

BOX 1: THE DEGREE OF SPILLOVERS FROM US TREASURIES TO THE EURO AREA GOVERNMENT BOND YIELDS INCLUDING THE MALTESE YIELD CURVE¹

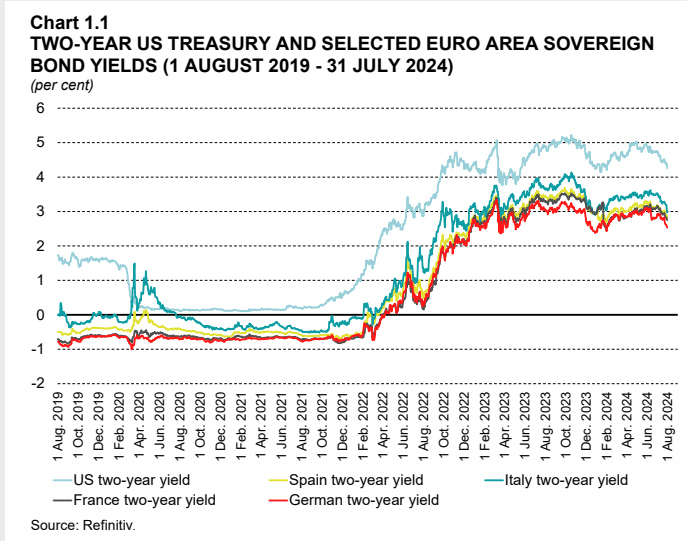
Introduction

This box analyses the extent of spillovers from US Treasury yields to euro area sovereign bond yields, with particular focus on instances of very high and low correlation. It particularly focuses on the relationship between US Treasuries and the German sovereign bond market, with Germany being the benchmark for the euro area countries. Other major euro area government bond markets are also being referred to in this analysis. The indirect spillovers from the US Treasuries to the Maltese government bond yield curve, are also analysed hereunder.

Sovereign bond yield movements are usually driven by several factors. Due to the close interlinkages between markets globally, certain factors influencing yields in one jurisdiction tend to have spillover effects on another country's yields. This box studies the main factors driving the US and selected euro area government bond yields over the five-year period covering 1 August 2019 – 31 July 2024.

Over the period under review, sovereign bond yields were driven by different factors. These include, but are not limited to, the interest-rate decisions taken by major central banks, public comments made by central bank policymakers, the release of economic data and country specific factors.

Charts 1.1, 1.2 and 1.3 clearly show that yield movements across the two, five, and ten-year tenors for the United States and the selected euro area countries (Germany, France, Spain and Italy) moved in the same direction during the period under review. It can also be noted that between Q3 2019 and Q1 2022, the benchmark yields of Germany and other selected euro area countries, were in



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negative territory whereas those in the United States remained positive.

Spillover from US Treasuries to euro area sovereign yields

As shown in Charts 1.1, 1.2 and 1.3, during most of the review period, yields moved in tandem across the two continents. However, there were instances where the path of yields diverged somewhat. This may have been led by factors such as different central bank policies and the prevailing macroeconomic news emerging from the respective jurisdiction.

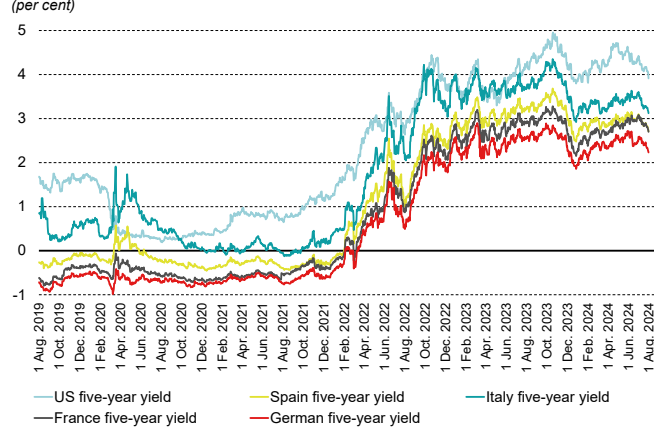
The slowdown in economic activity due to disruptions in supply chains experienced in the euro area in 2021 may have been amongst the region-specific factors that contributed to this divergence in yields. Weak economic conditions led to an accommodative monetary policy by the ECB. Over this period, the ECB kept its three key interest rates at very low levels and intensified its open-market purchases of European sovereign bonds, further supporting bond prices and pressuring yields lower.

