

Global Supply Chains and Outsourcing



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**Professor Sheldon
sheldon.1@osu.edu**

What are Global Supply Chains?

- ❖ 80 percent of trade now occurs within *global supply chains*
- ❖ Global supply chain for specific good: *value added* of all activities required to produce good for final consumption
- ❖ First appeared in early-1990s, rapidly developing across several industrial sectors
- ❖ Key feature: manufacturing has become increasingly fragmented across countries as production process has been “unbundled”

What are Global Supply Chains?

- ❖ **Stages of production dispersed geographically**
- ❖ **Apple's iPod: assembled in China used components sourced globally, e.g., display and hard drive produced in Japan by Toshiba**
- ❖ **Using its supply chain, Apple captured 36 percent of retail price, compared to 2 percent for assembly in China (Dedrick *et al.*, 2009)**
- ❖ **Two factors driving fragmentation: (a) information and communications technology (ICT) revolution, and (b) unskilled labor in emerging economies**

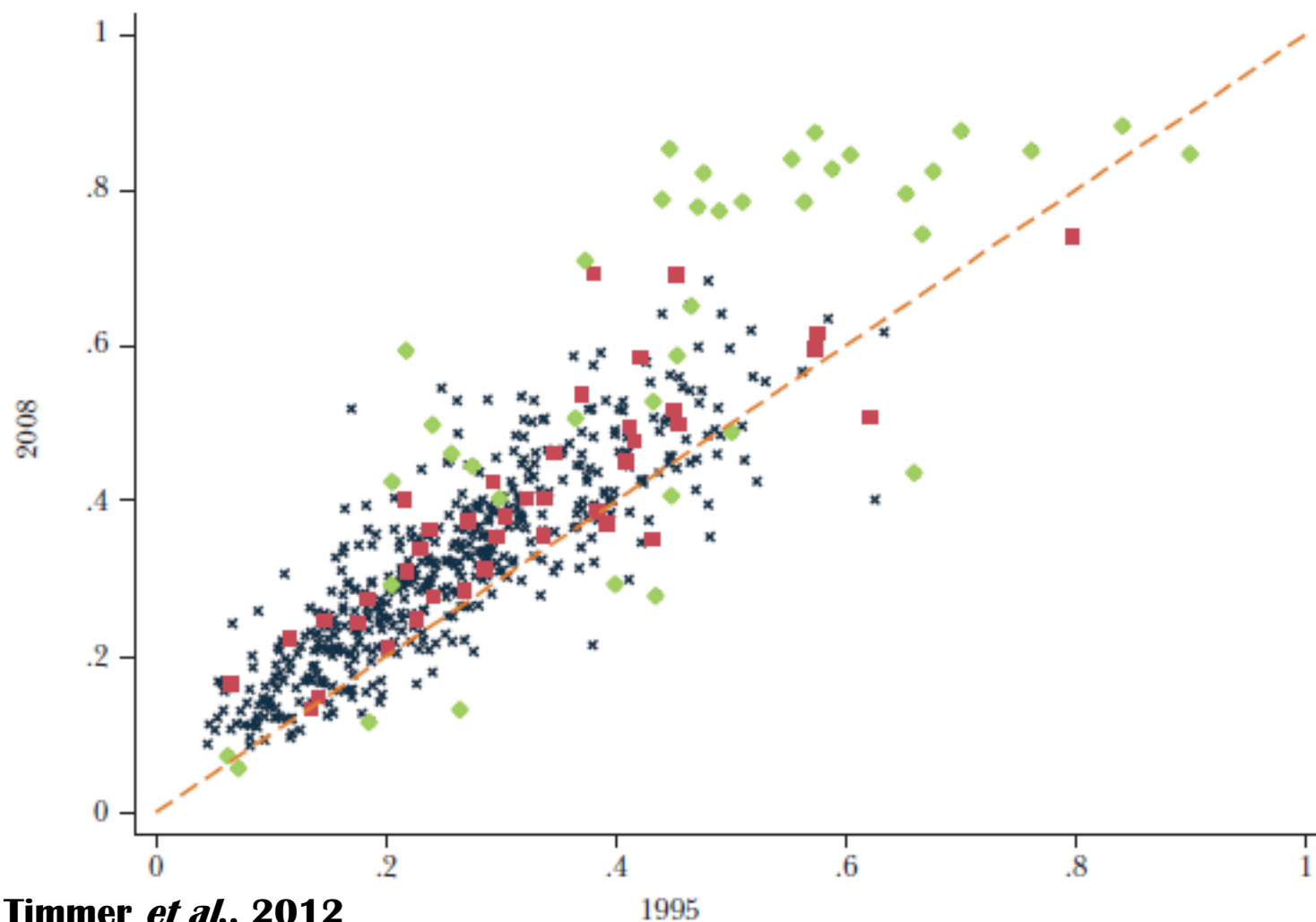
Supply Chain Characteristics

◇ **Timmer *et al.* (2012) have established:**

- **International fragmentation is expanding – measured by foreign value-added content of production (Figure 1)**
- **Increasing share of value-added going to capital and high-skilled labor, falling share to medium-skilled labor (Figure 2 and Table 1)**
- **Countries in North increasingly specialized in using services of high-skilled labor in combination with intellectual capital**

