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The growth consequences of socialism

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ABSTRACT

The discussion of the growth consequences of socialism has fulminated for a century, sparked off by the Calculation Debate in the 1920s and 30s, and has concerned the performance of the Soviet Union in the 1950s and the mixed development in the 1990s after communism collapsed in Central and Eastern Europe. We aim to inform these debates by providing an empirical assessment of how socialist economies performed across the second half of the 20th century. Using both neighbour comparisons as well as more formal empirical analysis of developing countries that turned socialist after independence, we derive a set of estimates of the degree to which the introduction of a planned socialist economy affects long-run growth and development. Our results robustly point towards a decrease in annual growth rates of approximately two percentage points during the first decade after implementing socialism.

1. Introduction

Throughout the last century, a substantial part of the world population has lived under some form of socialism. At the peak, in 1980, over roughly 1.5 billion persons out of a total world population of approximately 4.4 billion lived in socialist countries ([Encyclopedia.com, 2022](https://www.britannica.com/topic/socialism)). Following the end of the cold war and the publication of texts such as Fukuyama's (1989) "The End of History?", socialism seemed to be intellectually discredited and dead as an economic system (Buchanan, 1990). Nevertheless, and as recently noted by Niemietz (2019), there are signs of a revived and enthusiastic interest in socialism and planned economies. Obvious indicators are the relative success of politicians and parties such as Bernie Sanders in the US, Syriza in Greece, or Podemos in Spain (Fagerholm, 2016; Katsourides, 2016; Ramiro and Gomez, 2016). Some popular-scientific accounts have also revived the idea of a planned economy (e.g., Phillips and Rozworski, 2019), and in the US and UK, socialist is no longer pejorative as polls show that socialism is gaining popularity especially among women and Black Americans (Salmon, 2021), and younger Britons (Niemietz, 2021).

Theoretically, it is fair to say that economists are sceptical of the idea that socialism would have beneficial consequences for the economic performance of a country, although the reasons for such scepticism vary. From a neoclassical mainstream view, the problem with socialism comes mainly from the weak or absent incentives for work and investment in socialist economies and the suppression of the price coordination mechanism of economic activities. To this can be added the weakened incentives for innovation and entrepreneurship, though the role of the state in the innovation process is much discussed (see e.g. Mazzucato, 2013 and Foss et al., 2019 for two opposite contributions). In addition to the critique based on standard and new growth theory, a forceful critique of socialism

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comes from the Austrian school, according to which the main problem with socialist planning is the waste of knowledge and creativity that is inherent in centralised decision-making (Hayek, 1935, 1937; Kirzner, 1997; Zeckhauser, 2006).

Due to the lack of economic data on planned socialist economies, only a few studies have systematically assessed to which degree socialism affects economic growth. Some voices in recent political debates even claim that these effects are minor or possibly zero (e.g., Blakeley, 2019). This paper therefore looks at the effects of socialism, both using new and updated data covering a somewhat ignored group of 22 developing countries that turned socialist sometime during the time period 1950 to 2020.¹ Following von Mises (1951), Hayek (1988) and Buchanan (1990), we define socialism as a socio-economic model based on almost full social (state or quasi-state) ownership of means of production and the related command central plan. Because precisely that definition is used in the *de facto* indicator of socialism from Bjørnskov and Rode's (2020) update and expansion of the Democracy and Dictatorship dataset by Cheibub et al. (2010), that is the operationalisation we use.

Our fixed effects estimates indicate that developing countries that transition to socialism lose on average approximately 2–2½ percentage points in annual growth relative to similar countries. A set of simple placebo tests, as well as the two-stage difference-in-differences procedure originally proposed by Gardner (2022) suggest that these estimates are likely to be causal. These losses are qualitatively similar to those experienced by countries in Central and Eastern Europe that implemented socialist economies after WWII and imply substantial losses of human welfare over a typical socialist spell of one and a half decades in a developing country.

The paper proceeds as follows. As the term of socialism is often used in an inconsistent and confusing way, in the next section, we begin by discussing different types of socialism and connect this discussion to modern growth theory to outline how and under what circumstances socialism arguably constrains economic development. Section 3 outlines our data and empirical strategy and discusses how to measure a somewhat fuzzy concept such as socialism. Section 4 presents empirical evidence, and Section 5 concludes.

2. Types of socialism and the reflections in growth theory

2.1. Varieties of socialist thinking

Socialist and communist ideas have been part of economic thinking since Plato's ideal state in the fourth century BCE, but the term socialism first appeared in Robert Owen's *Co-Operative Magazine* in 1827. It was initially used to designate the proponents of cooperative ownership like Owen in Great Britain and Fourier in France in the 1830s and 1840s. In general, socialists have refused the individualistic, competitive foundations of capitalism and believed in an ideal society without poverty and oppression based on cooperative action and a significant degree of common ownership. However, the difficulty of defining socialism is apparent (Esenwein, 2005) as the socialist movement has been divided since the 1850s.

After the publication of *The Communist Manifesto* in 1848 and its elevation to the state ideology of the Soviet Union, the faction around Karl Marx and Friedrich Engels gradually became the most influential within the socialist movement (Magness and Makovi, 2023). They believed in a revolutionary transformation of the existing social order and in implementing a dictatorship of the proletariat. To distinguish it from early "utopian" socialism, Marx and his followers started to call themselves "scientific" socialists. In parallel, scientific socialism came to be called "communism" and "Marxism".² Regarding the economy, their version of state socialism would be based on full nationalisation of factors of production and central planning. And it is the way, we understand socialism in this paper.

Besides, other heterodox socialist currents emerged in the second half of the 19th century. Anarchism (Kropotkin, 1902) and syndicalism (Pouget, 1908) refused the dominant role of the state while highlighting the importance of individual freedom. Therefore, they are often jointly referred to as Libertarian Socialism. Conversely, Fabianism was a strand of non-Marxist state socialism (Shaw, 1899). However, the main and long-term challenge to Marxism came from within this movement. In the 1890s, the former Marxist Eduard Bernstein (1909) initiated a revision of Marxist doctrine. Bernstein rejected its fundamental economic concepts, such as the labour theory of value and tended to believe that socialism can be achieved by non-revolutionary ways. This revisionism became the ground for the development of pluralistic Western socialism and social democracy during the 20th century.³

The label of market socialism came to refer to attempts to respond to the real installation of centrally planned economies in Eastern Europe, which appeared after World War II. Following the interwar debate between socialists such as Oskar Lange (1936, 1937) and Abba Lerner (1934) and liberal economists including Hayek (1937) and Ludwig von Mises (1944), some authors tried to merge plan and market or to find a "Third Way" between capitalism and Marxist socialism. One such approach was pursued by Ota Šik in Czechoslovakia (Šik 1968, 1976) while other authors such as Vanek (1970) attempted to revive the ideals of self-managed socialism (see

¹ In an online appendix, we also perform a more standard neighbour comparison of three pairs of sibling countries in the developed world. Within these comparisons we employ examples of European countries (socialist Czechoslovakia versus capitalist Austria, and socialist Yugoslavia versus capitalist Greece).

² Rees (2005) remarks that communism and Marxism have often been taken as "inseparable, if not synonymous" concepts. On the other hand, he admits that not all communists have been Marxists and vice versa. Esenwein (2005) adds that Marxism started to be widely referred to as "communism" by Lenin and the Bolsheviks after their revolution to distinguish their thinking from "revisionist" socialism in Western Europe. After the founding of the Soviet Union in 1924, this political ideology was called "Marxism-Leninism" as well.

³ Although many scholars (in a confusing way) still use the term socialism when discussing the economic systems in Western Europe (e.g., King, 2003; Sassoon, 2010), we generally understand (in line with Niemietz, 2019) Western economies as market economies with less or more intensive social policies and interventions in macroeconomic areas.

also [Estrin, 1991](#)).

Finally, after colonial independence many African politicians developed versions of socialism that were based on sharing economic resources in what was seen as a traditional African way. These varieties are typically labelled African socialism (cf. [Friedland and Rosberg, 1964](#)); [Idahosa \(2005\)](#) even distinguishes among North African “Arab” Socialists, African socialists and Afro-Marxists. The tradition of communal ownership of land in much of Africa provided a practical basis for transitions into socialism with fully nationalised means of production ([Mboya, 1963](#)).

The varieties of socialist thinking were reflected in the development of real economies throughout the 20th century in significantly different ways. In this paper, we focus on the effects of the implementation of the orthodox strand of socialism – Marxism. Therefore, we understand socialism as a socio-economic model based on social, state, or quasi-state ownership of the means of production and the related command central plan.⁴ This understanding is in line with the leading definitions of socialism by von [Mises \(1951\)](#); [Hayek \(1988\)](#) or [Buchanan \(1990\)](#), as well as the definition in the New Palgrave Dictionary of Economics ([Nove, 2008](#)). This socialist type of centrally planned economy was established not only in the Soviet Union in the 1920s and Eastern Europe in the late 1940s, but also in numerous African, Asian and Latin American countries between the 1950s and 1980s.

2.2. Socialist economics in growth theory

In standard (neoclassical) growth models following [Solow \(1956\)](#), growth is driven by exogenous technological progress when the economy’s capital-output rate is constant. If the capital stock increases, growth will be higher as the economy transitions from one steady state to another. From this perspective, socialism (or any economic system) can affect growth via 1) the size of the capital stock, 2) the productivity of labour or capital (for a given technology), and 3) the rate of technological progress. In the long run, the third channel is likely to dwarf the others, although the other two remain empirically relevant: as shown by [Barro and Sala-i-Martin \(2004\)](#) the temporary effects in neoclassical growth models may still last for 20 years or more as the economy adjusts to a new steady state.

