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Authors

Burgess, Matthew G
Carrico, Amanda R
Gaines, Steven D
[et al.](#)

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Prepare developed democracies for long-run economic slowdowns

Matthew G. Burgess^{1,2,3,*}, Amanda R. Carrico², Steven D. Gaines⁴, Alessandro Peri³, Steve Vanderheiden^{2,5}

¹Cooperative Institute for Research in Environmental Sciences, University of Colorado Boulder, CO 80309

²Environmental Studies Program, University of Colorado Boulder, CO 80303

³Department of Economics, University of Colorado Boulder, CO 80302

⁴Bren School of Environmental Science and Management, University of California Santa Barbara, CA 93106

⁵Department of Political Science, University of Colorado Boulder, CO 80302

Abstract

Developed democracies proliferated over the past two centuries during an unprecedented era of economic growth, which may be ending. Macroeconomic forecasts predict slowing growth throughout the 21st century for structural reasons such as aging populations, shifts from goods to services, slowing innovation, and debt. Long-run effects of COVID-19 and climate change could further slow growth. Some sustainability scientists assert that slower growth, stagnation, or de-growth is an environmental imperative, especially in developed countries. Whether slow growth is inevitable or planned, we argue that developed democracies should prepare for additional fiscal and social stress, some of which is already apparent. We call for a ‘guided civic revival’, including government and civic efforts aimed at: reducing inequality; socially integrating diverse populations and building shared identities; increasing economic opportunity for youth; improving return on investment in taxation and public spending; strengthening formal democratic institutions; and investing to improve non-economic drivers of subjective well-being.

Introduction

Modern liberal democracies—with broad economic and political freedom and stability—predominate in today’s developed world, but they are a historical anomaly. Before the Industrial Revolutions, there was both little per-capita Gross Domestic Product (GDP) growth and little democracy (Fig. 1a). Since the Industrial Revolutions, most countries have escaped the ‘Malthusian trap’—where land productivity growth led to growth in

*correspondence to: matthew.g.burgess@colorado.edu.

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Supplementary information

Supplementary Table 1 shows regression coefficients, 95% confidence intervals, and *p*-values for the linear model fits shown in Fig. 2e,f.

population, but not affluence¹—and global affluence has increased by more than a factor of ten^{1,2}. This unprecedented global growth has temporally coincided with the global proliferation of democracy (Fig. 1a). In the early 19th century, less than 1% of the world's population lived in a democracy, compared to about 55% today³. There is some evidence of bidirectional causality: on average (with some exceptions), open, democratic institutions promote growth^{4–6}, and long-run growth and affluence promote the formation of democratic institutions^{7, 8}. Developed (i.e., high-income) democracies have been at the forefront of these trends (Fig. 1b), but now may face the prospect of long-run slowdowns in economic growth in the 21st century.

Here, we review the reasons 21st-century economic growth might be slow; we discuss potential fiscal and social challenges that slow growth could pose in developed democracies; and we discuss strategies countries may use to address these challenges. In our discussion, 'slow growth', 'stagnation', or 'de-growth' usually refers to slower, zero, or negative long-run growth, respectively, in per-capita GDP, which measures affluence. However, we also discuss GDP growth in the context of fiscal challenges (and in Fig. 2), as GDP is the denominator of the debt-to-GDP ratio, and it is the tax base. We consider de-growth (in contrast to slow growth and stagnation) mostly beyond the scope of our discussion, since economists consider unintentional de-growth unlikely⁹, and intentional de-growth (which some have called for¹⁰) seems unlikely to gain political traction in democracies¹¹.

We focus on developed democracies, because developed countries (most of which are democracies) may reach long-run stagnation first (Fig. 1a,b), and because instability within developed democracies would have significant implications for the international order. Democracies, in general, have brought gains in political, economic, and intellectual freedoms. These freedoms, coupled with the rule of law, have been critical drivers of growth^{4,6}, with few exceptions⁴. Freedoms of thought, speech, and assembly have been critical to the creation and dissemination of knowledge—as exemplified by, for instance, 48 of the world's 50 top universities being found in democratic countries¹². Surveys often find democratic freedoms to be positively related with subjective well-being (e.g.,¹³).

Some of the challenges slow growth or stagnation could pose to developed democracies affect democracy itself, such as stresses to social capital—the social cohesion, trust, norms, information flows, and civic institutions that underpin healthy democracies¹⁴—or increases in inequality and consequent concentrations of political power¹⁵. Other challenges we discuss—such as fiscal challenges—are less specific to democratic systems.

Many developed democracies are already under stress^{16–18}. Democratic institutions such as free press and fair elections have been under attack since the onset of the global financial crisis¹⁶. Trust in these institutions is declining in some developed democracies, especially among youth^{17,19}. Several countries have recently elected populists who openly challenge some of these values, including Hungary, Italy, Poland, Turkey, and the U.S.

On the other hand, some have noted that key drivers of slowing economic growth in developed democracies reflect important gains in human well-being—e.g., gains in women's rights contributing to falling birth rates, and an abundance of durable goods fueling shifts

towards service economies²⁰. However, even some proponents of intentionally slowing growth assert that many aspects of modern socioeconomic systems rely on long-run growth^{21, 22}. Certainly, modern socioeconomic systems have not existed under any other regime. Thus, it is reasonable to consider that modern socioeconomic systems could be stressed in a slow-growth or stagnant world.

We discuss strategies developed democracies may take to overcome the fiscal and social challenges we identify. Our discussion is meant to be general, but we also focus some of our discussion specifically on the U.S., Japan, and Italy. The U.S. is the world's most economically and politically powerful democracy, and thus constructively anticipating its challenges may be especially important. Japan and Italy are two developed democracies that have already experienced two decades or more of relative economic stagnation (Fig. 2a,b). Since these three countries are also culturally and politically different from each other, they provide instructive contrasts in some of their experiences with challenges associated with slow growth, from which lessons can be drawn. We focus most of our discussion on domestic challenges, but slow growth could also have important geopolitical implications that deserve attention in future research.

To prepare developed democracies for the fiscal and social challenges of slow growth or stagnation, we call for a 'guided civic revival' that includes government and civic efforts aimed at: decoupling social capital and individual well-being from economic growth, integrating diverse populations, improving opportunity for youth, improving the return on investment (ROI) in government spending and taxation, and institutionally safeguarding core elements of democratic government. Limiting inequality and improving access to education are key to this agenda, as are government and grass-roots investments in social integration and building shared national identities, to combat headwinds of polarization. We discuss some specific policy suggestions previous studies have made pursuant to some of these objectives (which we do not necessarily endorse). However, our aim here is to catalyze discussion of these issues, rather than to be any sort of 'final word'. There are many unanswered questions herein that should be a priority for multidisciplinary research before the consequences of slowing economic growth materialize more broadly.

Why 21st-century growth could be slow

Recently, some macroeconomists have argued that the 20th century's rapid economic growth—much like the 20th century's rapid population growth—may be a historical anomaly for structural reasons, ending soonest in developed countries. Population growth is slowing and populations are aging^{27–29}, which reduce the relative size of workforces, and increases public debt from social-welfare programs for elderly citizens, as has happened recently in Japan³⁰. Endogenous growth models—which emphasize innovation as a key driver of growth^{20,31}—suggest population stagnation could stifle innovation³². Gains from physical capital accumulation are limited with a finite population. Gains in education and health—key determinants of human capital—seem to be slowing in developed countries^{22,33}. Urbanization and female workforce participation cannot possibly exceed 100%. Inventions of the 19th and 20th centuries revolutionized nearly every sector of the economy simultaneously³³. Some argue that this feat will unlikely be repeated, even by ongoing

advances in high-tech sectors, which so far have not returned productivity growth to pre-1970 levels in either the U.S. or other developed democracies at the technological frontier³³. Labor productivity growth may be more difficult to increase in service sectors, and richer countries have shifted towards more service-oriented economies²⁰. In addition to these structural—possibly unstoppable—negative pressures on growth, many countries' growth may be hindered by high public and private debt burdens^{33,34} and inequality¹⁵.

