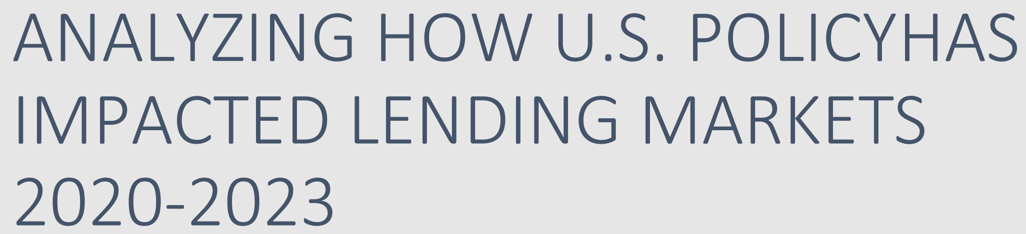

ANALYZING HOW U.S. POLICYHAS IMPACTED LENDING MARKETS 2020-2023

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(Introduction)

2020 was a historically momentous year. One of the most widespread and deadly pandemics in human history consumed the world, testing markets and shaking economies. Three years later, we continue to feel its aftershocks, particularly in the worlds of economics and financial markets. For this reason, I feel it appropriate to take a moment to review what policies have been enacted in response to the crisis, how they may have impacted lending markets, and subsequently how bonds have performed over the past 3 years.

(The Macroenvironment)

As was mentioned, much has changed politically and economically over the past 3 years. Before we discuss what has happened in bond markets as a result, let's take a step back and review the macroenvironment in 2020. Entering 2020, the U.S. and the global economy were in generally good shape. The U.S. Federal Funds Rate was low at around 1.5% making lending conditions ideal for borrowers. Additionally, the FED was engaged in significant Quantitative Easing placing downward pressure on bond prices and thus further encouraging the growth of the US economy. The unemployment rate had been steadily declining since 2015 and sat at a healthy 3.5% in January of 2020 (Board of Governors 2023). The inflation rate had also been fluctuating within a normal range between 2 and 3% (Board of Governors 2023). Additionally, the Real GDP Annual Growth Rate had also been fluctuating between 2 and 3% for all of 2019, in line with historical trends(Board of Governors 2023). All of these factors are elements of a well-functioning, healthy economy in line with the Federal Reserve's two targets: Maximum Employment and Price Stability. Of course, all of this was flipped upside down in March of 2020 when the U.S. Center for Disease Control announced a national quarantine and a series of new regulations made necessary by the quickly spreading COVID-19 pandemic. Seemingly overnight, thousands of businesses went under while practically all asset markets crashed causing the strength of financial institutions to be tested and the unemployment rate to skyrocket to nearly 15%. In response to the chaos, the U.S. government implemented a series of expansionary fiscal and monetary policies to provide relief to hundreds of millions of struggling Americans who were unable to leave their house let alone work. These policies worked in stabilizing the economy in the short run until the healthcare system was able to get a handle on the COVID-19 pandemic around mid-2021. Unfortunately, these packages of stimulus and

monetary easing continued to accelerate the economy beyond what was necessary. We now find ourselves battling the side effects of this excess stimulus which have notably included inflation peaking at over 9% in 2022. We will now discuss the various policies enacted to combat the remaining economic side effects of the pandemic and how these have ultimately translated into bond markets.

(Fiscal Policy)