Socialist economies can be expected to have lower productivity of capital and slower technological progress, although socialist economists emphasised technological innovation as an advantage of socialism (cf. [Ofer, 1987](#)). Theoretically, socialist economies could compensate by increasing the capital stock (the so-called extensive growth strategy) but that strategy is problematic in the long run; and as noted by [Easterly and Fischer \(1995\)](#), market economies can also increase their capital stocks over time, which seems to boost growth more than it did in the Soviet Union. A main problem in socialist economies, which arguably makes their investments less productive, is that when government determines the prices of goods and services, the informative and allocative functions of prices are suppressed ([von Mises, 1920](#); [Hayek, 1945](#)). The dispersed knowledge created in market economies for decision-makers is therefore not available for the planning authorities allocating investment funds and resources. At best, authorities must allocate investments and other resources based on a combination of simulated shadow prices – as the Soviet Union began to do in the 1960s – and self-reported information from the companies that receive the resources. Yet such a system of information gathering creates moral hazard problem, as companies typically have incentives to provide biased information and because only existing firms provide information (cf. [Laffont and Tirole, 1986](#)).

The self-reporting system also creates perverse incentives for state-owned companies not subject to competition, such that instead of aiming at the maximisation of profits, state-owned firms aim at maximising the flow of resources from the centre, and thus overestimate costs ([Kornai et al., 2003](#)). Any information available to planning authorities is therefore not only incomplete, but often systematically biased. Such problems are exacerbated by the ineffectiveness of the planning system due to its high demand on bureaucracy and monitoring, making it inflexible and slow to respond to changing conditions (cf. [Kornai, 1959](#)).

In addition, [Romer’s \(1990\)](#) contributions to endogenous growth theory suggest that without solid private property rights firms cannot appropriate the returns of investments in innovation, thereby effectively removing any incentive outside of government coercion to innovating. Yet, such decentralised experimentation is arguably necessary for turning pure invention into economically relevant innovation (cf. [Mokyr, 2016](#)). As emphasised in recent contributions, even with substantial scientific progress, property rights or some other institution, which enables companies to appropriate the returns to risky innovation, are necessary for academic progress to be turned into actual productivity increases ([Berggren and Bjørnskov, 2022](#)).

The main finding of [Easterly and Fischer \(1995\)](#) that Soviet growth over the period 1960–89 was among the lowest in the world, conditional on the accumulation of both physical investment and human capital, is therefore far from surprising. Moreover, the relative performance of the Soviet Union worsened over time ([Ofer, 1987](#)). The fact that growth was low also when controlling for capital accumulation suggests that the Soviet Union suffered from productivity problems, and Easterly and Fischer attribute these to a low elasticity of substitution between capital and labour. Other case studies include [Grier and Maynard \(2016\)](#) who estimate the economic effects of the Hugo Chavez regime in Venezuela using synthetic controls and document a substantial fall in per capita income after the Chavez regime turned socialist, [Geloso et al. \(2024\)](#) who explore the effects of the Cuban Revolution and the American Embargo, and the analysis of durable left-populist regimes in Latin America by [Absher et al. \(2020\)](#). [Glitz and Meyersson \(2020\)](#) document how East Germany’s productivity partially held up in areas where the country engaged in industrial espionage against West Germany, thereby indicating the importance of market-tested innovation for economic growth. Finally, [Mladina \(2021\)](#) compares Central Europe, the Baltics, China, Russia and Venezuela to the US and concludes that socialism results in poverty.

In summary, socialism can affect long-run economic growth through several mechanisms. Most of these affect growth through

⁴ Cooperatives de-iure existed in centrally planned economies, e.g. in agriculture. However, they were de facto subordinated to the state apparatus. Therefore, [Kornai \(1992\)](#) refers to them as examples of quasi-state ownership.

reduced productivity development, and most knowledge comes from either single-country studies or the study of the Soviet bloc. In the following, we explore whether these examples generalise to developing countries.

3. Data and empirical strategies

To assess the growth consequences of socialism, we employ the Penn World Tables, mark 10 (Feenstra et al., 2015) from which we draw data on purchasing-power adjusted GDP per capita and GDP per full-time employee, as well as data on investment rates, government final spending and trade volumes (all as percent of GDP), and the logarithm to population size. Our other main variable comes from Bjørnskov and Rode's (2020) update of the Democracy and Dictatorship dataset in Cheibub et al. (2010), covering a total of 192 sovereign countries yearly between 1950 and 2020. The data include both a dichotomous democracy indicator, based on a minimalist conception of democracy, and a socialism indicator. In Appendix A we discuss at length different approaches to measuring socialism and the reasons for using data from Bjørnskov and Rode (2020). In additional tests, which we report in an online appendix, we also apply the state ownership index from the most recent edition of the Varieties of Democracy dataset (Coppedge et al., 2016), which is coded from 0 – denoting total state ownership – to 4, indicating no state ownership.

3.1. Socialist countries

The full dataset includes 22 countries, most of which turned socialist in the 1960s and 1970s, for which there are sufficient available data: Angola, Benin, Cambodia, the Republic of Congo, Ethiopia, Ghana, Grenada, Guinea, Guinea-Bissau, Laos, Madagascar, Mali, Mozambique, Myanmar, Nicaragua, Sao Tomé and Príncipe, Senegal, Sudan, Tanzania, Venezuela, Vietnam, and Zambia. As a first indicative comparison, we identify a set of 22 geographical neighbours.⁵ These are in several aspects similar countries with similar levels of economic development and have shared borders with their socialist counterparts from the main dataset. All transitions in the full data are reported in Table 1 and the full dataset is summarised in Table 2 where 12.7 % of all country-years are coded as socialist.

3.2. Control variables and estimation strategy

Our formal empirical analysis relies on standard Barro-type growth regressions, where economic growth over a period is regressed on initial levels of GDP per capita and a vector of explanatory variables, including annual and country fixed effects, and a socialist dummy. We estimate the specification in Eq. (1) below.

$$\Delta Y_{it} = \alpha + \beta_1 \ln Y_{it-1} + \beta_2 X_{it-1} + \gamma S_{it} + \nu D_{it} + \varepsilon_{it} \quad (1)$$

The dependent variable is annual growth in purchasing-power adjusted GDP per capita in country i at time t , which we refer to as GDP growth, ΔY_{it} . Alternatively, we also provide estimates of growth in GDP per full-time employee, which we consider a simple measure of labour productivity and thus refer to as productivity growth. We follow standard practice and add the log of Y_{it-1} as a convergence term, and a vector of control variables, X_{it-1} , which includes investment prices, government spending, trade volumes and democracy.

We also add a set of country and annual fixed effects, D_{it} ; and ε_{it} denotes the error term. We begin by assuming that our estimates are causal in the sense that we assume that developing countries' growth prospects did not affect their probability to become fully socialist. However, we deal with the potential endogeneity problem in a set of placebo tests in which we 'assign' socialism to one of a socialist country's geographical neighbours that were never socialist. In the case a socialist country had several non-socialist neighbours, we choose the country in which GDP development in the ten years prior to socialism was most correlated with that of the country that became socialist.⁶ As such, this test estimates what happens if we assign socialism to the wrong neighbouring country.

In addition, we test our main results using the newly developed two-stage difference-in-differences procedure by Butts and Gardner (2022) that avoids the inclusion of already-treated units in the comparison group. In the first stage, the method estimates time trends and fixed effects separately for treated and non-treated countries. In the second stage, the method adjusts the observed outcomes based on the estimated trends from the first stage. The Butts and Gardner procedure therefore provides causal identification with a different approach, although we must stress that the relatively short pre-treatment periods for many countries that turned socialist implies that effects are unbiased but imprecisely estimated.

3.3. Transitions in and out of socialism: trends and examples

Fig. A1 shows how the share of socialist countries in the world increased gradually after World War II, peaked in 1979 (according to the BR-database, in the 1980s according to the CCP-data), and fell dramatically in 1989–1991 due to the collapse of the Soviet Union. As a result, country level spells of socialism varied, as shown in Table 1; differences between spells using alternative measures are listed

⁵ Appendix Table A4 lists all neighbouring countries from which we derive the neighbour GDP comparisons.

⁶ This yields 15 placebo countries: Burkina Faso standing in for Benin, Colombia for Venezuela, the Comoros for Madagascar, Djibouti for Ethiopia, DR Congo for Angola, El Salvador for Nicaragua, Equatorial Guinea for Sao Tomé and Príncipe, Gabon for the Republic of Congo, India for Myanmar, Malawi for Zambia, Mali for Senegal, South Africa for Mozambique, Thailand for Laos, Togo for Ghana, Trinidad and Tobago for Grenada, and Uganda for Tanzania.

Table 1

Transitions in and out of socialism, BR data 1950–2021.

