How Populism Harms Prosperity: Unified Populist Rule Reduces Investment, Innovation, and Productivity

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The economic cost of populism is high. This paper finds that 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 a 12-year period before returning to the pre-populist equilibrium. We also outline the mechanics behind these numbers and provide systematic evidence for our argument. Unified populist governments engage in protectionism, inefficient redistribution and financial repression that undermines productivity by increasing the size of government without parallel investments in infrastructure, basic science, and education. Their policies also reduce private investment, R&D spending, researchers per capita, and patents per capita. This is true for populists from either the left or right, in rich or poor countries, in nations open to trade or less open, and across both liberal democracies and authoritarian regimes. We arrive at these findings by estimating ARDL dynamic panel models via System GMM, which increases our confidence that these long run effects run from populism to economic underdevelopment and complement a case study of Argentina's post World War II political and economic history. This paper also introduces a new measure of populism that validly and reliably identifies if populists are in control of both the executive and legislative branches.

Keywords: Populism, TFP, economic development, private investment, innovation, Argentina.

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 Brazil. European countries have also flirted with populism since the end of World War II: France's National Front, beginning during the mid-1970s; Greece's Papandreou, in the 1980s; Italy's Berlusconi, starting in 1994; and the Netherland's Fortuyn and Wilders, during the 2000s, though the latter never won power outright. 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, Grier, and Grier 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, Schularick, and Trebesch (2020) 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.

In this paper, we corroborate the idea that populism is economically disappointing, but with an important twist: 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.[1]

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 a 12-year period before returning to the pre-populist equilibrium. 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 a 54-year period. All of this helps explain why populism strongly reduces TFP.

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[1] 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.

We also revisit a prominent example of populism that confirms these aggregate patterns. We document how Argentina has witnessed an ongoing economic catastrophe after repeated bouts of populism. Today, Argentina occupies the ignominious 126th spot in the World Bank's Ease of Doing Business Index (out of 190), and ranks 96th on Transparency International's Corruption Perception Index (out of 180).[2] While it has a relatively large government for a developing country (22% of its GDP), with half of the population either employed by the state or receiving social welfare (Seminara 2022), it has very low levels of private investment; and its productivity has declined precipitously after 1950 (see Figures 4 and 5). In 2004, Argentina's Real Per Capita Income was lower than it had been in 1977.

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 ballooning balance of payments and fiscal deficits 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, Schularick, and Trebesch (2020) quantitatively, using a global panel dataset: populists have higher import tariffs, less financial integration, a higher public debt-to-GDP ratio, and more inflation.

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[2] On these points, see Seminara (2022).

Departing from the extant literature, which focuses on macroeconomic channels, 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. To the best of our knowledge, ours is the first paper to focus primarily on TFP and the channels by which populism affects productivity.

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. 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. Additionally, these are dynamic models that 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 constant several potentially confounding factors 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 experimenting with different strategies for addressing any contemporaneous correlation (cross-sectional dependence) between units.

This paper makes several additional contributions. 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. Yet, we also provide a supporting case study of Argentina that contains evidence beyond our large-N quantitative analyses that populism harms long run development and does so by dampening innovation and, in turn, TFP.

We define populism to reflect political reality and do justice to how populists adopt public policies that affect their country's long run 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 seats controlled by populist parties in the legislature. This allows us to identify whether a "unified populist government" governs a country during any given country year. 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. 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.

We also provide qualitative and quantitative evidence of the relationship between populism and economic underdevelopment from Argentina's post World War II economic history. We show that Peronism ushered in an era of increased protectionism, crony capitalism, and redistribution through unsustainable macroeconomic policies. In turn, this reduced private investment, the acquisition and honing of technology from the economic frontier and autochthonous innovation. Thus, it reduced productivity and economic growth over the long run.

WHAT IS ECONOMIC POPULISM?

While scholars have engaged in spirited debates about how to best conceptualize populism politically, there is an emerging consensus about its economic signature.[3] In the next section, we introduce our original theoretical contribution: we discuss how economic populism impacts dynamic efficiency, including its effect on private investment, R&D efforts, and productivity. There, we argue that one of the chief reasons populism stifles innovation is its tendency to foster financial repression, among similar pathologies. In this section, we broach some of its known effects on static efficiency and distributive politics and focus on protectionism, crony capitalism, and inefficient redistribution.

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[3] According to the ideational approach to political populism, core ideas drive disparate populist movements (Hawkins and Rovira Kaltwasser 2017). Hawkins et al (2019) aver that populists see politics as a cosmic struggle between "the pure people" and "corrupt elite". Populism, however, is parasitic upon host ideologies: nationalism, socialism, or even liberalism. It all depends on a country's history and the permissive conditions that drive populists to power. 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.

Some researchers view populism as redistributive politics obtained through inefficient policies. Acemoglu, Egorov and Sonin (2013) define populist policies as those to the left of the political bliss point of the median voter, but that still receive support from that voter, and that tend to distort relative prices and engender sizable deadweight losses (see Acemoglu and Robinson 2001). Similarly, Kaufman and Stallings (1991) argue that populists' political goals are (1) mobilizing support within organized labor and lower-middle-class groups; (2) obtaining complementary backing from domestically oriented business; and (3) politically isolating the rural oligarchy, foreign enterprises, and large-scale domestic industrial elites. The policies to attain these goals include, but are not limited to, (1) budget deficits to stimulate domestic demand; (2) nominal wage increases plus price controls to redistribute income; and (3) exchange-rate control or appreciation to limit price inflation and to raise wages and profits in nontraded-goods sectors.

For Rodrik (2018), populism is a political reaction to globalization. He argues it is easier for populist politicians to mobilize along ethno-national/cultural cleavages when a globalization shock becomes salient in the crucible of mass immigration and refugee influxes. That is largely the story of advanced countries in Europe. Populists in these contexts, often associated with the political right, target foreigners or minorities. Conversely, populist politicians mobilize along income/social class lines when the globalization shock takes the form of an economic crisis. This is mostly the story in Latin America, where "leftwing" populists target the wealthy and foreign corporations under the banner of "anti-imperialism".

Governments that practice economic populism and resort to trade protectionism and similar "antiglobalist" policies often do so to shelter domestic manufacturers, generate rents, and redistribute in stealth, opaque manners.[4] This may mean adopting stiff import taxes and non-tariff

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[4] Classical mercantilism, as practiced by the Spanish and Portuguese Empires, for example, was centered on hoarding precious metals and running up trade surpluses. It accompanied

barriers while allowing politically favored firms to freely import capital goods and intermediate inputs under cascading tariffs structures (Calomiris and Haber 2014; Menaldo 2016a; Menaldo 2016b). Populists may also subsidize their cronies' credit, foreign exchange, raw materials, land, and labor while exempting handpicked winners from regulations reserved for their rivals, therefore uncompetitively raising the latter's costs (Albertus and Menaldo 2018).

Populists also tend to engage in off-balance sheet redistribution that benefits critical constituencies (Calomiris and Haber 2014; Menaldo 2016a; Menaldo 2016b). They may pursue elevated levels of public employment, spend the public purse on generous subsidies for fuel and food, and impose wage increases for organized labor, coupled with price controls on the goods and services that these workers tend to purchase (Acemoglu and Robinson 2001). Populists may also subsidize credit for politically critical groups that lack sufficient reputational capital or collateral, a topic we will expand upon below.

Financial Repression's Enduring Appeal to Populists

Calomiris and Haber (2014), Menaldo (2016a, 2016b, 2016c) and Albertus and Menaldo (2018) argue that populist governments that indulge in financial repression deliberately ration capital. They manipulate banking regulations and the money supply to make capital scarcer and more expensive than it already is. This means either higher margins or cheaper loans for political allies, depending on whether they are lenders or borrowers.

Consider that banks typically earn rents through the spread between the interest rates they pay on savings deposits and what they charge for business and consumer loans. Populists can

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government efforts to regulate commerce in general in ways that awarded monopoly rights over long distance trade in exchange for government revenues. For example, by imposing flag taxes on merchandise delivered by unlicensed vessels and the outright banning of imported goods. Neo-mercantilism is about protectionism, industrial policy, and reshoring manufacturing jobs, rather than maximizing government revenues through tariffs.

therefore restrict the number of bank charters they allocate and/or circumscribe banks' number of branches. Or they can restrict the supply of credit so that interest rates on ordinary loans exceed their marginal cost. Populists may also help politically connected bankers generate rents by allowing them to increase their leverage—e.g., by letting them reduce their reserves. They may greenlight some bankers to increase their lending portfolio's riskiness by allowing them to maintain a low rate of equity to deposits loaned out.

Moreover, populists may grant politically connected firms access to rationed credit at negative real interest rates. For example, they may impose high reserve requirements on the "ordinary lending" conducted by commercial banks, but not on lending directed to politically favored companies. To do so, they may impose ceilings on the interest rates that banks levy on politically privileged loans coupled with ceilings on the interest rates that savers earn on their deposits. Or the central bank and state-run development banks may either use rediscounting or lend directly to sheltered manufacturers. This will not only inflate politically connected firms' profits but may translate into higher salaries for electorally supportive managers and employees (Mueller, Ouimet, and Simintzi 2017).

Populists may also redistribute to their lower income supporters through the financial system and other indirect means. First, they may grant them subsidized loans. Second, they may engage in loan rediscounting that reduces their borrowing costs. Third, they may selectively forgive their supporters' debts.

While populists exploit financial repression to engineer rents they can share with political allies, unorganized citizens, small businesses, and entrepreneurs bear the cost as negative real interest rates on their savings, higher borrowing costs, or being shut out of credit markets entirely. First, most firms and households have a relatively inelastic demand for banking services and are

held captive by the domestic financial sector—a situation that may be exacerbated by outbound capital restrictions.[5] This means they will obtain a lower rate of return on their money holdings. While richer firms and households seeking higher returns may exit the domestic financial system, poorer households and firms may face higher interest rates and have less access to credit. They may therefore turn to alternative, informal borrowing markets that are expensive and volatile.

Similarly, economic populism also involves the monetization of government deficits to both finance redistribution, rather than progressive taxation, and grow the size of the public sector. First, populists may impose high reserve requirements on banks along with negative real interest rates that force banks to place a large proportion of their deposits in the central bank, effectively a forced loan to the government. Alternatively, "development banks" may loan cheap money to the government directly. Or populists might sell banking charters to financial institutions for a steep price in exchange for monopoly/oligopoly rights—and, as a quid pro quo, obligate banks to finance the government's budget deficit (Menaldo 2016b).

MECHANISMS LINKING POPULISM TO LOWER LONG RUN GROWTH

While the literature outlined above documents the connection between populism and distortive policies that harm static efficiency, we now discuss how populism may reduce long run economic growth by lowering productivity. Populists pursue several economic policies that reduce dynamic efficiency. They do so by harming entrepreneurship and investments in capital and technology that promote innovation. Populists usually finance bloated governments, potentially crowding out private investment without offsetting public investments in infrastructure, basic science, and education. The chronically insecure property rights and macroeconomic volatility

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[5] According to Calomiris and Haber (2014: 46): "After all, firms have to maintain bank balances to cover payrolls and accounts receivable, and some households must maintain minimal bank balances in order to execute certain payments. The transaction costs and legal constraints of avoiding the deposit market are prohibitive for some purposes."

endemic to populism may also negatively impact private investments that otherwise promote productivity and economic growth. Populist policies discourage technological acquisition and development by depressing R&D spending, employing fewer researchers, and reducing patenting.

