

MONETARY AND FISCAL HEADWINDS TO SUSTAINING THE RECOVERY

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A massive housing bubble—the product of a 15-year concerted federal effort to pressure banks to make subprime loans, and force Fannie Mae and Freddie Mac to buy and securitize subprime loans and incentivize banks to hold them as capital—burst in the fall of 2008. The asset base of the world’s financial institutions crumbled as the value of mortgage-backed securities (MBSs) collapsed and credit markets froze. Following traditional monetary policy precedence, the Federal Reserve responded by buying government bonds, pumping liquidity into the financial market, and expanding bank reserves.

Unconventional Monetary Policy

The Fed also did something that was not widely noticed at the time and even a decade later is almost never taken into account in the analysis of Fed policy: it started to pay interest on reserves in October 2008—in essence paying banks not to lend (Board of

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Governors 2008). By paying interest on reserves, the Fed converted the reserves of the banking system into interest-bearing securities and a liability of the Fed. But in paying interest particularly on excess reserves, the Fed was able to inject massive liquidity into the financial system and expand bank reserves without significantly expanding the money supply (Gramm and Saving 2019).

Though the recession ended in the summer of 2009, six months after the Obama administration took office, the economic recovery that followed lagged further and further behind historic norms for postwar America. In an effort to stimulate the economy, the Fed used its large-scale asset purchase (LSAP) program (also known as quantitative easing or QE) to acquire federal debt and MBSs. Consequently, the Fed's asset holdings swelled to almost five times their prerecession levels. In so doing, the Fed acquired directly or offset some 45 percent of all federal debt issued during the Obama era, almost four times the share of federal debt the Fed purchased during World War II.¹ However, unlike Fed purchases during World War II—which produced an increase in bank reserves, bank lending, and the money supply—the much larger debt purchases of the Obama era did not significantly increase bank lending and the money supply. The increase in bank reserves, which grew as a mirror image of Fed asset purchases, were effectively sterilized by the payment of interest on reserves, inducing banks to hold the excess reserves as an income-yielding asset.

The need to sterilize such excess bank reserves was explained by Chris Phelan (2015) of the Minneapolis Federal Reserve:

For every dollar in excess reserves, a bank can lend 10 dollars to businesses or households and still meet its required reserve ratio. . . . Thus, if every dollar of excess reserves were converted into new loans at a ratio of 10 to one, the \$2.4 trillion in excess reserves would become \$24 trillion in new loans, and M2 liquidity would rise from \$12 trillion to \$36 trillion, a tripling of M2.

¹Board of Governors of the Federal Reserve System, “H.4.1 Factors Affecting Reserve Balances” (www.federalreserve.gov/releases/h41; accessed November 8, 2018).

Today's \$1.75 trillion of excess reserves if fully loaned by the banking system, would by Phelan's analysis produce an inflationary 122 percent increase in the money supply.²

In August 2008, prior to the financial crisis, banks held \$0.14 of reserves for every dollar of demand deposits outstanding, reflecting a normal reserve ratio in a fractional-reserve banking system. By 2011, with the interest rate paid on excess reserves 15 basis points above the interest rate on 1-year Treasuries, banks held some \$2.90 of reserves for every dollar of demand deposits outstanding—over 20 times the precrisis level. Thus, banks were strongly incentivized to hold historic levels of excess reserves as the Fed expanded its assets by purchasing government bonds and MBSs. Even today, as the assets held by the Fed have begun to shrink and demand deposits have grown, banks still hold \$1.31 of reserves for every dollar of demand deposits outstanding. As the Fed has sold assets and reduced bank reserves, it has incentivized banks to further reduce excess reserves by paying an interest rate on excess reserves 45 basis points below the interest rate on 1-year Treasuries.

Monetary Headwinds

Extraordinarily, today we do not have a fractional reserve banking system. In a term used by Irving Fisher, the 19th and 20th century economist who advocated eliminating fractional reserve banking, we have today in his words, "100% money" (Fisher 1936). The only period in American history with policies remotely similar to today's policy was during the Civil War after the passage of the National Banking Act of 1863. The National Banking Act of 1863 levied a 10 percent tax on state bank notes, driving them from circulation. It also granted national bank charters and allowed national banks to issue notes, provided they held government bonds dollar for dollar

²M1 consists of (1) currency outside the U.S. Treasury, Federal Reserve Banks, and the vaults of depository institutions; (2) traveler's checks of nonbank issuers; (3) demand deposits; and (4) other checkable deposits (OCDs), which consist primarily of negotiable order of withdrawal (NOW) accounts at depository institutions and credit union share draft accounts. M2 consists of M1 plus (1) savings deposits (which include money market deposit accounts, or MMDAs); (2) small-denomination time deposits (time deposits in amounts of less than \$100,000); and (3) balances in retail money market mutual funds (MMMFs).

against their notes. In this way, the federal government created a massive market for its bonds, allowing the Treasury to fund part of the Civil War without driving up borrowing costs or printing additional “Greenbacks” and increasing inflation.

