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"IN THE LATE STAGE OF A TIGHTENING CYCLE, THE RISK OF A NON-LINEAR REACTION OF ECONOMIC AGENTS INCREASES. THIS CALLS FOR INCREASED GRADUALISM IN THE FORM OF SMALLER AND LESS FREQUENT RATE HIKES."

ECONOMIC RESEARCH

BNP PARIBAS

The bank for a changing world

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CENTRAL BANKS: HOW MUCH IS TOO MUCH?

The significant and fast paced monetary tightening by major central banks and the prospect that more is to come raise the concern of a monetary 'overkill'. This could happen due to a non-linear reaction of economic agents to an umpteenth rate increase. Several factors can play a role in this respect: negative animal spirits, debt levels and their characteristics, asset valuations, bank lending, capital markets. This calls for increased gradualism and, at some point, taking a pause whilst insisting that this doesn't represent an end to the tightening cycle.

During the press conference following the latest ECB governing council meeting, Christine Lagarde made it very clear that more rate hikes were to follow. Last week, Jerome Powell, speaking to US Congress, explained that it was a *"pretty good guess"* that the Federal Reserve would hike rates twice more this year[1] and the Bank of England surprised markets by a 50 basis points increase in its policy rate. The significant and fast paced monetary tightening and what may still come further raise the question of how much is too much.

What will be the straw that breaks the camel's back? As is often the case, asking the question is easier than answering it. J. Powell used the metaphor of driving a car. When you get closer to your destination, you leave the highway and start using local roads. In doing so, you slow down. However, road conditions and the appropriate speed are easier to assess than the pace of disinflation, which depends on how fast and how much past rate hikes influence demand, employment, pricing decisions etc.

Assessing the warranted tightness of monetary policy -the equivalent of deciding on the speed of the car in Powell's metaphor- is also a challenge. In the past, the Fed Chair has insisted on the need to have positive real interest across the yield curve, but this raises the question of the reference point. In this respect, the neutral rate of interest[2] works in theory but in practice it does not provide a conclusive answer due to the wide range of its estimates. One is left with the obvious conclusion that the bigger the cumulative tightening in a cycle and the higher the level of real interest rates, the bigger the risk that economic agents end up reacting in a disproportionate way to another rate increase.

Why might this ultimately happen? Several factors could trigger such a non-linear reaction (*exhibit 1*). The first one is a sudden drop in confidence, a manifestation of negative animal spirits[3]. This could reflect increased uncertainty of economic agents about the future, given the ever-higher interest rates. Although they may personally not (yet) be financially constrained, this increased uncertainty may lead to a more cautious stance in terms of spending.

A second driver is the debt level and structure of companies and households. A high level of debt that needs to be refinanced can make companies very sensitive to increases in interest rates. Likewise, for households, mortgages with variable rates or with fixed but adjustable rates also create a high sensitivity.

ACCELERATORS OF MONETARY TRANSMISSION

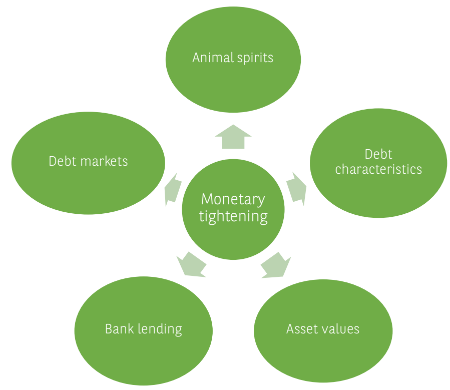


EXHIBIT 1 SOURCE: BNP PARIBAS

In the UK, the Bank of England has calculated that *"around a quarter of the outstanding stock of mortgages are scheduled to reach the end of their fixed-rate term between 2022 Q4 and the end of 2023."*[4] This implies that a considerable part of the impact of past rate hikes still needs to make itself felt. Rate hikes not only weigh on the demand for new mortgages but as time goes by, they also increase the cost of existing mortgages, which reinforces the impact of monetary tightening on the economy[5].

A third channel runs through asset prices. High interest rates reduce *ceteris paribus* the net present value of future cash flows and eventually they should also cause downward revisions of the cash flow projections. These should be gradual phenomena. A jump in the required risk premium due to a drop in confidence about the outlook and a feeling of greater uncertainty amongst investors, is a more likely candidate for a sudden, non-linear reaction[6].