Country	Socialist period	Country	Socialist period
Afghanistan	1978–1991	Lithuania	–1990
Albania	–1990	Madagascar	1975–1992
Angola	1976–1990	Mali	1960–1968
Armenia	–1990	Moldova	–1992
Azerbaijan	–1992	Mongolia	–1991
Belarus	–1990, 1994–	Montenegro	–1990
Benin	1974–1989	Mozambique	1975–1990
Bosnia and Herzegovina	–1990	Myanmar	1974–1988
Bulgaria	–1990	Nicaragua	1979–1989
Cambodia	1975–1981	North Macedonia	–1990
Cape Verde	1975–1989	Poland	–1989
Congo, Republic of	1969–1991	Romania	–1989
Croatia	–1989	Russia	–1991
Cuba	1960–	Sao Tomé and Príncipe	1975–1990
Czech Republic	–1989	Senegal	1962–1980
Estonia	–1990	Serbia	–1990
Ethiopia	1975–1990	Slovakia	–1989
Georgia	–1992	Slovenia	–1990
Ghana	1960–1965	Somalia	1970–1990
Grenada	1979–1983	Sudan	1969–1984
Guinea	1959–1983	Tajikistan	–1992
Guinea–Bissau	1974–1980	Tanzania	1967–1984
Hungary	–1989	Turkmenistan	–1992
Kazakhstan	–1992	Ukraine	–1990
Kyrgyzstan	–1992	Uzbekistan	–1992
Laos	1976–	Venezuela	2000–
Latvia	–1990	Vietnam	1975–
Libya	1970–2010	Zambia	1968–1989

Table 2

Descriptive statistics.

	Mean	Min	Max	Standard deviation	Observations
Growth, GDP per capita	1.940	-1.109	.664	6.255	10,118
Growth, labour productivity	1.666	-1.117	.884	6.369	9274
Log initial GDP per capita	8.889	5.509	12.227	1.215	10,299
Log initial labour productivity	9.919	6.620	13.097	1.159	9454
Investment rate	.218	-2.953	8.123	.151	10,299
Investment price	1.304	.002	30.110	.901	10,299
Trade	.529	0	24.358	.809	10,299
Government spending	.190	-2.615	4.289	.122	10,299
Log population size	1.610	-5.143	7.268	2.095	10,299
Democracy	.454	0	1	.497	14,499
Socialist (BR)	.127	0	1	.333	14,499
Log time socialist (BR)	.398	0	4.317	1.088	14,499
Socialist (CCP)	.149	0	1	.357	14,345
Socialist (DPI)	.122	0	1	.328	8063
State ownership	2.288	.053	3.777	.834	10,962

in [Tables A1a–A1c](#), [A2](#) and [A3](#). Transitions out of socialism likewise varied, leading some commentators to see it as unduly chaotic, and claim that it would create high levels of unemployment and severe economic dislocation (cf. [Knell and Rider, 1992](#)). Other observers at the same time saw most rapid transitions as remarkably successful and necessary to achieve robust transition (e.g., [Åslund, 1992](#)).

Apart from the rise and fall of the Soviet Union, the most common scenario is that countries that used to be colonies ended up with socialism after achieving colonial independence. Typically, these eventually left socialism because of both internal and external forces. As an example, Angola achieved independence in 1975 as a Marxist–Leninist one-party republic ruled by the People’s Movement for

the Liberation of Angola (MPLA), which was backed by the Soviet Union and Cuba. The country was plagued by unrest and civil war between the MPLA and the opposition, the insurgent anti-communist National Union for the Total Independence of Angola (UNITA), which was supported by the United States and South Africa. The transition from socialism came when the MPLA abandoned its Marxist ideology at the party congress in 1990 and declared social democracy to be its new ideology. Although having shed its ideology, the party continues to govern Angola.

Senegal is a similar example. The country was a French colony, and the first president after independence in 1960 was Léopold Sédar Senghor, founder of the Socialist Party of Senegal and often described as a poet, politician and cultural theorist.⁷ The country is classified as socialist from 1962, when a failed coup led to a substantial strengthening of the president's power. Educated in France at the University of Paris where he later also worked as a teacher, Senghor is typically classified as an African rather than a Marxist socialist (Friedland and Rosberg, 1964). Note also that Senghor represented a moderate, less radical version of African Socialism and unlike other ex-colonies, Senegal remained closely aligned with the French government. The transition from socialism is registered when Senghor retired and transferred power to Abdou Diouf in 1981, who reduced government involvement in the economy and continued Senegal's democratisation (with Diouf leaving willingly after losing the 2000 presidential election).

Both the transition into socialism as well as transitions out of socialism have often been events affected by country-specific and sometimes individual-specific characteristics but unrelated to prior economic performance. Of the 22 countries with full data, ten transitioned out of socialism because of the exogenous collapse of the Soviet Union and the subsequent loss of political and economic support. However, this explanation applies to Angola but not, for example, to Senegal. When we in the following turn to exploring the growth consequences of spells of socialism, we treat these transitions as approximately exogenous; the exception is our two-stage difference in difference estimates. For an illustration of the Senegal and Angola examples, see Fig. 1.

4. Empirical analysis

4.1. Main results

Table 3 contains the results of our baseline analysis (based on the specification described in Section 2.2), which compares socialist countries with the rest of the world. In columns 1–4, the dependent variable is growth in average income measured using purchasing-power adjusted GDP per capita. In columns 5–8, the dependent variable is labour productivity growth measured as GDP per full-time equivalent employee.

The coefficients on our control variables are in line with the standard findings in the growth literature. We find significant evidence of convergence effects (indicated by a negative effect of initial GDP per capita or per employee), negative effects of government spending, and positive effects of trade. We also find indications that democracies grow faster, although this is only significant for GDP per capita but not for labour productivity.

Turning to our main findings, we explore the effects of socialism measured as a simple dummy in columns 1 and 5, as the log of the number of years the country has been socialist in columns 2 and 6, and as two dummies capturing the first five years after turning socialist and the subsequent period of socialism in columns 3, 4, 7 and 8. We find that on average, the simple measure in columns 1 and 5 is statistically significant and indicates that socialist developing countries on average grew 1.5 percentage points slower than comparable countries and had 1.7 percentage points slower growth in labour productivity.

Conversely, we find that the number of years the country has been socialist is never statistically significant, suggesting that the effect of socialism on growth is approximately constant over time. The same conclusion can be drawn from our findings when we separate the early years of socialism from the remaining period, which shows that the growth rate is about two percentage points lower in socialist developing countries compared to non-socialist countries, both in the early and the late socialist period (2.2 and 2.1 percentage points) and that the same is true for labour productivity (2.5 and 2.4 percentage points, respectively).⁸

Finally, when we also account for the well-known costs of transitioning out of socialist regimes in columns 4 and 8, i.e. we directly control for already-treated societies, the corresponding estimates are 2.5 percentage points for both periods in column 4, and 2.9 and 2.8 percentage points for labour productivity in column 8. In addition, we document the costs of transitioning out of socialism by adding two dummies for the five years after transition from the Soviet sphere in Central and Eastern Europe and the Caucasus and for transitions out of socialism in the rest of the world. We estimate these costs to 3.9 and 2.3 percentage points for countries transitioning out of socialism from the Soviet sphere and 1.7 and 1.9 percentage points for other transitions out of socialism. Again, these differences are consistent with other evidence, as countries in the Soviet sphere in Europe and the Caucasus remained socialist for much longer

⁷ Senghor's (1991) poem *Midnight Elegy* aptly exemplifies his distinct combination of modernity and awareness of an African heritage known as *Négritude*: "I stand up lucid, strangely lucid / And I am handsome / Like the one-hundred meter runner, like the black stallion / Rutting in Mauritania. I carry in my blood a river of seeds / That can fertilise all the plains of Byzance / And the hills, the austere hills / I am the Lover and the locomotive with a well-oiled piston." (Excerpt translated from the French by Melvin Dixon)

⁸ Separating the first five years from the remaining socialist period is meaningful and potentially important for two reasons. First, a substantial institutional change towards poor protection of private property and more government intervention is likely to increase the size of the shadow economy (cf. Dreher et al., 2014). While this may lead to underestimation of GDP growth, we would expect the change to be phased in during the first years after transition such that the problem mainly applies to the first period. Second, one could also expect an exuberance effect if, for example, some organisations and people are at first excited by the change. Again, this potential effect would primarily be pertinent in the first period after transition.

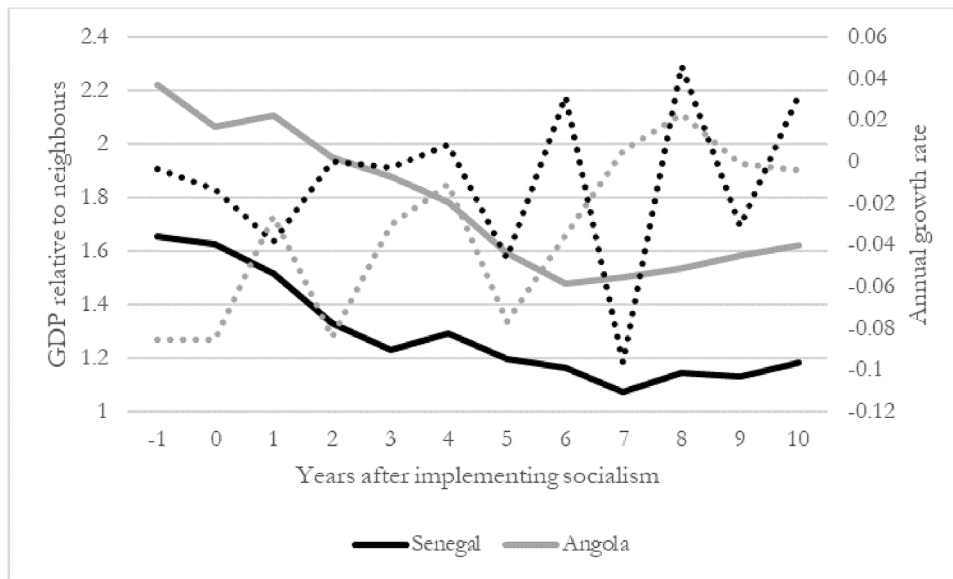


Fig. 1. Development under socialism, two examples.

