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How populism harms prosperity: Unified populist rule reduces investment, innovation, and productivity

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Abstract

This paper explores the long-term economic consequences of unified populist governments, where populist executives govern alongside legislative majorities. We find that such regimes significantly reduce a country's real per-capita income growth for over a decade before a gradual return to pre-populist economic conditions. They do so through inefficient, off-balance-sheet redistribution using financial repression, which damages financial intermediation and private investment and helps populists expand the size of government while crowding out their ability to invest in infrastructure, basic science, and R&D. We find strong evidence that these populist policies stifle innovation and productivity; the reason is that they precipitate big declines in private investment, R&D spending, researchers per capita, and patent generation. Using autoregressive distributed lag (ARDL) dynamic panel models estimated via system generalized method of moments (GMM), we demonstrate robust causal linkages between populism and these hallmarks of dynamic inefficiency. Furthermore, this paper introduces a novel measure of populism, identifying instances where populists control both the executive and legislative branches.

Keywords Populism \cdot TFP \cdot Economic development \cdot Private investment \cdot Innovation

JEL Classification $~O3\cdot O4\cdot P5$

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1 Introduction

Populists are disruptive. They excoriate liberal democracy's time-honored institutions: independent courts, attorneys general, central banks, and antitrust authorities, for example. Populists also demonize the experts—e.g., economists and judges—who help run these institutions, lionizing the so-called will of the people instead. They chafe against constraints on their power and eschew pluralism and compromise.

No one region or period has a monopoly on populism. Argentina has cycled between elected populists and military dictatorships over its modern history. The same is true of several other Latin American countries, including Peru, Bolivia, and Venezuela. European countries have also flirted with populism since the end of World War II: France's National Front, beginning during the mid-1970 s; Greece's Papandreou, in the 1980 s; Italy's Berlusconi, starting in 1994; and the Netherlands' Fortuyn and Wilders, during the 2000 s, though the latter never won power outright.¹ Asian cases include the Philippines under Marcos, Thailand under Shinawatra, and Sri Lanka, between 2010 and 2014. By contrast, the U.S. largely avoided this predicament—that is, until the presidency of Donald Trump (Albertus and Menaldo 2018; Levitsky and Ziblatt 2018).

There is widespread evidence that economies perform poorly under populism (Absher et al. 2020). While populists often attract votes by vowing to redistribute from a "powerful elite" to the ordinary people, they do not actually reduce pretax and transfer income inequality (e.g., Houle and Kenny 2018; Strobl et al. 2023). Neither do they improve real consumption per capita (Stankov 2020). Funke et al. (2023) find that, after 15 years, per-capita income in countries ruled by populists is 10% lower compared to plausible non-populist counterfactuals. These findings suggest that populist leaders' promises of greater economic equality and improved living standards for the majority are largely empty rhetoric or, worse, cynical lies.

Why? Rather than articulate economic interactions as "win-win" situations, which is the traditional economic perspective (namely, that there are always mutual gains from voluntary exchange), populists are obsessed with the idea that market

¹ Contemporary Europe has seen a wave of populist movements that echo historical patterns, with many countries experiencing the rise of leaders and parties that challenge the political establishment. In Hungary, Viktor Orbán has pursued a populist, nationalist agenda through his Fidesz party since 2010, promoting anti-immigration policies and consolidating power in defiance of European Union (EU) norms. In Poland, the Law and Justice Party (PiS), under the leadership of figures like Jarosław Kaczyński and Prime Minister Mateusz Morawiecki, pursued a similar nationalist agenda and sought to weaken judicial independence. Germany's Alternative for Germany (AfD), founded in 2013, is known for its staunch opposition to immigration and the EU and has become a prominent right-wing populist force at the national, and especially provincial, level. Meanwhile, in France, Marine Le Pen has continued the legacy of the National Front, rebranding it as National Rally and making strong showings in the 2017 and 2022 presidential elections with a platform focused on nationalism and anti-globalism. Spain's Vox party, established in 2013, has gained traction with its right-wing populism, opposing regional separatism and immigration while pushing back against progressive cultural shifts. In the Czech Republic, Andrej Babiš, a billionaire-turned-politician, served as Prime Minister from 2017 to 2021, leading the ANO 2011 party with anti-establishment rhetoric that combined business-friendly policies with populist appeals.

exchanges are characterized by "win–lose" situations. Politically, they see to it that their political supporters enjoy the artificially induced producer surplus generated by their myopic policies in the near term. Populism is, in short, about off-balance sheet redistribution achieved by distortive regulations (see Dornbusch and Edwards 1991; Rode and Revuelta 2015; Funke et al. 2023).

In this paper, we corroborate the idea that populism is economically disappointing, but with an important twist: we focus exclusively on how populist policies destroy individual and firm-level incentives to innovate while crowding out the government's role in providing solutions to market failures that would otherwise enhance dynamic efficiency. Therefore, in considering how populist redistributive policies come at the expense of a bigger pie tomorrow, we focus on its delayed impact on prosperity through its long-run effect on innovation and productivity. We define and measure populism as the unified rule of populists, whereby a populist executive has the support of a populist legislature. We theorize that populism negatively impacts cumulative growth, ultimate levels of income per capita, and consumption by undermining the sources of economic productivity. To do so, we use dynamic panel estimation models via the system generalized method of moments (GMM) framework on a panel dataset that observes 164 countries between 1950 and 2019.²

We find that populism negatively affects total factor productivity (TFP), both substantively and statistically, and therefore depresses the growth rate of real per-capita income. When a populist executive rules alongside a populist majority in the legislature, this reduces a country's growth rate of real per-capita income by 3.7% below its trend, a phenomenon that spans over 12 years before returning to the pre-populist equilibrium. A country with a per-capita income of \$10,000 growing at 2% per year would reach \$12,682 in 30 years without unified populist rule but only \$12,572 with it. Or, put differently, a country with an average growth rate of per-capita income of 2% per year that experiences unified populist rule would take 2.44 more years to double its GDP per head.

We also document why this occurs: populism drives private investment down by 5% (as a share of GDP) below its pre-populism trend and reduces a country's (1) spending on research and development (R&D), (2) its researchers per capita, and (3) patents per capita; indeed, populists reduce the number of patents per 100,000 people by 4.2% over the long run. All of this helps explain why populism strongly reduces TFP.

While our approach draws on the extant literature on the economics of populism, it also differs from it in important ways. The mechanisms linking populism to economic underperformance are largely focused on unsustainable macroeconomics over a short duration. Dornbusch and Edwards (1990, 1991) argue that populists trigger a spectacular boom followed by a painful bust. While pro-cyclical fiscal and monetary policies that feed into the ballooning balance of payments and fiscal deficits

 $^{^2}$ While we have coverage for these many countries during this period for the growth rate of per capita income, for some of the other variables coverage is either more or less expansive, the details of which we will discuss ahead when we introduce these variables in the ensuing empirical analyses.

catalyze growth in the short run, the economy quickly encounters bottlenecks due to an unplanned acceleration in demand for domestic goods and a shortage of foreign exchange. In turn, inflation skyrockets, followed by capital flight and demonetization. Sachs (1989) corroborates this basic story qualitatively for a host of Latin American countries across different eras, as do Funke et al. (2023) quantitatively, using a global panel dataset: populists have higher import tariffs, less financial integration, a higher public debt-to-GDP ratio, and more inflation. These patterns also appear at the subnational level as well.³

Moreover, the consensus that populism is bad for economic growth in the short run is not ironclad. Rodrik (2018) challenges the conventional wisdom that populism is inherently detrimental to economic outcomes. Rodrik, agreeing with the findings in this paper, argues that while populist movements often adopt policiessuch as protectionism, fiscal irresponsibility, or undermining institutions-that are economically harmful in the long run, not all populist policies are necessarily bad economics. Left-wing populism, focused on economic redistribution and social justice, can sometimes align with sound economic policies, especially in contexts of high-income inequality and underdevelopment. Similarly, after investigating the short-term effects of populism in Poland by comparing actual macroeconomic changes in the country with those of a synthetic Poland created using the advanced synthetic control method, Brzezinski and Sałach-Dróżdż (2024) conclude that Polish populism led to an almost 8% increase in GDP per capita between 2016 and 2019, with minimal effects on inflation and labor markets, improved tax revenue collection, neutral impact on budget deficit and government spending, and a significant reduction in income poverty, particularly among children, due to redistributive policies.

To gain traction on these contradictory findings, which focus primarily on macroeconomic channels that impact a country's economic growth in the short run, such as countries' balance of payments, government debt, and inflation, we evaluate how populism affects the sources of long-run economic growth. Namely, its impact on TFP. We also investigate how populism affects the mechanics of innovation, including its impact on private investment, R&D spending, and patenting, over the long run. To the best of our knowledge, ours is the first paper to focus primarily on TFP and the channels by which populism affects productivity and, moreover, one of the few to estimate the type of dynamic models that can convincingly separate short-run effects from long-term ones while also taking causal identification seriously.

³ For example, the election of populist mayors in Italy leads to greater debt default, a larger share of public procurement cost overruns, and a higher forced turnover of top bureaucrats and a sharp decrease in the quality of bureaucrats (Bellodi et al. 2024). Moreover, there is evidence that both civil and political polarization worsen under populist rule (Doerr et al. 2021).

