

The task-specialization hypothesis and possible productivity effects of immigration

1. Purpose

The purpose of this project is to investigate the task-specialization hypothesis and possible productivity effects of immigration using Danish matched worker-firm data. Thereby, we hope to make a significant contribution to the debate among economists on the impacts of immigration.

2. Motivation and background

The traditional models of immigration suggest that native workers lose, but there is a net economic surplus from immigration going to native factor owners. Many attempts have been made to estimate the elasticity of natives' wages with respect to immigration, but no consensus has been reached. As Borjas (2003) notes, the diversity of estimated effects in the literature is large, and if anything the estimates seem to center around zero. One reason why the traditional labor market models of immigration arrive at pessimistic conclusions for native workers is that they assume perfect substitutability between immigrants and native workers. This need not be the case, and a growing literature is investigating the degree of substitutability between natives and immigrants, theoretically as well as empirically.

Ottaviano and Peri (2008, 2011) divide the labor market into smaller cells (labor markets) and treat immigrants and natives as different inputs to production to be able to evaluate competition within and complementarities across skill-cells. Using data on US states they find evidence of imperfect substitution between immigrants and natives within skill cells. Furthermore, the estimated cross-cell complementarities give rise to positive marginal productivity (wage) effects in other skill groups. Looking at US cities Card (2009) finds similarly, that immigrants and natives are imperfect substitutes within education groups.

Peri and Sparber (2009) propose task specialization as a reason for complementarities and find evidence of the task-specialization hypothesis using data on US states. They find that immigrant workers specialize in occupations that are relatively intensive in manual tasks, whereas natives pursue jobs that require more communicative and language skills. With this aggregate data, it cannot be shown whether natives are displaced in the firms that hire immigrants but absorbed elsewhere in the economy, or whether task specialization actually happens within the firms. Danish, linked employer-employee data make it possible to study specialization internal to the firm and investigate whether immigration and possible complementarities between natives and immigrant workers lead to firm-level productivity effects. Analyzing US states, Peri (2010) finds supportive evidence that immigration increases total factor productivity and leads to adjustments of technology adoption towards the skill level of immigrants.

One approach to identify the impacts of immigrants is to use the geographic variation in immigration concentration. Immigrants tend to locate where immigrants of similar origin have settled historically, and this can be used as instrument for current immigrant shares in local labor markets, see e.g. Card (2001) and Cortes (2006). Malchow-Møller et al. (2011) take this so-called

area approach to a less aggregated level - they use it to study how immigrants affect wages of natives within the same firm and find a significant negative effect of low-skilled immigrant workers on the wages of native workers. This is relevant to our project, because it shows that the area approach works using the more disaggregated Danish data.

Task specialization has also been studied using worker-firm data from Denmark but in the context of outsourcing, see Hummels et al. (2011). Outsourcing here corresponds to import of intermediate inputs to production instead of hiring immigrant workers, so from a cost-saving perspective outsourcing and immigration might generate similar effects on native workers and productivity. Hummels et al. (2011) find that when Danish firms increase outsourcing their workers tend to specialize in tasks requiring skills from Social Sciences and Humanities. In contrast, workers performing manual or routine tasks or skill sets from Natural Science and Technical educations are hurt. Ottaviano, Peri and Wright (2011) simultaneously study immigration and outsourcing effects using more aggregate US data. They find that immigrants have a positive productivity effect through cost-savings such that native employment is actually increased at the industry level. While outsourcing in their theoretical model has the same potential, they do not find similar effects of outsourcing. One reason could be that immigrant workers in contrast to outsourcing give rise to synergies in production. Possible interdependencies in outcomes for different skill groups, task specialization as well as possible productivity gains internal to the firm is something this project expect to shed light on.

For native workers it is crucial whether task specialization happens at firm level or within geographic areas. The question is whether immigration allows firms to restructure and free up natives to perform different tasks and possibly higher paying jobs within the firm, or whether workers are laid off and forced to move to find employment elsewhere. Using larger geographic areas, like US states or cities, this question cannot be answered, but we will shed light on this using firm-level data.