As outlined above, the extant literature on populism identifies a strong relationship between populism and financial repression. The latter is bad for productivity. It raises firms' and households' economic costs and transaction costs in general, reducing the capital investments and R&D that translate into more productive workers (Rajan and Zingales 1998). For example, unorganized farmers in the countryside may be unable to finance their everyday business operations, let alone make new investments in irrigation and seeding (Menaldo 2016c). Small and medium-sized firms helmed by entrepreneurs who are starved for credit may exit the market prematurely or be deterred from entering it in the first place. Conversely, improved access to low-cost capital allows entrepreneurs to enter markets they would otherwise be excluded from because of their inability to finance product and process innovation, develop new supply chains, or reach economies of scale (see Banerjee et al. 2013).

Financial repression also incentivizes excessive risk taking that harms productivity. On the one hand, savers who earn negative real interest rates may engage in risky investments to earn higher yields. Rather than invest in real assets or new processes and products, however, they may turn to speculation, such as overinvesting in real estate or cryptocurrencies. On the other hand, households and businesses that do have access to subsidized credit may make less judicious investment decisions, or simply increase their consumption at the expense of savings. Moreover, when populists forgive their allies' non-performing loans it exacerbates moral hazard and the inefficient allocation of capital (Calomiris and Haber 2014).

Populists also damage securities and insurance markets, hamstringing the financing of capital investments and innovations that increase productivity. Populists favor several policies that threaten arm's length, versus relationship based, ways of allocating capital and reducing risk (Hoffman, Postel-Vinay, and Rosenthal 2007: 85). They weaken property rights and endanger impartial contract enforcement. They are partial to weaker corporate governance and lax accounting standards. They tolerate inefficient corporate bankruptcy laws, insufficient balance sheet transparency, and insider trading.

Populists also politicize competition policy in ways that harm innovation. They allow politically connected firms to secure their market power by monopolizing critical nodes in the supply chain and raising their rivals' costs. These government sanctioned monopolies may not reinvest their profits into the type of R&D that fosters process innovations and better products at lower prices: they do not face incentives to reduce costs or produce new and improved products. Instead, the name of the game is to secure and maintain barriers to entry.[6]

Populists' trade protectionism and restrictions on foreign direct investment (FDI) can also harm domestic innovation. Trade protectionism and ancillary distortive policies such as dual exchange rates associated with import substituting industrialization reduce incentives and opportunities for firms to reach economies of scale and become more internationally competitive. Meanwhile, some companies may face higher costs of importing machinery, tools, and other capital goods from abroad, preventing them from acquiring the process innovations that raise their

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[6] That is not to say that the search for monopoly rents does not incentivize innovation; under the right conditions, it is the key to Schumpeterian creative destruction. It is to say, however, that if the government helps firms erect or sustain barriers to entry in perpetuity, entrepreneurs are prevented from entering the market and displacing incumbent monopolists after innovating (see Arrow 1962).

labor productivity and TFP.[7] In turn, they may fail to move up the quality ladder and miss out on opportunities to occupy higher value-added rungs in the international supply chain. Similarly, by curtailing FDI inflows, populists prevent domestic firms from gaining exposure to multinationals' innovations and arrest labor mobility patterns that help them acquire know-how from the technological frontier (see Romer 1993).

Populists also tend to nationalize industries and then champion state-owned enterprises (SOEs), with adverse effects on productivity. These firms tend to have soft budget constraints, rack up debt, and receive government bailouts (Davis and Keiding 2002). In turn, SOEs face reduced pressures to increase profits, and thus have fewer incentives to cut costs and innovate. Plus, their subsidies may crowd out public spending on productivity boosting investments in infrastructure, basic science, R&D, and education. Moreover, because SOEs face strong incentives to "imitate" instead of "innovate", a populist government with an outsized ownership stake in the national economy may weaken intellectual property rights (IPR) to gain cheap access to foreign technologies (Yan 2020). SOEs sheer economic dominance, coupled with weaker IPR enforcement, may harm entrepreneurship and innovation writ large.

CONCEPTUALIZING POPULISM

Policy outcomes are a function not only of which party holds the executive, but also the legislature's composition and whether the executive enjoys the support of that political body. We therefore assume that a unified government, where both the executive and legislative branches are controlled by the same party, is more likely to engender rapid, meaningful, and extreme policy changes: the party in power has a greater ability to pass its preferred policies without the opposition

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[7] Comin, Hobijn, and Rovito (2008) show that, while developing countries needed decades to fully assimilate innovations such as the steam engine, electricity, and telephones, it has taken a handful of years for smartphones and similar digital technologies to fully transfer across the world. A big reason for this is increased globalization.

or similar veto points blocking them (Tsebelis 2002). In contrast, 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). Second, when minority cabinets must negotiate with legislative parties to obtain parliamentary support for their policy agenda (Curini and Zucchini 2011).

In short, we challenge the conventional view of populist strongmen who rule, unilaterally, as caudillos, with little input, let alone pushback, from other branches of government. Therefore, under a unified populist government, and 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. This should make it easier for populists to pass policies that harm productivity and economic growth by exercising total control over taxing and spending policies; trade policy; the money supply; supervision of the financial system; and competition policy. Unified government should also endow populists with the ability to exercise strong influence over nominally independent bureaucracies such as agencies

deputized to enforce antitrust laws and central banks, allowing them to further politicize economic policy.

Following Elgie (2002), we conceptualize a unified government as a situation where the executive enjoys majority support in the legislature. 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 unified versus divided government: we simply identify whether the executive branch and legislative majority are simultaneously controlled by populists.

Before we systematically test the relationship between unified populist rule and the economic policies that undermine long run prosperity by affecting productivity and its mechanics, we turn to an illustrative case. Argentina's enduring experience with populism showcases the ways in which unified populist rule introduces distortive economic policies that undermine innovation. Understanding how this happened will allow us to contextualize the quantitative analyses performed on a countrywide panel dataset that then follows.

ARGENTINA CASE STUDY

Consider that, at the turn of the 19th Century, Argentina was significantly wealthier than Canada–over 50 percent wealthier, in fact. However, over the later part of the 20th Century, the former's economy deteriorated significantly. By 2006, Argentina's per capita income was less than 50 percent of Canada's (see Figure 1).

This is telling because, on paper, both countries are very similar. First, both were founded as federal systems that boasted strong provincial and local governments. Second, they were populated by European colonists who encountered relatively small indigenous populations. Third,

Figure 1. Ratio of Argentina's Real Per Capita Income to Canada's.
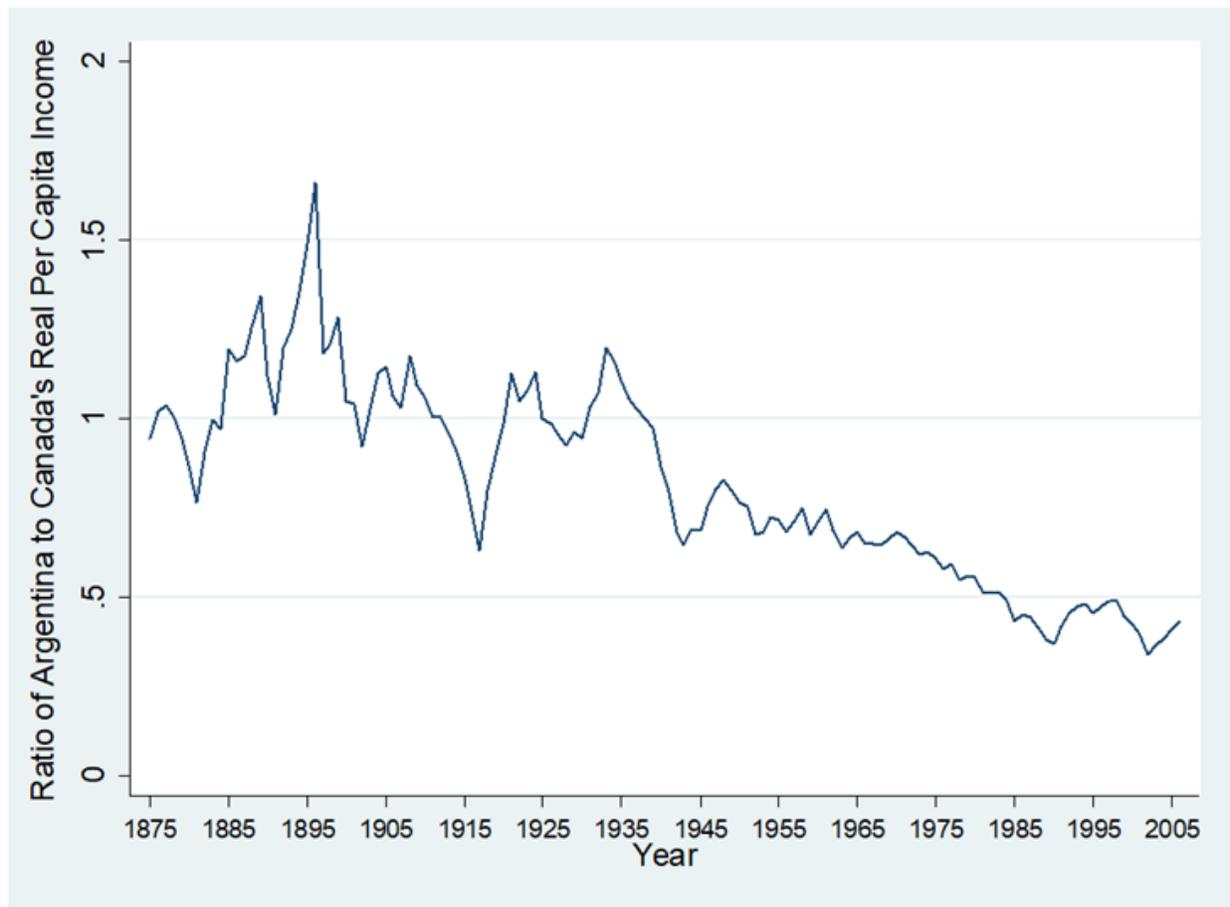
Notes: Real Per Capita Income for both countries in 2007 dollars.
Source: Haber and Menaldo (2011).

both of their early political economic models were characterized by settlers who farmed fertile

land in the rural periphery well suited for grains, albeit each nation had a bustling, dense metropolis

that was cosmopolitan and externally focused: Buenos Aires and Toronto, respectively.[8]

Indeed, these countries' export-oriented economies were centered on trade with Great

Britain; in the case of Canada, grains, fur, timber, and minerals; in the case of Argentina: grains

and beef. Fourth, they industrialized (at least at first) quite gradually, on the back of the expansion

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[8] Canada gained independence from Great Britain in 1867, while Argentina separated from Spain
in 1816.

of railroads into the interior and investments in infrastructure like ports. Fifth, they had very similar financial systems centered during long stretches of time on wildcat banking and a hands-off regulatory approach.

Economic populism was an important fork in the road that helps explain the divergence in their economic fortunes—albeit, as Figure 1 reveals, the onset of this divergence preceded its emergence. Juan Perón, a rabid populist and former general, first came to power in 1946 after a landslide electoral victory. He then reoriented the terms of political contestation in Argentina to pit rural oligarchs and foreign investors against coddled manufacturers and organized labor.