We arrive at our conclusions after estimating dynamic panel (system GMM) models, an approach we undertake after ensuring that our data and estimations satisfy the required assumptions, e.g., that the differences used as instruments for the levels equation are uncorrelated with the error term. In these regressions, all the independent variables are instrumented with their lags in levels and differences.⁴ Confidence in the validity of these instruments is buttressed by the fact that estimations satisfy the normal diagnostics. They are robust to second-order serial correlation; Sargan–Hansen tests of the overidentifying restrictions cannot reject the hypothesis that the instruments are orthogonal to the error term. These dynamic models also allow us to separate short-run from long-run effects. We estimate autoregressive distributed (rational, infinitely distributed) lag models that allow us to calculate for how long unified populist governments veer off their country's pre-populist trends in the size of government, private investment, R&D, researchers per capita, patents per capita, TFP, and economic growth.

Our findings are robust to a host of stress tests. We hold several potentially confounding factors constant and detrend the data. Our results hold if we estimate difference GMM models. They are also robust to relaxing the parameter homogeneity assumption (that panel units have homogenous slope coefficients) and if we experiment with different strategies for addressing any contemporaneous correlation (cross-sectional dependence) between units. They are also robust to a difference-indifferences (DiD) estimation strategy using a staggered adoption framework and an improved doubly robust estimator (IDRE).

Beyond using a dynamic panel approach, we conceptualize and code a new variable that more accurately measures populism across place and time. We expand beyond the data coverage more typical of research on populism, which is often relegated to regions such as Latin America or disparate case studies (Dornbusch and Edwards 1990, 1991; Dalio et al. 2017; Stankov 2018, 2020; Campos and Casas 2021; and Strobl et al. 2023): we include both developed and developing countries over more than 50 years.

⁴ While our analysis employs lagged explanatory variables as instruments within the system GMM framework to address endogeneity, we are aware of the broader concerns regarding the use of lagged variables as instruments in traditional panel data approaches. Bellemare et al. (2017) critically assesses the common practice of using lagged explanatory variables as instruments in fixed effects and random effects models, highlighting potential pitfalls such as weak instrument problems and the risk of inducing endogeneity rather than solving it. They demonstrate that, in many cases, these lagged instruments may be correlated with the error term, particularly in the presence of autocorrelation, leading to biased and inconsistent estimates. Additionally, they argue that lagged instruments can often be weak, providing insufficient variation to effectively instrument the endogenous variables, which undermines the reliability of causal inferences. However, it is important to note that their critique is not specifically directed at the system GMM approach, which was developed to address many of these issues in dynamic panel data contexts. System GMM employs a more sophisticated use of lagged variables, using both lagged levels and lagged differences as instruments, to mitigate the concerns raised by Bellemare et al. However, the system GMM approach recovers consistent estimates only if country-specific effects and time-varying shocks are orthogonal to sufficiently lagged terms of the regressors. Fortunately, we can avail diagnostic tests, which we outline below, to evaluate the orthogonality of the instruments.

2 Situating our paper in the literature

This paper complements findings produced by alternative datasets and econometric strategies. Funke et al. (2023) demonstrate that populist regimes dampen investment in general and they more generally show that GDP growth is depressed in the years following the start of populist rule. We strengthen these findings by reporting that TFP, which is closely related to GDP growth, and some specific forms of investment, especially private investment and R&D spending, are negatively affected by populism.

To be sure, there are alternative ways to obtain causal effects of electing a populist government other than dynamic panel models estimated via system GMM. On the one hand, a regression discontinuity design exploits elections in which a populist candidate won or lost against a non-populist candidate by a small margin. While this approach provides credible identification, it is likely to lack power (see Marx et al. 2022, who only find noisy estimates of the economic effects of electing a populist leader or party when using this method). Synthetic controls, used by Funke et al. (2023), rely on stronger assumptions to yield a causal estimate but benefit from more statistical power as they do not only exploit close elections.

While our approach relies on alternative assumptions and therefore helps triangulate between extant methods, it is also uniquely suited to the peculiar features of the dataset: we identified several countries, such as Venezuela, which have experienced multiple spells of unified populist rule. These repeated spells present a unique challenge, as they might not be independent events but rather part of a broader, continuous populist trajectory within a country. First, system GMM controls for country-fixed effects, which allows us to isolate the impact of unified populist rule from persistent country-specific factors, providing a clearer picture of how such regimes affect economic outcomes. Additionally, because system GMM uses internal instruments derived from lagged variables, this mitigates the concern that the economic conditions that lead to populist rule could also be influenced by past economic performance itself created by previous populist episodes, creating a feedback loop. Finally, by accounting for the dynamic nature of economic outcomes, system GMM can control for the fact that current outcomes (e.g., current GDP growth) are partly determined by past outcomes (e.g., past GDP growth). This is critical when analyzing repeated episodes of populism because it allows the model to separate the effect of past economic conditions from the direct impact of current populist governance. Similarly, the economic effects of a populist regime may persist beyond the regime's tenure, influencing future economic outcomes even after the regime's end. For countries with repeated populist episodes, this persistence may mean that each new episode is influenced by the residual effects of previous ones.

We identify these cycles of populism because we define populism to reflect political reality and do justice to how populists adopt public policies that affect their country's long-term economic development. We conceptualize populism as the unified rule of populists across the executive and legislative branches of government. We then create an original dataset that identifies (1) whether the executive branch is helmed by a populist politician and (2) the percentage of the votes received by populist parties in the legislative elections. This allows us to identify whether a "unified populist government" governs a country during any given country year.⁵ We therefore challenge the conventional view of populist strongmen who rule, unilaterally, as caudillos, with little input, let alone pushback, from other branches of government.

We argue that it is when a populist executive has the support of a populist legislature that they enjoy both the will and ability to pass policies that harm productivity and development. This includes exercising control over fiscal policies, trade policy, the money supply, supervision of the financial system, and competition policy. The unified government also endows populists with the ability to exercise strong influence over nominally independent bureaucracies in general, such as agencies deputized to enforce antitrust laws and central banks.

3 Conceptualizing unified populism

Political populism is widely understood as a mode of political mobilization that emphasizes a fundamental struggle between "the pure people" and "the corrupt elite" (Gidron and Bonikowski 2013; Mudde 2004). Populists frame politics as a cosmic battle between the virtuous masses and a self-serving elite, while appropriating host ideologies—whether nationalism, socialism, or liberalism—depending on a country's historical context and political conditions (Hawkins and Rovira Kaltwasser 2017; Hawkins et al. 2019).⁶ They frequently assert that an elite—characterized by corruption, obstruction, and elite collusion—is responsible for all economic woes and betrays the people's true interests. Populists claim to be the sole, authentic representatives of "the people" or the nation, arguing that only direct, unmediated representation truly serves the silent majority.

⁵ Our binary measure necessarily simplifies the identification process by focusing on whether populist forces simultaneously control both branches of government, which allows us to directly assess the impact of unified populist governance on economic outcomes. We acknowledge that the dichotomous nature of our measure does not capture the nuanced degrees of populism within individual branches of government, however. Conversely, the continuous measure developed by Celico et al. (2024) contributes valuable insights by incorporating detailed information on the vote share, seat share, and degree of populism within both the legislature and the executive. Yet, their approach does not explicitly identify cases where populists control both branches simultaneously, which is central to understanding the potential for significant shifts in governance and policy. While the Celico et al. (2024) measure of populism offers granularity, our binary approach is particularly valuable for investigating the consequences of consolidated populist power, which may have distinct and profound impacts on governance and long-term economic development. In future research, integrating both our binary and their continuous measures could provide a more comprehensive understanding of populism's effects, balancing the need for clear identification of regime types with the advantages of capturing variations in populism's intensity.

⁶ Researchers have also made a distinction between inclusionary and exclusionary populism (Mudde and Rovira Kaltwasser 2013). The former espouses mass welfare programs that include the poor, while the latter prioritizes an internal security posture aimed at protecting established insiders who most benefit from the welfare state from immigrant outsiders.

3.1 An objective definition of populism

We hasten to emphasize that the economic policy outcomes we analyze are not used to define populism. Our definition classifies parties as populist based on whether their programs, elite pronouncements, or other key communications explicitly refer to the conflict between "the people" and "the elites." In doing so, we draw on an established approach in both economics and political science that distinguishes populist rhetoric from the subsequent policy implications (Funke et al. 2023; Hawkins and Rovira Kaltwasser 2017; Rodrik 2018; Rovira Kaltwasser 2018). Therefore, while we theorize that populist governance may lead to reduced capital expenditure, R&D investment, research capacity, and TFP, and empirically explore whether this is indeed the case, we avoid incorporating these potential consequences into our definition of populism itself; nor do we contaminate our measurement of populism by identifying populist episodes based on these or any other potential economic consequences. Moreover, our measure of unified populist rule is strictly an objective political configuration in which both the executive and legislative branches are controlled by populists.