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Apart from the adverse economic effects arising from the pandemic, another supply shock hit Europe when it was starting to recover from pandemic-related lockdowns. The Russian invasion of Ukraine brought about disruptions which unleashed cost-push inflation that resembled the 1970s OPEC-led oil crisis.

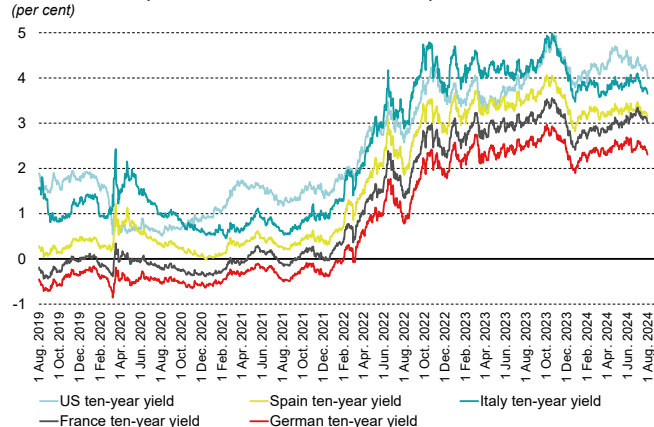
However, the timing of the monetary policy response by the respective central banks in these two jurisdictions was different. The Fed acted earlier than the ECB to try to curb

Chart 1.2
FIVE-YEAR US TREASURY AND SELECTED EURO AREA SOVEREIGN BOND YIELDS (1 AUGUST 2019 - 31 JULY 2024)
(per cent)



Source: Refinitiv.

Chart 1.3
TEN-YEAR US TREASURY AND SELECTED EURO AREA SOVEREIGN BOND YIELDS (1 AUGUST 2019 - 31 JULY 2024)
(per cent)



Source: Refinitiv.

inflation pressures. In fact, the Fed hiked the range of the Fed Funds rate in March 2022, while the ECB acted in July of the same year.²

Against this background, the degree of spillover from yields in the US Treasury bond markets to yields in Eurozone government bond markets, was highest in 2022 as illustrated in Tables 1.1 to 1.4. This strong correlation was particularly evident for Germany, from Q1 2022 onwards,³ as shown in Table 1.5.

Table 1.1
FULL-YEAR CORRELATION STATISTICS

Correlation between the two, five and ten-year yields on the US and DE benchmark bonds (1 August 2019 - 31 July 2024)
Annual data except for 2019 and 2024

	Correlation between two-year US and DE	Correlation between five-year US and DE	Correlation between ten-year US and DE
01/08/2019 - 31/12/2019	0.3833	0.8115	0.8851
2020	0.3819	0.4800	0.5059
2021	0.0467	0.6898	0.8159
2022	0.9586	0.9725	0.9831
2023	0.8481	0.7508	0.7842
01/01/2024 - 31/07/2024	0.8912	0.8308	0.8103

Sources: Refinitiv; Central Bank of Malta staff calculations.

Table 1.2
FULL-YEAR CORRELATION STATISTICS

Correlation between two-year yields of US treasuries and selected euro area bond yields (1 August 2019 - 31 July 2024)
Annual data except for 2019 and 2024

	Correlation between two-year US and DE	Correlation between two-year US and IT	Correlation between two-year US and ES	Correlation between two-year US and FR
01/08/2019 - 31/12/2019	0.3833	0.1245	0.4391	0.3865
2020	0.3819	-0.0885	0.0548	0.1203
2021	0.0467	0.5145	-0.6242	-0.5977
2022	0.9586	0.9576	0.9696	0.9572
2023	0.8481	0.8438	0.9191	0.9272
01/01/2024 - 31/07/2024	0.8912	0.9013	0.9070	0.4268

Sources: Refinitiv; Central Bank of Malta staff calculations.