Such a development may weigh on spending through a wealth effect. In addition, the value of an asset as loan collateral declines, which may reduce the access to credit. Such a phenomenon is part of the fourth channel, that of bank lending. Loan conditions may be tightened because of the decline in the collateral value -a process also known as

1 Source: Key takeaways from Fed Chair Powell's testimony, CNN, 21 June 2023.
2 The neutral rate is the official interest rate at which the stance of monetary policy is neither accommodative nor restrictive. "It is the short-term real interest rate consistent with the economy maintaining full employment with associated price stability." Source: Robert Kaplan, The neutral rate of interest, Federal Reserve Bank of Dallas, 24 October 2018.
3 J.M. Keynes referred to animal spirits as "a spontaneous urge to action" whereby decisions are not "the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities". Source: George A. Akerlof and Robert J. Shiller, Animal Spirits, Princeton University Press, 2009.
4 Bank of England, Monetary policy report, November 2022.
5 The Institute for Fiscal Studies, a British independent economics research institute, has calculated that if mortgage rates stay at their current level, 1.4 million UK households could, due to the reset of the rate on their mortgage, see a reduction of 20% of their disposable income -after paying the interest charges on their mortgage- compared to their situation in March 2022. Source: Tom Waters and Thomas Wernham, Interest rate hikes could see 1.4 million people lose 20% of their disposable income, Institute for Fiscal Studies, 21 June 2023.
6 For a detailed description see William De Vijlder, How the willingness to take risk can evaporate, Ecoweek, BNP Paribas, 28 July 2017.

the financial accelerator- or simply because banks worry more about the economic outlook and the associated risk to their loan book. Finally, higher policy rates may raise the risk aversion of investors and trigger an increase in corporate debt yields and/or reduce the access to debt capital markets by companies.

These multiple factors remind us of the delicate task faced by central banks in the late stage of a tightening cycle. They do not mean that central banks should start taking risk with inflation and stop raising rates, but they do call for increased gradualism in the form of smaller and less frequent increases. This will allow to monitor how the economy reacts, whilst reducing the risk of raising rates too much. Insisting that a pause does not mean that the tightening cycle has ended should help in avoiding that inflation expectations start to drift higher in reaction to increased central bank caution.

William De Vijlder

In the late stage of a tightening cycle, the risk of a non-linear reaction of economic agents increases. This calls for increased gradualism in the form of smaller and less frequent rate hikes.

MARKETS OVERVIEW

OVERVIEW

Week 16-6 23 to 23-6-23					
↘ CAC 40	7 389	▸	7 163	-3.0	%
↘ S&P 500	4 410	▸	4 348	-1.4	%
↘ Volatility (VIX)	13.5	▸	13.4	-0.1	pb
↗ Euribor 3M (%)	3.57	▸	3.61	+3.8	bp
↗ Libor $ 3M (%)	5.51	▸	5.54	+3.4	bp
↘ OAT 10y (%)	2.93	▸	2.85	-7.9	bp
↘ Bund 10y (%)	2.46	▸	2.35	-10.6	bp
↘ US Tr. 10y (%)	3.77	▸	3.74	-2.5	bp
↘ Euro vs dollar	1.09	▸	1.09	-0.4	%
↘ Gold (ounce, $)	1 959	▸	1 924	-1.8	%
↘ Oil (Brent, $)	76.7	▸	73.9	-3.6	%

MONEY & BOND MARKETS

Interest Rates		highest 23			lowest 23		
€ ECB	4.00	4.00	at	21/06	2.50	at	02/01
Eonia	-0.51	-0.51	at	02/01	-0.51	at	02/01
Euribor 3M	3.61	3.61	at	23/06	2.16	at	02/01
Euribor 12M	4.15	4.15	at	23/06	3.30	at	19/01
$ FED	5.25	5.25	at	04/05	4.50	at	02/01
Libor 3M	5.54	5.56	at	12/06	4.77	at	02/01
Libor 12M	5.93	5.93	at	23/06	4.70	at	20/03
£ BoE	5.00	5.00	at	22/06	3.50	at	02/01
Libor 3M	5.34	5.34	at	23/06	3.87	at	02/01
Libor 12M	0.81	0.81	at	02/01	0.81	at	02/01

