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Labor market effects of international outsourcing: How measurement matters

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ABSTRACT

As regards labor market effects of International Outsourcing, empirical results differ strongly. This is not only due to different data, the use of different indices adds to the puzzle. This paper investigates the importance of measurement differences for analyzing labor market effects of International Outsourcing. To this end, several indices are compared with respect to their design, their descriptive properties, their quality in proxying International Outsourcing activities, and their econometrical performance. As the results show, International Outsourcing effects depend strongly on measurement differences and the level of industry aggregation. Considering these results, different empirical findings can be reconciled.

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1. Introduction

Since International Outsourcing moved into the focus of political and social discussion, it has been blamed to reduce relative demand for low skilled labor. Thus, beside skill-biased technological change, International Outsourcing is seen as one main culprit for labor market disruptions in industrialized countries. While outsourcing is defined as the procurement of inputs from an external supplier, it is the international component, namely the use of a production fragment produced abroad, that achieves most attention in public discussion as well as in economic research. Even if International Outsourcing is already seen as a world-wide phenomenon, [Kierzkowski \(2005, p. 235\)](#) correctly mentions that “it is only the beginning of what seems an inexorable process”.

In order to investigate labor market effects of International Outsourcing, a wide area of empirical research emerged.¹ Since it is not possible to directly observe International Outsourcing on an aggregated macro level, there is a need to proxy it. Thus, several indices were developed and a few of them are very common in use. Within a descriptive analysis, [Campa and Goldberg \(1997\)](#) e.g. measure International Outsourcing using an index called vertical specialization. They show for the period 1974–1993, that International Outsourcing increased strongly in the US, Canada and the UK, but not in Japan. [Hummels, Ishii, and Yi \(2001\)](#) measure International Outsourcing as imported inputs used to produce products that are afterward exported. Based on OECD input-output tables they document several key aspects of International Outsourcing for various countries. [Yeats \(2001\)](#) uses the measure of imported inputs in total imports and mentions for a variety of countries that International Outsourcing is already at a quite high level.

Even though it is difficult to classify empirical contributions, they can be divided into two broad groups: some contributions show insignificant effects of International Outsourcing while others support the importance of International Outsourcing for changes on the labor market. [Berman, Bound, and Griliches \(1993\)](#) first estimate labor market effects of International Outsourcing using a narrow measure the parts and components purchased from abroad. Regressing the share of high skilled wages in total

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¹ For an analysis of the determinants of International Outsourcing, see e.g. [Jones, Kierzkowski, and Lurong \(2005\)](#) who empirically test the model of [Jones and Kierzkowski \(1990\)](#), and [Kimura and Ando \(2005\)](#) who analyze International Outsourcing activities in East Asia using a huge micro economic dataset.

Table 1
Indices used in empirical contributions.

Contribution	Index	Labor Market Implications
<i>Descriptive contributions</i>		
Campa and Goldberg (1997)	Vertical specialization (VS)	–
Hummels et al. (2001)	Imported inputs to produce exports	–
Yeats (2001)	Imported inputs in total imports (IITM)	–
<i>Insignificant effects of international outsourcing</i>		
Berman et al. (1993)	Parts and components purchased from abroad	Skill biased technical change as the main driving force
Amiti and Wei (2004)	Imported inputs in total inputs (IITI)	Service outsourcing no effect on aggregated labor markets
<i>Significant effects of international outsourcing</i>		
Feenstra and Hanson (1996a,b)	Imported inputs in total inputs (IITI)	Increasing relative wages of the high skilled
Egger and Egger (2002)	Imported inputs in total imports (IITM)	Increasing wages in low wage countries
Strauss-Kahn (2003)	Vertical specialization (VS)	Decreasing employment of the low skilled in France
Hijzen et al. (2004)	Imported inputs from the same industry	Decreasing demand for low skilled labor
Geishecker and Görg (2005, 2008)	Imported Inputs in Gross Output (IIGO)	Wages of low skilled decrease in low skill intensive industries (vice versa for the high skilled)
Hijzen (2007)	Two indices (one narrow and one general)	Increasing wage inequality (but technological change matters most)

