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Europe's Coming Deflation

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Introduction and Overview

- The variety of experiences in Europe during the recent inflation episode from early 2021 to June 2023 invites comment on the sources, policies adopted, and different outcomes across different countries.
- The standard narrative is that supply chain disruptions and the Ukraine war were the major factors behind the inflation. In fact, the surge in **producer prices** was very little impacted by the start of the war.
- For **consumer prices**, whose rise lagged producer prices and their peak by an average of 4 months, the supply chain disruptions and the Ukraine war may help explain the timing of some rises but were not the ultimate source.
- In all cases it was the prior increase of broad money growth that laid the foundation for the subsequent surge in inflation.
- The relative magnitudes of the inflation rates in Europe display considerable diversity for a variety of reasons. The simple unweighted mean of the PPI peaks was 32.9% and the unweighted mean of the CPI peaks was 13.2%.
- The data demonstrates that inflation is not some random phenomenon produced by unanticipated (or "exogenous") shocks – as the central bankers would have us believe. Instead, it is systematically related to prior rates of money growth across the continent, although with long and variable lags.
- An important principle is that at low levels of money growth or inflation the noise-to-signal ratio is high, whereas at high levels of money growth or inflation the reverse is true. These ideas are applied to Switzerland and Norway.
- Looking forward, the sharp slowdowns of broad money growth across the European region are pointing to a steep decline of inflation in the remainder of 2023, with more to follow in 2024 and 2025 – i.e., particularly at the 18- to 24-month time horizon for the typical lag-in-effect between broad money growth (which has yet to bottom out) and inflation.

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1. Introduction: an overview of the recent episode of inflation.

Figure 1. Table of European Inflation Rates.

	Peak Inflation Rates (% YOY)				PPI-->CPI	Latest (Jun-23)	
	PPI Peak	Date	CPI Peak	Date	Lag in months	PPI	CPI
Austria	22.2%	Sep-22	11.2%	Jan-23	4	0.8%	8.0%
Belgium	40.6%	Apr-22	12.3%	Oct-22	6	-8.4%	4.1%
Bulgaria*	56.0%	Sep-22	18.7%	Sep-22	0	-10.9%	8.7%
Croatia	23.8%	Jun-22	13.5%	Nov-22	5	9.2%	7.6%
Cyprus	28.9%	Jul-22	10.9%	Jul-22	0	4.6%	1.9%
Czech Rep	28.5%	Jun-22	18.0%	Sep-22	3	1.9%	9.7%
Estonia	33.7%	May-22	24.8%	Aug-22	3	-1.9%	9.2%
France	29.7%	Aug-22	6.3%	Feb-23	6	3.0%	4.3%
Finland	32.5%	Jun-22	9.1%	Nov-22	5	-9.5%	6.3%
Denmark	37.6%	Apr-22	10.0%	Sep-22	5	-2.3%	2.5%
Germany	45.8%	Aug-22	8.8%	Nov-22	3	0.1%	6.2%
Greece	48.8%	Mar-22	12.1%	Jun-22	3	-11.7%	1.8%
Hungary*	42.8%	Aug-22	25.7%	Jan-23	5	5.7%	20.1%
Italy	39.6%	Jul-22	11.7%	Oct-22	3	-3.8%	7.4%
Ireland	8.0%	Oct-22	9.2%	Oct-22	0	-0.6%	6.1%
Latvia	37.7%	Aug-22	22.1%	Sep-22	1	0.4%	7.9%
Lithuania	33.7%	Jun-22	24.1%	Sep-22	3	-9.4%	9.0%
Luxembourg	32.8%	May-22	7.4%	Jun-22	1	-4.0%	3.2%
Malta	7.5%	Dec-21	7.5%	Sep-22	9	4.0%	5.4%
Netherlands	28.2%	Jun-22	14.5%	Sep-22	3	-5.9%	5.7%
Norway	79.4%	Mar-22	7.5%	Oct-22	7	-28.5%	6.4%
Poland*	25.5%	Jun-22	19.1%	Feb-23	8	0.4%	11.5%
Portugal	26.6%	Mar-22	10.1%	Oct-22	7	-5.8%	3.4%
Romania*	53.0%	Aug-22	16.4%	Nov-22	3	3.8%	10.3%
Serbia*	17.7%	Jun-22	16.1%	Feb-23	8	1.3%	13.7%
Slovakia	35.8%	Sep-22	15.4%	Dec-22	3	6.5%	10.9%
Slovenia	25.7%	May-22	11.0%	Aug-22	3	7.3%	6.9%
Spain	43.9%	Jun-22	10.1%	Sep-22	3	-6.5%	3.1%
Sweden*	25.6%	Jun-22	12.3%	Dec-22	6	-3.1%	9.3%
Switzerland*	4.5%	Apr-22	3.4%	Jul-22	3	1.7%	1.7%
UK*	24.3%	Jun-22	11.1%	Oct-22	4	-2.8%	8.0%