While the political definition of populism emphasizes anti-elite rhetoric, the translation of this rhetoric into policy depends crucially on the structure of government. Policy outcomes are a function not only of which party holds the executive but also of the legislature's composition and whether the executive enjoys the support of that political body. We therefore assume that a unified government, where the same party controls both the executive and legislative branches, is more likely to engender rapid, meaningful, and extreme policy changes. Under such a government, the party in power has a greater ability to pass its preferred policies without the opposition or similar veto points blocking them (Tsebelis 2002). In contrast, a divided government can lead to policy gridlock and a lack of decisive action on economic issues, as opposing parties may have different policy priorities, making it more difficult to pass legislation (Alesina and Rosenthal 1995; Fiorina 1992; Sundqist 1988).

In a presidential system, gridlock—the inability to make policy changes despite demands from either the elite or the masses—is often caused by fixed terms and the interdependence of separately elected legislative and executive branches (Linz 1990). Consequently, legislative productivity tends to be associated with unitary party government (Howell et al. 2000). The extreme case may be Latin America, where divided government is strongly associated with government paralysis and political instability (Jones 1995). In parliamentary systems, a similar situation may arise under different circumstances: first, when there is low ideological agreement among governing partners (Tsebelis 2002), and second, when minority cabinets must negotiate with legislative parties to obtain parliamentary support for their policy agenda (Curini and Zucchini 2011).

We therefore challenge the conventional view of populist strongmen who rule, unilaterally, as *caudillos*, with little input, let alone pushback, from other branches of government. Instead, we emphasize that under a unified populist government, irrespective of whether it governs in a presidential or parliamentary system, there should be fewer veto points impinging on economic populism and both branches of government should be aligned in pursuing their political goals. Following Elgie (2001), we conceptualize a unified government as a situation where the executive enjoys majority legislative support. This definition has several advantages as it allows us to include situations where there are same-party majorities in both two-party and multi-party presidential systems, as well as minority and split-executive governments in parliamentary and semi-presidential systems. It also makes it relatively easy to determine when there is a unified versus divided government: we simply identify whether the executive branch and legislative majority are simultaneously controlled by populists. This alignment enables populist governments to pass their preferred policies—ranging from tax and spending measures, trade and monetary policies, to regulatory and competition frameworks.

3.2 Unified populist rule may also mean bureaucratic control

Unified populist governments are uniquely positioned to shape not just legislative outcomes but also the administrative machinery that implements policy. Although bureaucracies are typically designed to operate with a degree of independence from political pressures, evidence suggests that populist regimes can, and often do, replace high-level bureaucrats or install loyalists in strategic agencies (Bellodi et al. 2024). In line with this, Peters and Pierre (2020) argue that populism is often accompanied by a decline in the quality of government expertise, as leaders favor politically loyal individuals over seasoned professionals. Similarly, Bauer and Becker (2020) document historical instances where populist regimes have systematically purged both high-level bureaucrats and lower-tier personnel to align the public administration with their ideological priorities. For example, after securing a legislative supermajority, Hungary's Fidesz government replaced many independent regulatory officials, demonstrating that unified control can indeed diminish bureaucratic checks on policy implementation (Aslett and Magistro 2023; Magyar 2016).

While we acknowledge that bureaucracies may sometimes resist or slow policy changes—especially in well-institutionalized democracies—unified populist regimes often mitigate such resistance by using legislative oversight committees and ministerial appointments to circumvent entrenched bureaucratic expertise. In doing so, they further politicize economic policy and ensure that their populist preferences are more fully reflected in both the law and its implementation.

4 Populism and productivity, a framework

This section outlines how unified populist governments can undermine *dynamic efficiency* by systematically distorting financial systems, investment decisions, the allocation of capital, and the development or acquisition of technology. We set aside how populist policies affect static efficiency by engendering short-run

macroeconomic fallouts after unsustainable booms, including hyperinflation, balance-of-payments crises, and sovereign debt crises.⁷ We instead explore how by conducting off-balance-sheet redistribution in ways that harm financial intermediation, private investment, R&D, and innovation, populist governments can undercut long-run productivity.

4.1 The political economy of populism

Populist governments indulge in distributive policies that benefit their political allies. They tend to champion policies, such as rapid fiscal expansion or price controls, aimed at delivering immediate benefits to their political supporters (Dornbusch and Edwards 1991). If a leader's strength depends on mobilizing an inchoate group through a mass movement and cultivating their loyalty, distortionary redistribution via market manipulation or in-kind transfers may be politically effective because it helps solve a commitment problem (Acemoglu and Robinson 2001). Generating and distributing rents inefficiently through farm price supports, tariffs, and wage regulations helps populists *commit to future support* since reversing the policy would alienate a large constituency. Even if it wastes resources, a targeted, excludable benefit or state job compels political supporters to remain loyal because it can be withdrawn (see Robinson and Verdier 2013).

4.2 Populist policies that undermine dynamic efficiency

A central channel through which populist governments consolidate support at the expense of long-run growth is through financial repression, an effective device for engaging in off-balance sheet redistribution. By imposing top-down controls on banks, credit, and foreign exchange markets, populist regimes can engineer rents and redistribute wealth to loyal constituencies while simultaneously restricting or raising the cost of credit for less politically favored firms (Calomiris and Haber 2014; Menaldo 2016a). With control over both the executive and legislative branches, these governments face fewer institutional checks, which enables them to limit the number of bank charters, impose onerous reserve requirements, and restrict branch expansions. Such measures render credit scarcer and more expensive for entrepreneurial firms, even as politically connected banks benefit from artificially higher interest spreads.

In addition, populists often channel subsidized credit to cronies through staterun development banks or by imposing ceilings on interest rates for preferential loans, effectively granting politically connected firms access to credit at negative real interest rates (Albertus and Menaldo 2018; Calomiris and Haber 2014). While these measures bolster short-run patronage benefits, they simultaneously crowd

⁷ For an extended discussion of macroeconomic mismanagement under populism and its attendant crises see Acemoglu et al. (2013); Dornbusch and Edwards (1991); and Kaufman and Stallings (1991).

out lending for firms that depend on innovation-driven investments. The result is a reduction in overall private investment and a discouragement of technological upgrading. Moreover, to finance government deficits without resorting to progressive taxation, populists may force commercial banks to hold government debt at below-market rates—effectively imposing a hidden tax on savers (Menaldo 2016b)—thereby masking underlying fiscal weaknesses. Although such policies can temporarily maintain the appearance of stability by controlling inflation or stabilizing currency values, they conceal deteriorating economic fundamentals that eventually undermine investor confidence and deter the long-term, capital-intensive investments necessary for technological progress.

Extant research highlights a strong relationship between populism and financial repression, with adverse consequences for productivity. As Rajan and Zingales (1998) argue, higher transaction and opportunity costs resulting from financial repression reduce the incentives for firms and households to invest in capital and R&D, which are critical for long-run productivity growth. For example, unorganized farmers may find it difficult to finance routine business operations or invest in improvements such as irrigation and seeding (Menaldo 2016c). Similarly, small and medium-sized enterprises, starved of affordable credit, may either exit the market prematurely or be deterred from entering it altogether. In contrast, improved access to low-cost capital is essential for entrepreneurs to finance product and process innovations, develop new supply chains, and achieve economies of scale (see Banerjee et al. 2013).

Financial repression also incentivizes excessive risk-taking that further undermines productivity. On the one hand, savers who face negative real interest rates may be driven to engage in speculative investments—such as overinvesting in real estate or cryptocurrencies—to earn higher yields, rather than investing in productive assets or innovative processes. On the other hand, households and businesses that receive subsidized credit might make less judicious investment decisions or increase consumption at the expense of savings. Moreover, when populists selectively forgive non-performing loans for their allies, this exacerbates moral hazard and leads to even more inefficient allocation of capital (Calomiris and Haber 2014).

Similarly, populists often damage securities and insurance markets by weakening property rights, undermining impartial contract enforcement, and tolerating lax corporate governance. These practices disrupt arm's-length financing mechanisms, hampering capital allocation toward innovative ventures (Hoffman et al. 2007). It may particularly reduce the attractiveness of private equity or venture capital, which are key for financing innovation in many economies.

4.3 Other channels undermining innovation

Beyond financial repression and similar distortions to financial intermediation, populists pursue several other economic policies that reduce dynamic efficiency by harming entrepreneurship and investments in capital and technology that promote innovation. Populists usually finance bloated governments, potentially crowding out private investment without providing offsetting public investments in infrastructure, basic science, and education. Moreover, by distorting their R&D spending, hiring practices and intellectual property (IP) strategy, populist policies discourage firms from engaging in technological development and acquisition. Finally, the nationalization of key industries and the subsequent promotion of state-owned enterprises (SOEs) create environments where soft budget constraints and reliance on government bailouts weaken the drive to cut costs or invest in innovation (Davis and Keiding 2002). Moreover, the dominance of SOEs, combined with weakened enforcement of IP rights, can further discourage private entrepreneurship and technological progress (Yan 2020).