Note: full lines denote the level of GDP relative to neighbours; dotted lines denote annual growth rates.

Table 3

Main results, full sample.

	1	2	3	4	5	6	7	8
	GDP growth					Productivity growth		
Log initial GDP	-0.029*** (0.004)	-0.029*** (0.004)	-0.029*** (0.004)	-0.031*** (0.004)	-0.037*** (0.007)	-0.037*** (0.007)	-0.037*** (0.007)	-0.039*** (0.007)
Investment price	.002 (0.001)	.002 (0.001)	.002 (0.001)	.002 (0.001)	.002* (0.001)	.002 (0.001)	.002 (0.001)	.002 (0.001)
Government spending	-0.111*** (0.021)	-0.112*** (0.021)	-0.111*** (0.022)	-0.105*** (0.021)	-0.115*** (0.023)	-0.116*** (0.022)	-0.115*** (0.023)	-0.112*** (0.023)
Trade	.011*** (0.002)	.011*** (0.002)	.011*** (0.002)	.010*** (0.002)	.012*** (0.003)	.012*** (0.003)	.012*** (0.003)	.012*** (0.003)
Log population	-0.013** (0.006)	-0.013** (0.006)	-0.015*** (0.006)	-0.013** (0.005)	-0.014** (0.006)	-0.013** (0.006)	-0.016*** (0.006)	-0.016*** (0.006)
Democracy	.006** (0.003)	.006** (0.003)	.007** (0.003)	.008** (0.003)	.005 (0.004)	.005 (0.003)	.006* (0.004)	.007* (0.003)
Socialist	-0.015** (0.007)				-0.017** (0.008)			
Log time socialist		-0.005 (0.003)				-0.005 (0.003)		
Early socialist			-0.022*** (0.009)	-0.025** (0.009)			-0.025** (0.012)	-0.029** (0.012)
Late socialist			-0.021** (0.008)	-0.025*** (0.008)			-0.024** (0.009)	-0.028*** (0.009)
Post-socialist, Soviet sphere				-0.039*** (0.007)				-0.023** (0.009)
Post-socialist, other				-0.017*** (0.006)				-0.019*** (0.006)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Annual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,118	10,118	10,118	10,118	9274	9274	9274	9274
Countries	181	181	181	181	180	180	180	180
Within R squared	.093	.092	.094	.102	.084	.084	.086	.089
F statistics	9.31	9.34	9.34	10.32	8.25	8.29	8.17	8.01

Note: *** (**) [*] denote significance at $p < .01$ ($p < .059$ [$p < .10$]). Numbers in parentheses are standard errors clustered at the country level.

Table 4

Results, only developing and middle-income countries.

	1	2	3	4	5	6	7	8
	GDP growth				Productivity growth			
Log initial GDP	-0.019*** (0.005)	-0.029*** (0.005)	-0.019*** (0.005)	-0.020*** (0.005)	-0.024*** (0.007)	-0.024*** (0.007)	-0.024*** (0.007)	-0.025*** (0.007)
Investment price	.001 (0.001)	.001 (0.001)	.001 (0.001)	.001 (0.002)	.001 (0.002)	.001 (0.002)	.001 (0.002)	.001 (0.002)
Government spending	-0.065*** (0.017)	-0.067*** (0.017)	-0.064*** (0.018)	-0.066*** (0.018)	-0.072*** (0.021)	-0.073*** (0.021)	-0.071*** (0.021)	-0.072*** (0.022)
Trade	.012** (0.005)	.012*** (0.005)	.012** (0.005)	.012** (0.005)	.012** (0.005)	.012** (0.005)	.012** (0.005)	.012** (0.005)
Log population	-0.020* (0.011)	-0.019* (0.012)	-0.020* (0.011)	-0.022** (0.012)	-0.022* (0.013)	-0.022* (0.013)	-0.022*** (0.013)	-0.023** (0.013)
Democracy	.006* (0.003)	.006** (0.003)	.006* (0.003)	.006** (0.003)	.003 (0.003)	.003 (0.003)	.004 (0.003)	.004 (0.003)
Socialist	-0.020** (0.008)				-0.022** (0.010)			
Log time socialist		-0.007* (0.004)				-0.007 (0.005)		
Early socialist			-0.024** (0.009)	-0.027*** (0.010)			-0.029** (0.013)	-0.032** (0.013)
Late socialist			-0.020** (0.008)	-0.024*** (0.009)			-0.021** (0.009)	-0.025** (0.009)
Post-socialist, other				-0.014** (0.006)				-0.013** (0.006)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Annual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6151	6151	6151	6151	5457	5457	5457	5457
Countries	133	133	133	133	130	130	130	130
Within R squared	.053	.052	.054	.055	.057	.056	.058	.059
F statistics	11.78	12.08	11.66	11.36	8.52	8.65	8.24	8.13

Note: *** (**) [*] denote significance at $p < .01$ ($p < .059$ [$p < .10$]). Numbers in parentheses are standard errors clustered at the country level.

than the rest, and experienced larger income declines during transition as a consequence of dismantling their comparatively large military-industrial complex (cf. Roaf et al., 2014).

Comparisons that include both post-Soviet and post-socialist nations in Europe as well as other OECD countries may be misleading when focusing on socialist growth in developing and middle-income countries. In Table 4, we therefore repeat the analysis excluding all observations with a GDP per capita above 13,000 USD and all countries that were within the Soviet sphere. The cut-off is approximately consistent with the World Bank definition of developing and middle-income countries and is thus a conservative choice. Despite the smaller sample and arguably better comparison, the findings in Table 4 mirror those obtained with a full sample in Table 3, suggesting annual losses in income growth per capita around 2 to 2.5 percentage points, and somewhat larger losses in the growth rate of labour productivity.

Although we cannot reject that the effects are the same, the estimates indicate that the productivity losses are largest in the early years of a socialist regime. Our estimates are also politically relevant, suggesting sizable losses in income and human welfare from implementing a socialist economy in a developing country. In a typical country in our sample that turns socialist, the accumulated loss over the first five years amounts to almost 400 USD per inhabitant and more than twice that amount in lost labour productivity.

4.2. Robustness analysis

We have performed several tests to verify the robustness of our results. First, we report in Table 5 a set of placebo tests, which we think of as a way of intuitively testing the endogeneity bias in estimates in Tables 3 and 4. To recap, we assign socialism to the 'wrong' country, defined as a neighbouring country without a socialist present or future in which the growth path prior to socialism is most similar to the actually socialist country. We report estimates for GDP per capita in columns 1 and 2, and for labour productivity in columns 3 and 4; odd-numbered columns apply the full sample while even-numbered columns apply the restricted sample as in Table 4.

Table 5

Results, placebo tests.

	1	2	3	4
	GDP growth		Productivity growth	
	Full sample	Developing and middle-income	Full sample	Developing and middle-income
Log initial GDP	-0.031*** (0.005)	-0.019*** (0.005)	-0.039*** (0.007)	-0.024*** (0.007)
Investment price	.002 (0.001)	.001 (0.002)	.001 (0.001)	.001 (0.002)
Government spending	-0.109*** (0.021)	-0.072*** (0.017)	-0.117*** (0.022)	-0.079*** (0.019)
Trade	.011*** (0.002)	.013*** (0.005)	.012*** (0.003)	.013** (0.005)
Log population	-0.012** (0.006)	-0.019* (0.012)	-0.014** (0.006)	-0.020 (0.013)
Democracy	.009*** (0.003)	.007** (0.003)	.008** (0.004)	.005 (0.004)
Early socialist, placebo	-0.004 (0.011)	-0.011 (0.011)	.003 (0.009)	-0.004 (0.009)
Late socialist, placebo	-0.001 (0.009)	-0.008 (0.009)	-0.002 (0.011)	-0.012 (0.011)
Post-socialist, other	-0.009* (0.006)	-0.006 (0.005)	-0.011* (0.006)	-0.005 (0.006)
Country FE	Yes	Yes	Yes	Yes
Annual FE	Yes	Yes	Yes	Yes
Observations	10,118	6151	9247	5457
Countries	181	133	180	130
Within R squared	.098	.051	.085	.055
F statistics	10.75	12.48	8.16	11.23

Note: *** (**) [*] denote significance at $p < .01$ ($p < .059$ [$p < .10$]). Numbers in parentheses are standard errors clustered at the country level.**Table 6**

Results, two-stage diff-in-diff.

	1	2	3	4
	GDP growth		Productivity growth	
	Full sample	Developing and middle-income	Full sample	Developing and middle-income
Early socialist	-0.027*** (0.008)	-0.024*** (0.008)	-0.032*** (0.009)	-0.032*** (0.011)
Late socialist	-0.020** (0.008)	-0.015** (0.008)	-0.014 (0.012)	-0.009 (0.011)
Country FE	Yes	Yes	Yes	Yes
Annual FE	Yes	Yes	Yes	Yes
Observations	10,118	6151	9247	5457
Countries	181	133	180	130
Within R squared	.098	.051	.085	.055
F statistics	10.75	12.48	8.16	11.23

Note: *** (**) [*] denote significance at $p < .01$ ($p < .059$ [$p < .10$]). Numbers in parentheses are standard errors clustered at the country level.

Our placebo tests yield generally small and insignificant estimates, which we take as an indication that our estimates in [Tables 3 and 4](#) may be causal. The placebo estimates are also significantly different from those in earlier tables, although occasionally only at $p < .10$. As such, we find no indications that the effects we identify are reflections of region or geography-specific trends or development that is common to the most similar neighbours.

