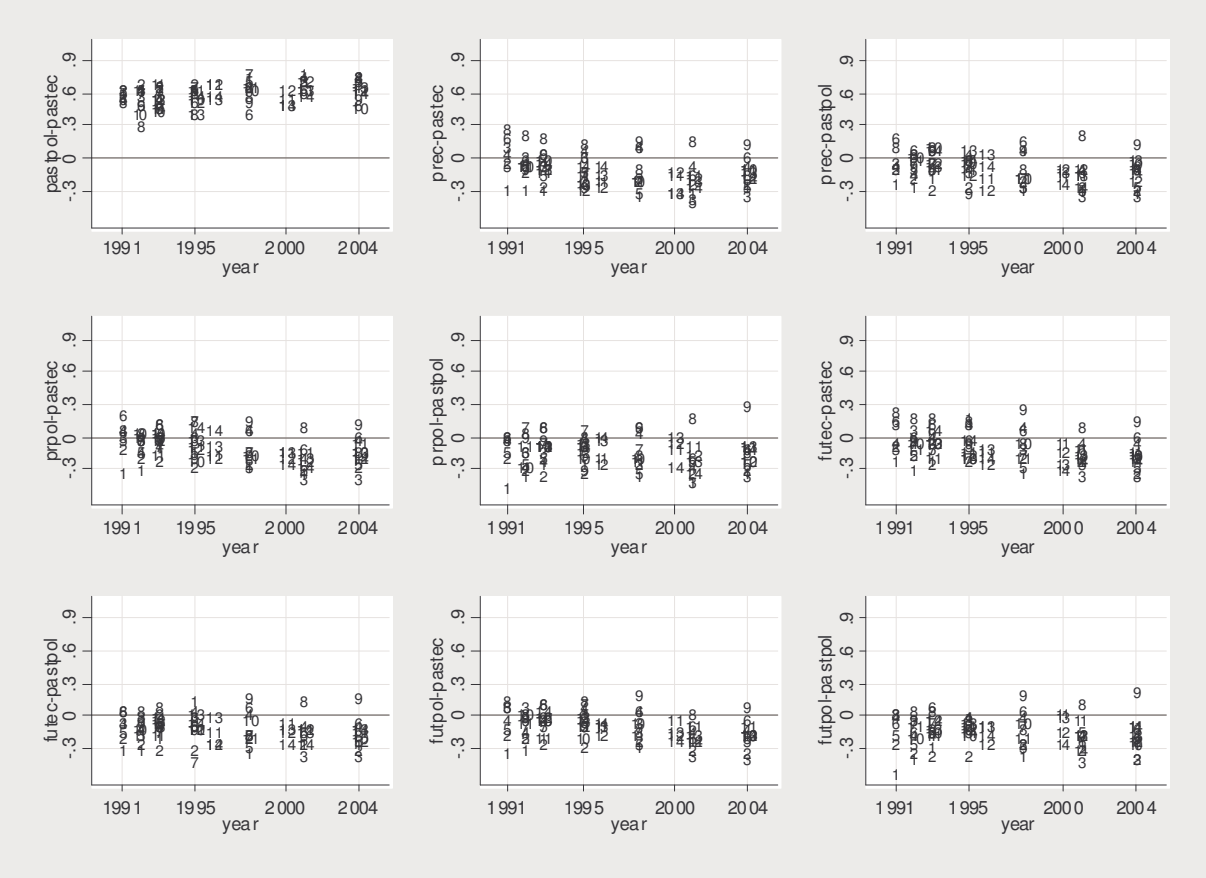
Gini index for the distribution of earnings. *Source*: Transmonee dataset, release 2008. (http://www.transmonee.org/. Missing data have been interpolated by using the Gini index for the distribution of incomes were available, or linearly otherwise.

Private sector share in GDP. *Source*: EBRD online data table-Structural Change Indicators http://www.ebrd.com/country/sector/econo/stats/index.htm.

EBRD indicators. *Source*: EBRD (2007b).

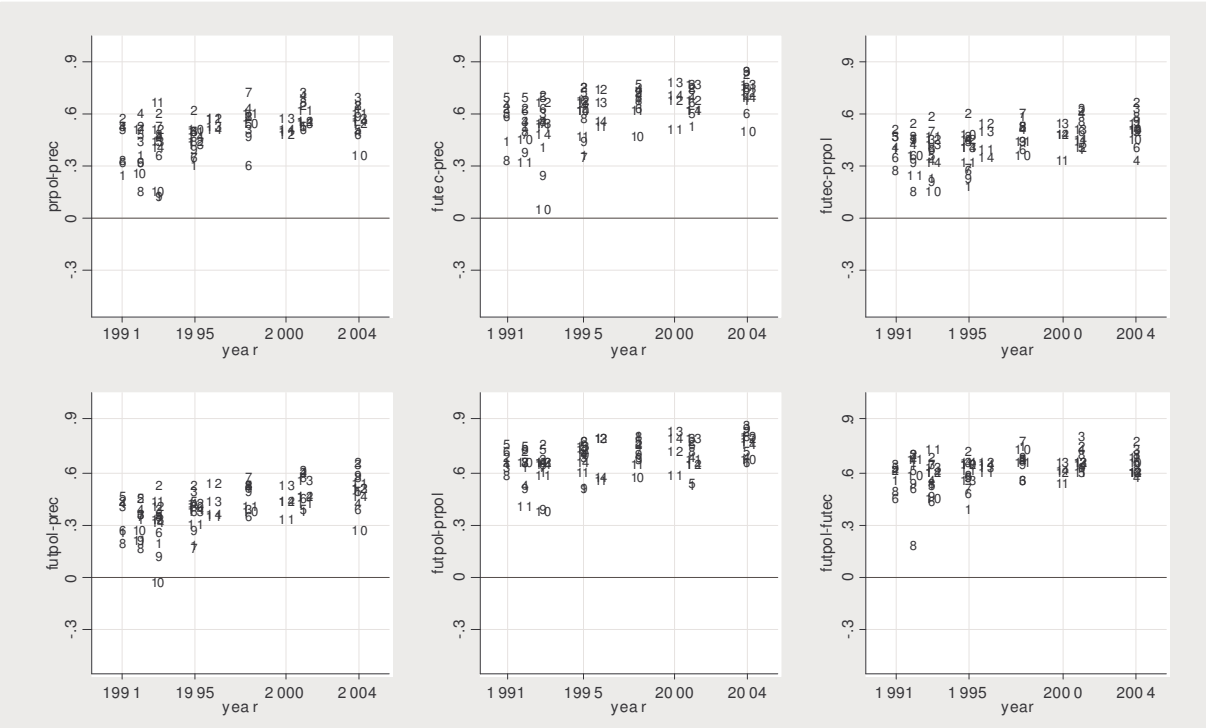
Figures and Tables

Figure 1. Correlations among responses which *also* involve judgments about the past [a]



