What Is Social Inequality and Why Does it Matter?[1]

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***Abstract*:** As distinct from income or wealth inequality, 'social inequality' is currently poorly understood and, at best, unevenly measured. We take a first step towards building a consistent framework to conceptualize and measure social inequality. We characterize social inequality as the relative position of individuals along a number of dimensions that measure achieved outcomes and perceived access to services as prerequisites to achieve outcomes in the future. Using survey data from twelve Central and Eastern European countries we construct an index of social inequality that we compare with other measures of inequality, and we use to identify which countries are more or less socially advantaged. We find that cross-national patterns of social inequality differ significantly from patterns derived from measures of income inequality. This is important since countries with less social inequality have higher levels of economic performance and human development, and stronger political institutions.

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1. INTRODUCTION

Since the seminal contribution of Amartya Sen (1992) a substantial body of work has converged on the notion that measuring inequality in several dimensions better informs our understanding of the influence of inequality on both individuals and societies since inequalities in different dimensions tend to move together and reinforce each other. In the subsequently large literature that has emerged, a commonly used label for multidimensional inequality is 'social inequality', which has been used mostly as a catch-all concept rather than a distinct and coherent concept.[5] While the term is sometimes used to refer to multiple disparities in material wealth in society, little attention has been given to its character and specificities (Milanovic 2005; Bollen and Jackman 1985). Social inequality remains a vague concept compared with work on inequality in individual dimensions such as in income (Milanovic 1998; Atkinson 1999), wealth (Cagetti and De Nardi 2008), labour market segmentation, gender and ethnicity (Schrover *et al.* 2007), welfare status (Layte and Whelan 2003), skills and training (Devroye and Freeman 2002), health (Marmot and Wilkinson 1999), and housing (Morris and Winn 1990), to name but a few.

Our aim here is to develop a framework to better conceptualize and measure social inequality. We face two primary constraints in achieving this, one theoretical and one methodological. The former constraint is the choice of dimensions to measure social inequality; the latter constraint is aggregating these necessary dimensions without introducing intractable complexity. We address the theoretical question of the choice of dimensions by conceptualizing social inequality with Amartya Sen's capability approach in which individuals' wellbeing depends on their effective freedom to achieve their life goals and full potential (1992, 1999). We argue that reaching this full potential depends both on having achieved fundamental outcomes such as income, education, and health, as well as on individuals' access to services, which is instrumental to

[5] As an example, the entry for 'social inequality' in the *Social Science Encyclopaedia* (Kuper and Kuper 2004) simply says, 'see inequality'.

effectively achieve outcomes in the future. In this way we can identify a set of minimally required dimensions that proxy fundamental outcomes and vehicles to achieve future outcomes. Methodologically, we propose a simple procedure to aggregate the dimensions into one index by using a weighted average of inequality measures across the chosen dimensions empirically weighted by their relative importance.

The findings provide several potential, if ambitious, contributions to the thinking about inequality. We propose an index of social inequality that measures disparities both in terms of actual achievements and of means to achieve outcomes in the future. The main results suggest that our theory-based social inequality index delivers a better conceptualization of how inequality matters to individuals. Further, given that our index outperforms the more commonly used measures of income inequality in predicting cross-national variation in economic and political conditions as well as in human development, social inequality defined in this way provides a better aggregate measure of how inequalities co-vary with national economic and political performance.

2. MEASURING INEQUALITY IN MANY DIMENSIONS

By viewing social inequality as intrinsically multi-dimensional, an important question is how to aggregate the data on different dimensions into one index. There is an extensive literature on the multi-dimensional measurement of inequality. At one end, there are authors who draw conclusions on the overall evolution of inequality by comparing changes in inequality in separate dimensions (e.g. Slottje, Scully, Hirschberg and Hayes 1991; Easterlin 2000; Hobijn and Franses 2001; Neumayer 2003). A disadvantage of this approach is that it makes it difficult to formulate an overall conclusion of the extent of inequality if inequality in one dimension evolves differently from inequality in another dimension. At the other end, there are approaches that first construct a composite multi-dimensional index and then measure the inequality in that index (e.g. Becker *et al.* 2005; Fischer 2003; McGillivray and Pilarisetti 2004; Noorbakhsh 2006). The

disadvantage of this approach is that it reduces the multi-dimensional nature of the problem to one dimension.

A middle approach lies in between these two extremes by using recently developed measures of multi-dimensional inequality. This middle approach has the advantage of avoiding the reduction of a multi-dimensional problem to a one-dimensional one while yet producing an overall index of inequality. Two sophisticated versions of this approach are Decancq *et al.* (2009) and Decancq and Lugo (2009) that construct a multi-dimensional inequality index which combines the information on inequality in different dimensions with the information on the correlation between these dimensions through weights and substitution parameters, the former building a multi-dimensional inequality Atkinson index and the latter building a multi-dimensional Gini index. Both indexes are derived within a theory-based framework that allows testing the robustness of the results to the theoretical assumptions that are used to build the indexes. However, they require sophisticated specifications that limit wider application and use of these indexes. Two multi-dimensional indexes that make use of a simplified version of this middle approach are the Human Opportunity Index (HOI), which accounts for disparities in the distribution of access to basic services for children (Paes de Barros *et al.* 2009)[6], and the inequality-adjusted human development index (IHDI), which measures wellbeing accounting for the distribution of human development across individuals (Foster *et al.* 2005). Both the HOI and the IHDI require simple computations and assume that each dimension included in the index weights equally. The assumption of equal weights is computationally easy but imposes an arbitrary choice on the relative importance of each dimension included in the index.

As in the HOI and IHDI we propose an index that is easy to compute but, importantly, we relax the assumption of equal weights. To our mind, it seems more reasonable – and theoretically

[6] The HOI measures children's access to basic services adjusted for differences associated with initial circumstances such as gender and race; as such it is a development index that controls for inequality of opportunity.

accurate - to allow the data to inform the choice of the weights. Relaxing the assumption of equal weights allows not only for different inequalities to vary across countries but also for the balance of inequalities to vary cross-nationally.