Some economists argue that artificial intelligence and other transformative innovations on the horizon could maintain longer-term growth³⁵—and perhaps even counteract the effects of aging if labor shortages increase demand for productive automations³⁶—especially if human capital and complementary innovations catch up³⁷. However, most leading macroeconomists in a recent survey⁹ projected slowing per-capita GDP growth across the world throughout the 21st century and disagreed only about the expected magnitude. Their median projection of average 21st-century U.S. per-capita GDP growth was 1.5%/y, compared to the 2%/y average from the 20th century. In China, their median per-capita-GDP growth projection was less than 3%/y, compared to more than 7%/y from 2000 to 2010². Only in low-income countries did respondents project 21st-century growth comparable to 20th-century growth⁹. Indeed, exogenous growth models predict declining growth with increasing affluence³⁸—consistent with historical data^{39–41} (Fig. 1c).

The Shared Socioeconomic Pathway (SSP) scenarios^{25,26} used in climate change research, as well as other statistical and numerical economic projections^{42,43} also agree on widespread slowing of 21st-century economic growth (Fig. 1a,b). Moreover, authoritative economic forecasts—such as by the International Monetary Fund (IMF) (which the SSPs are based on pre-2018²⁶) and national governments—have historically tended to over-project growth and were successively revised down^{44–48} (Fig. 1a,b). Failing to predict crises—as the ongoing COVID crisis illustrates⁴⁹—is only one among several reasons economic forecasts tend to be biased high. Other reasons forecasts have tended to over-project economic growth include political pressures, changing productivity trends, and output gaps failing to close as assumed (see refs.^{44–47,50}, and refs. therein).

Population growth forecasts were also recently revised down²⁹, with birth rates declining faster than anticipated in developing countries⁵¹. Some demographers now anticipate substantial population declines in many regions of the world in the second half of the 21st century^{29, 51}. Damages caused by climate change, and efforts to mitigate climate change, may also slow future growth^{52–55}. COVID-19 could slow long-term growth by discouraging trade or causing lasting human capital losses from education-system disruptions^{49, 56–58}. Indeed, a retreat from globalization is a defining feature of the SSP scenario with slowest economic growth: 'Regional Rivalry' (SSP3; Fig. 1a,b)^{25, 26}.

Separately from the debate about whether 21st-century growth will be slow, some environmental scientists and ecological economists argue that economic growth should be intentionally slowed, halted, or even temporarily reversed (i.e., de-growth) for the sake of sustainability (e.g.,^{10, 59–61}). At the core of many of these arguments is pessimism about the feasibility of reducing the energy and material footprint of economic growth, combined with the fact that the current footprint appears unsustainable (e.g.,⁶²). Other ecological

economists argue that high levels of productivity growth observed in developed countries during the mid-20th century may have been dependent on using energy sources—fossil fuels—with high energy return on investment (EROI) (i.e., little energy inputs are required for energy output), whereas renewables have lower EROI^{22, 63}. Although we consider intentional de-growth unlikely in democracies, it is plausible that some countries could adopt policies that prioritize climate change mitigation or broader environmental protection over economic growth as climate change or other environmental challenges intensify in coming decades.

Fiscal challenges

Long-run slowdowns in economic growth could pose serious fiscal challenges to developed democracies. A common measure of a country's debt burden is the ratio of government debt to GDP (but see also Furman and Summers'⁶⁴ recent critique of this measure). When an economy is growing, its debt-to-GDP ratio can be reduced without running a fiscal surplus, but without any growth, a fiscal surplus is the only option. Indeed, during the past century, developed democracies have mostly run fiscal deficits and relied on growth to reduce their debt-to-GDP ratios (see ref.⁶⁵). Consequently, long-run slowdowns in growth have coincided with recent debt levels greater than GDP in Japan and Italy (Fig. 2a,b), and the U.S. Congressional Budget Office (CBO) projected a similar trend for U.S. federal debt in the 21st century, even before the COVID-19 pandemic (Fig. 2c).

Slow growth also directly affects budget deficits by reducing tax revenues and increasing demands on spending, via social safety-net programs and—depending on the acuteness and severity of the slowdown—fiscal stimulus. In the U.S., for instance, the CBO's forecasts of growth have gradually declined over the past decade, and their forecasts of public deficits and debt burdens have coincidentally increased (Fig. 2c,d). We can also see the direct effect of growth on deficits in the strong correlations between CBO's forecast errors of growth and both revenues (Fig. 2e) and deficits (Fig. 2f). This correlation deserves attention from fiscal planners, given the tendency of growth forecasts to over-project^{44–47}. Other coincident 21st-century forces—such as the need to mitigate or adapt to climate change—will place additional, but worthwhile, demands on public spending, increasing deficits and debt burdens, all else being equal.

Logically, there is an upper limit beyond which the debt-to-GDP ratio is unsustainable—and thus, countries facing complete stagnation (i.e., zero growth) must eventually balance their budgets. However, at what point this upper limit occurs, and to what extent countries with very-slow-but-still-positive growth must avoid deficits, is a topic of active debate in economics. There is some empirical evidence that debt levels higher than 90% of GDP have historically been associated with slower growth via 'debt overhang'^{34,70}—i.e., where over-leveraged countries are prevented from issuing debt to finance productive investment opportunities. The other direct impact of high debt is high interest payments, which can consume a high fraction of government budgets and eventually can reduce investor confidence in government's ability to repay the debt, resulting in higher interest rates and debt payments⁷¹. This can create a debt spiral requiring a bailout from international

institutions or a write-down from creditors, as occurred, for instance, in Greece following the Great Recession⁷².

On the other hand, the current COVID-19 crisis clearly creates a strong case for running sizeable deficits in the short run. As Blanchard and Leigh⁷³ showed, countries that adopted fiscal austerity policies after the Great Recession under-performed economically relative to their forecasts, and countries that adopted expansionary fiscal policies over-performed.

Moreover, some macroeconomists have recently argued that there is fiscal space for larger deficits in slow-growing developed democracies, even in the medium-to-longer term, due to low interest rates on government debt and relatively high fiscal multipliers^{64,74}. Declining interest rates on government debt can prevent interest payments as a percentage of GDP from rising, even if the debt-to-GDP ratio rises. Blanchard⁷⁴ showed that the burden of a dollar borrowed by the government today shrinks over time as long as the nominal growth rate (GDP growth plus inflation) exceeds the interest rate on government debt—an inequality he showed has almost always held in the post-World-War-II U.S. Furman and Summers⁶⁴ argued that low interest rates can also be a sign that increasing government spending would crowd out relatively little private investment (because the interest rates investors are willing to accept on government bonds are affected by how lucrative private investment opportunities are), which would suggest a higher fiscal multiplier, all else equal.

Japan's and Italy's recent experiences with public debt amidst persistent slow growth illustrate both the link between growth and debt-to-GDP ratios, and the ambiguities—highlighted above—in what this means for desirable deficits in the future. Real GDP growth has been persistently low (<1% on average) in Japan since the mid-1990s and in Italy since the early 2000s (Fig. 2a,b). General government debt-to-GDP ratios rose in both countries during this period, exceeding 100% in both countries and 200% in Japan (Fig. 2a,b), making these two of the most indebted countries in the developed world⁶⁶. However, interest rates on government debt have also declined, to the point where both countries actually now pay a smaller fraction of their GDPs in interest than they did in the mid 1990s, when their debt-to-GDP ratios were lower⁶⁴ (Fig. 3a). Moreover, in contrast to the inflation crises in the late 1970s and early 1980s, inflation has declined and remained low (Fig. 3b). As Furman and Summers⁶⁴ argue, low interest rates, relatively low interest payments (historically speaking), and low inflation all suggest that there may currently be fiscal space for somewhat higher deficits in the short term (certainly in the context of the COVID-19 recovery). However, the prospect of persistent declines in growth throughout the 21st century (Fig. 1) suggests that the issue of sustainable public deficits and debts deserves continued attention. As we argue below, maximizing the return on investment in public spending and taxation is a no-regrets policy, irrespective of what one thinks sustainable debt limits are.