In the last decade, by comparison to the Civil War era, the Fed has purchased government bonds and other assets, which it has paid for by printing new money and inflating bank reserves. The Fed then paid banks interest to hold those excess reserves. Under the National Banking Act, commercial banks held the government bonds and were paid with interest on the bonds and given the ability to issue currency. Today the Fed holds the bonds and borrows from commercial banks to pay for them.

As a result of its quantitative easing programs, the Fed now holds 17 percent of the value of all publicly held federal debt and 27 percent of the value of all outstanding government-guaranteed MBSs.³ While the initial injection of liquidity into the economy in 2008 clearly helped stabilize financial markets and was a classic central-bank response to a financial crisis, the subsequent monetary easing programs of the Obama era were unprecedented. After the recovery began, further monetary easing did little to strengthen the economy, but at least in part due to monetary easing, the Obama administration was able to double the federal debt held by the public while reducing the cost of servicing that debt below the interest costs that had been incurred when the debt was only half as large.

From 2009 to 2016, private loan demand was weak in an economy kept in a stupor by high taxes and an avalanche of regulations. In that stagnant environment, the Fed was able to manage a massive balance sheet and inflated bank reserves without either igniting inflation or causing interest rates to rise. However, the Fed’s challenge is now growing enormously as the economy returns to normal growth. The strong growth of the last 18 months is driving up the demand for bank loans, increasing interest rates, and inducing banks to lend excess reserves. In addition, “Operation Twist” (by shortening the average maturity date of the debt held outside the Fed) will force the Treasury to borrow more money as the economy strengthens and interest rates rise.

³Board of Governors, “H.4.1 Factors Affecting Reserve Balances” (accessed November 8, 2018).

Challenges Facing the Fed

Despite repeated assurances from the Fed that it has the ability to gradually raise interest rates at a pace of its own choosing and keep inflation rates in the 2 percent range, the reality is that, with banks holding unprecedented levels of excess reserves, the money supply is now primarily market driven. A rise in loan demand and market interest rates will incentivize banks to reduce excess reserves and expand loans, causing the money supply to increase. To prevent that from happening, the Fed will have to raise the interest rate it pays on excess reserves or sell bonds to reduce bank reserves as market rates rise.

Historically, when the Fed did not pay interest on excess reserves, banks held few excess reserves. When the public's preference for holding money relative to GDP was stable, the Fed controlled the money supply by controlling the volume of coin, currency, and bank reserves. With banks now holding more than \$9.15 of reserves for every dollar they are required to hold, it is the return on bank lending relative to the return the Fed pays on excess reserves that determines the volume of excess reserves banks choose to hold, the volume of loans, and the money supply.⁴

The Fed now sets not just the fed funds target range; it sets the rate of interest that it pays on all reserves at the same time. That rate has a direct effect on monetary policy. When the Fed first began to pay interest on reserves, it also began setting the Fed funds rate as an upper and lower boundary, with the interest rate on reserves set as the upper limit for the fed funds target range. However, that changed in June 2017 when the interest rate paid on reserves was set 5 basis points *below* the upper limit target for the fed funds rate (Board of Governors 2017).

The policy effect embodied in setting the interest rate paid on excess reserves is that, if the rate is set above the market alternative for banks, they will expand their holding of excess reserves and the money supply will fall. If the interest rate on excess reserves is set at the market rate, other things being the same, the money supply will remain unchanged. Finally, if market interest rates rise and the rate paid by the Fed on bank reserves stays the same or rises by less,

⁴Authors' calculations (as of November 8–9, 2018) based on Federal Reserve and Bureau of Economic Analysis (BEA) data.

banks will expand loans and the money supply will rise. Before the Fed started paying interest on reserves, the money supply changed only when the Fed acted. Now if market interest rates rise and the Fed does not raise the rate it pays on excess reserves or take other actions to reduce bank reserves, the money supply rises. As a result, to maintain any given money supply, the Fed must respond to changes in market interest rates. In doing so the Fed becomes an interest rate follower, not an interest rate leader.⁵