5 Testing the framework

Argentina offers a vivid example of how unified populist rule can systematically erode long-term productivity, well beyond the usual concerns about hyperinflation or sovereign default. Historically, Peronist governments that controlled both the executive and legislative branches were able to replace Supreme Court justices, override bureaucratic checks and balances, and pursue far-reaching policies that favored immediate political gains over the development of a robust productive sector. Frequent recourse to financial repression starved innovative firms of capital while sweeping nationalization campaigns and heavy-handed interventions in private markets undercut investors' confidence. These actions not only engendered macroeconomic volatility but also discouraged industrial upgrading, crippled R&D, enervated patenting, and harmed Argentina's long-run technological progress. In the Appendix (Section A), we provide a detailed case study that shows how such unified populist rule reshaped Argentina's institutions and policies to undermine these drivers of dynamic efficiency. In the rest of the paper, we test our framework in a more systematic manner using an original panel dataset.

5.1 Measuring key variables

To evaluate the cross-country and time-series relationship between populism and TFP, economic growth, private investment, and a host of other indicators of dynamic economic efficiency, we construct a panel dataset that includes almost 200 countries observed from 1950 to 2019.⁸ Before outlining our outcome variables of interest, we first discuss our original operationalization of populism, which seeks to capture unified rule by populists in the executive and legislative branches validly and reliably.

We conceptualize populism as the unified rule of populists across the executive and legislative branches of government. To identify whether a given country operates under unified populist rule during a given year, we first code separate measures of executive and legislative populism. We proceed in a few steps. First, we draw on the Votes for Populists (VFP) Dataset and identify the vote share of populist parties

⁸ Data on some dependent variables is missing for a few countries. For example, we do not observe TFP Growth for Albania, Belize, Cambodia, Georgia, Haiti, Macedonia, and Pakistan.

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	Begin year	End year		Begin year	End year
Argentina	1951	1954	Haiti	1995	1995
Argentina	1973	1975	Haiti	2001	2004
Argentina	2011	2012	Hungary	2010	2019
Bulgaria	2009	2012	Italy	2018	2019
Belize	1979	1983	Sri Lanka	2010	2014
Belize	1989	1992	Mexico	1950	1993
Belize	1998	2007	Nicaragua	1984	1989
Bolivia	1956	1964	Nicaragua	2011	2019
Bolivia	1993	1996	Peru	1980	1989
Bolivia	2005	2019	Peru	1995	2015
Brazil	1950	1953	Philippines	1957	1960
Brazil	1989	1989	Philippines	1969	1986
Cuba	1954	1958	Puerto Rico	1950	1963
Dominican Republic	1962	1963	Serbia	2016	2019
Dominican Republic	1978	1985	Slovakia	2006	2009
Dominican Republic	1996	2019	Thailand	2005	2005
Ecuador	2007	2008	Turkey	2011	2019
Ecuador	2013	2016	Venezuela	1958	1962
Georgia	1991	1991	Venezuela	1983	1987
Honduras	2005	2009	Venezuela	2005	2009
Croatia	1992	1999			

Table 1	Unified	populist	governments.	1950-	-2019
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Notes and Sources: see the Appendix, Section B

in a country's legislature (Grzymala-Busse and McFaul 2020). It contains information on the electoral performance of populist parties in Europe, Latin America, and Asia from 1950 to 2019.⁹ Parties are coded as populist if their programs, elite pronouncements, or citations explicitly refer to claims about corrupt elites, and claims to represent the people, rather than narrow interest groups. Second, drawing on these same sources, we also code a dummy variable that identifies whether the president or prime minister (in presidential and parliamentary systems, respectively) is populist or not. Third, we consult a host of primary and secondary sources for additional verification.

The result is an original dataset that identifies (1) whether the executive branch is helmed by a populist politician and (2) the percentage of the votes received by populist parties in legislative elections. This allows us to identify whether a "unified populist government" rules a country during any given country year; we create a dummy variable that takes value 1 if the executive is helmed by a populist politician

⁹ The original dataset contained some inconsistencies and errors around both populist vote shares and the classification of parliamentary and presidential systems. Section B of the appendix contains detailed information on why and how we corrected these problems.

and if populist parties received 50% or more of the vote in the legislature. Table 1 reports the country-years coded as under unified populist rule.

There are several benefits to this way of measuring populism. Besides improved conceptual validity and reliability, our populism measure has extensive coverage over time across both developing and developed countries. Other measures either rely on a different conceptualization of populism and have shorter time frames or fewer countries. Dalio et al. (2017) created an index of the share of votes received by populist/anti-establishment parties or candidates in national elections across 10 countries starting in 1900. Stankov (2020) focused on populist executives/cabinets and relied on data from Döring and Manow (2019) covering 33 countries. Sáenz de Viteri and Bjørnskov (2018) developed a populism indicator for 42 Latin American and Caribbean countries between 1970 and 2014 using US and British newspaper archives. Funke et al. (2023) digitized a large amount of academic books, chapters, and articles to classify almost 1500 leaders as populist for over 100 years and 60 countries.

There are also some drawbacks to measuring populism in this manner. Our current measure doesn't account for cases in which the percentage of the vote share for populist parties in the legislature may be below 50%, but the number of populist seats may be above 50% due to the asymmetric allocations of votes to seats in some proportional representation systems. Furthermore, it doesn't account for cases in which the percentage vote for populist parties is above 50%, but this vote share may include populist parties that are not represented in the cabinet and that do not support the government in parliament. Moreover, in a parliamentary system, if there is a coalition cabinet and the prime minister's party does not have a majority of seats in the legislature, if the percentage of votes for populist parties in general is above 50%, it would still be coded as a populist. Finally, our definition of populism is quite rigid and coding conventions are relatively conservative, potentially omitting veritable examples of unified populist rule.

Fortunately, we address those drawbacks by coding an expanded, alternative version of the unified populist rule variable. First, it requires that a populist prime minister's own party, rather than a multi-party coalition, hold an absolute majority in parliamentary systems. Second, we also classify a country-year as populist if, even though populist parties collectively received less than 50% of the popular vote, they still ended up with more than 50% of the seats—for instance, due to disproportionate seat allocations under some electoral systems. Third, it excludes cases in which the percentage of the vote for populist parties was above 50%, but some of that share went to populist parties that were not represented in the cabinet and did not support the government in parliament. Fourth, we address missing data by scouring sources on political movements, political parties, and elections (see Appendix, Section B).

This includes progressive movements and authoritarian regimes that espouse populist values in constitutions or propaganda, including those that deploy political rhetoric that speaks to socio-economic inequalities, post-colonial legacies, and identity politics. It also includes nationalistic appeals to sovereignty, opposition to colonialism and imperialism, and anti-elite sentiments to rally support among marginalized populations. In keeping with our original version of unified populist rule, however, we looked for evidence that executives and legislative political parties behave like populists in general: they promise simple solutions to complex issues, demonizing experts and elites, and leverage corruption scandals or delegitimize state institutions to undermine traditional political structures.

As we show in the Appendix, Section B, this broader strategy identifies several populist-led governments omitted by VFP, especially in regions, such as Sub-Saharan Africa, that have received little attention from the literature on populism. Some of these populist episodes occurred in Algeria, Ethiopia, Indonesia, Senegal, and South Africa.

Of course, there are also some drawbacks to measuring populism in this alternative manner; basically, this alternative version of unified populist rule may introduce noise and/or bias. First, it requires more in-depth knowledge of specific elections, both for the executive and legislative branches. Second, it also means understanding how different systems for allocating seats to votes work across place and time. Third, we run the risk of overcounting episodes of unified populism in contexts where populist rhetoric is ambiguous. Nonetheless, our main findings remain robust when substituting this alternative measure for our original one. Further ahead we discuss the results of this experiment, which are reported in Appendix, Section G.

For now, we relegate attention to 41 populist episodes of populism captured by our main measure of unified populist rule (see Table 1). This corresponds to 303 populist country years out of a total of 12,889 (between 1950 and 2019). Meanwhile, there are 436 country years of populist executives who head a divided government and do not simultaneously enjoy a populist majority in the legislature. The average duration of a unified populist spell is 6.6 years, and the median duration is 4, with a standard deviation of 7.9 years.¹⁰

6 Measuring other key variables

Our outcome variables of interest include the growth rate of TFP, the growth rate of real per-capita income, government spending (% GDP), public investment (% GDP), private investment (% GDP), R&D spending (% GDP), the number of researchers per capita, and patent applications per capita. The summary statistics for each of these dependent variables, including their means, medians, and standard deviations, as well as the results of Fisher-type panel unit root tests for unbalanced panels with a linear trend and one lagged term, are reported in Table 2. We provide more details about these variables in the notes that accompany that table; Table 2 also contains summary statistics for the control variables, which we discuss below.

We include several additional variables and their instruments in some of the analyses. First, we add log(real per-capita income). This addresses the fact that poor countries may be more susceptible to populists and may also have higher growth rates than richer countries as they converge with the latter over time. Second, we control for Trade Openness. This follows Frankel and Romer (1999) and Alcalá and

¹⁰ Our main empirical findings remain qualitatively similar when we (1) use the alternative expanded version of unified populist rule instead of the main measure, and (2) treat any missing or unclear cases in the Votes for Populists dataset (especially outside its core regions) as missing. See Appendix, Section G.