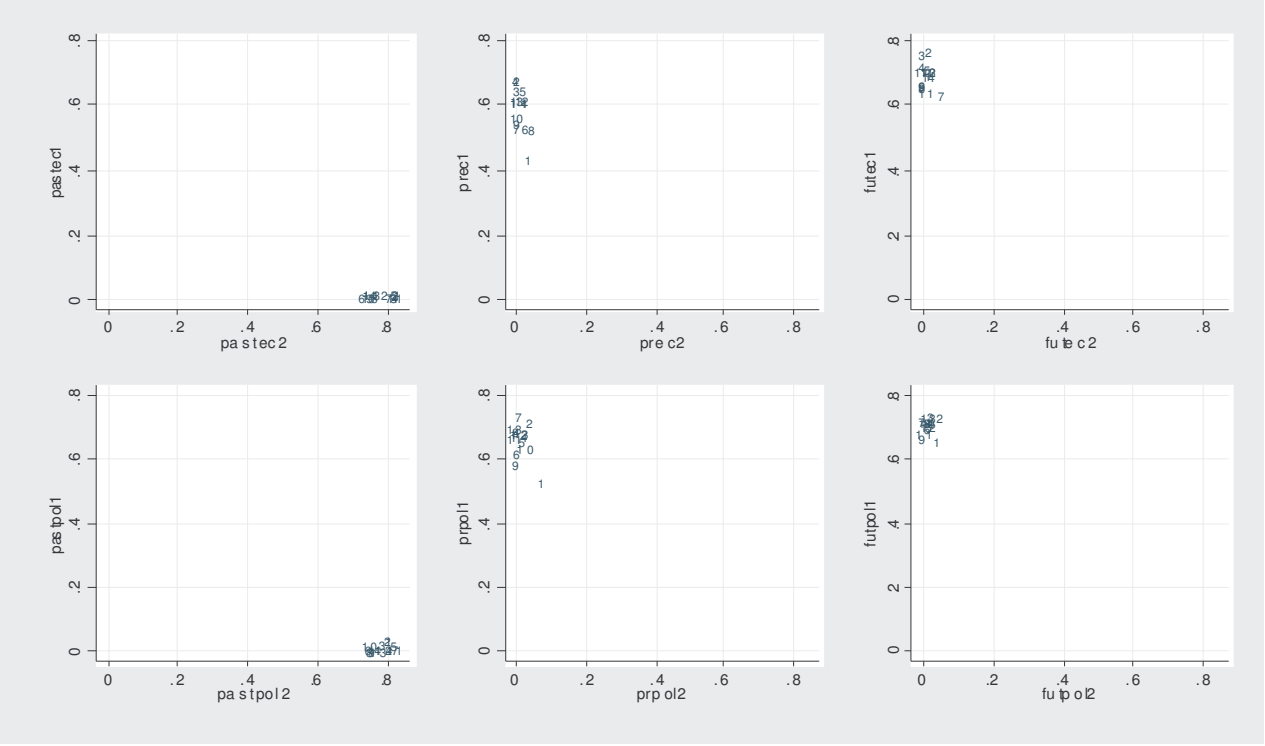
[a] Each country is represented by the code number, see the first column of Table 4.

Figure 2. Correlations among responses which *do not* involve judgments about the past [a]



[a] See the footnote to Figure 1.

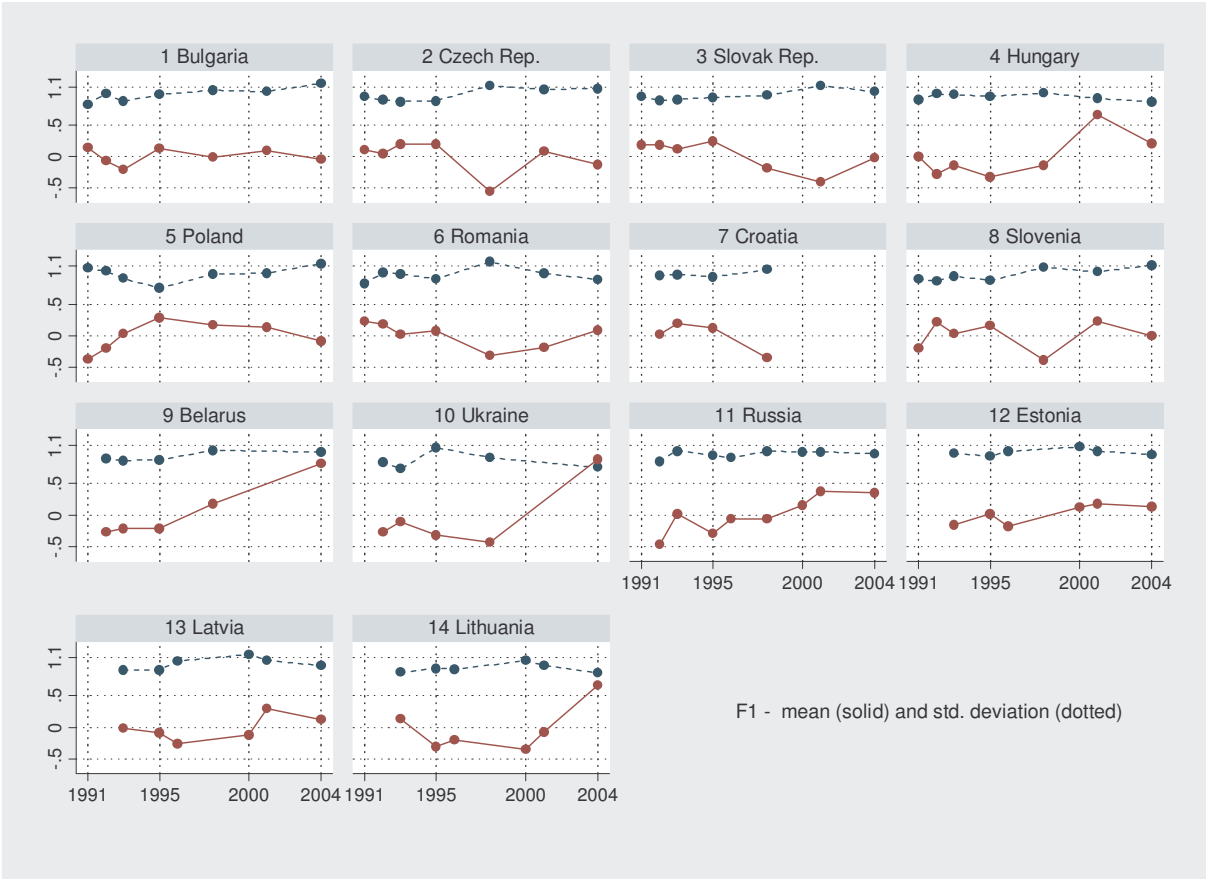
Figure 3. Explanatory power of each factor by response variable [a, b]