Ruling for close to a decade, between 1946 and 1955, Perón had inherited a vibrant post-war economy with a substantial trade surplus. Argentina's limited participation in World War II meant that he did not have to adopt austerity measures to reduce trade deficits and inflation. This placid situation was not to last, however. Perón and many of his successors ended up destroying the Argentine economy under decades of populist rule.

Perón was able to consolidate power through a multipronged approach. He replaced Argentina's liberal constitution with one that codified the notion that the state was in charge of managing private property to advance the "general" needs of the national economy and promote "social justice". He purged the Supreme Court and then packed it with his political lackeys. The Peronist party came to hold large majorities in both the Argentine Chamber of Deputies and the Senate: two thirds of the lower house and all but two senate seats. In 1948, the Peronists gained total control of the Senate and added fourteen additional seats in the House.

Consolidating political control over the three branches of government (including both legislative chambers) furnished the Peronist Party, the so-called unified Partido Justicialista (PJ), with the ability to engineer an economic revolution. Because the PJ monopolized the Argentine

legislature during Perón's entire term and boasted strict party discipline, it exercised "monolithic control" over Argentina's lawmaking process. The upshot: populist legislation sailed through with little opposition in the lower house and unanimous Senate support (Chavez 1994: 54-56).

The PJ embarked on aggressive protectionism, industrialization, and redistribution based on distorting the market instead of slicing a growing pie more equitably. Argentina's legislative and executive branches granted infant industries a cascading tariff structure and generous subsidies, including cheap credit, foreign exchange, and raw materials; they went so far as to ban competing imports. By 1950, the effective rate of protection was 310% (Berlinski 2003: 213).

The Peronists also adopted a host of economic policies that were geared towards boosting the real wages of the unionized formal sector employees that were integral to their coalition. They imposed sizable wage increases for labor unions, annual year-end bonuses, vacation pay, sick pay, and severance pay. These policies managed to boost real wages for both skilled and unskilled workers by about 35 percent in a few years.

Yet, economic populism exacted a great cost. The size of government increased by over 5% between 1950 and 1952, growing from 7.9% of GDP to 8.4% GDP. Huge, unfunded increases in social spending, generous transfers to unions, and massive public sector investment called on spending serious money.

To help finance their ambitious plans, the PJ raised taxes at confiscatory rates on the lifeblood of Argentina's economy, the outward oriented agricultural sector. This led to a plummeting of exports and, by extension, hard currency; eventually, receipts from export taxes dried up too. This was all part of a recurring cycle of expropriatory taxation on Argentina's primary commodity exports outlined in Figure 2, whether it be wheat or soy, that was repeated by populists throughout Argentine history, even though it preceded Perón.

Figure 2. Populist Cycles of Argentina's Commodity Export Taxation
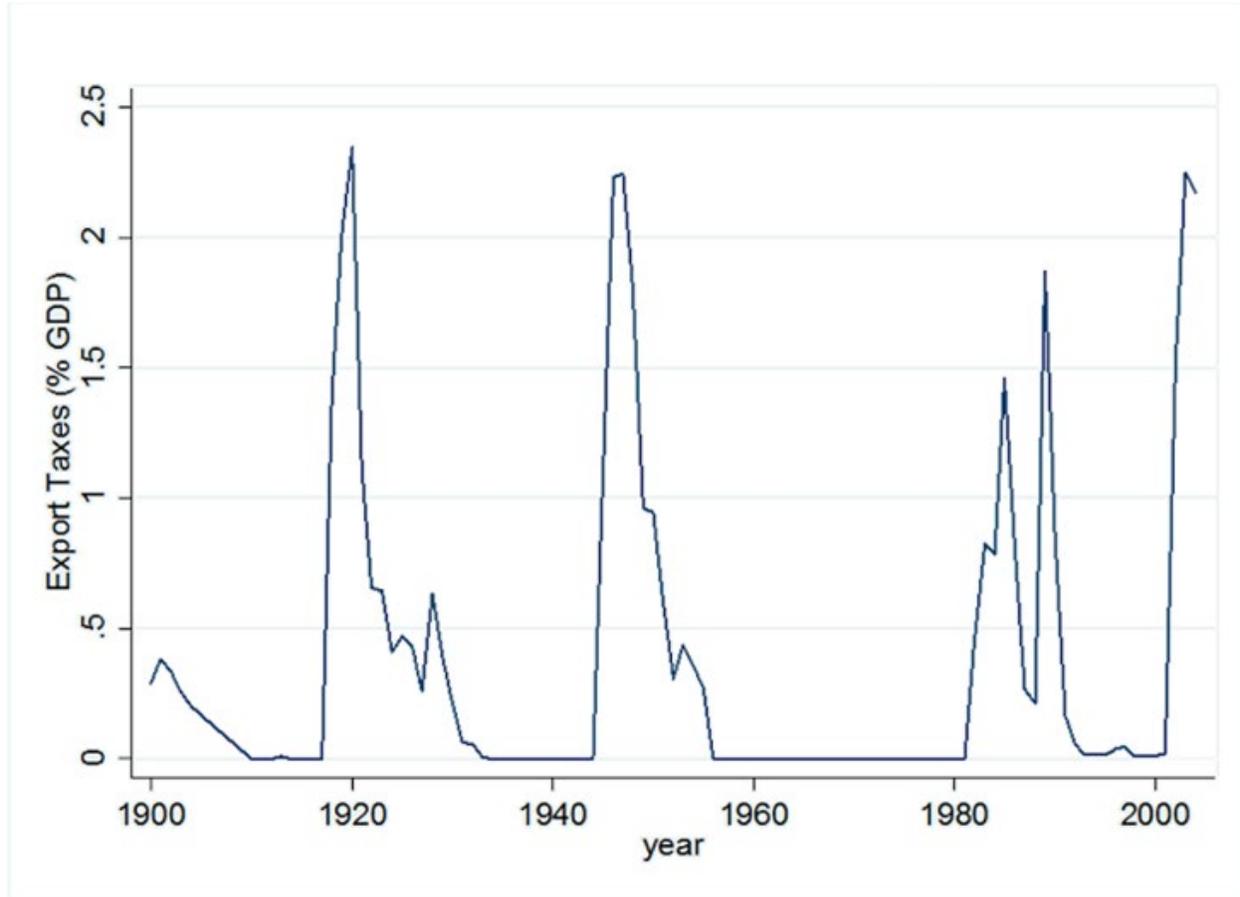
Notes: Most export taxes were levied by Argentine governments on primary commodities, with wheat and soy as the top two, but also cattle related exports.
Source: Menaldo (2009).

Alas, taxes imposed on agricultural exports were not a sustainable way to make up for the gap. Thus, Perón turned to the printing presses to make up for a huge budget deficit, which fueled inflation: Argentina saw an increase of over 500 percent in consumer prices by 1955.

Ultimately, Perón's economy went into a tailspin, and he was ousted from power in a military coup. Yet, the PJ Party continued to dominate Argentina's legislative politics even in his absence and continued to pass populist policies. Perón returned as president in 1974, nationalized banks and several industries, adopted expensive subsidies, placed new restrictions on FDI, and increased social spending. Though he died in office the next year, he was replaced by his second

wife, Isabel Perón, who served as his vice-president. Under her leadership, Argentina saw a 50/50 income split between labor and capital for the first time in its history. Yet, akin to what had happened decades before under her husband's first bout in power, this also came at a significant cost: the inflation rate reached 400 percent by 1975, and she too was ousted by the military. Figure 3 depicts the inflationary legacy of Peronism.

While after ousting the Peróns the armed forces then ruled incompetently for almost a decade, the roots of Argentina's subsequent macroeconomic collapse lie with the populist misadventures that preceded its tenure. The Perónist hangover included a severe shortage of international credit. This led the armed forces to turn to monetary policy and restrictive bank regulations to defend the Argentine Peso, which spurred capital flight. While the government eventually eased up on financial repression, the real exchange rate appreciated, and the current account deficit increased. Argentina's currency eventually collapsed. The military junta then monetized the budget deficit, which precipitated both high inflation and a serious output shock. In turn, tax revenues shrunk precipitously (see Figure 4). Argentina's government was no longer able to finance its foreign debt denominated in dollars and defaulted on ballooning interest payments.

The Argentine government's economic mismanagement continued after re-democratization in the early 1980s—and the return of electoral populism. Between 2003 and today, the Peronists in the Argentine Congress have pursued policies such as profit-sharing bills and the expropriation of foreign multinationals, with the most prominent case being the takeover of a Spanish owned oil company, Repsol, in 2012. Argentina suffered its ninth and largest sovereign debt default in May of 2020 under the PJ's so-called monolithic rule, with Cristina Kirchner as vice-president and a Peronist majority in Congress (see Chavez 2004).

Figure 3. Argentina's 20th Century's Inflation History
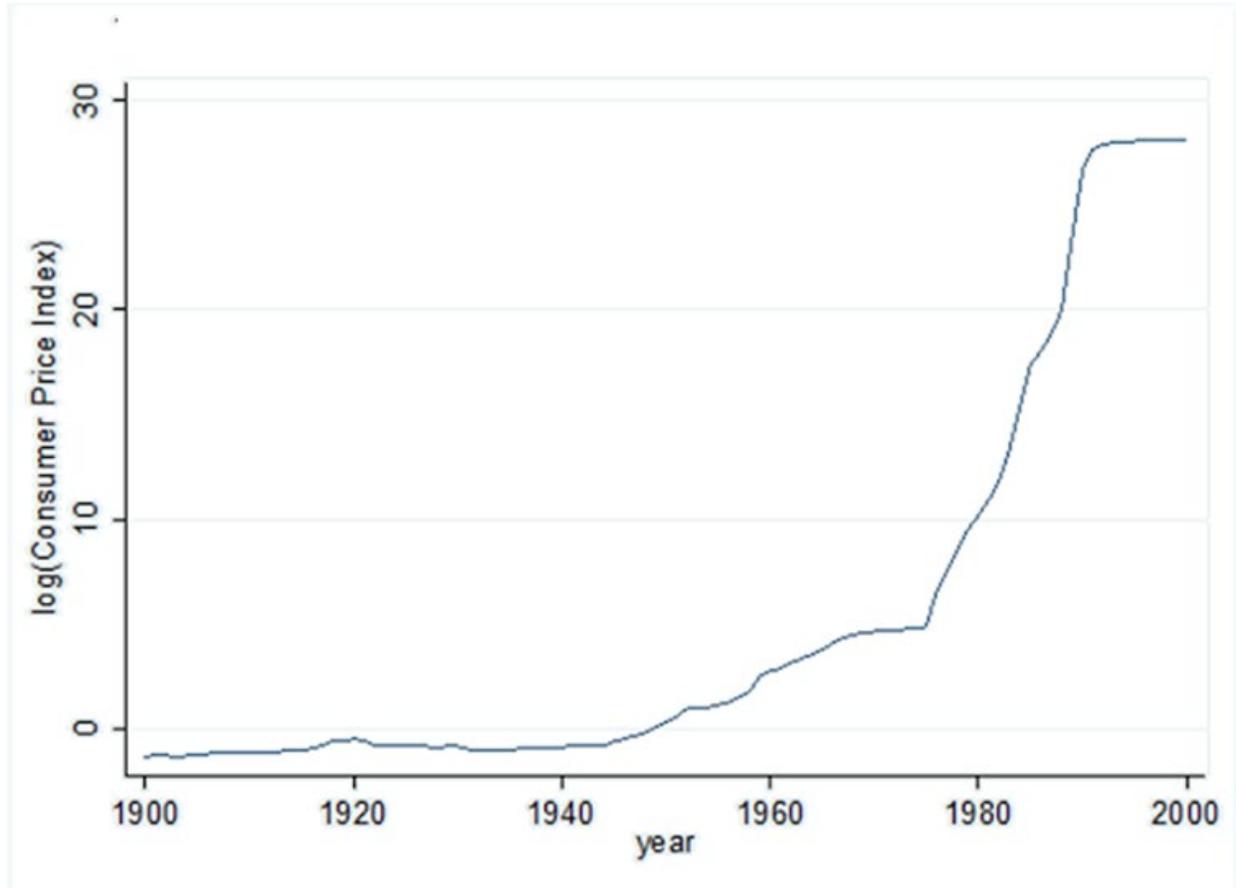
Notes: Index = 100 in 1970
Source: Astorga, Bergés and Fitzgerald (2003).

