Regional Income Convergence in Sweden, 1911-2003: A Time Series Analysis

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Abstract. The issue of income convergence is important for policy makers' regional strategies aimed at redistributing funds to poorer regions in a country. We investigate the growth and convergence characteristics of 24 Swedish counties during the period 1911-2003. Using time series techniques, we find that shocks to relative county per capita incomes are temporary, and that initially poor (rich) counties tend to experience higher (lower) growth rates than the nation as whole. Our findings are consistent with the neoclassical model's prediction of conditional convergence, and imply that market forces rather than interregional government redistribution are the main drivers behind our results.

JEL Classification: C32, E10, O40, R00
Keywords: Regional per-capita income, time series models, β convergence, trend function, serial correlation

1. Introduction

Regional income disparities have been a prominent feature of the Swedish economy throughout history. Indeed, some simple statistics reveal that the level of per capita income in the county of Stockholm was at least twice that of the poor northern counties for much of the twentieth century. Moreover, the rank ordering of counties by per capita income has undergone little change over time. There is evidence, however, that income disparities have been shrinking. Research based on the established cross section regression approach of Barro and Sala-i-Martin (1991), and used by Persson (1997), Aronsson, Lundberg and Wikström (2001) and others for Sweden, find a negative relationship between initial per capita income levels and subsequent growth rates across

Swedish counties, indicating that the initially poorer counties on average grew faster and thereby caught-up with the richer ones, a phenomenon known in the literature as β-convergence.

Much of the research on regional income convergence in Sweden is based on cross section approaches. To date, there has been no time series analysis undertaken using historical data on per capita income of Swedish counties spanning over more than 90 years. Yet, such research is worthwhile as it offers insights into how each individual county is growing through time relative to the nation as a whole. Consequently, this paper builds upon and extends previous research by using time series econometric techniques to examine whether per capita incomes of 24 Swedish counties converge to the national average during the period 1911-2003.[2] We implement time series tests to determine whether relative county per capita incomes satisfy the two conditions which Carlino and Mills (1993, 1996) argue are both necessary for convergence: (i) shocks to relative county per capita incomes are temporary (that is, stochastic convergence), and (ii) counties having per capita incomes initially above (below) the national average exhibits slower (faster) growth than the nation as a whole (that is, β-convergence). The empirical methodology that we employ stems from the tests for detecting shifts in the trend function of a dynamic time series developed by Vogelsang (1997, 1998), which allow for both serial correlation and trending data and are valid irrespective of whether the data are stationary or contain a unit root. One benefit of these time-series tests over cross section and panel data tests of income convergence is that we can determine not only whether stochastic and β-convergence have been occurring for Swedish counties overall, but also whether each separate county converges or diverges from the other counties. In addition, relative to Persson (1997), this study extends the time period by ten years; to 2003.

Our empirical results reveal that per capita income levels of Swedish counties have been converging in both the stochastic and β- sense since 1911. In particular, most of the convergence appears to have occurred during the first half of the twentieth century, and that the estimated rates of convergence were higher during this period. The results also indicate that the estimated degree to which counties converged to the national average depends to some extent on whether the break point of the trend function is treated as known or unknown (that is, endogenous), as well as on the robustness of test statistics with respect to the form and persistence of serial correlation in the errors. Our findings also suggest that government redistribution policies had a minimal impact on income convergence in Sweden.

The remainder of the paper is organized as follows. Section 2 describes the long-term evolution of relative per capita income of Swedish counties. Section 3 presents the econometric methodology. Section 4 reports the estimation and results. Section 5 summarizes and concludes.

2. Regional Growth and Convergence in Sweden: A First Look

Have regional income disparities in Sweden changed over the period 1911-2003?