2.1 CHOICE OF DIMENSIONS

The multi-dimensional measurement of inequality is motivated by Amartya Sen's "capabilities/functionings" approach, which is based on the core concept that wellbeing depends on the individuals' *effective freedom to achieve* their life goals and full potential or their own wellbeing (Sen 1992, 1999). Therefore, in theory, capability accounting should measure the real freedom that people enjoy in trying to achieve their desired – even if only potential – goals.

A number of important contributions (e.g. Anand *et al.* 2007; Alkire 2011) have established that a prerequisite for the fulfillment of individuals' wellbeing is achieving outcomes in several dimensions. Simply, wellbeing is intrinsically multi-dimensional and therefore inequality should as well be consistently measured along a number of dimensions. Our innovation here is arguing that individuals' wellbeing and effective freedom to achieve depend not only on what a person has actually achieved, but also, and as importantly, on what a person expects to be able to achieve in the future. Actual and future achievements are related since future achievements depend on what has been already achieved as well as on how actual achievements will allow achieving outcomes in the future.

We therefore propose a capability-based index of inequality that measures disparities both in actual and in potential outcomes, and we do so along the minimum number of dimensions that have been recognized as fundamental to measure wellbeing, namely, individuals' income, health, and education as included in the human development index (HDI). We measure individuals' level of income, health and education as actual outcomes, and individuals' access to health and education as instrumental to achieve potential outcomes in the future.

In other words, our argument is that a capabilities-based measure of social inequality should include disparities both in actual achievements and in individuals' access to health care and education, which is instrumental to effectively achieve outcomes in the future. The importance of access to services is paramount: inequality in any given measurable dimension is much more problematic in a society characterized by a skewed distribution of access to health care and education than in a society where access to services is more widely available.

Therefore, we see social inequality as a multi-dimensional inequality measure of actual achievements and access to services, and we propose our index as the first attempt to measure disparities in both sets of dimensions. Having identified the dimensions to include in the index, we now propose a simple method of aggregation.

2.2 CONSTRUCTING A MULTI-DIMENSIONAL INEQUALITY INDEX

Let us assume that there are *M* relevant dimensions along which to measure inequality and that these dimensions can be measured in an interpersonal comparable way. Let x_m^{ij} denote the value of individual *i* in country *j* for dimension *m* and let the vector $x^{ij} = (x_1^{ij},...,x_M^{ij})$ summarize the values across all *M* dimensions for individual *i* in country *j*. Let X^j define the matrix of all values across all *M* dimensions for all individuals in country *j*. The overall index of inequality for a given country *j,* $I^j(X^j)$, which can be rewritten for simplicity as $I^j(X)$, can be defined as a function of the *M* inequality indexes $I_m^j(x_m^j)$, *m=1,..,M*, computed by aggregating the values of each of the *M* dimensions for all *N* individuals in a given country.

The problem to define a multi-dimensional inequality index can be described as the search for the index *I(.)* that aggregates inequality in each of the value vectors $x_1^j,...,x_M^j$ on the real line so that a natural ranking can be made:

$$I^j(x) = \left[w_1^j I_1^j(x_1^j)^\beta + ... + w_M^j I_M^j(x_M^j)^\beta\right]^{1/\beta} \qquad (1)$$

where β is strictly different from zero and $w_m > 0$ for each $m=1,...,M$.

Therefore, the index *I(x)* is defined as a simple weighted average of order β of $I_m(x_m)$ with weights w_m^j, which are allowed to vary by country.[7]

Given a chosen set of *M* dimensions, three main components characterize the index *I(x)*: the parameter β, the *M* inequality indexes $I_m^j(x_m^j)$, and the weights w_m^j. The parameter β is related to the elasticity of substitution, σ, between pairs of dimensions. For a given pair of dimensions *h* and *g*, $\sigma_{hg} = \left|\frac{1}{1-\beta}\right|$. The smaller the β, the bigger the substitutability between two given dimensions, that is the more we need to decrease one dimension in order to increase another dimension by one unit while keeping the level of the index *I(x)* constant. By specifying the index *I(x)* in equation (1) we implicitly assume the same degree of substitutability for all pairs of dimensions. Further, we assume that β=1, so that equation (1) reduces to the standard weighted arithmetic average.

In order to compute the inequality index $I_m^j(x_m^j)$ by country and dimension, we normalize and rescale the data by subtracting the minimum value and by dividing by the difference between the maximum and the minimum value, and we compute the Theil index of each *m* dimension.[8]

Finally, we aggregate the *M* inequality indexes into the overall inequality index for country *j*. We do so by computing the weighted arithmetic average of the $I_m^j(x_m^j)$ inequality indexes for country *j* with the w_m^j weights specified in equation (1). Instead of arbitrarily imposing equal weights, we will use a factor analysis to let the data inform our choice of the weights (see

[7] As noted by Decancq and Lugo (2013), Maasoumi (1986) provides an information-theoretic justification of this class of indexes.

[8] The Theil index satisfies the four basic properties desirable in an inequality measure (Shorrocks 1980); as such it has been extensively used in several inequality analyses (Galbraith 2012).

Section 4).[9] Therefore, overall, our approach simply consists of two main steps: first, use empirical data to compute the weights, and, second, use these weights to compute a weighted average.

3. DATA

The EUREQUAL surveys provide a unique opportunity to bring to an empirical test our theory of social inequality. First, the countries of post-Soviet Central and Eastern Europe (CEE) including Russia provide a unique examination of the issue of inequality. This region's re-orientation away from Soviet Communism towards market economies and political democracy has met with wide ranging levels of success. Instructively, these countries began a process of transformation at nearly the same time but achieved substantial dissimilarity in consolidation of economic and political institutions. Two-thirds of the countries in our sample, including Hungary and the Czech Republic, are members of the European Union and thus represent near ideal transition cases toward these institutional arrangements while others, such as Russia and Ukraine, have demonstrated more troubled or partial transitions. We see this as an advantage over existing studies. Countries of recent and on-going transition present crucial cases of inequality because it challenges the new 'rules of the game'. That is, rather than merely troubling established democracies, inequality is more relevant to regime stability and legitimacy in non-established democracies as inequality in Germany, the UK, or even the US, does not threaten the edifice of democratic politics. A multi-dimensional inequality index – one that captures how individuals experience inequality - therefore contributes to our knowledge about the *extent*, *stability,* and *quality* of democratic outcomes given the wide variation in outcomes found in our sample.