If the Fed could find just the right mix of selling assets and lowering the rate it pays on excess reserves, it could theoretically succeed in reducing the assets it holds and reducing bank reserves without either slowing economic growth or igniting inflation. But the danger posed by the Fed's bloated asset holdings and the resulting massive level of banks' excess reserves is that, with a full-blown recovery now underway, the demand for credit will accelerate and force the Fed to move quickly to raise interest rates on reserves or sell securities to sop up excess reserves. If the Fed moves too slowly, the money supply will expand and inflation will rise. However, if the Fed raises the interest rates on reserves too much, lending and the money supply will fall, and a spike in interest rates could choke off the recovery.

As long as banks hold massive excess reserves as interest-bearing assets, the Fed will have to react to a market interest rate change or the money supply will change. The degree to which the Fed was ever able to set interest rates independent of credit market rates has now been dramatically curtailed, and the mechanism by which it can control the money supply has become far more complex. The monetary easing of the Obama years, which did little to stimulate growth, could now be paid for with runaway inflation or a crippled recovery or both.

The Fed faces several other challenges. A rise in market interest rates will increase the velocity of money, the ratio of the value of money the public chooses to hold relative to the size of GDP. Velocity fell by 28 percent in the decade after the financial crisis as the cost of holding money fell to virtually zero, but as interest rates have started to rise velocity has risen 1.5 percent.⁶ As interest rates increase in the future, velocity can be expected to rise as people

⁵Whether the Fed was ever an interest rate maker is open to question. See, for example, Fama (2013).

⁶Federal Reserve Bank of St. Louis, "Velocity of M2 Money Stock [M2V]" (<https://fred.stlouisfed.org/series/M2V>; accessed November 8, 2018).

economize on the holding of money, and the demand for goods and services will rise. To maintain price stability in an environment of rising interest rates, the Fed will not only have to prevent an explosion of bank lending and the money supply, it will also have to reduce bank reserves to prevent the increase in velocity from inflating demand and igniting inflation.

A second complication is that the Fed does not mark its assets to market. Every increase in market interest rates drives down the market value of its Treasury and MBS holdings and will require the Fed to sell more and more of the book value of its portfolio to lower the monetary base by a given amount. Selling assets at their lower market value would deplete both the value of the Fed's asset holdings and its earnings. The Fed carries its holdings of MBSs on its books as being worth \$1.68 trillion, the price at which they were purchased. But since mortgage rates have risen by an average of 40 basis points since the MBSs were purchased, those same MBSs would now sell for only some \$1.52 trillion. The same principle applies to Treasury bonds and notes that were bought for \$2.3 trillion but would today sell for only some \$2.15 trillion. Their market devaluation will increase in proportion to rising interest rates.⁷

To avoid these losses, the Fed can hold its Treasuries and MBSs to maturity. But the long maturity of the Fed's portfolio means that as interest rates rise and the Fed is forced to pay banks higher interest rates on reserves to prevent them from expanding lending and the money supply, its earnings on the bonds it holds will not grow. As a result, Fed profits will fall as interest rates rise.

In both 2014 and 2015, the Fed earned large profits on its portfolio and transferred earnings of almost \$100 billion each year to the Treasury. In both years those earnings covered an astonishing 40 percent of the total cost of servicing the entire federal debt. The transfer of earnings from the Fed to the Treasury in 2017 fell to \$80 billion, which funded only 30 percent of the Treasury's debt servicing costs. In 2018 Fed earnings were sharply lower at \$65.4 billion. Fed earnings continue to drop sharply.⁸ The decline in the payment of Fed earnings to the Treasury will drive up the federal budget

⁷Board of Governors, "H.4.1 Factors Affecting Reserve Balances" (accessed November 8, 2018).

⁸*Ibid.*

deficit and Treasury borrowing and in turn put upward pressure on interest rates. Once the public understands that the Fed is paying banks not to lend during a time of rising interest rates, a political blowback seems inevitable.

The Fed can sell securities, hold securities until maturity, pay higher interest rates on excess reserves or borrow against the value of its balance sheet, but all those options force the Fed to compete directly with the private sector for credit. In a crisis the Fed might consider raising reserve requirements, but any suggestion that the Fed simply mandate higher reserve requirements on banks to eliminate excess reserves should be weighed against Richard Timberlake's analysis of the massive reserve requirement increases of 1935–38 which "turned what had been an ongoing recovery into another cyclical disaster." The "result of Fed-Treasury policies was a sharp recession that further undermined confidence in the market system" (Timberlake 1999).