As we are well aware, changes in fiscal policy can cause major changes in the bond market. There are several different core avenues through which fiscal policy can affect the broader lending market. The first, and potentially the most impactful factor, is the annual amount that the government spends. Government spending is financed in two ways: through taxation revenue or borrowing. To get a sense of the current ratio of these sources, the Center on Budget and Policy Priorities estimates the Federal Government to spend 6.3 Trillion Dollars in 2023 of which 4.8 Trillion will be financed through Government Revenues. As one can clearly see, under the current system the Federal Government spends more than it brings in through taxes and other sources of revenue. This deficit requires the government to issue bonds as another source of short-term capital. Thus, changes in tax or other government revenue policies can also be said to influence the bond market just as changes in the amount the Government spends. Regardless of the reasoning, an increase in the supply of bonds adds downward pressure to the price of bonds which can cause an increase in yields. Over the past three years, government spending has surged to provide relief and stimulus through the challenging COVID environment. At the same time, many sources of government revenue were paused or significantly slowed (such as student loan revenue and income taxes) as a result of the new regulations and slowed economic growth. This combination forced the US Government to borrow nearly 3 times its annual average in the year 2020 which noticeably had bleed-through effects on the bond market. The second and less direct way in which fiscal policy can affect the bond market is through influencing interest rates. An expansionary fiscal policy (such as an increase in government spending, major tax cuts, or lump sum transfers) can cause inflation which could force the Federal Reserve to raise the federal funds rate subsequently increasing the interest rates on all bonds. In this manner, Fiscal policy also guides market participants' expectations of inflation and the general economy further exasperating its side effects on inflation and eventually lending conditions. When government

spending is high and inflation is expected to rise, investors predict higher bond yields and lower prices in the future causing them to require higher returns for bonds trading today. This avenue was in full effect during the COVID-19 pandemic as the US government provided a series of lump sum transfers (stimulus checks) to millions of Americans who lost their job. In fact, these stimulus packages impacted bond markets through two avenues: raising government spending ultimately caused more bonds to be being issued similar to the first avenue discussed and by causing price inflation and thus higher interest rates in line with the second avenue. Finally, the perceived risk of a government's debt is reliant on its fiscal policies. When governments have a high deficit, the risk of default on their debt increases leading to investors requiring a higher rate of return for taking on the additional risk. Historically, the US debt has been considered some of the safest investments in the world because of its low risk of default. However, on August 1, 2023, the Fitch Rating Agency downgraded US debt to AA+ from AAA in response to the growing deficit and political instability. This downgrade has grown the yield on long-term US debt but to a very slight degree. Despite Fiscal Policy impacting the broader US bond market through many different channels, over the past three years seemingly all of these channels have contributed towards tighter lending conditions (higher yields and lower prices). The interest rates on newly issued bonds reflect this fact. For example, the coupon rate for Treasury Inflation-Protected Securities (TIPS) bonds in 2020 was just below 2% which is significantly lower than the rate on those issued in 2023 at around 5.5%. Markets seem to expect further tightness in the short term and eventually a policy revert to an expansionary fiscal policy to counteract the current slowing economy as reflected in the inverted yield curve. The TIPS bond interest rates closely follow that of the Fed Funds rate which, as discussed, is a factor of government spending but is ultimately determined by the Federal Reserve. As we have seen, Fiscal policy is a very important piece to understanding why the general bond market changes. However, there are other key factors that directly contribute to such changes in the bond such as monetary policy which we will discuss next.

(Monetary policy)

As touched on above, an extremely important factor that determines the state of the bond market is Monetary Policy. Put simply, Monetary Policy is defined as the tools and actions enlisted by a nation's central bank to control the speed and direction of that nation's economy. In

the United States, the central bank is The Federal Reserve whose mission, as defined by the U.S. Government, is to achieve maximum employment and price stability. In pursuit of these goals, the FED has an assortment of tools or policies that it can use to control the broader economy. The primary tools the FED employs are the Federal Funds Rate, Open Market Operations, and Reserve Requirements. All three tools have implications on bond markets; however, the degree of the impact varies by the tool.

Let us begin unpacking these tools with Reserve Requirements. All "depository institutions" (like commercial banks, savings banks, credit unions, savings and loan associations, ect.) are legally required to hold reserves against their liabilities (Board of Governors 2022). The Federal Reserve has the ability to set these standards depending on the economic environment and the FED's prescribed pathway to maximum employment and price stability. In most cases, this entails changing the required reserve ratio which these depository institutions must abide by. When the Federal Reserve takes an expansionary stance on the economy (aiming to increase employment, prices, and output), it will reduce the reserve requirement encouraging depository institutions to employ a greater percentage of their capital in the market. In bond markets, this often translates to higher prices, lower yields, and greater liquidity. Of course, a contractionary stance from the Federal Reserve would entail a higher reserve requirement, less capital employed in markets, lower bond prices, and higher yields. The Federal Reserve has not majorly changed reserve requirements since March of 2020 so as we evaluate recent changes in the bond markets, we can rule our Reserve requirements as a driver.