Table 1.3
FULL-YEAR CORRELATION STATISTICS

Correlation between five-year yields of the US treasuries and selected euro area bond yields (1 August 2019 - 31 July 2024)
Annual data except for 2019 and 2024

	Correlation between five-year US and DE	Correlation between five-year US and IT	Correlation between five-year US and ES	Correlation between five-year US and FR
01/08/2019 - 31/12/2019	0.8115	0.1889	0.8126	0.7624
2020	0.4800	-0.0036	0.0428	0.3242
2021	0.6898	0.5671	0.4147	0.8230
2022	0.9725	0.9754	0.9755	0.9761
2023	0.7508	0.6972	0.8039	0.7823
01/01/2024 - 31/07/2024	0.8308	0.6843	0.7732	0.6798

Sources: Refinitiv; Central Bank of Malta staff calculations.

² The US headline CPI stood at 7.9% y/y in February 2022, whilst that in the Eurozone was 5.8% y/y. Even core inflation was higher in the United States. This justifies the Fed's intervention prior to that of the ECB.

³ The correlation was low only in Q4 2022 during this period.

Table 1.4**FULL-YEAR CORRELATION STATISTICS***Correlation between ten-year yields of US treasuries and selected euro area bond yields (1 August 2019 - 31 July 2024)**Annual data except for 2019 and 2024*

	Correlation between ten-year US and DE	Correlation between ten-year US and IT	Correlation between ten-year US and ES	Correlation between ten-year US and FR
01/08/2019 - 31/12/2019	0.8851	0.2964	0.8293	0.8593
2020	0.5059	-0.0862	-0.1799	0.1385
2021	0.8159	0.5928	0.8221	0.7546
2022	0.9831	0.9687	0.9768	0.9818
2023	0.7842	0.6869	0.7719	0.8035
01/01/2024 - 31/07/2024	0.8103	0.4293	0.6869	0.5436

Sources: Refinitiv; Central Bank of Malta staff calculations.

Table 1.5**QUARTERLY CORRELATION STATISTICS***Correlation between two, five and ten-year yields on the US and DE benchmark bonds (1 August 2019 - 31 July 2024)**Quarterly data*

Period	Correlation between two-year US and DE	Correlation between five-year US and DE	Correlation between ten-year US and DE
01/08/2019 - 31/12/2019	0.3833	0.8115	0.8851
Q1 2020	0.6751	0.4966	0.6971
Q2 2020	0.4933	0.6487	0.7126
Q3 2020	0.5901	0.4941	0.5518
Q4 2020	-0.1016	0.1033	0.1092
Q1 2021	0.3687	0.7405	0.8939
Q2 2021	0.3391	-0.1312	-0.1250
Q3 2021	0.5350	0.7338	0.8375
Q4 2021	-0.0052	0.0810	0.7454
Q1 2022	0.7750	0.9330	0.9594
Q2 2022	0.9037	0.9299	0.9021
Q3 2022	0.9614	0.9755	0.9804
Q4 2022	-0.0044	0.1803	0.6213
Q1 2023	0.9126	0.9460	0.9377
Q2 2023	0.8787	0.7830	0.6668
Q3 2023	0.8909	0.7097	0.8804
Q4 2023	0.9778	0.9751	0.9790
Q1 2024	0.8926	0.8328	0.9062
Q2 2024	0.8289	0.8350	0.4951
01/01/2024 - 31/07/2024	0.8912	0.8308	0.8103

Sources: Refinitiv; Central Bank of Malta staff calculations.