Complexity of Conducting Monetary Policy

Conducting monetary policy to promote price stability and full employment has historically been a Herculean task—an art as well as a science. But the monetary easing of the Obama years, which did little to stimulate growth, has made the task even more difficult. The Fed still controls the money supply, but the fact that virtually every commercial bank in America holds massive levels of excess reserves means a small error by the Fed in setting interest rates on excess reserves could send lending and the money supply spiraling. The Fed will now have to try to anticipate market changes and constantly try to react to those changes. More than ever the Fed will have to respond to increases in market interest rates defensively. With vibrant growth the Fed will be far more likely in the future than it has been in the past to be an interest taker and not an interest maker.

Any thought that the Fed could keep rates low as credit demand rises in the current economic expansion is not only naive but dangerous. Never in its more than 100-year history has the Fed had less ability to control interest rates. The sheer level of assets in the Fed's balance sheet virtually guarantees that the Fed will feel the yoke of massive excess reserves in the banking system for at least the next five years. It is possible, in theory, that the Fed could engineer a

program to dramatically reduce the interest on reserves, quickly sell off the assets in its balance sheet, and keep the money supply relatively constant, but the risk entailed in such a program would be huge. An error could spike interest rates, derail the recovery, and ignite inflation. It seems highly improbable that any central banker, even the great Alan Greenspan in his heyday, would dare to undertake such an effort.

The safest, and most likely, policy the Fed will follow to reduce its assets, and the excess reserves of the banking system, is to let the economy grow up to the size of the Fed's asset holdings. If the Fed lets the money supply grow to meet the needs of trade, at a 2 percent inflation rate and a 3.5 percent economic growth rate, the money supply could grow around 5.5 percent a year. At that growth rate, if the currency/deposit ratio and velocity remained the same, it would take 11 years for the Fed to grow its way out of its bloated asset holdings and eliminate the excess reserves of the banking system. If the Fed continued to reduce its assets by \$300 billion a year, as it did in 2017, the combination of economic growth and asset reductions would eliminate the current excess reserves within five years. Whichever path it follows, the Fed will almost certainly be required to closely monitor the difference between the interest rate it pays on reserves and market interest rates, and react to that difference for the remainder of the current recovery.

It seems reasonable to conclude that during this unwinding period interest rates and prices could be more volatile than we have seen previously in the postwar period, and the Fed will be less likely to try to hold interest rates below their natural market equilibrium levels. Economists will debate how restricted Fed action really is, but no one will argue that the Fed has more flexibility in setting policy than it did before it bought a significant share of the public debt and MBSs.

Fiscal Headwinds

As the current strong recovery continues and interest rates rise, the Treasury will be forced to borrow at a level never equaled during a strong recovery in the postwar period, and in the process it will begin to preempt private-sector borrowing (Gramm and Solon 2018). The debt-based entitlement programs of the 1930s and 1960s have always represented a ticking time bomb set to explode as the

population aged.⁹ With a trillion dollar stimulus package, an increase in general appropriated accounts, Obamacare and Medicaid, food stamp and Social Security Disability eligibility increases, nondefense federal spending in the eight years of the Obama era swelled to record levels.¹⁰ As the rising tax and regulatory burden weighed down the economy and delivered the weakest recovery in the post-war era, federal tax collections fell despite the large increase in tax rates in 2013. From September 2010 through January 2017, the Congressional Budget Office (CBO) sliced 10-year revenue projections by a whopping \$4.1 trillion due to lagging growth through the end of Obama's term.¹¹ With spending surging but revenues stunted from a weak economy, the national debt held by the public doubled in eight years.

The projected cost of the Trump Tax Cut at an assumed 1.9 percent GDP growth rate was \$1.2 trillion over 10 years (Joint Committee on Taxation 2017). At the current 3 percent GDP growth rate, the cost of the Trump Tax Cut in lost revenues from lower tax rates is already being largely recovered by new projected revenues from stronger economic growth. In the CBO's April 2018 report, the adjustment for higher growth alone generated a revenue surge totaling \$1.1 trillion, the single largest growth-driven revenue gain ever reported (CBO 2018: 94). If the economy continues to grow at the normal postwar rate, growth driven federal revenues will overwhelm the cost of the tax cut, paying for virtually all of its originally projected 10-year revenue losses in just five years.

⁹In 1983, President Reagan's reforms extended Social Security's cash flow for 51 years, but Medicare and Social Security will be broke and absorbing general revenue by 2026 and 2034, respectively.