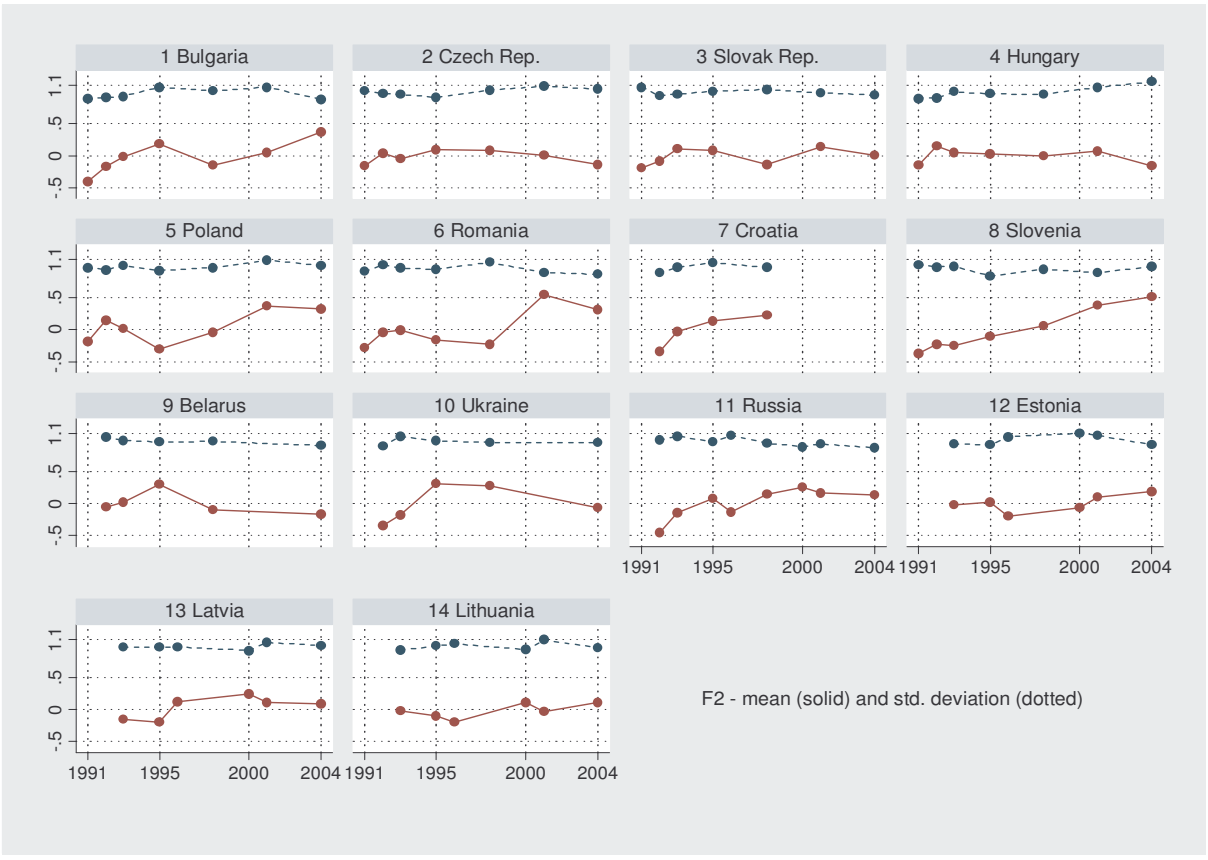


[a] Explanatory power is measured by the R^2 from country-level regressions of each response variable against one factor at a time. Along the y-axes we report the R^2 of the regressions against $\mathbf{f1}_{c,t,i}$; along the x-axes the R^2 of the regressions against $\mathbf{f2}_{c,t,i}$.

[b] The first (second) row of plots the R^2 from regressions where the dependent variables are the responses relative to the economic (political) situation, the three columns refer respectively to responses about the past, present and future. Within each plot, each point refers to the R^2 for a country regression (country codes 1-14 are reported in the first column of Table 4.

Figure 4. Time patterns of mean and standard deviation of F1 (above) and F2 (below), by country [a]





[a] Each dot corresponds to a surveyed year, data gaps are interpolated within country. Overall, there are 89 dots, corresponding to the 89 country-year clusters in Table 4. By construction each country mean and standard deviation across all periods are respectively zero and one.

Figure 5. Average changes in the score of f1 and f2 in each country: before/after 1997

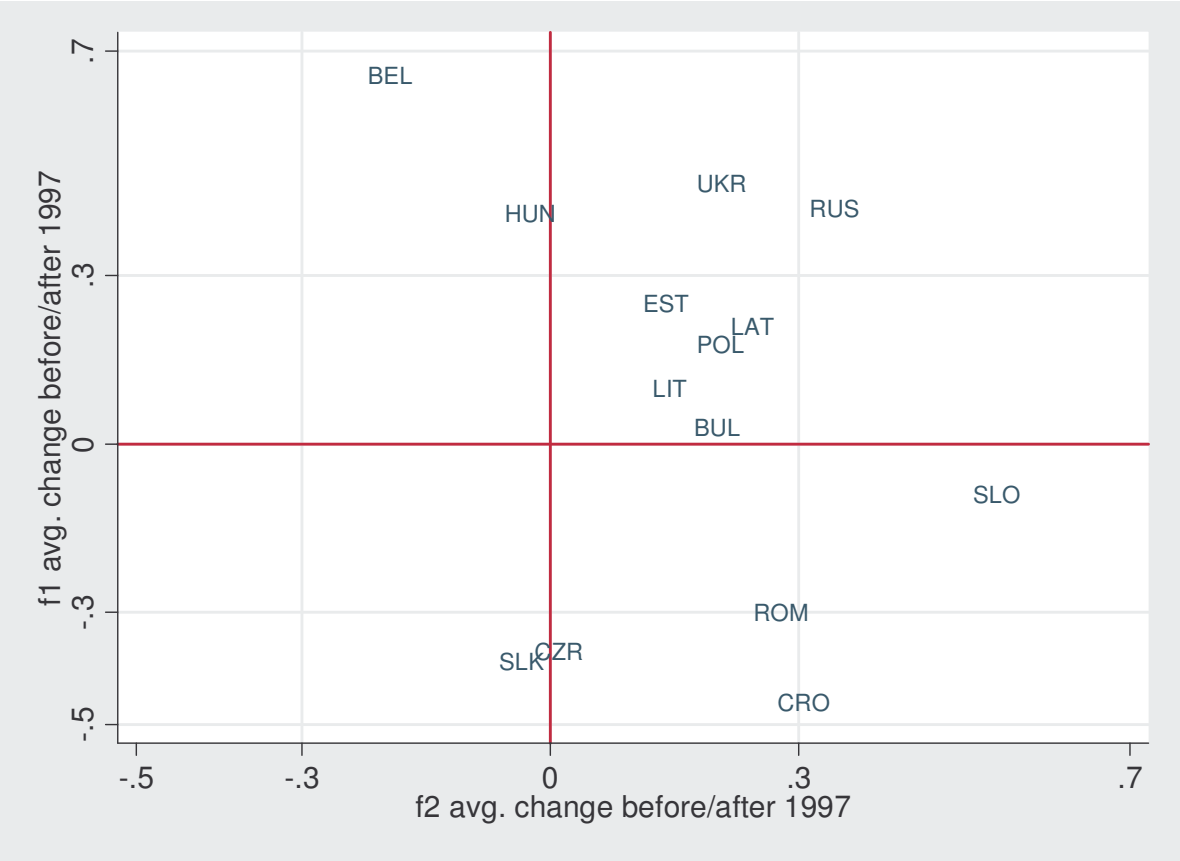


Figure 6. Comparison of the means of the two macro factors with the corresponding micro fixed effects