Variable	Mean	Median	Std. Dev	Coverage	Unit root test (p value)
Tfp growth (%)	- 0.12%	0.00%	5.40%	6176	< 0.001
Growth of per-capita GDP (%)	1.90%	2.30%	6.30%	9170	< 0.001
Gov't consumption (% GDP)	17.90%	17.40%	7.00%	9324	< 0.001
Public investment (% GDP)	6.31%	5.80%	3.11%	8245	< 0.001
Private investment (% GDP)	17.40%	16.85%	9.73%	8245	< 0.001
R&d spending (% gdp)	1.012	0.67	0.967	1688	0.767
Researchers (per million people)	2236.42	1699.50	1942.44	1278	0.003
Patent Applications (per million people)	280.2	72.5	542.1	3090	< 0.001
Log(per-capita income)	8.7	8.65	1.41	9324	-
Trade openness	66.20%	54.30%	41.10%	9324	-
Institutional quality	4.1	4.25	2	9324	-
Income Gini coefficient	38.2	38	7.5	4220	-
Fuel depletion (% GNI)	3.41%	0.80%	6.99%	3880	-
Socialist/communist government	0.037	0	0.189	9324	-

Table 2 Summary statistics and panel unit root tests for variables

The coverage for each variable corresponds to the *n* associated with the regression it is included in with the most observations. We calculate the growth rate of TFP using a TFP index expressed at the current purchasing power parity (PPP) relative to the U.S. It is from the Penn World Tables, 10.0 (Feenstra et al. 2015). The logarithmic growth rate of real per-capita income (in 2005 prices) is also adjusted for PPP. Government size is operationalized as government consumption at current national prices (adjusted for PPP) as % GDP, which is also from the Penn World Tables. Public investment is from the IMF Investment and Capital Stock Dataset 2021. Private investment is also from the IMF Investment and Capital Stock Dataset 2021. R&D spending (% GDP) is from the UNESCO Institute for Statistics (2022). Researchers per capita is from the same source. Patent applications per one million people is from the WBDI. Log(real per-capita income) is from the Penn World Tables. Trade Openness (imports + exports as % GDP), also from the Penn World Tables. Institutional Quality, from the V-Dem dataset (Coppedge et al. 2021), is coded from 0 to 9, with higher values signifying "better institutions". The Income Gini Coefficient is from the World Bank (2022)'s World Development Indicators (WBDI). Fuel Depletion (% GNI) is from the WBDI. Socialist/Communist Ideology is from the V-Dem dataset (Coppedge et al. 2021). Unit root tests are Fisher-type tests or panels with a linear trend and 1 lag. A p value < 0.05implies we reject the unit root for that series. We apply the inverse hyperbolic sine transformation to our researchers and patent variables because both have high kurtosis, and we wish to make the coefficients robust to outliers and extreme values (see Burbidge et al. 1988; Wooldridge 2015: 172)

Ciccone (2004), who find that greater openness to trade drives higher productivity; it may also be the case that countries less open to trade may be able to "afford" populists who espouse nationalist policies.¹¹ Third, we control for Institutional Quality.¹²

¹¹ Trade protectionism and restrictions on foreign direct investment (FDI) isolate domestic firms from international competition and technological spillovers, thereby reducing incentives to adopt modern machinery and processes (Romer 1993). Later ahead, we also experiment with controlling for the FDI stock.

¹² This measure captures the degree to which a country adheres to liberal principles, there are legislative and judicial constraints on the executive, effective Rule of Law, access to justice, and transparent law enforcement.

Several authors argue that countries with weak institutions that do not constrain politicians, nor effectively enforce property rights, suffer from lower productivity (see Acemoglu 2009); moreover, it is likely that populists may become entrenched in weak institutional environments (Acemoglu et al. 2013).

In some models, we also include additional controls. This extra set includes income inequality, measured as the income Gini coefficient; researchers such as Sachs (1989) and Acemoglu et al. (2013) theorize that highly unequal societies are more likely to elect populists to office. It also includes economic reliance on oil, measured as fuel depletion (% GNI), as oil wealth may be correlated with both populism and lower economic growth (see Menaldo 2016a). Finally, it includes a dummy variable that identifies whether the government subscribes to socialism or communism to address the fact that our measure of populism could be picking up the effects of extreme leftwing ideology rather than populism as such.

7 Econometric strategy

Consider that a country's economy may be subject to strong inertia because the behavior of households, firms, and investors may be quite sticky. Therefore, outcomes such as TFP, private investment, and patenting should be strongly autoregressive. Moreover, it may take several periods for a country's economy to fully adjust to policy changes. If populism takes time to inflict macro- and microeconomic damage, and adverse consequences only arise and/or persist after populists leave office, an arbitrary snapshot at any given moment in time may not capture the process implied by our theoretical framework. Namely, it may fail to detect a deterioration in workers' productivity or reduction in efficiency-enhancing capital if that damage is delayed and/or potentially spread out over several periods.

Therefore, in what follows, we estimate a series of dynamic panel models known as autoregressive distributed lag models (ARDL). These are rational, infinitely distributed lag regressions that allow us to be agnostic about the lag structure (unlike a finitely distributed lag approach) and nonetheless calculate long run effects (see DeBoef and Keele 2008; Wooldridge 2015). Basically, an ARDL maps two time series' long run trajectories and represents how one variable can knock the other off its path, as well as how long it takes for the latter to return to equilibrium.

An ARDL approach allows us to ascertain several facts about the dynamic relationship between populism and a host of outcomes associated with innovation and productivity. First, we can capture the long run impact made by a shift towards populism on our outcomes of interest. Second, we can estimate how long it takes for this full effect to register before these outcomes return to their pre-populist trajectories. Third, we can estimate the impact made by populism on these outcomes during any interval in this window.

Let us formally consider the relationship between populism and the growth rate of TFP where an ARDL process is expressed as:

$$\mathbf{Y}_{it} = \mathbf{Y}_{t-1\rho} + \mathbf{X}_{it}\boldsymbol{\beta}_1 + \dots + \mathbf{X}_{it-k}\boldsymbol{\beta}_l + \mathbf{u}_i \tag{1}$$

The right-hand side of the expression equals:

$$X_{it}\beta_{1} + (\rho\beta_{1} + \beta_{2})X_{it-1} + (\rho\beta_{1} + \beta_{2})X_{it-2} + (\rho\beta_{1} + \beta_{2})X_{it-k}u_{it}$$
(2)

To obtain the total, long-run effect of a change in populism on the growth rate of TFP, we calculate $(\beta_1 + \beta_2)/(1-\rho_0)$ and obtain the standard errors via the delta method. To obtain how long it takes for this cumulative effect to fully register, we calculate $\beta_2/(\beta_1 + \beta_2) + (\rho_0)/(1-\rho_0)$ and also calculate the standard errors via the delta method. Finally, to obtain the coefficient for any one of the lagged populism terms, X_{it-h} , we can calculate $\rho^{h-l}(\rho\beta_1 + \beta_2)$.¹³

7.1 System GMM dynamic panel approach

A naive ARDL modeling approach estimated via ordinary least squares (OLS), as depicted in Eq. (1), may introduce three important complications, however. First, reverse causation running from the dependent variable to populism may confound the results. Second, omitted variable bias may confound the results. Third, because these are dynamic models that include a lagged dependent variable (LDV), Nickell Bias may be induced once unit fixed effects are accounted for: the variable demeaning process across the units may create an artificial correlation between the LDVs, the regressors, and the error term (see Roodman 2009).

We thus turn to an instrumental variables (IV) approach specialized to dynamic panel models. Specifically, rather than estimate the regression using OLS, we apply the system GMM strategy to Eq. (1).¹⁴ It simultaneously addresses the problems outlined above, is well suited to the ARDL framework, and, if its assumptions are satisfied, provides several advantages to alternative dynamic panel approaches. Below, we outline those advantages and then discuss important tradeoffs; in the Appendix (Section C), we go into greater technical details.

System GMM addresses time-invariant omitted variable bias by first-differencing the variables, therefore expunging country-specific unobserved factors that may jointly determine both a country's propensity for populism and subpar innovation. For example, a country's deep history or geography or culture.

Additionally, it allows us to add variables to most of the regressions that capture sources of time-varying heterogeneity that, if omitted from the equation, may introduce bias. Moreover, because we estimate our regression using the system GMM approach we also instrument our key independent variable and controls with their available lags in levels and differences, which allows us to

¹³ For a proof behind these calculations, see Wooldridge (2015): 573. For thorough explanation and several examples see DeBoef and Keele (2008).

¹⁴ The main results are robust to using a two-way fixed effects panel approach estimated via OLS, however.

capture their exogenous variation. This limits the possibility that post-treatment bias afflicts the results.¹⁵

While we realize no researcher can identify an exhaustive set of control variables that fully eliminates omitted variable bias, we lean on the system GMM approach to further address the potential for endogeneity. First, the LDV is instrumented with available lags in levels to ensure they are rendered uncorrelated with the error term (therefore addressing Nickell Bias). As we noted above, we also instrument all our controls, which we assume may be potentially endogenous, with some of their lags, also in levels.¹⁶ We also do the same for our measure of unified populist rule. Finally, the original, undifferenced equation is added to the system of equations so that the potentially endogenous variables in levels (all our independent variables) are also instrumented with lags of their differences. Because the instrumental variables equation is overidentified, we can perform tests of the validity of the remaining instruments if we assume a given instrument is valid.