Argentine Populism's Effect on Private Investment, Innovation, and Productivity

Argentina's chronic populism adversely affected its productivity. As populists weakened

property rights, abrogated contracts, indulged in protectionism, adopted distortive regulations,

and larded the country with government debt, which it monetized, to spur consumption instead of

investment, technological progress grinded to a halt. The country saw ever fewer investments in

machines, human capital, and R&D (see Chudnovsky 1999). This meant less process and product

innovation, whether it was developed domestically or acquired elsewhere. In turn, TFP crashed,

reducing economic development over the long run (see Figure 1).

Figure 4. History of Argentina's Income Taxation
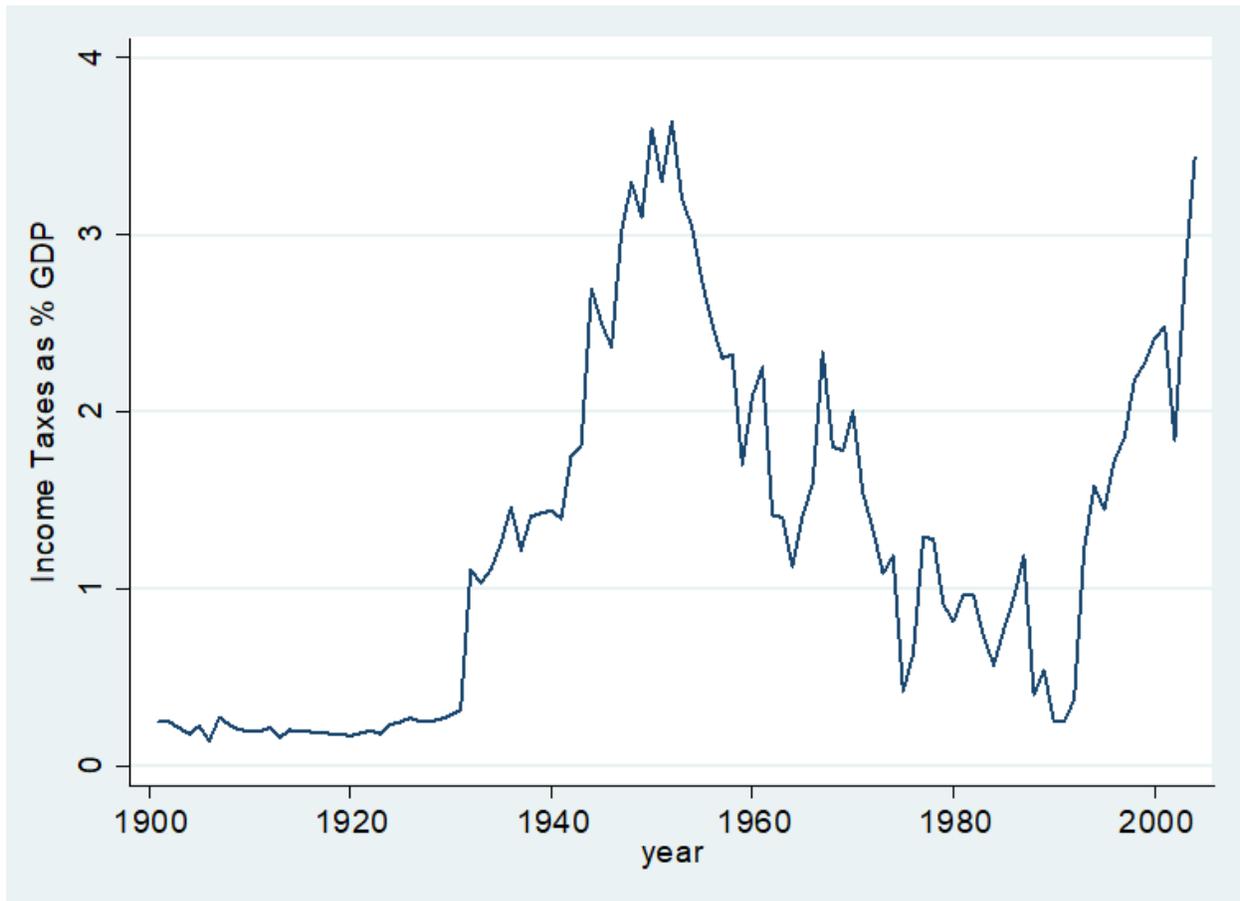
Notes: Income Taxes include taxes on income, profits and capital gains.
Source: Menaldo 2009.

Figure 5 plots Argentina's level of TFP between 1950 and 2019. It clearly shows that decades of populism set Argentina's productivity back. Moreover, the timing of big drops in TFP mirror unified populist rule. Specifically, there is an appreciable decline in TFP during Juan Perón's first administration, and a lagged continuation of that deterioration well after 1954, when he left office. One of the chief reasons for this was that while his government subsidized the importation of intermediate goods, such as metals, plywood, and glass, it imposed restrictions on importing foreign capital goods, which limited Argentina's acquisition of new technological vintages (see Berlinski 2003: 213; Barbero and Rocchi 2003: 288). During Perón's second term,

starting in 1973, which he was unable to complete after dying in office, but which his wife Isabel took over before being ousted in a military coup in 1975, TFP cratered again. And this pattern was repeated yet again during the early 2010s, under Cristina Kirchner's populist regime.

Figure 5. Argentina's TFP (1950 to 2019)
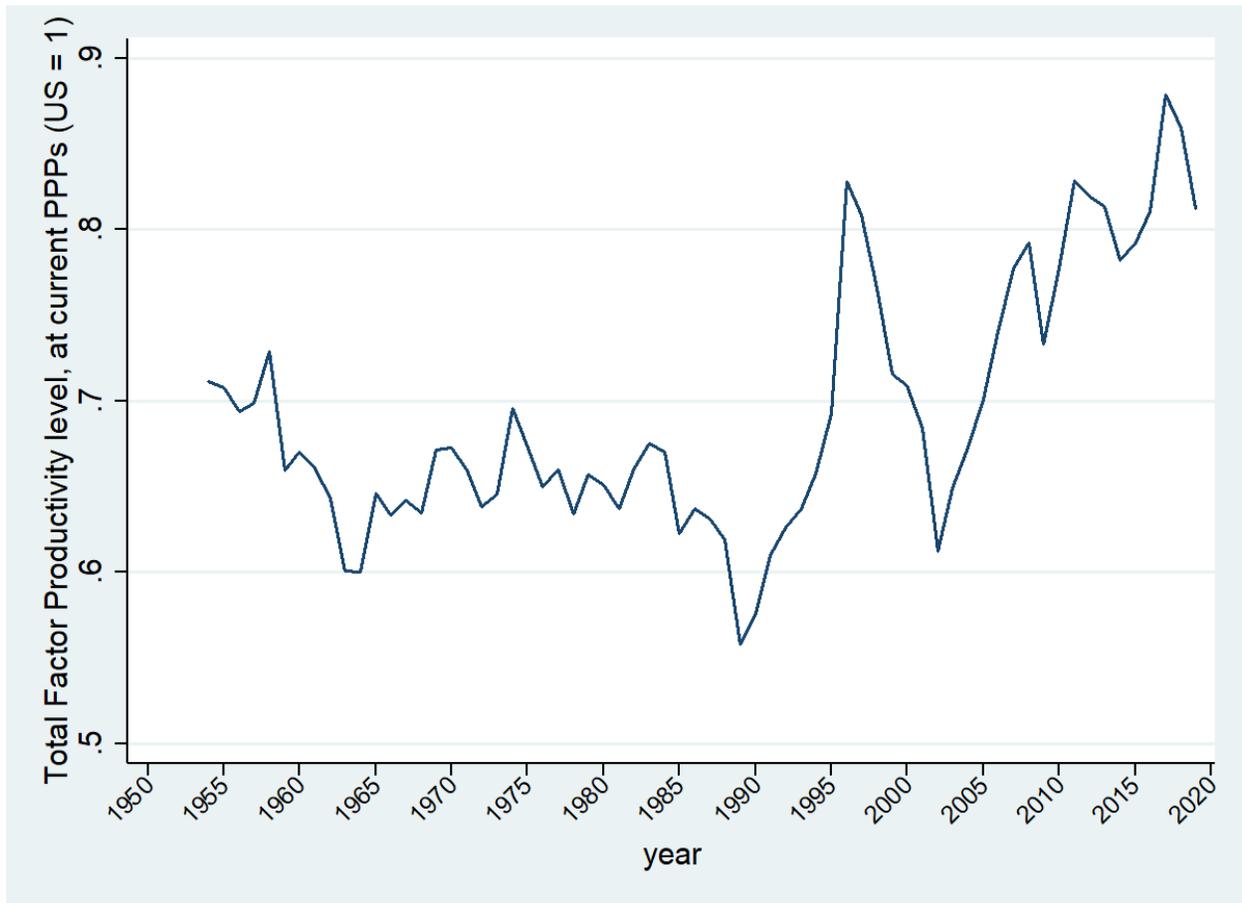
Notes: Argentina's TFP is at current Purchase Power Parity (PPP) relative to the U.S.
Source: Penn World Tables, 10.0 (Feenstra, Inklaar, and Timmer 2015).

What each populist episode shares is that they entrenched a political coalition in power that lacked incentives to invest in process and product innovation. "The high level of protection generated high profit margins and a lack of incentives to improve efficiency. The industries with relatively higher returns were more concentrated and operated in oligopolistic markets and with strong lobbying power" (Barbero and Rocchi 2003: 289). Moreover, populist governments failed

to invest sufficiently in infrastructure, science, and education. In the aftermath of decades of populist rule, total public spending on science and technology (% GDP) was only 0.33% in 1996, compared with 0.60% in Chile that year, and 0.61% in Brazil (see Chudnovsky 1999, Table 1).

Another one of the chief reasons for Argentina's lackluster TFP since circa 1950 is relatively low levels of private investment that have experienced sharp declines, especially under and soon after populist rule. Figure 6 plots the trajectory of Argentina's private investment (as a % GDP) between 1960 and 2019. It shows a similar pattern to TFP (Figure 5).