Second, and as importantly, the dataset includes all the variables that we need to operationalize our capability-based index of social inequality. In particular, as discussed in

[9] Factor analysis is one of several different alternatives to estimate the weights from empirical data (see Decancq and Lugo 2013 for a comprehensive review of the literature).

Section 2.1, we propose an index of inequality that measures disparities both in actual achievements (income, health and education) and in individuals' access to health care and education as instrumental to effectively achieve outcomes in the future. While individuals' level of income, health and education are recorded by most available individual-level datasets, the EUREQUAL dataset also includes a measure of access to health and education by asking individuals to report their perceived access to health care and education compared to "…the average access in the country as a whole." These two access variables allow us to measure self-reported access to services and thus to empirically substantiate the innovative component of our index.

In order to measure achieved outcomes we include households' income, individuals' health status and education level. We have chosen these three variables as the minimum number of achieved outcomes, in congruence with other work that has established them as fundamental to capture wellbeing, as best described in the long debate that motivated the introduction of the HDI, which measures countries' level of achievement along these three dimensions (Fukuda-Parr 2003).

Appendix B provides full details on the questions used to elicit information on each of the five variables included in our index. Since Poland does not have a response for perceived access to education, complicating its comparability, we drop it from our sample. We therefore use a total of 12 countries: Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Romania, Russia, Slovakia, and Ukraine.

Taken together, the five dimensions in the index are fundamental to enhance the individual's capability set by allowing for a satisfactory and rewarding life. Taking away any one of someone's income, health, education or preventing access to health care and education would restrict an individual's capability set and thus reduce the level of wellbeing.

4. COMPUTING THE WEIGHTS USING FACTOR ANALYSIS

Having chosen the dimensions to include in the index, we compute the dimension and country-specific w_m^j weights specified in equation (1) by using exploratory factor analysis.

<Table 1 about here>

Table 1 presents the results, which show clear cross-national variation across the individual factor loadings. In each country the two access variables load strongly and more so than any other variable suggesting that access to services will be a crucial determinant of our social inequality index.

4.1 VALIDATION OF ACCESS VARIABLES

While we see the inclusion of the two access variables as a way to operationalize a capability-based notion of social inequality, these variables are subjective and as such can leave themselves open to a number of competing interpretations. We therefore assess the quality of these data through a validation exercise by correlating individuals' self-reported levels of access to health and education with a number of objective measures of health care and education provision.

We start with individuals' perceived access to education. We validate the data by using both a measure of availability of education proxied by enrolment rates, and a measure of quality of education given by the students-teacher ratio as a proxy for class crowding and learning effectiveness.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) provide cross-country data on enrolment rates and students-teacher ratios at different levels of education for each year between 1999 and 2008. However, while data on enrolment rates are available at

each level of education from pre-primary to tertiary and for each year, data on students-teacher ratios are only available up to secondary education and are reported with no missing values for all countries in our sample between 2003 and 2006.[10] Therefore, in order to assure consistency between our indicators and to reduce measurement error we focus on secondary education and we compute changes in enrolment rates and students-teacher ratios between 2003 and 2006.

<Table 2 about here>

The first and second column of Table 2 show that both changes in overall secondary enrolments and in public schools are strongly, positively, and significantly correlated with the mean level of perceived access to education (by country). In addition, we find that access to education is also strongly, positively, and significantly correlated with students/teacher ratio, which suggests that while more students were able to enrol in school and thus experienced an increased access to education, they did so in crowded schools since the number of teachers did not increase proportionally.

We now move to the second access variable, that is individuals' perceived levels of access to health. The World Health Organization (WHO) provides several comparable cross-country measures of the quality of the health care system and the effectiveness of health care provision.[11] Overall, we would expect that in countries with higher expenditure on health and positive indicators of health, individuals would recognize this and indicate a higher and better access to health care. Therefore, we correlate the mean of individuals' perception of access to health care by country with four indicators: life expectancy at birth; per capita government expenditure on health (in PPP, 2006); per capita total expenditure on health (at average exchange rate, 2006);

[10] The full dataset is publicly available at http://stats.uis.unesco.org/unesco/ReportFolders/ReportFolders.aspx?IF_ActivePath=P,50&IF_Language=eng

[11] The full dataset is publicly available at http://www.who.int/whosis/en/

and the amount of social security expenditure on health as a percentage of general government expenditure on health (in 2006).

<Table 3 about here>

Table 3 shows that the correlation between each of the indicators of health care provision and perceived access to health is positive and significant (for Social Security expenditure at the $p \leq 0.10$ level), which lends support to the validity of our 'access to health' variable.

5. MULTI-DIMENSIONAL INEQALITY INDEX: RESULTS

Having chosen the dimensions to include in our index, validated the access questions, and obtained the weights using factor analysis, we can proceed to compute the multi-dimensional inequality index *I(x)* in equation (1) for each of the 12 countries in the sample. Figure 1 presents the multidimensional inequality index by country together with the most commonly used macro-economic inequality indicator - the Gini index for income inequality computed using available online data from the United Nations Development Programme (full details in Appendix B).

<Figure 1 about here>

Being a simple weighted average of Theil inequality indexes, the index is very easy to read: the higher the score, the higher the level of multi-dimensional inequality. Figure 1 makes it clear that cross-national patterns of social and income inequality differ significantly. Russia and Lithuania have the highest income inequality scores and low social inequality scores. Reversely, Moldova and Romania are the most socially unequal countries while have a level of income inequality that is around the sample average.