**Countries which are not members of the euro-area.*

The variety of experiences in Europe during the recent inflation episode from the onset of Covid-19 in early 2020 and June 2023 invites comment on the sources, policies adopted, and different outcomes across different countries. In this article I have chosen to do this for Europe as a whole – for both eurozone members and non-

members – since the combination of homogeneity and heterogeneity of the selected economies permits us to draw some meaningful policy conclusions.

2. Observations on the inflation record across Europe.

As can be readily seen in the table in Figure 1, the peak of inflation came one and a half to two years after the start of the anti-Covid monetary and fiscal measures taken by central banks and governments across Europe, starting in March 2020.

2.1 Timing or Lags in Effect

Producer prices. The earliest peak in producer prices came in Malta in December 2021 (21 months after the start of Covid in March 2020). However, this peak was exceptionally low (only 7.5%). Among other economies seeing an early peak in their PPI inflation rates were Greece and Portugal (both March 2022, 24 months later) followed by Belgium and Switzerland (April 2022, 25 months later). It is notable that the Maltese peak preceded the start of the war in Ukraine (February 2022), whereas the peaks for Greece, Portugal, Belgium, and Switzerland all came immediately after the start of the war, and therefore could have significantly reflected the oil and food price increases caused by Putin's invasion of Ukraine.

In fact, the peak in producer prices was very little impacted by the start of the war. Checking the data for the same economies in January 2022 – before the outbreak of war in Ukraine – the PPI in Greece was already up 31.6% on the preceding year, and similarly for Portugal (18.1%), and Belgium (37.8%). In short, the inflation had been generated and was well under way long before the start of the war in Ukraine in February 2022.

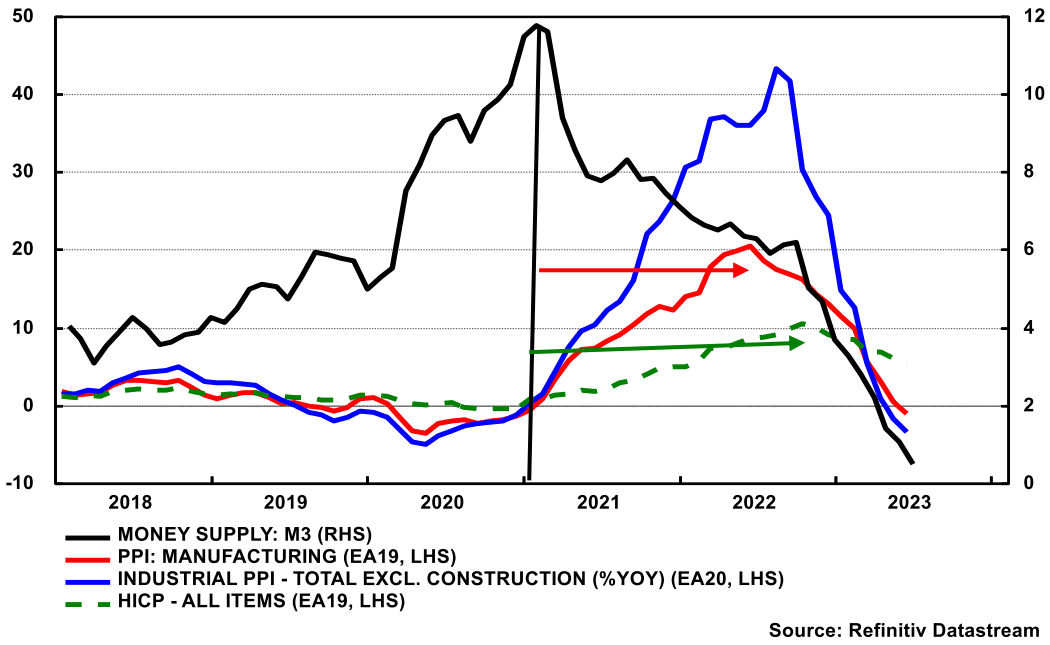
For **consumer prices**, the lags were a little longer, as one would expect, with the peak inflation rates (again measured as percentage year-on-year changes) coming on average 4 months after the peak in producer prices. The shortest time lags between **the start of the Covid pandemic** (not the peak of money growth) and the CPI peak were Greece and Luxembourg (June 2022, or 27 months) while the longest lags were in Austria (January 2023, 34 months) and Serbia (February 2023, 35 months).