Figure 6. Argentina's Private Investment, 1960 to 2019
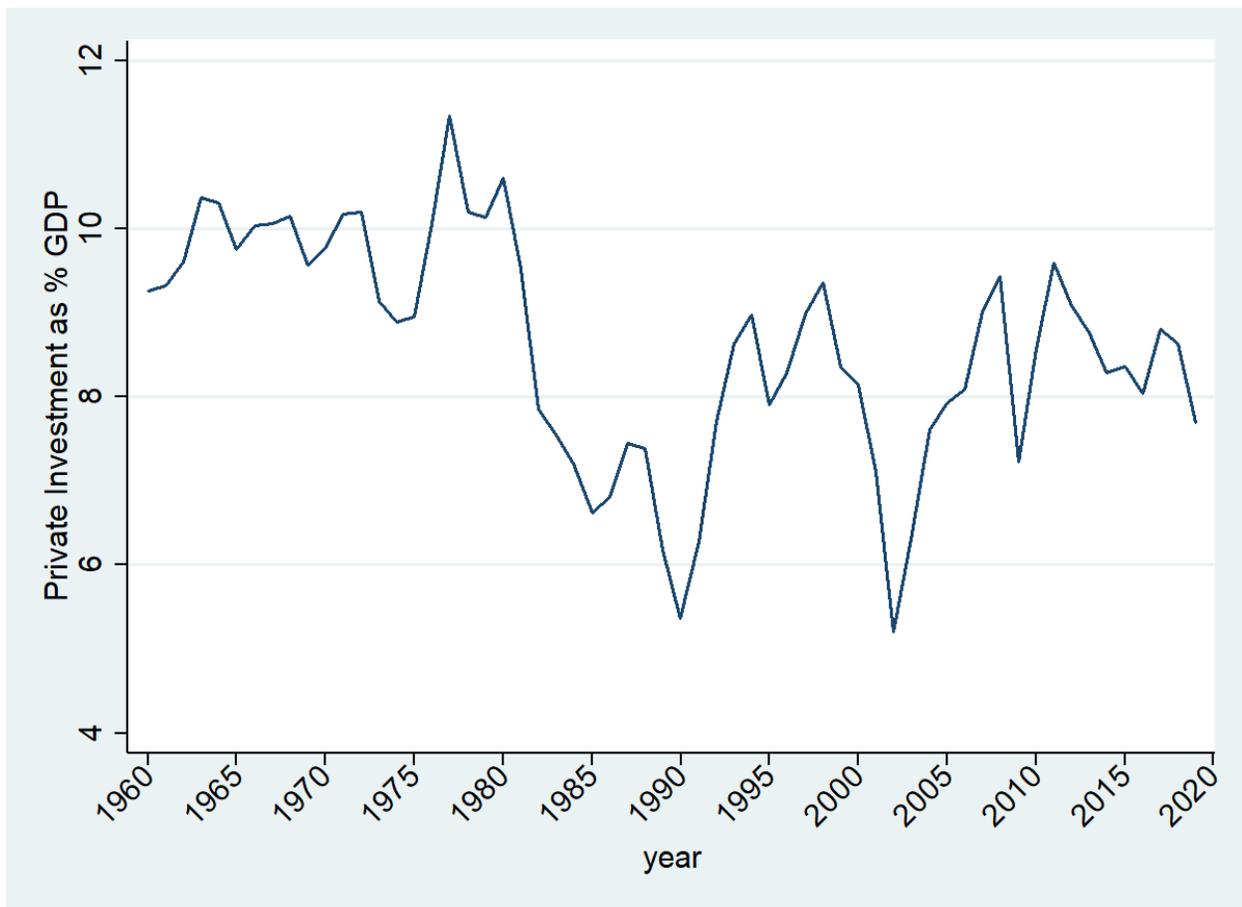
Notes: We calculated private investment as a share of GDP by dividing private investments in gross fixed capital formation, in constant 2011 international dollars, by GDP, also in constant international dollars.
Sources: IMF Investment and Capital Stock Dataset (2021).

During Perón's second term private investment contracts sharply, strongly recovers after he (and his wife) are no longer in office, but then suffers an even worse deterioration in the aftermath of the repeated economic crises precipitated by Peronist policies pursued by elected governments after Argentina's return to democracy in 1982. In 1996, total investments in science and technology by private firms was only 0.13% (GDP) compared to Chile, which clocked in at 0.27% that year, and Brazil, which recorded 0.18% (see Chudnovsky 1999, Table 1). Unsurprisingly, as Figure 6 reveals, private investment suffered another sharp reduction during Cristina Kirchner's tenure (2007-2015).

CROSS-COUNTRY TIME-SERIES EVIDENCE

We now evaluate the negative cross-country and time-series relationship between populism and TFP, economic growth, private investment, and a host of other indicators of dynamic economic efficiency. To do so, we construct a panel dataset that includes almost 200 countries observed from 1950 to 2019.[9] This allows us to evaluate the long run relationship between populism and a host of dependent variables that operationalize the nuts and bolts of innovation and productivity. They 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. Before outlining our econometric strategy, we discuss our original measure of populism, which seeks to capture unified rule by populists in the executive and legislative branches validly and reliably.

Measuring Populism

We conceptualize populism as the unified rule of populists across the executive and legislative branches of government and create an original dataset that identifies 1) whether the

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

executive branch is helmed by a populist politician and 2) the percentage of the seats controlled by populist parties in the legislature. This allows us to identify whether a "unified populist government" rules a country during any given country year.

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 Dataset and identify the vote share of populist parties 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.[10] 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 listed in the appendix.

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 seats controlled by populist parties in the legislature. This allows us to identify whether a "unified populist government" rules a country during any given country year; we create a dummy variable that indicates if that is the case (see Table 1 and the appendix).[11]

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

[11] The results are robust to an alternative version of Unified Populist Rule. The alternative differs from our main measure in four ways. First, for parliamentary regimes, it only codes as populist country years where the populist prime minister's (PMs) party has a majority of seats in the parliament, but not when the PM heads a coalition cabinet in which their party does not have an absolute majority of seats. Second, it codes as populist country years where the percentage of the vote share for populist parties is below 50%, but the number of populist seats is above 50% due to the asymmetric allocations of votes to seats in some proportional representation systems.

Table 1. Unified Populist Governments, 1950 to 2019

	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

Third, it excludes cases in which the percentage vote for populist parties was above 50%, but some of that share went to populist parties that were not represented in the cabinet and that did not support the government in parliament. Fourth, it complements the Votes for Populists dataset with the Funke, Schularick, and Trebesch (2020) populism data. See the Appendix for how these different versions of our Unified Populist Rule variable vary by country and period.

Dominican Republic	1978	1985	Slovakia	2006	2009
Dominican Republic	1996	2019	Thailand	2005	2005
Ecuador	2007	2008	Turkey	2011	2019
Ecuador	2013	2016	Venezuela	1950	1962
Georgia	1991	1991	Venezuela	1983	1987
Honduras	2005	2009	Venezuela	2005	2009
Croatia	1992	1999			

Notes and Sources: see the appendix.

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, Schularick, and Trebesch (2020) digitized large amounts of academic books, chapters, and articles to classify almost 1,500 leaders as populist for over 100 years and 60 countries.

Our measure covers 185 countries. We identify 41 populist episodes where there was unified populist rule. This corresponds to 303 populist country years out of a total of 12,889

(between 1950 and 2019). The average duration of a populist spell is 6.6 years, and the median duration is 4, with a standard deviation of 7.9 years.

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:

$$Y_{it} = Y_{t-1}\rho + X_{it}\beta_1 + \ldots + X_{it-k}\beta_n + u_{it} \tag{1}$$

The right-hand side of the expression equals:

$$X_{it}\beta_1 + (\rho\beta_1 + \beta_2)X_{it-1} + (\rho\beta_1 + \beta_2)X_{it-2} + (\rho\beta_1 + \beta_2)X_{it-k} + u_{it} \tag{2}$$

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 $\rho^{h-1}(\rho\beta_1 + \beta_2)$.[12]

System GMM Dynamic Panel Approach

A naive ARDL modeling approach estimated via Ordinary Least Squares (OLS), as depicted in equation (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).

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

We therefore 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 equation (1). 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.

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, the System GMM approach allows us to draw on instruments to capture the controls' exogenous variation, limiting the possibility that post-treatment bias afflicts the results. First, we add log(Real Per Capita Income), from the Penn World Tables, 10.0 (Feenstra, Inklaar, and Timmer 2015). This addresses the fact that poor countries may be more susceptible to populists and should also have higher TFP growth rates than richer countries as they converge with the latter over time.[13] Second, we control for Trade Openness (imports + exports as % GDP), from the Penn World Tables, 10.0 (Feenstra, Inklaar, and Timmer 2015). This follows Frankel and Romer

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[13] Some notable countries at or below the 25th percentile for Per Capita Income is Brazil before 1961, Botswana before 1980, China before 1997, Colombia before 1960, Egypt before 1981, Indonesia before 1990, India before 2010, South Korea before 1976, Sri Lanka before 1992, Mongolia before 1999, Malaysia before 1971, The Philippines before 1996, Romania before 1967, Thailand before 1983, Tunisia before 1975, and Taiwan before 1972. A host of Sub-Saharan African countries and Latin American ones are also at or below this threshold for most of the years in the panel. We note that because in the ensuing regressions we simultaneously control for institutional quality, any convergence between richer and poorer countries should be of the "conditional" variety (see Acemoglu 2009).

(1999), and Alcalá and 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.[14] Third, we control for Institutional Quality, from the V-Dem dataset (Coppedge et al. 2021), which is coded from 0 to 9, with higher values signifying "better institutions".[15] 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, Egorov, and Sonin 2013).[16]

In some models we also include additional controls, even though their data coverage is limited, reducing the number of observations. This extra set includes income inequality, measured as the Income Gini Coefficient from the World Bank's World Development Indicators (WBDI); researchers such as Sachs (1989) and Acemoglu, Egorov, and Sonin (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) from the WBDI, 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, as operationalized and measured by the V-Dem dataset (Coppedge et al. 2021), to

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[14] Some notable cases of Trade Openness at or below the 25th percentile are Argentina for several years in the 1960s and 1970s, Brazil between the 1950s and 1990s, Chile during the 1950s, 60s, and early 1970s, China until the mid-1990s, Egypt for the duration of the dataset, Spain until 1980, Greece until the early 1990s, India for the duration of the dataset, Iran between 1986 and 2014, Italy until 1960, Japan until 1969, South Korea until 1969, Mexico until 1992, Peru until 1997, The Philippines until 1994, Portugal until 1978, Thailand until 1975, Turkey until 2000, Taiwan until 1963, Uruguay until 1980, and the U.S. until 1995.

[15] 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.

[16] Because this is an ARDL model, we include each of these variables measured both contemporaneously and lagged by one year.

address the fact that our measure of populism could be picking up the effects of extreme leftwing ideology, rather than populism as such.

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.[17] And we 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.

To understand why this is the case, consider that the GMM approach constructs estimators. It generalizes the method of moments by allowing the number of moment conditions of the random variables, rather than the entire data distribution, to be greater than the number of parameters. Moment conditions are expected values for model parameters, such as the mean, and sample moment conditions correspond to the moment conditions in the sample, which allow us to estimate these parameters. GMM identifies parameter values closest to satisfying the sample moment conditions by weighting them, either by applying uniform weights via an identity matrix or optimal weights via the inverse of the covariance matrix of the moment conditions. When

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[17] 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.

there are more moment conditions than parameters, the estimator is said to be overidentified, which means GMM has effectively combined the moment conditions.

There are two main types of GMM approaches. Difference GMM estimation proceeds after first-differencing the data to eliminate the unit fixed effects and therefore expunge unit specific, time invariant heterogeneity that is potentially correlated with the error term. It then instruments the lagged dependent variable and any other endogenous regressor with lagged levels. System GMM emulates this approach, but augments Difference GMM by estimating simultaneously the regression in both differences and levels and separately instruments the two equations, with the latter instrumented with lagged differences (Blundell and Bond 1998).