Looking at the social inequality index, Slovakia and Hungary have the lowest level of inequality and Moldova and Romania the highest with a difference of 6 percentage points between them. For these post-Communist states, the variation in the quality and extent of both democratization and market liberalization match the generally expected contours of these related

processes. While it may seem somewhat counter-intuitive to see countries such as Russia, Lithuania, and the Czech Republic having similar levels of social inequality, our multi-dimensional index of social inequality is a weighted average of achieved and potential outcomes (in the form of 'access'). The balancing of actual and potential outcomes is one facet of the contribution of our index and in order to further assess the validity of this balance, we perform a series of competitive robustness checks.

5.1 ROBUSTNESS

We perform two main validity checks of our index. First, in order to assess the relevance of using weights that are empirically computed rather than assumed to all being equal to one (see Section 2) we follow the procedure used to construct the HOI and IHDI indexes and recompute our multidimensional inequality index when imposing equal weights; second, in order to assess the importance of the two access variables we recompute the index without them. Table 4 reports the results of the baseline index together with the index without the access variables and the index with equal weights. Figure 2 graphically compares the three indexes.

<Table 4 and Figure 2 about here>

Comparison between the baseline index and the index with equal weights suggests that using equal weights does not substantially affect the cross-country inequality pattern. On the contrary, the pattern changes substantially when we compute the index without the access variables. In other words, while the weights may slightly adjust the loading pattern of the final index, the inclusion of the access variables changes the *nature* of the index beyond mere computational transformations, which leads support to the salience of these variables as dimensions along which to measure disparities.

6. INEQUALITY AND CROSS-NATIONAL PERFORMANCE

In the literature *income* inequality has overwhelmingly been the most studied inequality concept and, as such, the common understanding of inequality is largely couched in narrowly economic terms. However, a number of studies have shown that changes in income inequality do not necessarily move predictably with changes in other dimensions of inequality; or, in other words, that being economically poor or having a low income is not necessarily a good indicator of being disadvantaged (e.g. Narayan *et al.* 2000; Alkire 2011).

Further, inequality in non-income dimensions has large impacts on development as countries with less human development tend to have greater inequality in more dimensions, or, in other words, more human development is associated with less inequality (UNDP 2010). Likewise, the distribution of income is at best a mediocre predictor of the distribution of non-income dimensions of individuals' wellbeing. Not surprisingly, therefore, aggregate income inequality, even when coupled with individual socio-economic locations, struggles with being a consistent and predictable indicator of broader social, economic, and political opportunities in individuals' lives (Wilkinson and Pickett 2009; Bartels 2008; Kaltenhaler *et al.* 2008; Bollen and Jackman 1985; Goodin and Dryzek 1980).

Given these findings, it is likely that the poor macro-performance of income inequality may be due to income - alone - being unable to capture information on the set of disparities that matter for individuals' lives. We investigate this by correlating the most commonly used indicator for income inequality, the Gini index for income inequality, and a set of standard political and economic macro-indicators. In particular, we consider 'Political Stability', 'Government Effectiveness' measures ('Governance Matters VIII' project of the World Bank; Kaufmann *et al.* 2009), and Freedom House Score, all measured in 2007, as indicators of political performance; the 2007 GDP *per capita* and the 5 year growth of GDP *per capita* between 2002 and 2007 as economic indicators. Data sources for each macro-indicator are described in Appendix B.

<Table 5 about here>

Table 5 shows that income inequality fails to move in coordination with each economic and political indicator in any meaningful way. This finding is somewhat disconcerting as the Gini index for income inequality is a frequently used and relied upon indicator of not only disparities in income but also as a proxy of other disparities that impact individuals' lives. In contrast to this assumption, our index is constructed to capture much of the non-income inequality that affects individuals. By including not only achieved outcomes (among which income), but also perceived access to health and education, we expect our index to provide a better indicator of the inequality that matters to individuals and their societies, and thus to countries' economic and political progress. We find that here. In contrast to the poor performance of the Gini index for income inequality, our multi-dimensional inequality index (MDII) correlates strongly and in the expected direction with both the level and the growth of per capita GDP, as well as with political stability (at $p<0.05$ and $p<0.10$, respectively). In addition, and consistent with previous results (e.g. Alkire 2011; UNDP 2010; Wilkinson and Pickett 2009), the Gini index is uncorrelated with the Human Development Index, while the MDII strongly is. Taken together, the correlations suggest that richer countries with better political institutions and higher human development tend to exhibit lower multi-dimensional inequality.

Further, to place both the Gini and our indices in direct comparison, Table 6 presents the results of a series of OLS regressions where each macro variable is regressed against the MDII and the Gini index for income inequality.

<Table 6 about here>

The regression results in Table 6 strengthen the findings in Table 5. While the Gini for income inequality fails to reach significance with *all* the macro variables, the MDII index remains significant for the level and the growth of per capita GDP, and with the Human Development Index. There is no issue of multi-collinearity as the MDII is not significantly

correlated with the level of Gini index of income inequality (r=0.22, p≤0.50, *N*=12; although it is moderately correlated with the change in the Gini index for income inequality from 2002 to 2007; r=-0.56, p≤0.07, *N*=12; not included).

Finally, and consistently with the high correlation between our index and the index with equal weights, the regressions run using the MDII with equal weights reproduce this macro-performance by showing that the Gini index for income inequality is never a significant predictor, while the MDII is strongly correlated with the level and growth of per capita GDP, the Human Development Index as well as with political stability (at the 10 per cent level). On the contrary, the index without the access variables reproduces the poor performance of the Gini index for income inequality by being uncorrelated with all macro variables except, as expected, for the Human Development Index since it includes the same three variables (income, education, and health).[12]

All these results taken together provide evidence that inequalities in non-income dimensions, and in particular in access to services, have an important independent explanatory power that cannot be effectively proxied by variation in income, and that these non-income inequalities are the driving force of our index as a better indicator of the inequality that matters to individuals. In other words, the results show that the crucial source of variation that is allowing our index to better explain macro-economic and political changes is provided primarily by the two access variables. The crucial role played by the access variables brings supporting evidence to our capability-based concept of social inequality as reflecting disparities in actual achievements and - crucially - in access to services, which we see as instrumental to future outcomes and thus to a full achievement of the 'freedom to achieve'.

