EDITORIAL

EUROZONE: INFLATION THROUGH THE LENS OF BUSINESS SURVEYS - THE CASE OF SERVICES

The latest quarterly survey of the European Commission of factors limiting the production of companies shows that few services companies mention insufficient demand as an issue. The score of the financial factor is on the rise but remains below average. Supply side factors remain at exceptionally high levels. A priori, one would expect that the combination of strong demand and constrained supply will influence the price setting behaviour of companies. However, regression analysis shows that these factors only explain a small part of the fluctuation in services inflation. Wage growth and the input prices PMI do a far better job. They will need to see a significant decline for services inflation to converge to 2.0%. This will take time.

The quarterly survey of the European Commission of factors limiting the production of companies -insufficient demand, labour market bottlenecks, shortage of material and equipment, financial constraints- sheds an interesting light on the drivers of inflation in the Eurozone.

In a previous issue of Ecoweek, these data were used to analyse developments in industry[1]. The conclusion was that demand and supply factors are useful in explaining annual producer price inflation but that a considerable part of the latter's variation was unexplained. With this caveat in mind, the pace of disinflation might be slow considering that supply factors limiting production are still well above their long-term average, whereas the demand factor is close to normal.

What does this survey tell us about the services sector? Chart 1 shows the results in terms of z-score, to take into account differences in volatility between the various series. Few services companies mention insufficient demand as a factor limiting their production. The tightening of monetary policy that started last year has led to an increase of the number of companies mentioning financial factors as a constraint, but the overall score remains below the long-term average. Supply side factors -hiring difficulties, issues in terms of space and equipment- remain at exceptionally high levels. *A priori*, one would expect that the combination of strong demand and constrained supply will influence the price setting behaviour of companies and underpin service price inflation.

The univariate regressions in table 1 show a statistically significant relationship between services inflation and the demand and supply factors that influence production levels in services. However, the very low R^2s show that a large part of the fluctuations in inflation are unexplained. In a multivariate regression, the R^2 improves but remains low (table 2). Moreover, the exceptionally high inflation in 2022 influences the regression results. When using data until the end of 2021 -the second part of table 2-, the demand and labour variables are significant but when using the full data set -the first part of table 2-, only the equipment and/or space factor is significant.

As mentioned, a low R^2 means that a considerable part of the fluctuations in inflation is unexplained, so other variables should be considered.

EUROZONE SERVICES: FACTORS LIMITING THE PRODUCTION (Z-SCORE)

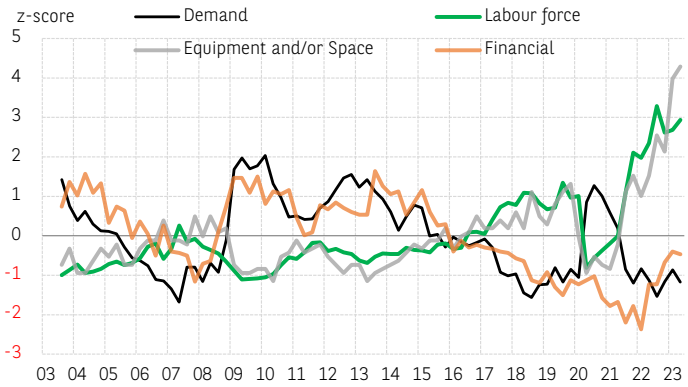

CHART 1 SOURCE: EUROPEAN COMMISSION, BNP PARIBAS CALCULATIONS

EUROZONE SERVICES INFLATION: UNIVARIATE REGRESSIONS

Data range	2003Q3-2023Q1		
Dependent variable	services price inflation (y/y)		
Explanatory variable	Demand	Labour	Equipment and/or space
R Square	0.10	0.14	0.26
coefficient	0.000	0.000	0.005
t statistic	-2.91	3.58	5.20

TABLE 1 SOURCE: EUROPEAN COMMISSION, BNP PARIBAS CALCULATIONS

1 Eurozone: Inflation through the lens of business surveys. The case of industry, Ecoweek, BNP Paribas, 17 July 2023.

> Wage growth and the input prices PMI, which historically have done a good job in explaining services inflation, will need to see a significant decline for services inflation to converge to 2.0%. This will take time.

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EUROZONE SERVICES INFLATION: MULTIVARIATE REGRESSIONS

Data range	2003Q3-2023Q1			
Multivariate	Demand	Labour	Equipment and/or space	R Square
R Square				0.29
coefficient	0.00004	-0.0004	0.0076	
t statistic	0.25	-1.67	3.85	

2003Q3-2021Q4				
Multivariate	Demand	Labour	Equipment and/or space	R Square
R Square				0.30
coefficient	-0.0005	-0.0010	0.0023	
t statistic	-3.64	-4.63	1.20	

TABLE 2

SOURCE: BNP PARIBAS

Wages are an obvious candidate considering that they represent a larger share of the cost base of services companies compared to industrial firms[2]. Input costs also play a role. They can be proxied by using the input prices PMI of S&P Global.