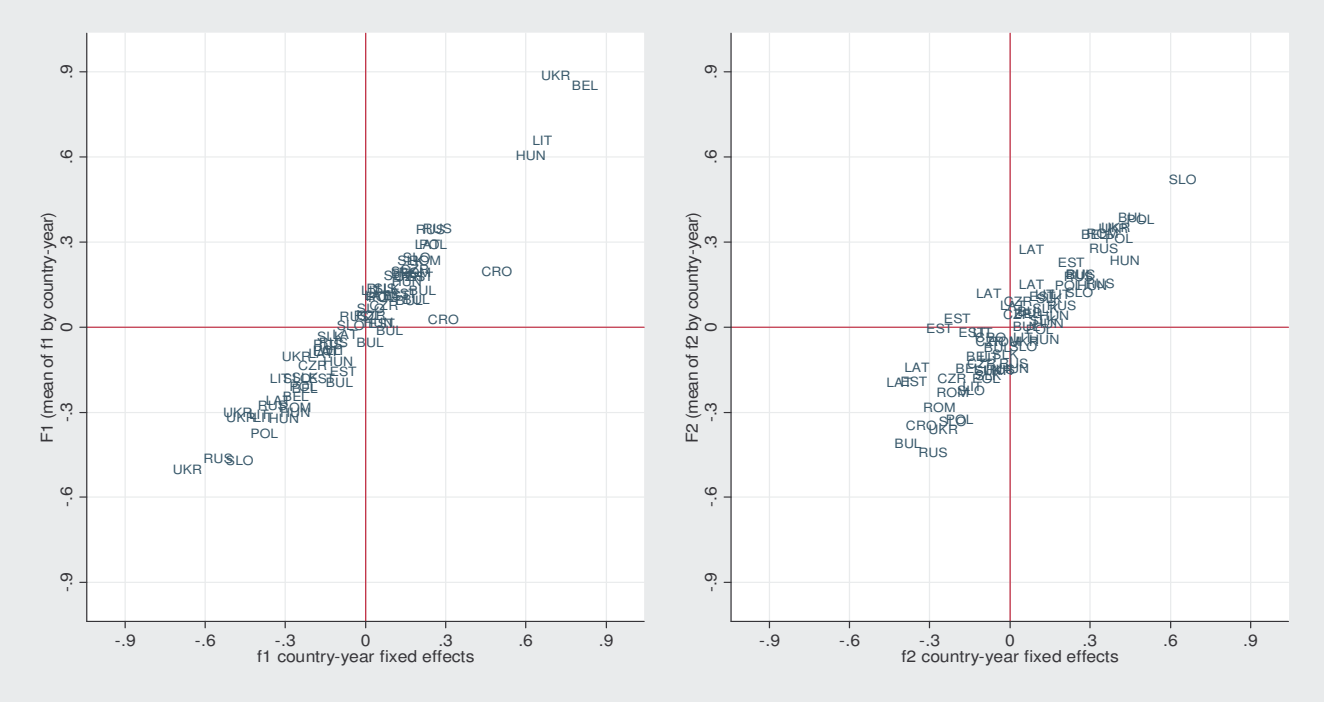
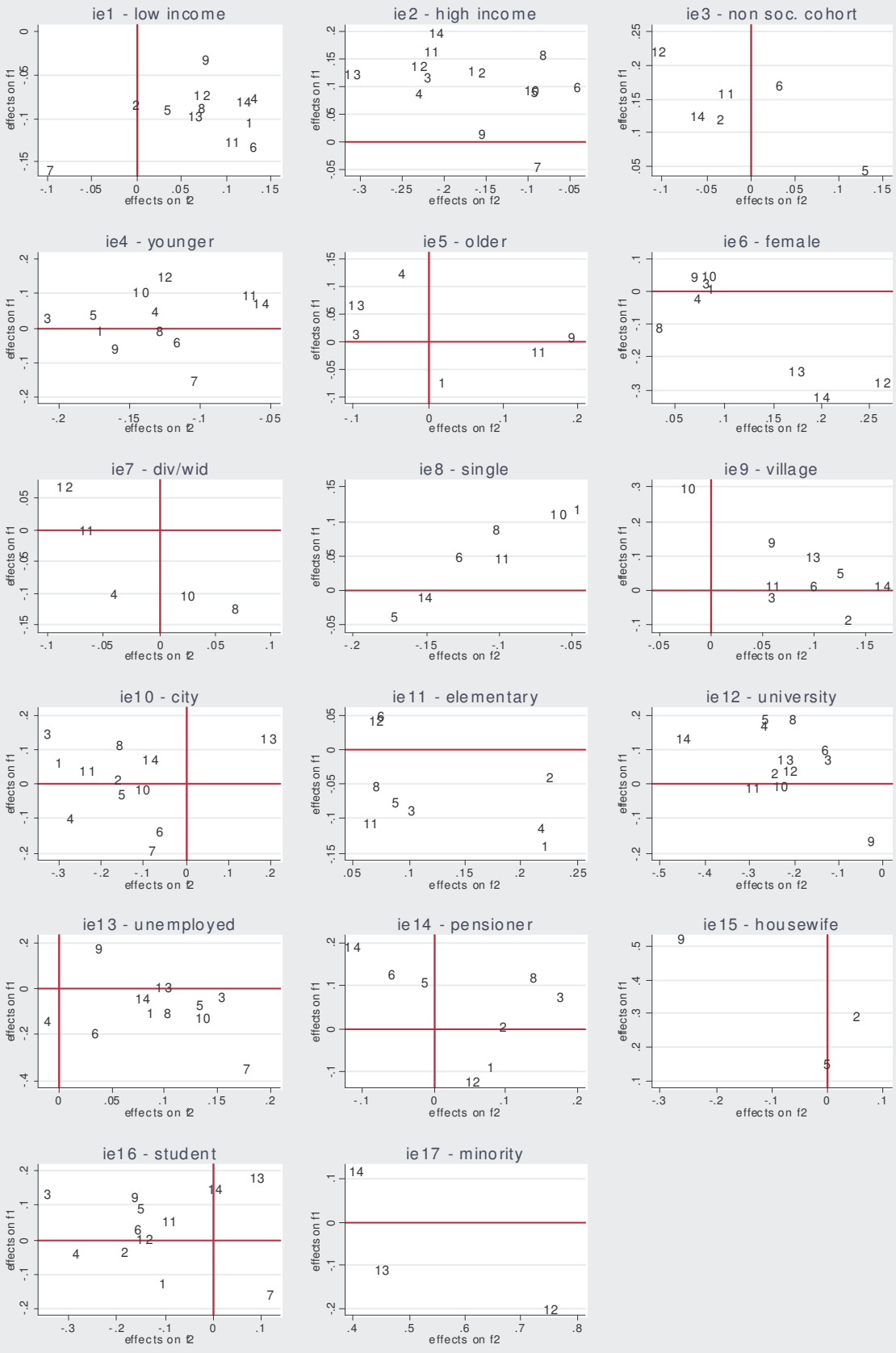


Figure 7. Effects of 17 individual characteristics on f1 and f2 [a]



[a] In each panel, the data points correspond to country estimates in which either the effect on **f1** or on **f2** or both are 10% significant (i.e. countries whose estimates are both not significant at 10% are excluded).