Again, we may ask the same question: to what extent were CPI increases a result of the unanticipated shock of the war starting in February 2022? Checking the data for the economies mentioned in the previous paragraph, in Greece the CPI was already at 6.2% year-on-year by January 2022, in Luxembourg it had already reached 3.6% (jumping to 6.6% in February), in Austria it was 5.0%, and in Serbia it was 8.3%. In short, the inflation was well under way before the war even started.

In all cases it was the prior increase in broad money growth that laid the foundation for the subsequent surge in inflation. We can see this very clearly in Figure 2 (PTO) which shows the year-on year increases of euro-area M3, together with the PPI and CPI for the region as a whole. Instead of measuring from the onset of Covid but measuring **from the peak of M3 growth** at 11.8% in January 2021 to the 20.6% peak of the PPI for manufacturing in June 2022, the time lag was 17 months (as

shown by the red arrow), very much in line with what one would expect from monetary theory.

Figure 2. The Lags Between Eurozone M3 and PPI and CPI Inflation.



Source: Refinitiv Datastream

Similarly, the lag in effect between the peak of M3 growth and the 10.6% peak in the CPI in October 2022 (as shown by the green arrow) was 21 months – again exactly in line with what one would expect from monetary theory.

2.2 Magnitude of Price Increases

Next, we will look at the relative magnitudes of the inflation rates across Europe. Here again there was considerable diversity for a variety of reasons. Based on the data in Figure 1, the simple unweighted mean of the PPI peaks was 32.9% in June 2022 (Figure 3) and the unweighted mean of the CPI peaks was 13.2% in October.

Figure 3. Average Peak Inflation Rates and Latest Rates.

	Peak Inflation Rates (% YOY)				PPI→CPI	Latest (Jun-2023)	
	PPI Peak	Mean Month	CPI Peak	Mean Month	Av Lag in months	PPI	CPI
Simple Means	32.9%	Jun-22	13.2%	Oct-22	4.0	-2.1%	7.1%

Producer prices. Looking at the same data by country, the highest PPI inflation rate was recorded by Norway (79.4%), followed by Bulgaria (56.0%) and Romania (53.0%). In the case of Norway this almost certainly reflects the very large weight of energy products in its PPI (68.03%)[1] since Norway is an oil-producer. Bulgaria and Romania are not euro-area member countries, although the Bulgarian lev is fixed to

[1] See Statistics Norway, Producer Price Index.

the euro by a currency board system. The National Bank of Romania describes its exchange rate regime for the Romanian leu as a "managed float".

The lowest peak rates of increase in the PPI were recorded by Switzerland (4.5%) and Ireland (8.0%).

Consumer Prices. The highest rates of year-on-year CPI inflation were seen in Hungary (25.7% in January 2023), closely followed by Estonia (24.8% in August 2022) and Lithuania (24.1% in September 2022).