At 23-6-23

Yield (%)		highest 23			lowest 23		
€ AVG 5-7y	2.64	2.64	at	02/01	2.64	at	02/01
Bund 2y	3.24	3.36	at	08/03	2.39	at	20/03
Bund 10y	2.35	2.75	at	02/03	1.98	at	18/01
OAT 10y	2.85	3.23	at	03/03	2.42	at	18/01
Corp. BBB	4.56	4.75	at	03/03	3.95	at	02/02
$ Treas. 2y	4.75	5.12	at	08/03	3.85	at	04/05
Treas. 10y	3.74	4.06	at	02/03	3.30	at	06/04
High Yield	8.86	9.16	at	20/03	7.94	at	02/02
£ gilt. 2y	5.16	5.16	at	23/06	3.15	at	02/02
gilt. 10y	4.32	4.49	at	19/06	3.00	at	02/02

At 23-6-23

EXCHANGE RATES

1€ =		highest 23			lowest 23			2023
USD	1.09	1.11	at	03/05	1.05	at	05/01	+2.0%
GBP	0.86	0.90	at	03/02	0.85	at	16/06	-3.5%
CHF	0.98	1.00	at	24/01	0.97	at	29/05	-1.0%
JPY	156.43	156.49	at	22/06	138.02	at	03/01	+11.1%
AUD	1.63	1.67	at	26/04	1.53	at	27/01	+3.6%
CNY	7.83	7.88	at	22/06	7.23	at	05/01	+5.5%
BRL	5.20	5.79	at	04/01	5.20	at	23/06	-7.8%
RUB	92.09	92.37	at	20/06	73.32	at	12/01	+18.2%
INR	89.28	90.45	at	03/05	86.58	at	08/03	+1.1%

At 23-6-23 *Change*

COMMODITIES

Spot price, $		highest 23			lowest 23			2023	2023(€)
Oil, Brent	73.9	88.2	at	23/01	71.9	at	12/06	-13.0%	-14.6%
Gold (ounce)	1 924	2 047	at	04/05	1 810	at	24/02	+6.0%	+3.9%
Metals, LMEX	3 720	4 404	at	26/01	3 564	at	24/05	-6.6%	-8.4%
Copper (ton)	8 409	9 331	at	23/01	7 852	at	24/05	+0.5%	-1.4%
wheat (ton)	272	2.9	at	13/02	216	at	30/05	-4.8%	-6.6%
Corn (ton)	251	2.7	at	13/02	225	at	19/05	-0.4%	-5.5%

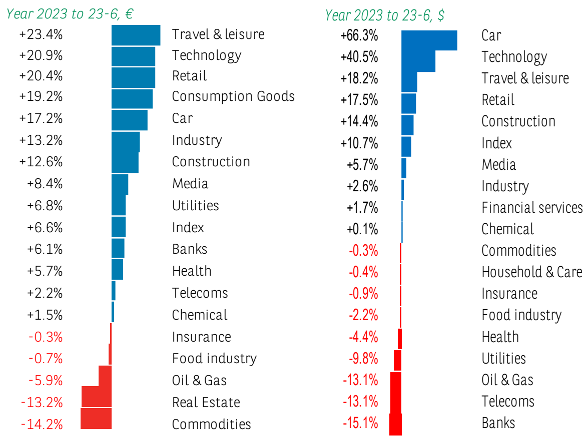
At 23-6-23 *Change*

EQUITY INDICES

	Index	highest 23			lowest 23			2023
World								
MSCI World	2 902	2 966	at	15/06	2 595	at	05/01	+11.5%
North America								
S&P500	4 348	4 426	at	15/06	3 808	at	05/01	+13.3%
Europe								
EuroStoxx50	4 272	4 409	at	21/04	3 856	at	02/01	+12.6%
CAC 40	7 163	7 577	at	21/04	6 595	at	02/01	+1.1%
DAX 30	15 830	16 358	at	16/06	14 069	at	02/01	+13.7%
IBEX 35	9 266	9 511	at	06/03	8 370	at	02/01	+1.3%
FTSE100	7 462	8 014	at	20/02	7 335	at	17/03	+0.0%
Asia								
MSCI, loc.	1 203	1 228	at	16/06	1 065	at	04/01	+1.3%
Nikkei	32 782	33 706	at	16/06	25 717	at	04/01	+25.6%
Emerging								
MSCI Emerging ($)	992	1 052	at	26/01	941	at	16/03	+0.4%
China	60	75	at	27/01	58	at	31/05	-5.4%
India	785	797	at	21/06	703	at	16/03	+0.9%
Brazil	1 665	1 691	at	21/06	1 296	at	23/03	+3.3%

