



**Credit
Rating
Agency**

A NRSRO Rating*

Ratings

United States

Long Term

Foreign Currency
Local Currency

HR AAA (G)
HR AAA (G)

Short Term

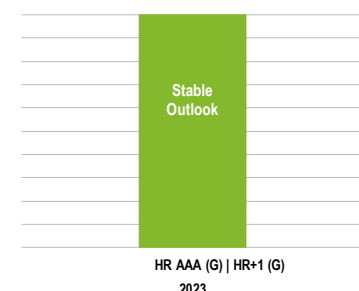
Foreign Currency
Local Currency

HR+1 (G)
HR+1 (G)

Outlook

Stable

Credit Rating Evolution



Source: HR Ratings.

Contacts

Paulina Villanueva

Sovereign Debt Associate
paulina.villanueva@hrratings.com

Edgar Gonzalez

Sovereign Debt Associate
edgar.gonzalez@hrratings.com

Álvaro Rodríguez

Public Finance Director
alvaro.rodriguez@hrratings.com

Ricardo Gallegos

Deputy Chief Economic Analysis
Director
ricardo.gallegos@hrratings.com

Felix Boni

Managing Director Chief Credit Officer
Lead Analyst
felix.boni@hrratings.com

The United States of America

Sovereign Debt

HR AAA (G)
HR+1 (G)

March 14, 2023

HR Ratings assigned the long-term rating of HR AAA (G) and the short-term rating of HR+1 (G) for the sovereign debt of the United States of America along with a Stable Outlook

The rating assigned to US sovereign debt is based on our assumption that a formal default on the debt is extremely unlikely if not inconceivable. The unlikelihood of a default is also supported by the role of the US dollar as the global economy's principal reserve currency, the fact that the totality of the debt is denominated in US dollars and the increasing willingness of the Federal Reserve to purchase substantial amounts of US government debt in the secondary markets. At the same time the strong recent statements on the part of the Federal Reserve expressing its willingness to raise interest rates to levels beyond those currently expected supports the rating and the outlook.

The Stable Outlook, and indeed the rating itself, could suffer a deterioration should we need to change our long-term forecasts to assume a higher level of inflation or deterioration in the relative value of the USD vs. other currencies, in part as a result of a deterioration in the current account. A resolution to the debt limit impasse that does not offer hope of a change in the trajectory of the debt forecasted in this report could also affect the Outlook.

Although formal default on US sovereign debt is difficult to imagine, we regard some form of virtual default through high levels of chronic inflation or currency devaluation as also being highly unlikely although the risk could increase over time. The upsurge in inflation seen in 2021 and 2022 (and likely to moderate in 2023, although remain somewhat elevated) is a negative consideration, especially assuming that in part it might be attributable to excessively expansionist fiscal and monetary policy. However, in our opinion this is not sufficient to impact our rating given the following: 1) the extraordinary nature of the COVID pandemic which we regard as the principal cause of policy laxness, 2) the role of international factors not related to policy decisions in exacerbating inflation, in particular, supply chain disruptions (in part caused by COVID) and the war in Eastern Europe, and 3) the decisiveness of the Fed's response once it became apparent that the inflation phenomenon was not as "transitory" as had originally been assumed.

Nevertheless, the current level of public debt to GDP at nearly 100% and our expectation that it will continue to increase could eventually affect this rating. Much would depend upon whether it produces sustained high levels of inflation and/or significant USD devaluation. In this context, the Fed's policy of quantitative easing has both positive and negative aspects. On the positive side, Fed policy attempts to keep the economy producing at its full non-inflationary potential through such mechanisms as quantitative easing. The purchase of US debt by the Fed reduces the "crowding out" effect of the need to finance deficits thus facilitating (although not guaranteeing) private sector productive investment. Quantitative easing also has the effect of reducing "public" debt actually in the hands of the public. Although our debt/GDP metric incorporates all public debt (and does not include intragovernmental debt) not servicing Treasury debt held by the Fed does not necessarily represent default.

On the negative side, quantitative easing can be inflationary by permitting the demand for goods and services, often generated by loose fiscal policy, to outstrip supply. As previously mentioned, inflation and/or currency depreciation can at some point represent virtual default. Consequently, an autonomous central bank following policies to limit inflation is relevant to our credit rating. Thus, the Fed's interest rate policy is also relevant in our analysis and, in hindsight, was probably too lax for too long a period of time following the



financial crisis of 2008-09. Although low interest rates can help stimulate economic growth, including investment, it can also reduce savings which is crucial for investment.

It appears that inflation is now entering a critical stage as the impact of extraordinary factors, such as supply chain issues, have reduced, or faded. Now the question is the degree to which large fiscal deficits and their past, and possible future, de facto partial financing by the Fed will generate an unacceptable level of inflation.

Our analysis assumes a moderate level of economic growth which is not sufficient to prevent the growth of spending relative to GDP and could lead to further demands for government spending. In this context, the decline in labor productivity in 2022 (due to reductions in 1Q and 2Q) would be a significant cause for concern were it to continue. This reinforces the need to ensure that the growing financing needs of the Federal government not crowd out the investment necessary to maintain productivity growth.

Furthermore, given the complicated geopolitical situation we assume rising defense expenditures which will place additional pressures on fiscal policy. We also assume slightly positive real Federal Funds rate which combined with rising primary deficits will lead to growing interest costs. Nevertheless, we do not yet see this as producing a degree of inflation that constitute a risk factor for our credit rating. Rising deficits could lead to somewhat higher current account deficits although at this point in time we do not see this as constituting a threat to the position of the USD as the global economy's principal reserve currency. Thus far large fiscal deficits have not led to any appreciable weakening of the USD.

Even so, it is important to emphasize that the failure to restrain inflation and the resulting degradation of the currency could increase political polarization and paralysis and eventually lead a change in Outlook to a deterioration in the rating. We assume that the debt limit is ultimately increased although whether this would be accompanied by an agreement that limits the upward trajectory of the debt is not at all clear. However, we do recognize the possibility that before a resolution is reached there might be some failure to meet certain non-debt obligations that would not imply, under our methodology, debt default.

In the following table we provide the principal assumptions in our base scenario that form the quantitative core of our rating process. The data are presented on a fiscal year basis. We assume moderate real GDP growth with a CAGR from 2022 through 2029 of 1.68%. The primary deficit would average 3.58% of GDP while interest costs would average 3.15% but expand substantially from 1.90% in FY22 to 3.62% in FY29. As a result, the overall financial deficit (not shown) would average 6.73% but end at 7.53% in FY29. Public debt as a percentage of GDP would end FY29 at 114.2% of GDP (vs. 97.1% at the end of FY22) assuming a CAGR for nominal GDP of 4.51% with a CAGR for deflator inflation of 2.78% combined with the already mentioned real GDP growth of 1.68%.

Although our formal debt metric for the US is Treasury debt in public hands, the fact that a significant portion of that debt (at the end of FY22 it was 24.4%) was held by the Fed is a relevant consideration. Excluding debt held by the Fed, public debt as a percentage of GDP falls from 97.1% to a still substantial, but much lower 72.7%.

One of our major considerations is inflation. We see CPI inflation trending down to 2.50% which would probably translate into around 2.2% for the PCE, the Fed's preferred metric. This, of course, would still be above the Fed's 2.0% target. On a long-term basis from 2022

to 2029 the CPI's CAGR would reach 3.0% which would be significantly above the PCE. One question is whether the Fed would consider the longer-term inflation metric to be more appropriate as it previously has done when it was significantly below 2.0% before the upsurge in inflation in 2021. As we discuss in detail in our section on interest costs, we assume modest real interest rates, at least with respect to the Fed Funds rate. Thus, a long-term PCE inflation above 2.0% does not translate in our base scenario into a highly restrictive monetary policy, in the long-term.

We believe that the most significant risk in our base scenario is the level of inflation in the context of the assumed primary deficits. Higher inflation would produce higher real interest rates and further increase interest costs as a percentage of GDP. Furthermore, the failure to limit PCE inflation to levels close to 2.0% on a long-run basis could be considered as a form of currency degradation which could require downward revision in the rating.

Finally, we assume that the current account deficit would tend to run above at around 3.25% of GDP. We furthermore assume that this would be largely consistent with the dollar remaining the global economy's primary reserve currency and with a stable level for the USD relative to other currencies. However, we do not discount the possibility that it could experience some depreciation vs. its currently high levels as we see a reduction in the primary income balance.

Fiscal Year	Real GDP Growth	Nominal GDP (USD billions) FY	Primary Balance* (% of GDP)	Interest Costs* (% of GDP)	Public Debt (% of GDP)	Inflation (average)	Current Account (% of GDP)
2020	-1.76%	21,058	-13.23%	1.64%	99.80%	1.45%	-2.53%
2021	4.09%	22,654	-10.70%	1.56%	98.4%	3.30%	-3.58%
2022	3.26%	25,016	-3.60%	1.90%	97.1%	7.91%	-3.86%
2023	1.16%	26,474	-2.74%	2.68%	97.4%	4.80%	-3.48%
2024	1.69%	27,730	-2.88%	2.94%	99.1%	3.60%	-3.39%
2025	2.22%	29,059	-3.63%	2.96%	101.5%	2.77%	-3.37%
2026	1.60%	30,242	-3.68%	3.07%	104.2%	2.53%	-3.34%
2027	1.94%	31,545	-3.81%	3.26%	107.0%	2.48%	-3.28%
2028	1.66%	32,802	-4.21%	3.47%	110.8%	2.51%	-3.21%
2029	1.56%	34,080	-3.90%	3.61%	113.9%	2.50%	-3.21%

Source: HR Ratings Forecast with data from the BEA, the Congressional Budget Office & FRED.

Regarding the non-quantitative variables considered for this rating it is important to emphasize the structural strengths that the U.S. possess, including the size of the economy, the development of the financial system, its market size, high institutional and governance strength, high per capita income, and the dynamism of the business environment.

HR Ratings Future Assumptions

- **Public Finance projections.** Public debt is expected to reach 118.2% of GDP in 2033 with financial deficits averaging 107.5% from FY23 through FY29.
- **GDP growth.** Long-term real GDP growth is expected at 1.70% with an average deflator inflation of 2.78%.
- **Inflation.** CPI inflation is projected to stabilize at 2.50% in the long term.



Credit
Rating
Agency

A NRSRO Rating*

The United States of America

Sovereign Debt

HR AAA (G)
HR+1 (G)

March 14, 2023

- **Monetary policy.** We assume that the Fed Funds rate will stabilize at 2.87% (mid-range) while quantitative easing will remain a policy tool should the need arise to encourage growth and support fiscal policy.
- **External accounts.** The current account deficit would stabilize at slightly at around 3.25% of GDP and be sufficiently supported by the financial and other accounts.

Factors that could downgrade the rating

- Chronic political divisions that impede the ability to timely approve and adequately implement fiscal policy.
- Lower than expected real economic growth that produces political demands for higher levels of government spending and primary deficits.
- Higher levels of inflation that lead to USD devaluation and weakening of the USD as a major reserve currency.
- Geopolitical crises that lead to larger fiscal imbalances, inflation, and currency devaluation or even some form of military conflict.



A NRSRO Rating*

Credit
Rating
Agency

The United States of America

Sovereign Debt

HR AAA (G)
HR+1 (G)

March 14, 2023

U.S. Economic Performance and Forecasts

The Historical Evolution

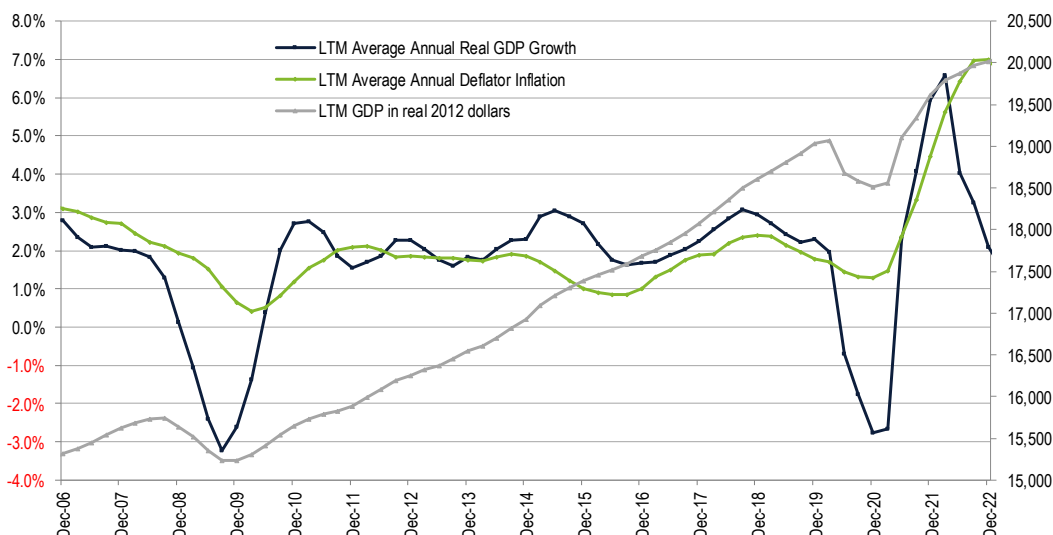
GDP evolution is a key variable in the analysis of sovereign debt. The nominal growth rate is relevant as it influences the extent to which the increase in debt can be supported or not by an expanding economy. For its part, real growth is relevant to the extent that it may affect the level of demand for public sector benefits in the event that real incomes do not rise sufficiently for politically relevant segments of the population. With an aging population, GDP growth is necessary to finance the increasing payments for programs such as Social Security and Medicare, at the same time that labor participation rates may be in decline. As labor force participation rates decline the role of productivity becomes especially relevant.

US economic growth in the aftermath of the COVID pandemic performed well in real terms. While economic activity fell 2.75% in 2020 it more than recovered in 2021 expanding 5.95% with the result that from 2019 through 2021 Compound Annual Growth Rate (CAGR) was 1.50%. On a Last Twelve Month (LTM) basis the economy surpassed its pre-COVID levels in 2Q21, five quarters later. In contrast, during the 2008-2009 recession the economy fell by 0.14% in 2008 and another 2.54% in 2009 and rebounded a relatively modest 2.56% in 2010. GDP reached a pre-recession high in 3Q08 and did not surpass that level until 2Q11, or eleven quarters later (see Figure 1).

However, the superior performance post-COVID came with a price in terms of much higher inflation. During the 2008-09 recession LTM GDP deflator inflation reached a low of 0.41% in 1Q10 and a post-recession high of 2.11% in 1Q12. In contrast, in COVID the low point for GDP inflation was 1.29% in 1Q21 while it appears that the high might have been reached in 4Q22 at 7.0%.

The relative performance during these two periods for deflator inflation and real GDP growth is shown in Figure 1 below. The gray and blue lines display a much more rapid recovery after COVID than that observed during the 2008-09 financial crisis. For its part, the green line shows the surge in inflation following COVID-19 vs. the low inflation in the aftermath of the financial crisis.

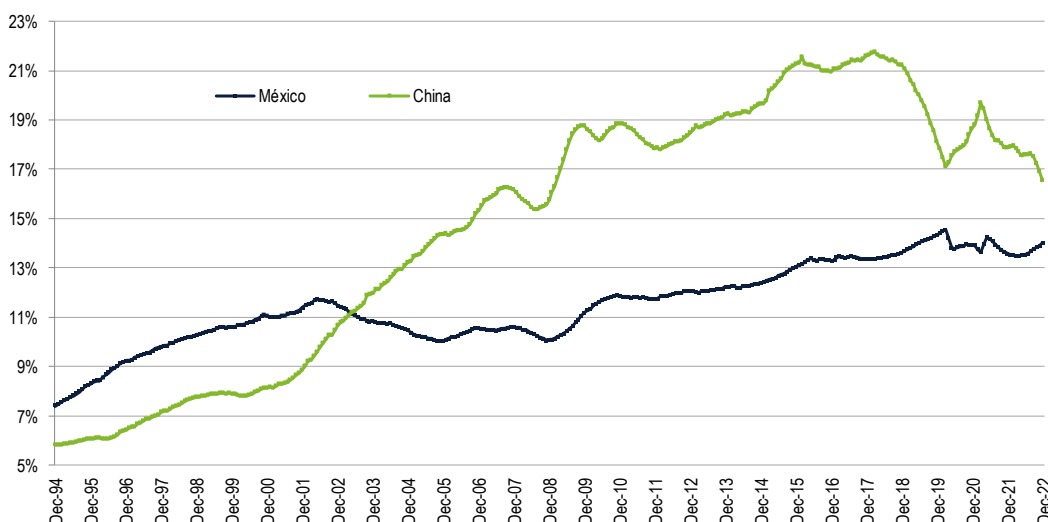
Figure 1. LTM Real GDP and GDP deflator growth



Source: HR Ratings based on seasonally adjusted data from US BEA retrieved from the FRED.

Certainly, inflation is a phenomenon with a multiplicity of causes both national and international. For example, it is probable that the low inflation in the post financial crisis (which was in decline even before the recession) was partly caused by the growing importance of low wage economies for US imports helping to keep prices low. In Figure 2 we show the evolution of China and Mexico in terms of their percentage participation in US imports.

Figure 2. Participation of major trading partners in US imports



Source: HR Ratings with data from the United States Census Bureau. LTM basis, seasonally unadjusted data.

The growth shows the surge in Chinese participation (in large part substituting Japanese participation) beginning in 2001. In contrast, the post COVID recovery has been accompanied by supply chain problems and disruptions of trade relations with China. Although Mexico's growing participation is not as evident, we do see an increase after the financial crisis and a peak just prior to COVID while in the case of China a dramatic reduction is evident with the Trump administration, and which has continued (after a brief interruption during COVID) in the Biden administration.

In terms of fiscal and monetary policy the responses were also somewhat different in the two recessions. For fiscal years 2009-11 the cumulative deficit (US\$4,009bn) represented 8.86% of cumulative GDP during this period. In contrast, during the COVID period the cumulative deficit for fiscal years 2020-22 (US\$7,730¹) reached 10.9% of cumulative GDP, larger but not dramatically so and certainly much less than the increase in inflation during the same two periods.

Using a different metric, from the end of FY08 to the end of FY11 the public debt of the US Treasury increased by US\$4,318bn vs. the increase of US\$7,490bn from FY19 to FY22 representing 9.5% and 10.6% of respective cumulative GDPs.

However, the difference perhaps lies more in monetary policy than in fiscal policy. Of the US\$4.3tr increase in public debt during the financial crisis induced recession, 27.5% was absorbed by the Fed through monetary easing. However, in the three fiscal years in the COVID period 48.9% of the increase in the public debt was purchased by the Fed².

In this context it is possible to make the argument that the combination of fiscal and monetary policy contributed to some degree to the recent upsurge in inflation although much of it can also be attributed changes in global trading conditions. Of course, the war in Eastern Europe, related volatility in the oil markets and possibly even the cost of the efforts to speed the transition to net-zero energy have also been factors in the current inflationary environment.

As the above paragraph suggests, although inflation has been a major problem for the US economy, it is also a global phenomenon. Furthermore, the Fed has been very aggressive in combating it through its policy of interest rate increases. Additionally, the Fed has begun to reduce its holdings of Treasury debt. In quarterly terms it holdings peaked at US\$6,255bn at the end of 1Q22 and at the end of 3Q22 had fallen to US\$6,097bn.

