

# Democracy, economic freedom and development

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December 2020

## Abstract

This study revisits the potential effect of democracy on economic development in a broad sample of countries, and also separately in a subsample of post-communist countries. The results are reassuring: democracy has a robustly positive impact on economic growth, and also on key factors of economic growth – investment in physical and human capital. Moreover, the sustained level of democracy, embodied in *accumulated democratic capital*, especially robustly correlates with economic development. When comparing the relative roles of democracy and economic freedom, democracy takes primacy in the global sample while both democracy and economic freedom seems to play important roles in the subsample of post-communist countries.

JEL Codes: E02; O11; O43; P26

Keywords: democracy; economic freedom; transition; economic development; democratic capital.

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# 1. Introduction

The formerly communist countries pursued a variety of reform paths. The political changes were precipitated by the economic stagnation throughout the Eastern Bloc countries during the 1980s, and made possible by the *perestroika* and *glasnost* initiatives introduced by Mikhail Gorbachev in the Soviet Union in the second half of the 1980s. This has led to (largely) peaceful protests in Central and Eastern Europe (the only exception to the peaceful nature of the protests being Romania), similarly peaceful pro-independence movements in the Baltics, as well as interethnic strife in the former Yugoslavia and parts of the Soviet Union (such as the secessionist conflicts in Azerbaijan, Georgia and Moldova). Initially, most communist countries seemed to embrace political liberalization. In the course of 1989, Hungarian and Polish governments entered into negotiations with the opposition, the Soviet Union and Poland held partially free elections, the Berlin Wall fell, and Communist-led governments from the Baltic states and Poland in the North to Bulgaria and Albania in the South agreed to relinquish power in free and fair elections. In the next two years, political liberalization continued, with free elections and transfers of power in a number of countries. In 1991, the Soviet Union kicked the bucket, followed by Yugoslavia in 1992. The main exceptions were the communist countries outside of the broader European space: China, Vietnam, Cuba and North Korea. These continue to subscribe to the Communist ideology and have remained under the formal and unchallenged rule of their Communist Parties.

Alongside political liberalization, formerly communist countries also undertook wide-ranging economic reforms. They abandoned central planning, price controls and exclusive public ownership of productive assets and introduced elements of the market economy (in some cases gradually and slowly, in other instances in rapid and big-bang fashion). Even the countries that shied away from political liberalization did embrace economic reforms: China started to liberalize its economy as early as 1978, shortly after the death of Mao Zedong. Cuba and North Korea eventually also introduced limited elements of market exchange and allowed some private enterprise.

The simultaneous implementation of political and economic reforms in most formerly communist countries was unprecedented: in the previous instances of successful economic transitions, pro-reform governments maintained a high degree of autocratic control while the reforms were being implemented. Indeed, Przeworski (2005) argues that no low-income country has succeeded in introducing and maintaining democracy, with the sole exception of India. All other instances of successful democratizations were countries that first brought their economies on a path towards prosperity and attained a moderate level of economic development, and only introduced political changes later. Examples of such successful economic-reform-first-democracy-later transitions are Chile, Taiwan and Singapore. The economic performance of China also seems to fit this pattern: since the onset of economic reforms in 1978, it has experienced four decades of almost uninterrupted growth. This relationship between economic development and the ability to sustain democracy has been generalized in the so-called *Lipset Hypothesis*: countries need to become sufficiently well-off before they are able to successfully introduce and sustain democracy (Lipset, 1959).

The experience of the post-communist countries seems to be in line with the Lipset Hypothesis: a number of countries, especially those with low or moderate income levels at the outset of transition, experienced setbacks and reversals in their political development. Following the first (fully or partially) free elections in the early 1990s, post-communist governments from Belarus to Kazakhstan re-introduced elements of autocracy and authoritarian rule. In some countries, the head of state has stayed the same since the early or mid 1990s (Belarus), is a direct descendant of the first post-Soviet ruler (Azerbaijan), or a hand-picked successor (Kazakhstan, Turkmenistan and Uzbekistan). Even in Russia, which outwardly subscribes to the notion of holding free elections and has an active civic society and opposition, Vladimir Putin has held the reins of power firmly for the last two decades. Other countries maintained largely free elections but political developments were strongly influenced by newly emerged interest groups or members of the former elites: Ukraine, Moldova, Armenia, Georgia and Serbia could be placed in this group.

In contrast, the countries in Central and South-Eastern Europe, which were more developed at the outset of reforms, have largely maintained their commitment to democracy, despite some setbacks (such the conflicts that followed the break-up of Yugoslavia in the early and mid 1990s) and deviations (such as Slovakia in the mid 1990s and Poland and Hungary in the late 2010s). Most of these countries went on to become middle-income or high-income economies and are currently either members of the EU or candidates for membership. Three decades after the post-communist changes began, eleven out of 27 EU member states are former communist countries.

This raises the question whether economic development of the post-communist countries was helped or hindered by the adoption of democracy. Figures 1a and 1b depict the evolution of output per person in the 35 countries that have a legacy of being ruled by a communist regime in the past (regardless of whether they are still ruled by a Communist Party at present). The countries are divided into two groups based on output per person (in 2010 prices) in 2018. Figure 1a presents the 18 countries in the lower (approximately) half of the distribution of output per person in 2018 (or the latest year for which data are available). Figure 1b presents the 17 countries forming the upper half of the distribution. Both groups share the same basic patterns. The early 1990s were marked by falling in output per person.<sup>1</sup> This output fall at the beginning of the post-communist transition was labeled *transformational recession* (Kornai, 2004). It was caused by the disorganization associated with changes in the economic system, end of central planning and price controls, transfer of ownership, and the fall in demand (including, most notably, fall in investment) that these profound changes precipitated. In some cases, the period of output fall was relatively short-lived (e.g. Poland, Hungary, Czech Republic), though in some cases it was rather steep (Albania). The output fall was followed by a recovery. Some countries saw their output increase several fold (note however that data for the early 1990s are missing for several countries so that the starting points are not always the same). Some of the most impressive results have been reported by countries that started from a relatively low point: China saw its output per person increase more than 10-fold, and Vietnam and Laos approximately 4 times. Bosnia, whose economy

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<sup>1</sup> The East Asian countries – China, Vietnam, Laos and Cambodia – show different pattern, with no output fall. Economic reforms in these countries started earlier (1978 in the case of China), and were much more gradual (see Roland, 2000).

was particularly adversely affected by the civil conflict in the 1990s, made up for the war-inflicted loss by increasing its level of economic development more than 8 times. Nevertheless, impressive growth performance was not limited only to countries with a low starting point or those afflicted by conflict: Albania, Estonia, Latvia, Lithuania, Poland and Slovakia all saw their output per person rising approximately three fold. In contrast, according to official statistics, the level of economic development in Kyrgyzstan, Tajikistan and Ukraine in 2018 is below the starting point from 1990, while Russia, despite its vast mineral wealth, has only increased its output per person by about a quarter.<sup>2</sup>

Figures 2a and 2b present the evolution of democracy for the same two groups of countries. Democracy is measured by the average Freedom House Index (see next section for detailed explanation) which ranges from 1 (no democracy) to 7 (full democracy). For comparison, Figures 3a and 3b show the evolution in the Index of Economic Freedom (compiled by the Heritage Foundation, see next section). Both groups of countries show evidence of substantial political and economic liberalization<sup>3</sup>, but both sub-samples also include countries that largely shied away from substantial political and economic reforms. The overall pattern is summarized in Figure 4, which shows the ratio in output per person in 2018 (or the latest year for which data are available) and 1990 (or the earliest available year) on the vertical axis, and the ratio of the levels of democracy in 2017 and 1989 (the year that preceded the beginning of fundamental political and economic reforms in most countries). The relationship between the improvement in democracy and the gain in economic development is almost flat, with a hint of hump-shaped curvature. In other words, countries that implemented the most dramatic changes in terms of political liberalization were not rewarded by greatest gains in economic development. Rather, their performance is overshadowed by countries that were reluctant to embrace democratic reforms, such as the South-East Asian countries. This seems to give support to those advocating pursuing economic reforms first and leaving off democratization until a later stage (or not undertaking it at all).

The weak relationship between democracy and economic prosperity mirrors the earlier findings in the literature: Barro (1996), Helliwell (1994), Przeworski and Limongi (1993), de Haan and Siermann (1995), Baum and Lake (2003), Doucouliagos and Ulubasoglu (2008), among others, find that this relationship is insignificant, hump-shaped or even negative (the latter implying that democratization should lower growth performance). Tavares and Wacziarg (2001) conclude that this is because democracy improves some factors that boost growth (such as human capital) but causes a deterioration in others (such as lowering the accumulation of physical capital and raising the size of government). Similarly, Giavazzi and Tabellini (2005) conclude that it is economic liberalization rather than political reforms that bring about better economic performance. In contrast, Fidrmuc (2003) argues that among post-communist countries, democratization served

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<sup>2</sup> As discussed in Chapter \* in the Handbook, estimates of economic performance based on the official statistics can be misleading. This is because Soviet era national accounts were based on Net Material Product, whereas the subsequent statistics measure GDP. Because of the differences between these two measures, the official statistics may considerably understate the increase in income and wellbeing. More direct measures of consumption generally show much greater improvements in living standards than the official statistics.

<sup>3</sup> In the graphs of political and economic freedom, the extent of freedom is depicted by the width of the band corresponding to each country.

as catalyst of economic reforms, so that countries that progressed further in terms of political liberalization benefited through faster growth. This finding is also confirmed by Doucouliagos and Ulubasoglu (2008), whose meta-analysis finds that democracy leads to both higher economic freedom and lower political instability.