Supply Chain Characteristics

Figure 1: Foreign Value-Added Shares in Global Value Chains, 1995 and 2008

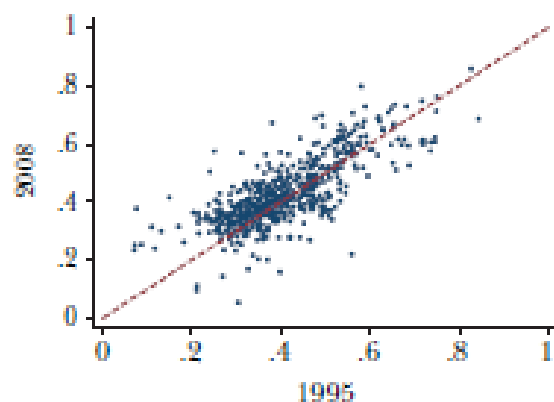


Source: Timmer *et al.*, 2012

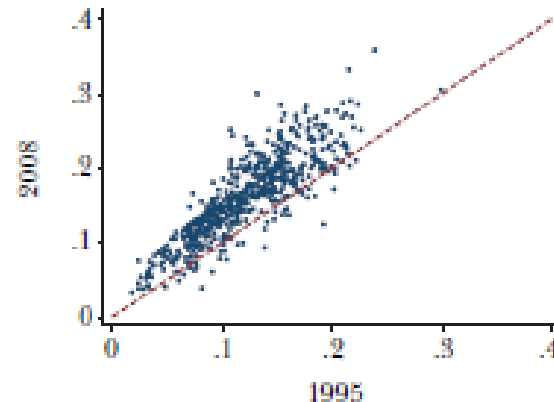
Supply Chain Characteristics

Figure 2: Input Shares in Value-Added in Global Value Chains, 1995 and 2008

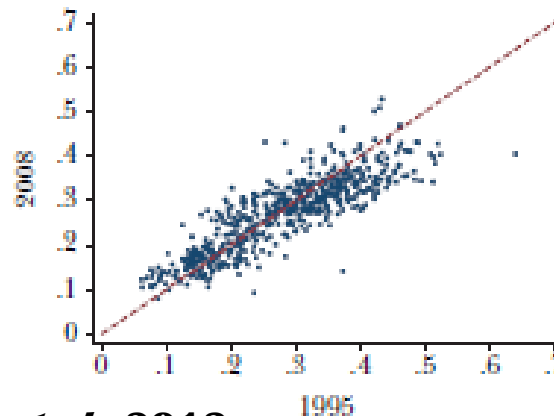
A: Capital share



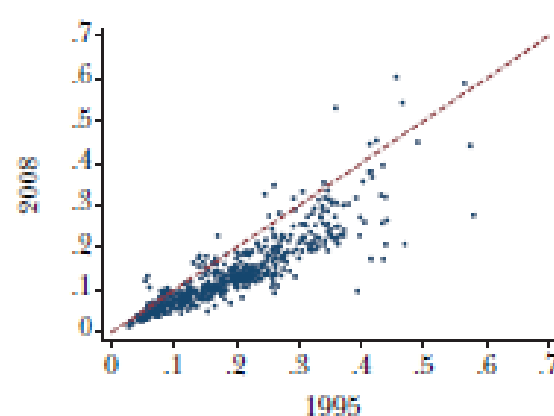
B: High-skilled labor share



C: Medium-skilled labor share



D: Low-skilled labor share



Source: Timmer *et al.*, 2012

Supply Chain Characteristics

Table 1: Changes in Input Shares in Global Value Chains, 1995-2008 (%)

	<i>Capital</i>	<i>Low-skilled labor</i>	<i>Medium-skilled labor</i>	<i>High-skilled labor</i>
United States	3.9	−1.9	−5.9	4.0
Japan	4.5	−5.4	−2.1	3.1
Germany	6.8	−2.8	−7.4	3.4
France	0.2	−8.7	0.1	8.4
United Kingdom	−3.4	−8.0	1.2	10.2
Italy	−1.1	−14.8	10.4	5.5
Spain	0.1	−12.9	4.7	8.1
Canada	1.8	−2.0	−4.6	4.8
Australia	6.0	−8.4	−0.9	3.3
South Korea	9.3	−11.6	−5.6	8.0
Netherlands	5.5	−7.3	−7.1	8.9
Total all high-income	2.9	−4.9	−3.0	5.0

Source: Timmer *et al.*, 2012

Outsourcing

- ❖ **After economist Gregory Mankiw described outsourcing as “...a good thing...”, it became a hot-button issue in 2004 Presidential election**
- ❖ **Procuring of *service* inputs by firm from foreign source, i.e., outside firm from unaffiliated supplier**
- ❖ **Origin - contracting out of design work in UK auto industry to Germany in 1970s (Amiti and Wei, 2005)**