Using these two variables yields interesting results (table 3): both are statistically significant and the R^2 is 0.46, which is a lot better than the results in table 2, which are based on the European Commission survey. Chart 2 shows observed and estimated services inflation as well as the regression residuals. The latter tend to be small in periods without shocks but large during the global financial crisis, the Covid-19 pandemic and in 2022. The equation can also be used to conduct a scenario analysis (table 4). For services inflation to move back to 2.0% and supposing that the input prices PMI drops to 50.0 -in June it stood at 61.3 -, wage growth should slow to 3.4% -versus 5.1% in December 2022, the latest available data.

Based on the historical range of wages and input prices, such an outcome is clearly possible but giving the respective gaps with the latest data, the process is likely to be slow.

William De Vijlder

EUROZONE SERVICES INFLATION, WAGE GROWTH AND INPUT PRICES PMI

Data range	March 2002 - December 2022		
Dependent variable	Services price inflation (y/y)		
Explanatory variables	Growth of wages and salaries (y/y)	PMI Input prices in services	R^2
R Square			0.46
coefficient	0.0038	0.0005	
t statistic	8.88	7.63	

TABLE 3

SOURCE: EUROPEAN COMMISSION, BNP PARIBAS CALCULATIONS

EUROZONE SERVICES INFLATION: OBSERVED VERSUS ESTIMATED

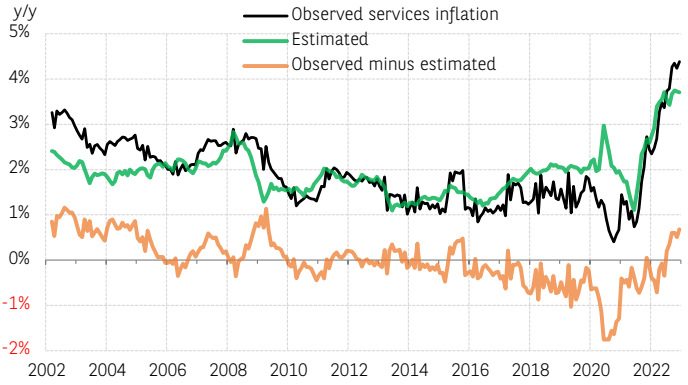

CHART 2

SOURCE: EUROSTAT, BNP PARIBAS CALCULATIONS

2 According to research by the ECB, *"labour costs are estimated to have represented about 40% of the cost structure in services and about 20% in industry excluding energy and construction in both 2008 and 2016."* Source: What is behind the change in the gap between services price inflation and goods price inflation? ECB Economic Bulletin, issue 5/2019.

EUROZONE: WAGES, INPUT PRICES AND ESTIMATED SERVICES INFLATION

		PMI Input prices									
		61.3	60	58	56	54	52	50	48	46	44
wage growth (y/y)	5.14	3.2%	3.1%	3.0%	2.9%	2.8%	2.7%	2.6%	2.5%	2.4%	2.3%
	5	3.1%	3.1%	3.0%	2.9%	2.8%	2.7%	2.6%	2.5%	2.4%	2.3%
	4.75	3.0%	3.0%	2.9%	2.8%	2.7%	2.6%	2.5%	2.4%	2.3%	2.2%
	4.5	2.9%	2.9%	2.8%	2.7%	2.6%	2.5%	2.4%	2.3%	2.2%	2.1%
	4.25	2.8%	2.8%	2.7%	2.6%	2.5%	2.4%	2.3%	2.2%	2.1%	2.0%
	4	2.7%	2.7%	2.6%	2.5%	2.4%	2.3%	2.2%	2.1%	2.0%	1.9%
	3.75	2.7%	2.6%	2.5%	2.4%	2.3%	2.2%	2.1%	2.0%	1.9%	1.8%
	3.5	2.6%	2.5%	2.4%	2.3%	2.2%	2.1%	2.0%	1.9%	1.8%	1.7%
	3.25	2.5%	2.4%	2.3%	2.2%	2.1%	2.0%	1.9%	1.8%	1.7%	1.6%
	3	2.4%	2.3%	2.2%	2.1%	2.0%	1.9%	1.8%	1.7%	1.6%	1.5%

TABLE 4

SOURCE: BNP PARIBAS