In this chapter, I revisit the question of the impact of democracy on growth. Although the analysis is motivated by the specific experience of the post-communist countries, I also present results obtained with a global sample encompassing all countries for which relevant data are available. In the next section, I introduce the data and methodology used in the analysis. Section 3 discusses the results on the relationship between democracy and economic growth. However, growth is not the only outcome of interest that can be influenced by the level of democracy. Democracy increases transparency and reduces economic uncertainty. Therefore, it can also lead to increases in investment in physical and/or human capital. Higher investment should, in turn, lead to faster economic growth. Democracy can thus raise living standards either directly, by raising growth, or indirectly, through its impact on capital (which then raises growth). This possibility is considered in Section 4. The final section summarizes the findings and offers a few concluding lessons.

## 2. Data and Methodology

The analysis is based on a standard model of growth estimated with annual data (see Mankiw, Romer, and Weil, 1992; Islam, 1995). The analysis draws on data from four main sources. First, economic statistics are from the 2019 version of the World Bank's World Development Indicators<sup>4</sup>: GDP per capita (in constant 2010 US\$), gross fixed capital formation (as percentage of GDP), and population growth. The main outcome variable is the growth rate of GDP per capita. As an additional measure of economic success, I also use the life expectancy at birth (for both genders).

Two indexes of democracy are commonly used in the literature, the one constructed by the Polity IV Project<sup>5</sup>, and the Freedom House index<sup>6</sup>. Polity IV constructs two basic indexes, of democracy and autocracy, each of which ranges from 0 to 10. These two are combined into a summary measure, referred to as Polity2, which subtracts autocracy from democracy. The resulting measure thus ranges from a minimum of -10 (for the most autocratic and least democratic political regimes) to 10 (fully democratic regime free of autocracy). The Polity2 measure is available from 1800 (or from the time the country acquired of independence if it only emerged later), with missing values for periods of major disruptions, foreign occupations and the like.

Freedom House is a non-governmental organization that monitors and evaluates the state of political rights and civil liberties across the globe. The resulting indexes range in value from 1

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<sup>4</sup> See <http://datatopics.worldbank.org/world-development-indicators/>.

<sup>5</sup> <https://www.systemicpeace.org/polity/polity4.htm>.

<sup>6</sup> <https://freedomhouse.org/>.

(fully free) to 7 (not free at all). I use the average of both indexes with a reversed scale for the sake of intuitiveness (so that higher values correspond to more democracy). The Freedom House index is available annually from 1972.

Economic freedom is measured using the Index of Economic Freedom compiled by the Heritage Foundation.<sup>7</sup> I use the overall index, which summarizes progress in the various areas for which the Heritage Foundation measures the extent of economic freedom. This overall index is constructed to range from 1 to 100. The downside of this index is that it is only available from 1995 onwards. Crucially, this results in the early part of the post-communist transition being left out of the analyses entailing economic freedom. There are alternative indexes of economic freedom, such as the EBRD Progress in Transition indicators published by the European Bank for Reconstruction and Development, but those are not available for a sufficiently broad sample of countries.

Both democracy indexes are available only for countries in their contemporaneous definitions. Therefore, the values for the Soviet Union, Yugoslavia and Czechoslovakia are used for the successor countries of these unions for the period before independence. Although there may have been some local differences, the same political and economic system applied throughout these three multinational unions. West German values are used for all of Germany for the period before unification because East Germany adopted the West German political and legal system when the two countries merged. Since the Heritage Foundation only publishes its index of from 1995 onwards, this problem does not arise with respect to the index of economic freedom. Finally, pre-independence economic data are only used when such data are reported in the World Development Indicators.

For the sake of comparability, political and economic freedom indexes are rescaled so that they range from 0 (not free) to 1 (completely free). The various indexes of political and economic freedoms display rather high correlation with each other. This makes including all of them in the same regression potentially problematic: the estimated coefficients could change depending on which other variables are included. A possible solution to this is to use principal component analysis (PCA) to combine the Polity 2 index, average Freedom House Index and Index of Economic Freedom. PCA is a statistical technique that transforms mutually correlated variables into a set of uncorrelated *principal components*, each of which is a linear combination of the original variables. With  $n$  original variables, the PCA yields  $n$  uncorrelated principal components. Each successive component, however, explains a lower share of the variation in the original variables. A commonly-used rule of thumb on deciding which principal component to use is based on each principal component's eigenvalue: if the eigenvalue is greater than unity, then the principal component is retained. The first eigenvalue is 2.337, followed by 0.565 and 0.098. The first principal component explains 78% of the variation in the data, and is positively correlated with all three indexes: the component loadings for Polity 2, Heritage Index and Freedom House Index (all rescaled to vary between 0 and 1) are 0.597, 0.502 and 0.626, respectively. The PCA thus yields one principal component, which is henceforth referred to as Principal Component 1. The advantage

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<sup>7</sup> <https://www.heritage.org/index/>.

is that this approach collapses all three indexes into one weighted index. The downside, however, is the limited availability of the Heritage Index, so that the Principal Component 1 can only be constructed for the period from 1995 onwards.

If democracy has an effect on economic growth and economic outcomes in general, this effect should occur by altering people's behavior. Democratic countries tend to have effective law and order systems, offer better protection of property rights and contract enforcement, and have fair and unbiased court systems. Corruption and nepotism tend to be less rife too. All of this encourages people to invest their time and resources in value creation and wealth accumulation rather than in rent seeking and in protecting their wealth from rent seeking and predation by others. This has several implications. First, democracy encourages individuals and firms to engage in economic exchange: outcomes of such exchanges are less uncertain in a democratic regime with a fair and independent judiciary and effective law and order system. This decrease in the economic uncertainty should foster economic growth directly. Second, democracy encourages investment in physical capital: in the absence of democracy, investment is associated with greater risk that the future returns will be captured by predatory governments or rent seekers. This also helps boost growth, but indirectly: greater investment in physical capital translates into higher growth in the future. Finally, once democracy is introduced, the effects may not occur straight away: people may need some time to accept the changes in the political and institutional environment and learn how to behave in the new regime. Therefore, the duration of democracy may be even more important than its current level.

To account for the role played by the tradition of democracy, I create a variable that I denote *democratic capital*. This is a measure reflecting democracy accumulated and sustained over a period of time. Specifically, I treat the annual level of democracy as investments in democratic capital. In this way, democratic capital in country  $j$  at time  $t$  can be expressed as

	$DK_{jt} = DK_{jt-1}(1 - \theta) + I_{jt-1}$	(1)
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where  $DK_{jt}$  stands for the stock of democratic capital,  $I_{jt}$  is the annual investment (i.e. the value of the index) and  $\theta$  is the annual depreciation rate of democratic capital, reflecting how quickly it would dissipate without further investments.<sup>8</sup> Then, applying the perpetual inventory method, a country with a stable value of the democracy index,  $\bar{I}$ , will converge to a steady-state value of democratic capital:

	$DK_{j\infty} = \bar{I}/\theta.$	(2)
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Furthermore, the higher is the depreciation rate, the less past realizations of democracy matter and hence convergence to this steady-state value is correspondingly faster. I use  $\theta = 0.2$  (i.e. 20% depreciation rate). This means that a country that experiences any change in its level of democracy

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<sup>8</sup> Person and Tabellini (2009) follow a similar approach but choose a lower depreciation value and include also spatial effects in their measure.

will approach the new steady-state level of democratic capital in approximately one generation (around 25 years, faster if the change is relatively modest).

The same formula could in principle be used also to estimate the initial value of democratic capital for each country for the years not covered by the data. However, that would assume that the level of democracy in preceding years was stable. The Freedom House Index is available from 1972 and the Polity 2 from 1800. As the analysis only concerns the period from 1990 onwards, my estimate of democratic capital should be close to the *steady-state* value for any country for which data are available at least from the 1970s. I therefore omit countries with data with data starting in 1980 or later, or those that have breaks in the series of democracy. Given that the Index of Economic Freedom is only available from 1995, no similar stock variable can be constructed for economic freedom.

The empirical model takes the following form:

$\Delta \ln y_{jt} = \beta_0 + \beta_1 \ln y_{jt-1} + \beta_2 \ln s_{jt} + \beta_3 \ln(\delta + n_{jt} + g) + \beta_4 \omega_{jt-1} + \mu_j + \varepsilon_{jt}$	(3)
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where  $y_{jt-1}$  stands for output per person,  $s_{jt}$  is the ratio of investment in physical capital to output,  $\delta + n_{jt} + g$  is the sum of depreciation rate of physical capital, population growth rate and the rate of technological progress (since depreciation and technological progress are not observed, I follow Mankiw, Romer and Weil, 1992, and assume that together they equal to 0.05), and  $\omega_{jt-1}$  is a measure political or economic freedom or democratic capital. The political/economic freedom and democratic capital measures are lagged. This is because political/economic reforms may take some time to affect economic performance, and also to diminish the possibility of endogeneity bias due to reverse causality from economic development to institutional quality. All equations are estimated with country-specific fixed effects and robust standard errors.

Table 1 presents the descriptive values for all countries included in the data set, for the period from 1990 to 2018. Table 2 shows corresponding figures only for the post-communist countries. Tables 3 and 4 show correlation matrixes for the same two sets of countries. The indexes of political and economic freedoms, and also both democratic capital variables, are strongly correlated with output per person, which is in line with the Lipset Hypothesis. In contrast, the correlation with economic growth is close to zero: it political or economic freedom have an impact on growth, this is not readily apparent from correlation coefficients.<sup>9</sup> The two democracy indexes are strongly correlated with each other, and both are also robustly correlated with economic freedom; the correlations between democracy and economic freedom are somewhat stronger in the subsample of post-communist countries than in the full sample. Similarly, the two democratic capital variables are also strongly correlated with each other, and both are robustly correlated with economic freedom.

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<sup>9</sup> Note that the empirical analysis below utilizes growth of per-capita output computed as log-difference of output rather than percentage growth.



