

Productivity Puzzle in the OECD Economies? 1 Or Why Has Economic Recovery Since the Great Financial Crisis

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ABSTRACT:- This paper investigates whether there has been a structural shift in inflation since a recovery began in the OECD economies. For policy purposes, it is important to be sure that such shifts are significant statistically, are likely to be sustained over the near future and be evenly distributed over the member economies so that no one of them is damaged by anti-inflation measures taken to help others. We approach the problem in two steps: first we examine the circumstantial and informal evidence, and then conduct formal statistical tests for structural changes in euro area inflation in 2015-2016. We find no evidence of a structural change. An even distribution of inflation criterion is the closest to being satisfied, but the other two are far from satisfied in any formal sense. The question remains: why has there been no inflation in the recovery since 2014? To answer that question, we demonstrate how low growth in real wages and self-reinforcing low productivity growth produces slow output growth and low inflation; and how low real wages and productivity in turn lead to low investment. This model fits the data well, down to the lack of labour and total factor productivity, and to the substitution of cheaper labour for excess capital stock. It implies a fall in investment spending (also seen in the data) that extends the period for which the low productivity-low inflation outcomes apply.

KEYWORDS:- Capital-Labor Substitution, Static Real Wages, Productivity Puzzle, Productivity Dynamics

I. INTRODUCTION

Inflation in the euro area has not been significant, from a policy perspective, for the past decade—that is, since the financial crisis began to have a real impact at the end of 2008 (Figure 1; all items index). Rather, the main concern was the prospect of too much disinflation after 2011; and then actual deflation through 2015-16. However, the euro area's gradual recovery starting in 2015 has generated a small recovery in inflation starting in 2016, accelerating from August 2016 to February 2017, then roughly steady to April 2017 before decelerating again to the end of 2017 (Figure 2). But the numbers are small. Inflation, at the peak of the 2016-17 increase, only just touched 2% before drifting back to 1.5% by May 2017 until the end of that year. So, while it is fair to say that economic recovery in the euro area has led to an increase in inflation that increase has been small, has remained within the ECB's target of 2% or less, and was not sustained. Hence, on a superficial look at the data, it would be hard to argue that there had been a structural change. We test that proposition directly in the next section. A second point is that a clear correlation exists between the euro area inflation rates in Figure 1 and Figure 2 and the inflation rate in energy prices and (to some extent) food prices. But there is no corresponding correlation between inflation and industrial goods and services prices. This is important because energy is mostly imported, as is food to a significant degree. Hence the principle factors driving inflation are external, rather than internally generated. That puts them beyond the ECB's immediate control; imported inflation, in this case, could be a signal of increasing Euro area competitiveness. The paper itself is organized as follows. Section 2 identifies the main components and the characteristics of inflation trends in the Euro area over the past decade, and their distribution across national economies. Included here are the movements in core inflation and official forecasts of future inflation to help identify possible structural shifts in an intuitive way. The formal tests for structural shifts/breaks are then conducted in Section 3 to show that the conclusion of "no structural shift" has statistical significance. Section 4 then supplies a formal theory, based on the interaction of real wages and productivity dynamics, to show how this situation would have arisen naturally in the aftermath of a severe recession where the key concerns are to substitute relatively low-cost labour for more expensive capital, and the consequent lack of incentive to invest. This argument is fully supported by the data, in the OECD area at least. But there is very little previous literature to compare on this topic—although the fear of a productivity puzzle is widespread among commentators and policy specialists. Those commentaries are therefore reported in Section 4, to be contrasted with the very sparse literature that does exist (because it reaches very different conclusions for fairly obvious reasons) supplemented by a couple of case studies that support the explanation advanced here. Section 5 then considers the long-term implications of the productivity dynamics and adds some reinforcing factors from a related literature which are likely extend the impact of our theoretical argument. Finally, Section

6 concludes with some policy implications, and crucially two important topics for further research that flow naturally from this research: the impact of automation and emerging skill shortages.