Because of the global nature of inflation, it is also relevant to examine the value of the USD relative to other currencies as a means of determining possible monetary degradation in the context of credit quality. In this regard, the strength of the dollar is a significant positive. Much of that continuing strength is probably attributable to the firmness of the Fed's current monetary policy.

One of the strengths of the U.S. economy, and certainly a highly relevant factor in its sovereign credit rating, is the dollar's position as an international reserve currency. We discuss the US's external accounts in a separate section of this report. However, it is worth mentioning here that according to the Fed's Broad USD Index the currency has gained, in real terms, 29% from the end of 2007 to the end of 2022 despite the two major recessions

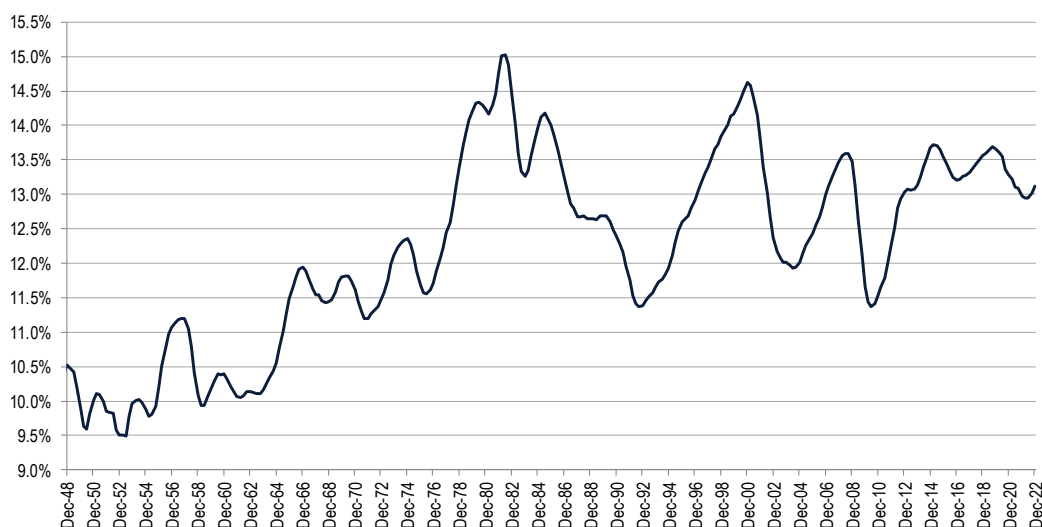
¹ Does not include the estimate of future costs of student loan policy changes in September 2022 which we believe reached US\$264bn.

² More precisely, from the end of FY08 to the end of FY11 the holdings by Federal Reserve Banks of Treasury debt increased by US\$1,188bn. From the end of FY19 to the end of FY22 the Fed's holdings increased by US\$3,661bn.

and the substantial increase in US public debt. In nominal terms the USD has gained 37.1%.

A major concern over large fiscal deficits and the resulting growth in public debt is that it can “crowd out” private sector investment and inhibit the increase in productivity. However, although crowding out certainly is a danger, that does not appear to have been the case for fixed US non-residential, or business, investment. In the following figure we show the evolution in nominal terms of private fixed business investment as a percentage of GDP from 1948.

Figure 3. LTM Nominal Private Fixed Investment to GDP

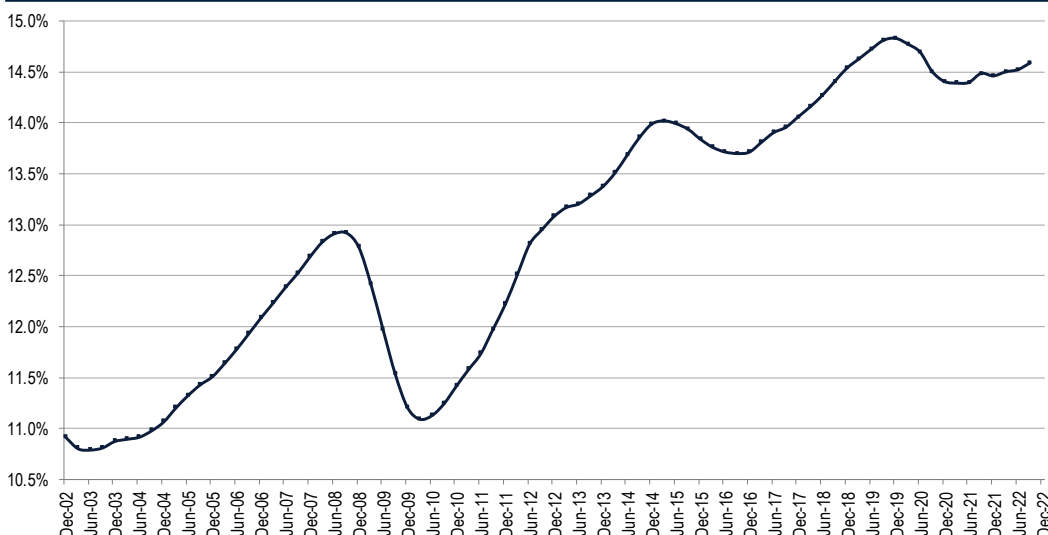


Source: HR Ratings based on seasonally adjusted data from US BEA retrieved from the FRED.

Although it is below its highs in 1982 and 2001, nominal fixed business investment remains relatively high in historic terms. Ideally, however, it is more appropriate to measure investment in real terms vs. GDP. Figure 3 shows it is nominal terms because the BEA does not present real dollar investment data until 2002. In Figure 4 we present fixed business investment in real terms from that year onwards.

The real term data suggest that investment is close to its recorded highs. Thus, it would appear to be difficult to suggest that large Federal government deficits are crowding out private sector investment. Of course, the ideal level of investment for stronger sustained growth might be higher. Furthermore, it is possible that tax and regulatory issues may be impeding higher levels of investment but that would be an issue separate from, but not necessarily unrelated to, debt and deficits.

Figure 4. LTM Real Fixed Business Investment as % of GDP



Source: HR Ratings based on seasonalized data from BEA.

Forecast Evolution

GDP, inflation and interest rates

The increase in nominal GDP during 2021 and especially 2022, significantly impacted by deflator inflation, kept the public debt-to-GDP ratio below 100% after reaching that level in 2020. Of course, if nominal GDP rises more as a result of inflation than real growth, the result is likely to be higher nominal, and presumably real, interest rates, higher interest outlays, and pressures to limit primary spending growth. Nevertheless, despite strong nominal GDP growth, public debt levels are more than 20 percentage points of GDP higher than in the pre-pandemic period.

Given this diversity of relevant macroeconomic variables we detail some of our major assumptions for real growth, inflation and interest rates. Over the long term we assume relatively modest real growth, in line with trends over the last few decades, and in accordance with lower growth in the work force and in labor productivity. Given our limited real growth expectations we assume increases in mandatory entitlement spending relative to the size of the economy.

Although we are assuming somewhat higher inflation relative to real growth and lower real growth vs. previous decades (see Figure 5), at this time we do not see this as representing form of currency degradation and even less as a threat to the reserve currency status of the USD. We assume that inflation will still be moderate in the next years, although probably above the Fed's traditional target of 2%³. Demographic factors that will likely produce lower US GDP growth and pressure fiscal policy are relatively common across most countries. Thus, in relative terms at least, the US is not necessarily at a disadvantage. This factor should support the global reserve currency position of the USD.

³ Depending, of course, upon how that 2% target is measured, whether as an average, and over what time span, or in annual terms.



Furthermore, we believe that much of the real growth in the world's economy over the last couple of decades (notably the 90's and first years of the new century) was the product of the emergence of groups of countries, most notably China and its integration into the world economy. We assume that a lower population growth in China and the declining support for free-market globalization is likely to lead to lower global growth and perhaps higher inflation. Furthermore, we appreciate the security considerations that drive efforts such as nearshoring, as well as the socio-economic benefits that greater manufacturing employment in the US can generate.

We also expect real interest rates to be higher than they have been thus far in the 2000s although perhaps a bit lower than they were in periods during the second half of the last century which saw significant volatility.

In general terms, we believe the greatest risk to our forecasts, long term, is that inflation may be higher than what we are assuming and, to a lesser degree, that growth might be lower. Given these two risks, the risk to our real interest rate assumptions is especially uncertain given the Fed's dual inflation and full employment mandates. We believe the evolution of inflation over the next year will be especially important now that global distortions, such as supply chain disruptions and higher energy prices, have been corrected or significantly incorporated into the price structure. In this sense, the responsibility for dealing with inflation is now, more than before, in the hands of the Fed. The relatively hawkish tone of the Fed, in recent weeks especially, is positive in terms of increasing the likelihood of lowering inflation in a still very difficult environment.

Of course, the geopolitical environment remains highly uncertain and could again cause major disruptions. New offensives are occurring or being planned in Ukraine, China-US relations have once again become strained while the Middle East continues to be volatile, especially as negotiations to limit Iran's nuclear ambitions appear to have made little progress. Indeed, one of our major assumptions regarding the evolution public debt is the need to increase defense spending as a percentage of GDP.

In calendar year 2023 we are assuming that GDP growth will continue to decelerate from 2022's 2.1% to 1.2% as consequence of reduction in the consumer spending and weakness in residential investment. We assume a decline in business investment of roughly 0.7%. A major question will be the degree to which public policy initiatives to spur onshoring especially investments in computer chips fabrication and EV production will lead to higher levels of investment spending.

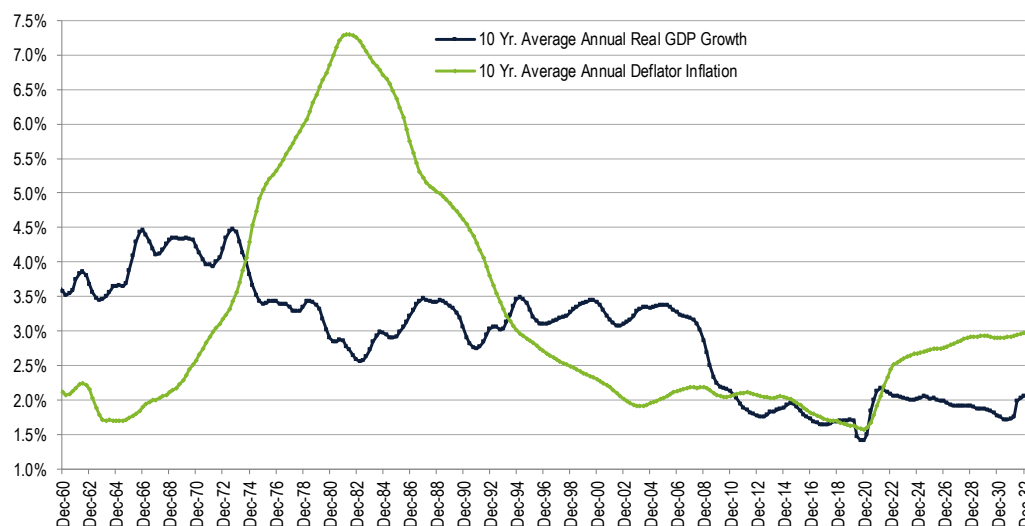
Our long-term assumptions for the evolution of the US economy are presented in Figure 5 below. For the period from 2022 through 2029 we assume a CAGR for real GDP of 1.68% and through 2032 of 1.70%. In terms of GDP deflator inflation, we are assuming 2.78% and 2.64% respectively. Combined, these assumptions would produce GDP nominal CAGRs of 4.51% and 4.38%⁴

These forecasts are roughly comparable to the CBOs assumptions although we expect slightly greater inflation and slightly less real growth. Thus, from FY22 through FY29 and through FY32 the CBO assumes real growth of 1.85%. For GDP inflation the CBO

⁴These are based on 3Q through 3Q numbers. Generally, we focus on GDP growth on a US fiscal year basis. Although our formal, methodologically based, period of analysis is through FY29 we also provide some of our assumptions through FY32 in order to have a greater appreciation of the consequences for public debt of our long-term assumptions.

assumes 2.50% and 2.35%, respectively with the CAGR for nominal GDP of 4.40% and 4.25%⁵.

Figure 5. Ten Year Average Annual Growth in Real GDP and GDP Deflator



Source: HR Ratings based on seasonally adjusted data from US BEA retrieved from the FRED.

Figure 5 above shows the real change in US GDP and inflation measured through the GDP deflator using a ten-year moving average. What appears to be clear is the long-term decline in economic growth beginning with the current century becoming more apparent with the recession of 2009 from which there was never any sustained recovery⁶.

On a still similar negative note, we are assuming that deflator inflation will be significantly higher than GDP real growth. This only occurred in the 70s when inflation became a major structural problem.

In Figure 6 below we show our assumed evolution of the Fed Funds rate in both nominal and real (ex-post basis) terms based on our expectations for PCE inflation which we see above 2.0% near the end of the period. Thus, even though inflation is likely to be near and perhaps slightly above the Fed's target our real rate assumptions are relatively low in a long-term historic context, at least prior to the 2000s. As we mentioned above, we believe there is a relevant degree of upside risk to our inflation assumptions.

⁵ Given the expertise and non-partisan nature of the CBO's reports we believe they represent a relevant baseline, especially in the longer term, against which to compare our own forecasts, especially budgetary, in the following section of this report, but also macroeconomic. The references to the CBO, unless otherwise noted, are from the February 2023 report: *The Budget and Economic Outlook 2023-2033*.

⁶ Which presumably is a factor that helps to explain why the Fed kept its reference rate so low in the post-financial crisis period until before the COVID pandemic.

Figure 6. Federal Funds Rates in Nominal and Real Terms based on PCE inflation



Source: HR Ratings forecasts with data retrieved from the FRED.

As the graph shows, real rates in the 2000s have been lower than in previous decades and mostly negative although quite volatile. Rates dropped sharply in 2001, moving negative in real terms, then moved sharply upward as inflation moved beyond 2.0% and then downward again in August and September 2007 as the financial crisis of 2008-09 approached. They remained quite low, especially during COVID, until the current cycle where the Fed is trying to catch up.

Our forecasts assume nominal rates will level off at 2.87%⁷ with real rates remaining in positive territory stabilizing at around 0.50%. PCE inflation would head down to 2.0% but then rise to around 2.3%. For its part the CBO see PCE inflation at 2.0%, the Fed Funds rate at 2.50% with a real rate of around 0.48%.

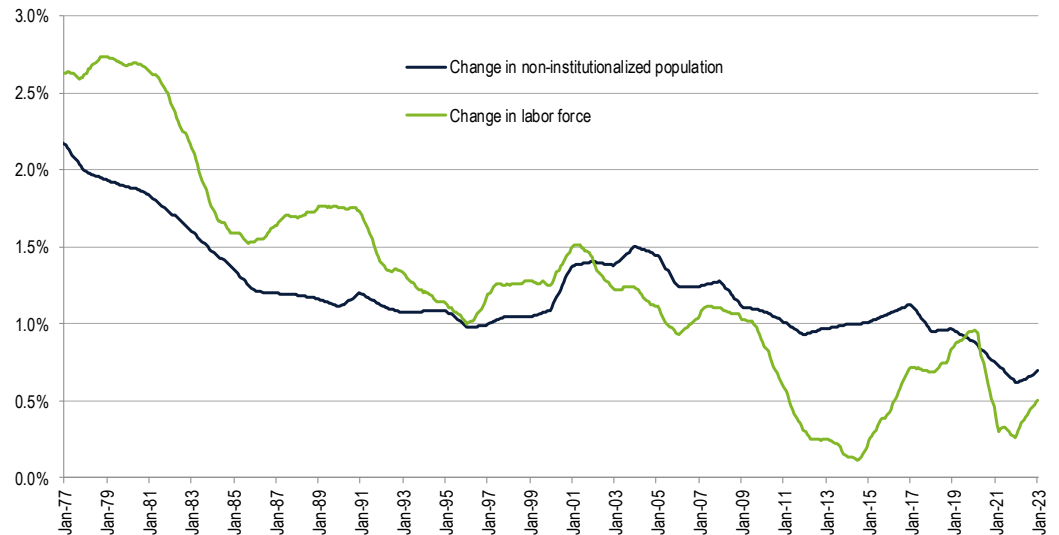
Labor force growth and labor productivity

Our long-term real GDP forecast assumptions are significantly influenced by the trends we see in the growth in the labor force and in labor force productivity⁸. In Figure 7 below we show the historic evolution of population and labor force growth. The growth of the non-institutionalized population (those above 16 years of age) is now averaging below 1.0% and close to 0.5%. We assume that its growth will continue to trend downwards. As a result of falling participation rates, the growth in the labor force (those working and those seeking employment) has been even weaker at around 0.5% and even below.

⁷ The midpoint of a 2.75% - 3.00% range.

⁸ A perspective also utilized by the CBO.

Figure 7. Annual change in five-year moving average of population and labor force

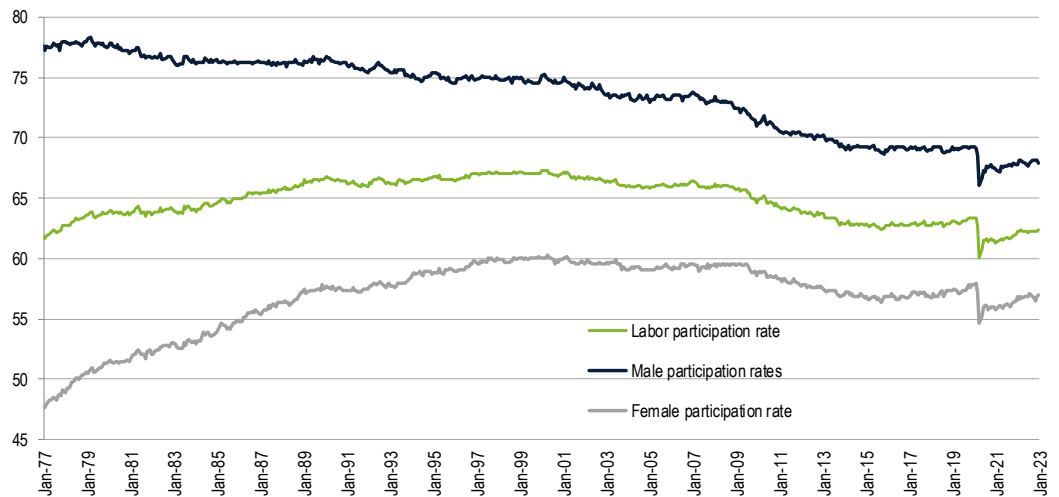


Source: HR Ratings based on seasonally data from the BLS and retrieved from the FRED. Labor force includes those working and those seeking employment.

The decline in the participation rate is the result of the rising retired age-population and perhaps to a weaker desire, or need, to work on the part of the non-pensioned population. The evolution of the participation rate is seen below in Figure 8. Although there was a slight stabilization (in 2015) and later rebound (in 2019) this was suddenly reversed with the pandemic while overall participation rates remain below the minimum pre-pandemic level.