wages on the components of a quasi-fixed cost function, including their International Outsourcing proxy, they show for the US manufacturing sector that International Outsourcing has only small effects while it is the labor saving technical change that turns out to be the main driving force. Amiti and Wei (2004) investigate the role of service outsourcing for the US and the UK showing that it is on a much lower level but increases at a faster pace than material outsourcing in both countries. Using imported inputs in total inputs, they estimate labor market adjustment effects with a standard labor demand equation. As a result they also present only insignificant effects of service outsourcing on job growth in the UK.² Thus, they summarize that service outsourcing does not induce a fall in aggregate employment but could lead to overall positive effects since it increases the productivity within industries.

By contrast, Feenstra and Hanson (1996a,b, 1999) first present a positive, statistically significant effect of International Outsourcing on the change in the non production wage share of the US manufacturing industry. Using the index imported inputs in total inputs they highlight the importance of International Outsourcing for understanding changes in labor demand and first note that measurement differences can be one crucial point for achieving different results. Egger and Egger (2002) examine the effects of International Outsourcing within the involved low-wage countries. As proxy they use i.a. imported inputs in total imports and find a significant positive (negative) effect of imports (exports) on wages in the manufacturing industry. Focusing on the manufacturing sector in France, Strauss-Kahn (2003) shows that International Outsourcing contributes significantly to the decline of the share of unskilled workers in employment. She bases her calculations on an index called vertical specialization and, like Berman et al. (1993) and Feenstra and Hanson (1996b, 1997), estimates labor market effects using a cost share equation of a translog function. Hijzen, Görg, and Hine (2004) estimate the effects of International Outsourcing on labor demand in the manufacturing sector in the UK using a very narrow measure inputs in an industry imported from the same industry. As a result they note that International Outsourcing nevertheless has a strong negative effect on the demand of low skilled workers and thus, is an important component in explaining the changing skill structure. Geishecker and Görg (2005, 2008) show for the German economy that International Outsourcing may have different adjustment effects for different levels of industry aggregation. As index they use imported inputs in total output. While for the manufacturing sector as a whole, effects of International Outsourcing are not significant, results differ when considering a more disaggregated industry level. Estimating a microeconomic log wage equation they show that, while low skilled workers in the low skill intensive industries experience significant reductions in their real wage, there is no such effect for low skilled workers in the high skill intensive industries. On the other hand, high skilled workers significantly gain from fragmentation only in the high skill intensive industries while the effect on their real wage in the low skill intensive industries is not significant. Hijzen (2007) investigates the effects of International Outsourcing and skill biased technical change on factor prices in the UK for the period 1993–1998. Using two indices, a more general and a narrow one, he shows that International Outsourcing effects are significant, however, technological change is the predominant force behind the change in relative wages. As Egger and Egger (2005) mention, most of the empirical contributions analyzing International Outsourcing do not control for possible spill over effects between industries. When considering these important features, labor market implications of International Outsourcing are expected to get even magnified. Table 1 highlights the indices used and the effects achieved by summarizing the existing literature.

As this literature review shows, empirical results differ strongly. Some of them support the importance of International Outsourcing for changes in factor prices, others refuse these effects and show that it is the skill biased technical progress that matters most. The use of different indices to proxy International Outsourcing activities adds to the puzzle. Basic presumptions made on the origin of different empirical results are that measurement differences may play a crucial role (Feenstra & Hanson, 1996b) and that the level of industry aggregation matters (Geishecker & Görg, 2005; Amiti & Wei, 2005). This contribution answers both of them. Investigating if measurement differences may be one reason for achieving different empirical results it turns out that

² In a companion paper Amiti and Wei (2005) show for the US economy that a negative effect occurs when looking at a more disaggregated industry level, but this effect disappears when considering the aggregate.

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