Our system GMM approach provides several advantages over alternative estimation strategies. Regression discontinuity designs (RDD) are ideal for cases where populists win or lose narrowly, but they are underpowered for analyzing repeated populist spells or broad cross-national settings, as seen in our dataset (164 countries, 1950–2019). Furthermore, Marx et al. (2022) found that RDD estimates of populism's economic effects can be imprecise in broad samples, reinforcing the need for complementary approaches. Synthetic control methods (SCM) are well suited to single populist onsets, but their flexibility diminishes when applied to multiple populist transitions across time, which are frequent in our dataset (see Table 1). Additionally, SCM may struggle to find valid synthetic comparisons in situations where a country has experiences with repeated populist rule. Conversely, our system GMM/ARDL approach is particularly suited to repeated treatments, dynamic feedback effects, and large-N panel data. It allows us to address time-invariant heterogeneity, dynamic persistence, and endogeneity in ways that RDD and SCM do not.

At the same time, we acknowledge that the ARDL approach and system GMM framework have weaknesses. First, there are instrument proliferation and weak instrument concerns. System GMM relies on internal instruments, but overfitting can introduce bias. We mitigate this issue by limiting the number of lags used as instruments and employing the continuously updating estimator to refine standard errors (see Appendix, Section C). Second, our approach assumes that the economic effects of populism are similar across countries, whereas design-based approaches (e.g., RDD or SCM) may capture heterogeneous effects in specific

¹⁵ Because we instrument our control variables in this manner, we elide the problems associated with the "bad control problem": we are not adding variables to the equation that have post-treatment values closely correlated with TFP growth or our other dependent variables.

¹⁶ We take a conservative tack and assume that each independent variable introduced in the regressions that follow, which include versions of the variables in both t and t-1, for unified populist rule and the controls, is potentially endogenous; each is instrumented accordingly.

cases.¹⁷ Third, while our models pass overidentification tests, and we check for stationarity and cointegration, dynamic panel models may still be sensitive to specification choices, particularly in how lag structures are determined. Therefore, we also ensure that our main findings are robust to a difference-in-differences (DiD) approach. Specifically, we obtain materially similar results to those obtained via the system GMM approach after using a staggered adoption DiD strategy using an improved doubly robust estimator (IDRE) with the not-yet-treated observations as the comparison group. In Appendix, Section D, we explain this approach and report the results.

8 Empirical results for TFP and economic growth

In this section, we discuss the results reported in Table 3 for a series of system GMM models. We proceed stepwise, moving from the simplest to the most complex specification. While the dependent variable across Models 1 through 5 (columns 1-5) is the growth rate of TFP, the dependent variable in Model 6 (column 6) is the growth rate of per-capita income.

8.1 The effect of unified populist rule on TFP growth

Table 3, Model 1 represents Eq. (1). As this is the simplest, baseline regression, we exclude any control variables and do not yet detrend the data. The total long-run effect (TLRE) engendered by a switch to unified populist rule (a populist president who enjoys a majority of legislative support in the parliament) on the growth rate of TFP is to reduce it by 0.95% (*p* value <0.001).¹⁸ It takes roughly 8 years for this cumulative negative effect to fully materialize and, thus, for TFP growth to return to its pre-populist trajectory. Importantly, the chi-squared statistic obtained from a Sargan–Hansen test of the over-identifying restrictions is 12.488 (*p* value =0.488). We thus cannot reject the joint null hypothesis that the instruments are valid.

We note, however, that our panel design, with only 235 observations of unified populist rule out of 6176 total, can be underpowered (see Roodman 2009). Since we find a significant negative effect, this might raise the possibility of type M errors (exaggerated magnitudes) or even type S errors (wrong sign). Moreover, the difference equation in the system GMM approach might not capture enough within-unit transitions to precisely estimate moderate effect sizes (Pesaran et al. 1999). Despite these power limitations, a system GMM strategy for estimating ARDL models

¹⁷ System GMM typically recovers average partial effects, while actual effects could vary across countries (see Chaisemartin and D'Haultfœuille 2023 regarding potential biases if treatment effects differ systematically by time or region).

¹⁸ The results are robust to instead measuring TFP in real, exchange rate terms (2005 prices).

remains crucial. It allows us to address both Nickell bias and omitted variable bias. So, while it has higher variance (and thus lower power), simpler OLS/fixed-effects methods risk greater bias if lagged dependent variables or regressors are endogenously determined (Blundell and Bond 1998). We therefore ran a power analysis that corresponds to a simpler, pooled model with a greater number of observations that foregoes any first-differencing or instrumenting, which reduces variance. The results, reported in Appendix, Section E, confirm that this regression is relatively high-powered: a 93% detection rate suggests a high likelihood of detecting a true effect of 1.5%, well above the conventional 80% power threshold.

In Table 3, Model 2 (column 2), we detrend the data, but do not yet include any controls. The TLRE engendered by a switch to unified populist rule on the growth rate of TFP strengthens to -1% (*p* value <0.001). It now takes roughly 16 years for this cumulative negative effect to fully materialize. The chi-squared statistic obtained from a Sargan–Hansen test of the over-identifying restrictions is now 8.303 (*p* value =0.599); we again cannot reject the joint null hypothesis that the instruments are valid.

Table 3, Model 3 (column 3) now includes the three basic control variables outlined earlier: log(per-capita income), Trade Openness, and Institutional Quality. Each is entered into the regression in both *t* and *t*-1, per the requirements of the ARDL approach. Unsurprisingly, the substantive and statistical significance of the TLRE associated with a switch to unified populist rule on the growth rate of TFP is now somewhat weaker.¹⁹ The chi-squared statistic obtained from a Sargan–Hansen test of the over-identifying restrictions is 69.455 (*p* value =0.125); we cannot reject the joint null hypothesis that the instruments are valid. Appendix, Section F, Fig. A4 graphs the TLRE coefficients and 95% confidence intervals for unified populist rule and the control variables included in column 3.

We now consider whether our results are robust to how we measure unified populist rule. First, we experiment with a *more conservatively coded* version of this variable: rather than inferring that the cases that the VFP dataset codes as missing are not populist, we drop the missing observations from the regression. Second, we experiment with a *more liberally coded* version of unified populist rule that not only addresses missing observations but relaxes our relatively rigid definition of populism to capture a wider swath of populist episodes. In the "5.1" section further above, we described how this alternative version of unified populist rule differs from our original measure (see also Appendix, Section B).

Appendix Section G reports what happens when we use these alternative versions of Unified Populist Rule under the auspices of the ARDL framework. We estimate identical specifications to the one reported in Table 3, column 3, except that we vary

¹⁹ There is also evidence of conditional convergence: the TLRE of increasing per-capita income by 1% is to reduce the growth rate of TFP by .40% (see Acemoglu 2009).

the measure of unified populist rule. Overall, we obtain LRTEs with *larger* negative effects, albeit estimated with greater variance (see Fig. A5). For the more conservatively coded version of unified populist rule, this means a TLRE point estimate of -3.62 percentage points with a 95% confidence interval between -6.76 and -0.48; for the more liberally coded version, this means a point estimate of -1.37 percentage points, with a 95% confidence interval between -2.24 and -0.51. Because the results obtained using these alternative versions of unified populist rule seem to bias in our favor—they make it more likely to find a negative effect of unified populist rule on our outcomes of interest—we return to using the original version of unified populist rule and continue experimenting with including different control variables.

In addition to including log(per-capita income), Trade Openness, and Institutional Quality, Table 3, Model 4 (column 4) adds income inequality, measured as the income Gini coefficient, economic reliance on oil, measured as fuel depletion (% GNI), and whether the government is socialist or communist. Each is entered into the regression in both t and t-1, per the requirements of the ARDL approach. The main results (the TLRE of unified populist rule) are considerably strengthened in both substantive and statistical terms. The chi-squared statistic obtained from a Sargan–Hansen test of the over-identifying restrictions is 37.451 (p value = 0.747); we cannot reject the joint null hypothesis that the instruments are valid. Appendix, Section H, Fig. A6 graphs the TLRE coefficients and 95% confidence intervals for unified populist rule and the control variables included in column 4.

Table 3, Model 5 (column 5) now excludes the basic set of controls (log(per-capita income), Trade Openness, and Institutional Quality), and includes only the additional ones (the income Gini coefficient, fuel depletion (% GNI), and whether the government is socialist or communist). The main results are materially unchanged from column 4, as is the p value associated with the Sargan–Hansen test. However, because (1) including these extra control variables biases in our favor, as it strengthens our main finding, and (2) their coverage is very limited, therefore reducing our observations sixfold (compare the n associated with Model 4 versus Models 5 and 6), we drop them from the remaining regressions. Instead, henceforth, we only include the basic set of control variables. Appendix, Section I, Fig. A7 graphs the TLRE coefficients and 95% confidence intervals for unified populist rule and the control variables included in column 5.

We note that we also experimented with several other specifications not reported in Table 3 and that our main findings are materially unchanged. Unified populist rule has a substantive and statistically significant negative effect on TFP Growth. We discuss them below.