Figure 8 also shows how the participation rate among men began to decline as early as the late 70s while the impact of this decline on the overall rate was neutralized by the rising female participation rate. However, both male and female participation rates declined with the 2008 financial crisis. As is the case for men, the female participation rate remains below the pre-pandemic.

Figure 8: Labor Force Participation Rates (3MMA)



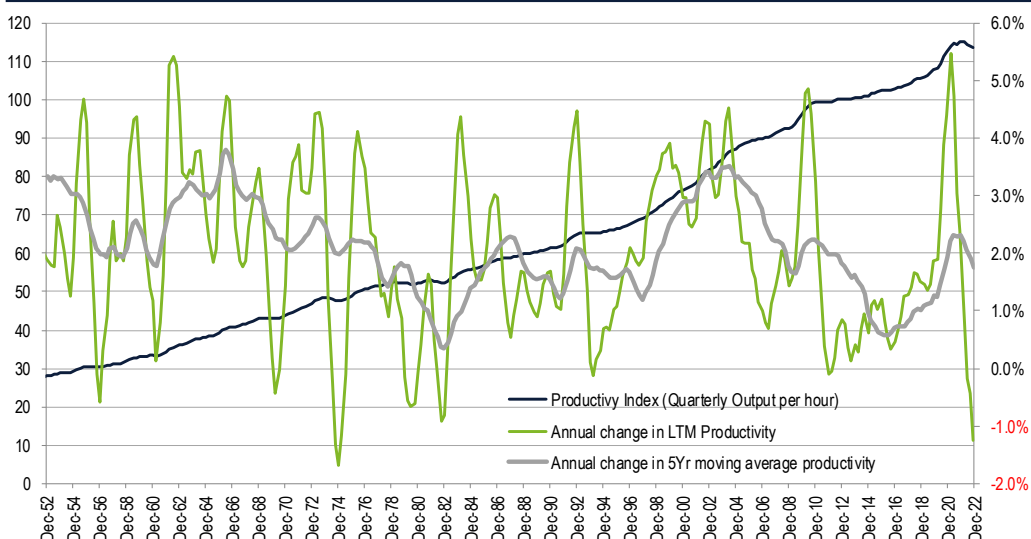
Source: HR Ratings with seasonally adjusted data from the US BLS and retrieved from the FRED.

Although participation rates might rise substantially, we do not see this as being very likely. More substantial overall population growth is even less likely and would take time to have an impact on our assumptions. Larger immigration of individuals in prime working age could have an impact and is often regarded as the most viable solution to the stagnant growth in the labor force.

What could have a more immediate impact on GDP growth is labor force productivity. In Figure 9 below we show the evolution in productivity measured as hourly output issued on a quarterly basis. As can be seen, the volatility of changes in productivity even on a four-quarter moving average basis is significant. Therefore, we also show the annual change in five year moving average productivity. Even that longer-term perspective shows a degree of volatility.

A recent five-year low can be observed for 2Q16 at around 0.6% thanks to the impact of the 2008-09 financial crisis. The rebound continued reaching a still low 1.2% in 1Q20 at which point the increase accelerated due to COVID-19 and presumably the dismissal of workers in less productive sectors. A high of 2.31% in the five-year average was reached in 4Q21. In that quarter, output rose 4.45% vs. 3Q21 at an annualized rate and fell 5.9% and 4.1% in 1Q22 and 2Q22 to rebound to a 3.0% in 4Q22. For all of 2022, labor force productivity declined 1.26%. To place this analysis in context, in order to have GDP growth of 1.8% and assuming that the labor force increases at a 0.8% rate productivity would need to increase at a 1% rate. Given the inherent volatility of the output per hour index and the volatility caused by the 2008-08 and 2020 recessions it is difficult to see where long-term productivity growth will stabilize. However, we see 1% at the top end of a possible range.

Figure 9: Five Year Labor Productivity Evolution



Source: HR Ratings with information from the BLS retrieved from the FRED.

Comparative Economic Performance and Outlook

In accordance with our methodology, we not only analyze US performance on its own but also relative to the historical and expected performance of the economies of other comparably rated sovereigns⁹. Thus, in this report we evaluate the evolution of various macroeconomic, fiscal, and external indicators using ten years of information. The graphs presented here provide more information in order to provide greater perspective. The databases used for this analysis were retrieved from the World Economic Outlook (WEO) publication of the International Monetary Fund (IMF)¹⁰. The main components used to make these comparisons are real GDP growth, inflation, current account balance and Net debt as share of GDP.

HR Ratings selected, based on information provided by the IMF, the economies with the highest credit ratings from international agencies (AAA, AA+ and AA).¹¹ and relatively high per capita incomes.

Real GDP Growth

Figure 10 presents the growth of the U.S. economy relative to that of other comparably rated sovereigns. From 2015 through 2017 U.S. growth was not noticeably different from the other economies included in the group of highly rated sovereigns. However, its performance in 2018 and 2019 was superior. Its growth during this entire

⁹ The IMF data used in this portion of our analysis contains 5 years in the past, the current year and 4 years in the future for countries with similar ratings.

¹⁰ In this section, HR Ratings uses data from the World Economic Outlook 2022 (October update) to compare the performance of similarly rated sovereigns based on ratings from international rating agencies. As the IMF mentions in that report, its US fiscal projections are based on the July 2022 Congressional Budget Office baseline, adjusted for the IMF staff's policy and macroeconomic assumptions.

¹¹ This classification includes AAA (France, New Zealand, Denmark, Netherlands, Sweden, Switzerland, Canada), AA+ (Austria, Finland) and AA (Germany, Australia, Norway, United Kingdom) rated countries.

period averaged 2.4% vs. 2.2% for the AAA rated economies and 1.9% for the entire group excluding the US.

COVID-19 caused a significant downturn not seen since the financial crisis of 2008-09. The global impasse disrupted global supply chains affecting international trade while lockdowns also affected the provision of services. Fiscal measures designed to mitigate the economic effects of COVID helped to avoid further damage to economic growth but also increased debt levels for many economies. These measures may also have resulted in increased personal savings given the difficulties in actually spending the proceeds of fiscal policy benefits. These excess savings may have helped produce the inflation upsurge in 2021, continuing to the present.

As is shown in Figure 10, in 2020 the US performed much better than the AA+ rated economies but fell more sharply than the AAA group did as whole and the AA sovereigns. On the other hand, U.S. growth rebounded very strongly in 2021 (+5.7%) vs. its peers as excess savings were spent and as fiscal policy remained highly stimulative, surpassing pre-pandemic levels. Stimulative fiscal policy was supported by monetary policy as the Federal Reserve responded by reducing its funding rate to a 0%-0.25% range and stabilizing financial markets through an aggressive policy of quantitative easing.

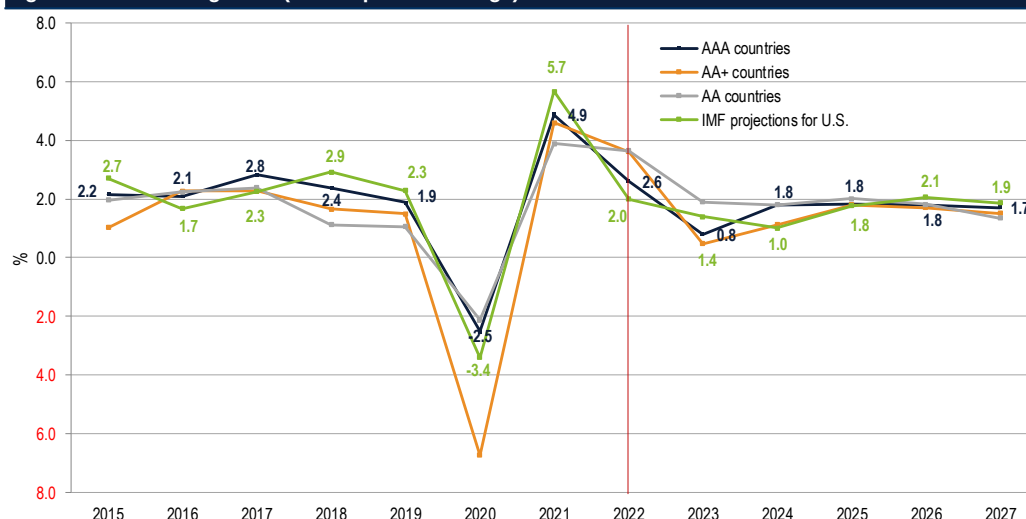
Of course, stimulative fiscal and monetary policies of one kind or another, to one degree or another, have been adopted by other highly rated wealthy economies, even including negative nominal monetary policy rates. The effect of these were seen in 2022 with expected growth above that of the US whose growth is expected to have underperformed.

Although US 2022 growth is expected to have been below its peers much of this is due to the surge in imports as both aggregate and domestic demand remained strong. Government transfer payments remained strong, significantly above pre-pandemic levels, although below 2020 and 2021 outlays. Government spending on a GDP basis also fell vs. 2021 but also remained significantly above pre-pandemic levels. For its part, during 2022, consumption continued to support GDP growth. We believe this was a consequence of the spending of savings accumulated thanks to the fiscal stimuli in 2020 and 2021. Those excess savings, however, may have been largely depleted as 2022 ended. In addition, the recovery of employment, even after several months of rising interest rates, also supported spending and remained surprisingly strong.

For 2023, the IMF expects growth of 1.4%, better than the IMF's projection for AAA rated countries of 0.8%. We assume that the forecast model includes a better performance in the second half of 2023, with the first half hurt by restrictive monetary policy, supported by a recovery in personal consumption and increased non-residential investment.

For both 2023 and 2024 the US is expected to have lower growth vs. the AA economies. However, US growth is expected to surpass both the AAAs and AA+ economies in 2023 and to equal the AA+ set in 2024 while underperforming the AAA's and AAs. Beyond 2024, growth across all ratings groups and expected to be roughly equal with a slight advantage for the US at 1.9% in 2027.

Figure 10. Real GDP growth (Annual percent change)



Source: HR Ratings with data from the IMF/WEO October 2022.

Inflation

US Inflation prior to 2021 generally remained within and even below the target level established by the Fed of 2.0%. To the extent to which the Fed is using an average inflation target over a period of time, it is relevant to note that for the period 2015-19 US CPI inflation was 1.55% and for the PCE the average annual inflation rate was an even lower 1.33%. However, for the five-year period through 2022 the average is now 3.63% and 2.99%, respectively. Going forward, the five-year average is likely to move even higher before stabilizing and presumably heading down again in part due to policy action on the part of the Fed.

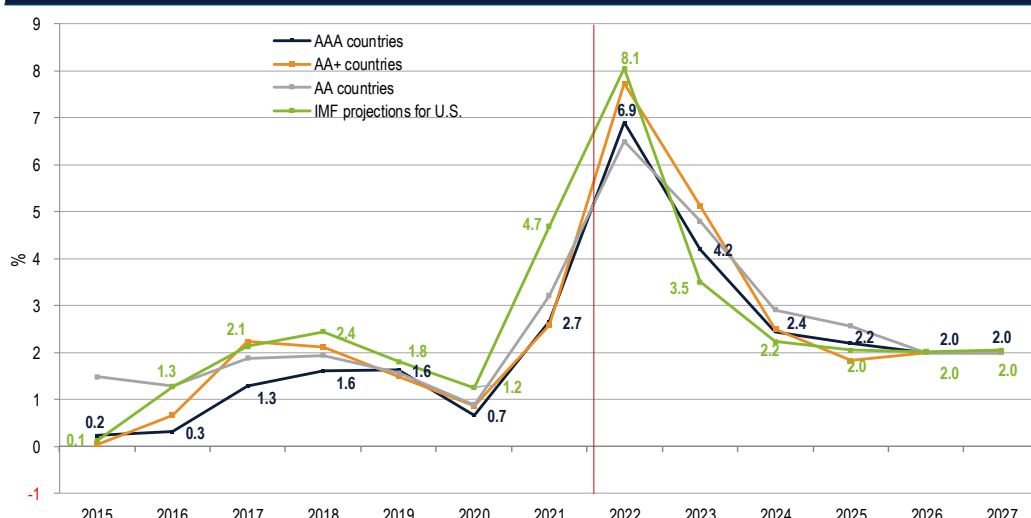
Low inflation, particularly in 2015 and 2016 is probably related to declines in crude oil prices and in general to the process of globalization which allowed for the optimization of the production and distribution of goods and services. In 2020 inflation fell once again due to the decline in demand for goods and services arising from lockdowns which was greater than the decline in the production and delivery of goods and services for the same reasons. In 2021 and 2022 as lockdowns lifted, demand outstripped the gradual increases in supply. Demand was especially strong due to savings accumulated during lockdowns, in large part as a result of fiscal support. Demand was also supported by loose monetary policy which now is ending.

However, it is important to note that there are important structural developments which are contributing to inflation, and which are difficult to separate as casual factors from cyclical factors. These include demographic changes resulting in aging populations, declining labor participation rates, perhaps even among prime working age groups, and the breakdown of globalization in an era of rising geopolitical tensions making security considerations as important as costs and efficiency. The move to net-zero emissions may also in the short to medium terms also impose higher costs for energy generation. Depending upon the country, structurally large fiscal deficits, in part the result of these structural changes, may also over time lead to higher levels of inflation.

As was the case for Figure 10 above, Figure 11 below shows the expectations of the IMF for different groups of economies categorized on the basis of their sovereign ratings. The IMF assumes that over time inflation will gradually return to a 2.0% level. It also shows that US inflation through 2022 tended to be higher than that for all rating categories. Beyond 2022, the IMF assume that US inflation will trend below most of the countries included in our analysis until all converge in 2026 and 2027.

A central question for future levels of inflation is whether the structural changes mentioned above will make it difficult for inflation to return to the desired 2.0% level once the cyclical disturbances are corrected.

Figure 11. Annual average inflation, consumer prices



Source: HR Ratings with data from the IMF/WEO October 2022.

Current account

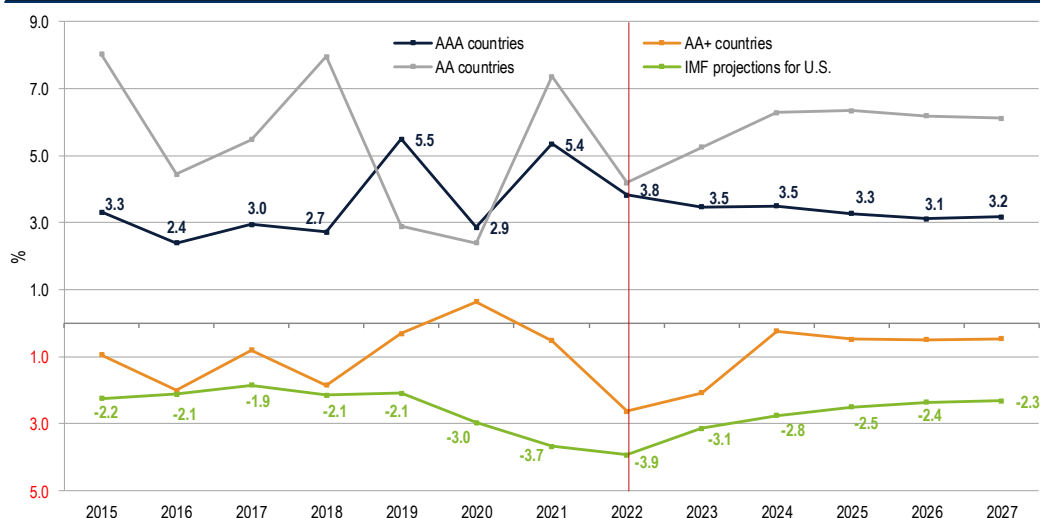
The balance of payments is the overall record of an economy's international transactions (current, capital, and financial). In particular the current account measures the balance of trade in goods and services, the net flows of primary income (interest payments and dividends) and the transfer of money not involving the incurrence of liabilities. In contrast to the previous two figures, Figure 12 below shows the US as differing sharply from the other economies in the sample with substantially larger current account deficits. The deficit increased substantially during the COVID recession as US fiscal support permitted higher levels of demand for imported goods and services than was the case for its trade partners.

As we shall see in our analysis of the details of the US current account, the deficit is largely the result of the deficit in goods and services. In contrast, the US has a surplus in the primary income. This is significant in that in order to finance the large deficit the US generates large financial accounts inflows which imply increasing liabilities. Yet despite the US resulting large net liability position it still generates net primary income. Were it not for the greater profitability of assets held by US residents vs. the lesser profitability of assets in the US held by non-residents the current account deficit would be much larger and ultimately unsustainable. This would threaten the value of the dollar and the dollar's reserve

currency position and its sovereign credit rating. We should note, however, that primary income inflows have declined beginning in 2020 with lower levels observed in 2021 and through the first three quarters of 2022.

Although the IMF assume that's the US current account deficit will gradually reduce in size relative to GDP to perhaps stabilize at around 2.3% of GDP or even less it would still remain substantially larger than that of AA+ economies and in contrast to the surpluses of the AAA and AA groups.

Figure 12. Current account balance (% GDP)



Source: HR Ratings with data from the IMF/WEO October 2022.

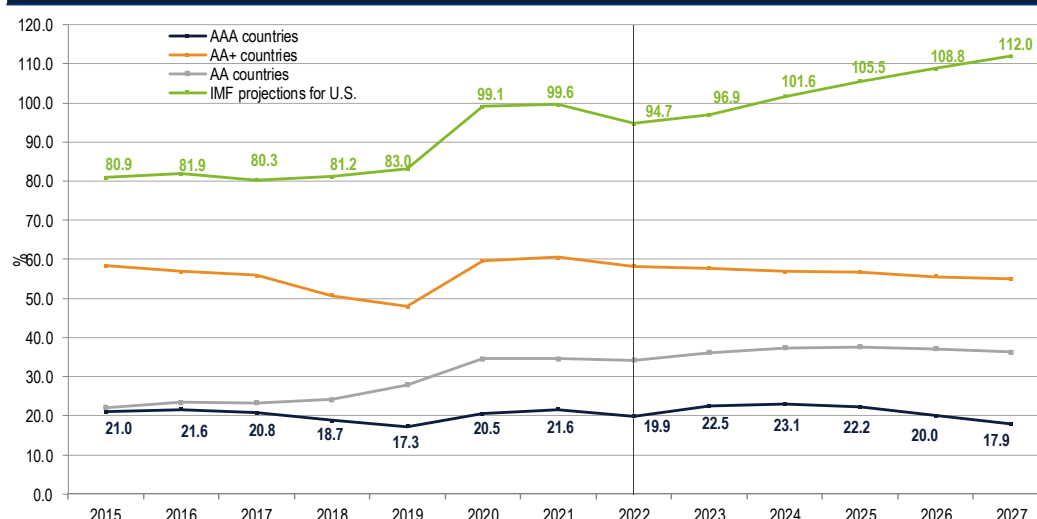
Debt to GDP

As can be seen in Figure 13 the US government's debt-to-GDP ratio is higher than the average for AAA rated countries and even higher than the sovereigns with AA+ and AA ratings. Furthermore, the IMF assumes that the US deficit will continue to increase while the other economies will show stable or slowly declining debt to GDP ratios. Figure 13 shows the much larger US fiscal response to COVID as its debt to GDP ratio experienced a much larger increase than was the case for the other sovereigns in the sample.