Table 1. Ex post outcomes of reform (with ex post insurance for losers)

Type of work	Prob. of Type	Net income if Reform not adopted	Net income if Reform adopted, fails	Net income if Reform succeeds
Pub. Sec.	$1 - \psi$	100	99	101
Pr.Sec-Loser	$\psi\ (1-\alpha)$	100	90	100
Pr.Sec-Winner	$\psi\ \alpha$	100	110	120
Pub. Sec.	$1 - \psi$	Y°	$Y^\circ - \varepsilon$	$Y^\circ + \varepsilon$
Pr.Sec-Loser	$\psi\ (1-\alpha)$	Y°	$Y^\circ - G + \sigma$	$Y^\circ + \sigma$
Pr.Sec-Winner	$\psi\ \alpha$	Y°	$Y^\circ + G - \tau$	$Y^\circ + 2G - \tau$

Table 2. Who is still in favor of a reform after it has been adopted?

Type of work	Prob. of Type	If Reform has failed and: No insurance	S-D insurance	Leftist insurance
Pub. Sec.	$1 - \psi$	No ?	No ?	No ?
Pr.Sec-Loser	$\psi\ (1-\alpha)$	No	Yes	Yes
Pr.Sec-Winner	$\psi\ \alpha$	Yes	Yes	No
Type of work		**If Reform succeeds and: No insurance**	**S-D insurance**	**Leftist insurance**
Pub. Sec.	$1 - \psi$	Yes ?	Yes ?	Yes ?
Pr.Sec-Loser	$\psi\ (1-\alpha)$	No	Yes	Yes
Pr.Sec-Winner	$\psi\ \alpha$	Yes	Yes	Yes ?

Table 3 . **The six basic questions and corresponding answer codes**

Here is a scale for ranking how the economic system works	Here is a scale for ranking how our system of government works
The top, plus 100, is the best; the bottom, minus 100, the worst.	
Where on this scale would you put:	
• the Socialist economic system before the revolution of 1989? → PASTEC	• the former Communist regime? → PASTPOL
• our current economic system? → PRESEC	• our current system of governing with free elections and many parties? ° → PRESPOL
• our economic system in five years time? → FUTEC	• our system of governing five years in the future? → FUTPOL

° This question is phrased differently in some countries, e.g. in Russia.

Table 4. **The NEB Surveys: Sample dimension by country and time**

Year:	*1991*	*1992*	*1993*	*1995*	*1996*	*1998*	*2000*	*2001*	*2004*	*Total*	*%share*
Code. Country:											
1. Bulgaria	1002	1164	1139	1181		971		1163	1231	7851	*7.7*
2. Czech Rep.	660	1275	1103	908		961		1101	967	6975	*6.8*
3. Slovak Rep.	291	569	531	1010		923		1002	1036	5362	*5.2*
4. Hungary	923	864	971	1018		973		1577	990	7316	*7.1*
5. Poland	1130	1063	980	949		1141		1000	943	7206	*7.0*
6. Romania	986	999	1000	996		1192		1001	1110	7284	*7.1*
7. Croatia		1000	1000	1000		1000				4000	*3.9*
8. Slovenia	1049	1011	984	997		974		1098	1000	7113	*6.9*
9. Belarus		1222	1056	1000		1000			1000	5278	*5.2*
10. Ukraine		993	945	1000		1161			2000	6099	*6.0*
11. Russia		2106	1973	1951	2374	1904	1907	2000	2068	16283	*15.9*
12. Estonia			1987	1296	971		1048	943	940	7185	*7.0*
13. Latvia			2137	1173	952		966	1001	956	7185	*7.0*
14. Lithuania			2012	870	1000		1112	1124	1113	7231	*7.1*
Total	**6041**	**12266**	**17818**	**15349**	**5297**	**12200**	**5033**	**13010**	**15354**	**102368**	*100.0*
% share	*5.9*	*12.0*	*17.4*	*15.0*	*5.2*	*11.9*	*4.9*	*12.7*	*15.0*	*100.0*	

Table 5. Basic statistics, whole sample

	Past		*Present*		*Future*	
Variables:	PASTEC	PASTPOL	PRESEC	PRESPOL	FUTEC	FUTPOL
Observations	95749	94126	97199	95474	89439	87081
(% of non-reponses)	*(6.5)*	*(8.1)*	*(5.0)*	*(6.7)*	*(12.6)*	*(14.9)*
Mean	22.94	3.72	-14.17	2.83	18.69	26.76
Std. Dev.	54.99	60.24	50.14	50.67	49.67	47.41
Sources of heterogeneity across means of country-year clusters, % shares [a]						
- country effect	68.0	62.0	44.6	51.2	37.9	39.2
- time effect	8.9	18.3	19.9	6.5	11.2	10.5
- residual effect	23.1	19.7	35.5	42.3	50.9	50.3
Sources of heterogeneity across standard deviations of country-year clusters, % shares [a]						
- country effect	56.9	51.6	32.8	24.8	26.2	27.3
- time effect	4.1	6.5	10.0	13.9	12.2	19.4
- residual effect	39.0	41.9	57.2	61.3	61.6	53.3

[a] The variability between countries and over time is decomposed in three shares: the first explained by differences across countries ("country effect"), the second by a time-varying drift common to all countries ("time effect"), and the third, which complements to 100% the previous two and captures residual idiosyncratic factors ("residual effects").

Table 6. Correlation matrix using all available data [a]

	PASTEC	PASTPOL	PRESEC	PRESPOL	FUTEC	FUTPOL
PASTEC	1					
PASTPOL	**0.635**	1				
PRESEC	-0.162	-0.141	1			
PRESPOL	-0.157	-0.198	**0.537**	1		
FUTEC	-0.145	-0.173	**0.622**	**0.472**	1	
FUTPOL	-0.149	-0.193	**0.419**	**0.684**	**0.645**	1

[a] Larger pairwise correlation coefficients (significantly ≥ 0.5 at 1%) are reported in bold.