### 3. Democracy and Growth

As I am mainly interested in the relationship between democracy and economic development in post-communist countries, the analysis is limited to the period from 1990 onwards. However, for the sake of comparability, I present results for all countries and then for post-communist countries separately. When constructing the post-communist subsample, any country with substantial history of communist rule in the past is counted as post-communist, even if it remains formally ruled by a communist party.<sup>10</sup> This is because they were all, at least initially, motivated by the desire to replicate the Soviet economic system based on central planning and tight central regulation (even if their subsequent paths diverged later). All regressions are estimated with country-specific fixed effects and with robust standard errors.

Table 5 presents the first set of results, with data for all countries (global sample). The first column features the baseline Solow model, that is, without political or economic freedom ( $\omega_{jt-1}$ ). All variables have the expected signs and are significant: economic growth is higher in poorer countries than in richer ones, and depends positively on investment in physical capital and negatively on population growth. In the next three columns, I add the Polity 2, economic freedom and Freedom House indexes (rescaled so that they range between 0 and 1), respectively. Both indexes of democracy (Polity 2 and Freedom House) are positively and significantly associated with economic growth. Both have similarly sized coefficients, suggesting that they indeed measure largely the same underlying concept of political freedom (as is already implied by their high correlation coefficient). In contrast, economic freedom appears to have little impact in the global sample. This last finding is somewhat surprising, given the large literature finding positive association between economic freedom and growth (see Doucouliagos and Ulubasoglu, 2006; Williamson and Mathers, 2011; Hall and Lawson, 2014, among others). This pattern is obtained also when either democracy index is entered alongside economic freedom (columns 5-6): the democracy indexes are significant and positive while the economic freedom index remains insignificant. A possible explanation rests in the fact that economic freedom is also robustly associated with investment (Doucouliagos and Ulubasoglu, 2006). It is therefore possible that the positive coefficient of investment also picks up the positive effect of economic freedom. Another possibility is that the insignificant coefficient reflects heterogeneity among countries or broader regions: it is possible that economic freedom boosts growth only in some countries (such as the post-communist subsample, discussed below). The final column features the first principal component obtained in principal component analysis on the Polity 2, economic freedom and Freedom House indexes: again, its coefficient is positive and significant (note that the scale of the principal component is different so that the size of this effect cannot be immediately compared with those of the two democracy indexes).

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<sup>10</sup> The following countries are considered post-communist: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Cambodia, China, Croatia, Cuba, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kosovo, Kyrgyzstan, Laos, Latvia, Lithuania, Moldova, Montenegro, Mongolia, North Macedonia, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and Vietnam.

Table 6 presents analogous regression results for the post-communist countries only. There are a few differences: investment in physical capital has a stronger association with growth while population growth is only borderline significant. The impact of political freedom is positive but not significant, but economic freedom significantly boosts economic growth, and its impact is approximately double that of democracy in the sample with all countries. The first principal component of political and economic freedoms is again significantly positive, and its effect is also approximately double that obtained in the global sample. It appears therefore that for the economic development of post-communist countries, economic freedom has been more important than political freedom. This would lend support to the approach of countries such as China and Vietnam that liberalized their economies without simultaneously introducing wide-ranging political freedoms.

Next, I replace political freedom by democratic capital, a stock rather than flow variable (Tables 7-8). Both democratic capital variables (based on the Polity 2 and Freedom House indexes) are strongly positively associated with economic growth. Note that as democratic capital is accumulated over time, this positive relationship is unlikely to be driven by reverse causality: democratic capital does not reflect the current level of democracy but its history and duration. The positive relationship is robust to introducing economic freedom into the regression (columns 3-4). In the last two columns, I explore the possibility that the effect of democratic capital is non-linear (inverted U-shaped), as suggested by Figure 4. The quadratic term is indeed negative but it is only significant for democratic capital based on the Freedom House index. However, the turning point, beyond which the effect of higher values of democratic capital becomes negative, is relatively high: 4.5, which is a value attained by countries which have sustained almost perfect democracy.<sup>11</sup>

A very similar pattern appears also for the post-communist countries: growth is always strongly boosted by democratic capital, regardless of whether it appears in the regressions alone (columns 1-2) or alongside economic freedom (columns 3-4). When considering non-linear effect of democratic capital, the quadratic term is again only significant for democratic capital based on the Freedom House index and the turning point is again relatively high at 4.35. Hence, sustained democracy is robustly and positively associated with economic growth: countries with higher democratic capital tend to grow faster than those with low stocks. The relationship may become flatter as countries accumulate and maintain democratic capital but only at rather high levels.

## 4. Democracy and Investment

Besides boosting growth, democracy – whether its contemporaneous level or accumulated democracy embodied in democratic capital – can also affect investment in physical and human capital. Since physical and human capital are determinants of growth, any impact that political or economic freedom has on investment in either would indirectly affect also economic development. Therefore, I use the same variables measuring political/economic freedoms and democratic capital

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<sup>11</sup> The steady-state value of democratic capital is given by equation (2). A country with perfect democracy (i.e. democracy index of 1) would thus converge to a steady state value of 5 (1/0.2, where 0.2 is the depreciation rate). Within the sample, value of 4.5 was attained, for example, by Spain in 1991 and Slovenia in 2004.

to explain investment in physical and human capital. Measuring investment in the former is rather straightforward: I use the investment to GDP ratio used in the regressions reported in the previous section as the dependent variable. Quantifying investment in human capital is more challenging. School enrollment is often used but this measure can be prone to mismeasurement. Furthermore, in the global sample, using school enrollment results in a large number of omitted observations because of missing data. Therefore, I use life expectancy at birth as a proxy for investment in human capital. This is a forward looking measure: it reflects how long an infant could expect to live if the prevailing patterns of mortality at the time of his/her birth stay the same throughout his/her life. The longer an individual expects to live, the more it pays to invest in human capital (see, for example, Jayachandran and Lleras-Muney, 2009; and Hansen, 2013). Therefore, life expectancy at time  $t$  should be closely correlated with human capital investments at  $t$  and in the years immediately following  $t$ .<sup>12</sup>

I estimate the following relationships:

$\ln s_{jt} = \gamma_0 + \gamma_1 \ln y_{jt-1} + \gamma_2 \omega_{jt-1} + \mu_j + \varepsilon_{jt}$	(4)
$\ln LE_{jt} = \gamma_0 + \gamma_1 \ln y_{jt-1} + \gamma_2 \omega_{jt-1} + \mu_j + \varepsilon_{jt}$	(5)

where  $s_{jt}$  is again the ratio of investment in physical capital to GDP,  $LE_{jt}$  is the life expectancy at birth (for both genders), and  $\omega_{jt-1}$ , as before, stands for political/economic freedom or democratic capital. Both models control for the lagged level of output per person: this is to keep the level of economic development constant.

Tables 9 and 10 present the results for investment in physical capital in all countries and in post-communist countries, respectively. Political freedom – but not economic freedom – translates into more investment in physical capital, in the global sample. This is confirmed also when the indexes are replaced with the principal component, and when using democratic capital. Economic freedom also has a positive effect but is not significant. Similar pattern also appears for post-communist countries, but the significance levels are lower: all measures of economic and political freedoms and democratic capital appear with positive signs but only the Polity2 index, and the democratic capital variables based on this index, are statistically significant.

Finally, Tables 11 and 12 show analogous regression results for investment in human capital, proxied by life expectancy. The estimates mirror those obtained for physical capital: economic freedom does not affect life expectancy, whereas political freedom and democratic capital boost life expectancy, and therefore should help stimulate investment in human capital. As with investment in physical capital, the regression results are stronger with the Polity2 index than with the Freedom House index; the democratic capital variables, nevertheless, are strongly significant regardless of which index was used to construct them. Similar patterns appear in the global sample and in the post-communist sub-sample; the estimated effects, however, are somewhat larger in the global sample.

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<sup>12</sup> I did not include life expectancy in the models of growth presented in the preceding sections, as it is closely correlated not only with human capital but also with output per person.

In summary, improvement in democracy, especially lasting improvements, encourage greater acquisition of physical and human capital. In this way, democracy boosts economic development not only directly but also indirectly by fostering investment, which in turn translates into faster economic growth.

## 5. Conclusions

This study revisits the potential effect of democracy on economic development in a broad global sample of countries, and also separately in a subsample of post-communist countries. During the 1980s and 1990s, scores of Latin-American, South-East Asian, post-communist and African countries embraced democratization alongside (and often at the same time as) economic reform. This so-called third wave of democratization (Huntington, 1991), and the associated wide-ranging improvements in human rights and civil liberties across the world, has been seen as an extraordinary and glorious achievement (*end of history* according to Fukuyama, 1989) that deserves to be praised and celebrated. However, do better human rights and civil liberties translate also into greater wellbeing? Is the key to economic development and prosperity in implemented political or economic reforms? The present paper seeks to shed light on these question.