From the beginning of March to end of Q3 2022, the yield on the ten-year US benchmark Treasury note rose by 211 basis points, with the German ten-year Bund yield rising by 218 basis points. The pronounced downward correction in yields in Q1 2024 was likely driven by the shift in market expectations that central banks would soon start cutting rates after an extended period of rate hikes. This broad shift in market participants' expectations likely led to a high correlation between yields in the United States and major euro area sovereign bond markets, especially evident in the two-year tenors.

Moreover, changes in fiscal stances by governments can also affect yields. For instance, in September 2022 the United Kingdom elected a new government and announced an aggressive tax plan. The new tax reduction plan was not substituted by other sources of government revenue. Investors thought that this would weigh on the debt sustainability of the country. Consequently, in October 2022 long-dated UK gilts sold off triggering a spillover to European bond yields.

Other factors which can affect bond yields are specific banking turmoil such as the case of the Silicon Valley bank and Signature bank in March 2023. These two American banks collapsed as they held too much long-term debt in their portfolio. In a rising interest rate environment, these banks held more long-dated than short maturity bonds on their balance sheets. In turn, they both suffered significant losses and failed. In this environment, investors opted for safer securities like government bonds rather than corporate bonds. The higher demand for government bonds led to an increase in their prices and yields falling across the board, both in the United States and in selected euro area government bond markets.⁴

During Q1 2023, the correlation of the two, five and ten-year US and German bond yields was high as shown in Table 1.5 and remained elevated for the rest of the year. This episode, highlighted that the degree of spillover from US bond yields to European peers, remained strong especially during a financially stressful environment, as the safe haven characteristics of markets in both regions dominated.

Moreover, there are cases where other exogenous factors drove yields across both continents. One of these instances, is a change in monetary policy in countries other than the United States. The recent change in the Yield Curve Control policy by the Bank of Japan, impacted yields in the United States and the Eurozone in a similar way.

However, within the euro area, country-specific factors may also limit the correlation between sovereign yields in that country relative to the United States. For instance, political instability triggered by snap elections in countries like Italy (September 2022), Spain (May 2023), and France (July 2024) led to a temporary divergence in the direction of US Treasury yields versus these specific countries. The correlation may also be limited by divergent fiscal paths across these countries, taking into account debt sustainability considerations.

Episodes depicting spillovers from US Treasuries to German sovereign bonds

This section takes the one-year period 31 July 2023 till 31 July 2024 and delves into further detail on the spillover effect from five-year US Treasuries to their euro area counterpart. In this part, episodes that accentuate this spillover effect are examined. It is worth noting that the most significant movements in yields throughout this period can be explained by inflation releases and monetary policy response.

⁴ Credit Suisse also failed during the same period of the collapse of the two American banks. This brought a sharp drop in euro area bond yields due to a plunge in European banking stocks which directed investment flows towards safer assets such as government bonds.

As highlighted in Chart 1.4, until October 2023 the US economy was quite resilient to interest rate hikes adopted by the Fed which cumulatively amounted to 525 basis points.

During the period 31 August – 19 October 2023, US Treasury yields rose significantly. This was mainly due to higher US CPI and retail sales data. In turn, European government bond mar-

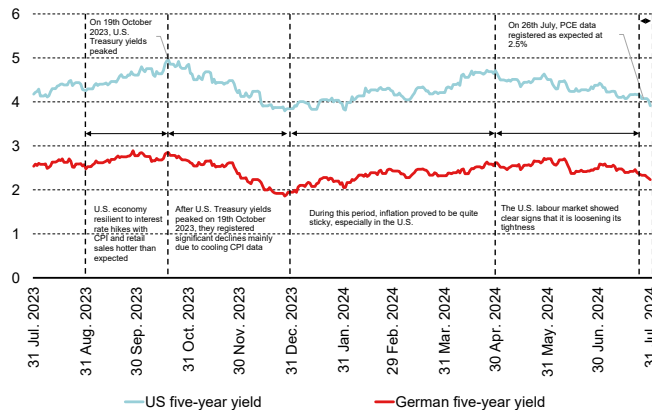
kets also exhibited a rise in yields. In this period, the yield on the five-year US Treasury rose by 70 basis points while that of the German counterpart, increased by 37 basis points.