At 23-6-23 *Change*

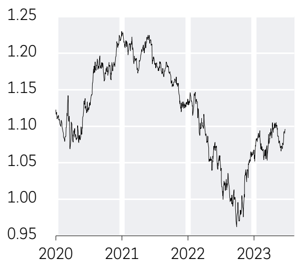
PERFORMANCE BY SECTOR (Eurostoxx50 & S&P500)



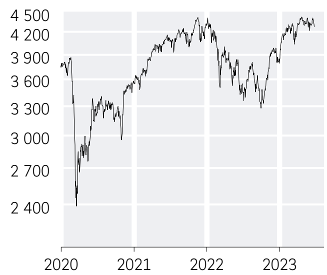
SOURCE: REFINITIV, BNP PARIBAS

MARKETS OVERVIEW

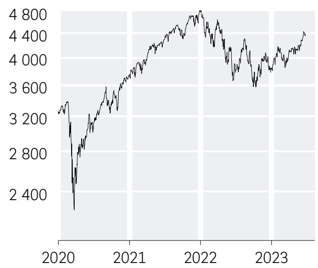
EURO-DOLLAR



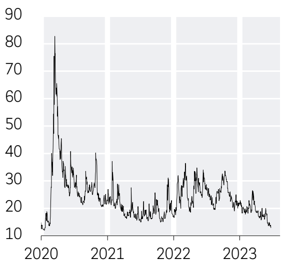
EUROSTOXX50



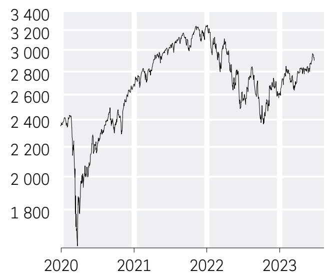
S&P500



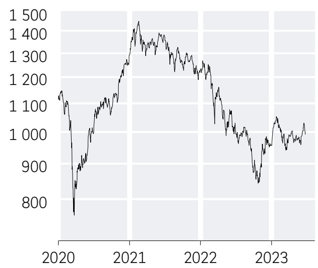
VOLATILITY (VIX, S&P500)



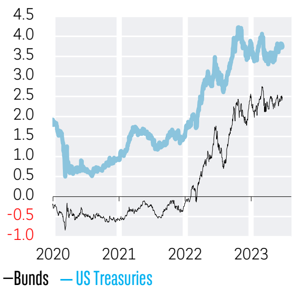
MSCI WORLD (USD)



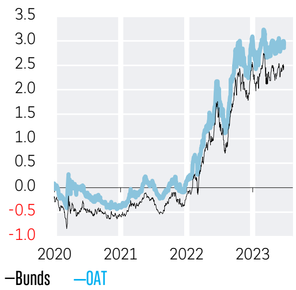
MSCI EMERGING (USD)



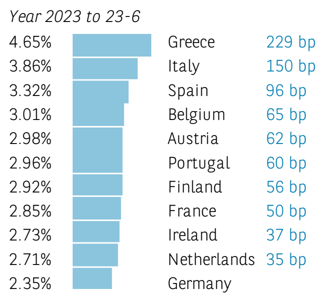
10Y BOND YIELD, TREASURIES VS BUND



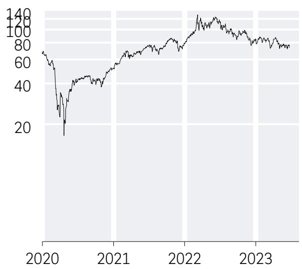
10Y BOND YIELD



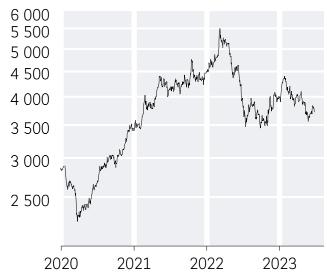
10Y BOND YIELD & SPREADS



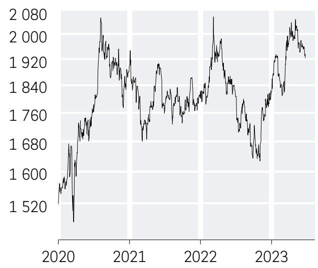
OIL (BRENT, USD)