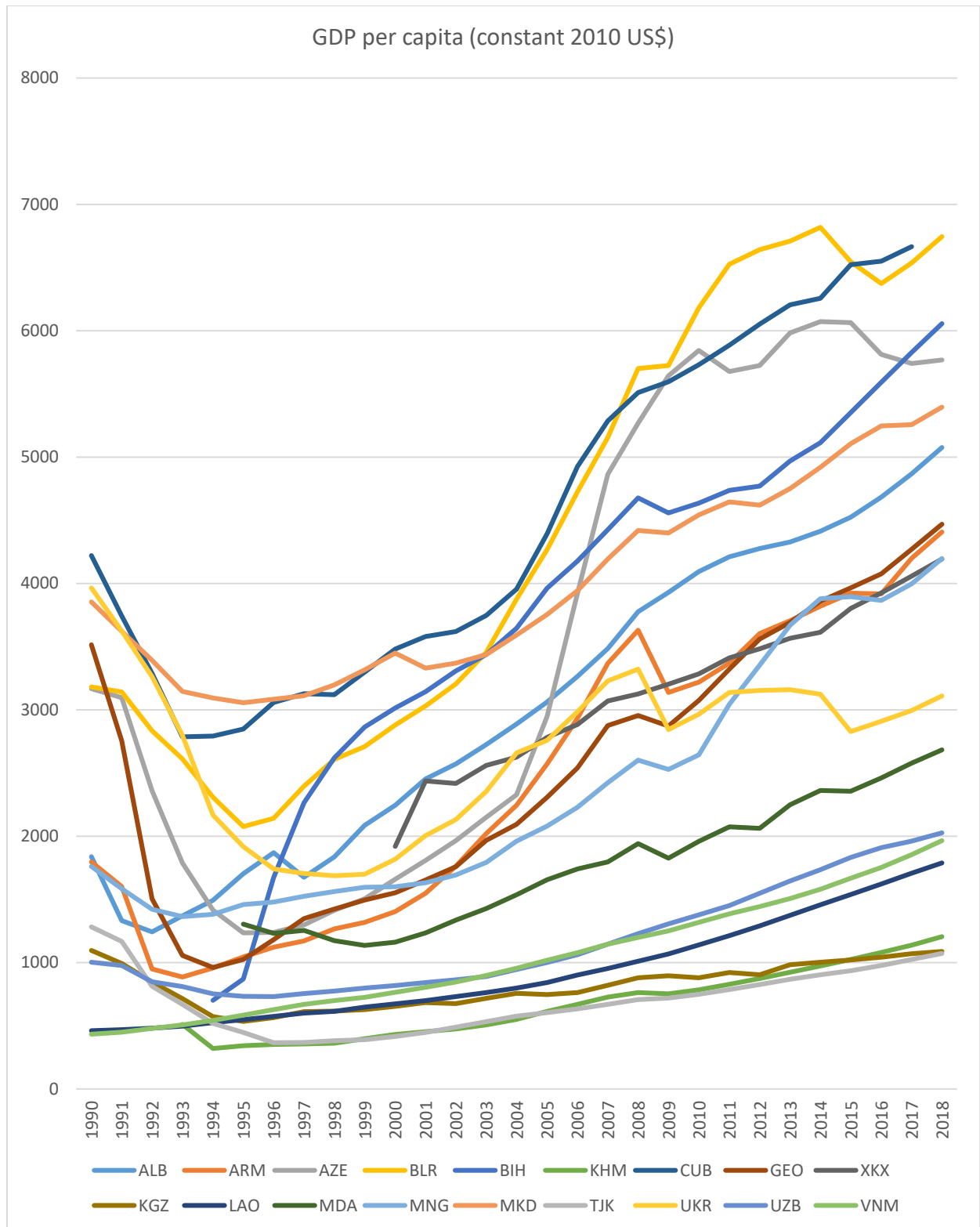
The formerly communist countries offer a unique opportunity to analyze this relationship because, in the early 1990s, they attempted to (re)introduce democracy after several decades of authoritarian rule. There was substantial heterogeneity in the strength and duration of their commitment to democratization, however. With the benefit of 30 years of hindsight, this diversity of approaches and outcomes allows a detailed analysis of whether democracy fosters or improves economic development. Therefore, besides approaching this question in a broad global sample including all countries for which the required data are available, I also consider a separate subsample of post-communist countries only.

The results are reassuring: democracy has a robustly positive impact on economic growth, and also on key factors of economic growth – investment in physical and human capital. This is true both for the contemporaneous level of democracy – measured either using the Polity2 index or the Freedom House index – and for related measures of accumulated democracy (democratic capital), which reflect not only the level but also the duration of democratic regime. Hence, improvements in the level of democracy have translated not only into greater respect for human rights and civil liberties – they have also brought about gains in the material level of wellbeing.

Somewhat surprisingly, when comparing the roles of democracy and economic freedom, democracy takes primacy. This finding, which stands in contrast with a vast body of literature confirming a positive relationship between economic freedom and growth, can be rationalized with recourse to several observations. First, the global sample, in which economic freedom does not correlate with growth, may be too heterogenous to obtain a significant estimate. Indeed, economic freedom is robustly correlated with economic growth in the sub-sample of post-communist countries. Second, inasmuch as economic freedom encourages investment in physical capital (as the literature suggests), then its positive effects can be picked up by the coefficient of that variable instead. Finally, the data for political freedom covers a longer period, which may also help explain why the effect of economic freedom is not precisely estimated.

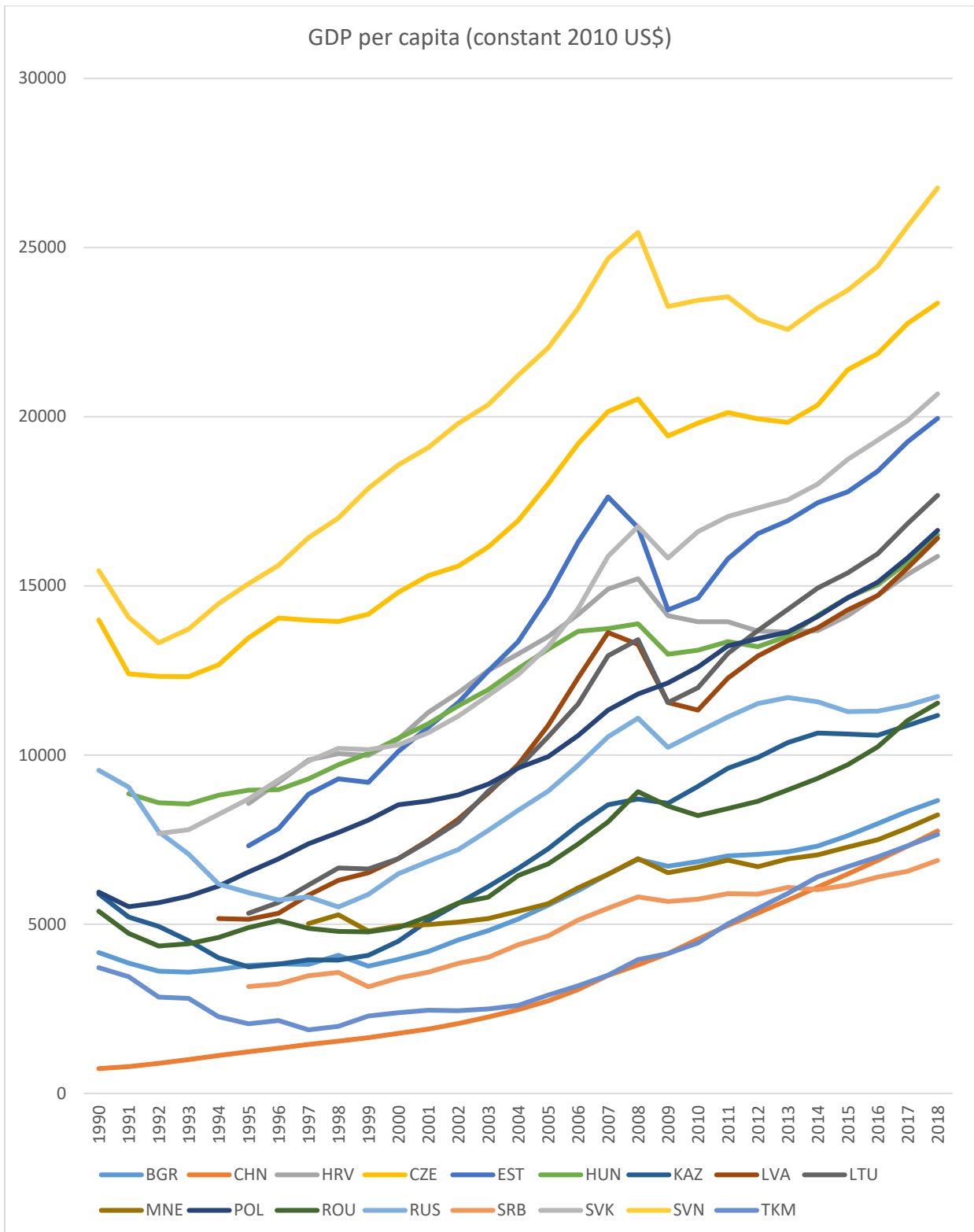
Hence, the results of my analysis give support to embracing democratization early on, and especially to sustaining democracy in the longer term: the gains from democratization appear especially strong when considering democratic capital, which measures sustained rather than current democracy. Importantly, it appears that little can be gained by postponing democracy and focusing merely at economic liberalization. Suppressing democracy for the sake of maintaining political stability and reform momentum may occasionally work, but it is far from a universal recipe on how to attain prosperity. Rather, postponing democracy is likely to help entrench authoritarianism, benefiting primarily the ruling elite, not the populace at large.