Finally, we note that—although the ‘classical dichotomy’ theory in macroeconomics⁷⁵ suggests that monetary policy is neutral in the long run (i.e., does not affect real growth; in contrast to the short run)—some economists dispute this, arguing that expansionary monetary policy might be useful in addressing challenges of long-run stagnation. For instance, some economists argue that price stickiness can make monetary policy non-neutral⁷⁶. Modern Monetary Theory (MMT)—influential in some political circles despite

being on the fringes of mainstream economic thought—argues that central governments that control their own currencies are limited only by inflation in their abilities to expand the money supply⁷⁷ (but see also criticisms of MMT; e.g.,⁷⁸). We do not intend to adjudicate this debate here, except to note that excessive reliance on printing money to address fiscal problems has sometimes resulted in economic disaster—for instance in Weimar Germany in the 1920s⁷⁹ and more recently in Venezuela⁸⁰.

Social challenges

Slow economic growth makes it harder to lift all boats simultaneously. A completely stagnant economy (in terms of per-capita GDP) is zero-sum, at least in dollar terms: for every winner there is a loser. Thus, slower growth makes it more challenging for governments to craft policies with broadly-felt economic benefits, and intuitively makes society more competitive, with resulting potential for personal stress, conflict, poverty and inequality, and gaps between expectations and reality, all of which have potential to strain the social fabric. Below and in Fig. 4, we highlight several social challenges that could accompany slow growth in developed democracies.

Opportunity and inequality

All else equal, slowing economic growth decreases the rate of job creation, and can increase pressure on both government revenues and social safety nets, which can cause governments to cut spending in opportunity-generating areas such as education⁸⁸. If slowing growth causes retirement savings to grow more slowly than expected, that can incentivize older workers to delay retirement^{89,90}. Each of these forces has the potential to result in increased unemployment, especially for youth⁹¹, and as a result also increase the competitiveness of education systems, as the ratio of elite positions to prospective candidates declines—what Turchin⁹² calls ‘elite overproduction’.

Indeed, the experiences of Italy, Japan, the U.S., and the rest of the Organization for Economic Co-operation and Development (OECD) bear this out, though with instructive variation (Fig. 4a). As OECD economic growth rates gradually declined during the second half of the 20th century (Fig. 1b), unemployment gradually increased, especially for youth (ages 15–24) (Fig. 4a). In Italy, youth unemployment has been especially pronounced, varying around 30% since the early 1980s, and spiking since the Great Recession (Fig. 4a). In contrast, Japan’s youth unemployment was only 4% in 2019; and the U.S.’s 8% (Fig. 4a). Japan’s labor force participation rate is also higher than Italy’s (62% vs. 49%, and 47% vs. 26% for youth in 2020²), meaning that the difference in unemployment rates understates the difference in employment.

Differences between Italy’s and Japan’s recent experiences owe to several factors. One is population aging, which is pronounced in both countries, but slightly more so in Japan². This results in a shortage of workers in Japan especially, which drives down unemployment, all else equal. Japan also has strong cultural norms, both against companies laying off workers, even during economic downturns (e.g.,⁹³), and promoting work and long working hours as a key currency of social status⁹⁴. Conversely, Italy’s culture more strongly values work-life

balance and encourages unmarried youth to live with their parents⁹⁵, which—combined with relatively generous unemployment benefits, wage stagnation, and a competitive labor market—may provide lower incentives to work⁹⁶. Heterogeneity in labor-market protections—with newer, younger workers disproportionately having flexible contracts that are easier to terminate during downturns in southern Europe (in contrast to other OECD regions)—has also contributed to Italy's unemployment being especially pronounced among youth, compared to older workers⁹⁷. Similarly, a more sequential education system—where workers are expected to learn key competencies on the job—may put youth at a greater disadvantage in Italy, especially in the face of downturns and precarious employment^{97,98}.

Decreasing opportunity for youth via slow growth has the potential to entrench inequality in at least two ways. First, decreasing opportunity may create fear of downward mobility among richer families that catalyzes support for policies that entrench class privileges^{99,100}. (Firms may analogously support policies that erode competition or labor rights; such erosion has occurred in the U.S. since its mid-20th-century growth peak^{101,102}.) Second, if slow growth puts downward pressure on public education funding, richer youth are more likely to have access to private alternatives.

There can also be a more fundamental link between slowing growth and increasing economic inequality, highlighted by Piketty¹⁰³. Specifically, Piketty¹⁰³ (see also Krusell and Smith¹⁰⁴) showed that capital's share of income (a measure related to inequality, since capital is mostly owned by the rich) should approach rs/g , where r is the rate of return on capital, s is the net savings rate (increase in the capital stock divided by income net of depreciation¹⁰⁴), and g is the economic growth rate. If growth (g) goes to zero, but both r and s stay positive, then inequality clearly explodes.

In practice, s is likely to decline as g declines, making rising inequality not inevitable^{22,104,105}. For instance, while per-capita GDP growth has followed an inverted V-shaped pattern (rising, then falling) over the past century in developed countries—peaking in the mid-1960s (Fig. 1b)—inequality has only followed the opposite V-shaped pattern (falling, then rising to its previous peak) in English-speaking developed countries, instead following more of an L-shaped pattern in non-English-speaking developed countries¹⁰⁶ (Fig. 4b shows this for the U.S., Italy, and Japan).

A key proximate cause of this difference seems to be higher taxes and safety-net spending, especially in most western-mainland European and Scandinavian countries vs. English speaking countries (Fig. 5). Greater cultural solidarity within non-English-speaking developed countries may be a related ultimate cause. Some research suggests cultural solidarity between poor and rich is a key determinant of political support for economic redistribution among the rich^{107,108}, as well as broader public goods provisioning and social capital^{109–112}. In the U.S., some scholars have traced declining support for universal social safety net programs after the 1964 Civil Rights Act to racism (e.g.,¹¹³). Regardless of the cause, rising inequality increases socioeconomic segregation, concentrates political power, strains public trust, and increases potential for conflict, all of which undermine democracy¹⁵, as we expand on below.

Personal finance

As economic growth has slowed over the past 50–60 years in developed democracies (Fig. 1b), household debt has steadily increased (Fig. 4c). Of course, other factors besides growth may be more important in explaining rising household debt. Two such factors are: (i) financial development increasing access to credit¹¹⁴; and (ii) wage stagnation relative to economic growth and costs of education (a key human capital input) and housing¹¹⁵. Household debt can create overhang¹¹⁶, preventing individuals from making productive capital (including human capital) investments, and it also can make aggregate demand and financial systems more sensitive to shocks¹¹⁴. These challenges could be exacerbated in the short-to-medium run if growth continues to slow faster than consumers and lenders expect, though in the long-run consumer and lender behavior would adjust.

Looking ahead, it is worth considering some potentially profound implications of long-run stagnation for several aspects of personal finance that consumers and households in many developed democracies often take for granted. As discussed above, as economic growth approaches zero, so too must the growth in the capital stock to prevent runaway inequality^{104,105}. Zero growth in the capital stock would mean that, on average, new investments are just barely large enough to cover depreciation. More plainly, exponential growth on modest investments would no longer be an attainable path to wealth accumulation for the average household. Thus, individual contribution models for retirement and education saving (common in the U.S.)—where savings primarily accrue through interest on manageable regular contributions—might need to be reconsidered in favor of more collective saving models (e.g., taxes on workers subsidize retirement for all; progressive taxation subsidizes education for low-income citizens). Similarly, in a stagnant economy, with declining populations²⁹, building wealth through housing appreciation could also cease to be common. Indeed, many Japanese housing markets have experienced declining prices during the country's stagnation period¹¹⁷. If these pillars of personal financial planning needed to be reconsidered, likely so too would related aspects of the social safety net. For instance, social planning for retirement and education funding might no longer be able to depend on the average citizen having adequate private savings.

Mental health, families, and gender

Long-run economic stagnation could affect mental and material well-being—especially of youth—potentially exacerbating several challenging trends which already appear across developed democracies. Many of these trends follow directly from the effect of stagnation on youth employment and opportunity, discussed above, while others are contemporaneous with potentially synergistic effects.

At the individual level, economic anxieties can be damaging to individuals' mental health¹¹⁸. These effects may be especially severe among young people, who, in many developed countries, are the first generation in centuries with lower average wealth than their parents¹¹⁹; but it also affects older people, especially those being left behind by automation and de-industrialization¹²⁰. This mismatch between expectations and reality under slowing growth may be especially challenging psychologically and socially. Indeed,

economic opportunities failing to meet expectations—especially among elite and bourgeois youth—is thought to have been a key catalyst for some political revolutions (e.g.,^{92,121}). In the near future at least, any negative impact of slowing growth on youth mental health will coincide with already skyrocketing incidences of youth anxiety and depression¹²². All of these trends—combined with longer-running trends towards urbanization and female workforce participation⁵¹—have caused marriage and birth rates to decline, such that they are below replacement (2.1 births per woman) in every OECD country in North America, Europe, Oceania, and East Asia¹²³ (Fig. 4d).