METALS (LMEX, USD)



GOLD (OUNCE, USD)



SOURCE: REFINITIV, BNP PARIBAS

INTERNATIONAL TRADE: THE SUPPLY SHOCK RECEDES, BUT NEW RISKS EMERGE

Global export volumes fell sharply in April, a fairly logical correction after the strong growth in the previous month, linked in particular to the catch-up effects subsequent to the end of the lockdown in China (Chart 1). According to the CPB[1], Chinese exports fell by 6.4% m/m (they still rose on a three-month moving average basis), as they did for the rest of the Asian emerging markets (-6.8% m/m), the United States (-5.9% m/m) and Latin America (-6.9% m/m). Eurozone exports fell less sharply (-1.9% m/m) but have been trending lower since last autumn (-6.0% compared to September 2022).

The New York Federal Reserve's global supply chain pressure index (GSCPI) fell again in May to its lowest-ever level (Chart 3). The PMI on delivery times (which is included in the calculation of the aggregated GSCPI) indicated a significant reduction in goods shipment times in May and for the thirteenth consecutive month (Chart 6). The trend is widespread across all industrial sectors covered by Markit's survey.

The strong pressures exerted on global supply chains in recent years have had a significant but difficult-to-quantify impact on production costs with a repercussion on consumer prices. A recent study by the Federal Reserve Bank of San Francisco[2] has attempted to quantify these effects on the US deflator (PCE), based on changes in the GSCPI. The authors conclude that between April 2021 and March 2023, pressures on global logistics explain *"on average 60% of the rise above the trend in overall inflation [2%]"* but that its contribution has gradually declined for several months. This reinforces the observation that US inflation is now driven mainly by demand[3].

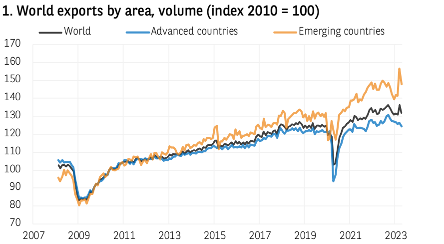
While the unprecedented disruption phase of the last two years has largely dissipated, new risks, particularly linked to climate change, are emerging more clearly and are expected to increase over the years. The record drought in Central America, which disrupts container traffic in the Panama Canal, is just one of many events that illustrates the growing scale of global warming affecting the global economy[4].

Guillaume Derrien

1 Netherlands Bureau for Economic Policy Analysis.
2 Liu Z. and T.L. Nguyen, Global Supply Chain Pressures and U.S. Inflation, FRBSF Economic Letter, 20 June 2023.
3 H. Baudchon, Eurozone and the United States: where does inflation come from? BNP Paribas Ecoweek, 6 June 2023
4 See The Fed's Inflation Fight Faces a New Challenge: A Dry Panama Canal, Bloomberg, 2 June 2023