**Figure 1a: Evolution of output per person, low-output group**



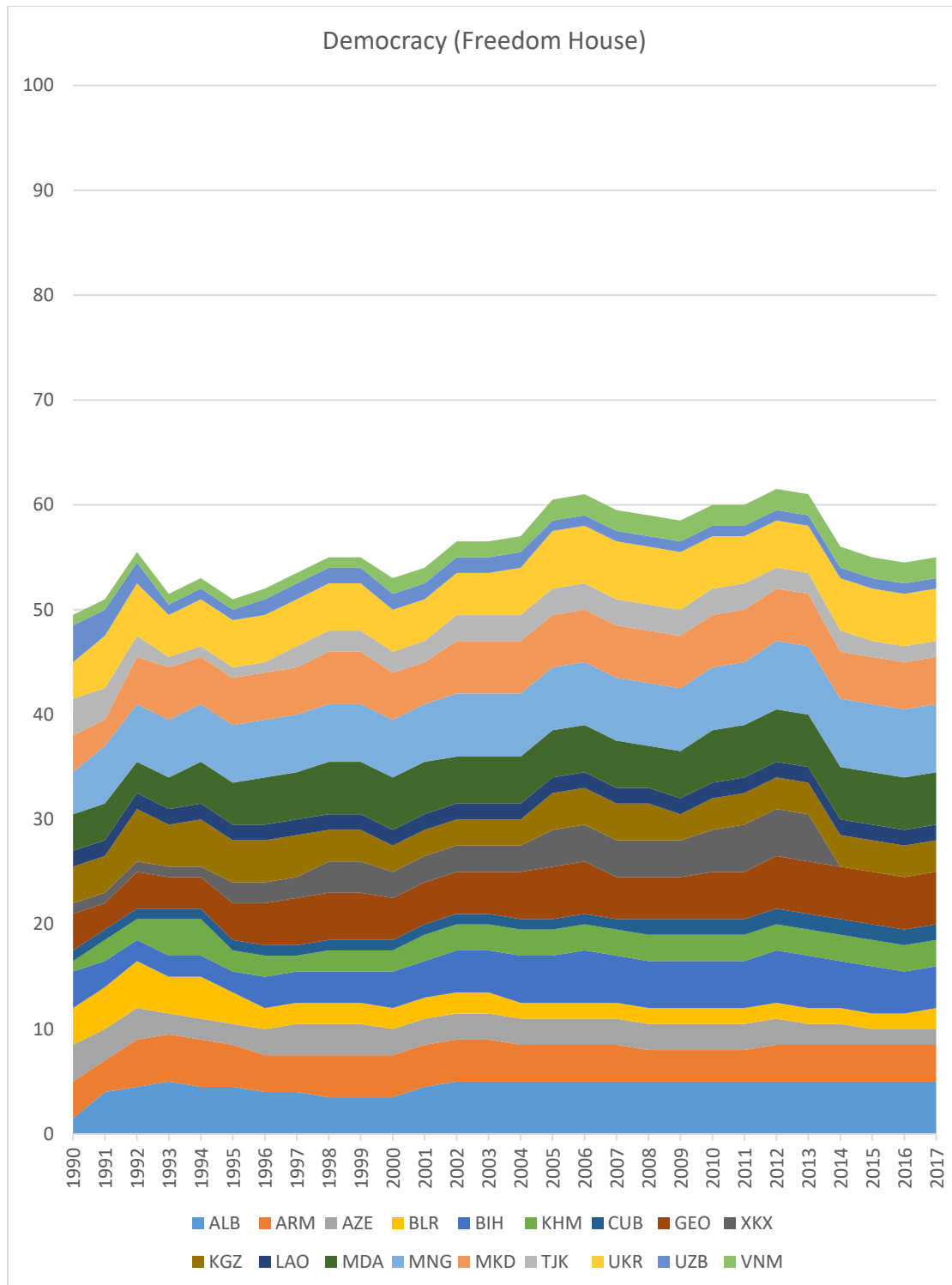
Notes: Level of output per person, in constant 2010 US\$. Countries included here are those in the lower half of the distribution of output per person in 2018 (of in the latest year for which data are available).

**Figure 1b: Evolution of output per person, high-output group**



Notes: Level of output per person, in constant 2010 US\$. Countries included here are those in the upper half of the distribution of output per person in 2018 (of in the latest year for which data are available).

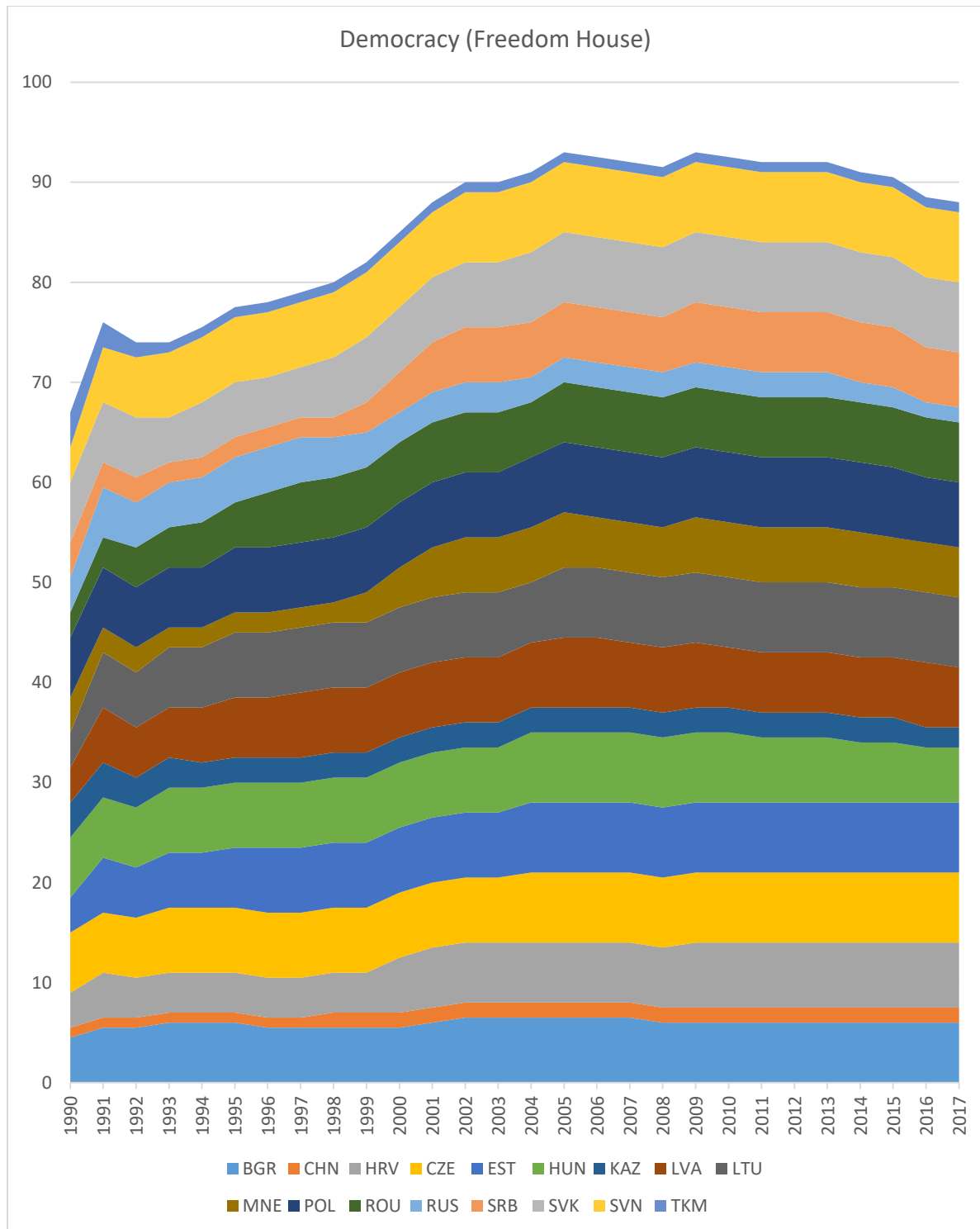
**Figure 2a: Evolution of democracy (Freedom House Index), low-output group**



Notes: The graph depicts the level of the democracy index (Freedom House) in each country and each year. The width of each country's band reflects the index value (wider band means more democracy). The bands are stacked up for better readability, to avoid overlapping lines for countries with similar levels of democracy. The countries included are the same as those in Figure 1a.