Members of all genders may experience unique social challenges in stagnant economies. For instance, in Japan, slow growth over the past three decades has coincided with a marked increase in suicides and social withdrawal among men^{124,125} (Fig. 4e). A smaller male-dominated suicide increase was observed in the U.S. following the Great Recession¹²⁶ (Fig. 4e). Interestingly, however, suicide rates have been much lower in Italy—without an analogous spike in the male rate coincident with the onset of economic stagnation (Fig. 4e). Future research should explore possible sociocultural and climatic/environmental causes of this difference. Social integration is known to reduce suicide risk^{127,128}, including in Italy^{129,130}, and there is some evidence for weather-related effects on suicide risk¹³¹. In the U.S., recent declines in male-dominated manufacturing sectors have led to declines in marriage rates¹³² and increases in male rates of suicide and drug abuse¹²⁰. Many studies have found links between violent crime and economic and social alienation among young men (e.g.,¹³³). Neighborhood-level density of single-parent households—likely to be exacerbated by declining economic opportunity for young men¹³²—also correlates with violent crime rates among young men¹³⁴.

Declines in economic growth might also pose unique challenges to women in developed democracies (as well as in other societies, of course, which is beyond the scope of this paper). At the macro level, there are strong positive correlations between GDP per capita and various measure of women's advancement and equality relative to men¹³⁵. Although economic downturns often disproportionately affect men's employment^{91,136,137} (COVID-19 being an exception¹³⁸), downturns can also affect safety net spending (e.g., healthcare, childcare, paid leave subsidies) that affect women disproportionately (e.g., as occurred in Sweden in the early 1990s¹³⁹). Recessions have also been associated with increased occupational gender segregation¹⁴⁰, and higher marriage rates in regions with job losses concentrated in female-dominated sectors¹³². Single-parent households—which are mostly headed by women—are especially vulnerable to economic downturns¹⁴¹, and recessions affecting male-dominated sectors are associated with lower marriage rates and more out-of-wedlock births¹³². Lastly, economic downturns can create status and identity threats to men that result in rises in nostalgia for patriarchal social structures (e.g.,¹⁴²). Of course, challenges associated with short-term recessions do not necessarily foreshadow challenges in long-run slowdowns, but these are nonetheless gender-related concerns societies trending towards slower growth should prepare for.

Trust and conflict

Slowing economic growth has the potential to stress societies' social fabrics in several ways, with ethnoculturally diverse societies perhaps being especially vulnerable. Across many societies (not only developed democracies), studies have found slowing growth and negative economic shocks associated with: declining social trust (e.g.,^{143,144}; but Searing¹⁴⁵ found a positive effect of recessions on trust in Latin America), declining support for political incumbents⁷ and democratic institutions¹⁴⁶, and increased likelihood of conflict (e.g.,^{147,148}; see Blattman and Miguel¹⁴⁹ for review). Some of these associations have bidirectional causality (i.e., these factors affect growth as well as being affected by growth) (e.g.,¹⁵⁰).

In the U.S., Pew research polls⁸⁶ found nearly 80% of the public trusted the federal government in the mid-1960s, but that number has declined to below 20% in recent years (Fig. 4f). Similar data are not available as far back for other OECD countries, to our knowledge, but Japan's and Italy's trust in government have been steadily below 50% since 2006, with Italy's declining (Fig. 4f).

Rising inequality—especially pronounced in English-speaking countries (among developed democracies)—exacerbates each of these challenges. For instance, it leads to geographic and social segregation by income, concentrates political power among the wealthy, and reduces social trust (separately from slow growth or recessions)^{15,106,151,152}. Piketty¹⁵³ notes that major political parties in several developed democracies have recently re-aligned to more ubiquitously represent the cultural and economic interests of the elite (“Brahmin left vs. merchant right”¹⁵³). Gilens and Page¹⁵⁴ argue that the extent to which post-1980s U.S. government policy empirically matches preferences of the wealthy seems more functionally oligarchic than democratic.

Sociopolitical stresses from inequality can be exacerbated by ethnocultural divisions, which intersect with economic inequality via racial and ethnic inequalities. Ethnocultural divisions—especially ethnic polarization, whereby members of society divide themselves into small numbers of roughly equally sized groups—are associated with lower levels of social trust and civic participation¹¹², support for redistribution¹⁰⁸, and public goods provisioning¹⁰⁹; and higher levels of conflict¹⁵⁵. In her book *Political Tribes*¹⁵⁶, Chua notes that inequality and ethnocultural divisions can combine to create situations where there is a ‘market-dominant minority’—a numerical ethnocultural minority with disproportionate economic and political power. In such situations, both the minority and majority groups feel threatened and entitled to be dominant, in ways that catalyze tribalism and have often caused democracies to fail.

Picking up on several of the trends described in this section, Putnam and Romney Garrett¹⁰² describe coincident hundred-year trends—rising from the 1930s to the 1960s, and subsequently declining—of several measures of social and civic health in the U.S. These measures include economic equality, bipartisanship, various measures of social connection and civic participation, and measures of political and social collectivism (as opposed to individualism). We note that these trends coincide with the rise and fall of per-capita GDP growth³³ (Fig. 1b), though the strength causality in each direction is not entirely clear.

Guided civic revival

How can developed democracies prepare themselves for these fiscal and social challenges of a possible slow-growth century? There are many unanswered questions herein that should be an urgent priority for multidisciplinary research. Indeed, recent monographs have addressed some aspects of the challenges described above^{15,20,59,102}.

Building on this and other research, we argue for a ‘guided civic revival’, aimed at decoupling social capital (social trust, civic participation, collectivism, etc.) and individual well-being from economic growth, reducing inequality, integrating diverse populations, improving opportunity for youth, increasing the return on investment (ROI) in government spending and taxation, and institutionally safeguarding core institutional elements of democracy so that they can withstand stress. We use the term ‘civic revival’ to denote the importance of grass-roots, bottom-up civic forces to the success of such a project. We use the term ‘guided’ to denote that fact that governments will need to play a role as well. We outline specific objectives of what we call ‘guided civic revival’ below, and we discuss ideas aimed at achieving each objective discussed in relevant literature (though we do not necessarily endorse every idea mentioned).

Strengthen democratic institutions

Given that some of the potential stresses on democracy are already apparent¹⁷, and it is unlikely that any society will be able to avoid all of them, democracies should solidify key democratic institutions—free and fair elections, balance of powers, rule of law, minimized influence of money in politics—as deeply and unchangeably as possible (e.g., constitutionally in constitutional democracies, or in laws) so that they can withstand short-term stresses from demagogic leaders or social movements. The recent history of democratic institutions in the United States, in contrast to Turkey and Hungary, provides an illustrative example. All three countries elected populist leaders with open disrespect of each country’s democratic norms. Yet, the U.S.’s constitutionally enshrined separations of powers and transfer of power norms have held, even as the outgoing President refused to concede the 2020 election past the point when the results were certified, culminating in the Capitol riots.

In the long term, however, we acknowledge that there are probably limits to how long institutions can withstand declines in social capital and public trust in government, not to mention ballooning debts. Thus, facing long-run economic stagnation, developed democracies will need to mitigate the fiscal and social stresses described above in order to avoid repeated stress tests on their democratic norms and institutions.

Increase social integration and reduce economic inequality

If social capital is to be decoupled from economic growth, then we argue that building strong shared identities within democratic societies is critical. This may be especially important—and potentially challenging—in ethnoculturally diverse societies. Reducing economic inequality is key to this project.

In every known society, people form group identities—leading to trust, favoritism and altruism towards in-group members, and distrust and sometimes hostility towards out-groups^{156–159}. Group identities can center on biological constructs, such as families, clans or ethnic groups; or they can center on social constructs such as national patriotism or religion. These tendencies underpin the challenges to widespread social cooperation observed in heterogeneous societies^{107–111}.

