

## Converging Economic Cycles? – The case of Finland, Sweden and the EU15 after WWII

### Abstract

Finland is one of the few examples of poor countries' absolute convergence in GDP per capita in the 20th century: Beginning one hundred years ago with a gross domestic product per capita less than half of that of the United Kingdom or the United States, nowadays the standard of living of her is ranked among the top fifteen to twenty countries in the world. In the same time frame Finland has converged to the average income levels of her leading neighbours, Sweden and the EU15. The basic question in this paper is whether there has been convergence in economic cycles along with the convergence in income levels after WWII between Finland, Sweden and the EU15.

Is there a logical reason to anticipate convergence in economic cycles along with convergence in income levels? Catching up of a poor country necessitates stable labour productivity growth. For permanent growth of labour productivity continuous adoption of new production technologies from the evolving world technology frontier is needed. This requires openness and close interaction via foreign trade with the leading countries. The increasing foreign trade will probably render the countries involved more dependent on each other. This type of convergence should breed convergence (or co-dependence) in economic cycles.

Extracting cyclical fluctuation from the time series has proven to be difficult. Particularly, in the case of difference stationary time series the separation of the long term trend and the short run variation is not an easy task. Different approaches have been suggested: a traditional approach is to use ad hoc filters to filter the respective variation in the long run and short run frequencies. Perhaps the most commonly used such a filter is the Hodrick-Prescott filter. The problem assigned to this approach is that the properties providing the systematic variation in the time series, i.e. the autocorrelation structure of the original series, are not studied at all. Another approach is to start from the autocorrelation structure of the individual time series and decompose the time series into components in accordance with the autocorrelation structure and the frequency. This is called Unobserved Components Model approach. However, within the latter approach, the very long run trend variation and the cycle are not easy to distinguish from one another and in practise trend and cycle are often modelled together and called a trend cycle component (TC).

The possible growing similarity in economic cycles is explored first by delineating the cyclical fluctuations of the economic areas by combining an Unobserved Component ARIMA-model based approach (UC-ARIMA) and filtering, therefore following an analytical solution provided by Regina Kaiser and Agustin Maravall in the early 2000s. By extracting the business cycles for Finland, Sweden and the EU15 with this combined approach, the similarities of the resulting economic cycles are studied by correlations of the cycles along time. Secondly, a strict econometric testing approach is conducted in order to test whether there would be a common cycle between Finland and Sweden or between Finland and the EU15 to be detected along the development after WWII. According to the results, the cyclical fluctuation of the economic areas mentioned has become more dependent on each other.

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