The large US fiscal deficits that produce the high and rising debt to GDP ratios help to explain its large current account deficit. These fiscal deficits lead to substantial levels of domestic demand which have to meet through imports. To the extent to which the disparity in the evolution of net debt continues we can expect larger current account deficits. In fact, we assume current account deficits larger than those forecast by the IMF.

The potential danger here is that larger debt levels with higher forecast interest rates might produce larger interest payments to non-US residents which would cause an even greater deterioration in the current account possibly threatening the USD international position. Nevertheless, as we show in our analysis of the Current Account, the position of the USD has actually increased during COVID and has strengthened even further with the shift to more restrictive monetary policies as a consequence of the upsurge in global inflation.

Figure 13. Net Debt (% GDP)



Source: HR Ratings with data from the IMF/WEO October 2022.

Public Finances

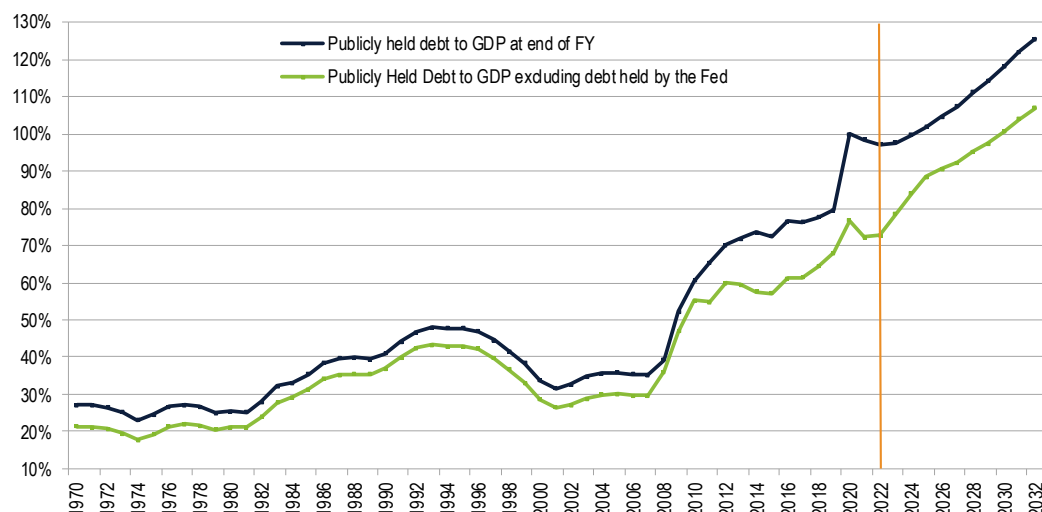
Public Debt to GDP evolution and forecast assumptions

Our forecasts see public debt as a percentage of trailing four-quarter GDP rising to 114% at the end of FY29 vs. 97.1% at the end of FY22. Furthermore, we see it rising still further to 125% in FY32. In contrast, on the basis of its February 2023 report, the CBO estimates that the debt to GDP ratio will rise to 108% and 115%, respectively¹².

Our higher debt levels vs. CBO estimates are due primarily to higher expected discretionary spending and to higher expected interest outlays the consequence of larger primary deficits and slightly higher effective interest rates on the debt. In turn, higher interest rates are largely the result of slightly higher expected inflation. For their part, our CPI inflation assumptions could imply PCE inflation higher than the Fed's 2.0% target, which may or may not result in higher nominal rates than we are assuming. Our higher debt metrics vs. CBO incorporate our nominal GDP forecasts which are between 0.7% and 1.4% larger in the same years.

¹² It is important to note that while our methodology currently requires forecasts only through FY29 we provide projections through 2032 as this is the final year of the CBOs current projections (excluding the "long-term" forecasts through 2052). Although the additional three years are not considered in our quantitative rating model, they provide additional insight (especially in comparison to CBO forecasts) as to the longer-term implications of our projections.

Figure 14. Public Debt to GDP



Source: HR Ratings public debt forecasts with information from the CBO and Federal Reserve retrieved from the FRED. Forecasts of Fed holdings from CBO.

In Figure 14 above we show our expected evolution of public debt to GDP through FY32. Strong inflation which significantly expanded nominal GDP, and the delayed impact of rising interest rates on the cost of the debt, is expected to produce a decline in the debt to GDP ratio through FY23 after which it rises steadily. The figure also shows the level of publicly held debt excluding the portion held by the Fed. This amount expanded considerably in the wake of the financial crisis of 2008-09 through quantitative easing as seen in the gap between the blue and green lines. Thus, while at the end of FY22 total public debt represented 97.1% of GDP, due to the Fed's cumulative purchases its ownership of public debt amounted to 24.4% of GDP meaning that public debt exclusive of the Fed's position represented a somewhat smaller 72.8%.

Although our metric of public debt to GDP does not consider the Fed's position, neither is it irrelevant given its substantial size. Not adequately servicing Fed held public debt would not necessarily represent default in the same sense or degree as a comparable lack of service on public debt held by other debtholders. Although Fed held public Treasury debt might in this sense represent some degree of amelioration of the severity of the debt issue it also raises the question of inflation which can be the result of Fed financing of Federal government deficits. Our credit rating would be negatively impacted to the degree to which a significant increase in inflation could be attributable to the Fed's monetary policy as we consider a degradation of the currency to be the equivalent to default.

Whether, or to the degree to which, Fed monetary policy can be considered to have caused inflation is at this point in time an open question in our point of view. We estimate that from the end of 2009 through the end of 2021 that CPI headline inflation increased at an annualized rate of only 1.96%. Thus, the cumulative impact of low interest rates and quantitative easing does not appear to have resulted in significant inflationary pressures¹³.

¹³ Based on LTM average CPI for 2009 and 2021, respectively. It is perhaps relevant to note Milton Friedman's comment that the relationship between monetary policy and inflation can have long and variable lags.

However, given the surge in inflation beginning in 2021 the inflation story has changed. From 2017 through 2022 inflation rose at a CAGR rate of 3.61%. Furthermore, the potential inflationary impact of fiscal and monetary policy was significantly greater during the pandemic than during the financial crisis (2008-09). Thus, from FY09 through FY15 the cumulative deficit represented 6.59% of GDP during that period while the increase in the Fed's holdings of public debt during that period represented 36.6% of the cumulative deficit and 2.41% of cumulative GDP. In contrast during the FYs 20-22 the cumulative deficit represented 9.2% of GDP while the increase in Fed's Treasury debt holdings was equivalent to 53.4% of the deficit and 5.15% of GDP¹⁴.

Given the large number of variables that can explain inflation it is difficult to determine what the impact that fiscal and monetary policy might have had or is currently having. However, the recent numbers suggest that its current impact has been consequential. We will be closely monitoring the future evolution of inflation as well as fiscal and monetary policy in order to evaluate whether the latter has produced some degree of currency degradation. On the other hand, we would also note the strong performance of the U.S. dollar as evidence that in the international context no such degradation has taken place. This suggests the global dimension of inflation irrespective of the fiscal and monetary policies adopted by any single country, even the United States.

Primary and financial deficit assumptions

The growth in the debt that we are forecasting is the result of the growth in the primary deficit relative to projected nominal GDP and the gradually large increase in interest expense which further expands the financial deficit. Finally, we are also incorporating some marginal increases in the debt in addition to the financial deficits as can be seen in the last column of Figure 15. Figure 16 shows in graphic form the long-term historic and forecast evolution of the primary and financial deficits.

For the five-year period, just before the pandemic, in fiscal years 2015 through 2019 the primary deficit was relatively small vs. those expected in the forecast period averaging 2.05%. However, we can note that in each of those years the deficit expanded vs. GDP from 1.21% in FY15 to 2.88% in FY19. Due to the pandemic the primary deficit surged to 13.23% in FY20 and although small in FY21 was still an extraordinarily large 10.70%. On the positive side, the primary deficit fell substantially in FY22. The official primary deficit of US\$900bn represented 3.60% of GDP. However, if we eliminate US\$426bn in "outlays" related to executive actions by President Biden to forgive and reduce service payments on university debt the primary deficit was actually a relatively small 1.90%¹⁵.

¹⁴For FY22 we have excluded from the deficit US\$426bn in student loan support in September 2022 as these attributed outlays were not expenditures *per se* but rather present value estimates of future spending.

¹⁵As is permitted in the Federal government's financial accounting, these outlays were not actual expenditures but the estimated present value of future outlays, thus the relevance of excluding them from the calculation of the primary deficit for FY22. Should these decisions be upheld by the Federal courts and not revoked by future presidential orders or legislation they will result in increases in the debt not reflected in the deficit. We have not made any such estimates in our forecasts.

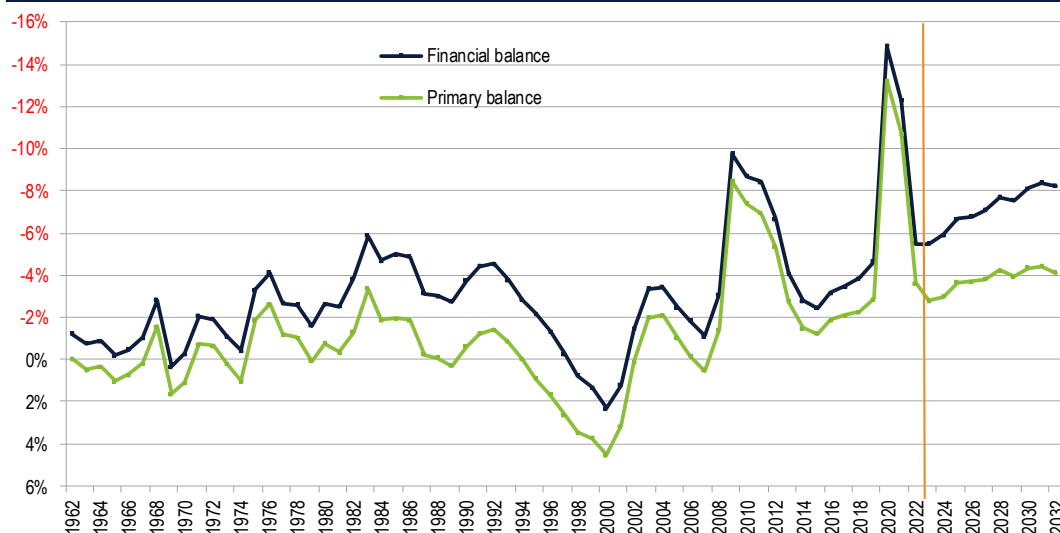
Figure 15. Revenue, Outlays, Deficit and Debt Assumptions as percentage of GDP

Fiscal Year	Revenues	Mandatory Outlays	Discr. Outlays	Primary Outlays	Net Interest	Total Outlays	Primary Deficit	Financial Deficit	Public Debt	Other change in Debt
FY19	16.37%	12.92%	6.32%	19.24%	1.77%	21.02%	-2.88%	-4.65%	79.4%	0.32%
FY20	16.25%	21.75%	7.73%	29.48%	1.64%	31.12%	-13.23%	-14.88%	99.8%	5.15%
FY21	17.86%	21.34%	7.22%	28.56%	1.56%	30.12%	-10.70%	-12.25%	98.4%	-6.66%
FY22	19.57%	16.53%	6.64%	23.17%	1.90%	25.07%	-3.60%	-5.50%	97.1%	2.56%
FY23	18.34%	14.51%	6.58%	21.08%	2.68%	23.76%	-2.74%	-5.42%	97.4%	0.19%
FY24	17.75%	13.77%	6.85%	20.62%	2.94%	23.56%	-2.88%	-5.82%	99.1%	0.28%
FY25	17.36%	13.84%	7.15%	20.99%	2.96%	23.96%	-3.63%	-6.60%	101.5%	0.32%
FY26	17.74%	14.02%	7.40%	21.42%	3.07%	24.49%	-3.68%	-6.75%	104.2%	-0.01%
FY27	18.09%	14.15%	7.75%	21.90%	3.26%	25.16%	-3.81%	-7.07%	107.0%	0.04%
FY28	18.19%	14.70%	7.70%	22.40%	3.47%	25.87%	-4.21%	-7.68%	110.8%	0.21%
FY29	18.16%	14.26%	7.80%	22.06%	3.61%	25.67%	-3.90%	-7.51%	113.9%	-0.24%
FY30	18.11%	14.74%	7.70%	22.44%	3.77%	26.21%	-4.32%	-8.09%	117.5%	0.23%
FY31	18.10%	15.00%	7.50%	22.50%	3.97%	26.48%	-4.41%	-8.38%	121.8%	0.13%
FY32	18.05%	15.10%	7.00%	22.10%	4.09%	26.19%	-4.05%	-8.14%	124.7%	0.15%

Source: HR Ratings forecasts with information from the CBO. "Other changes in Debt" forecasts from the CBO.

However, as can be observed in both Figure 15 and Figure 16, we see the primary deficit increasing once again in FY24 after decline still further in FY23 as a result of the continued unwinding of pandemic related outlays. However, the bigger impact on the financial deficit is the rise in interest costs as reflected in the larger gap between the two-deficit metrics.

Figure 16. Primary and financial balances to GDP



Source: HR Ratings forecasts with information from the CBO

Revenues assumptions

Our revenue assumptions are directly based on CBO's revenue to GDP forecasts. These show a decline (see figures 17 and 18 below) from the exceptionally strong FY22 level when they reached 19.6% of GDP due to various extraordinary factors. Revenues then decline to more historically comparable levels in fiscal years 23-25 and then rebound in the following fiscal years to around a moderately high 18.2%. The increase beginning with

FY26 is based on the expectation of the termination of provisions passed in 2017 that reduced certain tax obligations.

The strong revenue levels in FY22 were a major reason explaining the reduction in the deficit seen in the previous section of this report. However, declines are now evident. Not surprisingly, the surge in revenue reached its peak in the quarter that ended in April 2022 with a 54% y/y rise in total revenue with personal income tax receipts doubling. By the last quarter of the 2022 fiscal year the y/y increase fell to 7.4% (10.60% for personal income tax revenues) and for the first quarter of the new fiscal year (October-December) revenues actually fell 2.54% (-5.8% for the personal income tax). Particularly hard hit were other revenues, as remittances from the Fed to Treasury dried up thanks to higher interest rates paid on deposits. These forecasts do not include the possible positive impact on revenues derived from increased funding for the IRS approved in the Inflation Reduction Act¹⁶.

Figure 17 below provides the detailed annual assumptions by revenue source. For the end of the period, we assume total revenues will reach US\$7.0 trillion which is slightly higher than the CBO's US\$6.8 trillion forecast. This is due to our modestly larger GDP forecast, the result of somewhat higher inflation expectations.

Figure 17. HR Ratings Assumptions of Federal Government Revenue

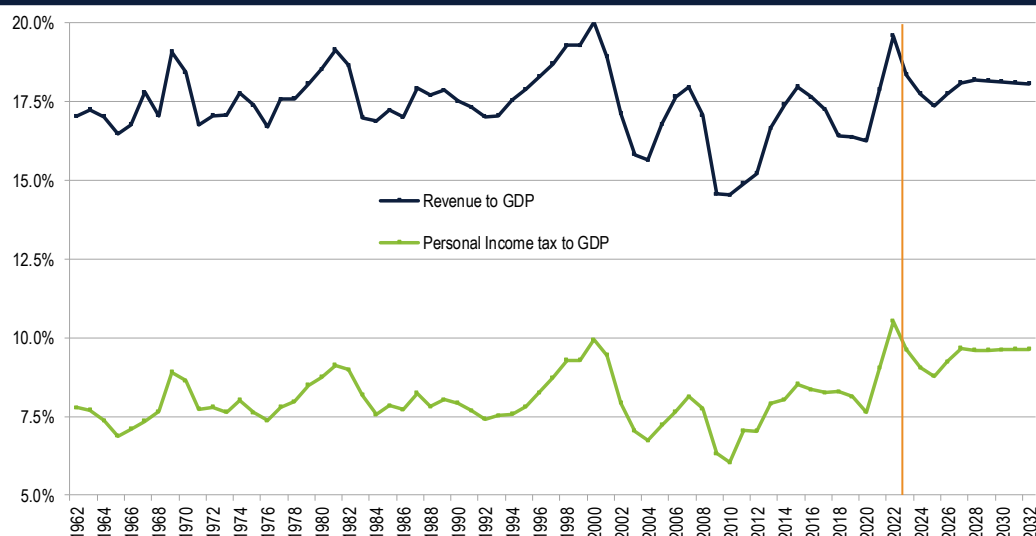
Fiscal Year	In Billions of USD					As percentage of GDP				
	Individual Income Taxes	Payroll Taxes	Corporate Income Taxes	Others	Total	Individual Income Taxes	Payroll Taxes	Corporate Income Taxes	Others	Total
FY19	1,718	1,243	230	272	3,463	8.1%	5.9%	1.1%	1.3%	16.4%
FY20	1,609	1,310	212	291	3,421	7.6%	6.2%	1.0%	1.4%	16.2%
FY21	2,044	1,314	372	317	4,047	9.0%	5.8%	1.6%	1.4%	17.9%
FY22	2,632	1,484	425	356	4,896	10.5%	5.9%	1.7%	1.4%	19.6%
FY23	2,545	1,576	480	254	4,855	9.6%	6.0%	1.8%	1.0%	18.3%
FY24	2,509	1,661	487	264	4,921	9.0%	6.0%	1.8%	1.0%	17.7%
FY25	2,550	1,730	496	268	5,044	8.8%	6.0%	1.7%	0.9%	17.4%
FY26	2,793	1,797	500	276	5,365	9.2%	5.9%	1.7%	0.9%	17.7%
FY27	3,046	1,867	499	296	5,708	9.7%	5.9%	1.6%	0.9%	18.1%
FY28	3,148	1,937	510	372	5,967	9.6%	5.9%	1.6%	1.1%	18.2%
FY29	3,272	2,009	518	389	6,188	9.6%	5.9%	1.5%	1.1%	18.2%
FY30	3,417	2,093	527	403	6,439	9.6%	5.9%	1.5%	1.1%	18.1%
FY31	3,553	2,170	533	419	6,674	9.6%	5.9%	1.4%	1.1%	18.1%
FY32	3,718	2,268	537	443	6,965	9.6%	5.9%	1.4%	1.1%	18.1%

Source: HR Ratings based on CBO revenue to GDP forecasts (The Budget and Economic Outlook 2022-to 2032). Forecasts from FY23 onwards.

Figure 18 graphically shows the long-term evolution and assumptions for total revenue and for personal income tax receipts as a percentage of GDP. Personal income tax revenues are expected to end the period at near historically high levels.

¹⁶ It appears that net effect would probably be minor. On August 25, 2022, letter to the ranking members of the House committees on Ways and Means and the Budget, the Director of the CBO estimated that over the 2022-2031 period the effect of increased funding for the IRS would be a US\$180.4bn increase in revenues. We understand that the increased funding would be approximately US\$80bn. Thus, the net annual impact on the deficit does not appear to be significant.

Figure 18. Revenue to GDP



Source: HR Ratings with information from the CBO.