While this test is indicative but cannot establish causality with certainty, we note that most sources of endogeneity bias would result in conservative estimates of the causal effect of introducing socialism. The same holds true for the problems associated with measuring the value of output and consumption in fully socialist economies, as well as measurement problems associated with the incentives of autocratic regimes (cf. [Magee and Doces, 2015](#)). We also note that the findings are not primarily driven by factor mobilisation or increased government spending. Although the Soviet Union grew in the 1930s and 1940s by, among other things, bringing many more

women into the labour force, this cannot be a relevant mechanism here. If labour mobilisation was a main driver, we would have seen smaller effects on labour productivity whereas the point estimates for productivity are actually larger.

As a more direct test of causality, we confirm our results using the two-stage difference-in-differences procedure by [Butts and Gardner \(2022\)](#). To recap, in the first stage, the method estimates time trends and fixed effects separately for treated and non-treated countries. In the second stage, the method adjusts the observed outcomes based on the estimated trends from the first stage. However, as the results in [Table 6](#) illustrate, the findings obtained using this method are very similar to our baseline results although less precisely estimated.

To examine different channels through which socialism affects growth we examine the effects of introducing socialism on investment rates or government spending in a set of separate tests reported in an appendix. These effects are typically relatively small (appendix [Table A4](#)), suggesting that the effect of socialism on growth does not operate via investment or government spending, but rather via other channels affecting total factor productivity.

When we use the index of state ownership (where full state ownership is coded as 0 and no ownership as 4) in the appendix [Table A4](#), we find that our indicator of socialism is associated with almost an entire standard deviation increase in state ownership. We see this specific test as a ‘smell test’ validation of our choice of coding socialism based on actual policy choices leading to the nationalisation of the means of production.

Finally, our main results are also robust to a set of further tests including running a full jackknife in which we delete single countries (see online appendix [Fig. A2](#)), varying the sample, varying the dependent variable ([Table A4](#)), and adding more control variables (available upon request). The jackknife serves to emphasise the robustness of our main findings. We also show that socialism does not significantly affect the rule of law index from the Varieties of Democracy dataset ([Coppedge et al., 2016](#)), apart from its association with GDP per capita. As a final robustness test, we add the rule of law and the human capital index from the Penn World Tables to the specification, as a way to assess if our socialism variables just reflect other important factors. Yet, we find that they do not. To summarise, our main findings survive several (standard and more demanding) robustness tests. We therefore turn to discussing their significance and interpretation.

5. Conclusions

When socialism collapsed in Central and Eastern Europe around 1990, the economic and social consequences of socialism appeared evident: Western Europe had grown much richer and democracy was more stable than the countries that had been in the Soviet sphere of influence. However, many academics and politicians have since argued that the experience behind the Iron Curtain was not representative of socialism, and socialist ideas and policies have become substantially more popular in recent years.⁹ The renewed interest in socialist and Marxist thought and economic policy thus begs the question we ask in this paper: what are the economic growth consequences of implementing a socialist economy?

We have provided standard econometric evidence and novel two-stage difference in difference estimates from 22 developing countries that turned socialist from the late 1950s and on. In all cases, we find substantial costs of implementing socialism: our best estimates of the growth loss associated with socialism indicate that socialist countries grow approximately 2–2½ percentage points slower, in terms of real GDP per capita, than comparable countries. Comparing growth in labour productivity yields comparable but slightly larger losses. As both a set of simple but intuitive placebo tests as well as the two-stage difference-in-differences procedure by [Butts and Gardner \(2022\)](#), that accounts avoids comparisons with already-treated units, indicate that the estimates are likely to be causal, we note that the endogeneity bias works against finding clear effects of socialism.

As the growth performance of comparable developing countries was far from stellar during the years in which these countries turned socialist, our estimates imply that in most socialist developing countries, the broad population effectively became poorer each year the country remained socialist. These effects may even be conservative as older African GDP data are problematic ([Jerven, 2011](#)) and because national income and other official data from autocratic socialist countries are likely to be exaggerated ([Berdine et al., 2018](#); [Martínez, 2022](#); [Alvarez et al., 2024](#)). Both problems suggest that our estimates, if anything, underestimate the negative growth effects of socialism.

Whereas we cannot inform of the specific mechanisms through which the implementation of full-blown socialism works, we note that some mechanisms are inconsistent with our findings. For example, it has been argued that the Soviet Union grew relatively quickly in the 1930s due to substantial factor mobilisation and investments, and subsequently suffered a productivity decline as centralised investment decisions were unprofitable and as resources were diverted away from research and development towards the military ([Allen, 2001](#)). However, this seems not to be the case in our sample of developing countries where, if anything, investment rates declined along with productivity. The relatively small (and insignificant) difference between our growth estimates for GDP per capita and labour productivity also indicates otherwise. One could also suspect that part of the decline occurred because major parts of the economy moved underground when socialist policies were implemented (cf. [Dreher et al., 2014](#)). However, this would imply larger measured growth effects in the first years of socialism while we find similar effects after the first five years. As in [Olson \(1996\)](#), we therefore believe that the main explanation is the implementation of socialist policies that were disastrous to productivity. With few exceptions – most notably Botswana and the South East Asian Tigers – the vast majority of developing countries were characterised by poor judicial institutions, corruption and strongly illiberal policies. The group of countries, which we compare socialist societies to,

⁹ [Niemi \(2019\)](#) discusses the way these examples were described over time by Western academics, and how each of his examples went through a period of political promise with subsequent disappointment of their actual economic performance.

were therefore not exactly economically free, enjoying inclusive institutions, or respectful of citizens' democratic rights. That we continue to find substantial, negative effects of implementing the orthodox version of socialism attests to the very specific nature of such policies.

Overall, we document that implementing a socialist centrally planned economy in developing countries has had dire economic and social consequences. Although charismatic African socialist leaders such as Ghana's Kwame Nkrumah and Tanzania's Julius Nyerere promised that socialism would be a fast track to prosperity and justice, theirs was a false hope. As in other parts of the world, our findings lend credence to the conclusion that full-blown socialism is universally associated with substantial economic failure and human misery.

CRediT authorship contribution statement

Andreas Bergh: Writing – original draft, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Christian Bjørnskov:** Writing – original draft, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Luděk Kouba:** Writing – original draft, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.jce.2025.04.003](https://doi.org/10.1016/j.jce.2025.04.003).

Appendix A. Measuring socialism

A first major empirical challenge is to measure adequately when a country is *de facto* a socialist or communist planned economy. Here, we briefly explore three different approaches. A first option is to code parties according to their official political ideology, using either expert coding or content analysis of party manifestos. The second option is to code whether a country is defined as socialist by its constitution, i.e., whether the country is *de jure* socialist or communist. The third option, which we follow in this paper, is to rely on the official definition of the country and its basic policy choices. Each of these options represent significant coding challenges and, as we show in the following, also differ substantially when applied empirically.

There are well-known problems with identifying party ideology (cf. Osterloh, 2012; Bauer et al., 2017; Bjørnskov and Rode, 2019). While several studies employ expert coding of parties in order to obtain measures of government ideology, they are problematic in this context as communist or unreformed socialist parties represent extreme positions in modern party spectra. Separating these parties from other left-wing parties with less extreme positions on economic policy and preferences for democracy is thus rarely done. The alternative way of placing parties on an ideological scale in which the coding relies on content analysis of party manifestos also remains problematic for the same reason (cf. Gabel and Huber, 2000). In addition, any practical application of manifestos data necessarily faces the problem that what is included in party manifestos reflects salient issues at the time of writing instead of actual policy choices or preferences that may often occur years after the manifesto was written. Identifying socialist societies through coding party ideology therefore remains problematic.

Turning to measuring whether a country is socialist by how the system is coded in the constitution, we face two major problems. First, a substantial literature in constitutional political economy has documented how *de jure* rights and constraints defined in the constitution differ substantially from the *de facto* situation and what is actually enforced (cf. Law and Versteeg, 2013; Voigt, 2021). Second, new constitutions are only infrequently implemented or substantially amended in most parts of the world and when they are, they often reflect regime changes that occurred sometime prior to the constitutional change. For example, while North Vietnam had been communist since 1945, it was only after the end of the Vietnam War that the country officially changed its name to the Socialist Republic of Vietnam. Similarly, although the Republic of Congo became a socialist economy after the 1968 military coup and was subsequently renamed the People's Republic of Congo, it only became formally defined as socialist by the constitution in 1979. Conversely, Portugal has been constitutionally defined as a socialist society since democratisation in 1975 but has continued to be a modern market economy until today. Relying on constitutional definition thus implies both false positive and false negative

identification of whether a society is *de facto* socialist.

We therefore rely on the third option, which consists of coding a society as socialist if the executive branch (i.e. the part of government that enforces law) identifies the state as such, and if its policy choices are consistent with a socialist planned economy in which most means of production are nationalised. One such case, the Derg – the military junta that ruled Ethiopia from 1974 until the late 1980s – provides a clear example, as the organisation rapidly implemented a Marxist-Leninist single-party state broadly along the lines of the Soviet Union. Although Ethiopia's constitution did not define it as a socialist economy before 1987, Derg policy under the leadership of Mengistu Haile Mariam included large-scale nationalisation of industry and much urban real estate, and substantial land redistribution. While this option implies that we are only identifying very clear examples of socialist societies, including Ethiopia during the Derg period, Nicaragua under the Sandinista government in the early 1980s, and most obviously communist China, this provides a conservative coding of socialism and thus a minimal risk of overidentifying consequences of socialism.¹⁰ Treating socialism as a dichotomous measure the way we do simplifies the definition procedure, but obviously potentially ignores information if countries are socialist to varying degrees. On the other hand, creating a continuous measure of socialism introduces new problems that have been discussed extensively in the literature on economic freedom (e.g., Berggren 2003; Hall and Lawson 2014).