Another policy in the FED's tool chest is Open Market Operations. Open Market Operations is a process through which a central bank swaps its currency for securities. In the case of the United States, this currency is money that was not in circulation prior to the operation. Thus, changes in open market operations steer an economy by changing the Monetary Base (or M0 Money Supply). Open Market Operations also influences the broader economy through the securities markets which act as the medium for this policy. It is through this market channel that Open Market Operations can impact bond markets. When the Federal Reserve is in an expansionary mode it will engage in Quantitative Easing where it is a net buyer of securities. Historically, these securities have been primarily Treasury Bonds and Mortgage-Backed Securities (MBS). A number of research papers such as Christensen (2022) and Duffie (2007) have shown that when the Federal Reserve engages in Quantitative Easing (or Quantitative

Tightening) there is a subsequent increase (or decrease) in bond prices, a decrease (or increase) in the liquidity premium, and ultimately a decrease (or increase) in bond yields. However, despite only operating Open Market Operations in only 2 securities markets, this policy can have bleed-through effects, particularly in the Corporate Bond Market (Krishnamurthy and Jorgensen 2011). Over the past three years, there has been a significant pivot in the Federal Reserve's Open Market Operations. Prior to June of 2022, the FED had been engaged in Quantitative Easing for a number of years. However, in June 2022 the FED switched to Quantitative Tightening. In Quantitative Tightening (QT), the FED allows their bonds to "roll off". The term "rolling off" refers to the process of allowing a bond to come to maturity, collecting its interest and principal payments, yet refusing to reinvest and replace the expired bond with a new one. By doing this, the FED slowly reduces the bonds it holds on its balance sheet and subsequently the Monetary Base of the economy. Currently, the FED is allowing for around 95 billion dollars of bond roll-off per month. This breaks down to around $60 Billion in Treasury bonds and $35 Billion in MBS bonds per month (Anstey 2023). The sheer size of the reduction in demand in bond markets as a result of this switch to QT has definitely had a negative impact on prices and a positive one on the liquidity premium and bond yields (particularly in the treasury and MBS markets). Going forward as we analyze potential reasons for changes in the bond market we must remember the pivot in Open Market Operations by the Federal Reserve.

The final primary tool that the Federal Reserve uses is the Federal Funds Rate. The Federal Funds Rate is a rate set by the Federal Reserve on overnight loans to depository institutions from the FED and other depository institutions. These temporary loans are used by depository institutions to cover reserve requirements when they have a temporary increase in liabilities or decrease in reserves. The FED funds rate happens to be the cheapest rate in the United States at which an individual or firm can borrow money. So through this tool, the Federal Reserve is able to change interest rates for the entire country. Thus, this tool has by far the greatest impact on bond markets than any other factor. When the Federal Funds Rate increases, the prices of all bonds must fall and the yields must subsequently increase by at least that degree to follow the new credit environment and justify the higher discount rate used to discount future payments to the present value. In March of 2022, the Federal Reserve began raising the FED funds rate to slow the economy in an effort to combat inflation. According to FRED, the Federal Reserve's database, the FED Funds Rate has increased from near 0 to 5.25-5.5% as of December

2023. When unpacking changes in the bond market, the FED Funds Rate will be a major reason for much of the price and yield movement that has occurred over the past 3 years.

As we have seen, Monetary Policy can have significant effects on the bond market through several unique channels. Two of the three main avenues for this change (Open Market Operations and the FED Funds Rate) have changed over the past 3 years begging the question: "What has happened in bond markets as a result?". However, before we dive into the performance of Bonds over the last 3 years, we must discuss a few other phenomena that have been known to have major implications on bond markets.

