Geographical concentration of supply chains and its implication for economic growth. An input-output approach.

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Since the decade of the 90s, there has been a process of globalization that has externalized the supply chains of goods and services. The international expansion of the supply chains has allowed enterprises to get intermediate products more easily and at lower costs. However, this process may also increase the risks associated to disruptions in both, the supply and demand sides in the different countries involved.
This topic has been extensively studied in the enterprises or business literature. For instance, Wagner (2007) explains the supply chain risks together with the importance of its management that has having a great interest because the frequency and intensity of catastrophes, disasters and crisis, which seem to have increased along the lasts years. So, we can say that global supply chains â€˜workâ€™ in an increasingly uncertain environment. Also talks about a tendency that is happening in current years. Enterprises â€˜liveâ€™ in really globalize and competitive world, so their main objective is to have an efficient production process. Because of that it is observed a tendency to outsource, reduce inventories and to streamlining the supply base. So, we can say that this is generating dependencies between enterprises. Around this topic other papers has made empirical analysis; as could be the case of Thun (2009) that studies the case of automotive industry in Germany or Blome (2011) that analyze risk of supply chains in the case of financial crisis. Following this line of argumentation we can mention Choi (2005) that shows that general companies reduce the number of suppliers in their supply base, which is called â€˜supply base optimizationâ€™. The objective of this is to reduce the administrative and transaction costs. Some examples are General Motors (GM) and General Electric (GE). Tang (2006) also investigated about the increasing uncertainty and vulnerability. In fact, Norman (2004) and Johnson focus theirs studies in particular industries. In the first case it is analyzed the case of Ericssonâ€™s consequences after a sub-supplier accident and the second one center their investigation in the toy industry, whose behavior can be teach us how to manage risk in high-tech firms.
To sum up, taking into account the different papers that we have mentioned we can say that in all cases are observed two trends: outsourcing and reducing of suppliers. These increase the vulnerability of enterprises that are more exposed to the risks of a globalized world, and have great levels of dependence, mainly of their suppliers.
Despite the relevance of the topic for economic growth, as far as we know, there are not papers exploring this issue at the meso and macro levels. In this regard, making use of the WIOD database, and more specifically, the MRIO tables, our aim is to analyze the concentration of supply chains in the world economies, its evolution and significance between 1996 and 2009. To do this, after a review of the literature, we consider, as a first step, the use of the Herfindahl index as indicator of concentration. We explore the concentration of the supply chains at different scales: data by countries, sectorial blocks or sectors. Similarly, we focus on matrices A, capturing direct relations between countries as well as on A+A2 and on (I-A)-1-I (with the objective including indirect relationships).
Although preliminary, our results offer some interesting insights. For instance, in 1996, almost all countries had moderate or high levels of concentration, being the most remarkable countries Mexico and Canada. This fact can reflect the NAFTA agreements that are observed between Canada, Mexico and USA. It is also interesting the evolution observed in European countries. Herfindahl index decreases in some of them, getting values below 1000. In that way, we could highlight the tendency of European countries to diversify external supply (although Herfindahl index is near 1000

in most cases) and the tendency to import supply from Rest of World that includes Latin American countries, Africaâ€¦whose level of development is lower than the studied countries and labour costs are lower too, as wages get lower values. The analysis is completed with a study of sectoral behaviors.