Federal Reserve Bank of Jackson Hole Economic Symposium
Reassessing Constraints on the Economy and Policy
August 25-27, 2022

Panel Topic: An End to Pre-Pandemic Trends or Just a Temporary Interruption?

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Before the pandemic, many economies were in relatively good cyclical shape. World GDP growth was 2.9 percent and the IMF was expecting growth to rise over the next few years. In the U.S., the unemployment rate was 3.5 percent and inflation was just below 2 percent. However, lurking under this rosy cyclical façade were ominous medium and long-run trends that threatened prosperity. I think that the arrival of COVID either did not affect or actually exacerbated those ominous trends. I will focus on three ongoing trends that I think are most likely to threaten future prosperity: (i) fiscal indiscipline; (ii) anemic productivity growth; and (iii) institutional failure cascades.

I. Fiscal Indiscipline

Even before the global financial crisis and COVID-19, a number of countries were on fiscal paths that were considered to be unsustainable. For example, in December 2007 the U.S. Congressional Budget Office (CBO) declared that "under any plausible scenario, the federal budget is on an unsustainable path." Nor was the U.S. alone. Other advanced countries, such as Japan, were also considered to be on unsustainable paths. The unsustainability in each case was due to a mix of generous promises to an aging population, the rising cost of medical care, and a reluctance of policymakers to enact tax increases.

Then the first two crises of the 21st Century arrived: the global financial crisis and the pandemic. The fiscal responses to those crises resulted in upward shifts in those already unsustainable paths.

Figure 1 shows the path of the ratio of gross government debt to GDP for both the advanced economies and the Emerging Market and Developing Economies.[1] The ratio for advanced economies follows a step function pattern: a step up with each crisis and little or no evidence of return to the previous level. The group weighted average is now at 115 percent of GDP. The ratio for the EMDEs follows a lower path, but one that is nonetheless increasing.

U.S. government debt accounted for 46 percent of all advanced economy sovereign debt and 33 percent of world sovereign debt in 2021. Thus, it is useful to look at its evolution in more detail.

Figure 2 shows the CBO's July projections of long-term deficits and publicly-held debt for the U.S. As the upper graph shows, net interest outlays on the existing debt is expected to exceed the primary deficit by 2026, which is only four years from now. Currently, the debt to GDP ratio is

[1] See the appendix for details on the data and estimation for all figures in the paper.

around 100 percent. Not shown on the graph is the fact that foreign and international investors hold more than 30 percent of the publicly held U.S. debt. The situation is expected to worsen in the future: the debt to GDP ratio is expected to exceed 175 percent by 2052.

Some have argued that deficits are not so problematic if the growth rate of the real economy (g) is above the real interest rate (r). While the current g – r gap is positive, it is not big enough to make up for the projected large primary deficits. Moreover, there is no guarantee that g – r will remain positive in the future.

What are the possible outcomes of this extraordinary fiscal path? This is a case where a review of history might be useful. A recent paper by Chen, Jiang, Lustig, Van Nieuwerburgh, and Xiaolan (2022) "Exorbitant Privilege Gained and Lost" studies UK fiscal capacity and exorbitant privilege before WWI and compares it to the U.S. after WWII, when the U.S. took over the role of hegemon in the international financial system. Their story is one of fundamentals contributing to fiscal capacity of the UK, and hence its hegemon status, in the two centuries leading up to WWI. However, a turnaround in these fundamentals later led to the UK's loss of hegemon status and exorbitant privilege. By the end of WWII, the UK relinquished that role to the U.S.

A key part of the Chen et al. paper is their calculation of fiscal capacity that includes convenience yields, using a variety of methods. They estimate that three-quarters of UK debt was backed by future budget surpluses in the two centuries leading up to WWI. After WWI, the UK lost its ability to earn convenience yields on its debt. Applying the same methods to the U.S. in the post-WWII period, the authors estimate that less than a third of U.S. debt is backed by future surpluses, and much of the gap has occurred during the last two decades. Currently, the gap between the present value of surpluses and debt outstanding is greater than 100 percent of U.S. GDP. Furthermore, Chen et al. argue that actual fiscal capacity for the U.S. is probably far below their upper bound estimates because of the riskiness of the U.S. tax process. This riskiness stems from the positive GDP growth and tax betas.