(Foreign Holdings of Treasury Bonds)

While the US bond market is primarily influenced by the US economy and the decisions of US government, the policies and performance of other countries outside of the U.S. can still have major impacts on the performance of the US bond market. As we have discussed, Treasuries are considered to be a stable and safe investment vehicle. As a result, foreign governments use US treasury securities to hedge against inflation or exchange rate risks. When other countries decide to buy and hold more U.S. Treasuries, the demand for them within the US market increases. This increase in demand will cause bonds to be set at a higher price with a lower yield. In this way, increases in Foreign holdings of US treasuries can be said to have similar effects as expansionary fiscal and monetary policies out of the US government. Of course, foreign holdings can also influence markets opposite fashion. When foreign countries sell U.S. Treasury bonds, downward pressure is placed on prices in the bond market and subsequently higher yields. Foreign holdings of US treasuries have fluctuated significantly over the past three years. Foreign holdings just reached their highest point in October 2023 since December 2021. Japan holds a disproportionately large share of all outstanding treasury bonds, currently sitting at around 1.1 trillion dollars of the total 7.7 trillion dollars of the U.S. Treasury notes in circulation (Reuters). Japan's holdings of US treasuries have continued to grow since the beginning of the pandemic. China holds a similarly large amount of US Treasuries at around 800 billion dollars worth. However, recently Chinese holdings of the U.S. Treasuries have decreased to their lowest point since 2009 (Reuters). China is unique in its use of US treasuries. China uses this vehicle to dictate and stabilize the exchange rate of Yuan to Dollars in order to keep its export prices low. Recently, China has faced significant currency devaluation in response to its

poor fiscal and monetary policies after COVID-19. This and a broader trend toward decreased reliance on the United States have caused China to continue to sell off treasury bonds placing upward pressure on prices. Despite China's sell-off, foreign holdings of US bonds have continued to grow in recent years contributing to a net increase in US bond prices.

(The Recent Past and Current State of the Bond Market)

Throughout the past three years, the US Treasury bond market has changed significantly. These shifts have largely been in line with changes in monetary and fiscal policy as investors' predictions on the future of the US economy change with changing economic data.

To put it all together, the transformation began with a large shock to the economy in early 2020. At this time, there was a low Federal Funds Rate and positive unemployment rates, which led the wandering eye to believe that the economy was in a positive state. COVID-19 quickly changed not only these positives but the economy as a whole. In order to fight this pandemic, fiscal and monetary policy changes had to be made, ultimately leading to large amounts of government spending. Furthermore, with government spending increasing due to the relief needed from the pandemic, bonds were being issued at a rate higher than ever before. These bonds were being supplied at such a rate that the prices were decreasing, ultimately increasing yields. As a result of this, the interest rate on treasury bonds, for example, took a huge hike purely from changes in fiscal policy. Subsequently reducing the prices of previously issued bonds and raising yields across the board.

Arguably the largest influence in recent the recent performance of the bond market was the Federal Reserve's monetary policy decisions. Even though Reserve Requirements were untouched, Open Market Operations switched from Quantitative Easing to Quantitative Tightening in June of 2022. This put upward pressure on bond yields and downward pressure on bond prices as a result of the reduced demand for newly issued Treasury and MBS bonds. At the same time, the Federal Funds Rate grew from near 0 prior to the pandemic, to over 5.25% between March 2022 and December 2023. This forced interest rates on newly issued bonds to grow at a similar rate and subsequently prices of previously issued bonds to fall by such a degree.