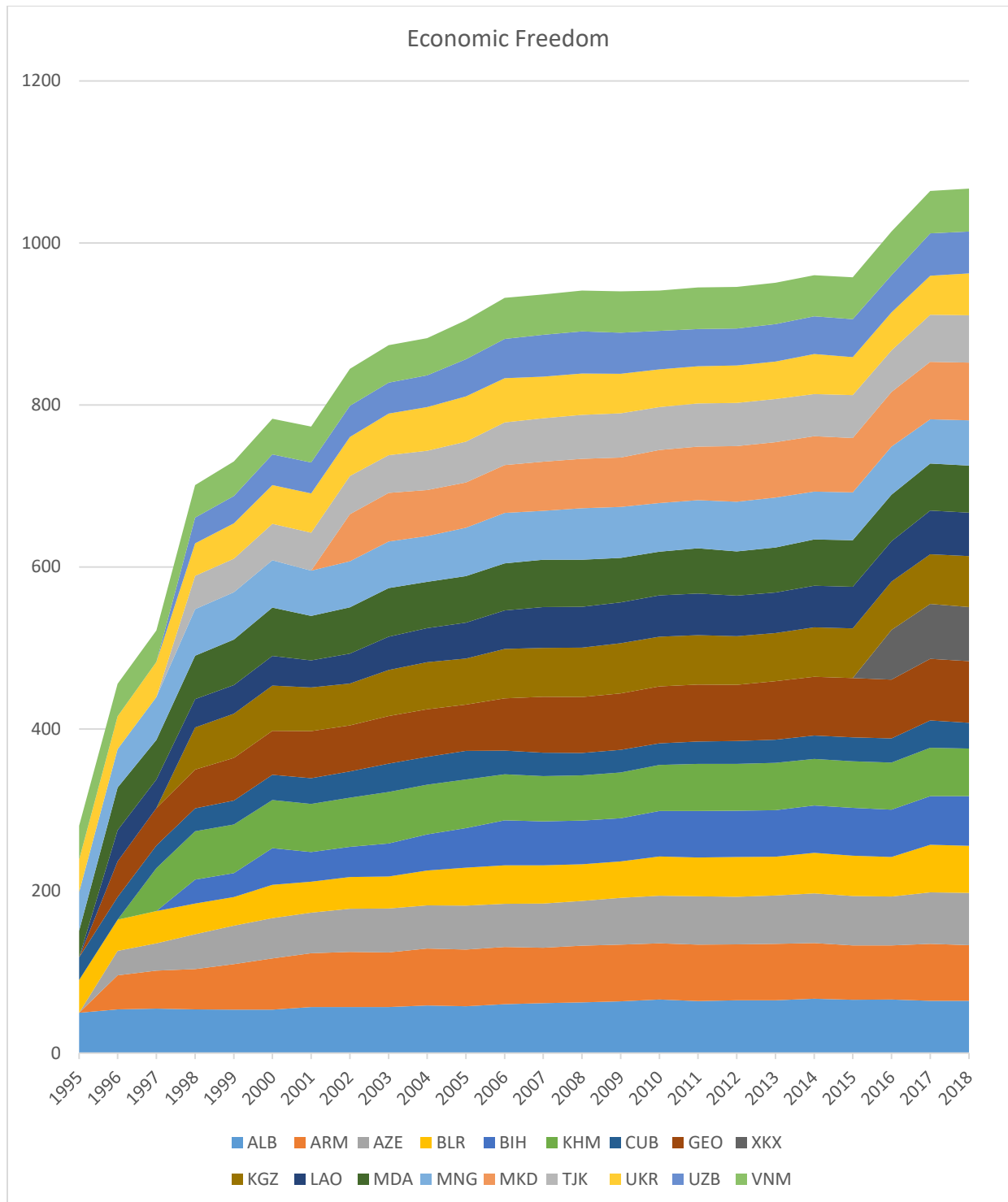


**Figure 2b: Evolution of democracy (Freedom House Index), high-output group**



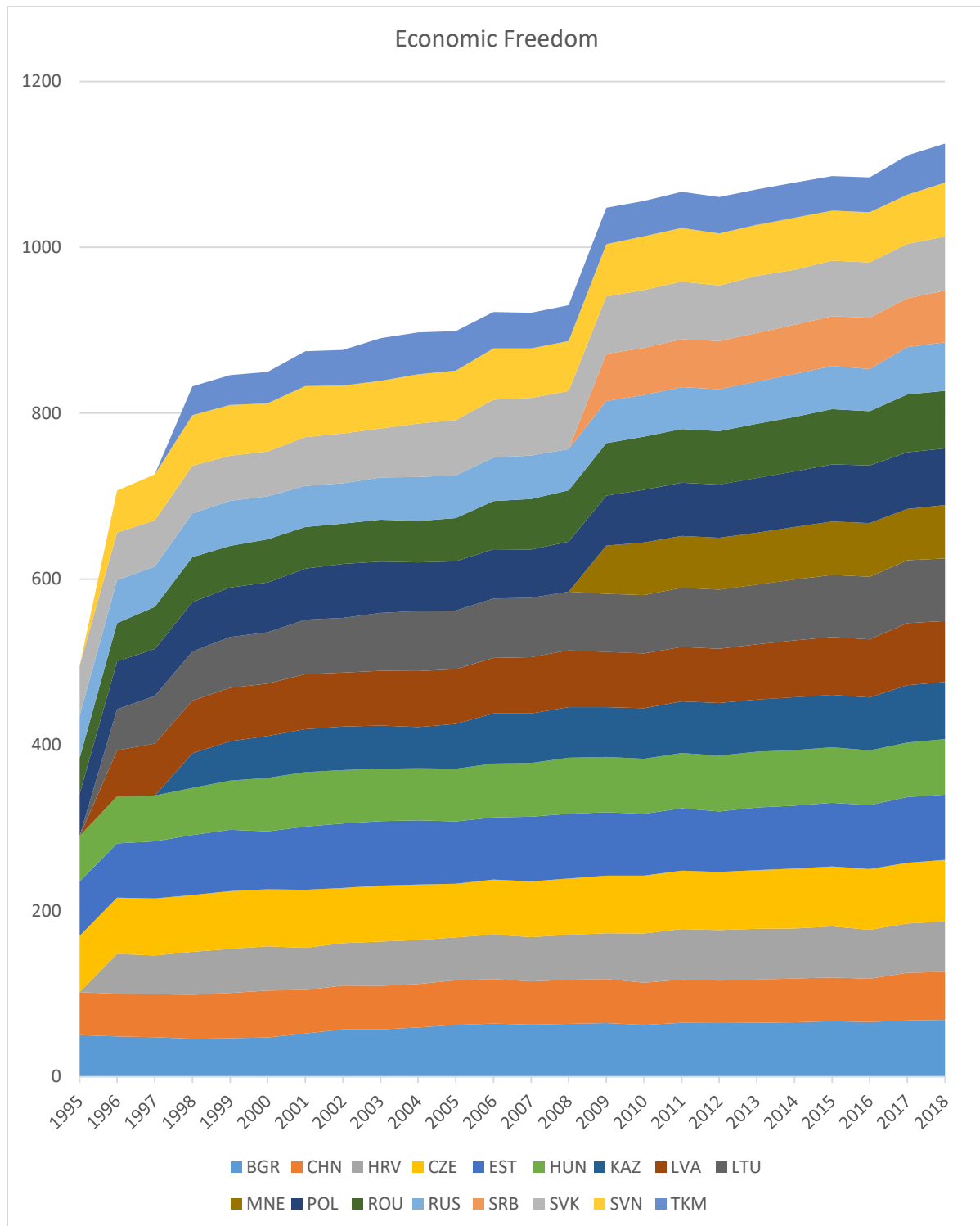
Notes: The graph depicts the level of the democracy index (Freedom House) in each country and each year. The width of each country's band reflects the index value (wider band means more democracy). The bands are stacked up for better readability, to avoid overlapping lines for countries with similar levels of democracy. The countries included are the same as those in Figure 1b.

**Figure 3a: Evolution of economic freedom, low-output group**



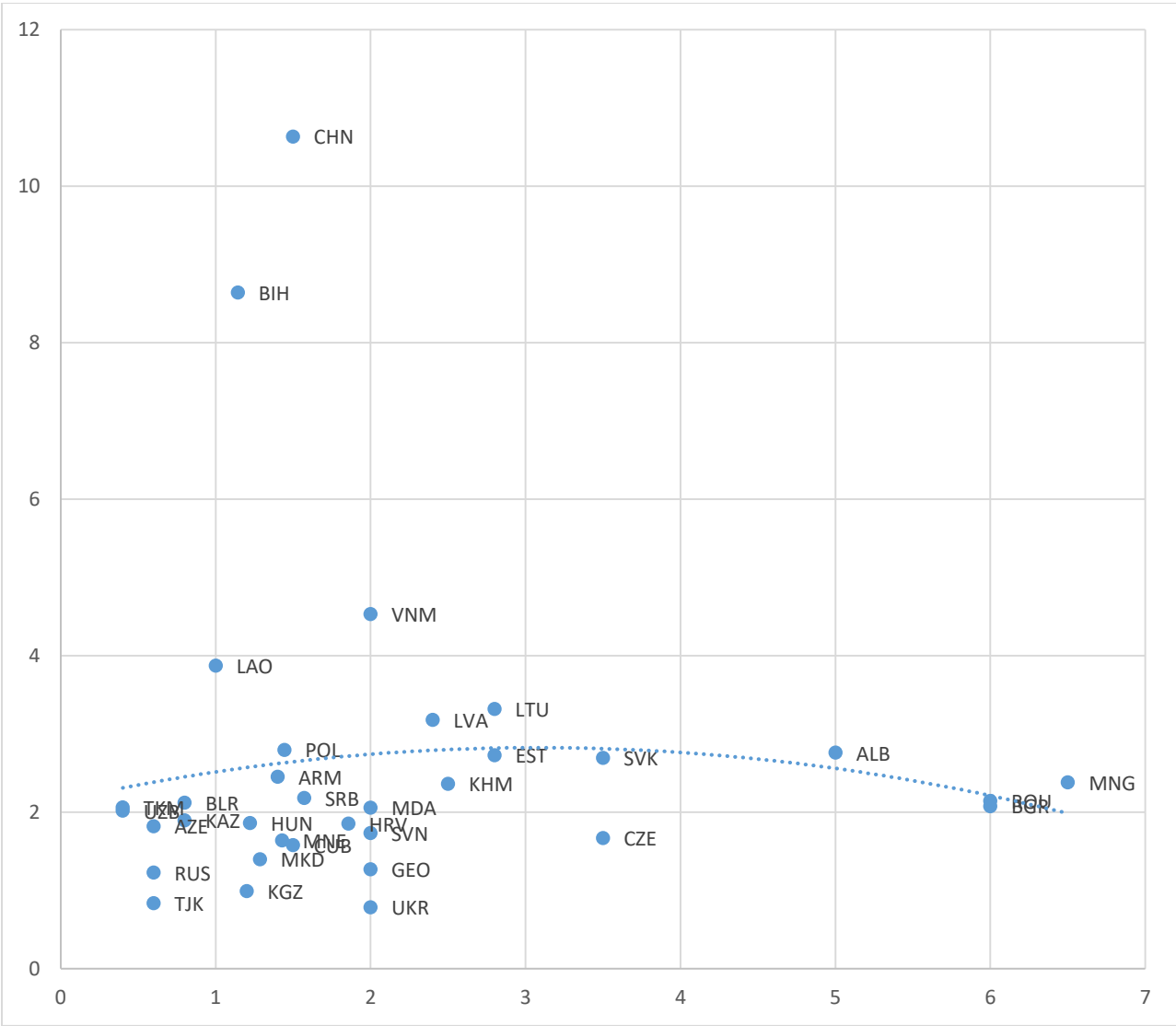
Notes: The graph depicts the level of the economic freedom index (Heritage Foundation) in each country and each year. The width of each country's band reflects the index value (wider band means more economic freedom). The bands are stacked up for better readability, to avoid overlapping lines for countries with similar levels of economic freedom. The countries included are the same as those in Figure 1a.