One of the most effective ways to build shared identities and social trust in diverse societies is through social integration—whereby members of a society have frequent social contact and cultural exchanges^{159–161}. For instance, while Putnam¹¹² found ethnocultural diversity to be negatively associated with social trust and civic engagement in U.S. neighborhoods, a similar study in Canada¹⁶² found the same pattern among older people, but the opposite pattern among younger people—who had more often grown up together and fostered a shared multicultural identity. Integrating neighborhoods and education systems allows children from diverse economic and ethnocultural backgrounds to grow up together, and sometimes reduces ethnocultural tensions^{163–165}; however, the conditions under which integration or contact occur are important to these outcomes¹⁶⁶.

Underfunded education systems and rising economic inequality have become major barriers to school and neighborhood integration in many modern democracies, including the U.S.¹⁵. Therefore, investments in (and lowering costs of) public education—which also reduce economic inequality, have fiscal benefits from high ROI, and disproportionately benefit youth¹⁵—could be a cornerstone of democratic resilience in a slow-growth future. Adapting education systems to provide more directly job-relevant training might improve opportunity for youth, especially during economic downturns^{97,98}. Populations continuing to age could also create opportunity for youth (and possibly cause labor shortages)¹⁶⁷.

Combating economic inequality would benefit from other institutions as well—both redistributive and ‘pre-distributive’ (i.e. preventing rent seeking by the powerful for their benefit; see ref.¹⁵). In large cities, increasing affordable housing supplies and restricting foreign speculation could lessen economic segregation¹⁶⁸. Some studies have found universal social welfare programs (e.g., universal healthcare and education) boost social trust more than means-tested programs¹⁶⁹, but universal programs may also be costlier. Universal redistributive institutions such as ‘baby bonds’—whereby governments provide all newborns with an illiquid sum of money that grows until the baby becomes an adult and can then access it—have been proposed (e.g.,¹⁷⁰) to address racial and class-based wealth gaps in the U.S., and could also enhance education access and youth opportunity. Similarly, housing vouchers that subsidize economically disadvantaged families to move to neighborhoods of their choosing (rather in geographically concentrated subsidized housing) has improved economic mobility in experiments¹⁷¹, and could also promote integration. Many sociologists and some economists argue that restoring and safeguarding the rights of organized labor may also be important^{22,172}, though we note—in light of countervailing concerns about offshoring—that the high-water mark of U.S. labor rights in the early post-WWII period also coincided with historic lows in trade and immigration¹⁷³.

Beyond education and inequality reduction, guided civic revival needs efforts to counter recent trends of polarization and segmentation. Some have recommended citizens engage in local politics, to build community from the bottom up^{102,174}. Others have argued for more drastic measures, such as mandatory (or socially expected) civil service for youth, to boost integration and civic engagement (e.g.,¹⁷⁵). Others still have argued for carefully matching immigration rates to the pace of—and efforts towards—integration¹⁷⁶. However, immigration—especially high-skilled immigration—is also a source of economic growth^{177,178}, and for many developed countries a key strategy to combat the challenges of aging populations⁵¹.

Declines in organized religion and the rise in social media use are two other factors that likely will need to be addressed in building shared identities and growth-independent social capital. Social media poses a unique 21st-century challenge to social cohesion through its fragmentation, moralization, and emotionalization of media and news consumption¹⁷⁹. Religion has been a key catalyst for social capital in the U.S. and other societies in the past^{102,180}, and also seems to fulfill key belonging needs. Indeed, Henrich and colleagues^{181,182} argue that emphases on non-kin-based group identity—originating in Christian churches—led to prosperity-enhancing psychologies and values in western-European countries and western offshoots.

As religious participation declines, there is danger that people will fill their belonging needs through associations with quasi-religious fundamentalist groups, fueled by social media. Some argue this is already occurring in the U.S., for instance, with the rise of movements such as QAnon on the political right¹⁸³, and what has been described as the ‘Successor Ideology’ and ‘The Elect’ on the political left^{184,185}. An alternative would be to construct new ‘civil religions’¹⁸⁶—with group identities encompassing all members within a country (and thus more inclusive in multicultural societies, such as the U.S., than previous national identities have been¹⁰²). One way to accomplish this in diverse, pluralistic societies may be what Chua¹⁵⁶ refers to as a ‘super-group’ identity (others call this a ‘dual identity’^{187,188})—whereby members of a society can retain individual sub-group identities (e.g. ‘Canadian-American’), but also strongly identify with the shared national identity (e.g., ‘American’). The objective of the ‘super-group’ identity concept is to facilitate a shared identity across cultural groups without encouraging the pro-assimilation politics and prejudice towards cultural minorities that other types of nationalism can catalyze^{156,188}.

In summary, post-growth societies will need to build and maintain social capital by reducing inequality and increasing cultural solidarity. Among developed democracies, this seems an especially pressing concern in English-speaking countries (e.g. the U.S., the U.K., and Canada), which are more diverse and unequal than most of their non-English-speaking counterparts. Given that cultural solidarity between rich and poor increases support for economic redistribution¹⁰⁸, there could be a virtuous cycle between reducing inequality and other strategies aimed at integration and building shared identities.

Increase return on public investment

The fiscal challenge of a slow-growth future is to strike a balance between using public spending to reduce inequality, enhance opportunity for youth—on top of other sizable

expenses such as infrastructure repair and climate-change mitigation⁵⁴—while maintaining sustainable debt burdens (as discussed in the section above on fiscal challenges). There is still ongoing debate regarding to what extent or how soon slow growth would require reducing deficits or balancing public budgets. Interest rates may remain smaller than growth rates so long as growth is positive (even if very small)^{64,74}, and both high private debt burdens and underfunded public goods (e.g., infrastructure, education) may increase fiscal multipliers (i.e. the economic benefits of public spending)¹¹⁶. Of course, what constitutes an accurate benchmark for growth—and by extension, what constitutes an under-performing economy in need of stimulus—is closely related to the debates regarding sustainable and feasible growth pathways²², summarized above.

However, despite this uncertainty, increasing ROI and reducing waste in government spending and taxation seems like a no-regrets policy—beneficial irrespective of interest rates (and, indeed, growth futures). Education, research and development (R&D), and infrastructure—which provide public goods and positive externalities—are areas with historically high long-run ROI in government spending¹⁸⁹. Closing costly tax loopholes and reducing corruption are other key areas. In the U.S., reform to the economically inefficient healthcare system¹⁹⁰ may also be a fiscal imperative.

Even with improvements in spending ROI and reducing tax avoidance, some countries may eventually need to raise taxes, if slow growth and other factors such as climate change, increasing societal complexity ('Wagner's Law'^{191,192}), and global integration¹⁹³ increase spending needs, and if slow growth eventually also increases the need for budget balance. In the U.S., some scholars and many Democratic politicians have called for higher taxes on top incomes and wealth to both finance spending needs and reduce inequality (e.g.,¹⁹⁴). Indeed, the size of the state (especially tax revenue), relative to GDP, is negatively correlated with economic inequality, and the U.S. is one of the most unequal countries in the OECD (Fig. 5). Funding spending increases with progressive tax increases has the additional advantage that the spending could have higher multipliers than the taxation (some of which would target money that would have otherwise been saved)⁶⁴.

However, while tax increases on top incomes may indeed be called for, we note that U.S. federal revenue as a percentage of GDP has been nearly constant in the post-WWII period, despite large variations in top income tax rates—a phenomenon known as Hauser's Law¹⁹⁵. A common feature of OECD countries with significantly higher tax revenue (compared to GDP) than the U.S. is a sizeable national consumption tax or value-added tax (VAT). For instance, Denmark (bottom-right point in Fig. 5b) has a 25% VAT¹⁹⁶. The advantage of a VAT (or consumption tax) is that consumption is a tax base which is both very large and difficult to offshore. A large base means that the same revenue can be raised at a lower tax rates (and thus smaller market distortions) than from taxes with smaller tax bases¹⁹⁷. Property taxes—especially on residential housing, as opposed to commercial real estate—may be similarly resistant to offshoring consequences (albeit they have a smaller base), and also contribute to reductions in wealth inequality, especially if revenues are collected and distributed evenly over economically diverse regions (e.g., states, instead of counties).