Without fiscal austerity measures or a dramatic turnaround in fundamentals, the fact that the U.S. is on an unsustainable fiscal path will eventually result in a crisis and a decline in the U.S.'s economic position. The outlook for a turnaround in fundamentals is not good, which takes me to my second trend: anemic productivity growth.

II. Anemic Productivity Growth

As shown by Fernald and Li (2022), labor productivity growth in the U.S. averaged only just over one percent per year for the 15 years before COVID hit. They make the case that the fluctuations we have seen surrounding the COVID recession and the recovery are mostly cyclical variations, not changes in trend. Total factor productivity growth, TFP, was only half a percent per year during those 15 years.

What should we expect over the next ten years? The CBO projects that TFP growth will average 1 percent per year and labor productivity growth will average 1.4 percent per year in the next 10 years. They assume slower growth in productivity relative to the last 30 years because of three

key factors: a slowdown in the growth of workers' educational attainment, reductions in federal investment relative to the size of the economy, and climate change.

The CBO's long-term economic forecasts are the best available: they are well founded in data and economic theory, and are constructed with feedback from private sector and academic economists. I was curious to see, however, whether the projections from a simple time series forecasting model based on historical data would be more or less pessimistic. Thus, I gathered U.S. data on some key series annually for 133 years from 1889 to 2021. I first studied which variables seem to best forecast the average growth rate of total factor productivity (TFP) over the subsequent 10-year period. I settled on a specification that included TFP, real GDP, patent applications, and population. This simple regression explains 68 percent of the variation in 10-year TFP growth.

Figure 3 shows the actual (dashed line) and predicted values (solid line) of 10-year growth rates of TFP, as well as some out-of-sample forecasts at the end of the period. The values shown for each year are the actual and predicted values for the subsequent 10 years. For example, the value shown for the year 2020 is the forecast for average TFP growth from 2020 to 2030.

The graph shows that the regression is surprisingly good at capturing the medium-frequency movements in TFP growth. The only big forecast miss is the plummet of not only the growth rate but the level of TFP from the 1920s to the Great Depression in the early 1930s. The solid blue line at the end of the sample shows the prediction of annualized TFP growth rates over the next 10 years. It predicts that the next decade will be the only period of negative 10-year average growth of TFP since the Great Depression. Thus, my time series forecasts based on historical data – which doesn't even take into account the effects of decreased government investment, schooling growth, and climate change – is even more pessimistic than the CBO's forecasts.

Low productivity growth does not just hurt macroeconomic performance – it may also affect income inequality. Eight years ago, I studied the link between productivity and inequality in a presentation I made to the CBO. I merged this same historical TFP data with income inequality data extending back to 1913. I have now updated that analysis with eight more years of recent data. Using a standard vector autoregression (VAR) with TFP ordered last in causal ordering, I study the effects of a shock to TFP on income inequality.

Figure 4 shows the effect on the subsequent path of TFP itself, on the average income of individuals in the top 10 percent of the income distribution, the average income of individuals in the bottom 50 percent of the income distribution, and the share of income going to the bottom 50 percent. The graph shows that a burst in TFP has a permanent positive effect on the level of TFP, a permanent positive effect on average household income in the bottom 50 percent (at least through 20 years), and a permanent positive effect on the income share of the bottom 50 percent. The shock to TFP also raises the income of the top 10 percent, but this effect appears to last only five years or so. Of course, things also happen in reverse, so a period in which TFP is below trend would be expected to lower income relative to trend and to increase inequality.