Table 7. Principal components analysis by country

Eigenvalue: [a] *Code. country:*	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	***Variation share explained by*** $\lambda_{1+}\lambda_1$ [b]
1. Bulgaria	2.865	1.246	0.779	0.545	0.313	0.251	**0.685**
2. Czech Rep.	3.308	1.352	0.526	0.355	0.312	0.148	**0.777**
3. Slovak Rep.	3.019	1.485	0.599	0.405	0.344	0.147	**0.751**
4. Hungary	2.810	1.625	0.578	0.467	0.357	0.162	**0.739**
5. Poland	3.011	1.436	0.694	0.373	0.321	0.165	**0.741**
6. Romania	2.500	1.519	0.872	0.499	0.387	0.223	**0.670**
7. Croatia	2.712	1.604	0.670	0.514	0.311	0.188	**0.719**
8. Slovenia	2.569	1.565	0.690	0.512	0.446	0.218	**0.689**
9. Belarus	2.449	1.527	0.699	0.571	0.473	0.281	**0.663**
10. Ukraine	2.784	1.369	0.652	0.539	0.437	0.219	**0.692**
11. Russia	2.668	1.582	0.659	0.547	0.349	0.195	**0.708**
12. Estonia	2.868	1.460	0.682	0.434	0.377	0.179	**0.721**
13. Latvia	2.813	1.475	0.734	0.439	0.387	0.152	**0.715**
14. Lithuania	2.864	1.382	0.659	0.489	0.433	0.172	**0.708**

[a] Ordered eigenvalues of the empirical covariance matrix of the p=6 variables of interest.

[b] Cumulative proportion of the overall variation explained by the first two principal components.

Table 8. Comparison between country averages of f1 and f2 before/after 1997 [a]

	Nobs.	Average of **f1**				Average of **f2**			
Code.country:		*1991-1996*	*1998-2004*	*change* [a]		*1991-1996*	*1998-2004*	*change* [a]	
1 Bulgaria	7148	-0.013	0.016	0.029		-0.089	0.113	0.202	***
2 Czech Rep.	5905	0.133	-0.237	-0.370	***	-0.004	0.007	0.011	
3 Slovak Rep.	4537	0.193	-0.194	-0.387	***	0.017	-0.017	-0.034	
4 Hungary	4681	-0.180	0.231	0.411	***	0.010	-0.013	-0.024	
5 Poland	5237	-0.068	0.109	0.177	***	-0.079	0.127	0.205	***
6 Romania	6731	0.126	-0.174	-0.300	***	-0.117	0.162	0.279	***
7 Croatia	3999	0.115	-0.346	-0.461	***	-0.076	0.230	0.306	***
8 Slovenia	6008	0.040	-0.050	-0.091	***	-0.240	0.299	0.539	***
9 Belarus	4392	-0.234	0.423	0.657	***	0.069	-0.124	-0.193	***
10 Ukraine	4259	-0.225	0.238	0.463	***	-0.101	0.106	0.207	***
11Russia	15569	-0.201	0.218	0.420	***	-0.165	0.179	0.344	***
12 Estonia	4503	-0.104	0.147	0.251	***	-0.058	0.082	0.140	***
13 Latvia	3488	-0.090	0.118	0.208	***	-0.105	0.139	0.244	***
14 Lithuania	5192	-0.057	0.042	0.099	***	-0.083	0.061	0.144	***
Total	**81649**	**-0.047**	**0.062**	**0.109**	***	**-0.086**	**0.111**	**0.197**	***

[a] Changes which are 1% significant are marked with *** on the basis of heteroskedastic-consistent standard errors.

Table 9. Panel estimates of the macro drivers [a]

Coefficient	*Independent variable*	*Dependent variable*:	**F1**		**F2**	
α_1	$TI^m_{ct} \times GDPgrowth_{ct}$		0.08830	***		
			(0.02087)			
α_2	$TI^m_{ct} \times Unemployment_{ct}$		-0.04654	***		
			(0.01504)			
α_3	$TI^v_{ct} \times GDPgrowth_{ct}$		-0.14168	**		
			(0.05616)			
β_1	$Gini_{c\ t-2}$				1.79455	***
					(0.58773)	
β_2	SP_{ct}				0.00336	**
					(0.00135)	
β_3	$Inflation_{c\ t-2} \times SP_{ct}$				0.00013	***
					(0.00005)	
τ_t [b]	1998 for F1	1996 for F2	-0.22868	***	-0.16365	**
			(0.07683)		(0.06359)	
average of μ_c [c]	Country effects		0.26185	**	-0.74681	***
			(0.10248)		(0.15110)	
R2			0.3866		0.4097	
RMSE			0.2123		0.1587	
No. observations			89		89	
Average no. obs. by country			6.36		6.36	

[a] See equations (13)-(14). White (1980) standard error in brackets. *** = 1% significant; ** = **5%** significant.

[b] Time dummy for 1998 in equation for F1 and for 1996 in equation for F2.

[c] Average of the individual fixed effects.

Table 10. Summary of the individual characteristics as reported in the interviews

Name [a]	***Group***	*Description*	*Label* [b]	*No. obs.* [c]	*Share %*
ie1	**Income level**	first quartile	low	14391	*23.4%*
	belongs to:	second and third quartiles	reference	31759	*51.5%*
ie2		fourth quartile	high	15466	*25.1%*
				61616	*100.0%*
ie3	**Cohort:**	age < 18 in 1991	non soc. cohort	8221	13.3%
		age ≥ 18 in 1991	reference		
ie4	**Age (years):**	age < 40	younger	25455	*41.3%*
		40 < age < 50	reference	12030	*19.5%*
ie5		age > 50	older	24131	*39.2%*
				61616	*100.0%*
ie6	**Gender:**	female	female	31073	50.4%
		male	reference		
ie7	**Marital status:**	divided/widow	div-wid	10802	*17.5%*
		married	reference	40838	*66.3%*
ie8		single	single	9976	*16.2%*
				61616	*100.0%*
ie9	**Location of**	village-small town	village	19981	*32.4%*
	residence:	big town	reference	23971	*38.9%*
ie10		city	city	17664	*28.7%*
				61616	*100.0%*
ie11	**Education:**	elementary	elementary	14403	*23.4%*
		secondary-vocational	reference	36281	*58.9%*
ie12		university	university	10932	*17.7%*
				61616	*100.0%*
	Labor force	employed	reference	36767	*59.7%*
ie13	**position:**	unemployed	unemployed	5490	*8.9%*
ie14		pensioner	pensioner	14498	*23.5%*
ie15		housewife	housewife	1250	*2.0%*
ie16		student	student	3611	*5.9%*
				61616	*100.0%*
ie17	**Other:**	minority (only Baltic countries)	minority	2846	4.6%

[a] Binary variables; = 1 when survey respondents belong to that category, zero otherwise.

[b] Labels are used to name the panels of Figure 7, where the effect of the corresponding characteristic on factor scores f1 and f2 are reported on the two axes.

[c] Within each group of characteristics , the total number of observations is 61,616; the distribution of characteristics within each group is given in the last column. See the text for a comment on the number of observations.