In the Appendix (Section J), we report the results of a regression with two additional control variables. First, the stock of FDI, which may impact TFP via investment quality, spillovers from multinational firms, and access to foreign technology (see Romer 1993). Second, along similar logic, we include exchange rate volatility as it impacts macroeconomic stability factors that can influence investment in technology and capital equipment (see, for example, Zhu et al. (2025)). Unified populist rule is still substantively and significantly negative.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent vari- able	TFP growt	h TFP growt	h TFP grow	th TFP growt	h TFP growt	h Growth PC GDP
Populism, TLRE	- 0.951***	- 1.002***	- 0.634**	- 1.763***	- 1.456***	- 3.671***
	(0.128)	(0.246)	(0.281)	(0.353)	(0.343)	(1.234)
Number of countries	118	118	118	64	64	164
Number of observations	6176	6176	6138	1000	1000	9170
Data detrended	NO	YES	YES	YES	YES	YES
Basic control variables	NO	NO	YES	YES	NO	YES
Additional con- trol variables	NO	NO	NO	YES	YES	NO
Sargan–Hansen test, chi- square	12.488	8.303	69.455	37.451	29.993	46.921
p value	0.488	0.599	0.125	0.747	0.749	0.152

significant at the 0.05 level; *significant at the 0.01 level; dependent variables expressed in percentages; see text for how lag length of instruments in levels and differences were selected for each system GMM model; each regression's standard errors estimated via the continuously-updating GMM estimator; TLRE =total long-run effect, which is $(\beta_1 + \beta_2)/(1-\rho_0)$, with the standard errors estimated via the delta method; therefore, LDVs are included in each model, but omitted from the table, as they are intercepts; across each model, the independent variables are included in both year *t* and year *t*-1 (these are also omitted). See text for what variables are included in the basic control variables set and what variables are included in the additional control variables set

In the Appendix, Section K, we report a regression with an interaction term between unified populist rule and logged(per-capita GDP), which is represented by Fig. A9. This estimation yielded a negative effect of unified populist rule on TFP at low levels of P.C. Income that attenuates as income levels rise. At the lower end of the distribution of P.C. Income, Populism reduces TFP by around 3–4 percentage points in the long run (borderline significant). As P.C. Income rises to the median and beyond, the magnitude of Populism's negative effect shrinks and eventually becomes statistically indistinguishable from zero. At the highest observed levels of P.C. Income, Populism no longer lowers TFP; the estimated effect is slightly positive (but not statistically significant). Finally, when the regime is not populist, higher incomes are positively associated with TFP in the long run, underscoring that non-populist policies might allow higher underlying levels of income to translate more effectively into productivity gains.

In the Appendix, Section L, we report the results of a regression that interacts unified populist rule and Extreme Leftwing Ideology, which is represented by Fig. A10. Non-leftwing populist regimes show no clear effect on TFP—the estimate is positive, but statistically indistinguishable from zero. Leftwing populist regimes have a negative and significant impact on TFP, suggesting that populism's detrimental influence on growth is primarily concentrated among left-leaning populist governments.

These results, particularly those concerning left-wing populism, should be interpreted cautiously, however. Of the 6138 observations (with controls and interactions), only 235 (less than 4%) are coded as populist. Most concerning, only five of the 275 left-wing executives are also coded as populist, resulting in a severely limited effective sample size for left-wing populist regimes. This small sample size raises two key concerns. First, it reduces statistical power, increasing the risk of type II errors (failure to detect true effects). Second, it increases the potential for spurious correlations and model misspecification, which can lead to inflated type I error rates (finding false positives). In short, with so few observations of left-wing populist regimes, it is difficult to confidently isolate the true effect, if any, from the noise.

In the Appendix, Section M, we report the results of regressions that identify whether the executive is a populist and the degree of populism in the legislature; they are represented by Figure A11. In the first model, we include Populist Executive-Only (i.e., a dummy that takes 1 if the chief executive is coded populist, regardless of legislative composition) alongside our "unified populist rule" measure. The coefficient on unified populist rule remains significant and is larger in magnitude, while the "leader-only" measure is non-significant. In the second model, we include both of those variables and how populist the legislature is (% seats held by populists). This does not change the main results; moreover, a higher degree of populism in the legislature without a populist executive does not materially impact TFP over the long run.

These results support our notion that executive populism, alone, does not have a negative effect on innovation and productivity. Instead, enjoying the parallel political support of a legislative majority allows populist executives to pass laws that harm innovation and productivity over the long run. A divided government can temper populist policy excesses.

8.2 Evaluating the effects of populism on economic growth

Ultimately, as we spelled out above, unified populist rule should depress the growth rate of per-capita income over the long term by not only lowering TFP, but also by reducing the accumulation of physical and intangible capital. Therefore, in Table 2, Model 6 (column 6), the dependent variable is now the logarithmic growth rate of real per-capita income (in 2005 prices).

As expected, the TLRE made by a switch to unified populist rule on the growth rate of real per-capita income is to reduce it by 3.7% (*p* value = 0.003). It takes 12.1 years for this cumulative negative effect to fully materialize and, thus, for per-capita economic growth to return to its pre-populist trajectory. Unsurprisingly,

substantively speaking, this is a stronger effect than that obtained in the previous set of models where the dependent variable is TFP. While a country not experiencing unified populist rule with a per-capita income of \$10,000 growing at 2% per year would end up with \$12,682.42 if the growth is compounded over 12 years, it would culminate with \$12,572.45 at the end of this period if it instead experiences unified populist rule. Another way to think of this is that a country with an average growth rate of per-capita income of 2% per year that experiences unified populist rule would take 2.44 more years (38.44 vs. 36 years) to double its GDP per head. The chi-squared statistic obtained from a Sargan–Hansen test of the over-identifying restrictions is 46.921 (p value =0.152); we cannot reject the joint null hypothesis that the instruments are valid.

To put these numbers in high relief and compare them with those associated with TFP (Table 3, columns 1–5), Figure 1 plots the estimated long-run responses of unified populist rule represented across all the models reported in Table 3, along with their 95% confidence intervals.

9 Evaluating mechanisms connecting populism to lower growth

In our theoretical framework, we outline the many channels by which populism negatively affects a country's dynamic efficiency, therefore depressing TFP and long-run growth. Populism leads to larger governments, and, in turn, this may crowd out private investment without an offsetting accretion of public investments. By the same token, unified populist rule should discourage R&D spending (% GDP), reduce the number of researchers per capita, and shrink the number of patents per capita obtained by inventors.

We now turn to evaluating the evidence for these propositions by estimating a series of ARDL regressions that are analogous to the ones we have used to explore the relationship between populism and the growth rate of TFP and the growth rate of per-capita income. These are reported in Table 4. As in Table 3, we estimate these via the system GMM approach. Table 4 also reports the Sargan–Hansen tests of the overidentifying restrictions.

In Table 4, Model 1 (column 1) the dependent variable is government size operationalized as Government Consumption at current national prices (adjusted for PPP) as % GDP. As expected, unified populist rule maps onto an increase in government spending of 5 percentage points over the long run (p value <0.001). If we instead experiment with Public Investment instead of Government Consumption (column 2), we learn that government spending on public investment does not increase (in a statistically significant manner) after a switch to populism. Taken together, these results suggest that although unified populist rule leads to larger governments over the long run, government spending in those cases is dedicated to increasing the size of the public sector and engaging in redistributive transfers, not making investments in infrastructure, basic science, and education. In column 3, the dependent variable is Private Investment. The TLRE made by a switch to unified populist rule on private investment (% GDP) is to decrease it by 4 percentage points (p value =0.05). It takes 64 years for this cumulative negative effect to fully materialize and, thus, for private investment to return to its pre-populist trajectory. To make better sense of this result, Fig. 2 graphs the lag distribution associated with unified populist rule–the value for each of the coefficients associated with populism for each period over the 64-year period. While there is a positive short-run improvement in private investment (of 0.32 percentage points as a % GDP) during the first period, this coefficient is not statistically significant, and in subsequent years the effect is always negative, albeit marginally less so as more time elapses.

We now evaluate the relationship between populism and R&D spending (% GDP): Table 4, Model 4 (column 4) reports the TLRE made by a switch to unified populist rule on this variable: it decreases it by 0.907 percentage points (*p* value = 0.002).²⁰ However, because an augmented Dickey Fuller test with a linear trend and a lagged term fails to reject the hypothesis that R&D Spending (% GDP) has a unit root (*p* value < 0.767), and because the regression returns an LDV coefficient that is greater than 1.0, we need to ascertain whether unified populist rule and R&D Spending (% GDP) are co-integrated. Therefore, we test the hypothesis that these variables are associated in a long-run equilibrium: they move together in such a way that their linear combination results in a stationary time series and share an underlying common stochastic trend.

We search for evidence of cointegration between R&D Spending (% GDP) and unified populist rule using Engle and Granger's (1987) two-step residual-based cointegration tests.²¹ The first step is to estimate a static fixed effects regression of R&D spending against populism with year dummies. We then calculate the residuals from this regression and estimate an augmented Dickey Fuller on these residuals. According to Maddala and Wu (1999: 649), we can simply use the *p* value from the Fisher test conducted on the residuals to test for cointegration using the augmented Dickey Fuller approach. Under the null hypothesis of no cointegration, the residuals have a unit root. If the variables are cointegrated, however, then the residuals should be stationary. An augmented Dickey Fuller test with one lagged term rejects the hypothesis that these residuals have a unit root (*p* value < 0.001), which strongly suggests that the negative long-run effect we reported above may not be spurious.