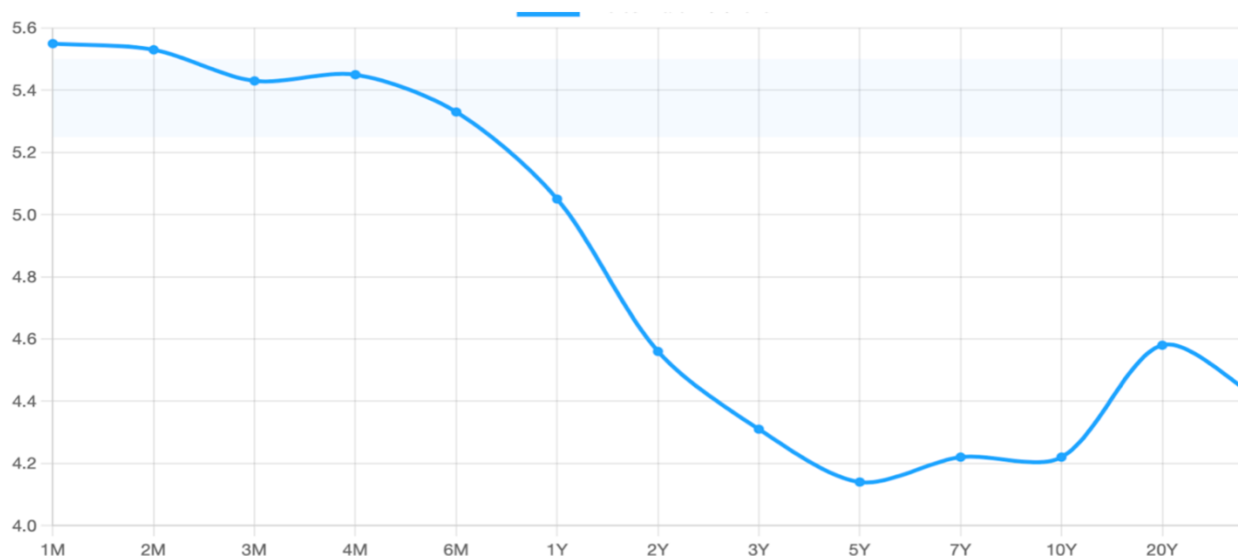
The US bond market has also been influenced significantly by changes in foreign holdings of US Treasuries. Notably, Japan has continued to grow its huge share of outstanding US government debt all whilst China has reduced its position. As a whole, Foreign holdings of

Treasuries have grown placing general upward pressure on bond prices and downward pressure on yields.

With all of these changes being presented, institutional and consumer investors have started to see US Treasury investments as not only a way to diversify their portfolio in a time of great economic distress but also as an opportunity to secure high yields whilst the broader market experiences volatility.

(What are investors betting on going forward?)

As we look into the future, investors are a skeptical over the performance of the US economy. As of December 1st, 2023, the treasury yield curve is downward sloping which is commonly referred to as being inverted. Please refer to the image below for a representation of investor expectations in the Treasury Yield Curve sourced from the USTreasuriesYieldCurve



site. The Y axis denotes the yield of treasury securities and the x axis denotes years. This type of slope on the Treasury Yield Curve is said to be a precursor to a recession because it means that investors are predicting interest rates to fall in the future. As we have learned, the interest payments, price, and yield of a bond is a factor of multiple variables, particularly government policies. If investors are betting on the Federal Reserve to decrease the federal funds rate (which would lead to a decrease in interest rates and yields in bond markets broadly) in the future, then they expect that the economy will need monetary easing in the coming years. So, as we look into the future of lending in the United States, investors are betting on reduced rates in the long term but continued tightness in the short run.

(Conclusion)

In this paper, I have reviewed the primary ways through which fiscal and monetary policy affect access to capital and the subsequent performance of bond markets. As a result of the wildly unique pandemic, there have been many changes in fiscal and monetary policy over the past 3 years. Over this time period, bond performance has been poor over this time period (despite investors' "flight to safety") primarily due to the contractionary monetary policy enacted to counteract the record-breaking inflation that ensued from the expansionary fiscal policy decisions that were made during the pandemic. Looking ahead, I expect bond yields to remain high as the FED continues to battle inflation which remains supported in the longer term by deglobalization trends, global unrest, the energy crisis, and the current divided state of fiscal policy. With that said, the yield curve predicts an eventual return to looser lending conditions as a potential consequence of current policy overtightening.

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