- ❖ **Focus on service outsourcing to low-wage countries – 6/10 leading cities for outsourcing are Indian**

By Whom, Where To, What Jobs?

- ❖ **Focus has typically been on US and UK-based firms to English-speaking countries**
- ❖ **However, other developed countries outsource too, e.g., Germany, Japan, Italy, France**
- ❖ **Interestingly, India and China also outsource business and computer services**
- ❖ **Back-office services (accounting), telephone call centers, computer programming, and testing components through computer modeling**

What Has Caused Outsourcing?

- ❖ **Lower costs of production overseas, main difference being in labor costs, e.g., computer programmers - in 2001, India: \$45,000/annum vs. US: \$70,000/annum**
- ❖ **Increase in educated workers overseas – especially in fast developing countries such as India**
- ❖ **Technological advances in computers and telecommunications**
- ❖ **Deregulation and trade liberalization in services sector over past two decades**

The Great “Unbundling”*

- ❖ **Advances in transport/communication have weakened link between geographic concentration and specialization**
- ❖ **Possible to separate tasks in time and space**
- ❖ **Blinder (2006) denotes this as “third industrial revolution”, i.e., (i) agriculture to manufacturing (18th -19th Century); (ii) manufacturing to services (20th Century); (iii) outsourcing (21st Century)**
- ❖ **Friedman (2005) describes it in terms of forces he believes have “flattened” world**