Mandatory Spending assumptions

As is the case for revenues, our mandatory spending assumptions generally follow the CBO's in terms of their relationship to GDP although we place some importance in real dollar changes expected by the CBO combined with our inflation forecasts. In Figure 19 below we show our detailed forecast assumptions including our nominal GDP expectations along with the GDP and net mandatory outlays assumed by the CBO.

Figure 19. GDP and Mandatory Spending Assumptions

HR Ratings Baseline Forecasts										CBO Budget Forecasts		
Fiscal Year	Nominal GDP	Social Security	Medicare	Medicaid	Other Programs	Total Gross Mandatory Outlays	Net Mandatory Offsets	Net Mandatory Outlays	Net Mandatory to GDP	Nominal GDP	Net Mandatory Outlays	Net Mandatory to GDP
FY19	21,159	1,038	775	409	786	3,010	-276	2,734	12.9%	n.a.	n.a.	n.a.
FY20	21,058	1,090	912	458	2,397	4,858	-277	4,580	21.8%	n.a.	n.a.	n.a.
FY21	22,654	1,129	868	521	2,650	5,167	-333	4,834	21.3%	n.a.	n.a.	n.a.
FY22	25,016	1,213	975	592	1,860	4,639	-505	4,135	16.5%	n.a.	n.a.	n.a.
FY23	26,474	1,336	1,010	589	1,250	4,185	-345	3,840	14.5%	26,238	3,840	14.6%
FY24	27,730	1,452	1,033	540	1,140	4,166	-347	3,819	13.8%	27,266	3,812	14.0%
FY25	29,059	1,557	1,141	539	1,154	4,392	-369	4,023	13.8%	28,610	3,995	14.0%
FY26	30,242	1,654	1,236	579	1,163	4,632	-391	4,241	14.0%	29,932	4,193	14.0%
FY27	31,545	1,750	1,332	621	1,185	4,889	-424	4,465	14.2%	31,251	4,395	14.1%
FY28	32,802	1,852	1,512	661	1,248	5,274	-451	4,823	14.7%	32,525	4,731	14.5%
FY29	34,080	1,956	1,455	704	1,215	5,330	-471	4,860	14.3%	33,811	4,756	14.1%
FY30	35,548	2,067	1,646	749	1,281	5,744	-505	5,239	14.7%	35,133	5,115	14.6%
FY31	36,883	2,184	1,775	796	1,316	6,071	-538	5,534	15.0%	36,488	5,391	14.8%
FY32	38,582	2,304	1,894	849	1,340	6,388	-561	5,827	15.1%	37,874	5,665	15.0%

Source: HR Ratings with information from the CBO (The Budget and Economic Outlook 2022-to 2032, May 2022) and Treasury. In billions of USD. HR Data for FY22 also incorporates The Accuracy of CBO's Budget Forecast for FY 2022, January 2023. Other Programs for FY22 includes US\$379bn in the student forgiveness executive order.

Figure 19 shows the strong increase in mandatory spending in fiscal year 2020 due to the pandemic, specifically in the "other program" accounts, rising still further in nominal terms in FY21. Net mandatory outlays increased from 12.9% of GDP in FY19 to 21.3% in FY21. FY22 saw a decline in other programs although Social Security, Medicare and Medicaid continued to advance. Total net mandatory spending fell to 16.5% of GDP in FY22. We

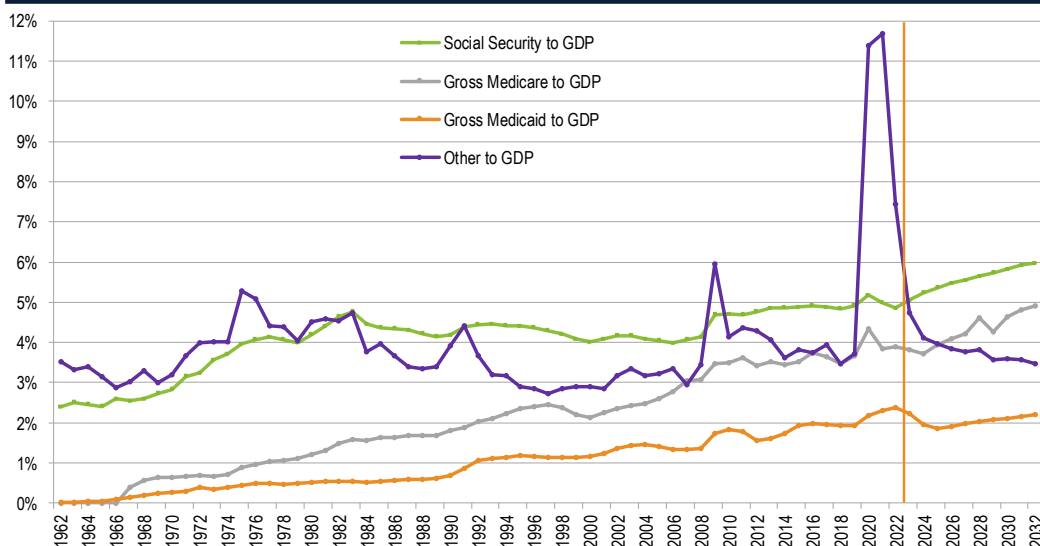
estimate that excluding the extraordinary provisions for student debt forgiveness and the reduction in debt servicing costs, net mandatory outlays fell to 14.8% of GDP. Our forecasts assume that net mandatory outlays to GDP continue to decline in fiscal years 22-25 and then begin to rise again as a consequence of the structural advance of Social Security and Medicare and to a lesser degree of Medicaid. In contrast “other” programs continue to decline¹⁷.

In Figure 20 we show the longer-term evolution of the major components of mandatory spending. Social Security spending is presented in gross terms although we understand that offsetting receipts are small. In contrast Medicare gross spending presented in the graph does not include substantial offsetting receipts. Our forecasts show Social Security spending rising from 4.91% in FY19 to 5.88% in FY32. We assume that Medicare and Medicaid spending will reach 4.91% and 2.20% by FY32 vs. 3.66% and 1.93% in FY19. On a net basis (eliminating its offsetting receipts) we assume that Medicare outlays will increase from 3.05% in FY21 to 3.45% in FY29 and to 3.98% in FY32.

The rise in Social Security and Medicare is the result of the growth in the retirement age population, inflation-based increases in benefits and rising medical care costs. The forecasts do not consider the possible impact positive impact of legislation (Inflation Reduction Act) to limit the increase in prescription drug prices.

Other programs, in contrast, are expected to decline from 3.72% to 3.47% in the same years. Offsetting receipts (not shown in Figure 19) would increase from 1.30% to 1.44%.

Figure 20. Gross Mandatory Outlays to GDP



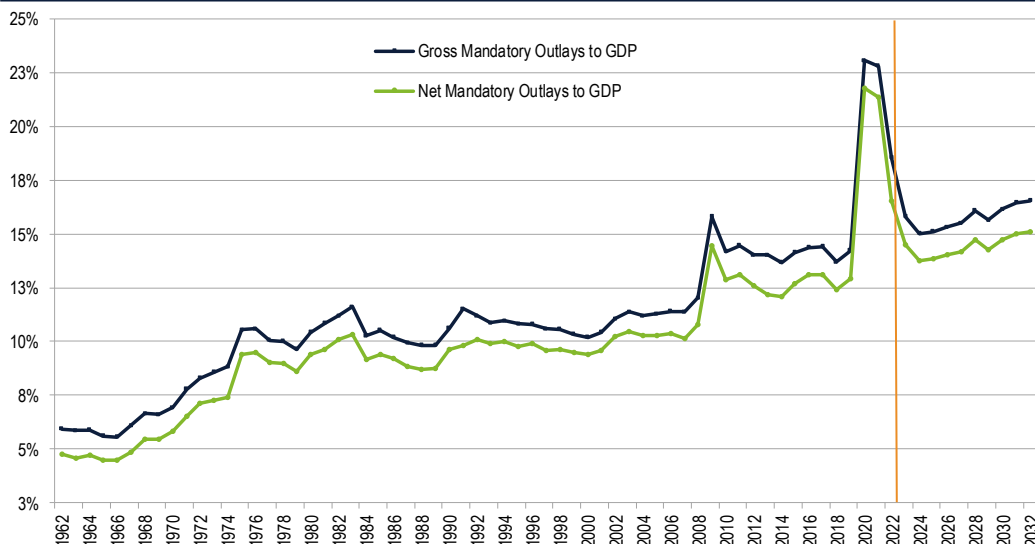
Source: HR Ratings with information from the CBO. Excludes offsetting receipts and net interest spending. For FY22 includes the impact of estimated net costs of presidential actions to reduce student university loan obligations.

In Figure 21 below we show the total evolution of mandatory spending both in gross and net terms, the difference being the offsetting receipts. The rising trend that began largely

¹⁷These “Other” programs include Income Security, Federal Civilian and Military retirement spending, Veterans programs and other. These other programs were those which expanded most significantly during the pandemic, and which include support for student university debt.

with the new century is clearly seen. Current programs such as Social Security and Medicare represent significant fiscal challenges for the United States as they do for many other countries around the world.

Figure 21. Mandatory Outlays to GDP



Source: HR Ratings with information from the CBO. Excludes net interest spending. For FY22 includes the impact of estimated net costs of presidential actions to reduce student university loan obligations.

Discretionary Spending assumptions

Where our forecasts do differ substantially from those presented by the CBO are for discretionary spending which needs to be authorized and appropriated by Congress each fiscal year. Our assumptions are significantly higher than those assumed by the CBO. As a consequence of the larger primary deficits that our discretionary spending assumptions produce the larger resulting debt leads to higher interest costs, which we will examine in the next section of this report. We also assume marginally higher interest rates which further increase our debt/GDP forecasts vs. those of the CBO.

Our higher expectations for discretionary outlays are not the result of any difference of opinion regarding the probable future trend for these expenditures but rather to the limitations imposed on the CBO in making its forecasts. By law the CBO is required to assume that these outlays rise in tandem with expected inflation (largely the GDP deflator). In effect, this means that discretionary spending has to fall relative to GDP, assuming real GDP growth. Our spending projections are not subject to these limitations.

As a consequence of the limitations imposed on the CBO, its discretionary spending assumptions shows declines from 6.64% of GDP in FY23 to only 6.12% in FY32. In contrast, we see discretionary spending rising substantially to 7.0% in the same period. Our forecasts, as shown in Figure 22, assume that defense spending will rise to a high of 4.0% of GDP in FY27 before falling slightly to 3.9% in FY29 and still further to 3.5% in FY32. In FY22 defense spending was only 3.0% of GDP. Our assumption of rising defense spending is based on the complicated geopolitical environment, the dangers arising from

a potentially nuclear armed Iran and especially China given its threats to the southwestern Pacific in general and to Taiwan, in particular.

Although the US official position regarding Taiwan has been described as one of “strategic ambiguity” it appears to be moving to a more definitive posture of defending it from any Chinese military move to recover what it regards as a breakaway province.

Figure 22. Discretionary Spending Assumptions

Fiscal Year	HR Ratings Baseline Forecasts						CBO Budget Forecasts					
	Defense	Non Defense	Total	Defense as % of GDP	Non-Defense as % of GDP	Total as % of GDP	Defense	Non Defense	Total	Defense as % of GDP	Non-Defense as % of GDP	Total as % of GDP
FY19	676	661	1,338	3.2%	3.1%	6.3%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FY20	714	914	1,628	3.4%	4.3%	7.7%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FY21	742	895	1,636	3.3%	3.9%	7.2%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FY22	751	910	1,661	3.0%	3.6%	6.6%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FY23	800	941	1,741	3.0%	3.6%	6.6%	800	941	1,741	3.1%	3.6%	6.6%
FY24	957	943	1,900	3.5%	3.4%	6.9%	848	1,022	1,869	3.1%	3.7%	6.9%
FY25	1,046	1,032	2,078	3.6%	3.6%	7.2%	886	1,070	1,955	3.1%	3.7%	6.8%
FY26	1,134	1,104	2,238	3.8%	3.7%	7.4%	918	1,087	2,005	3.1%	3.6%	6.7%
FY27	1,262	1,183	2,445	4.0%	3.8%	7.8%	947	1,116	2,063	3.0%	3.6%	6.6%
FY28	1,279	1,246	2,526	3.9%	3.8%	7.7%	976	1,137	2,113	3.0%	3.5%	6.5%
FY29	1,329	1,329	2,658	3.9%	3.9%	7.8%	1,003	1,162	2,165	3.0%	3.4%	6.4%
FY30	1,369	1,369	2,737	3.9%	3.9%	7.7%	1,028	1,187	2,215	2.9%	3.4%	6.3%
FY31	1,383	1,383	2,766	3.8%	3.8%	7.5%	1,053	1,213	2,266	2.9%	3.3%	6.2%
FY32	1,350	1,350	2,701	3.5%	3.5%	7.0%	1,079	1,240	2,319	2.8%	3.3%	6.1%

Source: HR Ratings forecasts with information from the CBO (The Budget and Economic Outlook 2023-to 2033, February 2023). In billions of USD. Data for FY22 also incorporates The Accuracy of CBO's Budget Forecast for FY 2022, January 2023.

Given the breadth of the geopolitical challenges that the US currently faces and the historically low level of current defense spending it is possible that our assumptions are still low. Although a lower level of spending would certainly facilitate a reduction in future deficits and debt vs. our forecasts, a weaker US defense posture could have negative consequences for the perceptions of US leadership possibly affecting the USD reserve currency status. Of course, the negative consequences of a weak defense posture could be even worse than mere perceptions.

The need for increased U.S. defense outlays could be reduced depending upon spending by allies in Europe. However, it remains to be seen to what degree the heightened perception of threat will result in higher defense spending by US allies reducing the need to U.S. spending.

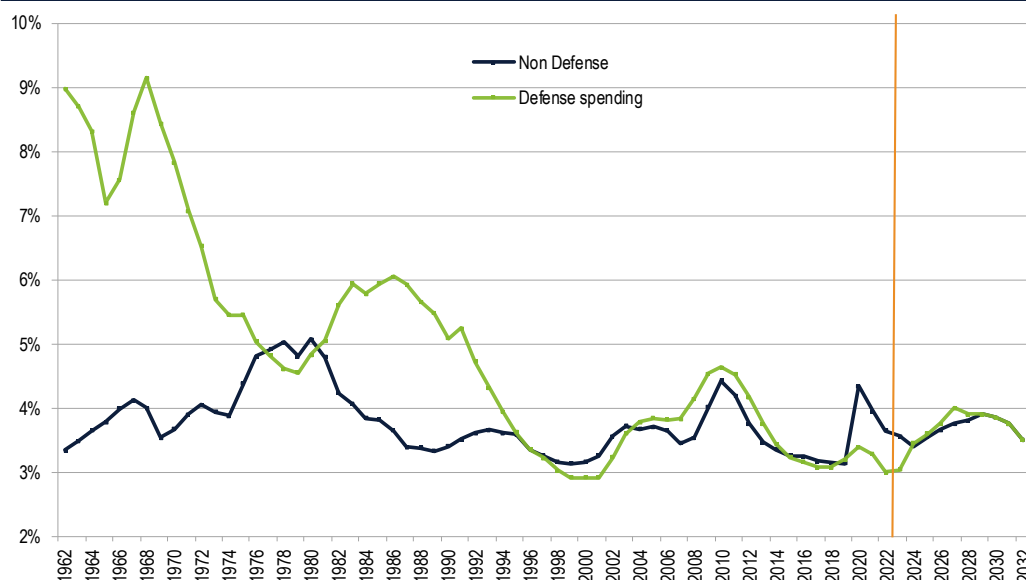
Apart from defense spending the US has been taking steps to increase its potential security position through onshoring measures especially in technology and for specific sectors such as the electric vehicle industry including the EV battery supply chain. There has also been increasing attention paid to the strengthening of the country's industrial base so as to increase its productive capacity in such areas as shipbuilding and arms manufacturing. These efforts could have positive impact on GDP growth although we have not yet incorporated that possibility in our economic assumptions.

Our forecasts also assume that higher defense spending will not be offset by lower nondefense discretionary spending. We assume that these outlays will be somewhat higher than those projected by the CBO in its February 2023 report. For example, our FY29 forecast of nondefense discretionary outlays of 3.9% compares to the CBO's assumption

of 3.4% for that year. We are assuming that to some degree the political support for higher defense spending might be dependent upon higher nondefense expenditures.

In Figure 23 we present the long-term historical evolution of discretionary defense and non-defense spending. The extraordinarily high levels of defense during the height of the Cold War and the Vietnam War from roughly 1964 to 1973 can be observed as can their decline by 1979 in the aftermath of the conflict. Then with administration of Ronald Reagan (1981-1989) spending once again increased in an effort to challenge the Soviet Union economically which itself was weakened by its conflict in Afghanistan. The Cold War ended in 1989 while the Soviet Union itself was dissolved in 1991 leading to the so-called “peace dividend”. However, the bombing of the World Trade Center in September 2001 eventually led to new hostilities in the Middle East which resulted in a new increase in defense spending. With the gradual ending of the conflict there, defense spending began once again began to fall to levels rarely seen in the post-WWI period where it currently remains.

Figure 23. Discretionary Outlays to GDP Evolution and Assumptions.



Source: HR Ratings forecasts with information from the CBO.

We believe the levels of spending that we are assuming given the geopolitical situation is still relatively lower and represent, along with the entitlement programs, a significant fiscal challenge.

As a result of higher discretionary spending, we forecast that the cumulative primary deficit from FY23 through FY29 will represent 3.04% of cumulative GDP while in the CBOs forecasts, they would reach only 2.3%. Figure 23 below shows the extremely low level of defense spending reached in FY22.

As a result of these differences in discretionary spending HR Ratings assumes that on a cumulative basis from FY23-FY29 the primary deficit would represent 3.6% of our forecasted GDP while for the CBO the primary deficit would reach 2.95% of its GDP forecast. For the period from FY23-FY32 the gap increases to 3.85% vs. 2.95%.

Interest Cost Assumptions

Cumulative Impact on Budgetary Deficits

The larger debt that results from larger primary deficits necessarily has an impact on projected interest payments. Interest outlays increase still further as we assume slightly higher interest rates on publicly held debt. For FY29 we assume that net interest will represent 3.62% of GDP rising to 4.11% in FY32. This compares 1.9% in FY22 and to 3.17% and 3.52% respectively for the CBO forecast.

As a result of the differences in terms of these primary deficits and net interest outlays we assume that the total financial deficit would reach 7.53% and 8.23% in FYs 29 and 32 while the CBO assumes financial deficits of 5.46% and 6.55% in the same periods.

Some methodological considerations

Net interest on the public debt. In order to explain our interest payments calculation, it is important to note its two major components: 1) net interest paid on Treasury debt and 2) net interest from other transactions. The interest paid on Treasury debt is net in the sense that it represents the amount of interest that Treasury pays on the totality of the debt (public and intragovernmental) that it has issued, less the interest income it receives from the various trusts, most notably the OASI, the social security trust fund¹⁸. These trust funds hold non-negotiable Treasury debt for which they receive interest income. The interest income paid to the trusts also represents interest income delivered to the Treasury as the trusts hand over to that department the totality of their income (payroll tax receipts and interest income). Presumably, therefore, the interest income received by the Treasury is the same interest it paid to the trusts. In this sense it is *net interest* on the totality of Treasury debt (public and intragovernmental). However, in effect, it can be more simply defined as the interest on Federal government public debt.

