



**Report on Ph.D. thesis**

**“International production fragmentation and its impact on labour  
market outcomes”**

**by**

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This Ph.D. thesis consists of a collection of empirical papers looking at various aspects of labour market implications of global value chains. All in all, there are six papers. Five are co-authored with various colleagues at Gdansk Polytechnic, these are all published in good quality refereed journals. The first paper in the thesis, which is single authored, is not published yet, but has the clear potential to be publishable in a journal that is of comparable quality to those where the other papers are published. In this report I will briefly review the papers and then give an overall assessment.

The first paper entitled „Production fragmentation and employment: Country-industry level analysis based on WIOD 2016” investigates the relationship between global value chains and employment using industry-level data for over 40 countries. The paper exploits the World-Input-Output Database (WIOD) which provides information for the period 2000 to 2014. The main contribution of the paper is to measure production fragmentation using the Global Import Intensity (GII) - a measure proposed in the literature - and use this to investigate the association between GII and employment at the industry level for a large number of countries. Results show a negative correlation between

GII and employment, which is in line with the interpretation that involvement in global value chains reduces employment in the home country. The paper also shows that these effects are stronger in manufacturing than in services industries.

The second paper “Effect of the integration into global value chains on the employment contract in Central and Eastern European countries” follows on from the first paper but now considers more the quality of employment rather than the quantity. Specifically, it investigates the relationship between the involvement in GVCs – measured again using the GII – and an indicator for whether an individual worker has a temporary or permanent contract. The analysis is conducted using a combination of individual level data from the Structure of Earnings Survey (SES) and sector level GII indices from WIOD. Overall, the estimation results show that workers in sectors with higher GIIs are, on average, less likely to have temporary contracts. However, a more disaggregated analysis indicates that this result is reversed in more tradable sectors: in those sectors, workers are more likely to have temporary contracts as sector level GII increases.

While the first two papers look at the involvement in global value chains per se, the third paper “Position in global value chains and wages in Central and Eastern European countries” shifts the focus somewhat to investigating the role of where in a global value chain an industry is positioned. The authors use WIOD data to calculate the GII as well as a measure of “upstreamness” which indicates the position of an industry in the value chain. The main focus in the empirical analysis is on the interaction of GII and upstreamness. Wages, as dependent variable, are measured at the individual level using micro data from the Eurostat EU Statistics on Income and Living Conditions (EU SILC). The main results of the econometric exercise show that the wage effects of GII indeed depends on the position of the workers’ industry in the value chain: Workers in downstream sectors (i.e., that are close to the final consumer) experience a wage decline when GII increases. This effect is not observed for workers in industries further upstream.

Paper four goes back to sector level data and investigates the relationship between GVC participation and GVC position (as in paper three) on wages and employment in a system of potentially related equations that are estimated using 3 SLS. A further question that is addressed in the paper is to see whether the association is different for trade in final goods compared to GVC trade in intermediates. This is found to be the case in the

empirical analysis. The simultaneous analysis of the quantity of employment and wages also shows that while, on average, trade is positively associated with employment, there is a negative relationship between GVCs and wages at the industry level. In an extension, the authors also investigate whether this relationship differs for workers with different skill levels, defining high, medium and low skilled workers. Results indeed suggest that there is heterogeneity depending on workers' skill levels.

In the fifth paper entitled "Global value chains and wages under different wage setting mechanisms" the focus is again on wages. In particular, the paper asks whether the relationship between GVC involvement and wages for individuals is different depending on the wage setting institutions in the country. As in paper two, the analysis is based on a combination of micro data on wages from the SES and industry level data on GVC participation. Furthermore, the analysis includes a variable to measure the position in the GVC (upstreamness), as in previous papers. Results show that the relationship between wages and GVCs indeed depends on the wage bargaining environment. In the presence of centralised bargaining greater GVC involvement is associated with lower wages, while this is not the case in countries / industries with firm level bargaining. Importantly, this paper makes a methodological contribution in using an instrumental variables approach to deal with the endogeneity of GVC participation. The instrument is constructed as a Bartik-style instrument, using information on GVC participation in neighbouring countries.

The final paper "Joint foreign ownership and global value chains' effects on productivity: A comparison of firms from Poland and Germany" uses firm level data from Amadeus combined with industry level from WIOD. The latter is used to calculate the GVC measures, while firm level data allows to calculate firm-level productivity (total factor productivity) as well as identify firm nationality. The paper then investigates empirically whether (i) foreign owned firms are more productive than domestic firms, (ii) whether GVC participation of the industry is related to firm level productivity, and (iii) whether the relationship between GVC participation and firm level TFP depends on the nationality of ownership. Results show for Poland that GVC participation is positively correlated with productivity of domestic but not foreign firms. For German firms, however, no positive impact of GVC participation is found.

Overall, the papers collected in this Ph.D. thesis all make a significant contribution to the literature. They show a sufficient level of novelty in a number of dimensions: employing the GII indicator in a number of different applications, combining individual level data (SES and EU SILC) and firm level data (Amadeus) with industry level data, investigating the role of wage setting institutions, position in the value chain, and nationality of ownership; and a simultaneous analysis of wages and employment. One paper also deals explicitly with the endogeneity problem in the GVC-wage relationship and proposes an interesting and novel instrument to deal with this. The analyses are in all cases carefully and competently executed, and the papers are well written. The contribution of the candidate to each of the co-authored papers is very clearly stated and significant in all cases. There is very little to quibble with in the thesis, though perhaps the candidate could have devoted more effort to teasing out policy conclusions, given the wealth of results amassed in the six papers.

However, this should not distract from the fact that this is a very good thesis which clearly fulfils the requirements for a Ph.D. thesis in the field of economics. I strongly recommend the admittance to a public defense.

Kiel, 26 September 2023

A handwritten signature in blue ink, consisting of a stylized first name and a large, circular surname.

(Holger Görg)