Decouple subjective well-being from growth

As others have noted (e.g.,^{22,198,199}), societies will need to find ways to decouple improving well-being from additional growth in a post-growth future. Some evidence suggests this could be challenging. For instance, self-reported life satisfaction strongly correlates with economic affluence and income, within and across countries^{200,201}. Moreover, migration patterns disproportionately flow from poorer to richer countries, and such migrations increase life satisfaction^{202,203}. Citizens of OECD countries are used to younger generations being economically better-off than older generations—a trend which may already be halting¹¹⁹ and is incompatible with stagnation. This creates potential for a gap between expectations and reality as growth slows.

On the other hand, there is some evidence: (i) that income's effect on well-being satiates (e.g., at \$60,000-\$90,000/y, Jebb et al.²⁰⁴ recently estimated), (ii) that it depends on the relative incomes of peers²⁰⁵, and (iii) that some measures of well-being are less correlated with income than others (e.g., daily emotions less than life satisfaction²⁰⁶). Undoubtedly, many factors affect subjective well-being in addition to affluence and income, as evidenced by the fact that subjective well-being has recently declined in the U.S. and in some other countries even as they became richer²⁰⁵. Benjamin et al.¹³ found security, family, personal freedoms, health, meaning, purpose, and moral satisfaction similarly or more strongly determining subjective well-being than income. The importance of these factors is evident, for instance, the documented role of religion in social capital formation¹⁸⁰, and may be related to Italy's relatively low suicide rates (Fig. 4e). These patterns reinforce the importance of maintaining democratic institutions and personal freedoms in a slow-growth world, as well as the importance of building shared identities and cross-cultural solidarity. These patterns may also suggest that the field of positive psychology has an important role to play in a slow-growth future (see Kaufman²⁰⁷ for a recent review).

Other, more direct, economic interventions that have been proposed to safeguard well-being (both subjective and economic) in the face of slow growth include universal basic income¹⁹⁸ (which would need to be financed by tax increases, e.g., as noted by Yang²⁰⁸) and work sharing (where individual positions are shared between multiple workers working fewer hours)¹⁹⁹. Work sharing could prove challenging in some professions where continuity of accountability for tasks is important, but may be feasible in other professions. Universal basic income might disincentivize work if the level is too high, but there is relatively little evidence for this effect at modest levels that do not go far beyond basic needs²⁰⁸. Of course, some gains in well-being may come naturally as growth slows (as Vollrath outlines²⁰); policy interventions should focus on specific challenges.

Whatever the specific pathways societies pursue to safeguard well-being in the face of slowing growth or stagnation, it seems clear that these pathways will need to include both grassroots and cultural forces—e.g., in families and local efforts to build social capital¹⁷⁴—and government actions, via the safety net, maintaining personal and political freedoms, and perhaps also nudges toward increased civic participation and social solidarity.

Conclusions

We started from the observation that modern developed democracies have arisen during a period of unprecedented global economic growth, which may be coming to an end, either unavoidably^{20,33,209} or—as some argue^{10,59}—deliberately by necessity. Although the future of economic growth is uncertain⁹, the possibility of long-run stagnation arriving this century in developed countries has become too significant to ignore.

We reviewed evidence suggesting that developed democracies may face a variety of fiscal social challenges under long-run stagnation. These included: high debt burdens; declining economic opportunity, family formation, and mental health among youth; rising inequality; challenges to personal finance; declines in social trust; and increases in conflict. Some of these challenges are already empirically apparent (Figs. 2, 4; see also¹⁰²), and they intersect with other major societal disruptions (besides growth slowdowns) such as automation, globalization, and climate change.

To address these challenges, we argued for a mixture of government and grassroots actions—a ‘guided civic revival’—aimed at: strengthening key democratic institutions and freedoms, increasing return on investment (ROI) in public spending and taxation, increasing economic opportunity for youth, reducing inequality and increasing social solidarity (perhaps especially in multicultural democracies). In countries, such as the U.S., with relatively small government and high inequality, we argued that the size of government—and consequently taxes—may need to increase. Although we take slow growth as a premise for our analysis, most of our prescriptions may be ‘no-regrets’ solutions—beneficial whether or not growth slows.

Our primary objective in this paper is to bring attention to these important issues, in order to stimulate public discussion and multidisciplinary scholarly research—as many unanswered questions remain. For instance: if slow long-run growth is inevitable, how long (if at all) should governments try to delay it using economic policies? How much public and private debt can stagnant economies afford? When should countries pursue fiscal stimulus in slow- or zero-long-run-growth worlds? How does slow growth or stagnation affect the optimal size of government? How should families, firms, and societies fund education, health care and retirement, and build or maintain wealth, amidst long-run stagnation? How can stagnant economies reduce inequality, and how much inequality should such societies accept? How can ethnoculturally diverse societies best promote shared identities and social solidarity, while also reducing nationalistic prejudice against minorities? How can political polarization be reduced, and how can key social, political, and fact-finding institutions be protected against its effects? What social, environmental, or other advantages or opportunities might slow growth create? Similar to guided civic revival, research agendas answering these and other related questions would likely benefit society even if growth does not slow as significantly or as quickly as many predict.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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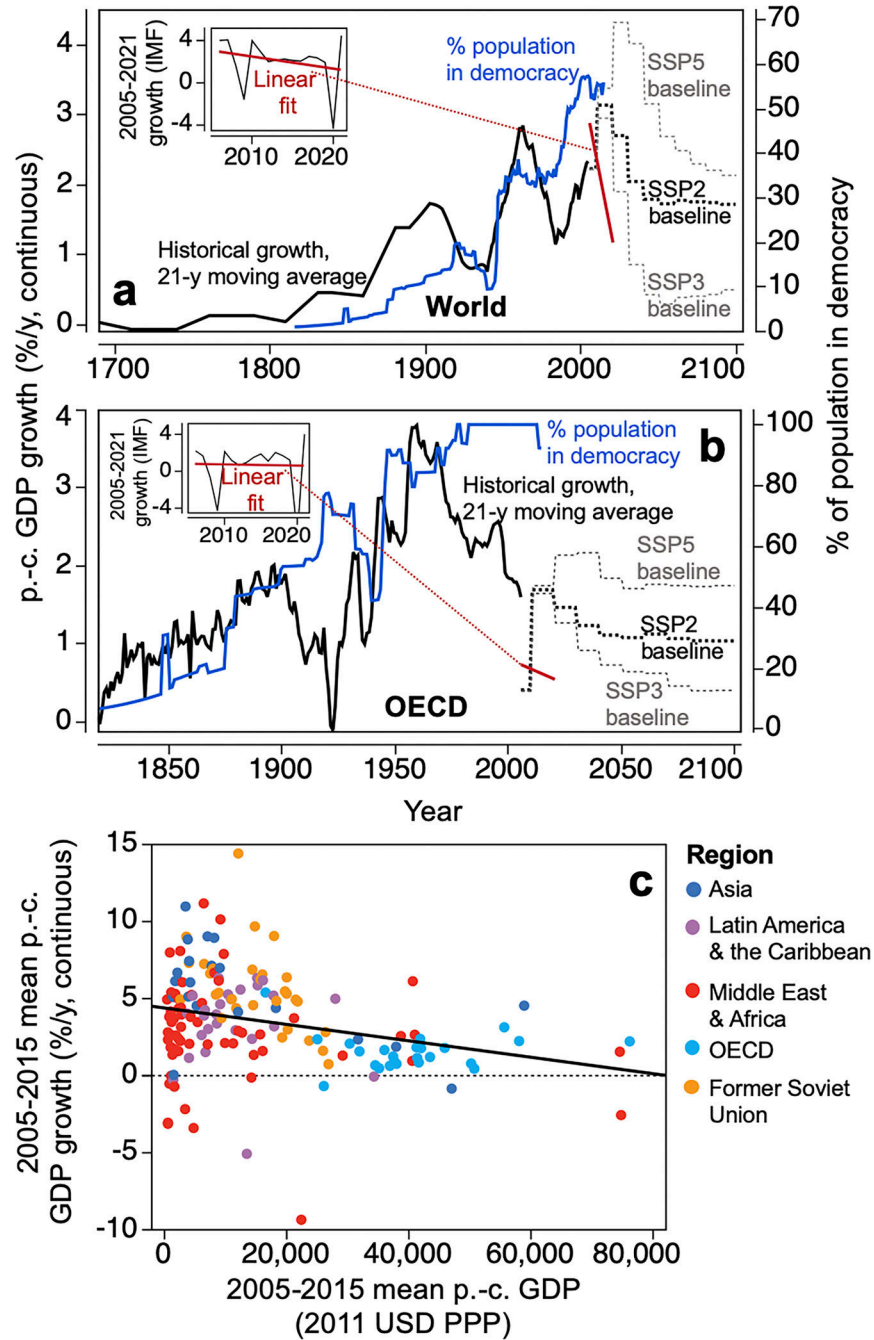


Fig. 1. Historical growth and democracy trends.