The lowest peak rates of inflation were in Switzerland (3.4% in April 2022), France (6.3% in February 2023), Malta and Norway (both 7.5% in September and October 2022 respectively), and Germany (8.8% in November 2022).

On average the lag between the PPI peaks and the CPI peaks was 4 months.

The latest data show clear signs that inflation is falling both at PPI and CPI levels. As shown in Figure 3, the average change among European PPIs for June was -2.1% year-on-year, down from the average peak of 32.9%, while the average change among CPIs was 7.1%, down from the average peak of 13.2%.

All this data demonstrates that inflation is not some random phenomenon produced by unanticipated (or "exogenous") shocks – as the central bankers would have us believe – but has been systematically related to prior rates of money growth across the continent, although with long and variable lags.

3. Measurement Differences in PPI and CPI Data

It goes without saying that individual countries have idiosyncratic features that cause their reported inflation rates to differ. Among the important differences that have contributed to different inflation rates in different countries are the following:

- Different weights in the construction of PPI and CPI measures of inflation. The eurozone authorities have succeeded in creating "harmonised" indices of consumer prices (HICP) which eliminate most of the weighting differences for the CPI, but in the list of economies included in Figure 1 there are several non-euro area economies that use differently weighted indices.
- There are structural differences among economies that may lead to considerable differences of reported inflation – e.g., economies with large natural resource or manufacturing sectors tend to report widely different rates of PPI inflation that may spill over into their CPI measures.
- Among the PPI measures there are some countries that measure input prices for the corporate sector (raw materials, semi-manufactured or intermediate good inputs etc.) and others that measure output prices of companies (or so-called factory gate prices i.e., the wholesale price which does not include distribution costs or retail margins). Where possible I have used input prices.
- In some countries, national governments imposed price controls (e.g. France and Portugal controlled the prices of sanitizers and protective equipment).

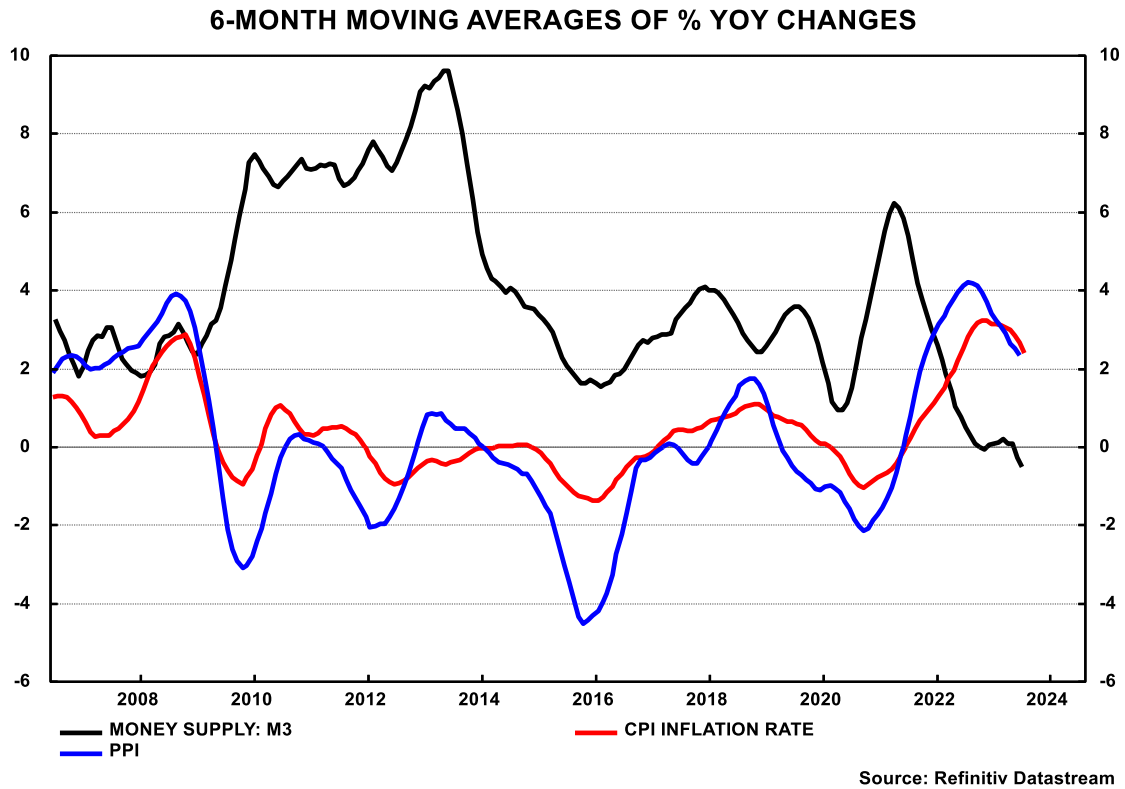
3. Signals and Noise: Case Studies of Switzerland and Norway