**Figure 3b: Evolution of economic freedom, high-output group**



Notes: The graph depicts the level of the economic freedom index (Heritage Foundation) in each country and each year. The width of each country's band reflects the index value (wider band means more economic freedom). The bands are stacked up for better readability, to avoid overlapping lines for countries with similar levels of economic freedom. The countries included are the same as those in Figure 1b.

**Figure 4: Relative Changes of Output per Person and Democracy since 1990**



Notes: Change of output per person between 2018 (2017 for Cuba) and 1990 (or the earliest available year) is on the vertical axis, while change in the Freedom House Index 2017/1989 is on the horizontal axis. Both changes are computed as ratios. Output series starts in 1990, except for Bosnia (1994), Cambodia (1993), Croatia (1995), Estonia (1995), Latvia (1994), Lithuania (1995), Moldova (1995), Montenegro (1997), Serbia (1995), and Slovakia (1992).

**Table 1 Descriptive Statistics: All Countries**

Variable	N	Mean	Std. Dev.	Min	Max
GDP pc growth (log difference)	5,679	0.018	0.061	-1.050	0.877
GDP pc growth (annual %)	5,679	0.021	0.062	-0.650	1.404
GDP pc (constant 2010 US\$)	5,726	13,429	20,434	164	193,746
Investment (GFCF, % of GDP)	4,707	0.223	0.075	-0.024	0.680
Population growth (annual %)	6,485	0.015	0.016	-0.110	0.175
Life expectancy at birth, total (years)	5,775	68.267	9.749	26.172	85.417
Polity 2	4,850	3.013	6.651	-10.000	10.000
Index of Economic Freedom (Heritage)	4,058	59.361	11.739	1.000	90.500
Freedom House Index (reversed scale)	5,567	4.519	2.004	1.000	7.000
Polity 2 (rescaled)	4,850	0.651	0.333	0.000	1.000
Economic Freedom (rescaled)	4,058	0.594	0.117	0.010	0.905
Freedom House (rescaled)	5,567	0.586	0.334	0.000	1.000
Principal Component 1	3,418	0.000	1.529	-4.878	2.471
Democratic Capital (Polity)	4,858	3.017	1.658	0.000	5.000
Democratic Capital (Freedom House)	5,310	2.693	1.603	0.000	5.000

Notes: Data refer to period 1990-2018. All countries for which data are available. Principal component 1 (PC 1) is the first principal component of Polity 2, Freedom House Index and Economic Freedom.

**Table 2 Descriptive Statistics: Post-communist Countries**

Variable	N	Mean	Std. Dev.	Min	Max
GDP pc growth (log difference)	892	0.028	0.076	-0.604	0.653
GDP pc growth (annual %)	892	0.032	0.075	-0.453	0.922
GDP pc (constant 2010 US\$)	913	5,951	5,443	321	26,759
Investment (GFCF, % of GDP)	860	0.237	0.074	0.026	0.577
Population growth (annual %)	1,019	0.003	0.012	-0.110	0.078
Life expectancy at birth, total (years)	977	70.620	4.729	52.935	81.176
Polity 2	977	2.131	7.211	-10.000	10.000
Index of Economic Freedom (Heritage)	773	55.234	13.698	1.000	79.100
Freedom House Index (reversed scale)	986	3.907	2.045	1.000	7.000
Polity 2 (rescaled)	977	0.607	0.361	0.000	1.000
Economic Freedom (rescaled)	773	0.552	0.137	0.010	0.791
Freedom House (rescaled)	986	0.484	0.341	0.000	1.000
Principal Component 1	685	-0.365	1.813	-4.878	2.181
Democratic Capital (Polity)	968	2.631	1.684	0.001	4.995
Democratic Capital (Freedom House)	1,020	2.091	1.552	0.000	4.980

Notes: Data refer to period 1990-2018. Only post-communist countries. Principal component 1 (PC 1) is the first principal component of Polity 2, Freedom House Index and Economic Freedom.

**Table 3 Correlation Matrix: All Countries**

	Grow	GDP	Inv	Popgr	Lifep	P2	IEW	FH	P1	DKP2
Growth ( $\Delta\log$ )	1									
GDP pc	-0.12	1								
Investment	0.243	-0.01	1							
Pop growth	-0.22	-0.14	-0.03	1						
Life exp	0.026	0.591	0.177	-0.43	1					
Polity 2	-0.02	0.329	-0.04	-0.4	0.378	1				
IEW	-0.06	0.605	0.106	-0.14	0.551	0.463	1			
FH	-0.02	0.508	-0.01	-0.4	0.489	0.887	0.611	1		
PC 1	-0.03	0.532	0.016	-0.37	0.527	0.913	0.752	0.962	1	
DK p2	-0.03	0.389	-0.03	-0.4	0.45	0.951	0.502	0.883	0.904	1
DK fh	-0.05	0.552	-0.01	-0.39	0.528	0.867	0.641	0.965	0.949	0.917

Notes: Data refer to period 1990-2018. All countries for which data are available. Principal component 1 (PC 1) is the first principal component of Polity 2, Freedom House Index and Economic Freedom.

**Table 4 Correlation Matrix: Post-communist Countries**

	Grow	GDP	Inv	Popgr	Lifep	P2	IEW	FH	P1	DKP2
Growth ( $\Delta\log$ )	1									
GDP pc	-0.173	1								
Investment	0.259	-0.035	1							
Pop growth	0.020	-0.266	0.176	1						
Life exp	-0.164	0.598	-0.096	-0.279	1					
Polity 2	-0.203	0.503	-0.137	-0.481	0.339	1				
IEW	-0.058	0.526	0.181	-0.241	0.354	0.661	1			
FH	-0.182	0.645	-0.105	-0.477	0.399	0.922	0.679	1		
PC 1	-0.172	0.609	-0.049	-0.454	0.395	0.958	0.815	0.964	1	
DK P2	-0.201	0.545	-0.126	-0.474	0.376	0.968	0.690	0.913	0.949	1
DK fh	-0.190	0.690	-0.106	-0.454	0.435	0.907	0.730	0.970	0.960	0.940

Notes: Data refer to period 1990-2018. Only post-communist countries. Principal component 1 (PC 1) is the first principal component of Polity 2, Freedom House Index and Economic Freedom.

**Table 5 Economic growth, democracy, and economic freedom: All countries**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$
$\ln y_{jt-1}$	-0.029*** (0.007)	-0.025*** (0.005)	-0.032*** (0.005)	-0.034*** (0.007)	-0.033*** (0.005)	-0.033*** (0.005)	-0.035*** (0.005)
$\ln s_{jt}$	0.033*** (0.008)	0.032*** (0.008)	0.032*** (0.006)	0.033*** (0.008)	0.032*** (0.006)	0.033*** (0.006)	0.032*** (0.006)
$\ln(n_{jt} + 0.05)$	-0.047*** (0.015)	-0.054*** (0.017)	-0.058*** (0.013)	-0.054*** (0.016)	-0.066*** (0.014)	-0.059*** (0.013)	-0.066*** (0.014)
$P2_{jt-1}$		0.036*** (0.012)			0.025** (0.009)		
$EFW_{jt-1}$			-0.006 (0.026)		-0.008 (0.026)	-0.014 (0.026)	
$FH_{jt-1}$				0.042** (0.016)		0.029*** (0.011)	
$PC1_{jt-1}$							0.007** (0.003)
Constant	0.187*** (0.063)	0.106* (0.055)	0.191*** (0.059)	0.179*** (0.067)	0.152*** (0.062)	0.179*** (0.059)	0.187*** (0.064)
N	4,492	3,994	3,237	4,357	3,047	3,205	3,047
R-squared	0.014	0.025	0.051	0.020	0.060	0.062	0.060
F	9.68***	10.12***	30.07***	9.18***	25.13***	26.57***	32.86***

Notes: Estimated over 1990-2018. All countries for which data are available. P2: Polity 2 index. EFW: Economic freedom in the world. FH: Freedom House index. All three indexes are rescaled to range between 0 and 1. Estimated with country fixed effects and robust standard errors (in parentheses). Significance: 1% \*\*\*, 5% \*\* and 10% \*.

**Table 6 Economic growth, democracy, and economic freedom: Post-communist countries**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$
$\ln y_{jt-1}$	-0.023 (0.014)	-0.0112 (0.009)	-0.043*** (0.009)	-0.026 (0.015)	-0.044*** (0.009)	-0.043*** (0.008)	-0.040*** (0.007)
$\ln s_{jt}$	0.078*** (0.021)	0.065*** (0.018)	0.041*** (0.011)	0.077*** (0.021)	0.039*** (0.011)	0.041*** (0.010)	0.039*** (0.011)
$\ln(n_{jt} + 0.05)$	-0.073* (0.038)	-0.066* (0.041)	-0.033* (0.019)	-0.071** (0.039)	-0.040* (0.021)	-0.033* (0.019)	-0.038* (0.021)
$P2_{jt-1}$		0.031 (0.051)			0.019 (0.022)		
$EFW_{jt-1}$			0.090** (0.046)		0.104** (0.047)	0.085* (0.047)	
$FH_{jt-1}$				0.044 (0.057)		0.014 (0.031)	
$PC1_{jt-1}$							0.014** (0.006)
Constant	0.117 (0.162)	0.006 (0.135)	0.312*** (0.091)	0.125 (0.168)	0.278*** (0.099)	0.309*** (0.089)	0.328*** (0.099)
N	893	863	710	893	690	710	690
R-squared	0.073	0.057	0.071	0.070	0.059	0.065	0.040
F	4.88***	3.35**	16.78***	4.00**	13.80***	14.37***	19.35***

Notes: Estimated over 1990-2018. Post-communist countries only. P2: Polity 2 index. EFW: Economic freedom in the world. FH: Freedom House index. PC1: 1<sup>st</sup> principal component based on P2, EFW and FH. All three indexes are rescaled to range between 0 and 1. Estimated with country fixed effects and robust standard errors (in parentheses). Significance: 1% \*\*\*, 5% \*\* and 10% \*.