Between 19 October (when yields peaked) till end December 2023, yields on US government bonds registered significant declines, a move which was triggered by the release of the October 2023 CPI data. This showed that the US CPI remained unchanged from the previous month and that US inflation had possibly peaked. In turn, Fed policymakers' tone turned dovish with markets moving, from pricing in another rate increase, to no further hikes during the two remaining FOMC meetings for 2023. In Europe, however, inflation was also showing signs of easing with the annual consumer price growth slowing in all categories. In November, Germany's HICP stood at 2.3%, the lowest level in more than two years.⁵ Thus, during this interval, the spillover from the US market might have been more limited due to softening of inflationary pressures in the euro area. The yield on the five-year US Treasury declined by 111 basis points while that of the German five-year, declined by 91 basis points during this period.

The following period under review, which is from 1 January till 30 April 2024, inflation figures from the United States turned out to be quite sticky mainly driven by housing rents. On the other hand, in Europe, the headline inflation was stable at 2.4%, year on year. Still, during this period, the yield on the five-year US Treasury rose by 88 basis points whereas that of the German five-year bond, increased by 67 basis points. Thus, the spillover on the European market was quite evident even as inflation remained stable in Europe while that in the United States came in higher for three consecutive months.

Between 1 May and 31 July 2024, the US labour market conditions eased. In the United States, the unemployment rate rose to 4.3% while in Europe, it was at 6.4%. At the same time, euro area inflation ticked up by 0.1%. When comparing the drop in yields of the

Chart 1.4
US AND GERMAN FIVE-YEAR SOVEREIGN BOND YIELDS
(31 JULY 2023 - 31 JULY 2024)
(per cent)



Source: Refinitiv.

⁵ That was down from 3% a month earlier, and from a peak of 11.6% a year before.

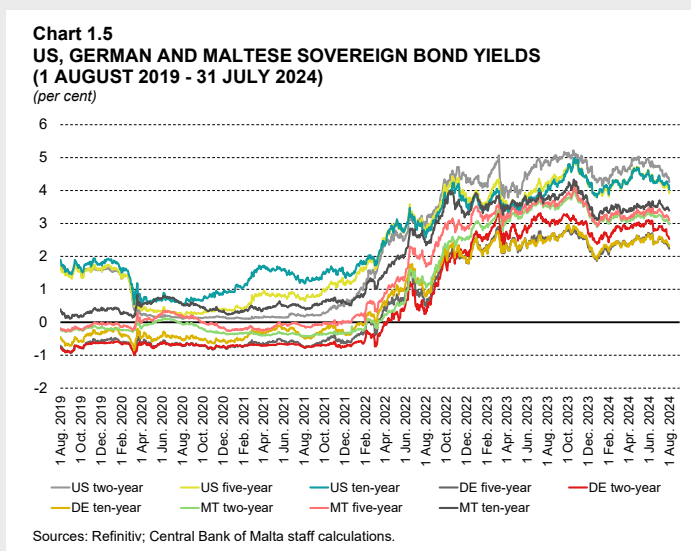
five-year benchmark across the two continents, one can notice again that the magnitude of the decline in yields in the United States was larger when compared to that of the German counterpart, with the former declining by 74 basis points while in the latter dropping by 38 basis points.

Spillover on Maltese sovereign yields

Maltese government bond yields are usually benchmarked against a group of euro area jurisdictions. Hence, it is understandable that spillover effects from the US Treasury market on the German government bond market also indirectly impact the Maltese sovereign yields. Chart 1.5 shows that the Maltese government bond yields⁶ followed their euro area counterparts over the period under review. In fact, Maltese yields dropped during the COVID-19 period, between March 2020 and March 2022. As from May 2022, when major central banks started hiking rates in response to elevated inflation rates, yields followed an upward trend.

Bond yields remained at elevated levels throughout 2023 as central banks continued their aggressive interest-rate hiking policies. The following year, bond yields experienced significant fluctuations, mainly driven by shifting market expectations for policy rate cuts by the Fed and the ECB following weak economic data and mixed inflation readings.