Table 11. Tests of the stability over time for the effects of groups of individual characteristics on factor scores [a]

Country:	BUL	CZR	SLK	HUN	POL	ROM	CRO	SLO	BEL	UKR	RUS	EST	LAT	LIT
Country code [b]:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Groups of characteristics [c]:														
						Equation for **f1**								
Income level (ie1-ie2)	0.005	0.042	0.190	0.434	0.465	0.629	0.000	0.041	0.866	0.103	0.000	0.061	0.130	0.368
Age & Cohort (ie3-ie5)	0.298	0.889	0.250	0.194	0.188	0.171	0.020	0.812	0.061	0.656	0.002	0.905	0.095	0.001
Gender & Marital status (ie6-ie8)	0.089	0.140	0.429	0.294	0.031	0.222	0.021	0.883	0.777	0.322	0.010	0.000	0.000	0.000
Location of residence (ie9-ie10)	0.000	0.487	0.670	0.004	0.034	0.002	0.124	0.502	0.000	0.000	0.000	0.005	0.111	0.004
Education (ie11-ie12)	0.047	0.421	0.037	0.411	0.570	0.138	0.376	0.344	0.641	0.726	0.135	0.145	0.001	0.001
Labor force position (ie13-ie16)	0.704	0.773	0.120	0.126	0.072	0.797	0.004	0.891	0.327	0.000	0.025	0.069	0.146	0.506
Minority in Baltic countries (ie17)	-	-	-	-	-	-	-	-	-	-	-	0.003	0.059	0.726
All characteristics (ie1-ie17)	0.000	0.019	0.001	0.046	0.000	0.003	0.000	0.637	0.000	0.000	0.000	0.000	0.000	0.000
						Equation for **f2**								
Income level (ie1-ie2)	0.335	0.415	0.387	0.027	0.003	0.955	0.009	0.008	0.423	0.276	0.039	0.009	0.104	0.000
Age & Cohort (ie3-ie5)	0.100	0.054	0.230	0.796	0.476	0.975	0.899	0.807	0.304	0.055	0.597	0.513	0.608	0.690
Gender & Marital status (ie6-ie8)	0.090	0.596	0.666	0.407	0.050	0.547	0.030	0.629	0.041	0.037	0.027	0.000	0.006	0.004
Location of residence (ie9-ie10)	0.000	0.007	0.008	0.011	0.442	0.088	0.009	0.098	0.000	0.002	0.008	0.000	0.000	0.000
Education (ie11-ie12)	0.245	0.121	0.369	0.067	0.208	0.157	0.090	0.308	0.000	0.169	0.035	0.047	0.433	0.390
Labor force position (ie13-ie16)	0.000	0.000	0.001	0.734	0.327	0.274	0.720	0.237	0.102	0.986	0.003	0.499	0.649	0.116
Minority in Baltic countries (ie17)	-	-	-	-	-	-	-	-	-	-	-	0.000	0.966	0.412
All characteristics (ie1-ie17)	0.000	0.000	0.001	0.002	0.022	0.595	0.001	0.015	0.000	0.004	0.000	0.000	0.000	0.000

[a] P-values of the null of parameter constancy over time. [b] See e.g. Table 3.

[c] The individual characteristics included in each group are reported in brackets, see Table 10 for a detailed description.

Table 12. MG parameter estimates of the models with country-year dummies [a]

groups	NEAR	CIS	BALTICS	ALL	NEAR	CIS	BALTICS	ALL
Equation for f1		**TI^m x g**				**TI^s x g**		
ie1 - low income	-0.0043	-0.0192	-0.0372*	-0.0146	-0.0408	0.1188	0.0932	0.0354
ie2 - high income	0.0421*	-0.0286	0.0459**	0.0274	-0.12	0.1026	-0.1155	-0.056
ie6 – female	0.016	-0.0209	0.1562***	0.0361**	-0.0159	0.078	-0.5475***	-0.1125**
ie7 - div-wid	-0.0319	-0.0048	0.0261	-0.0071	0.1097	-0.0074	-0.0477	0.0343
ie8 – single	-0.018	-0.2031**	-0.014	-0.0542**	0.0615	0.5930**	0.0297	0.1629**
ie9 – village	0.0066	-0.2305***	-0.0225	-0.0385*	-0.0546	0.7893***	0.0887	0.1370**
ie10 – city	0.018	-0.0869	-0.0141	-0.0069	-0.0452	0.2709	-0.0053	0.0141
ie11 – elementary	-0.0464*	-0.1165	0.0282	-0.0442*	0.1377*	0.3929	-0.055	0.1289*
ie12 – university	0.0595*	0.0166	0.0853***	0.0469**	-0.145	-0.0243	-0.2302***	-0.1155
Equation for f2		**PS x Gini**				**PS x Infl**		
ie1 - low income	1.2040***	-0.586	-0.8539	0.1196	0.0050**	-0.0002	-0.0038**	0.001
ie2 - high income	-1.9295***	1.361	-0.3094	-0.4649	0.0019	-0.0001	0.0017	0.0007
ie6 – female	0.3994	-0.8293	1.7214**	0.2964	0.0022	0.0001	0.0057***	0.0022**
ie7 - div-wid	0.7674	2.1652**	1.5778*	1.2795***	-0.0015	0.0002	0.0056***	0.0001
ie8 – single	-0.313	-0.2927	-0.2787	-0.3205	0.0007	0.0000	0.0025	0.0013
ie9 – village	0.1251	1.9706**	0.4339	0.3684	0.0004	0.0000	0.0035**	0.0012
ie10 - city	-0.4542	2.8785***	-1.0944	0.2998	-0.0022	-0.0009***	-0.0040**	-0.0029**
ie11 - elementary	0.0373	-0.6542	-1.5289	-0.4323	-0.0015	0.0000	-0.0034*	-0.0015
ie12 - university	0.3557	-4.0082**	1.3717*	-0.5697	-0.0027	-0.0002	0.0028*	0.0007
Poolability test for f1 (p-values)		**TI^m x g**				**TI^s x g**		
ie1 - low income	0.2610	**0.0315**	0.3572	0.0898	0.2624	**0.0230**	0.3211	0.0598
ie2 - high income	0.2502	0.5118	0.5992	**0.0000**	0.3405	0.5135	0.5327	**0.0001**
ie6 - female	0.0894	0.3075	**0.0058**	**0.0000**	0.1785	0.2922	**0.0000**	**0.0000**
ie7 - div-wid	0.5676	0.4896	0.2655	0.1734	0.4690	0.5272	0.1263	0.1100
ie8 - single	0.1446	**0.0099**	0.3881	0.0796	0.2602	**0.0220**	0.4176	0.1451
ie9 - village	0.4667	**0.0059**	0.2055	**0.0006**	0.2726	**0.0033**	0.1439	**0.0006**
ie10 - city	0.5168	0.4121	0.7385	0.0730	0.6343	0.2801	0.9201	0.1196
ie11 - elementary	0.0541	0.3356	0.3210	**0.0036**	**0.0295**	0.3089	0.3931	**0.0069**
ie12 - university	0.6642	0.5271	0.1143	0.3764	0.7968	0.5484	0.5575	0.6062
Poolability test for f2 (p-values)		**PS x Gini**				**PS x Infl**		
ie1 - low income	0.4174	0.5555	0.1656	0.1842	**0.0254**	0.7285	0.1249	**0.0084**
ie2 - high income	**0.0390**	0.1048	0.4489	**0.0340**	0.0538	0.7247	0.6954	**0.0046**
ie6 - female	0.8553	**0.0040**	**0.0086**	**0.0100**	0.5569	0.7471	**0.0019**	**0.0136**
ie7 - div-wid	0.1454	**0.0403**	0.2683	0.0678	0.7717	0.0548	**0.0215**	**0.0238**
ie8 - single	0.7850	0.3215	0.0803	0.2495	0.7030	0.5070	0.0702	0.0744
ie9 - village	0.1156	**0.0029**	0.1738	**0.0000**	**0.0109**	0.7595	0.1197	**0.0394**
ie10 - city	0.0616	**0.0002**	0.6056	**0.0032**	0.4732	**0.0000**	0.0870	**0.0003**
ie11 - elementary	0.3516	0.8923	0.2170	0.5718	0.2500	0.8659	0.1893	0.4550
ie12 - university	**0.0033**	0.0647	0.3161	**0.0049**	0.1242	0.7730	0.2780	0.2155

