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Globalization and productivity

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2013

document version

Publisher's PDF, also known as Version of record

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citation for published version (APA)

Mohlmann, J. L. (2013). *Globalization and productivity: Micro-evidence on heterogeneous firms, workers and products*. Tinbergen Institute.

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Summary

In the introduction of this dissertation, three main research questions were posed. The first question was: *how do physical, economic, cultural and institutional distance act as barriers to international trade, and does the impact of these types of distance vary for different types of products?* This question was covered in Chapter 2, which used a gravity equation to model international trade flows. The issue of cultural barriers to trade is also related to Chapter 5, which investigates the relationship between immigrants, trade, and productivity at the level of the firm. The results from Chapter 2 confirm the network/search theory specified in Rauch (1999) with respect to the effect of linguistic or colonial links. Trade flows are significantly higher between countries that share the same language or have a common colonial history. Our results show that trade flows are about 80 percent higher for countries that either share the same language or have a common colonial history, compared to country pairs that have none of these. The effect of linguistic or colonial links is larger for more differentiated goods. This is in line with the network/search theory from Rauch (1999), which indicates that these type of links are less important for homogeneous products. The reason for this is that homogeneous products can simply be traded on world markets, which means that it is less difficult to find a match between buyers and sellers and that it requires less negotiation since contracts can be standardized. So the more heterogeneous products are, the higher the importance of linguistic or colonial links.

For geographical distance, our results show the opposite pattern: this type of distance is relatively important for homogeneous products. An explanation for this is that transportation costs form a larger share of the total transaction costs for homogeneous products than for heterogeneous products. So the result that geographical distance is more important for homogeneous products qualifies the importance of non-traditional distance types relative to geographical distance for heterogeneous products. The analysis of additional cultural and institutional distance variables suggests that these effects are rather different for different product types. Cultural distance exercises a negative influence and institutional distance a positive influence on goods traded on organized exchanges, while

both variables are statistically insignificant for trade in differentiated goods. A possible explanation for the positive effect can be found in the trade-off between FDI and trade. Zooming in on more disaggregated product groups provides further insights on the effect of different dimensions of distance. An interesting result is that for nine out of ten groups cultural distance does have a negative effect on trade. It is likely that the various types of distance have even more heterogeneous effects when even more detailed product groups are considered. This is an interesting direction for further research.

The second main research question was: *what are the characteristics of firms that outsource, and how does outsourcing affect the productivity of the firm and the probability that employees lose their job?* This question consists of two parts, which are discussed in Chapters 3 and 4. Chapter 3 focussed on the consequences of outsourcing on firm productivity, while Chapter 4 studied the effects of outsourcing on the risk that employees would lose their job. Outsourcing is expected to reduce production costs and increase firm productivity. However, it can also lead to redistribution effects and to an increase of temporary unemployment. Chapter 3 investigated whether firms that outsourced are more productive than firms that did not outsource, and whether there exists a selection effect. To answer this question, three different measures for productivity were analysed: (i) labour productivity measured as the ratio between output and labour costs, (ii) labour productivity measures as output per full-time equivalent, and (iii) total factor productivity (TFP). While labour productivity is an intuitive measure, it is less suited for this analysis than TFP, since it does not account for any other input factors. Therefore, the results on TFP are the most relevant. The estimations clearly showed that larger firms are more productive than smaller firms. An increase of the firm size of one percent is associated with an increase of TFP of 0.22 percent. The evidence on outsourcing is rather mixed and depends strongly on the type of outsourcing. The strongest relationship was found for firms that internationally outsourced support activities. These firms were statistically significantly more productive than firms that did not outsource any support activities internationally. The higher productivity of these firms was also observed before they outsourced, which implies that firms self select into this type of outsourcing. The model by Melitz (2003) also predicts such a selection effect for exporting, and this is empirically confirmed for Dutch firms by

Kox and Rojas-Romagosa (2010). However, no selection effect was found for the other three types of outsourcing. Self-selection effects are more likely to occur for exporting than for outsourcing, because exporting is a sign of being more productive than other firms, while outsourcing is a sign of being less productive than another firm.

Regarding the effect of outsourcing on the change in productivity we found that firms that internationally outsourced core activities decreased their TFP compared to firms that did not. And firms that domestically outsourced support activities increased their TFP compared to firms that did not. This implies that international outsourcing of core activities was less successful than the firms thought it would be. It is possible that this is caused by higher than expected inter-firm transaction costs. These costs may be higher in the case of international outsourcing than in the case of domestic outsourcing. This is likely to be related to, for example, differences in languages or culture, see Chapter 2. Additionally, if something goes wrong at the insourcing firm, it might be more costly for the production process of the outsourcing firm in the case of core activities than in the case of support activities. These reasons might explain the result that firms that domestically outsourced support activities did increase their productivity while firms that outsourced core activities decreased their productivity.