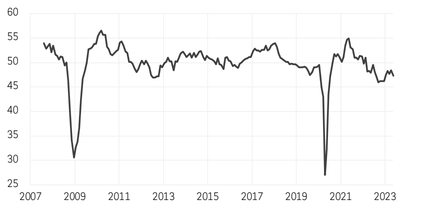
GLOBAL TRADE INDICATORS

1. World exports by area, volume (index 2010 = 100)



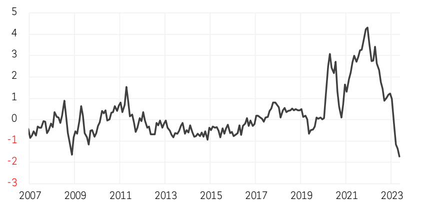
Source: CPB, BNP Paribas

2. Global manufacturing PMI, new export orders



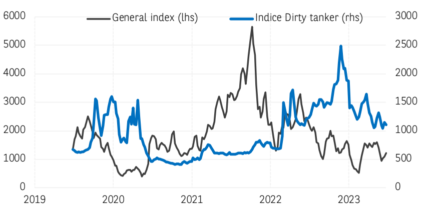
S&P Global (Markit), BNP Paribas

3. Global supply-chain pressures index



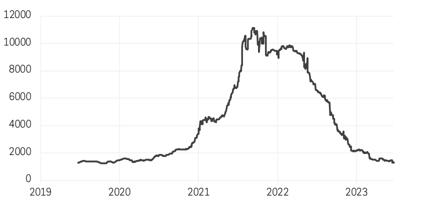
Source: Federal Reserve of New York

4. Baltic Exchange Dry Index



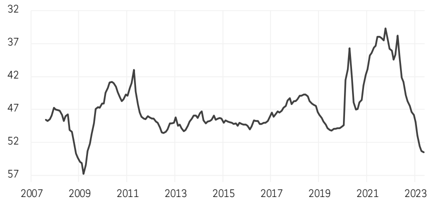
Source: Baltic Exchange, BNP Paribas

5. Freight rate index



Source: Freightos, BNP Paribas

6. Global manufacturing PMI, delivery times (Inverted line)



S&P Global (Markit), BNP Paribas

ECONOMIC SCENARIO

UNITED STATES

After a strong second half of 2022 (+0.7% q/q on average per quarter), US growth slowed sharply in Q1 2023 (+0.3% q/q). The growth breakdown allows us to put the weakness of the figure into perspective (this is mainly due to the very negative contribution of changes in inventories). The impact of the tighter monetary policy on activity and employment growth was still contained in Q2, leading us to upwardly revise our near-term growth forecasts (Q2 growth a little more positive, Q3 a bit less negative). While the peak in inflation was reached in mid-2022, core disinflation remains gradual in such a way that headline inflation should stay significantly above the target of 2% by the end of 2023. The ongoing monetary tightening is expected to drive the US economy into recession in the second half of 2023 and limit the expected recovery in 2024.

CHINA

Economic growth, which was sluggish and unbalanced in 2022, is accelerating in 2023. The end of the zero Covid policy has led to a rebound in private demand and activity in the services sector since late January, with household consumption benefiting from catch-up effects. However, the post-Covid is losing momentum surprisingly rapidly. Households remain prudent, as they are notably worried by the uncertain recovery in the labor market. The crisis in the property sector is persisting. Moreover, export and industrial production prospects are darkened by global demand weakness and tensions with the US. The government and the central bank should implement new policy stimulus measures, but they are likely to remain careful. In particular, the worrying financial situation of local governments should constrain public investment.

EUROZONE

The euro zone fell back into technical recession in the first quarter of 2023. Initially estimated at +0.1% q/q, growth in the euro zone in Q1 2023 has been revised to -0.1% (after a decline of same magnitude in Q4 2022). This downward revision to growth was driven by Germany. A technical rebound is expected in Q2 but, after that, the build-up of the negative effects of monetary tightening would cause growth to fall back. After three quarters of stagnation, a limited recovery would follow. Although it is expected to decline throughout 2023, inflation would remain elevated and well above the 2% target at the end of this year and still a bit above at the end of 2024, forcing monetary policy to remain in restrictive territory.

FRANCE

Real GDP growth increased in Q1 2023 (0.2% q/q in Q1, after 0% in Q4 2022) driven by transport equipment's exports. However, household demand has played on the downside: household consumption stabilized (+0.1% q/q) in Q1 after -1% q/q in Q4 2022 whereas their investment decreased by 2.3% q/q in Q1 (after -1.2% in Q4). As inflation is still high (with a peak of 7.3% y/y in February 2023 according to the harmonized measure) and because of rising interest rates, household demand should remain subdued in 2023, weighing on our GDP growth forecast (0.5% in 2023, compared to 2.5% in 2022).

RATES AND EXCHANGE RATES

In the US, the Federal Reserve skipped the June meeting but we expect one last hike at the July meeting given continued high core inflation and a resilient labour market. The slow pace of disinflation argues against a rate cut before the beginning of 2024, despite the US economy entering recession in the second half of 2023.The peak in long-term yields is likely to have been reached. Bond yields should subsequently move lower as the inflation outlook improves and the market starts anticipating monetary policy easing in 2024.

The ECB hiked again at its June meeting and more is to come. While core inflation shows encouraging signs of easing in April and May, it is not yet sufficient to end the tightening cycle. We expect a terminal rate for the deposit rate at 4.00%. As part of its monetary tightening, the ECB also announced a complete halt, starting in July 2023, of its reinvestments under the APP. European long-term rates probably have peaked and should move lower, driven by both a gradual decline in inflation in the eurozone and lower US yields.