This analysis comes with many caveats. Because of the slow swings of average TFP growth, key historical periods can be influential observations. For example, productivity rose during WWII and income inequality fell significantly. I suspect that WWII is an influential observation. I have

research in progress based on archival data on individuals to understand why income inequality fell so much during that period.

Now, I should also add a caveat concerning my previous forecasting regression that produced the pessimistic forecast of productivity during the next 10 years is based on a linear model. However, as I argued in Ramey (2019) "Secular Stagnation or Technological Lull," TFP growth is not a smooth process. Rather, as many economists have noted, growth-driving technological change is (i) large-scale; (ii) general purpose; (iii) infrequent; (iv) randomly timed; and (v) disruptive. The arrival of a transformative technology can lead to several decades of high productivity growth as the technology diffuses and is adopted. The economy then settles into periods of low productivity growth until the next transformative technology arrives. I call these sluggish growth stages "technological lulls" and in my paper I argued that the U.S. economy is in one of these lulls. I argued that this is a supply-side constraint that aggregate demand stimulus cannot solve.

If this more complicated characterization of the TFP process is more accurate, then my linear regression model forecast could turn out to be very wrong. It would not be the first time that someone under-predicted productivity growth. When Alvin Hansen gave his famous 1938 AEA Presidential Address on secular stagnation, he was unaware that the U.S. was then experiencing the most innovative decade of the 20th Century. Thus, it is certainly possible that a transformative innovation is just around the corner and could lead to a sustained rise in productivity growth.

However, I do not think any policymakers should bank on such an outcome. Current fiscal policies should be adopted based on forecasts of slower-than-average productivity growth.

III. Cascading Institutional Failures

The final trend I want to highlight is something that I call "cascading institutional failures." I define cascading institutional failures as a situation in which one institution, or group of institutions, fails in its mission and that failure undermines the ability of another institution to succeed in its mission, either through a direct effect or an indirect effect. Let me explain with some examples.

The first example concerns the interaction of fiscal and monetary policy. As Bianchi and Melosi (2022) argue, the failure of the fiscal authorities to cut spending or raise taxes in order to keep government debt on a sustainable path can undermine the ability of central banks to fight inflation. They argue that when spending and taxes do not adjust to balance the government's intertemporal budget constraint, prices must adjust. This forced adjustment of prices results in higher trend inflation, undermining the central bank's ability to maintain price stability.

The second example is public schools. One the most important ways to raise the average human capital level and to reduce inequality is through the public schools. However, despite decades of research and experiments, large segments of the U.S. public schools are underperforming.

Consider, for example, the state of California. California has the 4th highest state gross state product per capita of the 50 states, yet its primary and secondary public schools rank 44th out of

50 states on test scores. Not only that, my own research on California public schools reveals that racial gaps in standardized test scores rise with each grade, even within income groups. Thus, inequality worsens rather than improves as students move through the system.

In contrast to primary and secondary school performance, the University of California (UC) system is perhaps the best public university system in the country and its flagship institutions rank in the upper tiers of worldwide universities. Historically, the University of California could maintain an academic level that could compete with some of the best private universities because there was excess demand for slots and admissions committees could use standardized test scores, such as SATs and ACTs, to overcome inconsistent grading across secondary schools. However, a few years ago, the University felt compelled to eliminate the use of standardized test scores because of concerns about the diversity of its students. Early warnings suggest that because less information is now available to make admissions decisions, too many students who do not have the academic preparation for the courses of a Tier 1 Research University have been admitted and are now floundering in college.

There are at least two negative consequences. First, the downward shift in the distribution of academic preparation will likely lead to a lowering of the academic level of classes. Thus, the University of California may be forced to concentrate more on remedial education and less on providing a high level of training for future innovators, which may affect future productivity growth. Second, it is likely that more students will drop out of college because they were not academic prepared for such demanding coursework.