Panels a and b show historical trends (solid, black; 21-y moving average)²³, recent trends (inset and red line, based on International Monetary Fund's (IMF) April 2020 forecast²⁴), and Shared Socioeconomic Pathway (SSP) projections ('middle-of-the-road' SSP2, low-growth SSP3, and high-growth SSP5^{25, 26}) of global per-capita Gross Domestic Product (GDP) growth, and historical trends in democracy³. Panel a shows global trends; Panel b focuses on the Organization for Economic Co-operation and Development (OECD) (using 1990 members, following the SSPs²⁵). Panel c shows the negative relationship between

per-capita GDP and per-capita GDP growth across countries in recent years (2005–2015 averages)²³. The black line represents an ordinary least squares (OLS) fit (Qatar is omitted as an outlier) ($y = 4.35 - (5.34 \times 10^{-5})x$; 95% slope confidence interval (CI): $(-8.16 \times 10^{-5}, -2.51 \times 10^{-5})$, $p = 0.0003$; 95% intercept CI: (3.70, 5.00), $p < 0.0001$). Countries are color coded according to SSP regional classifications²⁵.

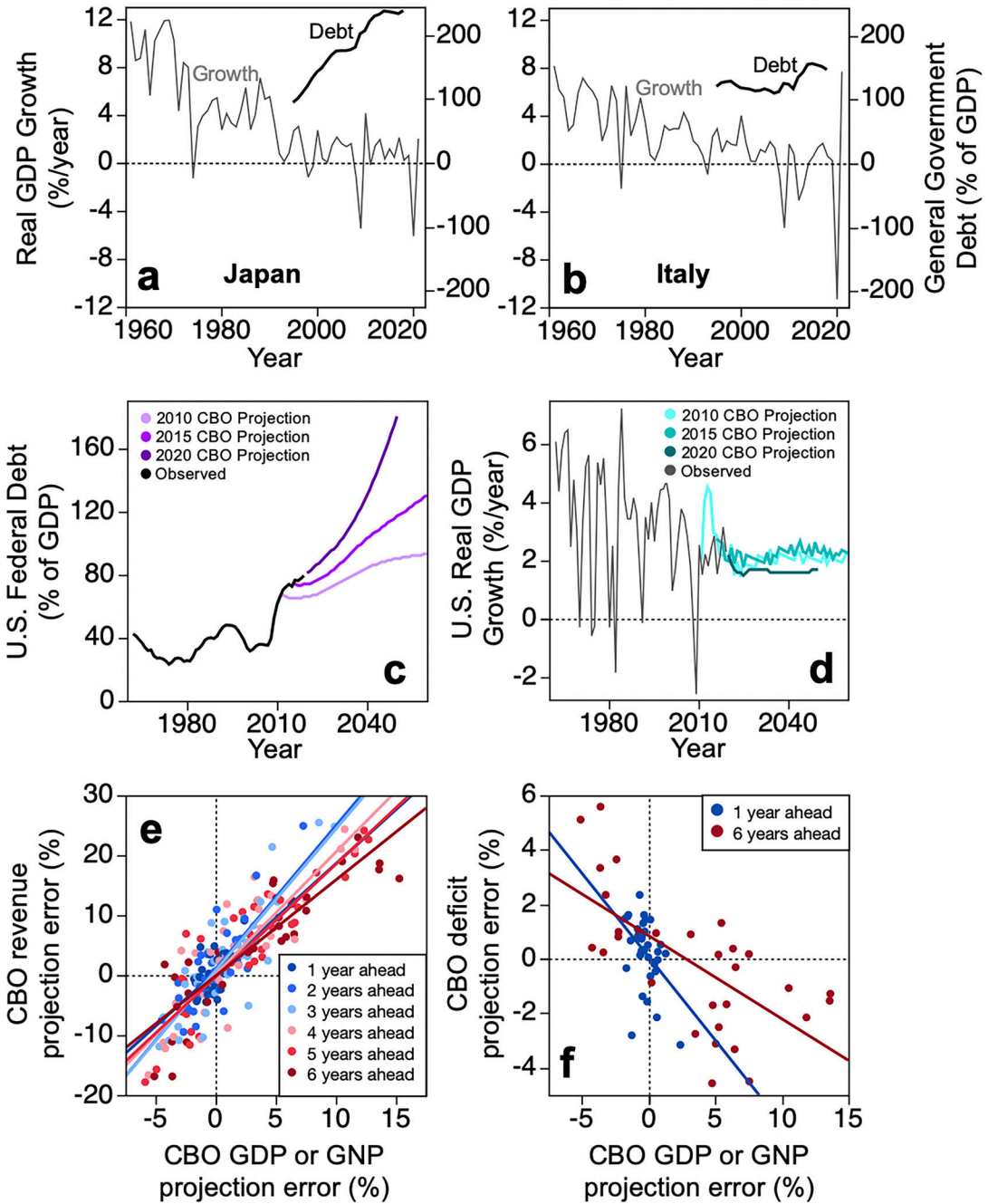


Fig. 2. Slow growth and public debt.

Panels a and b show real Gross Domestic Product (GDP) growth and general government debt from recent decades in Japan and Italy, respectively^{66,67}. We note that both Japan and Italy have had very little net population change since 2000², and thus their growth rates in GDP and per-capita GDP over this period are broadly similar. Panels c and d show, respectively, federal debt and real GDP growth observed and projected by the Congressional Budget Office (CBO)⁶⁸ in 2010, 2015, and January 2020—all before COVID-19. Panels e and f show correlations between CBO projection errors in nominal GDP or Gross National

Product (GNP) and in revenue (e) and fiscal deficit (f), over different projection horizons, as indicated^{68,69}. Lines indicate ordinary least squares (OLS) fits (see Supplementary Table 1 for coefficients, 95 % confidence intervals, and *p*-values).

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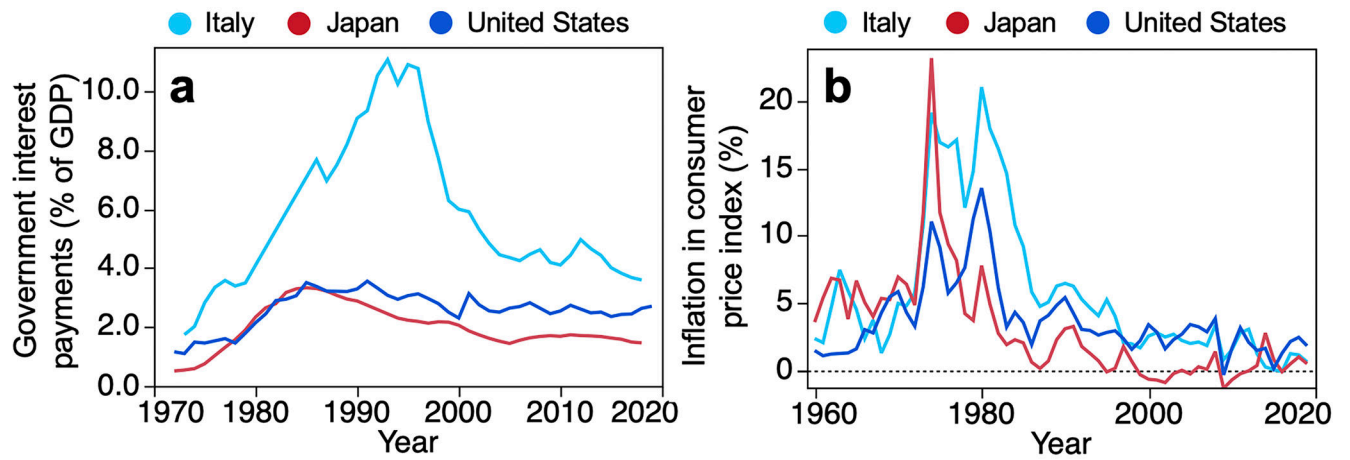


Fig. 3. Government interest burdens and inflation.