Interest income on financial assets. Additionally, the Federal government receives interest income from financing accounts that track the cash flows of Federal credit programs (mostly student loans).

Thus, we can speak of *net interest on the debt* (or basically interest on the public debt) and *net interest outlays* which includes the former less the interest income from financial accounts¹⁹.

In FY22 net interest on the debt reached US\$475bn which included US\$534bn in interest outlays on the public debt and US\$59bn in interest income largely from other financing accounts²⁰. Furthermore, we understand that of the US\$534bn, US\$718bn was the gross

¹⁸ In effect the non-negotiable Treasury securities held by the trusts, in particular OASI, represents the historic surplus or difference between the cumulative income it has received from its primary income source (payroll taxes) and interest income on its Treasury securities and the payments made to its beneficiaries. Currently, the OASI is running a deficit with beneficiary payments being greater than income. This has the effect of reducing the cumulative surplus. In effect, the surplus (or the non-negotiable Treasury securities) has no financial or economic relevance and will eventually be exhausted. Its relevance lies in the fact that by law payments to beneficiaries cannot exceed the sum of income and the value of its Treasury securities. When there no longer are Treasury securities (i.e., the trust is "insolvent") to draw on benefits will need to be reduced to meet current income. Of course, Congress can (and probably will) simply change the law. By the legislation that governs the CBO, it must assume in its forecasts that when the trust is "insolvent" benefits will not be affected.

¹⁹ See Federal Net Interest Costs: a Primer, CBO, December 2020. In FY20 gross interest paid by the Treasury was US\$523bn while from the Trust Funds it received US\$135bn for net interest on the debt of US\$388bn. Additionally, Treasury received from its financial assets income of US\$41bn for net interest of US\$347bn, p6.

²⁰ These "outlays" include the inflation adjustment on TIPS, or Treasury securities whose face value is linked to inflation.

interest on the totality of Treasury debt and US\$184bn was interest income received from the trust funds. We estimate that the interest on the public debt represented an effective cost of the public debt of 2.29%²¹. However, the effective net interest rate is 2.04% if we divide the US\$475bn (interest on the public debt less interest income) by the same average public debt number²².

Our forecasts for interest income is based on the level of financial assets estimated by the CBO in its February 2023 budgetary forecasts for fiscal years 2023 – 2033. We apply an average annual interest rate of 3.75% during our forecast period. We estimate that for FY22 interest income reached approximately US\$59bn which translates into an effective interest rate of 3.25%²³.

Historical evolution of the cost of the public debt

In Figure 24 below we show the recent historical evolution of various interest and interest rate metrics. The first column presents our estimates of gross interest paid on the entirety of Treasury debt (publicly held and intragovernmental). The second shows the estimated interest received by the Treasury from the various Trust Funds. Thus, the interest paid to and returned by the Trust Funds have no impact on net outlays or the deficit. Consequently, in effect, the net of the first two columns is interest on publicly held debt²⁴.

Figure 24. Interest variables on Federal Government debt and assets

Fiscal Year	Gross Interest Outlays	Interest Received from Trusts	Net Interest on Public Debt	Interest income on Assets	Net Interest Outlays	Average Public Debt	Cost of Public Debt	Net cost of public debt	Average Federal Funds Rate
FY10	414	185	229	30	199	8,282	2.77%	2.40%	0.13%
FY11	454	188	266	36	230	9,574	2.78%	2.40%	0.13%
FY12	359	127	232	9	223	10,705	2.17%	2.08%	0.13%
FY13	416	156	260	35	225	11,632	2.24%	1.93%	0.13%
FY14	430	158	272	40	232	12,381	2.20%	1.87%	0.13%
FY15	402	141	261	38	223	12,948	2.02%	1.72%	0.13%
FY16	430	146	284	42	242	13,642	2.08%	1.77%	0.33%
FY17	457	147	310	44	266	14,417	2.15%	1.84%	0.81%
FY18	522	150	371	45	326	15,208	2.44%	2.15%	1.58%
FY19	573	150	423	48	375	16,275	2.60%	2.31%	2.27%
FY20	523	135	387	41	346	18,909	2.05%	1.83%	0.75%
FY21	562	150	413	60	352	21,650	1.91%	1.63%	0.13%
FY22	718	184	534	59	475	23,292	2.29%	2.04%	0.98%

Source: HR Ratings with information from the CBO and Treasury. In millions of USD.

²¹ The result of the US\$534bn (interest on the public debt) divided by the average of fiscal year-end public debt: US\$22.3bn and US\$24.3bn.

²² However, we do know that the Federal government had financial assets of US\$1,647bn at the end of FY21 and a projected US\$2,500bn for the end of FY22 which is “the value of outstanding student loans and other credit transactions, cash balances, and various financial instruments.” P14 of the CBO’s “Budget and Economic Outlook 2023-2033” February 2023 report which is the major source for our CBO baseline fiscal forecasts. Theoretically, an alternate calculation of the net interest cost is to divide US\$475bn by the average of the “net debt” or subtracting from the average public debt the average of the two financial asset numbers given in this note.

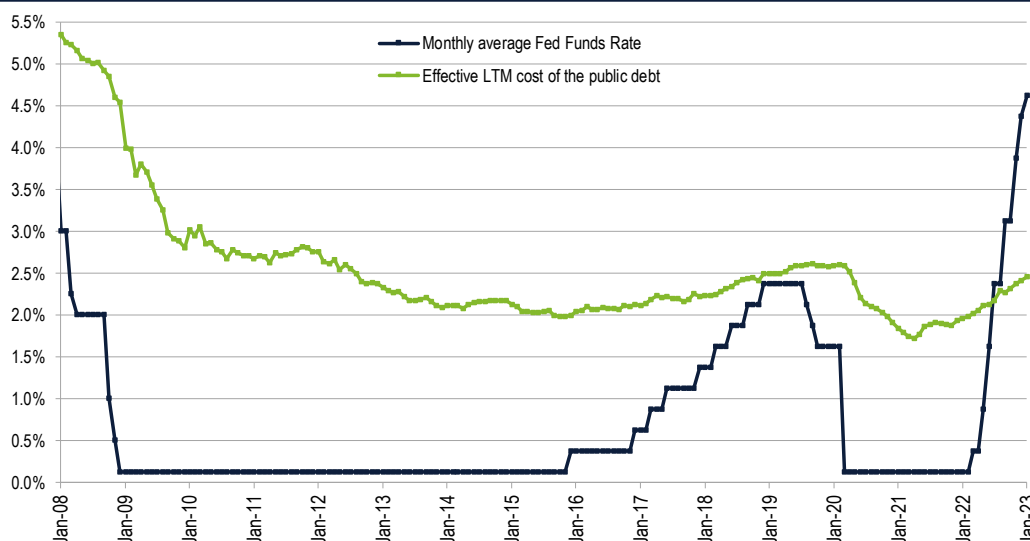
²³ Calculated on the basis of FY year-end assets of US\$1,647bn and US\$1,959bn for FY21 and FY22. The CBO assumes that Federal government financial assets will close FY29 at US\$2,172bn and FY32 at US\$2,362bn.

²⁴ In its Monthly Budget Review reports on the evolution of the Federal budget, the CBO gives the net interest on the public debt and does not include the interest income on assets which is incorporated in a different outlay account. However, in its annual budget forecast reports it does include the interest income in the net interest account, in line with Treasury accounting.

Not related to Treasury debt is the interest income on assets while net interest outlays are the net of net interest on public debt and interest income on assets. For these historical periods we measure the **cost of public debt** as net interest on the public debt divided by average public debt while the **net cost of public debt** is the result of dividing net interest outlays (including interest income) by the same variable of average public debt.

The figure shows how the different cost of debt metrics decline after the financial crisis of 2008-09 as the effects of Fed monetary policy gradually takes hold albeit with a certain lag. With the Fed's tightening reflected in the increase in the Fed Funds rate in FY17, the cost of debt metrics begins gradually to rise starting in that year until rates fall as a consequence of COVID. They then begin to rebound in FY22 as the upsurge in inflation in 2021 causes the Fed once again to being a new monetary policy cycle²⁵. In Figure 25 we graphically present the evolution of the relationship between the Fed Funds rate and effective cost of the public debt and extends Figure 25 through January 2023.

Figure 25. Federal Funds average monthly rate and the cost of the public debt



Source: HR Ratings with data from the Federal Reserve and the CBO (for interest outlays). Fed Funds rates represent the midpoint of the Fed's monetary policy range. Interest outlays exclude interest income on Federal financial assets.

Interest rate assumptions and net interest cost forecasts

In Figure 26 below we show our forecast assumptions for net interest outlays. The first column presents the net interest on the public debt while the second column is our assumption for interest income from financial assets. In the fourth column we show net interest outlays, deducting from the direct cost of the debt the interest income derived from financial assets. In the fifth column we show the average public debt calculated as the average of the debt at the close of each fiscal year.

The effective "Cost of Public Debt" is ratio of interest payments on the public debt to average public debt while the net cost of public debt is the ratio of net interest outlays to

²⁵ Based on the monthly average of the mid-point of the interest rate range announced by the Fed.

the average public debt. The difference is roughly 25bps. For comparative purposes we also show our expectation for Fed Funds rate during this period.

Figure 26. Interest and Interest Rate Forecast Assumptions

HR Ratings Baseline Forecasts									CBO Budget Forecasts		
Fiscal Year	Net Interest on Public Debt	Interest income on Assets	Net Interest Outlays	Average Public Debt	Cost of Public Debt	Net cost of public debt	Average Fed Funds Rate	Avg. CPI inflation	Net cost of public debt	Federal Funds Rate	Avg. CPI inflation
FY22	534	59	475	23,292	2.29%	2.04%	0.98%	7.91%	n.a.	n.a.	n.a.
FY23	777	68	709	25,042	3.10%	2.83%	4.69%	4.80%	2.56%	4.70%	5.65%
FY24	890	75	815	26,629	3.34%	3.06%	4.55%	3.60%	2.78%	4.00%	3.40%
FY25	938	77	861	28,479	3.29%	3.02%	3.56%	2.77%	2.72%	2.77%	2.25%
FY26	1,006	79	927	30,502	3.30%	3.04%	3.08%	2.53%	2.75%	2.43%	2.08%
FY27	1,108	81	1,027	32,642	3.40%	3.15%	2.93%	2.48%	2.84%	2.37%	2.04%
FY28	1,223	85	1,138	35,056	3.49%	3.25%	2.87%	2.51%	2.96%	2.42%	2.15%
FY29	1,314	85	1,229	37,589	3.50%	3.27%	2.87%	2.50%	3.02%	2.50%	2.25%
FY30	1,425	86	1,340	40,307	3.54%	3.32%	2.87%	2.50%	3.06%	2.56%	2.27%
FY31	1,555	89	1,465	43,357	3.59%	3.38%	2.87%	2.50%	3.11%	2.60%	2.27%
FY32	1,668	92	1,577	46,525	3.59%	3.39%	2.87%	2.50%	3.16%	2.63%	2.28%

Source: HR Ratings forecasts with information from the CBO (The Budget and Economic Outlook 2023-to 2033, February 2023) in billions of USD.

HR Ratings forecasts for the net cost of public debt can be compared with the comparable rate that we calculate for the CBO's forecasts. Thus, for FY29 HR Ratings is assuming a net interest cost of financing the public debt (including interest income) of 3.27% while the CBO assumes 3.02% for a difference of 25 basis points. For FY32, the difference remains roughly the same (3.39% vs. 3.16%).

A major difference between our assumptions and those of the CBO's is with respect to CPI inflation. For FY23 HR Ratings is assuming less CPI inflation than is the CBO (roughly 86bps) although thereafter we are assuming higher inflation of around 27bps. The CBO sees CPI inflation stabilizing at around 2.25% which we believe assumes that PCE inflation (the Fed's preferred inflation measure) will in turn stabilize at around its traditional target of 2.0% assuming. For our part, HR Ratings assumes that a low growth labor force, the end of the efficiencies of unregulated globalization and higher deficits will lead to a PCE of around 2.25%.

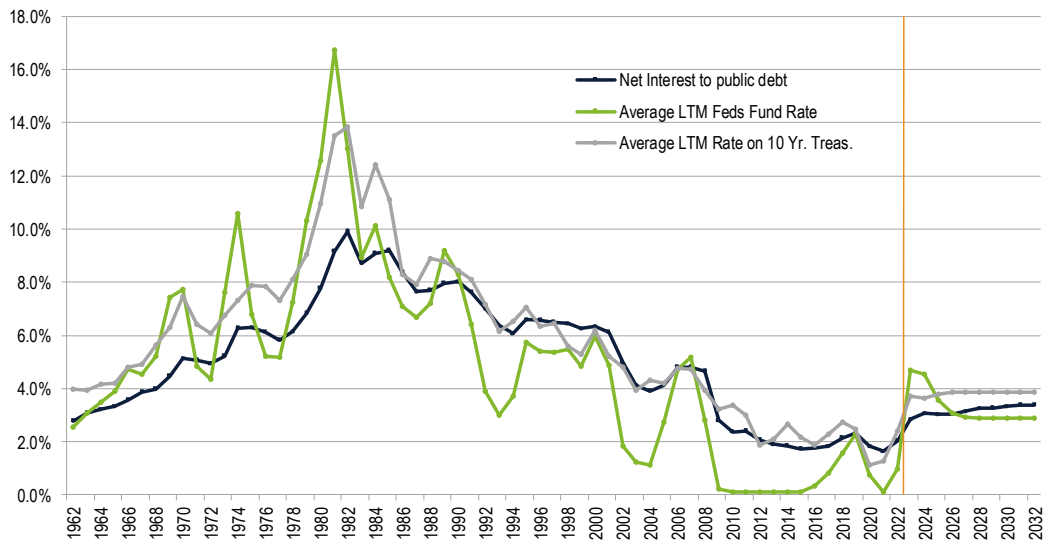
Over the longer term our effective net cost of servicing the public debt largely reflects this difference in inflation assumptions. HR Ratings' net cost assumptions on average are 28bps higher than the CBO's.

If we were to calculate the real term net cost of servicing the public debt (considering our respective CPI assumptions), for the period encompassed by fiscal years 2023-32 HR Ratings assumes one of 0.30% vs. 0.24% for the CBO. For the period FY26-32, characterized by a degree of stabilization, HR Ratings assumes 0.74% while for the CBO it would be 0.78%.

In Figure 27 below we show graphically the historical evolution and our forecast assumptions concerning the cost of the public debt (with interest income added to the net cost of financing the public debt), the LTM average Fed Funds rate and the LTM yield on ten-year Treasury bonds. We assume a stabilization of the Fed Funds rate and along with it a stabilization of our net cost of debt metric to a level modestly above it and below our forecasted yield on ten-year Treasuries. We assume that the yield on the ten-year bond

will end at around 3.85%, comparable to the CBOs 3.81%²⁶. We believe that given our assumptions for short and long-term interest rates, and the growth of the primary deficit, our forecasts for the effective overall net cost of the public debt are more likely to be too low rather than to high.

Figure 27. Cost of the Public Debt

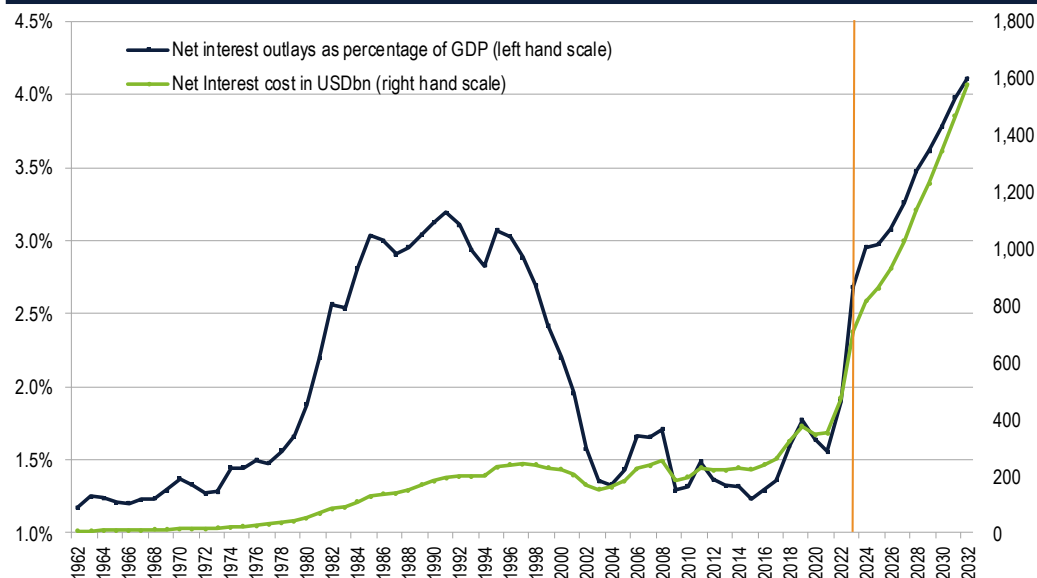


Source: HR Ratings with information from the CBO. Annual interest outlays net of interest income to average fiscal year-end public debt.

In Figure 28 we show net interest not in relationship to public debt but rather in relationship to GDP. Thus, for FY23 we see net interest reaching 2.68% of our projected LTM GDP through September 2023. This is substantially above the 1.90% level observed for FY22. CBO's forecasts assume it will reach 2.44%. By the end of the forecast period in FY32 we see it further rising to 4.11% of GDP vs. CBO's expectation of 3.52%. Figure 23 also shows the actual nominal level of forecast net interest outlays.

²⁶ Due to the difficulty of forecasting the timing of recessions or the occurrence of larger movements in inflation we are forecasting a stabilization in these variables.

Figure 28. Interest costs as a percentage of GDP



Source: HR Ratings forecasts with information from the CBO.

External Accounts

Historically, the U.S. external accounts position has been characterized by current and capital account deficits. These, however, have been offset by comparable surpluses in the financial account and to a lesser degree in the derivatives account thanks to the dollar's position in international trade and as the global economy's dominant reserve currency. The movements in absolute USD terms and relative to US GDP are seen in Figure 29 below.