Ironically, the blunt-force approach of eliminating standard testing was unnecessary since the entire university system of California offers other ways to remediate the failures of the primary and secondary schools. For example, students from high schools that did not prepare them well can go to junior college at very low cost for two years to catch up. If their grades at junior college are good, they can transfer to the UC as juniors. Moreover, in addition to the University of California system and the junior college system, the outstanding state university system provides a very good 4-year college education at low cost to half a million students.

The failure of primary and secondary schools to provide equal opportunities for learning has even more far-reaching effects. The addition of a mandate to reduce inequality on the Federal Reserve System may have resulted in their failure fulfill their primary mission – maintaining price stability. The result is that everyone is made worse off.

To conclude, I have identified three trends that were either unaffected or exacerbated by COVID: fiscal indiscipline, anemic productivity growth, and institutional failure cascades. All three will present a significant challenge to policy makers.

Appendix: Data and Estimation Descriptions

Figure 1

Data sources:

Panel data by country is from the IMF's April 2022 World Economic Outlook (WEO). Data are available at: https://www.imf.org/en/Publications/WEO/weo-database/2022/April/download-entire-database . The country groups are from the World Bank's database on fiscal space, available at: https://www.worldbank.org/en/research/brief/fiscal-space . See Kose et al. (2022).

Construction:

Groups averages are calculated as the weighted average of country gross debt to GDP ratios, using nominal GDP in U.S. dollars as weights.

Figure 2

The two graphs in Figure 2 are copied directly from the CBO's (2022) July 2022 long-term forecast.

Figure 3

Data sources:

Total factor productivity (TFP). Data from 1889 - 1947 were shared by Robert Gordon, who constructed them for Gordon (2016). The data from 1948 – 2021 are from the Bureau of Labor Statistics at https://www.bls.gov/productivity/tables/total-factor-productivity-major-sectors-historical.xlsx .

Real GDP. Data from 1889 to 1928 were from Sutch (2006), *Historical Statistics of United States, Millennial Edition Online,* Table Ca 9-19. Data from 1929 on are from the Bureau of Economic Analysis via fred.stlouisfed.org, series GDPCA.

Population. Data before 1929 are from Haines and Sutch (2006) *Historical Statistics of United States, Millennial Edition Online,* Table Aa6-7. Data from 1929-2021 are from the U.S. Census, via fred.stlouisfed.org, series B230RC0A052NBEA. Both series include the armed forces overseas.

Patent applications. Data from https://www.uspto.gov/web/offices/ac/ido/oeip/taf/h_counts.htm. I used utility patent applications.

Econometric specification:

The forecasting equation uses log levels of each variable. The average TFP (log) growth rate from year 0 to year 9 (a ten-year period) is predicted using 8 lags of logs of TFP, real GDP, population, and patent applications.

Figure 4

Data sources:

Same TFP source as for Figure 3. The series on real average income by income group and share were downloaded from https://wid.world/ . These data begin in 1913.

Econometric specification:

The VAR contains log TFP, log average income for bottom 50%, log average income for top 10%, and bottom 50% share. Five lags are used. The shocks to log TFP are identified using a Cholesky decomposition with log TFP ordered last.

References

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Gordon, Robert J. *The Rise and Fall of American Growth*. Princeton University Press, 2016.

Haines, Michael R. and Richard Sutch , "Population: 1790–2000 [Annual estimates]." Table Aa6-8 in *Historical Statistics of the United States, Earliest Times to the Present: Millennial Edition,* edited by Susan B. Carter, Scott Sigmund Gartner, Michael R. Haines, Alan L. Olmstead, Richard Sutch, and Gavin Wright. New York: Cambridge University Press, 2006. http://dx.doi.org/10.1017/ISBN-9780511132971.Aa1-109

Kose, M. Ayhan, Sergio Kurlat, Franziska Ohnsorge, and Naotaka Sugawara. "A Cross-Country Database of Fiscal Space." *Journal of International Money and Finance* 128 (2022): 1-19.

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Ramey, Valerie A. "Secular Stagnation or Technological Lull?." *Journal of Policy Modeling* 42, no. 4 (2020).