Trends in government (a) interest payments and (b) inflation in the consumer price index, expressed as a percentage of Gross Domestic Product (GDP), in Italy, Japan, and the U.S. (data from ref.²).

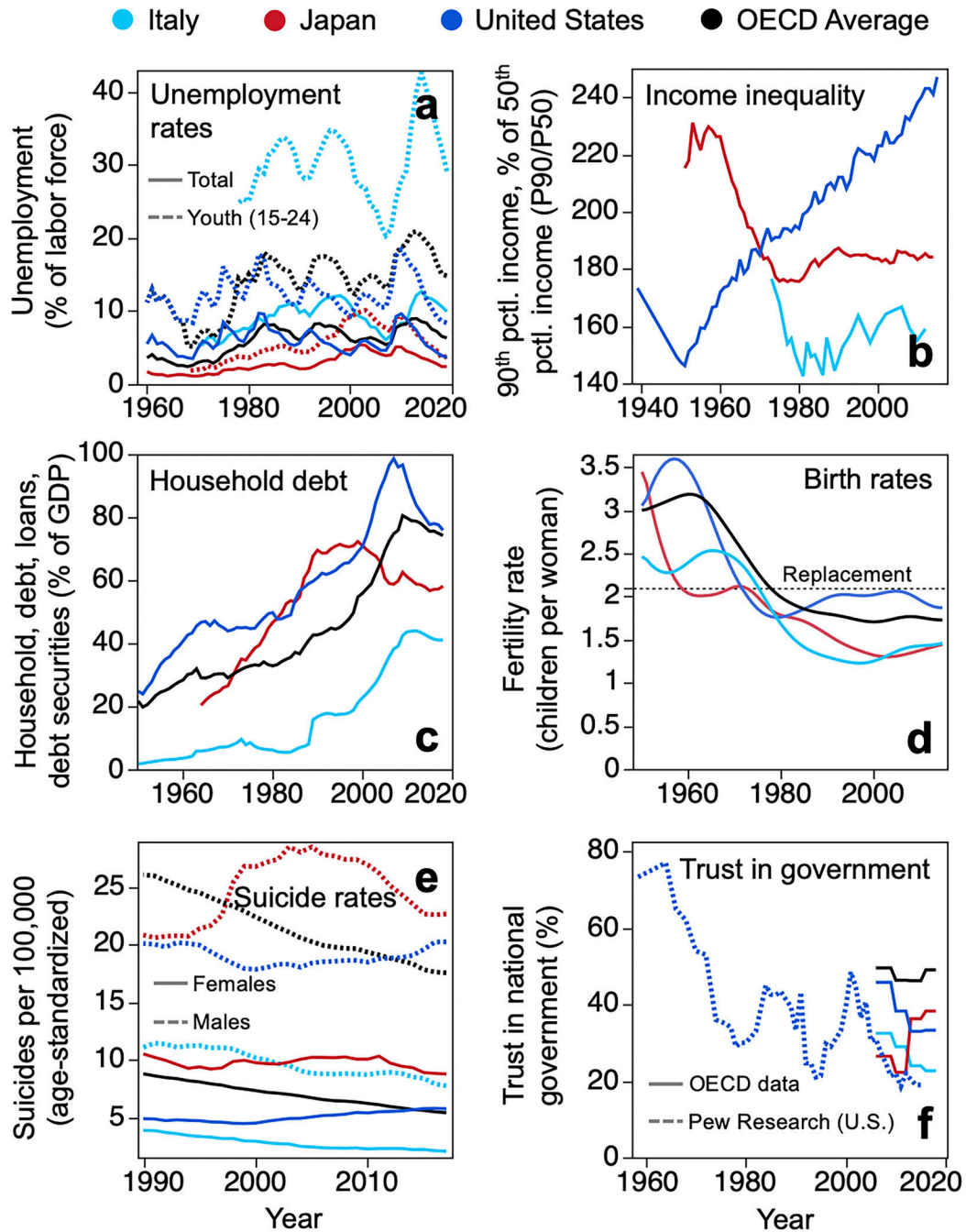


Fig. 4. Social challenges slow growth could exacerbate.

Comparison of six different social trends in Italy, Japan, the U.S., and the Organization for Economic Co-operation and Development (OECD) average when available (using the 1990 membership, as in Fig. 1): (a) unemployment rates (data from ref.²); (b) income inequality, measured as the ratio between 90th and 50th percentile incomes (data from ref.⁸¹); (c) household debt (data from ref.⁸²); (d) Birth rates (data from ref.⁸³) (replacement rate of 2.1 also shown for reference); (e) suicide rates (data from ref.⁸⁴); and (f) trust in government (data from refs.^{85–87}).

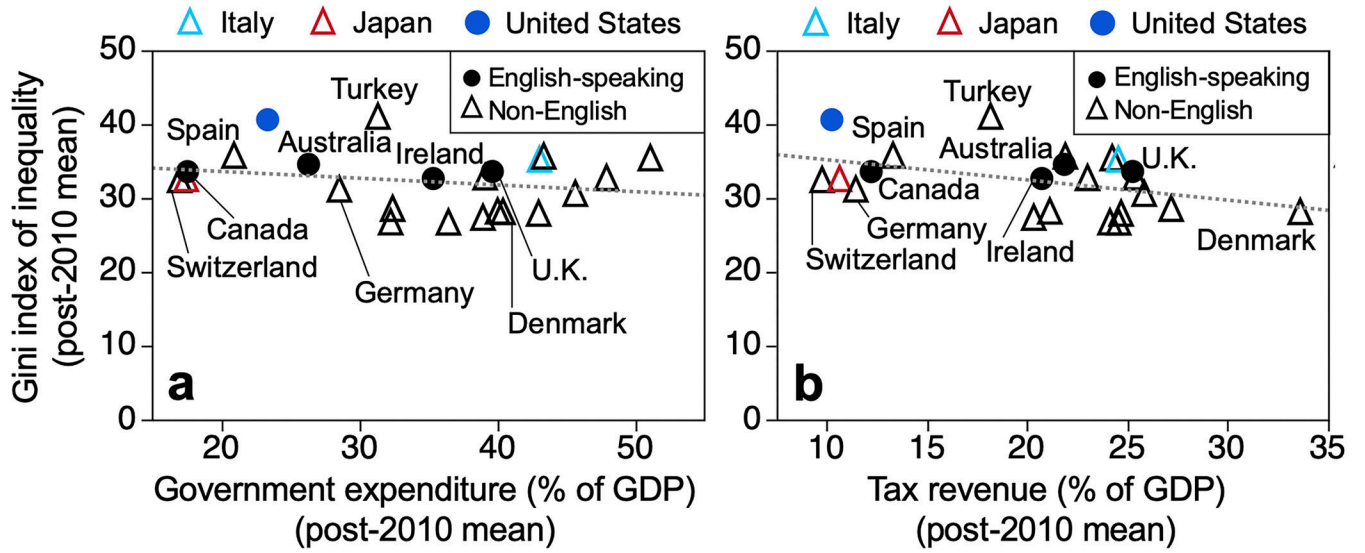


Figure 5. Size of government and inequality.

Comparison, across Organization for Economic Co-operation and Development (OECD) countries (1990 members), of the Gini index of economic inequality to (a) government expenditures (% of Gross Domestic Product (GDP)) and (b) central government tax revenues (% of GDP), excluding fines, penalties, and most social security contributions (data from ref.²). Dashed grey lines show bivariate ordinary least squares (OLS) fits. In panel a: $y = 35.4 - 0.091x$; 95% slope confidence interval (CI): $(-0.27, 0.084)$, $p = 0.29$; 95% intercept CI: $(29.1, 41.7)$, $p < 0.0001$. In panel b: $y = 37.9 - 0.27x$; 95% slope CI: $(-0.53, -0.017)$, $p = 0.038$; 95% intercept CI: $(32.4, 43.4)$, $p < 0.0001$.