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Outsourcing and productivity: Evidence from Korean data

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ABSTRACT

This paper aims to provide the first investigation of the productivity effect of outsourcing by using the Korean industry data at the three-digit ISIC level. We find that there are positive productivity gains from material outsourcing. The impact of material outsourcing increases when we account for the share of imports from China. This is due to the growth of Chinese exports to Korea over the recent years. Moreover, the results also suggest that during our sample period Korea's experiment with service outsourcing did not lead to an increase in its productivity.

1. Introduction

Outsourcing or offshoring continues to be a topic of great interest in both the developed and developing countries. Grossman and Rossi-Hansberg (2006, p. 2) note that while "much ink has been spilt on the subject of offshoring" most studies overlook the impact of globalization on productivity. Using U.S. data from 1997 to 2004, they find that the combined productivity and labor-supply effect had a positive impact on the real wage of less-skilled workers. Amiti and Wei (2009) find that service outsourcing accounted for about 10% of labor productivity growth in the U.S. between 1992 and 2000. Also using U.S. data from 1995 to 2002, Mann (2003) calculates that real GDP growth increased 0.3% points annually partly due to lower prices from outsourcing in the IT industry.

A few studies examine the productivity effect of outsourcing using European data. Daveri and Jona-Lasinio (2008) find "narrow off-shoring" of intermediates to be beneficial for productivity growth in the Italian manufacturing industries. They define narrow outsourcing as the share of imported intermediate inputs in total purchases of intermediate inputs. However, their result is not robust for service outsourcing and the broad measure of outsourcing defined in Feenstra and Hanson (1999). Focusing on three U.K. manufacturing industries Girma and Görg (2004) find that outsourcing is positively related to productivity. Görg, Hanley, and Strobl (2008) find that between 1990 and 1995 greater outsourcing of both materials and services led to higher productivity in the Irish electronic industry but only for foreign-own firms. For domestic exporters, the positive association between outsourcing and productivity existed only for material inputs.

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The purpose of this paper is to analyze the impact of Korea's outsourcing activities on productivity in the manufacturing industry. The few available studies that examine the impact of outsourcing on productivity predominately focus on the United States and Europe. To our knowledge, this is the first available study using Korean data.

The importance of studying this country is that between 1981 and 2001, intra-regional trade in East Asia (China, Korea, and Japan) expanded about seven times, while world trade increased approximately three times during the same period (Ando, 2006). Therefore, our paper adds to the current literature by examining whether Korea is benefiting from the increasing intra-regional trade in intermediate goods within the region. Ahn, Fukao, and Ito (2008) show that from 1990 to 2003 parts and components and processed intermediate goods accounted for about 65% of the increased trade within East Asia. The impact of outsourcing on productivity has important implications for the long-run growth and development of Korea as the region discusses the possibility of forming a free trade area.

In this paper, we apply the Feenstra and Hanson (1999) definition of outsourcing to the Korean manufacturing industry for years 1985–2001. One channel by which outsourcing may increase productivity is by allowing firms to shed their relatively inefficient parts of the production process and expand their output in stages in which they have a comparative advantage (Amiti & Wei, 2009). Feenstra (2007) notes that through outsourcing the gains in firm productivity may translate to higher real wages from lower prices of final goods. We find a positive relationship between material outsourcing and Korean productivity. By contrast, service outsourcing has an insignificant impact on Korean productivity.

The paper is organized as follows. Section 2 provides background information on Korea's involvement in outsourcing activities. A discussion of the Korea's trade growth will also be presented in Section 2. A description of the empirical framework and data is presented in Section 3 while Section 4 offers the results and summary. The conclusion is given in Section 5.

2. Background information

Panel A of Table 1 shows that Korea is a highly open economy, particularly in merchandise trade. Korea's import and export shares of world total increased for both merchandise and service trade between 1990 and 2005 as shown in panel B of Table 1.

Using the narrow and broad definitions of outsourcing as defined by Feenstra and Hanson (1999) and Ekholm and Hakkala (2006), Ahn et al. (2008) find evidence to suggest that Korea's foreign outsourcing of both materials and services increased between 1990 and 2000, with a more rapid rise for the latter input.

The top three countries Korea imports from are Japan, U.S., and China. From Fig. 1, it can be seen that the share of Chinese imports grew between 1980 and 2006 while the import shares of Japan and the U.S. declined. In 2004, China became second only to Japan as Korea's top importer with the gap between the two narrowing in the recent years. Fig. 2 shows that China became the top export destination for Korea in 2003. Ahn et al. (2008) also point that exports of other East Asian economies of processed intermediate and part and components to Korea increased more rapidly relative to Japan.

Korea's top importing sectors are petroleum and electrical machinery according to Fig. 3. Cheng (2004) calculates that Korea's chief imports are capital and industrial raw materials with a large share of these goods used in the production of electrical and electronic exports. With China as one of its top East Asian supplier, Korea's imports of processed intermediate goods and parts and components increased from U.S.$17.4 billion in 1990 to U.S.$53.9 billion in 2003 (Ahn et al., 2008). In particular, Fig. 4 shows that nearly 50% of Korea's import of electrical machinery is from China.

Table 1
Import and export shares of GDP by country.

Panel A	Imports share of GDP						Exports share of GDP					
	Merchandise			Services			Merchandise			Services		
	1990	2000	2005	1990	2000	2005	1990	2000	2005	1990	2000	2005
Korea	26.48	31.36	33.17	0.00	6.45	7.33	24.65	33.67	36.11	3.47	5.65	5.58
Japan	7.80	8.13	11.36	2.79	2.48	2.92	9.53	10.27	13.12	1.37	1.46	2.38
U.S.A.	8.98	12.88	13.95	1.70	2.06	2.26	6.84	8.00	7.28	2.31	2.79	2.85
Panel B	**Imports share of world total**						**Exports share of world total**					
	Merchandise			Services			Merchandise			Services		
	1990	2000	2005	1990	2000	2005	1990	2000	2005	1990	2000	2005
Korea	1.97	2.44	2.45	0.001	2.36	2.46	1.87	2.71	2.73	1.12	1.79	1.77
Japan	6.63	5.78	4.82	10.10	8.27	5.65	8.28	5.70	5.70	5.07	4.39	4.39
U.S.A.	14.57	19.17	16.21	11.74	14.37	11.98	11.33	8.67	8.67	16.29	14.39	14.39
World total ($ billions)	3545	6565	10,685	835	1400	2346	3475	10,434	10,434	816	2460	2460

Source: World Bank, *World Development Indicators*, various years.