6.1 DISCUSSION

[12] All results are available from the authors upon request.

Our index of social inequality performs better than a standard measure of income inequality because of the inclusion of perceived access to health care and education. If we take the MDII to better represent inequality as it exists in several dimensions, we are led to a clearer understanding as to why countries with less social inequality have better economic performance and stronger democratic political institutions. The normative relationship between inequality (and inequalities) and democratic political institutions is fairly well understood (Lichbach 1989; Karl 2000) as the redistribution of the goods of society is a founding feature of successful democratization and long-term success (Boix 2003). When the market distorts the distribution of goods, democratic remedies are essential if and when citizens are dissatisfied with inadequate government responses (Dahl 1971). To the degree that these political institutions fail to offer solutions, they can be perceived to be broken and are thus de-legitimized. Again, as the evidence here shows, where and when this happens is not revealed by using uni-dimensional measures of income inequality.

How representatives are our findings? While a less common region for study, countries of Central and Eastern Europe (CEE) provide the means to rigorously test a new conceptualization and strategy to measure multi-dimensional inequality. Most of what we know about the relationship between inequality and political institutions come from established democracies; that is, countries in which the political institutions are established with little concern for backsliding or 'alternative solutions'. Given the broad set of inequalities that has been growing unevenly across CEE over this period (Milanovic 1998, 2005; Förster, et al, 2005), there have been strong calls for return to more egalitarian approaches as not only were employment opportunities insufficient to maintain a standard of living but also the goods of market economies were seen to be distributed in a distorted manner (Loveless and Whitefield 2011; Kelley and Zagorski 2004; Örkeny and Székelyi 2000). Like the West, but particularly pernicious in less established democracies, these perceptions and the presence of high levels of

inequality in the region have led to declines in political engagement, such as voting (Karakoc 2013).

The role of inequalities is acutely relevant for CEE which is representative not only of post-Communist states (including Central Asia) but also of other transitional states and regions, most notably Latin America. Both of these regions have and continue to struggle with consolidating democratic and market institutions as well as achieving relatively equitable distributions of public goods for their respective societies. Membership in the European Union of some of the countries examined here also has relevance to many of the countries of Southern Europe including Greece, Spain, and the Balkans. Thus, despite a specific path to this point, the current situations of the CEE countries have generalizability to a number of other regions and countries.

7. CONCLUSION

This paper develops a framework to conceptualize and measure social inequality. We propose a capabilities-based measure of social inequality that includes disparities in achieved outcomes (income, education and health status) and in individuals' access to health care and education, which, we argue, is instrumental to effectively achieve outcomes in the future.

We show that cross-national patterns of social and income inequality differ significantly and that our multi-dimensional index of social inequality outperforms the more common uni-dimensional indicators of income inequality by better predicting economic and political outcomes. This improvement is due to measuring disparities in access to health care and to education, which builds a strong case to elicit access-type questions in surveys that aim at measuring multi-dimensional inequality.

We do not assert that our index as it is specified represents a final model. Rather it is the first step towards a theoretical framework where social inequality is characterized as the relative position of individuals along several social, economic and political dimensions, which, crucially, include *potential* future outcomes. A number of alternative dimensional specifications are clearly

available; however, we do assert that our index contains essential dimensions. Most importantly, it is the inclusion of both achieved outcomes and variables that measure how these achieved outcomes can allow further achievements in the future that constitute our main contribution to the study of multi-dimensional inequality.

We have found that cross-national patterns of social inequality differ significantly from patterns identified when using more common comparative inequality measures such as the Gini index for income inequality. In addition, and just as importantly, countries that have less social inequality exhibit higher level of human development, better economic performance and stronger political stability. Income inequality matters for individual choices when it is measured at a disaggregated level at which it is directly experienced by individuals in their daily life such as among their neighbors or peers (e.g. Stark and Taylor 1991); on the contrary, when it is measured at the aggregate level it merely indicates an environment in which broader sets of disparities are activated. That is, rising levels of income inequality in a given country often only exacerbate - rather than capture - the more salient disparities as individuals experience them. Empirically, rising income inequality is necessary - but not sufficient - to understand how inequalities act in concert to constrain both societies and the individuals that constitute them.

The empirical results that we present validate our conceptualization of inequality as it matters to and it is perceived by individuals. In countries in which actual achievements (income, education and health) and perceived access to health care and education are higher, we find more stable political institutions and higher economic growth. While not asserting a causal relationship, this is indicative of a relationship suggesting, for the most part, that countries with high levels of social inequality are countries in which most people would prefer not to live. If this is the case, the innovation about the thinking and structure of inequality that we propose provides insights into what inequality means as an indicator of the actual quality of life in a given country.

Unfortunately, our data do not allow uncovering the mechanism through which access to health care and to education allow better predicting political and economic performance. Future research should aim at collecting new data that allow examining this mechanism in order to uncover the ways through which social inequality impacts on a country's political and economic performance.

REFERENCES

Alkire, Sabina. (2011). "Multidimensional Poverty and its Discontents", OPHI Working Paper No. 46.

Anand, Paul, Graham, Hunter, Ian, Carter, Keith Dowding, Francesco Guala, and Martin Van Hees. (2007). "Measuring Human Capabilities", Open University Discussion Paper No. 53.

Atkinson, Anthony B. (1999). "Income Inequality in the UK" *Health Economics* 8(4): 283–288.

Bartels, Larry. (2008). Unequal Democracy: The Political Economy of the New Gilded Age. Princeton: Princeton University Press.

Becker, Gary S., Tomas J., Philipson, and Rodrigo R., Soares. (2005). "The quantity and quality of life and the evolution of world inequality" *American Economic Review* 95(1): 277–291.

Boix, Charles. (2003). Democracy and Redistribution. Cambridge University Press.

Bollen, Kenneth A., and Robert W., Jackman. (1985). "Political Democracy and the Size Distribution of Income" *American Sociological Review* 50(4):438-457.

Cagetti, Marco, and Maria Cristina De Nardi. (2008). "Wealth Inequality: Data And Models" *Macroeconomic Dynamics* 12(S2): 285-313.