¹⁰Federal spending spiked in late 2008 with the passage of the Troubled Asset Relief Program (TARP), which added some \$189 billion to the deficit in 2008–10. Most of TARP funds were paid back by 2010 and banks and other financial firms such as AIG paid the government back in full plus interest. Only bailouts to non-financial firms, principally General Motors and mortgage assistance bailouts, failed to repay TARP funds. On net, therefore, TARP did not contribute to the long-term national debt.

¹¹See Congressional Budget Office, *The Budget and Economic Outlook* and the *Budget and Economic Outlook Update*, January 2011 through January 2017 (Washington: Government Printing Office). Available at www.cbo.gov/publication/52370.

But growth driven revenues cannot outpace politically driven spending. As the CBO (2018: 94) reports, raising the budget caps for 2018 and 2019 in the 2011 Budget Control Act will cost \$670 billion over 10 years. If the spending caps are busted permanently in 2020, the additional spending increase over the next decade would equal \$1.7 trillion—more than the original projected cost of the tax cut (CBO 2018: 61).

Although the publicly held national debt roughly doubled as a share of GDP, the cost of servicing the debt dropped to 1.3 percent of GDP in 2016 from 1.7 percent in 2008 (CBO 2018: 149). But while the cost of servicing the doubled federal debt has been masked by historically low interest rates, the building recovery will continue to put upward pressure on interest rates. If the current recovery is sustained and blossoms into a full blown expansion matching the postwar norm, competition for credit will drive interest rates back toward their postwar norms as well. In an economy characterized by interest rates anywhere near the norm for postwar America the cost of servicing the federal debt will spiral.

The same driving forces have propelled every significant postwar recovery: a sustained rise in private investment and increases in new home building. In those recoveries, the rise in private investment and home building have increased borrowing and driven up interest rates. As the current recovery matures and interest rates normalize we will begin to feel the effect of the unparalleled borrowing of the past decade. The resulting competition for credit will be further exacerbated by the growth in entitlement spending brought on by the aging U.S. population. Debt servicing costs, entitlement spending growth and the federal borrowing they will spawn will produce stiffer headwinds than have faced any strong recovery in the postwar era.

During the Obama recovery, private investment lagged behind the postwar norm and housing starts remained at recessionary levels.¹² Gross private domestic investment is now at the highest level in a decade and housing starts are up 42 percent from the Obama

¹²Bureau of Economic Affairs, “National Data Table 1.1.10: Percentages Shares of Gross Domestic Product” (<https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey>; accessed November 8, 2018).

era average.¹³ Interest rates are rising as private and public borrowers increasingly compete for available credit. In a full blown recovery, where economic growth rates reached their postwar norm of some 3.5 percent of real GDP, interest costs should be expected to rise toward their postwar norm as government and the private sector compete for available credit.

Interest rates in the postwar period were highly affected by inflation rates, which from 1948 to 2008 averaged 3.8 percent.¹⁴ Interest rates surged when the inflation rate reached double digit levels in the late 1970s. From 1977 to 1982 prices rose on average by 9.2 percent annually and Treasury borrowing costs reached their highest postwar levels at an average rate of 10.6 percent for that period.¹⁵ If the 1977–82 period is dropped as an anomaly, the average annual cost for Treasury borrowing in the postwar period prior to 2009 was 4.8 percent. For the entire 1948–2008 period, the real Treasury borrowing cost (the nominal borrowing cost minus the inflation rate) was 1.2 percent. This suggests that if the Fed could meet its 2 percent inflation target during this recovery, Treasury borrowing rates might be kept in the 3.2 percent range. It should be noted, however, that since the rate on 10-year Treasuries has already reached 3 percent it may be optimistic to assume Treasury borrowing costs will normalize at 3.2 percent over the next five years even if inflation rates are in the 2 percent range.

To obtain a better insight into the effects of rising interest rates on Treasury debt servicing costs and the resulting crowding out of private borrowers, in the analysis below we will use 4.8 percent as the upper bound of Treasury borrowing costs and 3.2 percent as the lower bound. As interest rates rise to either level the impact on Treasury borrowing costs is stunning.

¹³U.S. Bureau of the Census and U.S. Department of Housing and Urban Development, *Housing Starts: Total: New Privately Owned Housing Units Started [HOUST]*. Available at <https://fred.stlouisfed.org/series/HOUST>; accessed November 8, 2018.