We show in Tables A1a-c that this choice is consequential by comparing empirical examples of the three approaches. As our example of expert coding, we define a society as socialist if the executive's party is defined as left-wing in the Database of Political Institutions (DPI), and either holds at least 75 % of seats in parliament or rules the country without a parliament (Cruz et al., 2021). Our example of socialism as defined by the constitution derives from the Comparative Constitutions Project (CCP), which provides a direct indicator of whether the constitution does so (Elkins et al., 2009).¹¹ Finally, we employ the *de facto* indicator capturing whether the country was officially a socialist or communist planned economy, based on whether most means of production were nationalised and centrally controlled, from Bjørnskov and Rode's (2020) update and expansion of the Democracy and Dictatorship dataset.

As is clear from the tables, there are both large overlaps but also large discrepancies between the three indicators. While the CCP and the Bjørnskov-Rode (BR) indicators agree on 1511 observations, the former codes an additional 632 country-years as socialist while the latter codes 313 additional country-years as socialist. Some of the discrepancies are due to timing differences, but others arise from the false positives and negatives inherent in the constitutional definition of socialism. The discrepancies when using the DPI indicator relative to both the CCP and BR indicators are substantially larger and includes both types. These discrepancies for example include Tanzania in the period 1975–1984, which BR codes as socialist but the DPI does not, and Burkina Faso between 1981 and 1991, which neither BR nor CCP code as socialist but which DPI does.

The BR indicator is illustrated in Fig. A1. The figure clearly shows how the share of countries in the world that were socialist increased during the 1960s and 1970s, as newly independent countries turned to socialism, and peaked around 1980. The figure also very clearly illustrates the dramatic collapse of socialism worldwide in the early 1990s when not only Central and Eastern Europe, but also a number of developing countries aligned with the Soviet Union, turned away from socialism. That is the broad development that provides our identification of the consequences of socialism in the following.

Table A1a
Discrepancies between Bjørnskov-Rode and CCP.

		Bjørnskov-Rode Not socialist	Socialist
CCP	Not socialist	11,680 (82.6 %)	326 (2.3 %)
	Socialist	608 (4.3 %)	1535 (10.8 %)

Table A1b
Discrepancies between Bjørnskov-Rode and DPI.

		Bjørnskov-Rode Not socialist	Socialist
DPI	Not socialist	6478 (82.1 %)	431 (5.5 %)
	Socialist	450 (5.7 %)	527 (6.7 %)

¹⁰ As can be seen in Table 1, China does not transition into or out from socialism during the period studied and thus does not drive our results. As discussed by Naughton (2017), China is difficult to classify as clearly socialist or non-socialist.

¹¹ In the relatively few cases in which a new constitution was implemented after 2009, we update the data by coding the new constitutions in the same way as in Elkins et al. (2009). In addition to the three indicators explored here, Manzano (2007) also provides an indicator of socialism. However, her indicator is available for considerable fewer country-years than the three chosen here, and moreover tends to be consistent with the indicator backed out of the Database of Political Institutions.

Table A1c

Discrepancies between CCP and DPI.

		CCP Not socialist	Socialist
DPI	Not socialist	6170 (77.9 %)	465 (5.9 %)
	Socialist	761 (9.6 %)	515 (6.5 %)

Table A2

Discrepancies between Bjørnskov-Rode and CCP, all cases.

BR over CCP		CCP over BR	
Country	Period	Country	Period
Afghanistan	1978–1979	Albania	1991–1997
Afghanistan	1990–1991	Armenia	1991–1994
Belarus	1994–2019	Azerbaijan	1993–1994
Benin	1974–1975	Bangladesh	1972–1975
Bulgaria	1950–1960	Bangladesh	1981–2019
China	1950–1953	Belarus	1991–1993
Cuba	1960–1975	Bosnia and Herzegovina	1991–1994
Ethiopia	1975–1986	Cambodia	1982–1989
Ghana	1960–1963	Croatia	1990–1996
Grenada	1979–1983	Egypt	1964–2011
Guinea	1959–1981	Ghana	1966–1968
Guinea-Bissau	1974–1980	Guyana	1970–2019
North Korea	1950–1953	Hungary	2011–2019
Laos	1976–2019	India	1992–2019
Mali	1960–1968	Iraq	1964–1989
Mongolia	1950–1959	Libya	1969–2010
Nicaragua	1979–1989	Burma (Myanmar)	1963–1973
Poland	1950–1951	Myanmar	1989–2008
Senegal	1962–1980	Nepal	2006–2007
Serbia	1950–1952	Poland	1990–1991
Somalia	1970–1978	Portugal	1976–2019
Sudan	1969–1972	Rwanda	1973–1990
Tanzania	1967–1976	Serbia and Montenegro	1990–1999
Venezuela	2000–2019	Seychelles	1979–1992
Zambia	1968–1989	Somalia	1991–2003
		Sri Lanka	1972–2019
		Syria	1964–2011
		Tanzania	1985–2019
		Ukraine	1991–1995
		Vietnam	1960–1974
		Yemen	1978–1993

Note: 'X over Y' means cases in which dataset X codes a country as socialist while dataset Y does not.

Table A3
Discrepancies between Bjørnskov-Rode and DPI.

BR over DPI		DPI over BR	
Country	Period	Country	Period
Afghanistan	1989–1991	Algeria	1975–1992
Belarus	1994–	Angola	1991–1992
Nicaragua	1979–1989	Angola	2009–2017
Tanzania	1975–1984	Argentina	1975–1976
Venezuela	2000–	Barbados	1975–1976
		Barbados	1998–2008
		Belarus	1992–1993
		Benin	1990–1991
		Benin	1994–1995
		Burkina Faso	1981–1991
		Cambodia	1982–1993
		Cape Verde	1976–1991
		Republic of Congo	1998–2002
		Ethiopia	1991–1995
		The Gambia	1975–1984
		The Gambia	1988–1992
		Ghana	1993–1996
		Guinea–Bissau	1981–1994
		Guyana	1981–1992
		India	1988–1989
		Jamaica	1975–1980
		Jamaica	1994–2002
		Lesotho	1994–2002
		Liberia	1976–1980
		Libya	1977–2010
		Mexico	1975–1979
		Mongolia	1992–1993
		Mozambique	1991–1994
		Mozambique	2010–2014
		Namibia	2000–
		Nicaragua	2017–
		Pakistan	1975–1977
		Portugal	1975–1976
		Senegal	1981–1992
		Sierra Leone	1975–1992
		Solomon Islands	1982–1984
		St. Lucia	1998–2006
		Tajikistan	1993–1995
		Tajikistan	2006–
		Tanzania	2001–2010
		Trinidad and Tobago	1987–1991
		Tunisia	1975–2011
		Turkmenistan	1993–2013
		Uzbekistan	1993–1995
		Vanuatu	1989–1991
		Zambia	1990–2001

Note: “X over Y” means cases in which dataset X codes a country as socialist while dataset Y does not.

Table A4

Alternative dependent-variables: Investment rates, government spending and state ownership.

	1	2	3	4	5	6	7	8	9	10	11	12
	Investment rates (% of GDP)				Government spending (% of GDP)				State ownership			
Log initial GDP	.023*	.022*	.033**	.034**	-0.024*	-0.024*	-0.010	-0.012	-0.068	-0.073	-0.028	-0.031
	(0.012)	(0.012)	(0.014)	(0.014)	(0.013)	(0.013)	(0.014)	(0.014)	(0.061)	(0.061)	(0.067)	(0.067)
Investment price	-0.027***	-0.023***	-0.023***	-0.023***								
	(0.007)	(0.008)	(0.008)	(0.008)								
Government spending	.197	.110	.110	.112								
	(0.158)	(0.093)	(0.093)	(0.094)								
Trade	.102***	.101***	.212***	.212***	.094***	.094***	.129***	.129***	-0.010	-0.011	.035	.035
	(0.024)	(0.024)	(0.043)	(0.043)	(0.011)	(0.011)	(0.022)	(0.022)	(0.045)	(0.045)	(0.039)	(0.039)
Log population	.069***	.071***	.012	.014	-0.008	-0.012	-0.071**	-0.073**	-0.246**	-0.244*	.054	.050
	(0.025)	(0.026)	(0.029)	(0.029)	(0.017)	(0.017)	(0.032)	(0.032)	(0.121)	(0.125)	(0.196)	(0.196)
Democracy	-0.005	-0.005	-0.009	-0.010	.002	.001	.001	.011	.335***	.337***	.202***	.203***
	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)	(0.065)	(0.065)	(0.053)	(0.053)
Early socialist	-0.055***	-0.053***	-0.035*	-0.030	.041*	.036	.037	.033	-0.765***	-0.779***	-0.755***	-0.764***
	(0.018)	(0.019)	(0.019)	(0.020)	(0.024)	(0.027)	(0.023)	(0.025)	(0.127)	(0.133)	(0.130)	(0.138)
Late socialist	-0.067***	-0.065***	-0.048***	-0.042**	.052*	.047	.057**	.052	-0.794***	-0.808***	-0.739***	-0.749***
	(0.018)	(0.019)	(0.017)	(0.019)	(0.029)	(0.031)	(0.029)	(0.032)	(0.124)	(0.126)	(0.131)	(0.135)
Post-socialist, Soviet sphere		-0.027**		–		.052***		–		-0.079		–
		(0.013)				(0.016)				(0.128)		
Post-socialist, other		.009		.021		-0.020		-0.018		-0.075		-0.038
		(0.018)		(0.017)		(0.018)		(0.019)		(0.089)		(0.092)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Annual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,118	10,118	6151	6151	10,118	10,118	6151	6151	9118	9118	5686	5686
Countries	181	181	133	133	181	181	133	133	160	160	119	119
Within R squared	.465	.466	.611	.612	.451	.457	.440	.441	.469	.469	.474	.474
F statistics	19.92	19.28	15.53	15.60	30.30	28.74	9.35	9.04	9.43	9.93	20.08	20.98

Note: *** (**) [*] denote significance at $p < .01$ ($p < .05$) [$p < .10$]. Numbers in parentheses are standard errors clustered at the country level.