We choose the System GMM approach for several reasons. First, System GMM is more efficient than difference GMM, as it adds cross-sectional information from the panel (Blundell and Bond 1998). In our case, this exploits the cross-country differences in unified populist rule, for which there is substantially more variation than within countries (see Table 1). Second, across our dynamic models the LDVs are relatively persistent (approaching 1), suggesting that the delayed levels are only weakly correlated with the variables' first differences, rendering them weak instruments on their own.

However, since system GMM regressions may suffer from the "too many instruments" problem, which introduces bias, we use several strategies prescribed by Roodman (2009) and Kripfganz (2019) for reducing the instrument count. First, we curtail the number of instruments by deploying only a limited number of lags as instruments. For the difference equation applied to the LDV, we use a lag length of 4, and for the levels equation, we use a lag length of 1. For both the difference and levels equations applied to the independent variables, including the ones measured in t and in t-1, we choose the number of lags that allow us to reach convergence when

estimating the standard errors via an integrated approach. Second, we "collapse" the instruments by creating one for each variable and lag distance, instead of one for each period, variable, and lag distance. Third, we detrend the data by introducing a linear trend term instead of adding year dummies.

We also take a very conservative approach to estimating the uncertainty around our point estimates. While the System GMM two-step estimator is asymptotically efficient (for a given set of instruments), in finite samples the estimation of the optimal weighting matrix might be sensitive to the chosen initial weighting matrix. Fortunately, an iterated GMM estimator that updates the weighting matrix and coefficient estimates until convergence removes the arbitrariness in the choice of the initial weighting matrix (Hansen and Lee 2021). We therefore choose to use the continuously updated GMM approach pioneered by Hansen, Heaton, and Yaron (1996), where the optimal weighting matrix is obtained directly as part of the minimization process.

System GMM is not without tradeoffs. First, it rests on the assumption that the differences used as instruments for the levels equation are uncorrelated with the error term; in other words, with the unobserved unit-specific effects. Second, this approach ignores cross-sectional dependence. Third, it assumes that the panel units have homogenous slope coefficients.

Fortunately, we can address these potential shortcomings. In terms of satisfying the assumption that the differences used as instruments for the levels equation are uncorrelated with the error term, a sufficient condition for this is the joint mean stationarity of the dependent variable and the differenced terms. Therefore, evidence that these variables are cointegrated would imply that their linear combination behaves as a stationary time series. To evaluate whether this is indeed the case, we performed a series of Westerlund cointegration tests on the

dependent variables and first-differenced Unified Populist Rule terms. Numerous tests soundly reject the hypothesis (returning p-values < .001) that these variables are not cointegrated.[18]

Other robustness tests and diagnostics that we do not report, but briefly discuss here, also buttress the System GMM strategy. First, we performed statistical tests that compare the validity of the System GMM approach versus the Difference GMM approach. Specifically, following Eichenbaum, Hansen, and Singleton (1988), we conducted a series of incremental overidentification tests (difference Sargan-Hansen tests) across our regressions that compared the full models (that include both differences and levels) and reduced models (that include only differences). We consistently failed to reject the hypothesis that the additional moment conditions are valid, justifying the additional moment conditions for the level model. Additionally, if we relax the assumption that the slope coefficients are constant across countries by estimating mean group estimations pioneered by Pesaran and Smith (1995), we corroborate our basic results. And following Chudik et. al (2016), we experimented with dynamic common-correlated effects models that add lags of the cross-sectional means. This allows for the possibility of cross-sectional error correlations that may be engendered by omitted common effects possibly correlated with the explanatory variables. Finally, across our models Arellano-Bond tests of AR(2) reject the hypothesis that the differenced data suffer from second-order serial correlation.

Empirical Results

We now discuss the results reported in Table 2 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 (reported in Columns 1-5) is the growth rate of

[18] We conducted several tests under different assumptions, experimenting with different leads and lags and the inclusion/exclusion of a constant and a trend.

TFP, the dependent variable in Model 6 (Column 6) is the growth rate of Per Capita Income. We calculate TFP growth using a TFP index expressed at current PPP relative to the U.S. and the logarithmic growth rate of Real Per Capita Income is in 2005 prices, also adjusted for PPP. Both are from the Penn World Tables, 10.0 (Feenstra, Inklaar, and Timmer 2015).[19]

Let us first consider some important descriptive statistics regarding the growth rate of TFP. The mean annual growth rate of TFP for 6,294 observations (118 countries) between 1955 and 2019 is .14%; the median is 0; and the standard deviation is 5.6% (the within standard deviation is 5.5%). An Augmented Dickey Fuller Test (a panel unit root test for unbalanced panels) with a linear trend and one lagged term rejects the hypothesis that the growth rate of TFP has a unit root (p-value < .001).

Table 2, Model 1 represents equation (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 .95% (p-value < .001).[20] 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.[21] 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 (uncorrelated with the error term) and that the excluded instruments are correctly restricted from the estimated equation.

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[19] The results are robust to instead measuring TFP in real, exchange rate terms (2005 prices).
[20] We remind readers that the formula to obtain this TLRE is $(\beta_1 + \beta_2)/(1-\rho_0)$. See DeBoef and Keele 2008: 191.
[21] We remind readers that the formula to obtain the TLRE's duration is $(\beta_2/(\beta_1 + \beta_2))-((-\rho_0)/(1-\rho_0))$. See DeBoef and Keele 2008: 194.

Table 2. ARDL Dynamic Panel Regressions Estimated via System GMM, TFP Growth and Per Capita Income Growth

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	*TFP Growth*	*TFP Growth*	*TFP Growth*	*TFP Growth*	*TFP Growth*	*PC GDP Growth*
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	6,176	6,176	6,138	1,000	1,000	9,170
Data Detrended	NO	YES	YES	YES	YES	YES
Basic Control Variables	NO	NO	YES	YES	NO	YES
Additional Control 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

Notes: **significant at the .05 level; ***significant at the .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 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 Table 2, 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 < .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 (uncorrelated with the error term).

Table 2, 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.[22] 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 (uncorrelated with the error term).

In addition to including log(Per Capita Income), TradeOpenness, and Institutional Quality, Table 2, 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 =

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[22] There is also evidence of conditional convergence: the total, long-run effect of increasing Per Capita Income by 1% is to reduce the growth rate of TFP by .40%

0.747); we cannot reject the joint null hypothesis that the instruments are valid (uncorrelated with the error term).

Table 2, 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 6, as is the Sargan-Hansen test. However, because 1) none of these extra control variables really help explain variation in the growth rate of TFP at conventional levels of statistical significance (in either Models 5 or 6), 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 henceforth drop them from the remaining regressions. Instead, in the remaining regressions we only include the basic set of control variables.

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 both physical and human 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), which is observed between 1951 and 2019, providing four more years of coverage than the growth rate of TFP. While the sample mean is 1.9%, the median is 2.3%, and the standard deviation is 6.3%, an Augmented Dickey Fuller Test with a linear trend and one lagged term rejects the hypothesis that this variable has a unit root (p-value < .001).

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 = .003). As expected, substantively speaking, this is a stronger effect than that obtained in the previous set of models where the

dependent variable is TFP. 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 versus 36 years) to double its GDP. 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. 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 (uncorrelated with the error term).

Evaluating the Mechanisms Connecting Populism to Lower Long Run 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, 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 3. As in Table 2, we estimate these via the System GMM approach. Table 3 also reports the Sargan-Hansen tests of the overidentifying restrictions; across all models we return chi-squared statistics from Sargan-Hansen tests of the over-identifying restrictions that prevent us from rejecting the joint null hypothesis that the instruments are valid (uncorrelated with the error term).

Table 3. ARDL Dynamic Panel Regressions Estimated via System GMM, Mechanisms

Dependent Variable	(1) Govt. Size	(2) Public Investment	(3) Private Investment	(4) R&D Spending	(5) Researchers P.C.	(6) 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
p-value	0.12	0.242	0.152	0.544	0.888	0.588

Notes: **significant at the .05 level; ***significant at the .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 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. We apply the inverse hyperbolic sine transformation to the dependent variables measured in per capita terms (Models 5 and 6) because these variables have high kurtosis, and we wish to make the coefficients robust to outliers and extreme values (see Burbidge, Magee, and Robb 1988; Wooldridge 2015: 172).

In Table 3, Model 1 (Column 1) the dependent variable is government size operationalized as Government Consumption at current national prices (adjusted for PPP) as % GDP. It is from the Penn World Tables (Feenstra, Inklaar, and Timmer 2015). While the sample mean is 17.9%, the median is 17.4%, and the standard deviation is 7.0%, an Augmented Dickey Fuller Test with a linear trend and one lagged term rejects the hypothesis that Government Consumption (% GDP) has a unit root (p-value < .001). The TLRE made by a switch to unified populist rule on the size of government is to increase it by 5 percentage points (p-value = .002). It takes 138 years for this cumulative negative effect to fully materialize and, thus, for government consumption to return to its pre-populist trajectory.

While Table 3, Model 2 (Column 2) reports that government spending on public investment does not increase (in a statistically significant manner) after a switch to populism, Model 3 (Column 3) reveals that private investment does strongly decline (both variables are from the IMF Investment and Capital Stock Dataset 2021 and their coverage is from 1960 to 2019). This suggests 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. Meanwhile, the TLRE made by a switch to unified populist rule on private investment (% GDP) is to decrease it by 4 percentage points (p-value = .05).[23] It takes 64 years for this cumulative negative effect to fully materialize and, thus, for private investment to return to its pre-populist trajectory.

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[23] While the sample mean is 1.9%, the median is 2.3%, and the standard deviation is 6.3%, an augmented Dickey Fuller Test with a linear trend and one lagged term rejects the hypothesis that Government Consumption (% GDP) has a unit root (p-value < .001).