Dahl, Robert. (1971). Polyarchy. Yale University Press.

Decancq Koen, Andre', Decoster, and Erik, Schokkaert. (2009). "The Evolution of World Inequality in Wellbeing" *World Development* 37(1): 11-25.

Decancq, Koen, and Lugo, Maria Ana. (2009). "Measuring Inequality of Wellbeing with a Correlation-Sensitive Multi-dimensional Gini Index", University of Oxford Department of Economics Discussion Paper Series 459.

Decancq, Koen, and Lugo, Maria Ana. (2013). "Weights in Multi-dimensional Indices of Wellbeing", *Econometric Reviews*, 32(1): 7-34.

Devroye, Dan, and Richard B., Freeman. (2002). "Does inequality in skills explain inequality of earnings across advanced countries?" CEPDP, 552. CEP, London School of Economics and Political Science, London, UK.

Easterlin, Richard A. (2000). "The worldwide standard of living since 1800" *Journal of Economic Perspectives* 14(1): 7–26.

Fischer, Stanley. (2003). "Globalization and its challenges" *American Economic Review* 93(2): 1–30.

Foster James E., Luis F., Lopez-Calva, and Miguel Szekely. (2005). "Measuring the Distribution of Human Development: methodology and an application to Mexico" *Journal of Human Development* 6(1): 5-25.

Fukuda-Parr, Sakiko. (2003). "The Human Development Paradigm: Operationalizing Sen's Ideas on Capabilities" *Feminist Economics* 9 (2–3): 301–317.

Galbraith, James K. (2012). Inequality and Instability. New York: Oxford University Press.

Goodin, Robert E., and John, Dryzek. (1980). "Rational Participation: The Politics of Relative Power" *British Journal of Political Science* 10(3): 273-92.

Hobijn, Bart, and Phil Hans, Franses. (2001). "Are living standards converging?" *Structural Change and Economic Dynamics* 12(2): 171–200.

Kaltenhaler, Karl, Stephen, Ceccoli, and Ronald, Gelleny. (2008). "Attitudes toward Eliminating Income Inequality in Europe" *European Union Politics* 9(2):217-241.

Karakoc, Ekrem. (2013). "Economic Inequality and its Asymmetric Effect on Civic Engagement: Evidence from Post-communist Countries" *European Political Science Review* 5(2): 197-223.

Karl, Terry Lynn. (2000). "Economic Inequality and Democratic Instability" *Journal of Democracy* 11(1):149-156.

Kelley, Jonathan, and Krzysztof, Zagorski. (2004). "Economic Change and the Legitimation of Inequality: The Transition From Socialism to the Free Market in Poland and Hungary, 1987-1994" *Research in Social Stratification and Mobility* 22: 319-364.

Kuper, Adam, and Jessica, Kuper. (2004). *The Social Science Encyclopedia*, Routledge.

Layte, Richard, and Christopher T., Whelan. (2003). "Moving In and Out of Poverty: The Impact of Welfare Regimes on Poverty Dynamics in the EU" *European Societies* 5(2): 167-191.

Lichbach, Mark Irving. (1989). "An Evaluation of "Does Economic Inequality Breed Political Conflict?" *World Politics* 41(4):431-470.

Loveless, Matthew, and Sthephen, Whitefield. (2011). "Being Unequal and Seeing Inequality: Explaining the Political Significance of Social Inequality in New Market Democracies" *European Journal of Political Research* 50: 239–266.

Maasoumi, Esfandiar. (1986). "The measurement and decomposition of multi-dimensional inequality" *Econometrics* 54(4): 991-97.

Marmot, Michael, and, Richard, Wilkinson. (1999). Social Determinants of Health. Oxford: Oxford University Press.

McGillivray, Mark, and, J. Ram, Pillarisetti. (2004). "International inequality in wellbeing" *Journal of International Development* 16: 563–574.

Milanovic, Branko. (1998). Income, Inequality and Poverty during the Transition from Planned to Market Economy. The World Bank; Washington D.C.

Milanovic, Branko. (2005). Worlds Apart. Measuring International and Global Inequality. Princeton University Press; Princeton

Morris, Jenny, and, Martin, Winn. (1990). Housing and Social Inequality. Hilary Shipman Ltd.

Narayan, Deepa, Raj Patel, Kai Schafft, Anne Rademacher, and Sarah Koch-Schulte (eds.). (2000). Voices of the Poor: Can Anyone Hear Us? World Bank: New York, N.Y: Oxford University Press.

Neumayer, Erik. (2003). "Beyond Income: Convergence in Living Standards, Big Time" *Structural Change and Economic Dynamics*, 14(3): 275–296.

Noorbakhsh, Farhad. (2006). "International convergence or higher inequality in human development, evidence from 1975–2002" WIDER Research Paper Series 2006-15.

Örkeny, Antal, and, Maria, Székelyi. (2000). "Views on Social Inequality and the Role of the State: Post transformation Trends in Eastern and Central Europe" *Social Justice Research* 13(2):199-218.

Paes de Barros, Ricardo, Francisco H. G., Ferreira, Jose' R., Molinas Vega, and Jaime Saavedra Chanduvi (eds.). (2009). Measuring Inequality of Opportunities in Latin America and the Caribbean. The World Bank.

Schrover, Marlou, Joanne, Van der Leun, and, Chris, Quispel. (2007). "Niches, Labour Market Segregation, Ethnicity and Gender" *Journal of Ethnic and Migration Studies* 33(4): 529-540.

Sen, Amartya K.. (1992). Inequality Reexamined. Oxford: Oxford University Press.

Sen, Amartya K.. (1999). Development as Freedom. Oxford: Oxford University Press.

Shorrocks, Anthony F. (1980). "The Class of Additively Decomposable Inequality Measures" *Econometrica* 48(3): 613-625.

Slottje, Daniel J., Gerald, Scully, Joseph G. Hirschberg, and, Kathy J., Hayes. (1991). Measuring the Quality of Life Across Countries. Westview Press.