In this section we will consider two cases of inflation which differed significantly from the pattern of the rest of Europe: Switzerland which has enjoyed the lowest rate of inflation in Europe, and Norway which has seen huge movements of its PPI but, despite being a leading producer of oil and gas, has been unable to avoid the inflation that others have blamed on imported oil prices.

However, before exploring the details, there is an important principle to be understood. From the 1980s and into the 1990s and beyond economics has tried to match the natural sciences by employing complex maths, econometrics, and modelling to prove its principles or to give scientific content to its empirical findings. But with respect to the relation between money and inflation, two major problems have obstructed the attempt. The first is the idiosyncratic features of individual economies (mentioned above) which have made it difficult to conduct uniform measurements across different economies. The second concerns the difference between signal and noise which is highly relevant in economies like Switzerland (Figure 4) where M3 growth, real GDP growth, and inflation have all been low.

The principle is that at low levels of money growth or inflation, the noise-to-signal ratio is high, whereas at high levels of money growth or inflation the reverse is true.

Figure 4. Swiss Inflation has been Low Because M3 Growth was Low.



Switzerland's experience with money and inflation in recent decades illustrates these two problems of mismeasurement and high noise-to-signal ratio.

First, it will be observed from Figure 4 (where I have used **6-month moving averages** of year-to-year changes in each data series to smooth out the more erratic monthly movements) that the growth rates for M3 in the years 2009 to 2013 were high by Swiss standards. This reflected considerable inflows from abroad at a time of global instability in financial markets (during the GFC in 2008-09) and at a time of regional crisis (the euro-area debt crisis of 2011-12). The increase in M3 is accounted for by transfers of funds to CHF at Swiss banks for safety during the two crises. This was a classic flight of funds to a safe haven. Given also that the Swiss National Bank, or central bank, was pegging the CHF exchange rate during this period (or at least operating a floor or minimum at 1.20 for the CHF against the EUR from September 2011), the M3 aggregate therefore increased substantially in line with net inflows. However, the CPI inflation rate remained low, averaging exactly 0.0% p.a. between the start of 2010 and the end of 2014.

The explanation is that, strictly speaking, the Swiss money supply should be measured by summing resident holdings. Since much of the increase in CHF deposits in 2009-13 was owned by foreigners, the funds were never going to be used for day-to-day spending in Switzerland. Consequently, the divergence between M3 and inflation over this period is largely explained by mismeasurement.

Second, at very low rates of money growth such as occurred in the period June 2014 to June 2020 (when M3 averaged only 2.7% p.a.) the task of predicting inflation accurately in the short-run becomes almost impossible because the noise-to-signal ratio is very high. There are always random factors affecting price indices in any particular month, and the closer the overall inflation rate comes to zero, the greater these disturbances from random factors will appear to be. Average inflation may be predictable over a 2- to 3-year timespan, but forecasters must expect significant misses when attempting to forecast inflation in any specific month.

