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Sacrifice ratio dispersion within the Euro Zone: what can be learned about implementing a single monetary policy?

Jean-Jacques Durand, Marilyne Huchet-Bourdon & Julien Licheron

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Abstract

This article focuses on the comparison of sacrifice ratios as an indicator for structural dispersion within the euro area over the period 1972–2003. Estimates of the sacrifice ratio, defined as the cumulative output cost arising from permanent inflation reduction, are obtained using structural VAR models. Results from sub-period analysis as well as 10-year-period rolling estimates lead to two main conclusions. First, empirical evidence displays a recent increase in the average sacrifice ratio, which can be linked to the simultaneous decrease in the average inflation rate: this negative relationship between the initial level of inflation and the cost of disinflation can be seen as a justification for the choice of an inflation objective close to 2% for the European Central Bank (ECB) rather than a target of perfect price stability, potentially very damaging. Second, we cannot provide evidence of any reduction in European sacrifice ratio dispersion, which would suggest that the nominal convergence triggered by the Maastricht Treaty did not

involve a true reduction of structural differences. It is likely to be a problem in the stance of a single monetary policy, because structural differences imply asymmetric responses of real national economies to the same monetary impulse.

Keywords:

sacrifice ratio | monetary policy | convergence | Economic and Monetary Union (EMU)

JEL classifications:

C22 | E32 | E52 | E58

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Notes

1. Two key comments need to be made regarding the definition of a sacrifice ratio. First, this ratio is not a measure of the net cost of disinflation: it does not take into account the long-term benefits associated with lower inflation. Second, the output cost is only one cost among others resulting from disinflation, as Filardo (1998) notes. Recessions associated with large inflation reductions not only lower GDP but also induce other costs that are much more difficult to measure: personal costs borne by the unemployed, failed businesses, or a widening of the income distribution.

2. As Filardo (1998) notes, Okun's (1978) empirical works, as well as Gordon and King's (1982), are based on the implicit assumption of a linear Phillips curve, an assumption that is quite restrictive and questionable. We will see later on that this assumption of linearity is also one of the limitations of the structural VAR methodology. However, unlike the Phillips curve approach, structural modelling allows for a distinction between exogenous shocks and endogenous reactions of the system.

3. Ball (1994) applies his episode-specific methodology to 19 OECD member countries using annual data over the period 1960–1991, and then to a sub-group of nine of these countries using quarterly data over the same period.

4. See, for example, Jordan (1997), Neely and Waller (1997) or Zhang (2005).

5. As emphasized by an anonymous referee, assuming the demand disturbance to be a monetary shock for the considered period is a strong assumption. However, preliminary attempts using a three-variable model (including the short-term nominal interest rate) have reached the same conclusions as with our bivariate model. Besides, Cecchetti and Rich (2001) however show that the imprecision in sacrifice ratio estimates increases with the number of endogenous variables. For these reasons, we concentrate solely on a two-variable system, and associate shifts in monetary policy with the aggregate demand shock.

6. Demand shocks, especially monetary policy shocks, should distort the path of potential output and thus have an impact on the Nairu (Non-Accelerating Inflation Rate of Unemployment). In the case of EMU countries, Logeay and Tober (2006) stress the dependence of the Nairu on actual unemployment, which entails the existence of ‘hysteresis effects’. This hysteresis phenomenon implies the possibility of a long-run non-neutrality of monetary policy, as described in Ball (1999), Ball and Mankiw (2002) and Zhang (2005).

7. This assumption is also questionable since we have quarterly data: several recent empirical studies suggest that monetary impulses would affect the inflation rate with a lag of two to three months in the euro area.

8. We should note however that the hypothesis of five optimal lags has proved relevant in some cases, which is why the VAR models have also been estimated using five lags. Results are not reported here, but they are close to those obtained using four lags, which attest to a certain amount of robustness in our results.

9. Impulse response functions obtained with the short-run identifying restriction are available upon request from the authors. The responses of inflation and output to the supply shock are in line with those reached using the decomposition proposed by Blanchard and Quah (1989). However, the cumulative response of output to the demand shock appears to be significantly positive in most countries, which would entail the existence of ‘hysteresis effects’.

10. Provided that we assume symmetry in the real short-run effects of monetary policy, i.e. equivalence between the positive effects of monetary expansion and the negative effects of restrictive monetary policy. This questionable assumption represents one of the limitations inherent in the VAR modelling approach.

11. If we employ the short-run constraint described above, we get higher estimates of the average sacrifice ratio as well as higher values for their standard deviation. However, the evolution of the average sacrifice ratio and the dynamics of the standard deviation of rolling estimates over the period 1972:1–2003:4 are very similar to the conclusions reached with the long-run constraint.

12. We have also used other indicators to evaluate the degree of dispersion within euro area sacrifice ratios: the simple spread (which measures the difference between the highest and lowest estimates of the sacrifice ratio at each date), or the spread between the average of the three countries with the highest and lowest sacrifice ratios (in order to adjust for the sensitiveness of the simple spread to outliers). Results are not reported herein, but these two alternative dispersion indicators broadly exhibit the same behaviour as the unweighted standard deviation: there is no clear evidence of a decrease in the dispersion of sacrifice ratios.

13. Many theoretical and empirical studies, such as Akerlof, Dickens, and Perry (1996, 2000), show that a moderate level of inflation could provide some ‘grease’ to the price and wage setting process.

14. Of course, our findings say nothing about the optimal rate of inflation, because we only analyse the short-term output costs of fighting inflation. Further empirical analysis should try to balance more precisely the relative costs and benefits of a zero inflation target vs a small positive inflation rate.