

1 Introduction

The dualistic nature of the Italian economy analysed in many empirical studies has initiated a debate about the existence of two different economies, one in the South and one in the North. The Italian parties have answered to this issue by proposing *federalismo*. The extreme position is taken by *Lega Nord*: Northern regions form indeed a different state, and therefore, should be separated from the Center and the South.

The political discussion about *federalismo* has been focussing on the fiscal autonomy of Italian regions as a first step towards complete political and economic autonomy. Fiscal autonomy would have allowed the richer North to benefit from higher tax returns and to stop financing the inefficient economy of the regions in the South. The importance of this issue from both political and economic points of view has stimulated a body of literature on the dualistic nature of Italy. The focus of our study is not on growth convergence,¹. Instead, we want to analyse the question whether Italy is an optimal currency area.

According to the traditional theory of optimal currency areas (Mundell, 1961; McKinnon, 1963; Ingram, 1969; Kenen, 1969; Taylor and Masson, 1992), the question of whether to chose a common currency or not depends on exogenous factors such as synchronized business fluctuations. However, recent research suggests that a common currency and the common economic policy create the characteristics of an optimal currency area. In other words, the phenomenon may indeed be endogenous.

¹Barro and Sala-i-Martin (1991) and Sala-i-Martin (1996) show that in the period 1950-1993, there was a process of absolute convergence taking place at an annual rate of 2%, while other studies come to the conclusion that there is a structural break: a process of absolute convergence did take place in Italy up to the middle of the 1970s. After this date, a divergence process can be observed emerging between the Northern and Southern regions.

One of the determinants of an optimal currency is the degree of sectoral specialization. Regions with similar sectoral structures tend to have synchronized business cycles (Kenen, 1969; Krugman, 1993). Kalemli-Ozcan *et al.* (2001) and Ricci (1997) argue that similar monetary policy leads to a concentration of industries and induces similar economic fluctuations by facilitating international insurance against country-specific shocks, respectively by reducing shock asymmetry. In his framework, optimal currency areas are endogenous and self-reinforcing.

In the traditional theory of optimal currency areas, the exchange rate represents a tool to adjust to asymmetric demand and supply shocks. Differently, Buitert (2000) argues that foreign exchange markets represent a source of external shocks. Through the adoption of a single currency, an optimal currency area will remove one of the main causes of asymmetric macro shocks. Another important mechanism for shock transmission is labour mobility. Since migration is costly, workers are likely to move only in case of a long period of expected higher earning. Therefore, only persistent real shocks determine migration flows.

One of the possibilities to analyse the issue of whether a country is an optimal currency area is to look at the similarity of the regional business cycle. Arguing along the lines of the traditional currency area theory, we can say that if the cyclical structure is similar, i.e. if we can talk about an intra-national cycle, then a common currency seems a reasonable choice: the exchange rate is not necessary to isolate the regional economy from outside shocks coming from other regions. On the other hand, if the optimal currency area is endogenous, synchronised regional cycles would point towards the success of the mechanisms outlined above.

Our method of choice is spectral analysis. This method allows the decom-

position of the overall variance of a series into the contributions of harmonic waves. Thus it is possible to identify dominant cyclical structure in the series under analysis. We are especially interested in the “classical” business cycle structure: the Juglar cycle with a length of 7-10 years and the Kitchin cycle with a length of 3-5 years. The cyclical nature of the business cycle remains debated; modern researcher rather talk about “fluctuations” than “cycles” (Lucas, 1977). However, these phenomena seem to be robust and can be found not only in historical data (A’Hearn and Woitek, 2001), but also in modern economic time series (Reiter and Woitek, 1999). Identifying the relative importance of cyclical components in the GDP of Italian regions is a first step in determining whether there is an intra-national business cycle in Italy. The second step of the analysis will be to see whether there is an inter-relationship between regional cycles, and how this phenomenon changed over time.

2 Methodology

As stated in the introduction, we are interested in the classical business cycle, i.e. cycles with a length of 7-10 years (Juglar cycles), which are superimposed by shorter, 3-5 year cycles (Kitchin cycles). To address the issues listed above, we decided to employ spectral analysis.² A stationary time series X_t can be decomposed into superimposed waves with frequencies $\omega \in [-\pi, \pi]$. The spectrum measures the (marginal) contribution of each wave to the overall variance. It is defined as the Fourier transform of the autocovariance

²See e.g. Harvey (1993), pp. 175-179, Granger and Newbold (1986), pp. 48-53, Brockwell and Davis (1991), pp. 434-443, Priestley (1981), vol. II, and Koopmans (1974), pp. 119-164.