Figure 8. Lag Distribution for ARDL Model 6, Table 3.
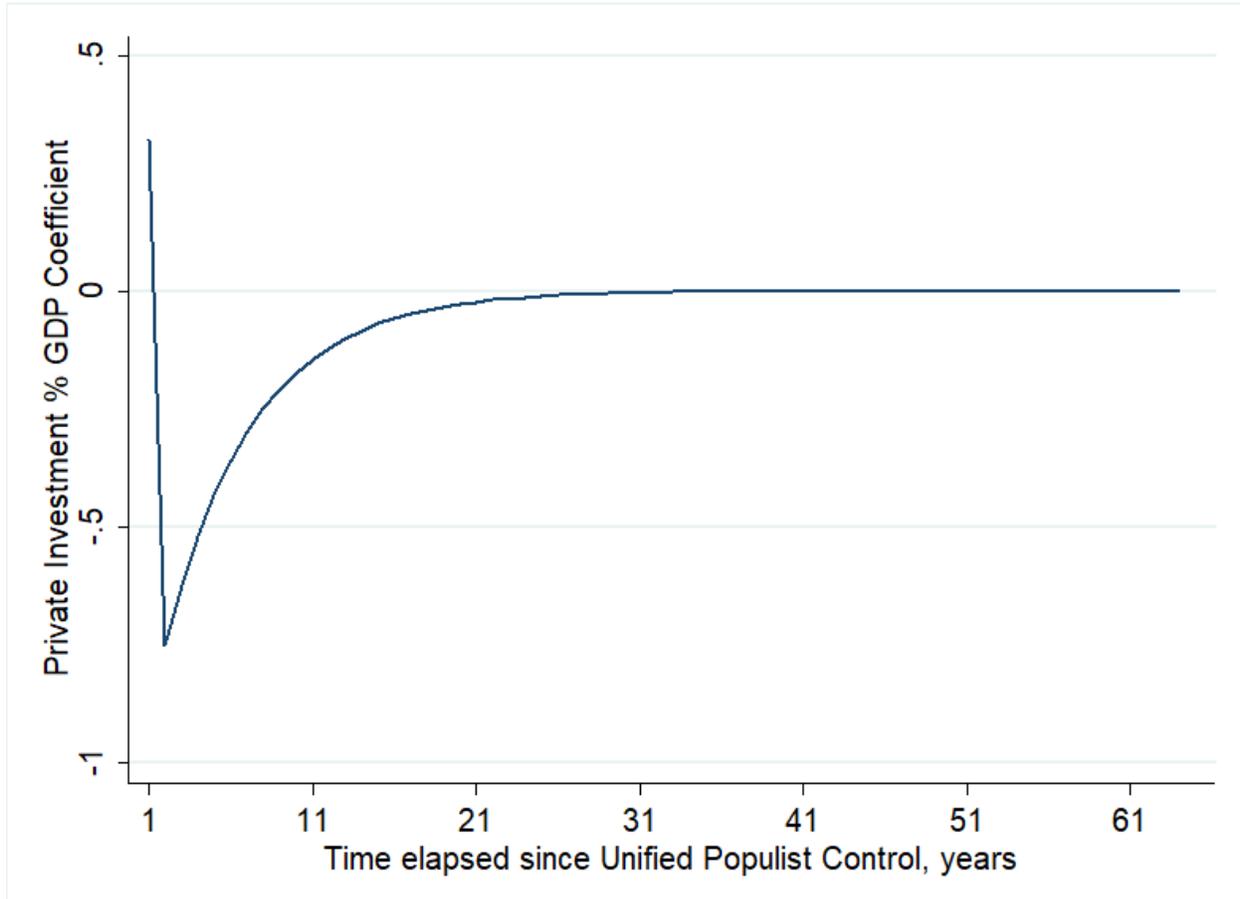
Notes: $X_{it-h} = \rho^{h-1}(\rho\beta_1 + \beta_2)$, where $\rho_0 = .833$, $\beta_1 = 0.321$, and $\beta_2 = -1.017$ (see Table 3, Column 3).

To make better sense of this result, Figure 7 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 .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), which is from the UNESCO Institute for Statistics. Table 3, Model 4 (Column 4) reports the TLRE made by a switch to unified populist rule on this variable: it decreases it by .907 percentage

points (p-value = .002).[24] 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 < .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.[25] 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 < .001), which strongly suggests that the negative long-run effect we reported above may not be spurious.[26]

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[24] 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.

[25] 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 equation 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 9 observations are needed. This would exclude 27 countries from the regression.

[26] We fail to reject this hypothesis when a trend term is included, however.

Table 3, Model 5 (Column 5) reports the relationship between populism and the number of researchers per capita, which is from the UNESCO Institute for Statistics.[27] The TLRE made by a switch to unified populist rule on hyperbolic sine(Researchers Per Capita): it decreases them by 39.7 percent (p-value = .001).[28] However, and despite the fact that 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 < .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 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 < .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, which is from the WBDI. An Augmented Dickey Fuller Test with a linear trend and one lagged term fails

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[27] It is available between 1997 and 2019; the mean value of researchers per one million people is 2,236.417, the median is 1,699.498, and the standard deviation is 1,942.439. We apply the inverse hyperbolic sine transformation to the number of researchers per capita because this variable has high kurtosis, and we wish to make the coefficients robust to outliers and extreme values (see Burbidge, Magee, and Robb 1988; Wooldridge 2015: 172).

[28] It is available between 1981 and 2019; the mean value is 280.2 patent applications per one million people, the median is 72.5 per one million, and the standard deviation is 542.1 per one million. We apply the inverse hyperbolic sine transformation to the number of patent applications per capita because this variable has high kurtosis, and we wish to make the coefficients robust to outliers and extreme values (see Burbidge, Magee, and Robb 1988; Wooldridge 2015: 172).

to reject the hypothesis that the number of patent applications per capita has a unit root (p-value < .001); moreover, the regression returns an LDV coefficient below 1.0. 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 percent (p-value = .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.

CONCLUSIONS

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 executive and legislative branches are controlled by populists, on dynamic efficiency and long run growth. We argue that populists indulge in protectionism, crony capitalism, and redistribution and, in doing so, severely repress their financial systems and engage in other activities that are bad for 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.

A case study of post-World War II Argentina supports our view, as do dynamic panel models using the ARDL framework estimated by System GMM. We find that populism seriously distorts countries' long run growth trajectories and that this finding is not driven by left-wing governments, or poor countries, or 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 valid (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. Indeed, 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 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. But this destroys individual and firm level incentives to improve efficiency and innovate. Populism is, in short, about off-balance sheet redistribution today, achieved by distortive regulations, at the expense of a bigger pie tomorrow.

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 overregulation. 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.

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APPENDIX

In this appendix, we explain how we code the variables that comprise our Populism Dataset. To decide if a country year was under unified populist rule (whether populists controlled both the executive and legislative branches), we first create three variables from the original Votes for Populists dataset and from consulting a host of primary and secondary sources:

- Executive Populist Vote Share, which measures the vote share of populist presidents or populist parties that are in government (either in a coalition or governing solo).

- Legislative Populist Vote Share, which measures the populist vote share in the legislature.

- Populists in Power, which is built from Executive Populist Vote Share and is a dummy that equals 1 if the prime minister or president is a populist, otherwise it equals 0.

The latter two variables are then used to create our key independent variable in our analyses. Specifically, these allow us to identify whether a "unified populist government" rules a country during any given country year; we create a dummy variable that indicates if that is the case. Below, we present detailed information on departures from the Votes for Populism dataset by country and the reasons why.

Argentina: Military junta overthrows Peron in 1955 so vote shares go to 0 until 1972 (the Peronist party was outlawed). Elections occurred in 1973 but in 1976 a dictatorship was established again until 1983.

Austria: Coded as parliamentary since the head of state is largely a ceremonial figure. We updated the FPO share in the 1971 elections. In 1970 and from 1983 to 1985 the FPO was in a coalition government led by the Socialists. In 1999-2001 the FPO entered a coalition government led by OVP, then again in 2002-2005, and again in 2017.

Bolivia: We copied the vote share of Victor Paz Estensorro to the legislature since his party had a majority in Congress. The elections were annulled but the MNR, his party, was able to come to power the next year after a popular national revolution. Victor Paz Estensorro also won the 1964 elections, however, following the elections, General René Barrientos led a military coup in November 1964, removing Paz from office. The coup led to a series of authoritarian and military regimes that remained in power until 1982. The elections in 1966 were not free and fair.

Brazil: There was a military coup in 1964 so the vote shares are set to 0 until 1982, when the first legislative free and fair elections happened.

Bulgaria: Recoded as a parliamentary system. We fixed mistakes in the coalition variable.

Cambodia: In 2018, the Cambodia National Rescue Party did not contest in the elections, so it was changed to 0.

Chile: Alessandri's vote share was copied and pasted from 1920 to 1951, then Ibanez from 1952 to 2019. We now have Ibanez correctly from 1952 to 1958. He is an independent and did not have support from the legislature. Montalva is also considered a populist by the literature and he is president from 1964 to 1969. We copy the vote share of his party, the PDC, in the legislature column. We do the same for Salvador Allende, president from 1970 until the coup of 1973. We copy the vote share of his party coalition in the legislature.

Colombia: Jorge Eliecer Gaitan's vote share was mistakenly copied and pasted from1946 to 1961. The ANAPO vote share was mistakenly copied from 1972 to 2001, but should end in 1977. Uribe's 2006 vote share should end in 2009, and not in 2013.

Costa Rica: Rafael Calderon's vote share was incorrectly copied from 1940 to 2019. From 1950, we have no record of populism in Costa Rica.

Croatia: Semi presidential system until 2000, then parliamentary.

Cuba: Data ends in 1958 with the beginning of the Cuban revolution.

Czech Republic: In 2010, VV entered a coalition government led by ODS. In 2013, ANO entered a coalition government led by CSSD. In 2017, ANO formed a minority government, hence we copied its share to the executive.

Dominican Republic: Bosch was removed from office in 1963 by a coup. The 1966 election results are copied through 1977, but they should stop in 1969. Since the PRD and PLD are both identified as populists, whenever they're in power we copy over their share to the executive.

Ecuador: We keep 0 in legislative populist vote share in Ecuador because Ibarra's party was not in parliament.

Estonia: In Estonia, the Fatherland coalition and the ENIP were part of the executive from 1992-1994 under PM Mart Laar, who then resigned after a vote of no confidence. Mart Laar from the Pro Patria Union formed a government again in 1999 and he stayed in power until 2001, when he resigned.

Finland: Is now coded as parliamentary starting in 2000 (new constitution). The Pro Patria (IRL) was also in the coalition government with Reform from 2007 to 2010 (the PM was from Reform), then again from 2011 to 2015, and again from 2016 to 2019. In 2019 EKRE was in a coalition government led by the Centre Party.

France: There is a mistake with the UDCA. In 1956 it was called Union et Fraternite Francaises, and it was dissolved in 1962.

Georgia: Gamsakhurdia's vote share was wrongly copied from 1991 to 2015. There was a coup in late 1991/early 1992 where Gamsakhurdia was removed.

Greece: The coalition variable was not always coded correctly, so we fixed that to make sure that the percentage executive was correct and that we correctly identified whether populists were actually in power.

Guatemala: The second round vote share for Jimmy Morales is reported. His party did not have a majority in Congress, so we did not copy his vote share.

Haiti: Astride was only president in 1991, 1994-1996, and then 2001-2004. He was removed by coups in each case. In each case, we copy the vote share of his party in the legislature for the year in question.

Honduras: Manuel Zelaya was incorrectly copied from 2005 to 2019. He was president until 2009 (when he was ousted), and we copied the share to the legislature since his party had a majority.

Hungary: Issues with the coalition variable. We noted that Fidesz was in power in 1998. Conversely, Fidesz was not in power in 2002. Fidesz was again in power in 2010.

India: Fixed 1980, to note that I. Ghandi's party was in government until she was assassinated in 1984. Similarly, in 2014, we note that the BJP is actually in power and not just in parliament.

Ireland: Now coded as parliamentary not presidential.

Israel: The coalition variable was not always coded correctly, so we fixed that to make sure that the percentage executive was correct and that we correctly identified whether populists were actually in power.

Italy: The coalition variable was not always coded correctly, so we fixed that to make sure that the percentage executive was correct and that we correctly identified whether populists were actually in power.

Japan: The Liberal Democratic party's results were mistakenly copied from 2005 to 2011, but should end in 2009, since in 2009 the DPJ won the elections.

Lithuania: Many mistakes in identifying whether the populist party in question was in the coalition government or not, which we fixed.

Macedonia: Now coded as parliamentary not presidential. The president is largely ceremonial. The executive populist vote is based on legislative elections, and not presidential.

Mexico: We end Mexico's PRI populism in 1994. Salinas de Gortari is the last populist (Ronchi 2007). Whenever the data only provided the legislature share of populist votes for the PRI, we also added the executive share (based on presidential elections).