The possibility that outsourcing increases involuntary unemployment was investigated in Chapter 4. In the public debate this is particularly relevant for international outsourcing. The effects of outsourcing on the risk for employees of involuntarily losing their job were studied by combining data on unemployment benefits with data from a survey on outsourcing. Additionally, it considered whether employees that used to work for firms that outsourced have a different probability of finding a new job after they lost their job. These questions are studied using a Cox proportional hazard model, which allows us to control for the duration of the job, as well as for other characteristics of the firms and the employees. One of the characteristics the model corrected for is job duration. The results suggest that the risk of involuntary job loss is relatively high for jobs with a low tenure, is smallest for jobs with a tenure between 10 and 25 years, and increases again after that. The risk of involuntary job loss is also higher for female employees, younger employees, and employees born in low-income countries. This can partly be explained by a higher share of

short-term contracts for these groups. The risk of involuntary unemployment has no statistically significant relationship with the general outsourcing variable. However, this seems to be the result of a positive effect of domestic outsourcing and a negative effect of international outsourcing. Employees were 23 percent *less* likely to lose their job if they worked in a firm that outsourced internationally, and 60 percent *more* likely to lose their job if they worked in a firm that outsourced domestically.

The probability of finding a new job after becoming involuntarily unemployed is lower for female employees, older employees, employees with a higher wage, and foreign employees. This may be related to the length of the period people are willing to search for a new job. For example, woman may be able to afford longer search periods, since they are more often than men the secondary earner of a family in the Netherlands. It is also possible that these groups have more difficulty finding a new job. For example, foreigners might have more difficulty with finding a new job because they are less fluent in the Dutch language. And older people might have more difficulty with finding a new job because of a discrepancy between their wage and their productivity. Additionally, people that worked for the same employer for many years may depend relatively strongly on firm-specific capital, which is less useful when they have to find a new job at a different employer.

The negative effect of the previous wage on the probability of finding a new job may be caused by a more efficient labour market for lower wage jobs. Jobs with higher wages might require longer search periods because it may be more difficult to find a successful match. We find no relationship between domestic outsourcing and the probability of finding a new job. However, former employees of firms that have outsourced internationally are about nine percent less likely to find a new job. This is probably the case because jobs that are lost due to international outsourcing are actually leaving the country. In the case of domestic outsourcing, the jobs only relocate to a different region within the Netherlands, or they might stay in the same region and only move to a different firm. Therefore, employees that lose their jobs as a result of domestic outsourcing are sometimes able to perform the same task in a different firm. When firms outsource activities internationally, this suggests a comparative disadvantage of the Netherlands in these tasks. This implies that the demand for the skills that are required for these tasks in the

Netherlands is decreasing, and employees might not be able to find a new job in which they can perform the same task as in their previous job. They might have to change their skill set, by training or education, before they are able to find a new job, which can explain why they are less likely to find a new job.

The third main research question was: *how does ethnic diversity within firms affect the productivity of these firms?* This question was studied in Chapter 5. The existence of a relationship between ethnic diversity and productivity at the level of the firm could explain why previous research found that such a positive relationship exists at the level of cities. The results show that more productive firms are larger, more diverse, and more likely to export. When TFP is explained by these three variables simultaneously, the relationship between diversity of the employees and TFP is negative. This negative relationship is caused by the share of foreign employees, and not by the diversity of the foreign employees, which showed a positive relationship with TFP. This is possibly related to the result found in previous studies at the level of cities that economic growth is smaller in the case of large homogeneous groups of immigrants (see, e.g., Ottaviano and Peri, 2005).

When the estimations are adjusted for time invariant firm characteristics, the relationship largely disappears. This could imply that there is actually no relationship between ethnic diversity and firm productivity, or that the estimation on time variation within firms is problematic. However, since the cross-sectional estimations show that overall diversity has a negative effect on TFP between firms and the fixed effects estimations show almost no impact of diversity on TFP within firms, both interpretations suggest that processes that occur at the firm level are unlikely to explain any potential positive relationship between diversity and TFP at more aggregate levels, like the level of the city. If such a relationship exists, other explanations have to be considered. For example, it might be caused by the matching process: firms might be better able to find a suitable employee in cities with more diverse employees. Alternatively, there might be selection effects that cause more productive firms or employees to move to more diverse cities. It is possible that other types of diversity than ethnic diversity are more relevant for productivity on the level of firms. For example, diversity of the level of education or diversity of the field of education.

A second result from Chapter 5 is that exporting firms seem to get some benefit from having a diverse workforce over firms that do not export, after correcting for the overall positive relationship with the export share and the negative relationship with diversity. This benefit gets higher as the share of the revenue that is generated by exporting increases. An explanation for this is that foreign employees are potentially better in closing contracts with foreign firms in their home-country. This can, for example, be caused by lower communication costs, a better cultural understanding, or because they have people in their network, which can reduce search costs for trading partners. Chapter 2, using a gravity model approach, showed that these type of costs are an important determinant of trade flows between countries. So if immigrants would be able to reduce these costs, they could increase trade on a micro level as well as on a macro level. An interesting approach for further research would be to study the relationship between the ethnicity of employees and the trade flows of the firm.