¹⁴Bureau of Labor Statistics, “CPI-All Urban Consumers: Series ID CUUR000SAO” (https://data.bls.gov/timeseries/CUUR000SAO?output_view=pct_1mth; accessed November 8, 2018).

¹⁵Board of Governors of the Federal Reserve System, “10-Year Treasury Constant Maturity Rate [DGS10].” Available at <https://fred.stlouisfed.org/series/DGS10>; accessed November 8, 2018.

If the economy continues to grow at a rate near the postwar norm and Treasury borrowing costs rise to 3.2 percent over the next five years, the cost of servicing the federal debt will more than double from \$316 billion in 2018 to \$666 billion in 2023. If borrowing costs rose to 4.8 percent by 2023, the cost of servicing the federal debt would more than triple, from \$316 billion to \$1,056 billion in 2023. The cost of servicing the \$7.54 trillion increase in the public debt that occurred in the 2009–16 period alone would cost \$362 billion, more than the current cost of servicing the entire federal debt today.¹⁶

Given the size of the national debt, the explosion of entitlement spending as the population continues to age, and the growth of discretionary spending, even with the strong revenue growth that would come from 3.5 percent GDP growth, by 2023 total federal borrowing at a 4.8 percent borrowing cost would be \$1,372 billion, 5.2 percent of GDP. Even if the Fed is successful in holding inflation rates in the 2% range and Treasury borrowing costs grow only to 3.2 percent by 2023, total federal borrowing will still be \$985 billion, 3.7 percent of GDP. Federal borrowing between 5.2 percent and 3.7 percent of GDP is in fact quite similar to the level of borrowing that actually occurred during the Obama era, 4.6 percent of GDP. But the high borrowing costs of the Obama era, driven by a massive growth in spending and a collapse in revenues, produced little crowding out of private investment in the static growth of the 2009–16 period. In the failed recovery the economy had little pulse and never felt the fever of higher interest rates that would have come if private demand for loanable funds had matched the levels experienced in strong postwar recoveries. But in a full-blown recovery those levels of federal borrowing would crowd out vibrant private demand for available credit and potentially produce interest rates that could choke off the recovery.

In postwar America prior to 2009, the private sector on average has had to compete with the government in a credit market where federal borrowing absorbed only 1.6 percent of GDP, 1.8 percent

¹⁶Author's calculations based upon CBO's April 2018 budget baseline and economic assumptions. CBO projected GDP for 2018 is adjusted upward for postwar norm of 3.5 percent economic growth. Interest cost reflects the ratio of net interest costs to publicly held debt.

during the so-called high deficit Reagan administration.¹⁷ As the current recovery builds, debt servicing costs and entitlement spending will produce borrowing that by 2023 could preempt as much as 5.2 percent of GDP in available credit, producing significantly larger headwinds than those faced by any other strong postwar recovery.

To get some insight into the forces that will drive federal preemption of private sector credit as the recovery builds, it is instructive to look at what the next five years might look like during a full blown recovery as compared with what might have happened in a stagnant economy, like America was experiencing in 2016. In January 2017, the CBO projected the taxes, spending, and deficits that would be expected if the economic stagnation of 2009 to 2016 were experienced in the future (CBO 2018: 10). The budget baseline was based on the tax structure, spending commitments, and growth rates that existed at the end of the Obama administration.

The three principle differences in the pre- and post-Trump spending, tax, and deficit projections are (1) the Tax Cut of 2017 and the lifting of regulatory burden; (2) the waiver of the discretionary spending caps in the 2011 Budget Control Act, which added both defense and nondefense spending in 2018 and 2019; and (3) the significant increase in the economic growth rate. The spending caps had been suspended every year since 2014 and no doubt would have been suspended in 2018 and 2019 had Obama remained president. To focus on the real policy differences embodied in the Trump program we have added the 2018 and 2019 discretionary outlays to the pre-Trump, January 2017 projections. The differences between the pre- and post-Trump projections are then reduced down to the economic impact of the large tax cuts and the Trump deregulatory effort on private sector spending and of course the stronger economic growth beginning in 2017 and accelerating in 2018.