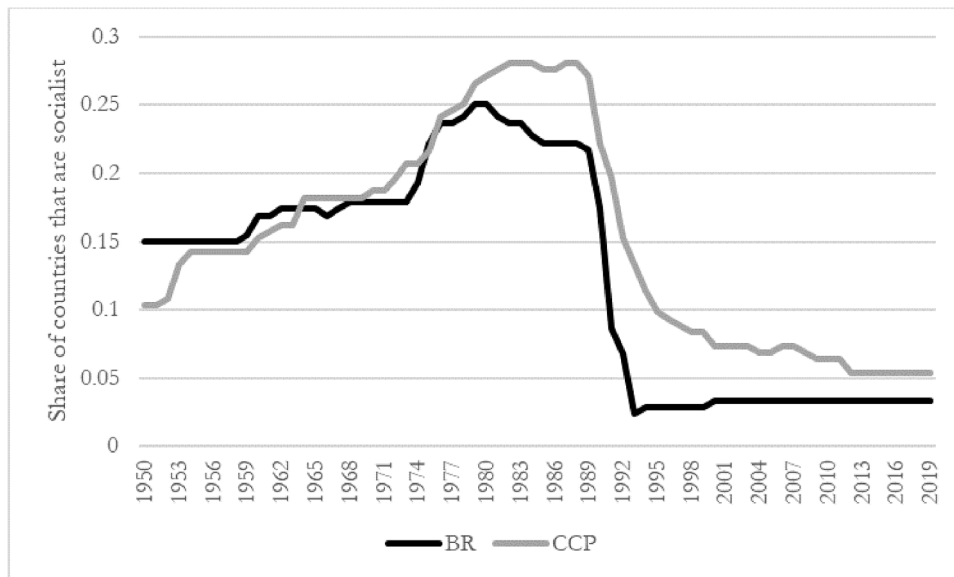


Fig. A1. Socialist share across the world, 1950–2019.

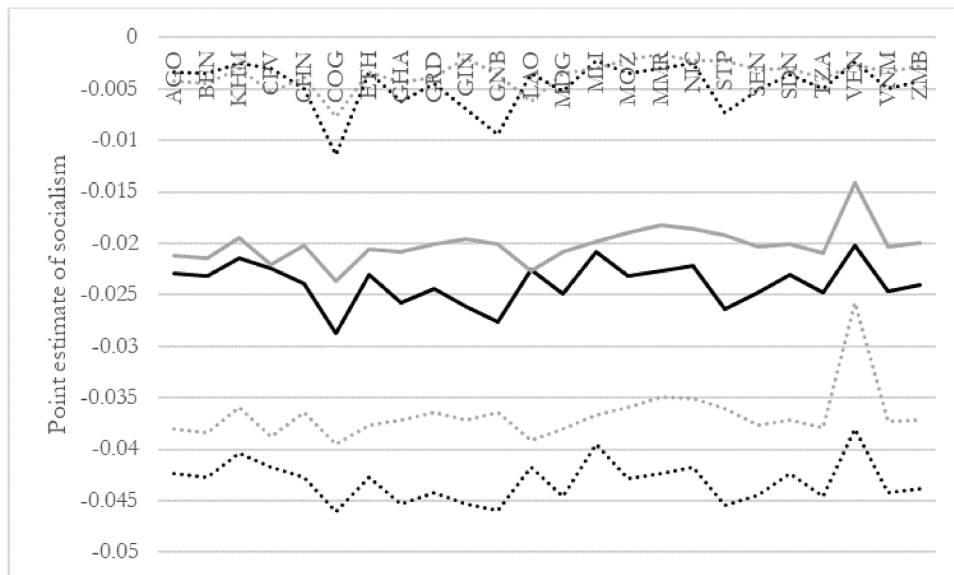


Fig. A2. Summary of jackknife test.

Note: full lines denote the estimates for the early period (black) and late period of socialism (grey) while dotted lines denote the 95 percent confidence intervals. Excluded countries are denoted along the x-axis.

References

- Absher, Samuel, Grier, Kevin, Grier, Robin, 2020. The economic consequences of durable left-populist regimes in Latin America. *J. Econ. Behav. Organ* 177, 787–817.
- Allen, Robert C., 2001. The rise and decline of the Soviet economy. *Can. J. Econ.* 34, 859–881.
- Alvarez, Sean P., Geloso, Vincent, Scheck, Macy, 2024. Revisiting the relationship between economic freedom and development to account for statistical deception by autocratic regimes. *Eur. J. Polit. Econ.* 85, 102577.
- Blakeley, Grace, 2019. *Stolen: How to Save the World from Financialisation*. Repeater Books, London.
- Barro, Robert J., Sala-i-Martin, Xavier, 2004. *Econ. Growth*.
- Bauer, Paul C., Barberá, Pablo, Ackermann, Kathrin, Venetz, Aaron, 2017. Is the left-right scale a valid measure of ideology? Individual-level variation in associations with “left” and “right” and left-right self-placement. *Political Behav.* 39, 553–583.
- Berdine, Gilbert, Geloso, Vincent, Powell, Benjamin, 2018. Cuban infant mortality and longevity: health care or repression? *Health Policy Plan.* 33, 755–757.
- Berggren, Niclas, 2003. The benefits of economic freedom: a survey. *Indep. Rev.* 8, 193–211.
- Berggren, Niclas, Bjørnskov, Christian, 2022. Academic freedom, institutions, and productivity. *South Econ. J.* 88, 1313–1342.