 $^{^{20}}$ It is only available between 1997 and 2019. The mean value for R&D (% GDP) is 1.012, the median is 0.670, and the standard deviation is 0.967.

²¹ We eschew Westerlund cointegration tests for two reasons. First, due to some missing observations, there are gaps in some of the country time series that compose the dataset. Second, this approach estimates country-by-country ECM regressions that call on us to include both leads and lags of the differenced terms (see Eq. 3, above) and, thus, require a minimum number of observations. For example, with no lags, 1 lead, a constant, and a linear trend, at least nine observations are needed. This would exclude 27 countries from the regression.



Fig. 1 Graphing populism coefficients and 95% confidence intervals, Table 3 models. *Notes*: These coefficients and their 95% confidence intervals are obtained by estimating autoregressive distributed lag models (ARDL) via the system generalized method of moments (GMM) approach as explained in the main text. For Models 1–5, the dependent variable is total factor productivity (TFP) expressed in percentages; for Model 6 it is the geometric growth rate of per-capita income. See text for how lag length of instruments in levels and differences were selected for each system GMM equation. Each regression's standard errors estimated via the continuously updating GMM estimator; the coefficients in the figure represent the TLRE = total long-run effect, which is $\frac{\beta 1+\beta 2}{1-\rho 0}$, with the standard errors estimated via the delta method. The independent variables include the lagged dependent variable (LDV), unified populist rule, and different sets of control variables (see text). Besides unified populist rule ("Populist") introduced in *t* and *t-1*, all control variables are introduced contemporaneously and in *t-1*

Table 4, Model 5 (column 5) reports the relationship between populism and the number of researchers per capita. The TLRE made by a switch to unified populist rule on hyperbolic sine(researchers per capita): it decreases them by 39.7% (*p* value = 0.001). However, and even though an augmented Dickey Fuller test with a linear trend and one lagged term fails to reject the hypothesis that the number of researchers per capita has a unit root (*p* value < 0.003), the regression returns an LDV coefficient that equals 1.224.

Therefore, out of an abundance of caution, we seek to ascertain whether unified populist rule and hyperbolic sine(researchers per capita) are co-integrated. Turning again to Engle and Granger's (1987) two-step residual-based cointegration test, we find evidence that the negative long run-effect between populism and a country's

	(1)	(2)	(3)	(4)	(5)	(9)
Dependent variable	Govt. Size	Public Investment	Private Investment	R&D Spending	Researchers P.C	Patent Applic. P.C
Populism, TLRE	5.033***	0.31	-4.170^{**}	-0.906^{***}	- 39.6***	-4.21^{**}
	(1.810)	(0.657)	(2.100)	0.286	(11.557)	(2.02)
Number of countries	164	158	158	110	93	130
Number of observations	9,324	8,245	8,245	1,688	1,278	3,090
Data detrended	YES	YES	YES	YES	YES	YES
Basic control variables	YES	YES	YES	YES	YES	YES
Sargan-Hansen test, chi-square	79.844	72.583	85.378	16.547	31.26	38.358
<i>p</i> value	0.12	0.242	0.152	0.544	0.888	0.588
significant at the 0.05 level; *: ferences were selected for each sy effect, which is $(\beta_1 + \beta_2)/(1-\rho_0)$, v intercepts; across each model, the basic control variables set. We app variables have high kurtosis, and w	*significant at the ystem GMM mod- with the standard - e independent vari pply the inverse hy we wish to make th	0.01 level; dependent va el; each regression's stand errors estimated via the d ables are included in both perbolic sine transformat ne coefficients robust to o	riables expressed in perce dard errors estimated via lefta method; therefore, L1 h year t and year t -1 (thes ion to the dependent varii utiliers and extreme values	itages; see text for ho the continuously-upda DVs are included in e: e are also omitted). B bles measured in per. (see Burbidge et al. 19	w lag length of instrum ting GMM estimator; 1 ach model, but omitted ee text for what variabl capita terms (Models 5 388; Wooldridge 2015:	ents in levels and dif- LRE = total long-run from the table, as are as are included in the and 6) because these 172)

 Table 4
 ARDL dynamic nanel repressions estimated via system GMM mechanisms



Fig. 2 Lag distribution for ARDL Model 6, Table 4. *Notes:* $X_{it-h} = \rho^{h-1}(\rho\beta_1 + \beta_2)$, where $\rho_0 = 0.833$, $\beta_1 = 0.321$, and $\beta_2 = -0.017$ (see Table 3, column 3).

researchers is not spurious. Specifically, an augmented Dickey Fuller test with one lagged term and a linear trend rejects the hypothesis that the residuals from a static country fixed effects regression (with year dummies) of inverse hyperbolic sine(researchers per capita) against populism has a unit root (p value < 0.001).

Finally, Model 6 (column 6) reports the relationship between populism and the number of patent applications (made by both a country's residents and non-residents) per capita. As expected, the TLRE made by a switch to unified populist rule on hyperbolic sine(patent applications per capita) is negative: the number of patent applications per 100,000 people decreases by 4.2% (p value = 0.04). It takes 53.7 years for this cumulative negative effect to fully materialize and, thus, for the number of patent applications (per capita) to return to its pre-populist trajectory.

Figure 3 plots the estimated long-run responses of unified populist rule represented across all the models reported in Tables 4, along with their 95% confidence intervals.

10 Conclusion

In this paper, we introduce and empirically test a framework to make sense of the fact that economic populism is systematically associated with lower per-capita income. We focus on the negative impact of unified populist rule, where both the



Fig. 3 Graphing the coefficients and 95% confidence intervals, Table 4 models. *Notes*: These coefficients and their 95% confidence intervals are obtained by estimating autoregressive distributed lag models (ARDL) via the system generalized method of moments (GMM) approach as explained in the main text. The dependent variable for Model 1 is Government Spending as share GDP (in percentage); for Model 2 Public Investment as share GDP (in percentage); for Model 3 Private Investment as share of GDP (in percentage); for Model 4 R&D Spending as share of GDP (in percentage); for Model 6 Patent Applications Per 1000 People. Model 5's coefficient is not reported because of the outsized scale of the estimated coefficient (see text). See text for how lag length of instruments in levels and differences were selected for each system GMM equation. Each regression's standard errors estimated via the continuously-updating GMM estimator; the coefficients in the figure represent the TLRE =total long-run effect, which is $\frac{\beta 1 + \beta 2}{1 - \rho 0}$, with the standard errors estimated via the delta method. The independent variables (see text). Besides unified populist rule ("Populist") introduced in *t* and *t-1*, all control variables are introduced contemporaneously and in *t-1*.

executive and legislative branches are controlled by populists, on dynamic efficiency and long run growth. We argue that populists indulge in off-balance-sheet redistribution to bolster their political support and, in doing so, severely repress their financial systems and engage in other activities that are bad for innovation and productivity. The result is bigger governments, but without concomitant public investments in infrastructure, basic science, and education. Countries ruled by populists also witness reduced private investment, less R&D spending, fewer researchers per capita, and less patents per capita. In turn, this maps onto lower TFP over the long run and ushers in economic underdevelopment.

Using dynamic panel models with an ARDL framework estimated via system GMM, we find that populism seriously distorts countries' long run growth trajectories and that this finding is not driven by left-wing governments, poor countries, nations less open to trade, or authoritarianism. Moreover, we instrument unified populist rule and all other covariates with several lags, in both differences and levels,

and Sargan–Hansen tests consistently fail to reject the joint null hypothesis that the instruments are uncorrelated with the error term.

Our results allow us to infer that, at least compared to a welfare maximizing benchmark, populists of all stripes discount the future heavily. Contrast this with governments that practice welfare state capitalism. Acknowledging tradeoffs is valued and cost-benefit analysis is baked into bureaucratic protocols. Therefore, experts are empowered to collect and analyze data and share their views. Governments abstain from picking winners and losers and choose economic policies that minimize distortions, reduce inefficiencies, and grow the pie. They can then redistribute some of the surplus through taxes and transfers and protect against risks through robust social insurance.

It is therefore unsurprising that, except for Singapore, Brunei, and some of the Persian Gulf emirates, the most economically developed countries on earth are liberal democracies that have been historically ruled by center-left or center-right governments that value science and expertise and eschew protectionism and over-regulation. These countries are also industrialized economies that have a high capital-to-labor ratio, advanced technology, and highly skilled and educated populations. In the battle of ideas, the stakes could not be higher.

Of course, while our analysis suggests a strong causal relationship between non populist governments and long run economic development, a country's regime type is not the sole determinant of economic success. The latter is influenced by a multitude of factors. These include, but are not limited to, historical trajectories, geographical advantages, natural resource endowments, and external economic relationships. However, our analysis suggests that in so far as populism enjoys popular support, it is an important variable that is potentially subject to change—even though once it is entrenched, it may be difficult for citizens to revolt against populism if they sour on it.

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Author contribution We both shared the research, analysis, and writing duties equally. We worked together on all relevant areas, including conceptualization, literature review, constructing variables, research design, analysis, and results write up.

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