3. Danish matched worker-firm data

Danish matched worker-firm data provides unique opportunities to analyze effects of immigration at a less aggregated level. Specifically, this data make it possible to investigate the task specialization hypothesis and possible productivity effects of immigrant workers at the firm level, which will contribute to a better understanding of the mechanisms at work when the labor market faces immigration. The richness of the Danish data is unique in international comparisons, and so far the task-specialization hypothesis has not been tested at the firm level. Tasks performed in different occupation can be obtained by combining the ISCO occupation-codes and O*NET task data applied by Hummels et al. (2011) and Peri and Sparber (2009). This provides us with a measure of the degree of e.g. manual versus communicative tasks in each job. We have access to a matched worker-firm data set covering the population of Danish workers and firms for 1995-2008. As shown by Malchow-Møller et al. (2011) this is a period with a substantial increase in the share of immigrant workers in the Danish labor market.

4. Research questions

Does immigration lead to task-specialization within firms?

Do immigrant workers and possible task-specialization lead to firm level productivity effects?

We will analyze whether immigrant workers crowd-out Danish workers, or whether they lead to restructuring, possibly higher total employment and productivity effects at the firm level. We will exploit the Danish register data to make a detailed distinction between workers with different skills and occupation levels. The firm level data and the richness of the Danish registers allow us to analyze of the underlying mechanisms that the aggregated models blur.

5. Policy relevance

Immigration policies are subject to much controversy and it is clear that this will remain an important subject on the political agenda. One reason is that little is actually known about the impacts of immigration, economists are debating and still reluctant to give advises. Labor market and productivity effects of immigration are often debated by politicians, business leaders and wage earners in Denmark. Do immigrants crowd-out natives on Danish workplaces or do they complement native workers and lead to productivity improvements? The first scenario is often feared by Danish workers, and the latter scenario is often put forward by Danish business leaders. If immigrant workers are absorbed by the Danish labor market, they may also help easing the consequences of our ageing population. The research proposal is also relevant in the context of the ongoing debate over a declining relative productivity level in the Danish economy, see e.g. Danish Economic Council (2010). Either way, Denmark like other rich countries faces a constant immigration pressure from poorer countries and at the same time we are competing in a global labor market for high skilled labor. Hence, it seems very clear that a better understanding of the economics of immigration would benefit the public debate and be valuable for policymakers as well as the Danish economy.

6. Project participants

Giovanni Peri, Professor, University of California, Davis

Mette Foged, PhD Student, University of Copenhagen

Within the economics of international migration Giovanni Peri is one of the most renowned researchers in the world. With theoretical and empirical analyses he has been very influential in the substitutability/complementarity debate among migration economists and suggested the task-specialization hypothesis. This makes him extremely valuable for this project. As a PhD student Mette Foged has chosen to specialize within the economics of international migration and cooperation with Giovanni will be very educating for her and beneficial to her academic career. Mette has considerable experience with empirical analysis using Danish register data. Together we therefore expect to be able to exploit the unique Danish employer-employee data to provide new knowledge on economic impacts of immigration.

7. Time schedule

The planned duration of this project is two years starting September 2011. A more detailed, theoretical specification of the research questions, and an empirical strategy will be made this fall. During the spring 2012 the empirical model will be estimated. Mette Foged will spend the fall 2012 at UC Davis visiting Giovanni Peri, there we will work intensively on the paper. The goal is to have it ready for submission to an international recognized journal early 2013. We hope that the collaboration also will lead to co-authorship on further papers.

8. Budget

The success of this project is dependent on funding for expenses that are beyond the PhD grant of Mette Foged. Two months of salary for Giovanni Peri to be able to reserve time for the project are required. In addition the project involves some travelling between Copenhagen and Davis, expenses to a few additional register variables and conference participation such that Mette Foged can present the paper at international conferences.

Salary for Giovanni Peri (total of 2 months)	140,000,-
Data: Extra variables*	20,000,-
Conference participation	20,000,-
Travel expenses for Mette Foged to visit UC Davis	20,000,-
Overhead (20 percent of the expenses listed above)	<hr/> 40,000,-
Total	<hr/> 240,000,-

* Mette Foged has already been granted access to Jakob R. Munch's project "Globalization and worker and firm outcomes" at the CAM-server, where matched worker-firm data is available. The projectholders therefore expect limited expenses to further data purchases.

Attachments

CV of Giovanni Peri

CV of Mette Foged

Recommendation by supervisor Jakob R. Munch regarding this project

Literature

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