Specifically we want to look at the current recovery occurring under Trump policies if the current growth rate, now roughly equal to the postwar average, can be sustained for the next five years. A sustained recovery will drive interest costs up and create headwinds that the recovery will have to overcome. It is instructive in identifying the

¹⁷See the historical tables in CBO (2018) for April 2018. Available at www.cbo.gov/about/products/budget-economic-data.

source of the headwinds to compare the recovery that is now underway with what the economy and federal borrowing would have looked like had the Trump policies not been implemented and the low growth of the previous eight years had continued. The 2017 CBO projections, which assumed the continuation of what was at the time called “secular stagnation,” plus the addition of the discretionary spending increases of 2017 and 2018, show revenues rising in 2023 by \$742 billion above the 2018 level. The cost of servicing the federal debt rises by only \$274 billion based on the low interest rates in the low growth scenario projected by CBO for 2023. Federal borrowing in 2023, despite the lower interest rate and lower debt servicing costs is still projected to be \$1,141 billion or 4.7 percent of GDP, slightly higher than the average level of federal borrowing that actually occurred during the Obama years, 4.6 percent of GDP.

The CBO projections in 2018—after the tax cuts and the lifting of regulatory burden, the surge in economic growth, and assuming a sustained recovery with economic growth rates and interest rates reaching their postwar norms—produce the following projections: Revenues would rise by 60 percent more than under the low-growth projections, and interest costs would rise as much as 270 percent more at a 4.8 percent Treasury borrowing cost, but only 28 percent more if borrowing costs could be held to only 3.2 percent. However, the level of projected federal borrowing in 2023 as a percentage of GDP is still between 5.2 percent of GDP and 3.7 percent of GDP depending on how high interest rates rise during the recovery—not significantly different than the 4.7 percent that would have occurred had the Trump Tax Cuts, deregulatory effort, and revived growth not occurred.

Stated in its simplest form, the headwinds of federal borrowing that will occur if the current recovery is sustained are not significantly different than the federal borrowing that would have occurred had the Obama program remained in effect. The difference is, however, that at a growth rate of 1.8 percent of GDP, federal borrowing of some 5 percent of GDP did not produce a crowding-out problem for private borrowers; but at 3.5 percent of GDP growth it will.

While these projections are a simple effort to approximate the impact of changes in a complex economy, they do show that high levels of federal borrowing are baked into our financial future. Whether the economy continues to grow at the average postwar rate or falls

back into the stagnation experienced from 2009 through 2016, the level of federal borrowing will remain roughly the same. While stronger growth will generate more federal revenues, stronger growth coming from strong private investment and consumer demand will drive up the demand for loanable funds, increase interest rates, and force the Treasury to borrow more money to service a federal debt that has doubled since 2008. Using the CBO model and assuming strong growth is sustained through 2023 and a normalization of interest rates to their average postwar levels suggest that the revenues flowing from increased growth are roughly offset by the rising interest costs of servicing the now massive federal debt. The same process works in reverse with growth at the lower level CBO projected at the end of the Obama administration. Revenues are significantly lower under the low growth CBO projections, but so are the interest costs incurred in servicing the federal debt. The difference is, however, with stagnant growth, while the Treasury is borrowing roughly the same amount of money that it would have borrowed if normal postwar growth had continued and interest rates had normalized, it is not competing with the robust private demand for capital that would accompany sustained growth and therefore does not face the same crowding-out problem. But, if our current high growth rate is sustained and our postwar experience is any guide to the future, the pressure of rising interest rates on the cost of servicing a federal debt that has doubled in the past decade will at some point challenge the sustainability of the recovery.

The weakest recovery in the postwar period was bought with a fiscal policy that doubled the national debt held by the public and a monetary policy that expanded the monetary base to a level never approached in the modern era. Never in our history has so much money been spent to produce so little good, and the full bill for that failed policy has yet to arrive.

Caveats and Policy Implications

It is possible, however, that as the recovery builds, some relief from a potential spike in market interest rates might be found in the extraordinary growth in the world economy, which has occurred in the past 30 years. The massive thrift levels in developing countries could be playing some role in producing the moderate interest rates of the past two decades and may in fact be altering the secular trend

in market interest rates. The ability of the United States, with strong growth and stable property rights, to attract foreign capital especially from developing countries might well offset some of the interest rate increases that have accompanied previous strong recoveries in the postwar period. To the extent that the world's financial market is benefiting from a growth in thrift in the developing world, it might be possible for the American recovery to continue with growth at the postwar norm without triggering interest rates that have historically accompanied similar recoveries in the past.

In addition, some argue that a new idea revolution is displacing the industrial revolution and companies are being built with new ideas and not capital. Thus it might be possible to experience historic postwar growth rates without experiencing the historic demand for available capital and high interest rates that have accompanied strong growth in the past. But this idea revolution is built on human capital, the acquisition of which requires investment just as investment in physical capital was required in the industrial revolution. The question then remains as to whether new products can actually be produced and marketed with significantly lower capital investment relative to the value of the product than we have experienced in other postwar recoveries. That is an empirical question. The answer is likely to come only as this recovery progresses and other recoveries occur in the future.