Sutch, Richard , "Gross domestic product: 1790–2002 [Continuous annual series]." Table Ca9-19 in *Historical Statistics of the United States, Earliest Times to the Present: Millennial Edition,* edited by Susan B. Carter, Scott Sigmund Gartner, Michael R. Haines, Alan L. Olmstead, Richard Sutch, and Gavin Wright. New York: Cambridge University Press, 2006. http://dx.doi.org/10.1017/ISBN-9780511132971.Ca1-26.

World Inequality Database, https://wid.world/data/.

Figure Titles

(to accompany separate .eps files)

Figure 1. Sovereign Debt (Ramey-Fig1.eps)

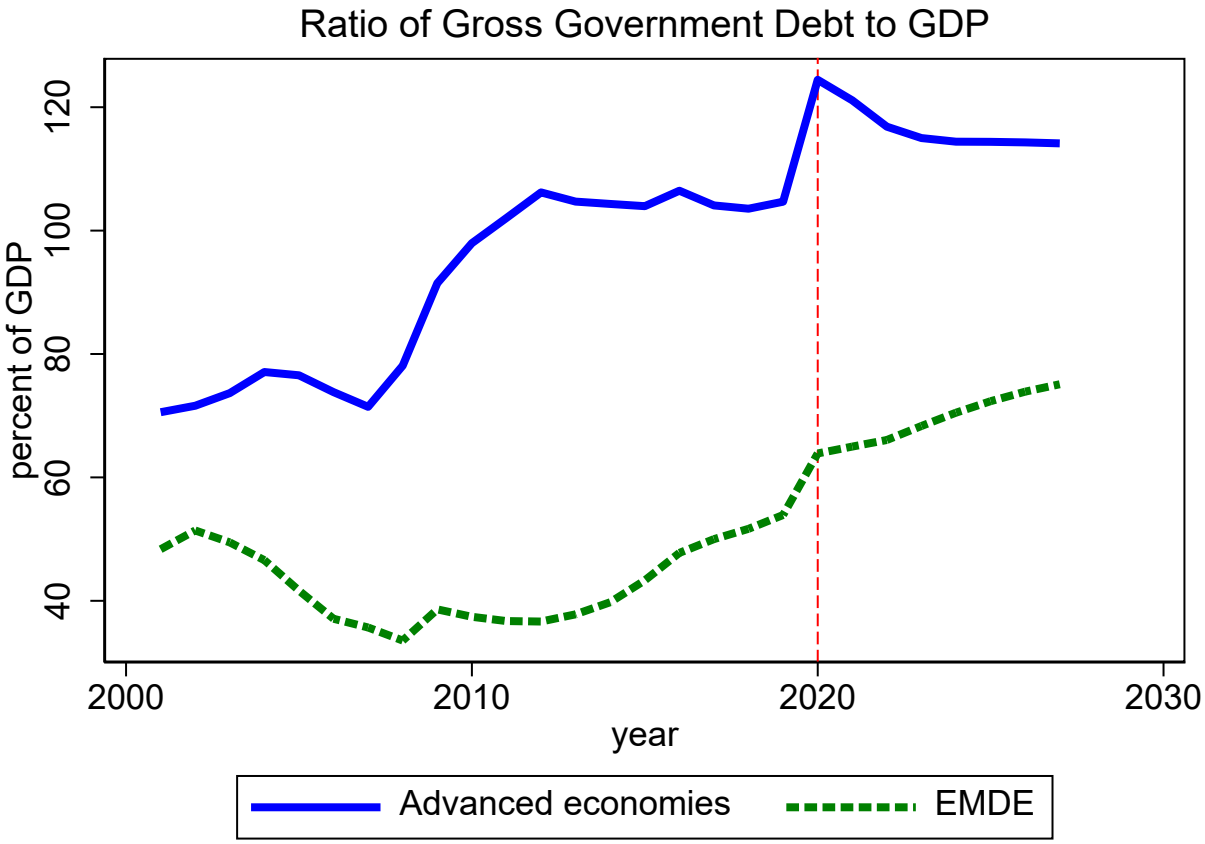
Figure 2. U.S. Federal Debt (Ramey-Fig2.docx – this is a copy of the CBO graph)