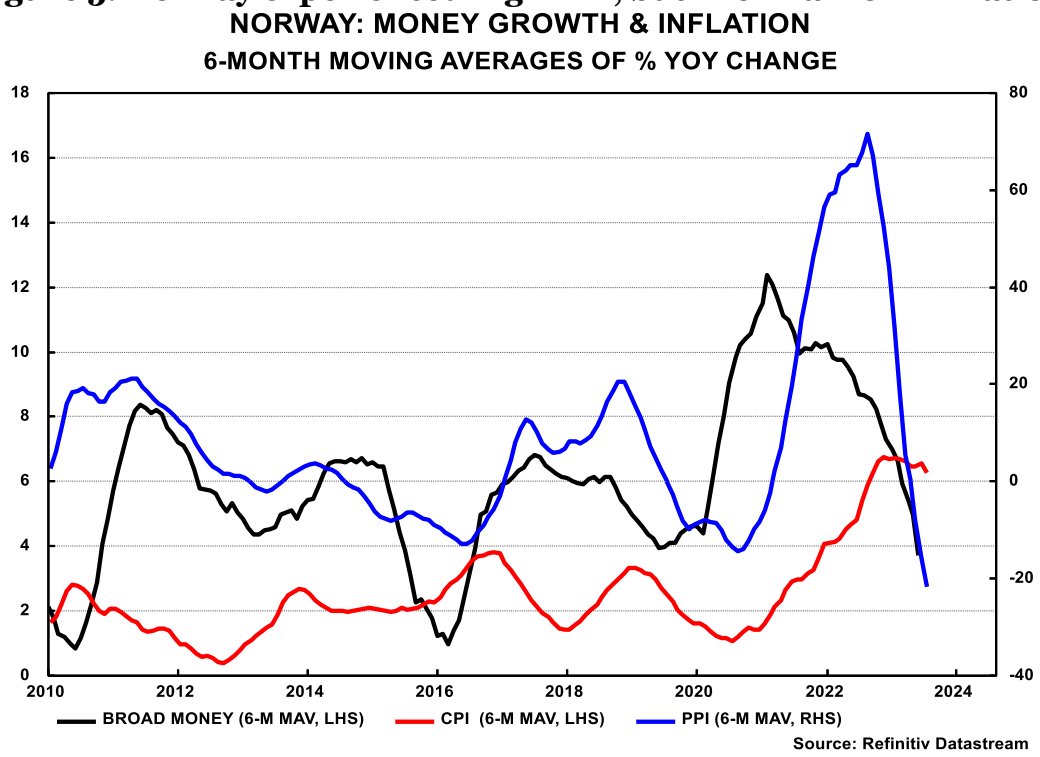
Conversely, in an economy where money growth and inflation are high it is much easier to see the relationship because the "noise" factors will be small relative to the big increases in money and inflation. Unfortunately, this fact means that whereas economists will typically accept that ***hyperinflation*** is definitely a monetary phenomenon, they often have great difficulty accepting that inflation is also a monetary phenomenon at very low rates of money growth and inflation. The reluctance to accept the second part of this observation, built up over the past 2-3 decades, has led many economists and central bankers during the past three and a half years to devise bizarre, though sometimes oft-repeated, non-monetary explanations for inflation.

The Swiss data in Figure 4 must be interpreted in the light of the analysis above. Predicting zero inflation in 2010-14 based on the official (but overstated) M3 data would have well-nigh impossible. However, based on average M3 growth of 2.9% p.a. for the period 2015-2020, predicting near-zero Swiss CPI inflation would have been a much easier task. (In fact, over this period CPI inflation averaged -0.1% p.a.) It will

also be observed that for the Covid-affected period 2020-23 the ordering and the relative magnitude of M3 growth as well as PPI and CPI inflation was much as one would expect with a 16-month lag between the March 2021 peak of M3 and the July 2022 PPI peak, and with a 20-month lag to the November 2022 PPI peak (with all data based on 6-month moving averages).