**Table 7 Economic growth and democratic capital: All countries**

	(1)	(2)	(3)	(4)	(5)	(6)
	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$
$\ln y_{jt-1}$	-0.035*** (0.007)	-0.040*** (0.008)	-0.036*** (0.005)	-0.034*** (0.005)	-0.034*** (0.007)	-0.036*** (0.009)
$\ln s_{jt}$	0.033*** (0.006)	0.038*** (0.007)	0.031*** (0.006)	0.033*** (0.006)	0.033*** (0.006)	0.036*** (0.007)
$\ln(n_{jt} + 0.05)$	-0.045*** (0.018)	-0.053*** (0.016)	-0.063*** (0.014)	-0.059*** (0.013)	-0.046*** (0.018)	-0.054*** (0.016)
$DKP2_{jt-1}$	0.014*** (0.003)		0.008*** (0.002)		0.017*** (0.007)	
$DKP2_{jt-1}^2$					-0.001 (0.001)	
$DKFH_{jt-1}$		0.014*** (0.003)		0.006** (0.003)		0.031*** (0.010)
$DKFH_{jt-1}^2$						-0.003** (0.002)
$EFW_{jt-1}$			-0.016 (0.027)	-0.021 (0.026)		
Constant	0.191*** (0.065)	0.227*** (0.074)	0.183*** (0.064)	0.197*** (0.059)	0.182*** (0.061)	0.178 (0.082)
N	3,893	3,893	2,980	3,143	3,893	4,176
R-squared	0.023	0.023	0.051	0.058	0.023	0.024
F	10.82***	10.73***	26.05***	26.93***	8.79***	9.01***
Turning point					13.93	4.49

Notes: Estimated over 1990-2018 All countries. DKP2: Democratic capital based on Polity 2 index. DKFH: Democratic capital based on Freedom House index. Turning point: value of democratic capital at which the relationship reaches its maximum. Estimated with country fixed effects and robust standard errors (in parentheses). Significance: 1% \*\*\*, 5% \*\* and 10% \*.

**Table 8 Economic growth and democratic capital: Post-communist countries**

	(1)	(2)	(3)	(4)	(5)	(6)
	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$	$\Delta \ln y_{jt}$
$\ln y_{jt-1}$	-0.032** (0.015)	-0.044** (0.018)	-0.046*** (0.010)	-0.045*** (0.008)	-0.019* (0.011)	-0.036* (0.021)
$\ln s_{jt}$	0.053*** (0.017)	0.072*** (0.020)	0.038*** (0.011)	0.042*** (0.011)	0.048*** (0.017)	0.064*** (0.021)
$\ln(n_{jt} + 0.05)$	-0.049 (0.044)	-0.063 (0.040)	-0.040* (0.021)	-0.031* (0.018)	-0.051 (0.042)	-0.064 (0.039)
$DKP2_{jt-1}$	0.025*** (0.008)		0.005 (0.005)	0.008 (0.005)	0.062** (0.029)	
$DKP2^2_{jt-1}$					-0.007 (0.004)	
$DKFH_{jt-1}$		0.024*** (0.006)				0.057** (0.023)
$DKFH^2_{jt-1}$						-0.007* (0.004)
$EFW_{jt-1}$			0.097* (0.051)	0.062 (0.050)		
Constant	0.159 (0.181)	0.263 (0.201)	0.296*** (0.105)	0.335*** (0.089)	-0.001 (0.149)	0.154 (0.223)
N	829	893	667	710	829	893
R-squared	0.053	0.069	0.054	0.059	0.037	0.058
F	5.49***	5.57***	12.85***	14.09	4.29***	4.73***
Turning point					4.70	4.35

Notes: Estimated over 1990-2018. Post-communist countries only. DKP2: Democratic capital based on Polity 2 index. DKFH: Democratic capital based on Freedom House index. Turning point: value of democratic capital at which the relationship reaches its maximum. Estimated with country fixed effects and robust standard errors (in parentheses). Significance: 1% \*\*\*, 5% \*\* and 10% \*.

**Table 9 Institutional determinants of investment: All countries**

	(1)	(2)	(3)	(4)	(5)	(6)
	$\ln s_{jt}$	$\ln s_{jt}$	$\ln s_{jt}$	$\ln s_{jt}$	$\ln s_{jt}$	$\ln s_{jt}$
$\ln y_{jt-1}$	0.171*** (0.056)	0.206*** (0.044)	0.180*** (0.043)	0.150*** (0.055)	0.169*** (0.048)	0.161*** (0.046)
$EFW_{jt-1}$	0.198 (0.225)					
$P2_{jt-1}$		0.164* (0.086)				
$FH_{jt-1}$			0.240*** (0.086)			
$PC1_{jt-1}$				0.085** (0.034)		
$DKP2_{jt-1}$					0.043* (0.023)	
$DKFH_{jt-1}$						0.054** (0.026)
Constant	-3.112*** (0.468)	3.391*** (0.367)	-3.208*** (0.365)	-2.815*** (0.467)	-3.102*** (0.380)	-3.058*** (0.370)
N	3,238	3,999	4,362	3,048	3,898	4,181
R-squared	0.029	0.044	0.042	0.028	0.043	0.041
F	5.87***	13.04***	11.84***	7.66***	12.00***	12.00***

Notes: Estimated over 1990-2018. All countries. Estimated with country fixed effects and robust standard errors (in parentheses). Significance: 1% \*\*\*, 5% \*\* and 10% \*.

**Table 10 Institutional determinants of investment: Post-communist countries**

	(1)	(2)	(3)	(4)	(5)	(6)
	$\ln s_{jt}$	$\ln s_{jt}$	$\ln s_{jt}$	$\ln s_{jt}$	$\ln s_{jt}$	$\ln s_{jt}$
$\ln y_{jt-1}$	0.077 (0.085)	0.199*** (0.061)	0.187*** (0.060)	0.077 (0.090)	0.158** (0.063)	0.164** (0.061)
$EFW_{jt-1}$	0.220 (0.385)					
$P2_{jt-1}$		0.257** (0.122)				
$FH_{jt-1}$			0.081 (0.142)			
$PC1_{jt-1}$				0.048 (0.066)		
$DKP2_{jt-1}$					0.055** (0.023)	
$DKFH_{jt-1}$						0.032 (0.026)
Constant	-2.227*** (0.621)	-3.304*** (0.518)	3.081*** (0.515)	-2.089*** (0.755)	-2.957*** (0.513)	-2.920*** (0.500)
N	711	864	894	691	830	894
R-squared	0.010	0.008	0.011	0.004	0.006	0.012
F	1.21	7.08***	4.84**	1.57	7.42***	4.90**

Notes: Estimated over 1990-2018. Post-communist countries only. Estimated with country fixed effects and robust standard errors (in parentheses). Significance: 1% \*\*\*, 5% \*\* and 10% \*.

**Table 11 Institutional determinants of life expectancy: All countries**

	(1)	(2)	(3)	(4)	(5)	(6)
	$\ln LE_{jt}$	$\ln LE_{jt}$	$\ln LE_{jt}$	$\ln LE_{jt}$	$\ln LE_{jt}$	$\ln LE_{jt}$
$\ln y_{jt-1}$	0.127*** (0.013)	0.098*** (0.014)	0.101*** (0.015)	0.118*** (0.013)	0.084*** (0.014)	0.093 (0.015)
$EFW_{jt-1}$	-0.018 (0.062)					
$P2_{jt-1}$		0.077*** (0.020)				
$FH_{jt-1}$			0.031 (0.022)			
$PC1_{jt-1}$				0.014** (0.006)		
$DKP2_{jt-1}$					0.025*** (0.005)	
$DKFH_{jt-1}$						0.015*** (0.005)
Constant	3.165*** -0.1029	3.340*** (0.119)	3.352*** (0.118)	3.226*** (0.105)	3.431*** (0.109)	3.392*** (0.117)
N	3,444	4,286	4,855	3,190	4,162	4,611
R-squared	0.565	0.590	0.583	0.566	0.599	0.590
F	53.42***	32.86***	29.21***	52.41***	42.70***	40.60***

Notes: Estimated over 1990-2018. All countries. Estimated with country fixed effects and robust standard errors (in parentheses). Significance: 1% \*\*\*, 5% \*\* and 10% \*.

**Table 12 Institutional determinants of life expectancy: Post-communist countries**

	(1)	(2)	(3)	(4)	(5)	(6)
	$\ln LE_{jt}$	$\ln LE_{jt}$	$\ln LE_{jt}$	$\ln LE_{jt}$	$\ln LE_{jt}$	$\ln LE_{jt}$
$\ln y_{jt-1}$	0.074*** (0.010)	0.073*** (0.008)	0.071*** (0.008)	0.072*** (0.009)	0.063*** (0.008)	0.064*** (0.009)
$EFW_{jt-1}$	0.012 (0.047)					
$P2_{jt-1}$		0.026*** (0.009)				
$FH_{jt-1}$			0.012 (0.014)			
$PC1_{jt-1}$				0.005 (0.005)		
$DKP2_{jt-1}$					0.009*** (0.002)	
$DKFH_{jt-1}$						0.010*** (0.003)
Constant	3.649*** (0.071)	3.642*** (0.069)	3.668*** (0.067)	3.667*** (0.073)	3.720*** (0.060)	3.711*** (0.068)
N	690	870	900	671	838	900
R-squared	0.418	0.426	0.416	0.427	0.395	0.421
F	54.52***	43.44***	40.48***	53.17***	85.43***	65.41***

Notes: Estimated over 1990-2018. Post-communist countries only. Estimated with country fixed effects and robust standard errors (in parentheses). Significance: 1% \*\*\*, 5% \*\* and 10% \*.

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