

## **Abstract for “Shifts in Comparative Advantage and Industrial Structures when Production is Internationally Fragmented”**

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Until recently, there was a close relationship between a country's comparative advantages and its export structures. Standard theories of international trade would predict that a country exports those products that make intensive use of its abundant production factors. But in a world in which production processes are being fragmented across countries, this no longer holds true. Rather than specialising in the production of particular goods, countries specialise in carrying out particular activities in the production chains and trade in tasks rather than in products. This has deep consequences for our thinking about how the industrial structure of countries evolve over time, and how international trade impacts the pace of structural change.

In this paper I introduce a new empirical framework to analyse the process of structural change driven by international trade, when production is fragmented, by extending the work of Hidalgo et al. (2007). Hidalgo et al. (2007) develop the so-called 'product space' framework to describe the stages of changes in industrial structures when a country develops. The main idea is that changes in industrial production structures are path-dependent and the shifts in production from one product to another differ in their feasibility. They trace out these paths empirically by using the correlations in revealed comparative advantage (RCA) based on the gross export of different products. A low correlation in RCA between two products means that it is difficult for a country to shift its production from one product to another. But the problem with their approach is that, under international production fragmentation, the gross exports of products or industries are no longer the suitable descriptions about the actual activities and value-added contributions that take place in a country. As shown by Koopman, Wang, and Wei (2013), statistical gross export data include double-counted value-added components; they show that the gross export based RCA differs substantially from the RCA based on value-added export.

My paper follows Hidalgo et al.'s line of research, but allows for production fragmentation by analysing the proximity of exports on the basis of value added and jobs, rather than gross export flows. With the multi-regional input output tables and socio-economic accounts from recent developed World Input Output Database (WIOD), we are able to calculate the value-added exports from each industry in each country, and we further decompose these value-added exports to the contributions by each kind of jobs at different skill levels. In turn, we derive the RCA indices for each job and our 'job space', in a similar way as the product space.

I obtain interesting results which show a quite different picture compared with previous literatures. For example, while based on the gross exports approach, the shift from textiles production to electronics production seems to be difficult and long winding. Instead I find that some activities in electronics and textiles production are quite similar to each other, e.g. assembly activities carried out by low-skilled workers. Structural change should thus be no longer analysed in terms of products or industries, but in terms of jobs and actual activities. These have implications for the collecting of data on production by statistical organisations, and also implications for the discussion about the usefulness of

industrial policies. My results also suggest that in the process of upgrading, horizontal policies like education and training play a more important role than strategic industry-specific stimulation policies.

### **References**

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- Koopman, R., Wang, Z., & Wei, S. J. (2012). 'Tracing value-added and double counting in gross exports'. NBER working paper #18579.