Stark, Oded, and J. Edward,Taylor. (1991). "Migration Incentives, Migration Types: The Role of Relative Deprivation" *The Economic Journal* 101(408): 1163-1178.

United Nations Development Programme. (2010). *Human Development Report 2010*.

Wilkinson, Richard G., and Kate Pickett. (2009). *The Spirit Level: Why More Equal Societies Almost Always Do Better*. London: Penguin.

TABLES AND FIGURES

Table 1: Exploratory Factor Analysis

	Income	Health	Education	Access: Health	Access: Education	N	Eigenvalue	Difference
Belarus	0.43	0.29	0.41	0.77	0.77	750	1.63	1.34
Bulgaria	0.60	0.49	0.61	0.76	0.73	641	2.09	1.84
Czech Rep	0.55	0.41	0.55	0.56	0.69	674	1.57	1.40
Estonia	0.29	0.32	0.20	0.78	0.76	681	1.41	0.82
Hungary	0.38	0.21	0.44	0.73	0.72	609	1.43	1.12
Latvia	0.52	0.47	0.38	0.79	0.78	691	1.88	1.64
Lithuania	0.43	0.42	0.37	0.88	0.89	685	2.09	1.71
Moldova	0.33	0.41	0.38	0.73	0.73	646	1.49	1.25
Romania	0.51	0.39	0.61	0.81	0.82	1084	2.12	1.88
Russia	0.33	0.33	0.25	0.83	0.83	1369	1.66	1.46
Slovakia	0.39	0.39	0.52	0.65	0.72	698	1.51	1.39
Ukraine	0.27	0.46	0.36	0.83	0.83	1196	1.78	1.59

Table 2: Correlation Between Perceptions of Access to Education and National-level Indicators of Availability and Quality of Education

	Change in Total Secondary Enrolment Rate 2003-2006	Change in Secondary Enrolment Rate 2003-2006: Public	Change in Students/Teacher ratio at Secondary 2003-2006
Mean Perception of Access to Education	r=0.91 (p≤0.000) *N*=12	r=0.89 (p≤0.000) *N*=11*	r=0.90 (p≤0.000) *N*=11**

P=Probability Two-Tailed; T-Test
Source: United Nations Educational, Scientific and Cultural Organization (UNESCO)
Notes:
* Bulgaria is dropped since there are no data on Secondary Enrolment Rate.
**Estonia is dropped since there are no data on Secondary Students/Teacher ratio.

Table 3: Correlation Between Perceptions of Access to Health Care and National-level Indicators of Health Care Provision

	Life expectancy at birth in 2006	General government expenditure on health as % of total expenditure on health in 2006	Per capita total expenditure on health in 2006	Social security expenditure on health as % of general government expenditure on health in 2006
Mean Perception of to Health Care	r=0.69 (p≤0.014) *N*=12	r=0.82 (p≤0.001) *N*=12	r=0.72 (p≤0.009) *N*=12	r=0.51 (p≤0.089) *N*=12
P=Probability Two-Tailed; T-Test				
Source: World Health Organization (WHO)				

Table 4: Multi-dimensional Inequality Index (MDII)

	Baseline Full Index	Equal Weights	No Access Variables
Belarus	0.07	0.08	0.10
Bulgaria	0.09	0.09	0.10
Czech Republic	0.08	0.08	0.11
Estonia	0.07	0.08	0.10
Hungary	0.06	0.07	0.16
Latvia	0.09	0.10	0.12
Lithuania	0.08	0.08	0.10
Moldova	0.12	0.15	0.27
Romania	0.12	0.13	0.15
Russia	0.08	0.09	0.10
Slovakia	0.06	0.06	0.08
Ukraine	0.09	0.09	0.09

Table 5: Correlations Between Macro Indicators, Gini Index and MDII

		Gini Index 2007		MDII	
Political Performance	*Political Stability*	r= -0.25	p≤0.43 (*N*=12)	r=-0.51	p≤0.09 (*N*=12)
	Government Effectiveness	r= -0.06	p≤0.85 (*N*=12)	r=-0.42	p≤0.17 (*N*=12)
	Freedom House Score	r= 0.24	p≤0.46 (*N*=12)	r=0.09	p≤0.76 (*N*=12)
Economic Performance	*GDP per capita*	r= -0.18	p≤0.58, *N*=12)	r=-0.62	p≤0.03 (*N*=12)
	5 year per capita GDP growth	r= -0.01	p≤0.99 (*N*=12)	r=-0.59	p≤0.04 (*N*=12)
Human Development	*Human Development Index*	r=-0.19	p≤0.53 (*N*=12)	r=-0.66	p≤0.02 (*N*=12)

Table 6: Regression of Macro Indicators on MDII and Gini Index

	Political Stability	*Government Effectiveness*	*Freedom House Score*	*GDP per capita*	*5 year per capita GDP growth*	*Human Development Index*
MDII	-13.81 (8.37)	-17.64 (12.73)	4.59 (32.08)	**-113883.2*** **(49700.43)**	**-73.48*** **(31.86)**	**-1.63*** **(0.65)**
Gini Index 2007	-0.02 (0.03)	0.005 (0.05)	0.09 (0.13)	-32.23 (201.23)	-0.06 (0.13)	-0.001 (0.003)
Constant	2.04 (1.16)	1.51 (1.76)	-0.92 (4.43)	**16813.17*** **(6861.952)**	5.62 (4.39)	**0.99*** **(0.089)**
R^2	0.28	0.18	0.06	0.39	0.37	0.43

N=12; Beta (standard error): * p<0.05, ** p<0.01
Source: EUREQUAL Mass Publics Surveys 2007