Figure 3. Total Factor Productivity (TFP) Forecasts (Ramey-Fig3.eps)

Figure 4. Estimated Effect of Productivity on Inequality (Ramey-Fig4.eps)

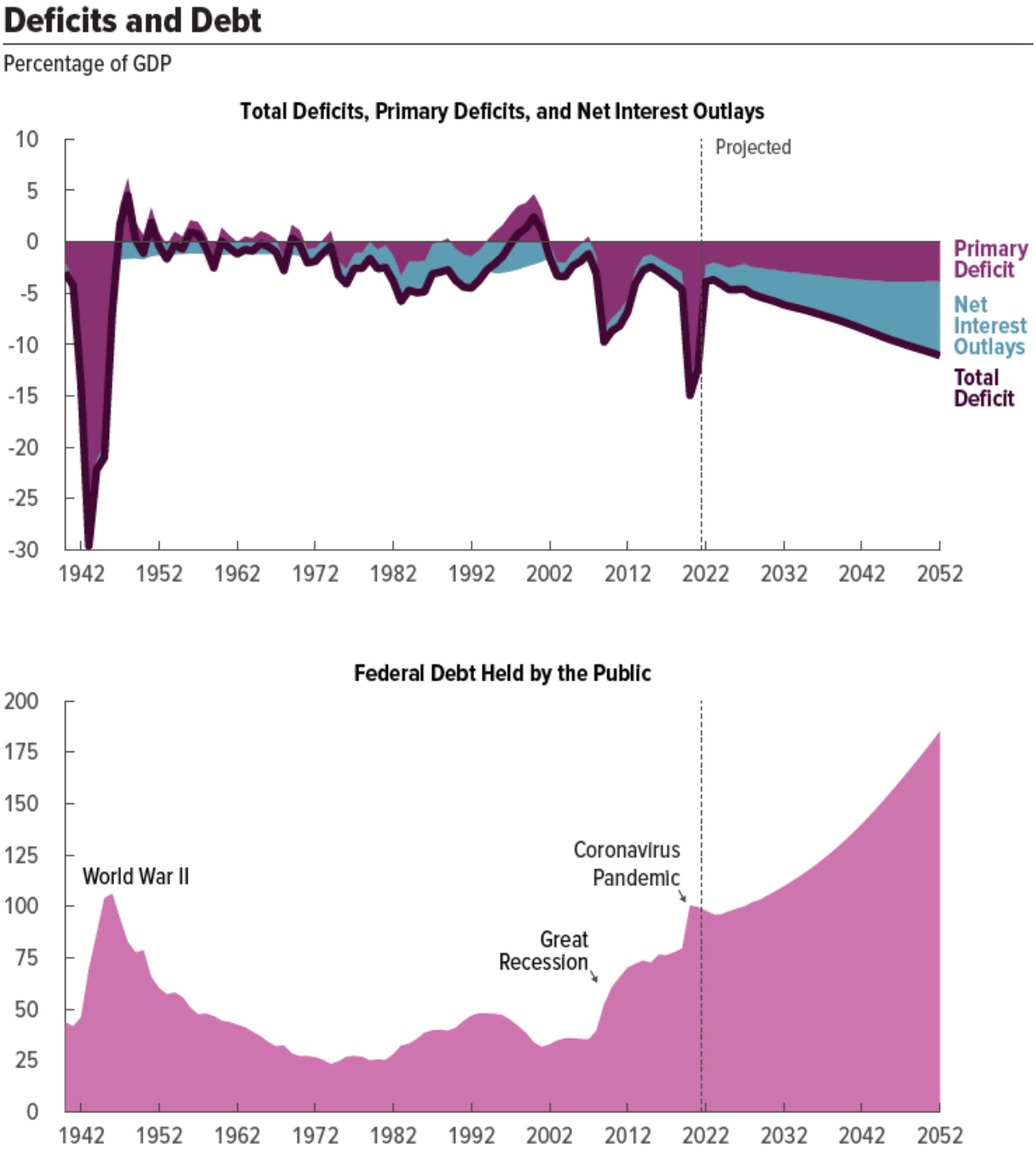
Figures are also shown below for convenience.