Figure 29. Current, Capital and Financial Accounts Balance in billions of USD

Balances	Calendar Year							
	2015	2016	2017	2018	2019	2020	2021	2022**
Current Account	-408.5	-396.2	-361.0	-439.9	-446.0	-619.7	-846.4	-982.4
Goods and Services	-490.8	-479.5	-510.3	-578.6	-559.7	-654.0	-845.0	-993.5
Goods	-761.9	-749.8	-799.3	-878.8	-857.3	-913.9	-1,090.3	-1,220.7
Services	271.1	270.3	289.0	300.2	297.6	259.9	245.2	227.2
Primary Income	185.2	196.4	257.9	255.3	243.6	163.1	139.5	184.6
Secondary Income	-102.9	-113.2	-108.6	-116.5	-129.8	-128.8	-140.8	-173.6
Capital Account	-7.9	-6.6	12.4	-4.3	-6.5	-5.5	-2.5	-1.2
Current and Capital Account	-416.4	-402.8	-348.6	-444.1	-452.4	-625.2	-848.8	-983.6
Financial Account*	353.1	372.3	395.5	287.5	528.5	700.8	699.9	664.2
Financial Account* & Derivatives	380.1	364.5	371.5	307.9	570.2	706.0	741.8	762.5
Change in Reserve Assets	-6.3	2.1	-1.7	5.0	4.7	9.0	1.2	4.4
Statistical discrepancy	30.0	40.4	-24.6	141.2	-113.1	-71.8	108.2	225.5
As a share of GDP	2015	2016	2017	2018	2019	2020	2021	2022**
Current Account	-2.2%	-2.1%	-1.9%	-2.1%	-2.1%	-2.9%	-3.6%	-3.9%
Goods and Services	-2.7%	-2.6%	-2.6%	-2.8%	-2.6%	-3.1%	-3.6%	-3.9%
Primary Income	1.0%	1.1%	1.3%	1.2%	1.1%	0.8%	0.6%	0.7%
Secondary Income	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.7%
Capital Account	-0.0%	-0.0%	0.1%	-0.0%	-0.0%	-0.0%	-0.0%	-0.0%
Current and Capital Account	-2.3%	-2.2%	-1.8%	-2.2%	-2.1%	-3.0%	-3.6%	-3.9%
Financial Account*	1.9%	2.0%	2.0%	1.4%	2.5%	3.3%	3.0%	2.6%
Financial Account* & Derivatives	2.1%	1.9%	1.9%	1.5%	2.7%	3.4%	3.2%	3.0%
Change in Reserve Assets	-0.0%	0.0%	-0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Statistical discrepancy	0.2%	0.2%	-0.1%	0.7%	-0.5%	-0.3%	0.5%	0.9%

Source: HR Ratings with data from BEA

*Excludes changes in Reserves Assets

** Calculated with information published up to Q322 and HR forecasts for 4Q22.

As can be seen in Figure 29, the current account deficit widened substantially during COVID in 2020 and was even larger in 2021. With observed data through the first three quarters of 2022 and HR Ratings forecast for 4Q, it appears that the current account deficit could have been even higher than in 2021, both in absolute terms and relative to GDP. The increase observed in the deficits throughout 2020-2022 was probably related to the substantial fiscal stimulus in these years, both in absolute terms and relative to other major economies. As we noted in our analysis of the comparable performance of the US vs. its credit rating peers, the large current account deficit is mostly due to the deficit in goods and services (actually in goods, as the US has a relatively small surplus in services).

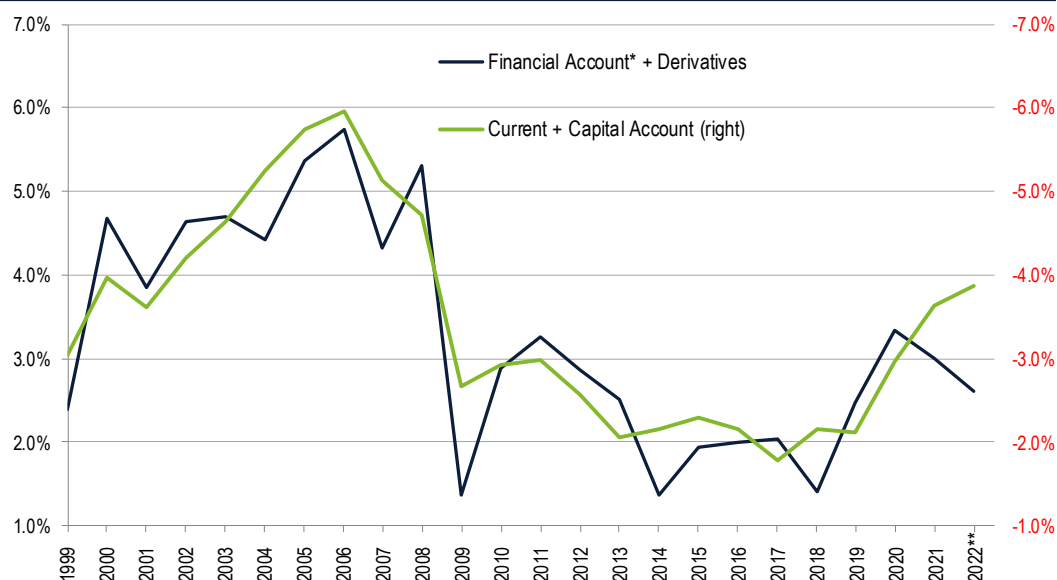
In contrast, primary or investment income has been positive helping partially to moderate the effects of the trade balance. However, this surplus has been declining substantially as the trade deficit increases. The surplus in primary income is despite the fact (as we shall see below) that the net investment position of US residents is strongly negative (i.e., the US based assets of non-US residents are greater than the foreign assets of US residents). This negative net investment position is the result of the large surpluses that the US receives in the financial account, and which are necessary in order to finance the deficit in the current account.

Of concern is the fact that the surplus in the primary income account has been declining and with the rise in US interest rates and the expectation of much larger government debt in future years this decline could continue.

The relative evolution of the current account (plus the small capital account) and the financial account (plus the not insignificant surplus in the derivatives account) is shown in Figure 30 which includes our estimates for 4Q22. The financial account excludes changes in reserves. Consequently, the difference between the two data series represents the sum of the usually very small change in reserves account and the statistical discrepancy which in 2021 and thus far in 2022 have been positive as can be seen in Figure 29²⁷.

Between 2015 and 2019 the current account as a percentage of GDP averaged 2.1%, relatively lower than the 3.0% observed in 2020 and the 3.6% and 3.9% registered in 2021, and estimated for 2022, as a consequence of the larger demand of goods. In contrast, the financial account surplus fell substantially in 2021, perhaps, as a result of some return to “normality” after 2020 and moved closer to the levels observed post-financial crisis. We assume it could fall further in 2022. The larger gap between the two series reflects the large statistical discrepancy observed in 2021. For 2022 we expect that the discrepancy was at least as large, and perhaps larger.

Figure 30. Current and Financial Accounts as a percentage of GDP



Source: HR Ratings with data from the BEA

*Financial Account does not include changes in reserves assets or SDRs.

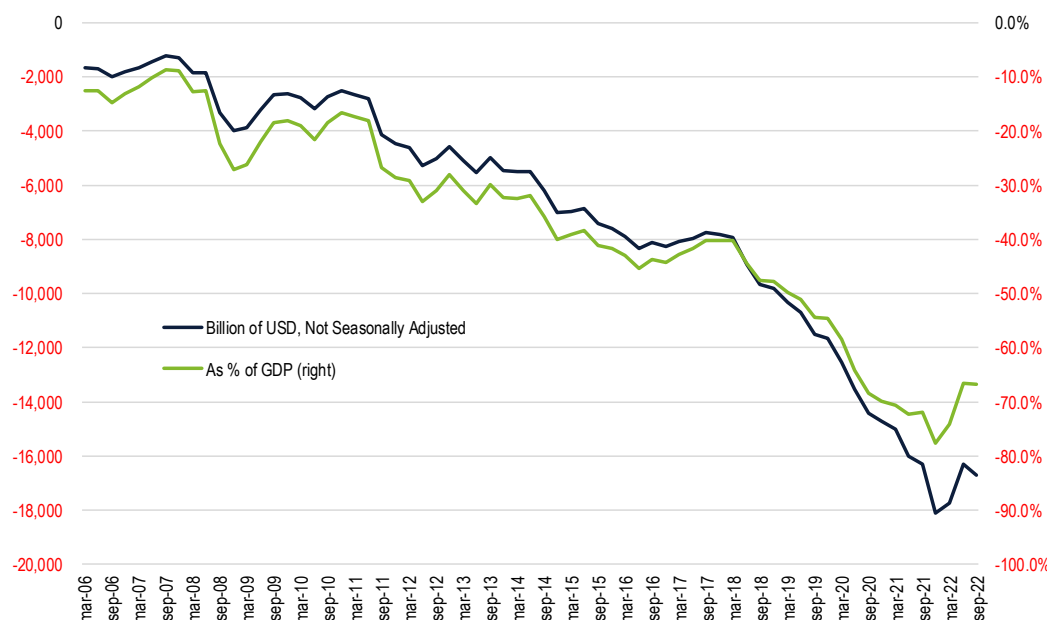
** Calculated with information published up to Q322 and HR forecasts for 4Q22.

As a consequence of the consistent annual surpluses in the financial account, the holdings of assets in the US by non-US residents have increased relative to the holdings of assets abroad by US residents. The effect of this over time is that the net international investment

²⁷ The statistical discrepancy is basically the difference between the change in reserves and the sum of the current, capital, financial (excluding change in reserves) and derivative accounts.

position of the US (NIIP) has become increasingly negative. The evolution of the NIIP is shown in Figure 31 below²⁸.

Figure 31. U.S. Net International Investment Position



Source: HR Ratings with data retrieved from the FRED.

In effect, the deficit in the purchase of goods by US residents is financed by investments of non-residents in the US. These investment flows are typically larger than the purchase of assets abroad by US residents producing the surplus necessary to finance the deficit in the current account. Of course, these investments can widen the current account deficit to the extent to which the returns on US assets held by non-residents are repatriated. This probably reflects the perception of the US as a safe haven for investors and possibly higher returns on US investments, prompting the reinvestment of investment income.

However, as we have seen above in the primary income account, despite holding fewer assets abroad, US residents repatriate more earnings from their foreign assets than foreign resident repatriate from their earnings on their US assets.

Among these assets are the Treasury securities issued to finance the budgetary deficit of the US Federal government. To a degree these purchases are necessary in order not only to finance the current account deficit but also to limit the crowding out effect on private investment were US residents alone to finance the increasingly larger budgetary deficits. However, as these deficits become larger and as US interest rates rise the ability of foreign

²⁸ U.S. assets abroad include the value of overseas affiliates of U.S. multinational corporations (foreign direct investment, or FDI), shares of foreign companies held by U.S. residents (portfolio equity), bonds issued by nonresidents, U.S. banks' deposits in foreign banks, etc. Symmetrically, U.S. liabilities include the value of U.S.-based affiliates of foreign corporations, shares of U.S. companies held by nonresidents, U.S. Treasury and corporate bonds held by foreign central banks and other foreign investors, as well as foreign deposits in and foreign loans to U.S.-based banks.

residents to continue to purchase increasing amounts of Treasury securities could be affected while the repatriation of interest income on those securities could increase leading to wider current account deficits. As we have seen the size of the primary income surplus has fallen in recent years.

As was seen in Figure 31, over the past decades, the U.S debtor position has been increasing and reached an all-time high in December 2021, both in nominal USD (-US\$18,124bn) and as a percentage of GDP (-78.0%). Part of the steep increase produced in 2021 reflected the U.S. dollar appreciation (as seen in Figure 32) and the economic recovery that made the U.S. equity prices rise more substantially than foreign equity prices. However, in 2022 as financial markets began somewhat to normalize, the U.S. dollar gave up some of the gains it had made reflected in the reduction of the NIIP deficit, falling to 67.0% of GDP.

The attractiveness the US as a safe haven offering profitable investment returns has resulted in a long-term increase in the value of the USD vs. other currencies. This has probably contributed to a virtuous cycle with the increased the value of the dollar making the investment in US assets even more attractive. The evolution of the USD is shown in Figure 32 below.

Figure 32. Real Broad Dollar Index, Jan 2006=100



Source: HR Ratings with data retrieved from the FRED. Monthly, Not Seasonally Adjusted

Consequently, despite the large deficit in the current account (which we assume will increase vs. post financial crisis levels) we do not see this as a credit risk for our sovereign credit rating at this time as the strength of the USD significantly limits the possibility of a virtual default through currency degradation. Nevertheless, deficits comparable to those prior to the financial crisis could increase the level of risk.

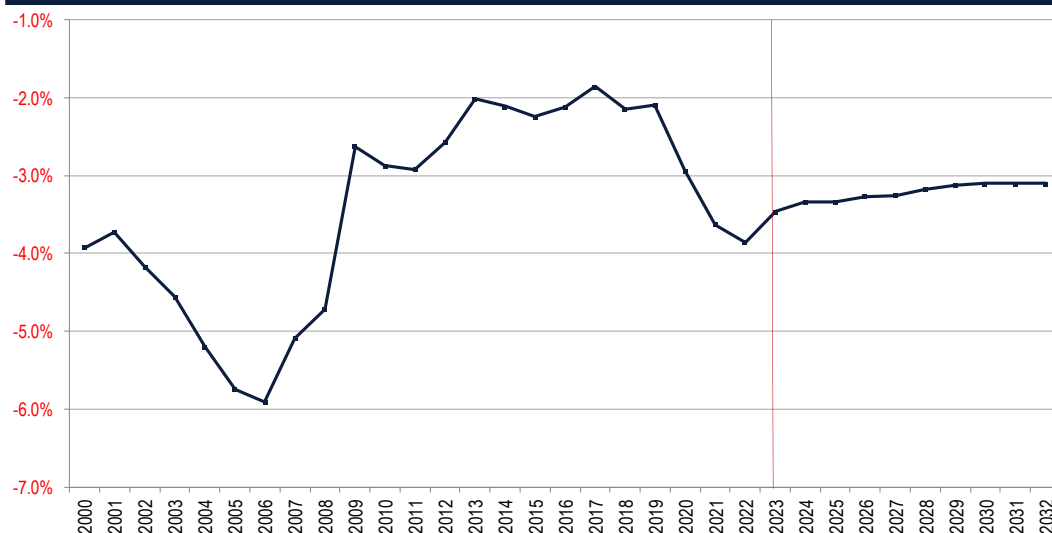
Current account forecasts

Over the long-term HR Ratings is assuming current account deficits above 3% of GDP. For 2023, HR Ratings anticipates that the U.S. will register a smaller current account deficit as a percentage of GDP after reaching the highest current account deficit in 2022. This assumption is based on the fact that we are forecasting that imports will stabilize as a percentage of GDP while exports would show more dynamism, reducing the trade deficit.

In general, we see the trade deficit gradually coming down although it would remain significantly above the pre-pandemic levels reached in 2018 and 2019 of 2.82% and 2.62%, respectively. This decline could be supported by the efforts to bring production back to the United States, in part for national security reasons. Thus, a big question is the success that industrial policy will have gone forward. Also relevant will be the effect on the balance of trade on efforts to transition to a net-zero energy economy.

An important component of our forecast is the assumption that the surplus in the primary account will gradually fall in the face of larger government debt levels as a result of ever larger deficits. Our expectations for the current account are shown in Figure 33 with more detail provided in Appendix 3 of this report. We should note that our current account forecasts show larger deficits than those expected by the IMF as seen in Figure 12.

Figure 33. Current account as a percentage of GDP



Source: HR Ratings forecasts with information from the Bureau of Economic Analysis (BEA).

Appendix 1

Table A1.1. Principal Macroeconomic IMF assumptions ^{1/}													
Periodo	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Real GDP (annual change)													
AAA rated countries	2.2	2.1	2.8	2.4	1.9	-2.5	4.9	2.6	0.8	1.8	1.8	1.8	1.7
AA+ rated countries	1.0	2.3	2.3	1.7	1.5	-6.7	4.6	3.6	0.5	1.1	1.8	1.7	1.5
AA rated countries	2.0	2.2	2.4	1.1	1.1	-2.1	3.9	3.6	1.9	1.8	2.0	1.8	1.3
United States (IMF)	2.7	1.7	2.3	2.9	2.3	-3.4	5.7	2.0	1.4	1.0	1.8	2.1	1.9
United States (HR Ratings)	2.9	1.6	2.2	2.9	2.3	-1.8	4.1	3.3	1.2	1.7	2.2	1.6	1.9
CPI (annual average)													
AAA rated countries	0.2	0.3	1.3	1.6	1.6	0.7	2.7	6.9	4.2	2.4	2.2	2.0	2.0
AA+ rated countries	0.0	0.7	2.2	2.1	1.5	0.9	2.6	7.7	5.1	2.5	1.8	2.0	2.0
AA rated countries	1.5	1.3	1.9	1.9	1.6	0.9	3.2	6.5	4.8	2.9	2.6	2.0	2.0
United States (IMF)	0.1	1.3	2.1	2.4	1.8	1.2	4.7	8.1	3.5	2.2	2.0	2.0	2.0
United States (HR Ratings)	0.1	1.3	2.1	2.4	1.8	1.5	3.3	7.9	4.8	3.6	2.8	2.5	2.5
Current account (as share of GDP)													
AAA rated countries	3.3	2.4	3.0	2.7	5.5	2.9	5.4	3.8	3.5	3.5	3.3	3.1	3.2
AA+ rated countries	-0.9	-2.0	-0.8	-1.8	-0.3	0.6	-0.5	-2.6	-2.1	-0.2	-0.5	-0.5	-0.5
AA rated countries	8.0	4.5	5.5	8.0	2.9	2.4	7.4	4.2	5.3	6.3	6.3	6.2	6.1
United States (IMF)	-2.2	-2.1	-1.9	-2.1	-2.1	-3.0	-3.7	-3.9	-3.1	-2.8	-2.5	-2.4	-2.3
United States (HR Ratings)	-2.2	-2.1	-1.9	-2.1	-2.1	-2.5	-3.6	-3.9	-3.2	-3.1	-3.1	-3.1	-3.1
Net debt (as share of GDP)*													
AAA rated countries	21.0	21.6	20.8	18.7	17.3	20.5	21.6	19.9	22.5	23.1	22.2	20.0	17.9
AA+ rated countries	58.3	56.9	55.9	50.7	48.0	59.6	60.6	58.2	57.8	56.9	56.7	55.5	55.0
AA rated countries	22.1	23.4	23.3	24.1	27.9	34.5	34.6	34.2	36.1	37.4	37.6	37.1	36.3
United States (IMF)	80.9	81.9	80.3	81.2	83.0	99.1	99.6	94.7	96.9	101.6	105.5	108.8	112.0
United States (HR Ratings)	72.5	76.4	76.2	77.6	79.4	99.8	98.4	97.1	97.6	99.7	101.9	104.5	107.3

Source: HR Ratings with data from the IMF (GDP, Inflation, current account and Net debt) WEO october 2022 update.