[a] See equation 19 and Section 8 for an explanation of the model and of the test statistics.
*** = 1%; ** = 5%; * = 10% significant. P-values for poolability: highlighted in bold when < 5% (reject).

Table 13. MG parameter estimates of the models with macro drivers [a]

groups	NEAR	CIS	BALTICS	ALL	NEAR	CIS	BALTICS	ALL
Equation for f1		**TI^m x g**				**TI^s x g**		
ie1 - low income	-0.0161	0.0944	-0.0209	0.0168	-0.0217	-0.2227	0.0117	-0.0682
ie2 - high income	0.0362	0.1644***	0.0307	0.0705***	-0.1236*	-0.4926**	-0.1001	-0.2064***
ie6 - female	0.0071	0.1618***	0.1678***	0.0774***	-0.0083	-0.4846***	-0.5964***	-0.2563***
ie7 - div-wid	-0.0385	0.0643	0.0235	0.0017	0.126	-0.2028	-0.0471	0.0007
ie8 - single	-0.022	-0.0643	-0.0028	-0.0235	0.0625	0.1627	-0.0279	0.0511
ie9 - village	-0.0151	0.1778***	-0.0185	0.0513***	-0.0121	-0.4504**	0.0406	-0.1596***
ie10 - city	-0.0117	0.2917***	-0.0178	0.0735***	0.0085	-0.8759***	-0.0272	-0.2554***
ie11 - elementary	-0.0328	-0.0185	0.0308	-0.0131	0.0723	0.0477	-0.0852	0.0067
ie12 - university	0.0371	0.1432*	0.1092***	0.0729***	-0.0909	-0.4235*	-0.3247***	-0.2132***
Equation for f2		**PS x Gini**				**PS x Infl**		
ie1 - low income	1.2312***	-1.2573	-1.3658	-0.1442	0.0052**	0.0000	-0.0050***	0.0006
ie2 - high income	-1.6040***	0.2207	-0.9918	-0.6668**	0.0024	0.0002	-0.0006	-0.0001
ie6 - female	0.6976**	-1.926***	1.1064	0.1086	0.0025	0.0004**	0.0027**	0.0011
ie7 - div-wid	1.0976*	1.6926*	1.2846	1.2195***	-0.001	0.0003	0.0040**	-0.0004
ie8 - single	-0.1221	-1.1273	-0.7166	-0.5307	0.0013	0.0002	0.0008	0.0005
ie9 - village	0.3979	-0.7585	-1.0553	-0.334	0.0014	0.0002	-0.0015	-0.0008
ie10 - city	-0.0369	0.4995	-2.5568***	-0.2624	-0.0013	-0.0008***	-0.0085***	-0.0046***
ie11 - elementary	0.4723	-1.1558	-1.8957*	-0.3976	-0.0011	0.0002	-0.0050***	-0.0017
ie12 - university	0.6618	-4.1378**	1.0874	-0.4889	-0.002	0.0001	0.0015	0.0001
Poolability test for f1 (p-values)		**TI^m x g**				**TI^s x g**		
ie1 - low income	**0.0139**	**0.0263**	0.4471	**0.0008**	**0.0150**	**0.0258**	**0.0269**	**0.0014**
ie2 - high income	0.1183	**0.0002**	0.8847	**0.0000**	0.3063	0.2910	0.9090	**0.0071**
ie6 - female	**0.0341**	**0.0002**	**0.0000**	**0.0000**	**0.0022**	**0.0000**	0.1070	**0.0000**
ie7 - div-wid	0.5949	0.1960	0.0772	0.2555	**0.0186**	0.1218	0.3414	**0.0495**
ie8 - single	0.1852	0.1630	0.4756	0.4756	0.1637	0.1060	0.1051	**0.0057**
ie9 - village	**0.0238**	0.0819	0.1543	**0.0000**	0.9963	**0.0150**	0.7906	**0.0421**
ie10 - city	**0.0172**	**0.0000**	**0.0162**	**0.0000**	**0.0482**	**0.0367**	**0.0119**	**0.0000**
ie11 - elementary	**0.0272**	0.3648	0.3802	**0.0072**	**0.0068**	0.4068	0.0816	**0.0049**
ie12 - university	0.7459	0.1216	**0.0022**	**0.0065**	**0.0015**	**0.0161**	0.5532	**0.0011**
Poolability test for f2 (p-values)		**PS x Gini**				**PS x Infl**		
ie1 - low income	**0.0222**	**0.0252**	0.4380	**0.0017**	0.0694	0.8935	**0.0320**	**0.0013**
ie2 - high income	**0.0253**	**0.0004**	0.6815	**0.0000**	0.0852	0.3388	0.8528	**0.0173**
ie6 - female	**0.0165**	**0.0004**	**0.0000**	**0.0000**	0.5788	**0.0408**	0.1293	0.0698
ie7 - div-wid	0.5264	0.2202	**0.0156**	0.0846	0.7654	**0.0228**	0.0864	**0.0249**
ie8 - single	0.4041	0.2352	0.4270	0.6064	0.8160	0.3067	0.0857	**0.0215**
ie9 - village	0.0917	0.1452	0.1272	**0.0000**	**0.0012**	0.4187	0.5684	**0.0022**
ie10 - city	0.0619	**0.0001**	**0.0145**	**0.0000**	0.0858	**0.0000**	**0.0000**	**0.0000**
ie11 - elementary	**0.0202**	0.3609	0.5696	**0.0129**	0.1392	0.5097	**0.0390**	**0.0393**
ie12 - university	0.8732	0.1008	**0.0280**	**0.0084**	0.1023	0.9793	0.6328	0.5019

[a] See equation 20 and Section 8 for an explanation of the model and of the test statistics.
*** = 1%; ** = 5%; * = 10% significant. P-values for poolability: highlighted in bold when < 5% (reject).