Figure 1. Sovereign Debt



Notes. Group averages are calculated as the weighted average of country debt-to-GDP ratios, using nominal GDP in US dollars as weights.

Figure 2: U.S. Federal Debt



Data source: Congressional Budget Office. See www.cbo.gov/publication/57971#data.

Primary deficits exclude net outlays for interest.

GDP = gross domestic product.

Figure 3: Total Factor Productivity (TFP) Forecasts

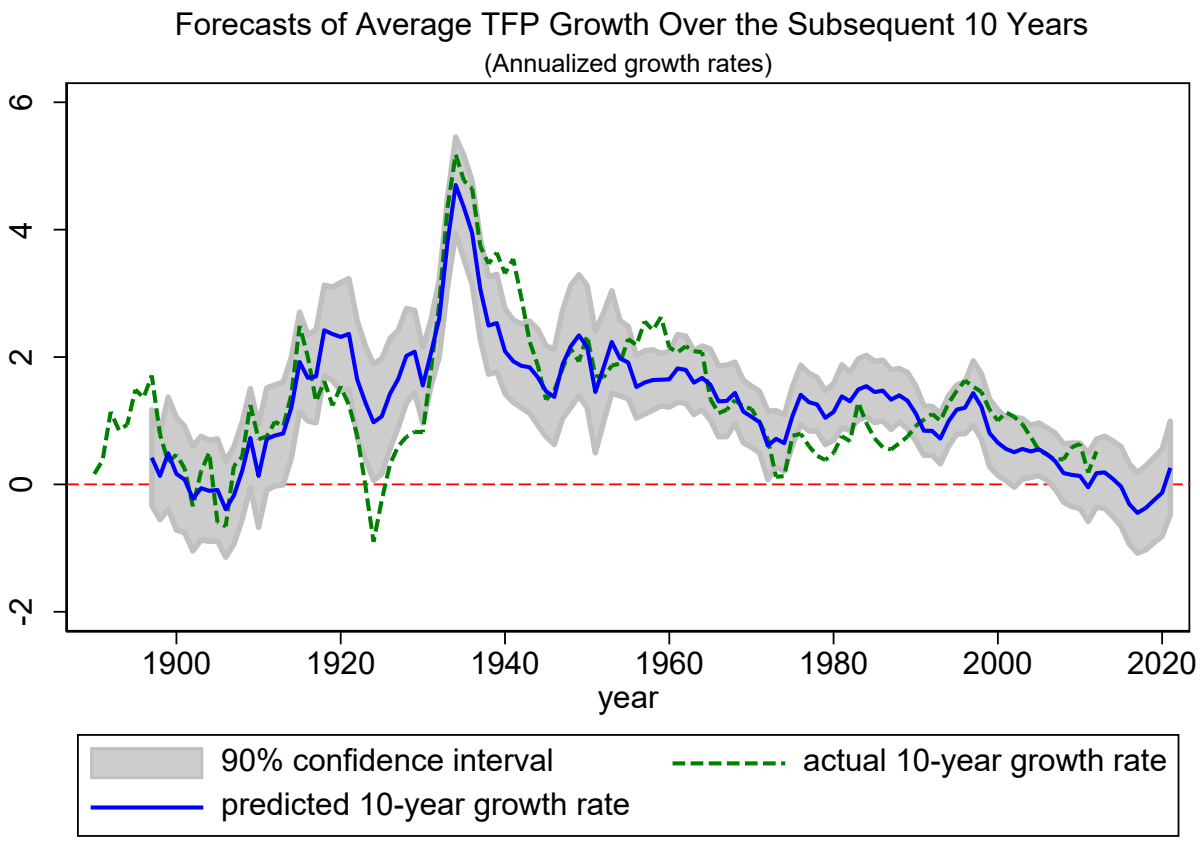
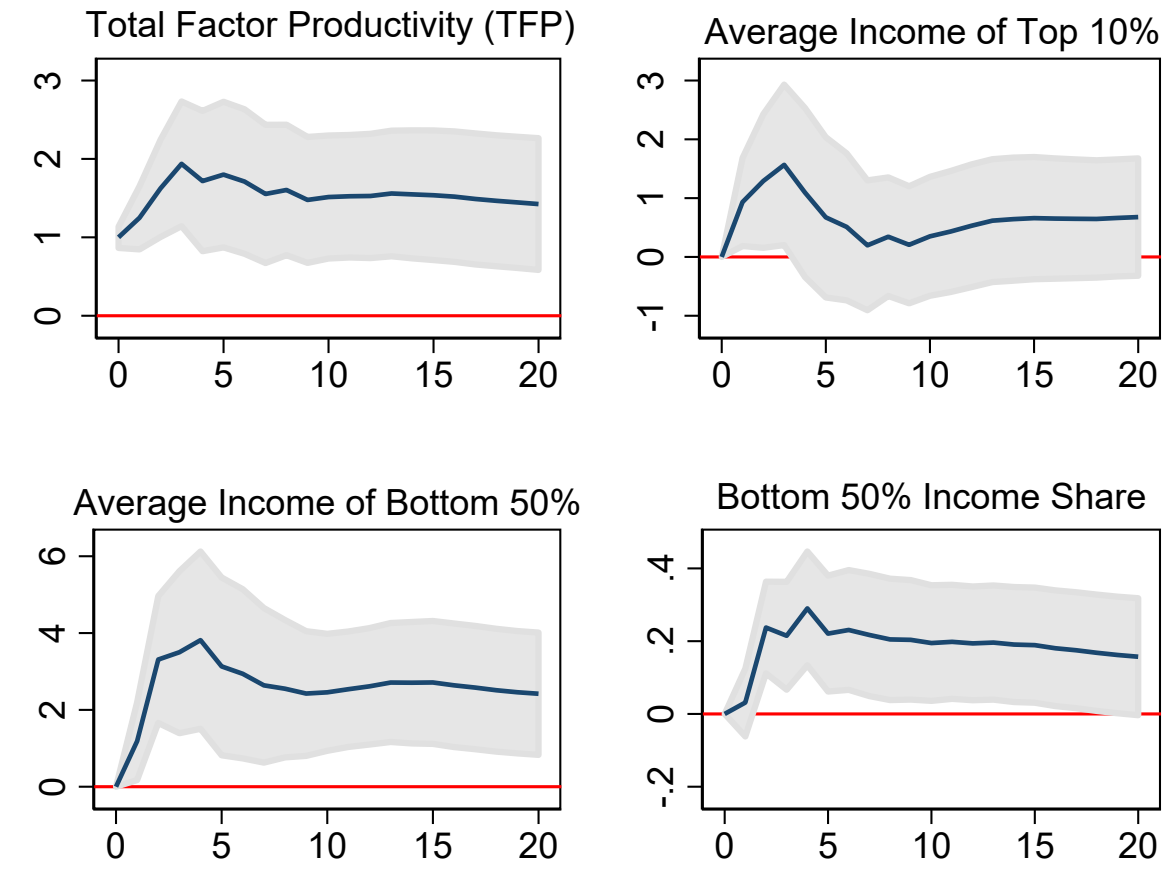


Figure 4: Estimated Effect of Productivity on Inequality



Vertical axes show percentages, horizontal axes show years