Appendix 2

Table A2.1. Public Finance Accounts in billions dollars

Fiscal Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Revenues															
Individual Income Taxes	1,684	1,718	1,609	2,044	2,632	2,545	2,509	2,550	2,793	3,046	3,148	3,272	3,417	3,553	3,718
Payroll Taxes	1,171	1,243	1,310	1,314	1,484	1,576	1,661	1,730	1,797	1,867	1,937	2,009	2,093	2,170	2,268
Corporate Income Taxes	205	230	212	372	425	480	487	496	500	499	510	518	527	533	537
Others	271	272	291	317	356	254	264	268	276	296	372	389	403	419	443
Total	3,330	3,463	3,421	4,047	4,896	4,855	4,921	5,044	5,365	5,708	5,967	6,188	6,439	6,674	6,965
Outlays															
Social Security	982	1,038	1,090	1,129	1,213	1,336	1,452	1,557	1,654	1,750	1,852	1,956	2,067	2,184	2,304
Medicare	705	775	912	868	975	1,010	1,033	1,141	1,236	1,332	1,512	1,455	1,646	1,775	1,894
Medicaid	389	409	458	521	592	589	540	539	579	621	661	704	749	796	849
Other Mandatory	706	786	2,397	2,650	1,860	1,250	1,140	1,154	1,163	1,185	1,248	1,215	1,281	1,316	1,340
Gross Mancatory	2,782	3,010	4,858	5,167	4,639	4,185	4,166	4,392	4,632	4,889	5,274	5,330	5,744	6,071	6,388
Offsetting Receipts	-260	-276	-277	-333	-505	-345	-347	-369	-391	-424	-451	-471	-505	-538	-561
Net Mandatory	2,522	2,734	4,580	4,834	4,135	3,840	3,819	4,023	4,241	4,465	4,823	4,860	5,239	5,534	5,827
Defense	623	676	714	742	751	800	957	1,046	1,134	1,262	1,279	1,329	1,369	1,383	1,350
Nondefense	639	661	914	895	910	941	943	1,032	1,104	1,183	1,246	1,329	1,369	1,383	1,350
Total Discretionary	1,262	1,338	1,628	1,636	1,661	1,741	1,900	2,078	2,238	2,445	2,526	2,658	2,737	2,766	2,701
Total Primary Outlays	3,784	4,072	6,208	6,470	5,796	5,581	5,719	6,100	6,479	6,910	7,349	7,518	7,976	8,300	8,528
Net Interest	325	375	345	352	475	709	815	861	927	1,027	1,138	1,229	1,340	1,465	1,577
Total Outlays	4,109	4,447	6,554	6,822	6,271	6,290	6,534	6,961	7,406	7,937	8,487	8,748	9,315	9,765	10,105
Primary Balance	-454	-608	-2,787	-2,423	-900	-726	-798	-1,056	-1,114	-1,202	-1,382	-1,330	-1,536	-1,626	-1,563
Financial Balance	-779	-984	-3,132	-2,775	-1,375	-1,435	-1,613	-1,917	-2,041	-2,229	-2,520	-2,560	-2,876	-3,091	-3,139
GDP	20,302	21,159	21,058	22,654	25,016	26,474	27,730	29,059	30,242	31,545	32,802	34,080	35,548	36,883	38,582
Public Debt	15,750	16,801	21,017	22,284	24,299	25,784	27,475	29,483	31,521	33,763	36,350	38,827	41,787	44,927	48,124

Source: HR Ratings with information from the CBO.

Table A2.2. Public Finance Accounts as share of GDP

Fiscal Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Revenues															
Individual Income Taxes	8.3%	8.1%	7.6%	9.0%	10.5%	9.6%	9.0%	8.8%	9.2%	9.7%	9.6%	9.6%	9.6%	9.6%	9.6%
Payroll Taxes	5.8%	5.9%	6.2%	5.8%	5.9%	6.0%	6.0%	6.0%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%
Corporate Income Taxes	1.0%	1.1%	1.0%	1.6%	1.7%	1.8%	1.8%	1.7%	1.7%	1.6%	1.6%	1.5%	1.5%	1.4%	1.4%
Others	1.3%	1.3%	1.4%	1.4%	1.4%	1.0%	1.0%	0.9%	0.9%	0.9%	1.1%	1.1%	1.1%	1.1%	1.1%
Total	16.4%	16.4%	16.2%	17.9%	19.6%	18.3%	17.7%	17.4%	17.7%	18.1%	18.2%	18.2%	18.1%	18.1%	18.1%
Outlays															
Social Security	4.8%	4.9%	5.2%	5.0%	4.8%	5.0%	5.2%	5.4%	5.5%	5.5%	5.6%	5.7%	5.8%	5.9%	6.0%
Medicare	3.5%	3.7%	4.3%	3.8%	3.9%	3.8%	3.7%	3.9%	4.1%	4.2%	4.6%	4.3%	4.6%	4.8%	4.9%
Medicaid	1.9%	1.9%	2.2%	2.3%	2.4%	2.2%	1.9%	1.9%	1.9%	2.0%	2.0%	2.1%	2.1%	2.2%	2.2%
Other Mandatory	3.5%	3.7%	11.4%	11.7%	7.4%	4.7%	4.1%	4.0%	3.8%	3.8%	3.8%	3.6%	3.6%	3.6%	3.5%
Gross Mancatory	13.7%	14.2%	23.1%	22.8%	18.5%	15.8%	15.0%	15.1%	15.3%	15.5%	16.1%	15.6%	16.2%	16.5%	16.6%
Offsetting Receipts	-1.3%	-1.3%	-1.3%	-1.5%	-2.0%	-1.3%	-1.3%	-1.3%	-1.3%	-1.3%	-1.4%	-1.4%	-1.4%	-1.5%	-1.5%
Net Mandatory	12.4%	12.9%	21.8%	21.3%	16.5%	14.5%	13.8%	13.8%	14.0%	14.2%	14.7%	14.3%	14.7%	15.0%	15.1%
Defense	3.1%	3.2%	3.4%	3.3%	3.0%	3.0%	3.5%	3.6%	3.8%	4.0%	3.9%	3.9%	3.9%	3.8%	3.5%
Nondefense	3.1%	3.1%	4.3%	3.9%	3.6%	3.6%	3.4%	3.6%	3.7%	3.8%	3.8%	3.9%	3.9%	3.8%	3.5%
Total Discretionary	6.2%	6.3%	7.7%	7.2%	6.6%	6.6%	6.9%	7.2%	7.4%	7.8%	7.7%	7.8%	7.7%	7.5%	7.0%
Total Primary Outlays	18.6%	19.2%	29.5%	28.6%	23.2%	21.1%	20.6%	21.0%	21.4%	21.9%	22.4%	22.1%	22.4%	22.5%	22.1%
Net Interest	1.6%	1.8%	1.6%	1.6%	1.9%	2.7%	2.9%	3.0%	3.1%	3.3%	3.5%	3.6%	3.8%	4.0%	4.1%
Total Outlays	20.2%	21.0%	31.1%	30.1%	25.1%	23.8%	23.6%	24.0%	24.5%	25.2%	25.9%	25.7%	26.2%	26.5%	26.2%
Primary Balance	-2.2%	-2.9%	-13.2%	-10.7%	-3.6%	-2.7%	-2.9%	-3.6%	-3.7%	-3.8%	-4.2%	-3.9%	-4.3%	-4.4%	-4.1%
Financial Balance	-3.8%	-4.6%	-14.9%	-12.3%	-5.5%	-5.4%	-5.8%	-6.6%	-6.7%	-7.1%	-7.7%	-7.5%	-8.1%	-8.4%	-8.1%
Public Debt	77.6%	79.4%	99.8%	98.4%	97.1%	97.4%	99.1%	101.5%	104.2%	107.0%	110.8%	113.9%	117.5%	121.8%	124.7%

Source: HR Ratings with information from the CBO.

Appendix 3

Table A3.1. Current Account in billions of US

Calendar Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Receipts	3,794	3,840	3,260	3,780	4,378	4,683	4,976	5,225	5,546	5,915	6,241	6,565	6,834	7,104	7,384
Goods and Services	2,542	2,546	2,159	2,557	3,014	3,242	3,485	3,690	3,952	4,253	4,502	4,748	4,950	5,150	5,359
Goods	1,677	1,655	1,432	1,761	2,105	2,281	2,469	2,608	2,793	3,005	3,180	3,344	3,479	3,620	3,767
Services	866	891	726	795	910	961	1,016	1,082	1,159	1,248	1,321	1,404	1,471	1,530	1,592
Primary Income	1,103	1,137	936	1,052	1,191	1,260	1,302	1,339	1,388	1,446	1,512	1,579	1,633	1,689	1,746
Secondary Income	149	157	165	171	174	181	189	196	206	216	227	238	251	265	279
Payments	4,234	4,286	3,880	4,627	5,361	5,610	5,914	6,205	6,546	6,952	7,321	7,686	8,013	8,329	8,669
Goods and Services	3,121	3,106	2,813	3,402	4,008	4,195	4,430	4,681	4,963	5,292	5,577	5,851	6,098	6,333	6,590
Goods	2,556	2,512	2,346	2,852	3,325	3,489	3,702	3,921	4,156	4,426	4,669	4,895	5,093	5,300	5,514
Services	565	594	467	550	682	705	728	760	807	866	908	955	1,004	1,034	1,076
Primary Income	848	893	773	913	1,006	1,053	1,108	1,133	1,175	1,231	1,295	1,362	1,420	1,478	1,538
Secondary Income	265	286	294	312	347	362	376	391	408	429	449	474	495	518	542
Balances															
Current Account	-440	-446	-620	-846	-982	-927	-938	-980	-1,000	-1,036	-1,079	-1,121	-1,179	-1,225	-1,285
Trade	-579	-560	-654	-845	-993	-953	-944	-991	-1,011	-1,038	-1,075	-1,103	-1,148	-1,183	-1,231
Primary Income	255	244	163	139	185	207	194	206	213	215	217	218	213	211	209
Secondary Income	-117	-130	-129	-141	-174	-181	-187	-195	-202	-213	-221	-236	-244	-253	-263

Source: HR Ratings projections with data from BEA

Table A3.2. Current Account as Percentage of GDP

Calendar Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Receipts	18.5%	18.0%	15.5%	16.2%	17.2%	17.5%	17.7%	17.8%	18.1%	18.6%	18.8%	19.0%	19.1%	19.0%	19.0%
Goods and Services	12.4%	11.9%	10.2%	11.0%	11.8%	12.1%	12.4%	12.6%	12.9%	13.4%	13.6%	13.8%	13.8%	13.8%	13.8%
Goods	8.2%	7.7%	6.8%	7.6%	8.3%	8.5%	8.8%	8.9%	9.1%	9.4%	9.6%	9.7%	9.7%	9.7%	9.7%
Services	4.2%	4.2%	3.4%	3.4%	3.6%	3.6%	3.6%	3.7%	3.8%	3.9%	4.0%	4.1%	4.1%	4.1%	4.1%
Primary Income	5.4%	5.3%	4.4%	4.5%	4.7%	4.7%	4.6%	4.6%	4.54%	4.54%	4.56%	4.58%	4.55%	4.53%	4.50%
Secondary Income	0.7%	0.7%	0.8%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
Payments	20.6%	20.1%	18.4%	19.8%	21.1%	21.0%	21.1%	21.2%	21.4%	21.8%	22.1%	22.3%	22.3%	22.3%	22.3%
Goods and Services	15.2%	14.5%	13.4%	14.6%	15.7%	15.7%	15.8%	16.0%	16.2%	16.6%	16.8%	17.0%	17.0%	17.0%	17.0%
Goods	12.5%	11.8%	11.1%	12.2%	13.1%	13.0%	13.2%	13.4%	13.6%	13.9%	14.1%	14.2%	14.2%	14.2%	14.2%
Services	2.8%	2.8%	2.2%	2.4%	2.7%	2.6%	2.6%	2.6%	2.6%	2.7%	2.7%	2.8%	2.8%	2.8%	2.8%
Primary Income	4.1%	4.2%	3.7%	3.9%	4.0%	3.9%	3.9%	3.9%	3.8%	3.86%	3.91%	3.95%	3.96%	3.96%	3.96%
Secondary Income	1.3%	1.3%	1.4%	1.3%	1.4%	1.4%	1.3%	1.3%	1.3%	1.3%	1.4%	1.4%	1.4%	1.4%	1.4%
Balances															
Current Account	-2.14%	-2.09%	-2.94%	-3.63%	-3.86%	-3.46%	-3.34%	-3.34%	-3.27%	-3.25%	-3.26%	-3.25%	-3.29%	-3.28%	-3.31%
Trade	-2.82%	-2.62%	-3.11%	-3.62%	-3.90%	-3.56%	-3.36%	-3.38%	-3.30%	-3.26%	-3.25%	-3.20%	-3.20%	-3.17%	-3.17%
Primary Income	1.24%	1.14%	0.77%	0.60%	0.73%	0.77%	0.69%	0.70%	0.70%	0.68%	0.65%	0.63%	0.59%	0.57%	0.54%
Secondary Income	-0.57%	-0.61%	-0.61%	-0.60%	-0.68%	-0.68%	-0.67%	-0.67%	-0.66%	-0.67%	-0.67%	-0.68%	-0.68%	-0.68%	-0.68%

Source: HR Ratings projections with data from BEA



**Credit
Rating
Agency**

The United States of America
Sovereign Debt

HR AAA (G)
HR+1 (G)

A NRSRO Rating*

March 14, 2023

HR Ratings Management Contacts

Management

Chairman of the Board of Directors

Alberto I. Ramos +52 55 1500 3130
alberto.ramos@hrratings.com

Chief Executive Officer

Pedro Latapí +52 55 8647 3845
pedro.latapi@hrratings.com

Vice President of the Board of Directors

Aníbal Habeica +52 55 1500 3130
anibal.habeica@hrratings.com

Analysis

Chief Credit Officer / Economic Analysis

Felix Boni +52 55 1500 3133
felix.boni@hrratings.com

Rogelio Argüelles +52 181 8187 9309
rogelio.arguelles@hrratings.com

Ricardo Gallegos +52 55 1500 3139
ricardo.gallegos@hrratings.com

Secured Public Finance / Infrastructure

Roberto Ballinez +52 55 1500 3143
roberto.ballinez@hrratings.com

Roberto Soto +52 55 1500 3148
roberto.soto@hrratings.com

Unsecured Public Finance / Sovereigns

Álvaro Rodríguez +52 55 1500 3147
alvaro.rodriguez@hrratings.com

Financial Institutions / ABS

Angel García +52 55 1253 6549
angel.garcia@hrratings.com

Akira Hirata +52 55 8647 3837
akira.hirata@hrratings.com

Corporates / ABS

Luis Miranda +52 52 1500 3146
luis.miranda@hrratings.com

Heinz Cederborg +52 55 8647 3834
heinz.cederborg@hrratings.com

Sustainable Impact / ESG

Luisa Adame +52 55 1253 6545
luisa.adame@hrratings.com

Regulation

Head Compliance Officer

Alejandra Medina +52 55 1500 0761
alejandra.medina@hrratings.com

José González +52 55 8647 3810
jose.gonzalez@hrratings.com

Business

Business Development

Verónica Cordero +52 55 1500 0765
veronica.cordero@hrratings.com

Carmen Oyoque +52 55 5105 6746
carmen.oyoque@hrratings.com

Operations

Operations

Odette Rivas +52 55 1500 0769
odette.rivas@hrratings.com



Credit
Rating
Agency

The United States of America

Sovereign Debt

HR AAA (G)
HR+1 (G)

A NRSRO Rating*

March 14, 2023

México: Guillermo González Camarena No. 1200, Piso 10, Colonia Centro de Ciudad Santa Fe, Del. Álvaro Obregón, C.P. 01210, Ciudad de México. Tel. +52 (55) 15 00 31 30
Estados Unidos: 2990 Ponce de Leon Boulevard, Suite 401, Coral Gables, FL 33134. Tel. +1 (786) 464 0500.

The rating assigned by HR Ratings LLC to the entity, issuer and/or issue is based upon the analysis performed under a base case and stress case scenario, in accordance with the following methodology(ies) established by the rating agency:

Rating Methodology for Sovereign Debt, May 19, 2017
General Methodological Criteria, January 2023

For more information with respect to this (these) methodology(ies), please consult the website:
www.hrratings.com/en/methodology

Complementary information

Period of the financial information used by HR Ratings for the assignment of the current rating.	January 1999 to December 2022
Main sources of information used, including third parties.	Congressional Budget Office, Federal Reserve, IMF, Bureau of Economic Analysis
Ratings assigned by other rating agencies that were used by HR Ratings (if so).	N.A.
HR Ratings considered at the moment of assigning or reviewing the rating, the existence of mechanisms designed to align the incentives between the originator, servicer and guarantor and the possible buyers of the rated instrument (where it applies).	N.A.

**HR Ratings, LLC (HR Ratings), is a Credit Rating Agency registered by the Securities and Exchange Commission (SEC) as a Nationally Recognized Statistical Rating Organization (NRSRO) for the assets of public finance, corporates and financial institutions as described in section 3 (a) (62) (A) and (B) subsection (i), (iii) and (v) of the US Securities Exchange Act of 1934.*

This is an unsolicited rating, so HR Ratings did not receive any payment from company or person, for its issue. Unsolicited ratings are issued in accordance with the Agency's current methodologies and follow the same policies and procedures as for the requested ratings, as applicable. HR Ratings may withdraw or change this rating at any time, without liability whatsoever. The following information can be found on our website at www.hrratings.com: (i) The internal procedures for the monitoring and surveillance of our ratings and the periodicity with which they are formally updated, (ii) the criteria used by HR Ratings for the withdrawal or suspension of the maintenance of a rating, (iii) the procedure and process of voting on our Analysis Committee, and (iv) the rating scales and their definitions.

The ratings and/or opinions of HR Ratings de México S.A. de C.V. (HR Ratings) are opinions regarding the credit quality and/or the asset management capacity, or relative to the performance of the tasks aimed at the fulfillment of the corporate purpose, by issuing companies and other entities or sectors, and are based on exclusively in the characteristics of the entity, issue and/or operation, regardless of any business activity between HR Ratings and the entity or issuer. The ratings and/or opinions granted are issued on behalf of HR Ratings and not of its management or technical personnel and do not constitute recommendations to buy, sell or maintain any instrument, or to carry out any type of business, investment or operation, and may be subject to updates at any time, in accordance with the HR Ratings classification methodologies, in terms of the provisions of article 7, section II and/or III, as appropriate, of the "General provisions applicable to the issuers of securities and other participants in the stock market".

HR Ratings bases its ratings and/or opinions on information obtained from sources that are believed to be accurate and reliable. HR Ratings, however, does not validate, guarantee or certify the accuracy, correctness or completeness of any information and is not responsible for any errors or omissions or for results obtained from the use of such information. Most issuers of debt securities rated by HR Ratings have paid a fee for the credit rating based on the amount and type of debt issued. The degree of creditworthiness of an issue or issuer, opinions regarding asset manager quality or ratings related to an entity's performance of its business purpose are subject to change, which can produce a rating upgrade or downgrade, without implying any responsibility for HR Ratings. The ratings issued by HR Ratings are assigned in an ethical manner, in accordance with healthy market practices and in compliance with applicable regulations found on the www.hrratings.com rating agency webpage. There Code of Conduct, HR Ratings' rating methodologies, rating criteria and current ratings can also be found on the website.

Ratings and/or opinions assigned by HR Ratings are based on an analysis of the creditworthiness of an entity, issue or issuer, and do not necessarily imply a statistical likelihood of default, HR Ratings defines as the inability or unwillingness to satisfy the contractually stipulated payment terms of an obligation, such that creditors and/or bondholders are forced to take action in order to recover their investment or to restructure the debt due to a situation of stress faced by the debtor. Without disregard to the aforementioned point, in order to validate our ratings, our methodologies consider stress scenarios as a complement to the analysis derived from a base case scenario. The rating fee that HR Ratings receives from issuers generally ranges from US\$1,000 to US\$1,000,000 (or the foreign currency equivalent) per issue. In some instances, HR Ratings will rate all or some of the issues of a particular issuer for an annual fee. It is estimated that the annual fees range from US\$5,000 to US\$2,000,000 (or the foreign currency equivalent).