2. Inflation TRENDS and Structural Change Tests 2.1. Inflation Trends by Country Inflation had reached 1.5% by the end of 2017. However, three points about that increase: 1) it still falls short of the 2% Euro-wide target, the mandated ECB target; 2) it is unclear if this inflation was caused by the recovery. More likely it was caused by external factors such as the recovery in energy prices in 2017, occasional food price spikes and the level of wage bargains in Germany;

3) The inflation increases were distributed unevenly: 0.8% in the average Euro economy in 2016; but 1.7% in Germany, 1.5% in France, 1.0% in Italy, 0.9% in Spain, 0.2% in Greece, 0.1% in Ireland.² Inflation rates since then have tended to converge. Euro area inflation touched 2.0% in February 2017, but then fell back to 1.5% in April (remaining there for the rest of that year) and is forecast by the ECB to remain in the 1.4% - 1.8% range until 2022. Likewise, inflation in Germany briefly reached 2.2% in February 2017 (Figure 3); but fell back to 1.5% in March and 1.8% in November. In Italy, it fell to 0.9% in March and stayed there; in Spain from 3% to 1.7%; and in France it fell to 1.2% from 1.5%. 2.2. Core Inflation and Inflation Forecasts We now examine recent developments and forecasts for core inflation in the euro area (Figure 4). Core inflation itself has moved very little in the past two years, apart from a small uptick from 0.9% to 1.2% in 2017. This has now been fully reversed and is evidently not expected to reappear. Nor do Eurostat's current forecasts give any reason to suppose that the existing core inflation rate, 0.9%, is likely to change in the near future. The initial part of the uptick in early 2017 is probably due to food price increases (see lower left panel, Figure 4); but the second part would have to be an internal matter, such as a period of increased wage settlements in Germany, since energy prices are stripped out of the core inflation measure. As a result, the forecasts of actual inflation (top right) show that inflation is not expected to increase either. In addition, despite the uptick, the month-on-month figures show no trend tendency (or forecast tendency) to increase. Again, there is no evidence for a structural change here. 3. Direct Tests for Structural Change To perform more formal direct tests for a structural change in euro area inflation outcomes, we conduct a series of regressions on monthly euro area data starting from January 2011 to December 2017 inclusive. The regressions are specified as follows is the corresponding dummy to detect a slope change acceleration) in the inflation process, at any time since the start of 2015. Not all variables are included in each regression since we aim to pick out only the most significant. The results are displayed in Table 1, with t-ratios to allow tests of statistical significance to be conducted for each factor in the inflation process—and specifically for the structural change variables.

Table 1. Trends and structural change, euro area inflation, Jan. 2011-Dec. 2017.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
constant	2.42 (13.23)	2.49 (13.43)	2.56 (13.67)	2.63 (13.90)	2.71 (14.22)	0.31 (0.78)	-0.052 (0.86)	0.025 (0.63)
time	-0.275 (7.39)							
P_{t-1}		-0.029 (7.68)				1.03 (8.89)	0.997 (35.55)	0.969 (40.30)
P_{t-2}			-0.030 (8.00)			-0.021 (0.125)		
P_{t-3}				-0.031 (8.31)		-0.091 (0.55)		
P_{t-4}					-0.037 (8.70)	0.041 (0.36)		
D_t							0.101 (0.66)	
$P_{t-1} \cdot D_t$								0.010 (0.22)
Adj-R ²	0.395	0.417	0.441	0.463	0.489	0.950	0.955	0.953

Source: own calculations, OECD CPI-inflation data, t-ratios in brackets. Dependent variable, current inflation P_t .

4. Why Has Recovery Not Produced a Structural Change in Inflation? In contrast to all recoveries over the past six decades, all of which were heavily criticised for being “job-less” and slow to take effect, the most striking features of the recent recovery have been the rapid reductions in unemployment, apparent immutability of real

wages and persistently slow growth in output levels. In fact, the current recovery appears to have been the antithesis of those that went before: employment was quickly restored to full employment (pre-crisis) levels; unemployment rates fell to broadly full employment levels very soon after; output started to grow at 1% - 1.5%, but unlike in previous recoveries failed to speed up from there. And real wages failed to increase at all (in fact, at times, they decreased by small amounts in several OECD economies). To be fair, this has been a feature of many, if not most, of the advanced economies. However, the essential message is the same in the euro area as elsewhere. With wage settlements subdued or static under the high unemployment resulting from the recession itself, and with limited prospects of rapid growth in the near future, short term low wage contracts would be seen as a less risky and more flexible alternative to large capital investment projects so long as output growth remains slow or uncertain. In effect, the choice became to substitute relatively cheap labour (in real terms) for relatively expensive capital—especially when, in previous years in a number of OECD economies, an inexorable rise in unit labour costs had led to an overinvestment in (the then relatively cheap) capital at the expense of labour.

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