It is possible that the growth in thrift levels in the developing world is ushering in a new period of lower real market interest rates. If that is indeed the case the current recovery might not be as threatened as it would have been in other postwar recoveries since interest rate increases would be muted as compared to the historic norm. It is also possible that modern technology might require less capital to produce and market goods and services than has been the norm in postwar America. But since we don't know whether there has been a secular reduction in interest rates or a reduction in the capital required to produce goods and services, much less the magnitude and significance of such changes, prudence dictates that we not count on them to ward off the dangers that rising interest rates pose given the size of the federal debt.

Finally, what does our current fiscal and monetary reality tell us about the future and what guide does it provide for us to follow in our effort to strengthen and sustain the recovery? The analysis above would suggest the following.

First, the Fed will be incapable of suppressing interest rates to help sustain the recovery without unleashing unacceptable levels of inflation. Given the current level of excess reserves, a failure of the Fed to track increases in market interest rates by raising the rate it pays on reserves could cause the money supply and prices to explode. If Fed policy plays any role in the future of this recovery, other than by lifting regulatory burden to make the financial system more efficient, it will at best be a neutral role. If the Fed can simply drawdown its assets and the excess reserves of the banking system in a sustained recovery without causing interest rates to spike or inflation to spiral above its 2 percent target, it will have performed at an extraordinary level.

Second, to sustain the recovery, the Trump administration should accelerate its deregulatory effort to promote greater economic efficiency. This effort should proceed across the board but especially in the financial sector where 81 percent of the Treasury's recommended changes in regulations imposed under Dodd-Frank have not been implemented.

Third, for the sake of preserving strong growth and attracting capital internationally to hold down domestic interest rates, the Trump administration should find a way to settle existing trade disputes. The strong economic growth flowing from our current expansion and rising U.S. interest rates will attract foreign capital, drive up the value of the dollar, and expand American imports. Nothing we can do in the way of trade policy can prevent this from happening without at the same time significantly damaging the recovery. A nation's capital and trade balances are mirror images of each other and double entry bookkeeping does not yield to politics or anything else. In addition, we will need all the foreign capital we can attract to hold down domestic interest rates and thereby enable us to sustain the recovery. Holding down interest rates, sustaining strong growth, and preventing inflation require that we have more world commerce, not less. Ongoing trade conflicts will make sustaining the recovery increasingly difficult. It's time to make peace on trade and wage war on the deficit.

Fourth, every dollar the federal government does not spend is a dollar it does not have to borrow and in the process compete away from private borrowers. The caps on discretionary spending should be allowed to go back into effect in 2019, entitlements should be

reformed, and new spending programs should require a real spending offset.

Fifth, we should dramatically enhance the incentive to work with the goal of increasing labor force participation. This process should begin by suspending all state waivers in existing welfare work requirements. Work requirements should be instituted in all unearned benefits granted by the federal government. We should determine whether giving the earned income tax credit (EITC) for less than full-time work actually encourages or discourages greater work effort. We should also look at whether the phase-out structure of the EITC actually discourages more work effort at certain income levels.

The greatest source of untapped skilled labor in America is in the millions of workers retiring every year. Older workers should be strongly incentivized to keep working. We should determine the age at which older workers should be exempt from Social Security taxes and Medicare taxes. The income limits for the EITC should be increased significantly for those over 65. Further, seniors should be exempted from the federal wage and hour laws and occupational licensing should not be age limited unless there are legitimate safety concerns involved.

We should raise the retirement age to respond to the obvious fact that people are living longer, healthier lives than when the entitlement programs were established. The early retirement age should be phased up along with the full retirement age. The full retirement age is being phased up to 67 years of age now. That phase up should continue at the current rate to 70, and the early retirement age should be phased up at the same rate to 65. We should set a morbidity standard that would automatically phase up retirement ages as people live longer and healthier lives. Eligibility for Social Security disability should be tightened.

Finally, the story of America is the story of immigrants who come to our country seeking a better life for themselves, and who produce a better life for our country. We should give a green card with their diploma to every foreign graduate of an accredited U.S. college or university. We need to vastly expand legal immigration quotas for people with valuable productive skills. Illegal immigration is illegal and we should enforce the law, but there is plenty of room in America for people who have skills we need, are willing to come legally, and want to work.

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