

The Relation between Inflation and Regional Unemployment and Sectoral Income Growth Dispersion: Evidence from EU-Countries

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Abstract. Using data from 15 EU countries for 1974-2004, with various specifications and estimation methods this paper gives strong support to the idea that the aggregate inflation-output gap or inflation-unemployment rate relationship is not linear because inflation is relatively more sensitive to markets and regions that are close to a capacity constraint. Accordingly, inflation is not only related to the average output gap or average unemployment rate but also to corresponding dispersion variables. In the light of this, it seems worth reconsidering how price stabilization is carried out in practice in the euro area.

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1. Introduction

This paper deals with questions of whether the output-inflation relationship is linear and whether the dispersion of output growth or unemployment rates within a country has a direct effect on the determination of inflation for the country as a whole. The topic has been the subject of considerable debate. Nonlinearity of the Phillips curve has been tested in numerous analyses (see Laxton, Meredith and Rose, 1995, Laxton, Rose and Tambakis, 1999, and Linzert, 2005, among others). The whole issue itself has a long history. Lipsey (1960: 19, original emphasis) remarks “If one wishes to predict the rate of change of money wage rates, it is necessary to know not only the level of unemployment but also *its distribution between the various markets of the economy*.” While Lipsey does not attempt any estimates, Archibald (1969) offers some for the UK, where the variance of both regional and industry unemployment are shown to have a positive effect on wage inflation. Extending this to the US gives more problematic results with quarterly data.² However, it is Brechling (1973) who introduced the nonlinear aggregation hypothesis which basically formulates the problem and suggests ways of testing the proposition. He also carried out some

empirical tests with the US data. The results of the tests were somewhat disappointing from the point of view of the hypothesis and may, therefore, explain why the aggregation case has not been revisited with any intensity since.³

If Phillips curves are non-linear and different regions/sectors are at different points on them, then aggregation of the regional/sectoral results will hold different implications for the application of macro-economic policy aimed at affecting inflation than the implication derived from an estimate using aggregate data for the whole country or area. Furthermore, a policy aimed at reducing the heterogeneity of labor markets, as is the case with European integration, will reduce the sacrifice ratio (unemployment cost) of lowering inflation. If on the other hand, it is the regions or sectors with the tightest labor markets that have a disproportionate impact on inflation for the area as a whole, then addressing the shortage of labor in those regions, say, through the encouragement of migration, would be an appropriate complement to policies such as monetary policy that do not discriminate in the same way.⁴

Why then are Phillips or wage curves nonlinear? Fortunately or unfortunately, there are several explanations for the regularities observed thus far (Mayes and Virén, 2002b). The simplest common feature of the explanations is that unemployment is bounded even if the level of participation in the labor market is itself endogenous. As the boundary is approached, inflation is likely to rise at an increasing rate. A second common feature is the key role of labor market institutions. Thus, one may refer to downward rigidities of nominal wages, which themselves can be explained in various ways. One may also refer to asymmetries in employment adjustment—for instance to the apparent asymmetry of hiring (training) and lay-off costs. Given the fact that asymmetries appear to be particularly typical of estimated Okun curves, this explanation may be relevant (Harris and Silverstone, 2001).⁵

Asymmetries do not only appear in behavioral equations but may also be present in policy rules. There the issues can be quite complex: policy rules may just respond to underlying perceived asymmetries in, say, wage and employment equations. But policy rules can also be genuinely asymmetric. The relevant loss functions can simply be asymmetric, Brainard uncertainty-type constraints in policy behavior may make certain types of policy actions less desirable, or there may be some institutional constraints in policy, for instance in terms of legislation on welfare systems (see for example, Schaling, 1999, and Tambakis, 1999, for a more thorough analysis and evaluation of policy implications).⁶

Many analyses in this area are largely empirical and concentrate on finding evidence on asymmetries/nonlinearities. Most analyses simply use aggregate time series data from a single country, which makes the analysis straightforward and may also be less subject to measurement errors. The problem with these kinds of data, however, is that it is difficult to trace the origins of asymmetries. It is also possible that with small sample sizes some outlier observations may create results which look like nonlinear relationships. With a larger set of data on countries, sectors and regions empirical findings may be better determined and more widely applicable.

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