Turning to Norway (Figure 5), although there was a huge energy-related surge in the PPI (peaking at 71.7% year-on-year on a 6-month moving average basis) which might have distorted the figures, in fact the ordering of the peaks in M2, the PPI and CPI and their time lags followed normal paths. The 6-month average year-on-year change in M2 peaked at 12.4% in February 2021, and the PPI peaked in August 2022, 18 months later. The CPI (also on a 6-month moving average basis) peaked at 6.8% in November 2022, or 21 months after the peak in money growth. Consequently, despite its exceptional status as one of Europe's only meaningful oil producers, Norway followed the monetarist textbook to the letter during the Covid-related inflation episode.

Figure 5. Norway experienced high PPI, but "normal" CPI inflation.



Conclusions

This analysis has shown that although there was a wide variety of monetary and inflation experience across Europe during the past three and a half years, when properly interpreted and understood the experience of all the countries fits neatly into a monetary framework. It was fundamentally the acceleration of broad money growth at the start of the Covid pandemic which gave rise to the subsequent episodes of inflation, not the unanticipated spikes in individual product prices due to supply

chain problems, nor the energy and food price spikes following the start of the war in Ukraine. These may explain the timing of the changes in relative prices, but they do not explain or justify the changes in the overall price level.

Looking forward, the sharp slowdowns of broad money growth across the European region are pointing towards a steep decline of inflation, if not in the remainder of 2023, then certainly in 2024 and 2025 – i.e., at the 18- to 24-month time horizon for the typical lag-in-effect between broad money growth and inflation. This applies both to member countries of the eurozone where M3 growth for the single currency area has fallen to 0.5% year-on-year in June 2023 (see Figure 2) and to non-member countries such as Switzerland where M3 growth was -1.2% year-on-year in June or Norway where M2 growth had fallen to -1.9% on a simple (unsmoothed) year-on-year basis.

With many central banks still talking of the need either to tighten monetary policy further or to keep interest rates at current levels for a sustained period, it seems unlikely that central bankers will divert from their current excessively tight stance. The implication is that inflation rates over the next two years will fall well below their targeted levels, just as they did in the period 2013-16, and – if current negligible or negative money growth rates continue – then in some cases European economies will experience outright deflation (falling prices).

Summary and Investment Implications

- The variety of experiences in Europe during the recent inflation episode from early 2021 to June 2023 invites comment on the sources, policies adopted, and different outcomes across different countries.
- The standard narrative is that supply chain disruptions and the Ukraine war were the major factors behind the inflation. In fact, the surge in **producer prices** was very little impacted by the start of the war.
- For **consumer prices**, whose rise lagged producer prices and their peak by an average of 4 months, the supply chain disruptions and the Ukraine war may help explain the timing of some rises but were not the ultimate source.
- In all cases it was the prior increase of broad money growth that laid the foundation for the subsequent surge in inflation.
- The relative magnitudes of the inflation rates in Europe display considerable diversity for a variety of reasons. The simple unweighted mean of the PPI peaks was 32.9% and the unweighted mean of the CPI peaks was 13.2%.
- The data demonstrates that inflation is not some random phenomenon produced by unanticipated (or “exogenous”) shocks – as the central bankers would have us believe. Instead, it is systematically related to prior rates of money growth across the continent, although with long and variable lags.
- An important principle is that at low levels of money growth or inflation, the noise-to-signal ratio is high, whereas at high levels of money growth or inflation the reverse is true. This idea was applied to Switzerland and Norway.
- Looking forward, the sharp slowdowns of broad money growth across the European region are pointing to a steep decline of inflation in the remainder of 2023, with more to follow in 2024 and 2025 – i.e., particularly at the 18- to

24-month time horizon for the typical lag-in-effect between broad money growth (which has yet to bottom out) and inflation.

- The investment implications of this analysis are straightforward. First, there may be recessions in Europe starting in late 2023 or early 2024. Second, both the euro-area and non-euro-area economies are likely to head towards sub-target inflation in 2024, with outright deflation possible in 2025. Investors should look for opportunities to buy government bonds. An environment of very low money growth implies very low nominal GDP growth, which in turn means that equities will generally struggle, although if central banks lower rates rapidly and as far as they have raised them, then there may be occasional strong rallies.

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