Nicaragua: Daniel Ortega is identified as populist. When he was in power we copied his share to the legislature if his party had a majority, otherwise we did not.

Pakistan: Elections for the Assembly were held in 1970, but the Assembly was eventually inaugurated in 1972 after Yahya resigned and handed power to Zulfikar Ali Bhutto. Bhutto became Prime Minister in 1973, after the post was recreated by a new constitution. Bhutto won the elections in 1977 with 60% of the vote, but he was overthrown by a military coup. The original dataset mistakenly copied and pasted Bhutto's vote share from 1977 to 1997.

Panama: Arnulfo Arias' vote share in 1948 was copied and pasted till 1963. Arias was initially denied his electoral success in 1948 by the military. In 1949, the National Assembly declared he had won. In 1951, he was overthrown by the police chief. He did not have a majority in the National Assembly so we coded the legislative variable as 0. In 1968, he won again, but was ousted after only 11 days in office.

Paraguay: Fernando Lugo was mistakenly copied and pasted from 2008 to 2019. He was in power from 2008 to 2012, so we edited it accordingly. In August 2008, shortly before taking office, Lugo struck a deal with Oviedo, enabling him to govern with a parliamentary majority. Together, the Authentic Liberal Radical Party and National Union for Ethical Citizens held 25 out of 45 Senate seats and 44 out of 80 House of Representatives seats so we entered the share of votes of his party, the Patriotic Alliance for Change, and the National Union of Ethical Citizens,

in the legislature too. He lost support from the Liberals in 2009, which meant he had no more majority in Congress, so from 2009 we entered 0. Lugo was impeached in 2012.

Peru: Luis Miguel Sanchez Cerro and Victor Raul Haya de la Torre were mistakenly copied and pasted from 1931 to 1955. Victor Raul Haya de la Torre from the Peruvian Aprista Party was President in 1962, but elections were annulled by a military coup so we entered 0. Fernando Belaunde Terry was elected president in 1963, but he did not have a majority in Congress, so we coded the legislative populism variable as 0. Following a coup on 3 October 1968, no further elections were held until a Constituent Assembly was elected in 1978, so we have 0s in both legislature and executive between 1968 and 1978.

Philippines: In 1953, Ramon Magsaysay was elected president with the Nacionalistas so we code his vote share as populist since the party is identified as populist. We do the same in 1957 for Carlos Garcia and in 1965 for Ferdinand Marcos. Martial law started in 1972. We code Ferdinand Marcos as a populist based on these sources (McCoy 2017, Webb and Curato 2018). For populist executive vote share, we carry forward his 62.2% until 1986, when he is ousted. He dissolved the Chambers and ruled by decree from 1973 until 1978, hence we enter 100 under legislative vote share. After that, we enter the share obtained by his party in parliamentary elections until 1986. Finally, we note that Estrada was ousted in 2000.

Puerto Rico: The vote share for Luis Munoz Marin was mistakenly copied and pasted from 1960 to 2019. We now stop his vote share in 1963.

Serbia: It is now coded as parliamentary not presidential.

Slovakia: It is now coded as parliamentary not presidential.

Slovenia: It is now coded as parliamentary not presidential.

South Korea: Roh Moo-hyun is coded as populist. His party, the Millennium Democratic Party, did not have a majority in Parliament when he was elected. Roh and his supporters left the

Millennium Democratic Party in 2003 to form a new party, the Uri Party. The Uri Party won a majority in parliament in 2004, but lost it on April 30 2005, hence we code this accordingly.

Sri Lanka: It is a semi-presidential system, but we code it as presidential. Mahinda Rajapaksa is identified as a populist president. Hence, when he won the presidential elections we added the vote share of the party he belongs to (Sri Lanka Freedom) to the legislature populist vote share, to signal he had support from the legislature.

Switzerland: The variable Populists in Power is coded as 0 because there is not a figure like a Prime Minister or President.

Thailand: The 2006 elections were annulled by a coup. The 2007 executive was only in place for a year, and on 2 December 2008, the People's Power Party (PPP) had been dissolved by the Constitutional Court over vote buying. The PPP's executive team was banned from politics for 5 years. After the party's dissolution, all of the party's members of parliament had to join another party if they wished to retain their seat. The majority of them transferred to the newly founded Pheu Thai Party. Some representatives defected to the Democrats, which enabled the Democrat Party leader Abhisit Vejjajiva to be elected by parliament as prime minister. The 2011 results were mistakenly copied and pasted until 2019, but a military junta was in power from 2014 to 2019, so populist vote shares now take the value 0 from 2014 to 2019.

Turkey: It switched to direct presidential elections in 2014, so executive power rests with the president starting in 2014.

Ukraine: It is a semi-presidential system but we code it as presidential.

Our main measure of Unified Populist Rule is constructed by creating a dummy variable that takes value 1 whenever the Populists in Power dummy variable is equal to one and the Legislative Populists Vote Share is larger than 50%. However, it 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. Hence, we also create an alternative version of the Unified Populist Rule variable. The alternative version differs in four main ways. First, for parliamentary regimes, it only codes as populist country years where the populist prime minister's (PMs) party has a majority of seats in the parliament, but not when the PM heads a coalition cabinet in which their party does not have an absolute majority of seats. Second, it codes as populist country years where the percentage of the vote share for populist parties is below 50%, but the number of populist seats is above 50% due to the asymmetric allocations of votes to seats in some proportional representation systems. Third, it excludes cases in which the percentage vote for populist parties was above 50%, but some of that share went to populist parties that were not represented in the cabinet and that did not support the government in parliament. Fourth, it complements the Votes for Populists data and our analysis of primary and secondary sources with the Funke, Schularick, and Trebesch (2020) populism data. Below we report the countries that change as a result of this different coding scheme.

Argentina: in 1950 the Peronistas had a majority in parliament (111/158 seats). In 1989, 1991 and 1995, the PJ controlled, respectively 127/254 seats,130/254 seats, and 145/257 seats, so Menem did have a majority until 1996 although it doesn't appear so in our dataset. In 2003, the PJ had a majority in the chamber of deputies until 2005, and so again in 2007 until 2009. Then again in 2011 to 2013.

Bulgaria: The eighty-seventh Cabinet of Bulgaria (in office from July 27, 2009 to March 13, 2013) was a minority government chaired by Boyko Borisov. Attack was not the party of the PM. The PM's party had 116 seats out of 240, short of 5 seats for absolute majority.

Bolivia: the president's party had no legislative majority in 1993.

Brazil: no legislative majority in 1950-54 for Vargas. And no legislative majority for Fernando Collor de Mello in 1989.

Chile: Montalva's party had a majority of seats in 1965 to 1969.

Dominican Republic: from 1996 to 2000 the president did not have a majority. The president had a majority from 2000 to 2002. Then again from 2006 to 2019.

Honduras: Zelaya's party did not have an absolute majority in parliament, with 62 out of 128 seats.

India: INC (Indira Gandhi's party) had a majority in Congress in 1967. And also in 1970. It was not in power and did not have a majority of seats in 1977. It did so again in 1980. Then the BJP had a majority of seats in 2014.

Italy: In 1994 Berlusconi's pre-electoral coalition was able to form a government and win an absolute majority of seats. We hence code this is an absolute majority. We do the same in 2001. Finally, we do the same for 2008-2011 since, because of the electoral law and how seats were assigned, Berlusconi did have a majority in parliament despite receiving less than 50% of the votes.

Japan: In 2003, although the LDP failed to secure a simple majority, due to their coalition with the NK, on November 19, the Diet appointed Junichiro Koizumi the Prime Minister in its short special session (which elect the prime minister) and, within a month, the LDP regained a majority by absorbing the Conservative Party. In 2005, the LDP won an absolute majority.

Macedonia: In 2008 VMRO-DPA held an absolute majority of seats.

Pakistan: In 1972 Bangladesh, which used to be East Pakistan and which had elected a majority Awami, seceded from Pakistan, where in 1973 Bhutto became PM and now had a majority of PPP seats in the now smaller National Assembly.

Panama: Martinelli's coalition (the Alliance for Change) had a majority also in the parliament.

Peru: No absolute majority in congress for president Humala from 2011 to 2015 (although most other parties in Congress were also populist).

Philippines: In 1953, the Nacionalistas had a majority of seats in the House of Representatives.

Poland: In 2015, the PiS was able to win an absolute majority of seats.

Serbia: In 2014, the SNS coalition won a majority of seats.

Slovakia: In 2006, Fico announced that the government coalition would consist of his Smer-SD party, together with the Slovak National Party and People's Party-Movement for a Democratic Slovakia. In 2012 Robert Fico's Direction – Social Democracy won an absolute majority of seats.

Thailand: In 2001, the Thai Rak Thai party co-founded and led by Thaksin Shinawatra won the largest number of votes and 248 of the 500 seats on a populist platform of economic growth and anti-corruption. Following the elections, it gained a parliamentary majority by merging with the New Aspiration Party, giving it 286 seats. A coalition government was formed with the Thai Nation Party. In 2007, the PPP won 233 out of 480 parliamentary seats, just short of absolute majority. In 2011, the populist Pheu Thai Party won a majority with 265 seats.

Turkey: Erdogan had a majority in both 2002 and 2007 (even with less than 50% of votes).

Venezuela: In 1973, Carlos Address Perez's party gained a majority of seats in the legislature (until 1977). In 2000. Chavez's party gained a majority of seats in the National Assembly (despite getting less than 50% of the votes). The president's party had a majority of seats in the legislature through 2014.

In this alternative version of populism we complement the Votes for Populists data and our analysis of primary and secondary sources with Funke, Schularick, and Trebesch (2020)'s data:

Australia: 1950-2019

Bolivia: 1950-2019

Bulgaria: 1950 to 2000

Canada: 1950-2019

China: 1950-2019

Croatia: 1950-1990

Cyprus: : 1950-2019

Czech Republic: 1950-1990

Denmark: 1950-1973

Egypt: 1950-2019

Estonia: 1950-1992

Finland: 1950-1962

France: 1950-1955

Germany: 1950-1990

Greece: 1950-1973

Hungary: 1950-1994

Iceland: : 1950-2019

Israel: 1950-1973

Indonesia: we consider this as unified populist rule from 1959-1966 when Sukarno established a presidential system that would make it easier to govern by decree. He disbanded parliament and replaced it with a new parliament where half the members were appointed by the president.

India: 1950-1967

Ireland: 1950-97

Japan: 1950-2003

Latvia: 1950-2019

Lithuania: 1950-1995

Luxembourg: 1950-2019

Malaysia: 1950-2019

Malta: 1950-2019

Netherlands: 1950-1976

New Zealand: 1975-1984 Muldoon was a populist and had a majority in Parliament.

Norway: 1950-2019

Paraguay: 1950-2019

Poland: 1950-1990

Portugal: 1950-2002

Romania: 1950-1990

Russia: 1950-1993

Slovakia: 1950-1990

Slovenia: 1950-90

South Africa: Zuma coded as populist and it had a majority in Parliament from 2009 to 2018.

Republic of Korea: 1950-2002

Spain: 1950-1976

Sweden: 1950-1987

Switzerland: 1950-1971

Taiwan: 1950-1992

Thailand: 1950-2000

Turkey: 1950-2002

UK: 1950-1964

US: Trump and Republican majority 2016-2018.

Uruguay: 1950-2019

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