The spillover effect from the US Treasury market to the Maltese sovereign bond market is analysed through the correlation coefficients of the two, five and ten-year benchmark yields of the bund and Maltese government bond yields. Table 1.6, shows the annual correlation coefficients for all benchmark tenors. Results show that the correlation was substantially high during the years under review, except for the year 2020 and some quarters in 2021,⁷ which were comparatively low, as both countries were impacted by an exogenous shock (COVID-19 pandemic). The same pattern was observed in Table 1.7 where quarterly correlation coefficients were computed.



⁶ Two, five, ten-year MT yields are an average of the qualifying two, five, ten-year bonds for each year.

⁷ The Maltese economy is a more open economy than the United States. During this period, it may have been more directly hit by supply chain disruptions.

Table 1.6**FULL-YEAR CORRELATION STATISTICS**

Correlation between the two, five and ten-year yields for the German and MT benchmark bond yields during the period 1 August 2019 - 31 July 2024

Annual data except for 2019 and 2024

	Correlation between two-year DE and MT	Correlation between five-year DE and MT	Correlation between ten-year DE and MT
All years	0.99572664	0.99487501	0.99269990
01/08/2019 - 31/12/2019	0.83635561	0.93793425	0.92313774
03/01/2020 - 31/12/2020	0.35963195	0.39031043	0.40337542
03/01/2021 - 31/12/2021	0.52020031	0.65790602	0.73258974
03/01/2022 - 31/12/2022	0.98637058	0.97968036	0.98019079
03/01/2023 - 31/12/2023	0.85923852	0.87295991	0.94336637
01/01/2024 - 31/07/2024	0.72387914	0.79219300	0.81361860

Source: Central Bank of Malta staff calculations.

TABLE 1.7**QUARTERLY CORRELATION STATISTICS**

Correlation between two, five and ten-year yields on the US and MT benchmark bond yields during the period 1 August 2019 - 31 July 2024

Quarterly data

	Correlation between two-year DE and MT	Correlation between five-year DE and MT	Correlation between ten-year DE and MT
Q1 2020	-0.00656960	0.62347608	0.58615558
Q2 2020	0.15205669	0.19161164	0.23582492
Q3 2020	0.59409673	0.57643006	0.62691025
Q4 2020	0.12187141	-0.02535046	0.28818373
Q1 2021	0.12313379	0.46036355	0.84737795
Q2 2021	0.85881848	0.75845442	0.91554332
Q3 2021	0.89076587	0.93436787	0.89750903
Q4 2021	0.32289616	0.44004870	0.82903837
Q1 2022	0.91651539	0.93690709	0.93737825
Q2 2022	0.96240781	0.96758613	0.97290248
Q3 2022	0.97361183	0.97962623	0.97748965
Q4 2022	0.94875484	0.88927356	0.85114273
Q1 2023	0.87059182	0.79610148	0.78851305
Q2 2023	0.91593320	0.83875999	0.80829819
Q3 2023	0.90510566	0.88798076	0.92259289
Q4 2023	0.97148714	0.98162258	0.98696633
Q1 2024	0.57952747	0.63238517	0.73408331
Q2 2024	0.54310866	0.73863375	0.68890891

Source: Central Bank of Malta staff calculations.

Concluding remarks

Overall, it can be noted that there have been instances when the correlation between US and European bond markets was rather high. This analysis shows that the correlation tends to be greater if central bank policy direction and shocks in both countries are similar. For instance, this was particularly evident during 2022, when central bank policy across major central banks was restrictive in order to try to address high inflation. More recently, expectations for the two major central banks to start their rate cutting cycle have likely re-strengthened the correlation between yields in both regions, particularly in the short end of the yield curve. It is also quite evident that the release of macroeconomic data in the United States can lead to differing degrees of spillovers onto the European government bond market. On the other hand, country idiosyncratic factors such as political instability, banking turmoil and instances of severe market distress may limit the correlation among the jurisdictions examined.