Figure 1: MDII and Gini Index for Income Inequality

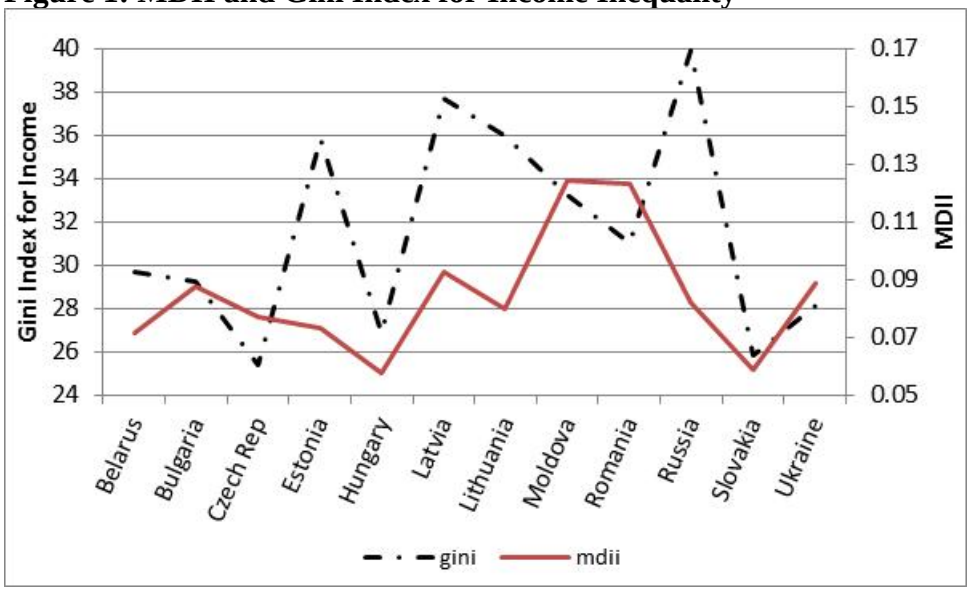
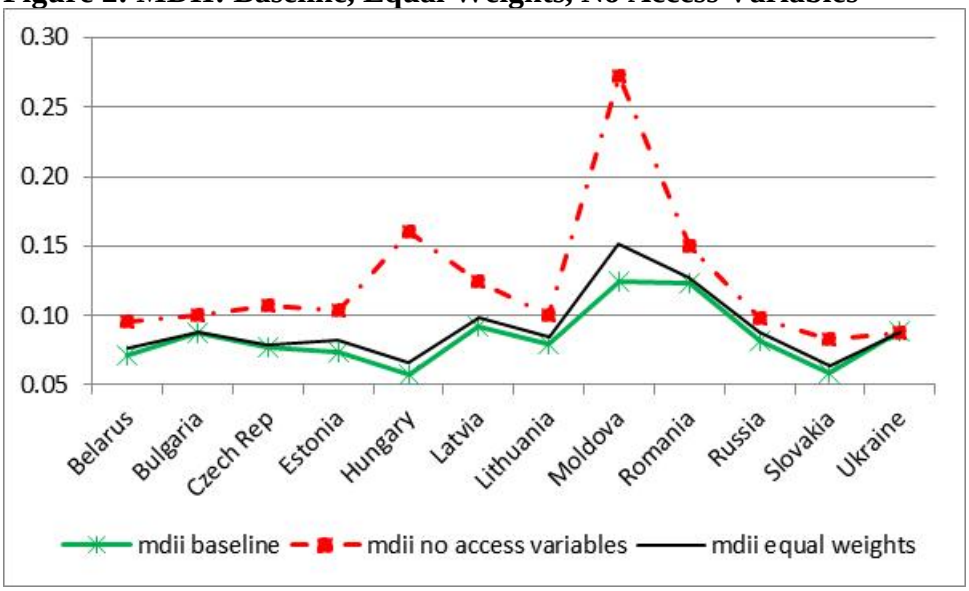


Figure 2: MDII: Baseline, Equal Weights, No Access Variables



APPENDIX A: FUNDING

The EUREQUAL project 'Social Inequality and Why It Matters for the Economic and Democratic Development of Europe and Its Citizens: Post-Communist Central and Eastern Europe in Comparative Perspective', funded by the European Commission under contract No 028920 (CIT5), Framework 6.

Fieldwork was conducted by national surveys administered by polling institutes in each country via face-to-face interviews on the basis of stratified national random probability samples in the spring of 2007. The final dataset includes surveys conducted in 13 CEE countries (Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, and Ukraine) with each country's data weighted to N=1000.

APPENDIX B: DATA SOURCES

Individual-level variables from the EUREQUAL surveys:

Income: (L6a): "Can you tell me please what is your own monthly income before taxes from your work, pension and any other sources of income, such as child benefit, family allowances, etc. that you may have? " Open-ended response: Hungary, Moldova, and Romania. Income range categories: Belarus, Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Poland, Russia, Slovakia, and Ukraine.

Health: M1: How would you describe your health in general? 5: Excellent; 4: Good; 3: Average; 2: Poor; 1: Very Poor.

Education: all countries were adjusted to the ISCED 1997. 0: Pre-primary; 1: Primary; 2: Lower secondary; 3: Upper secondary; 4: Post-secondary, non-tertiary; 5: First stage tertiary; 6: Second stage tertiary leading to an advanced research qualification.

Access to Health Care: L7f: Now, please compare your household's access to health care with the average access in the country as a whole? Would you say that your household's health care access is: 1: Well below average; 2: Below average; 3: Somewhat below average; 4: Average; 5: Somewhat above average; 6: Above average; 7: Well above average; Do not know (recoded to missing).

Access to Education: L7g: Now, please compare your household's access to education with the average access in the country as a whole? Would you say that your household's access to education is: 1: Well below average; 2: Below average; 3: Somewhat below average; 4: Average; 5: Somewhat above average; 6: Above average; 7: Well above average; Do not know (recoded to missing).

Macro-level variables:

GDP per capita (2002-2007): World Bank data*:* www.worldbank.org/data.html
GINI (2002-2007): United Nations Development Programme*:* http://hdr.undp.org/en/statistics/data/
Freedom House scores (2002-2007): http://www.freedomhouse.org/
Governance Scores (2002-2007): including Rule of Law, Governmental Effectiveness, Control of Corruption, and Regulatory Quality. *Source:* Daniel Kaufmann, Aart Kraay and Massimo Mastruzzi (2009). "Governance Matters VIII: Governance Indicators for 1996-2008". World Bank Policy Research June 2009.