- Bernstein, Eduard, 1909. *Evolutionary Socialism: A Criticism and Affirmation*. B.W. Huebsch, New York. Available at: <https://rowlandpasaribu.files.wordpress.com/2013/09/eduard-bernstein-evolutionary-socialism.pdf> (Accessed July 2021).
- Bjørnskov, Christian, Rode, Martin, 2019. Crisis, ideology, and interventionist policy ratchets. *Polit. Stud. (Oxf)* 67, 815–833.
- Bjørnskov, Christian, Rde, Martin, 2020. Regime types and regime change: a new dataset on democracy, coups, and political institutions. *Rev. Int. Organ.* 15, 531–551. Available at <https://sites.google.com/unav.es/martin-rode/home/data>.
- Buchanan, James, 1990. Socialism is dead but Leviathan lives on. *CIS Occas. Pap.* 30.
- Butts, Kyle, Gardner, John, 2022. did2s: two-stage difference-in-differences. *R J.* 14, 162–173.
- Cheibub, José Antonio, Gandhi, Jennifer, Vreeland, James R., 2010. Democracy and dictatorship revisited. *Publ. Choice* 143, 67–101.
- Coppedge, Michael, Lindberg, Staffan, Skaaning, Svend-Erik, Teorell, Jan, 2016. Measuring high level democratic principles using the V-dem data. *Int. Political Sci. Rev.* 37, 580–593.
- Cruz, Cesi, Keefer, Philip, Scartascini, Carlos, 2021. The Database of Political Institutions 2020. Database and Codebook. the World Bank. Available at <https://publications.iadb.org/en/database-political-institutions-2020-dpi2020> (Accessed April 2021).
- Dreher, Axel, Méon, Pierre-Guillaume, Schneider, Friedrich, 2014. The devil is in the shadow. Do institutions affect income and productivity or only official income and official productivity? *Publ. Choice* 158, 121–141.
- Easterly, William, Fischer, Stanley, 1995. The Soviet economic decline. *World Bank Econ. Rev.* 9, 341–371.
- Elkins, Zachary, Ginsburg, Tom, Melton, James, 2009. *The Endurance of National Constitutions*. Cambridge University Press, Cambridge.
- Encyclopedia.com, 2022. Communism. *Popul. Asp. Of*. Available at: <https://www.encyclopedia.com/social-sciences/encyclopedias-almanacs-transcripts-and-maps/communism-population-aspects> (Accessed April 2022).
- Esenwein, George, 2005. Socialism. In: Horowitz, Maryanne Cline (Ed.), *New Dictionary of the History of Ideas*. Charles Scribner's Sons, New York.
- Estrin, Saul, 1991. Yugoslavia: the case of self-managing market socialism. *J. Econ. Perspect.* 5, 187–194.
- Fagerholm, Andreas, 2016. What is left for the radical left? A comparative examination of the policies of radical left parties in Western Europe before and after 1989. *J. Contemp. Eur. Stud.* 1, 16–40.
- Feenstra, Robert C., Inklaar, Robert, Timmer, Marcel P., 2015. The next generation of the Penn World Table. *Am. Econ. Rev.* 105, 3150–3182.
- Friedland, William H., Rosberg, Carl G., 1964. *Africa: African Socialism*. Stanford University Press, Stanford.
- Foss, Nicolai J., Klein, Peter G., Bjørnskov, Christian, 2019. The context of entrepreneurial judgment: organizations, markets, and institutions. *J. Manag. Stud.* 56, 1197–1213.
- Fukuyama, Francis, 1989. The end of history? *Natl. Interest* 16, 3–18.
- Gabel, Matthew J., Huber, John D., 2000. Putting parties in their place: inferring party left-right ideological positions from party manifestos data. *Am. J. Pol. Sci.* 44, 94–103.
- Gardner, John, 2022. "Two-stage differences in differences". doi:10.48550/arXiv.2207.05943.
- Geloso, Vincent, Pavlik, Jamie Bologna, Bastos, João P., 2024. In: *The forsaken road: Reassessing living standards following the Cuban Revolution and the American embargo*. Paper presented at the annual meetings of the Association of Private Enterprise Education. Las Vegas, pp. 7–9. April.
- Glitz, Albrecht, Meyersson, Erik, 2020. Industrial espionage and productivity. *Am. Econ. Rev.* 110, 1055–1103.
- Grier, Kevin, Maynard, Norman, 2016. The economic consequences of Hugo Chavez: a synthetic control analysis. *J. Econ. Behav. Organ.* 125, 1–21.
- Hall, Joshua C., Lawson, Robert A., 2014. Economic freedom of the world: an accounting of the literature. *Contemp. Econ. Policy* 32, 1–19.
- Hayek, Friedrich A., 1935. *Collectivist Economic Planning*. Routledge, London.
- Hayek, Friedrich A., 1937. Economics and knowledge. *Economica* 4, 33–54, 1937.
- Hayek, Friedrich A., 1945. The use of knowledge in society. *Am. Econ. Rev.* 35, 519–530.
- Hayek, Friedrich A., 1988. *The Fatal Conceit: The Errors of Socialism*. University of Chicago Press, Chicago and London.
- Idahosa, Pable L.E., 2005. Socialism, African. In: Horowitz, Maryanne Cline (Ed.), *New Dictionary of the History of Ideas*. Charles Scribner's Sons, New York.
- Jerven, Morten, 2011. Users and producers of African income: measuring the progress of African economies. *Afr. Aff.* 110, 169–190.
- Katsourides, Yiannos, 2016. *Radical Left Parties in Government: The Cases of SYRIZA and AKEL*. Palgrave Macmillan, London.
- King, J.E., 2003. Non-Marxian socialism. In: Samuels, Warren J., Biddle, Jeff E., Davis, John B. (Eds.), *A Companion to the History of Economic Thought*. Blackwell, Oxford, pp. 184–200.
- Kirzner, Israel, 1997. Entrepreneurial discovery and the competitive market process: an Austrian approach. *J. Econ. Lit.* 35, 60–85.
- Knell, Mark, Rider, Christine, 1992. *Socialist Economies in Transition*. Edward Elgar Publishing, Cheltenham. Available at: <https://econpapers.repec.org/RePEc:elg:eebook:264> (Accessed August 2021).
- Kornai, Janos, 1959. *Overcentralization in Economic Administration*. Oxford University Press, Oxford.
- Kornai, Janos, 1992. *The Socialist System*. Clarendon Press, Oxford.
- Kornai, Janos, Maskin, Eric, Roland, Gerard, 2003. Understanding the soft budget constraint. *J. Econ. Lit.* 41, 1095–1136.
- Kropotkin, Piotr, 1902. *Mutual Aid: A Factor of Evolution*. McClure Phillips & Co., New York. Available at: <http://theanarchistlibrary.org/library/petr-kropotkin-mutual-aid-a-factor-of-evolution> (Accessed July 2021).
- Laffont, Jean-Jacques, Tirole, Jean, 1986. Using cost observation to regulate firms. *J. Polit. Econ.* 94, 614–641.
- Lange, Oscar, 1936. On the economic theory of socialism, part one. *Rev. Econ. Stud.* 4, 53–71.
- Lange, Oscar, 1937. On the economic theory of socialism, part two. *Rev. Econ. Stud.* 4, 123–142.
- Law, David S., Versteeg, Mila, 2013. *Sham constitutions*. *Calif. Law Rev.* 101, 863–952.
- Lerner, Abba P., 1934. Economic theory and socialist economy. *Rev. Econ. Stud.* 2, 51–61.
- Magee, Christopher S.P., Doces, John A., 2015. Reconsidering regime type and growth: lies, dictatorships, and statistics. *Int. Stud. Q.* 59, 223–237.
- Magness, Phillip W., Makovi, Michael, 2023. The mainstreaming of Marx: measuring the effect of the Russian revolution on Karl Marx's influence. *J. Polit. Econ.* 131, 1507–1545.
- Manzano, Dulce, 2007. PhD thesis. Universidad Autónoma de Madrid.
- Martínez, Luis R., 2022. How much should we trust the dictator's GDP growth estimates? *J. Polit. Econ.* 130, 2731–2769.
- Mazzucato, Mariana, 2013. *The Entrepreneurial State: Debunking Public vs. Private Sector Myths*. Anthem Press, London.
- Mboya, Tom, 1963. African socialism. *Transition* 8, 17–19.
- Mises, Ludwig von, 1920. Die Wirtschaftsrechnung im sozialistischen Gemeinwesen. *Arch. Sozialwiss. Sozialpolitik* 47, 86–121.
- Mises, Ludwig von, 1944. *Omnipotent Government: The Rise of the Total State and Total War*. Yale University Press, New Haven.
- Mises, Ludwig von, 1951. *Socialism: An Economic and Sociological Analysis*. Yale University Press, New Haven.
- Mladina, Peter, 2021. The economic performance of socialism. *Appl. Econ. Lett.* 28, 1842–1846.
- Mokyr, Joel, 2016. *A Culture of Growth: Origins of the Modern Economy*. Princeton University Press, Princeton.
- Naughton, Barry, 2017. Is China socialist? *J. Econ. Perspect.* 31, 3–24.
- Niemietz, Kristian, 2021. Left turn ahead. *IEA Curr. Controv.* 81.
- Niemietz, Kristian, 2019. *Socialism: The Failed Idea that Never Dies*. Institute of Economic Affairs, London.
- Nove, Alec, 2008. *The New Palgrave: A Dictionary of Economics*. Macmillan, London.
- Ofer, Gur, 1987. Soviet economic growth: 1928–85. *J. Econ. Lit.* 25, 1767–1833.
- Olson, Mancur, 1996. Big bills left on the sidewalk: why some nations are rich, and others poor. *J. Econ. Perspect.* 10, 3–24.
- Osterloh, Steffen, 2012. Words speak louder than actions: the impact of politics on economic performance. *J. Comp. Econ.* 40, 318–336.
- Phillips, Leigh, Rozworski, Michal, 2019. *The People's Republic of Walmart: How the World's Biggest Corporations are Laying the Foundation for Socialism*. Verso, New York.

- Pouget, Emile, 1908. The Basis of Trade Unionism. T.H. Keell, London. Available at: <https://libcom.org/library/basis-trade-unionism-emile-pouget> (Accessed July 2021).
- Ramiro, Luis, Gomez, Raul, 2016. Radical-left populism during the Great Recession: podemos and its competition with the established radical left. *Polit. Stud. (Oxf)* 65, 108–126.
- Rees, Tim, 2005. Communism. In: Horowitz, Maryanne Cline (Ed.), *New Dictionary of the History of Ideas*. Charles Scribner's Sons, New York.
- Roaf, James, Atoyan, Ruben, Joshi, Bikas, Krogulski, Krzysztof, 2014. 25 Years of Transition: Post-Communist Europe and the IMF. The International Monetary Fund, Washington DC.
- Romer, Paul, 1990. Endogenous technological change. *J. Polit. Econ.* 98, S71–S102.
- Salmon, Felix, 2021. America's continued move toward socialism. *Axios*. June 25. Available at <https://www.axios.com/americas-continued-move-toward-socialism-84a0dda7-4b8d-483a-8c4e-0c2e562c4e67.html> (Accessed September 2021).
- Sassoon, Donald, 2010. Socialism in the twentieth century: an historical reflection. *J. Polit. Ideol.* 5, 17–34.
- Senghor, Léopold Sédar, 1991. *The Collected Poetry*. University of Virginia Press, Charlottesville.
- Shaw, George Bernard, 1889. *Fabian Essays in Socialism*. Walter Scott Ltd., London. Available at: <https://oll.libertyfund.org/title/wilshire-fabian-essays-in-socialism> (Accessed July 2021).
- Šik, Ota, 1968. *Ekonomika a Zájmy (Economy and Interests)*. Nakladatelství Svoboda, Prague.
- Šik, Ota, 1976. *The Third Way*. Wildwood House, London.
- Solow, Robert M., 1956. A contribution to the theory of economic growth. *Q. J. Econ.* 70, 65–94.
- Vanek, Jaroslav, 1970. *General Theory of Labor-Managed Market Economies*. Cornell University Press, Ithaca.
- Voigt, Stefan, 2021. Mind the gap: analyzing the divergence between constitutional text and constitutional reality. *Int. J. Const. Law* 19, 1778–1809.
- Zeckhauser, Richard J., 2006. Investing in the unknown and unknowable. *Capital Soc.* 1, 1–39.
- Åslund, Anders, 1992. *Post-Communist Economic Revolutions: How Big a Bang?* Center for Strategic and International Studies, Washington, DC.