In December 2022, the Bank of Japan increased the upper end of its target range for the 10-year JGB yield to 0.5%. Further adjustments to the yield curve control policy cannot be excluded, given that the country currently faces the fastest rate of inflation since the early 1990s. Nevertheless, we do not expect the BoJ to proceed with a rate hike.

We expect the dollar to weaken somewhat versus the euro. The dollar's valuation is expensive, positioning in the market is very long and the long-term interest rate differential should narrow. We expect the yen to remain around current levels in the near term before strengthening versus the dollar considering that the federal funds rate should have reached its terminal rate.

GDP GROWTH AND INFLATION

	GDP Growth*				Inflation**			
%	2021	2022	2023 e	2024 e	2021	2022	2023 e	2024 e
United-States	5.9	2.1	1.3	-0.1	4.7	8.0	4.2	2.4
Japan	2.2	1.0	1.5	1.0	-0.2	2.5	3.1	1.7
United-Kingdom	7.6	4.1	0.4	0.7	2.6	9.1	7.4	2.3
Euro Area	5.3	3.5	0.4	0.6	2.6	8.4	5.3	2.7
Germany	2.6	1.9	-0.4	0.5	3.2	8.7	5.7	2.4
France	6.8	2.6	0.5	0.6	2.1	5.9	5.6	2.6
Italy	7.0	3.8	1.1	0.7	1.9	8.7	6.0	2.3
Spain	5.5	5.5	1.8	0.8	3.0	8.3	2.8	2.2
China	8.4	3.0	5.6	5.3	0.9	2.0	2.7	2.5
India***	8.7	7.0	5.7	6.0	5.5	6.7	5.4	4.5
Brazil	5.0	2.9	2.5	0.5	8.3	9.3	4.7	4.0

Source : BNP Paribas (e: Estimates & forecasts)

* Last update 8 June 2023: GDP Japan, Last update 2 June 2023: GDP US and Brazil, last update 17 May 2023: GDP UK and Japan, last update 21 May 2023: GDP Germany

** Last update 22 June 2023: inflation UK, Last update 16 June 2023: inflation US and Brazil, Last update 2 June 2023: inflation Euozone, Germany, France, Italy, Spain, US and Brazil

** Fiscal year from 1st April of year n to March 31st of year n+1

INTEREST AND EXCHANGE RATES

Interest rates, % End of period		Q2 2023	Q3 2023	Q4 2023	Q4 2024
US	Fed Funds (upper limit)*	5.25	5.50	5.50	3.75
	T-Note 10y **	3.90	3.90	3.85	3.55
Eurozone	deposit rate*	3.50	4.00	4.00	3.00
	Bund 10y **	2.60	2.45	2.20	2.00
	OAT 10y	3.15	3.00	2.72	2.50
	BTP 10y	4.60	4.70	4.45	3.80
	BONO 10y	3.60	3.55	3.30	2.90
UK	Base rate*	5.00	5.75	5.75	4.00
	Gilts 10y **	4.50	4.40	4.25	3.80
Japan	BoJ Rate	-0.10	-0.10	-0.10	0.10
	JGB 10y**	0.45	0.50	0.65	0.80

Exchange Rates End of period		Q2 2023	Q3 2023	Q4 2023	Q4 2024
USD	EUR / USD	1.10	1.10	1.12	1.18
	USD / JPY	133	133	130	123
	GBP / USD	1.24	1.25	1.27	1.34
EUR	EUR / GBP	0.89	0.88	0.88	0.88
	EUR / JPY	146	146	146	145

Brent End of period		Q2 2023	Q3 2023	Q4 2023	Q4 2024
Brent	USD/bbl	85	83	90	95

Sources: BNP Paribas (Market Economics, Interest Rate Strategy, FX Strategy, Commodities Desk Strategy)

* Deposit rate: Last update at 27 April 2023, Fed Funds : 2 June 2023, BoE rate: 22 June 2023

** Bund 10y: last update at 3 May 2023, Gilts 10y: 15 June 2023, JGB 10y: 22 June, US 10y: 5 June 2023

FURTHER READING

EcoPulse of June	EcoPulse	26 June 2023
A slow business cycle	EcoTVWeek	22 June 2023
Spain: bank deposit rates continue to rise	Chart of the Week	22 June 2023
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