TITLE: AN INPUT OUTPUT ANALYSIS OF THE RELATIONS BETWEEN SECTORAL LINKAGES AND DEVELOPMENT BLOCKS

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ABSTRACT:

The concept of development block "refers to a set of factors in industrial development which are closely interconnected and interdependent" that generate both constraints and opportunities (Dahmen 1991a, Dahmen 1991b). Innovations create opportunities for complementarities, implying the realisation of specific correspondences between technological, institutional, productive, etc, dimensions, which foster development potentials of an economic system. When the development potentials develop, the system adapts to the existing complementarities, otherwise structural tensions are generated. These leave room for entrepreneurial action and structural change. This paper aims to identify and characterise development blocks, and their relations with Hirschmanian linkages, drawing upon the whole set of OECD harmonised I-O Tables. The database is designed to capture changes in the structure of the OECD economies since the late 1960s, before the 1973 oil shock, in the mid-1980s, mid-1990s and, recently released (Oecd, 2006), beginning of 2000. The OECD I-O tables will be matched with the OECD data on technological flows (e.g. Leoncini and Montresor, 2003) We intend to analyse the production-technology relationships between sectors and within countries. At first, we perform a static analysis of the I-O matrices across different countries by means of different tools (e.g. network analysis, backward and forward linkages, propagation length in order to detect to which extent each sector diffuses `shocks' to the other sectors. As a result of the analysis we are able to highlight if there exist some patterns relating clusters of sectors among them and how they extend across the I-O matrix. The identification of these patterns is at the basis of the following dynamic analysis. We then perform the dynamic analysis aimed at detecting patterns of co-integration between the indicator of sectoral linkages and the innovation flows. The econometric analysis can help detecting long-run relationships between technology and production in the various sectors, hence development blocks can be identified as being sparkled by sectors sharing common long-run trend, implying that any shock between the technology and production is not absorbed because a non-stationary variable will not tend to converge towards the mean. We will define a development block as the temporal sequence of the unbalances deriving from the new

complementarities emerging from technological change. We then test the following hypothesis: a technological opportunity (that we spot by means of innovation flows at time t) can set the pace for a structural tension; the ensuing development blocks will create opportunities for structural change (that we measure by means of particular patterns in the indicator of sectoral linkages of the I-O matrices at time t+1). In this way, we identify a development block whether we find evidence of cointegration between technology and production.