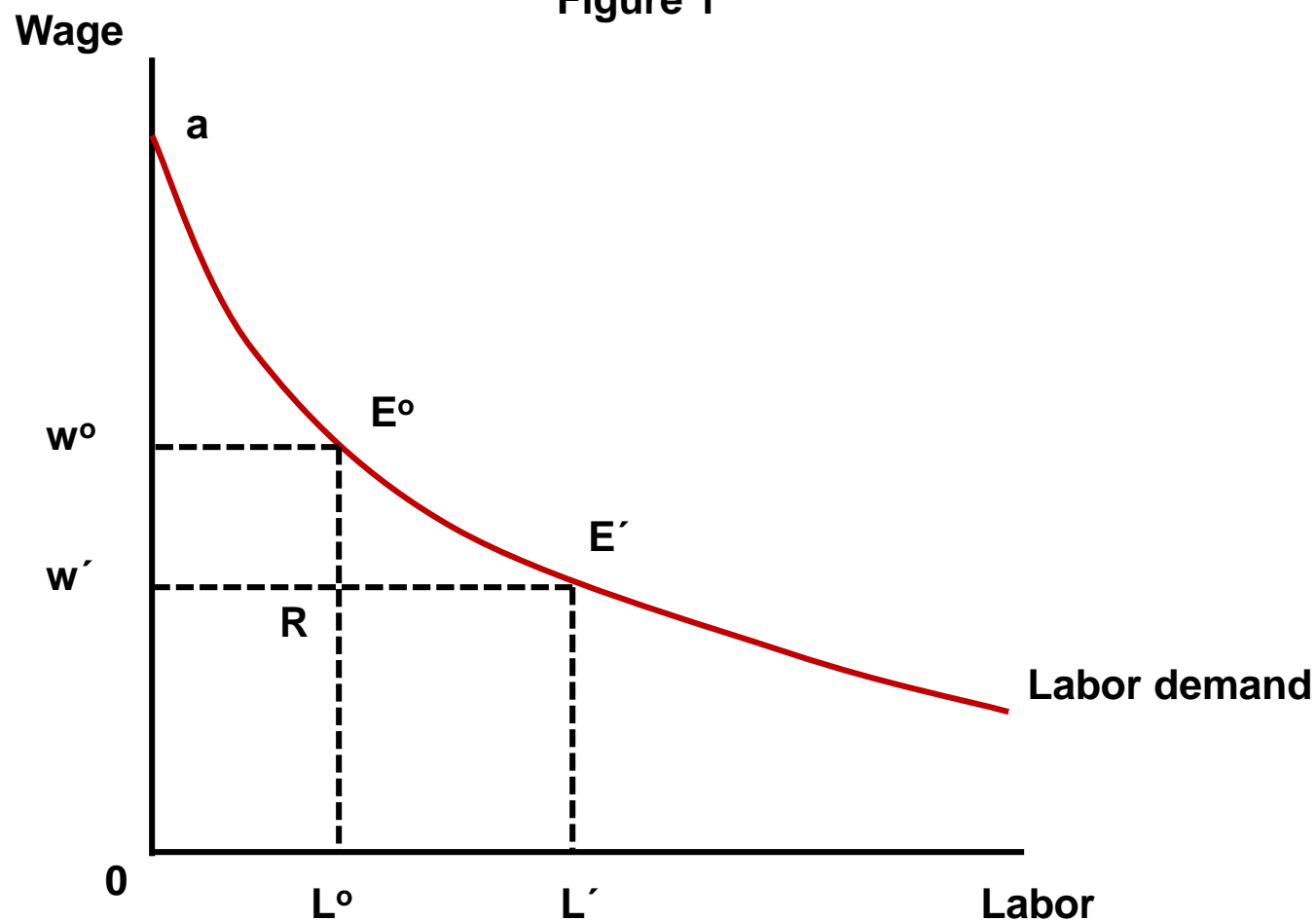
* **Baldwin (2006)**

Economic Analysis

- ◇ Assume one good, produced with labor and capital, with diminishing returns to both factors (Figure 1)
- ◇ If L^0 is labor endowment, wage is w^0 , wage bill is $0w^0E^0 L^0$, and return to capital is aw^0E^0
- ◇ Suppose innovation allows labor to be purchased at w' from overseas, and domestic labor is paid lower wage
- ◇ Domestic labor now gets $0w'R L^0$, and capital gets $aw'E'$, net gain being $E^0R E'$
- ◇ Captures key reason for concern about outsourcing – domestic labor loses, capital gains

Economic Analysis

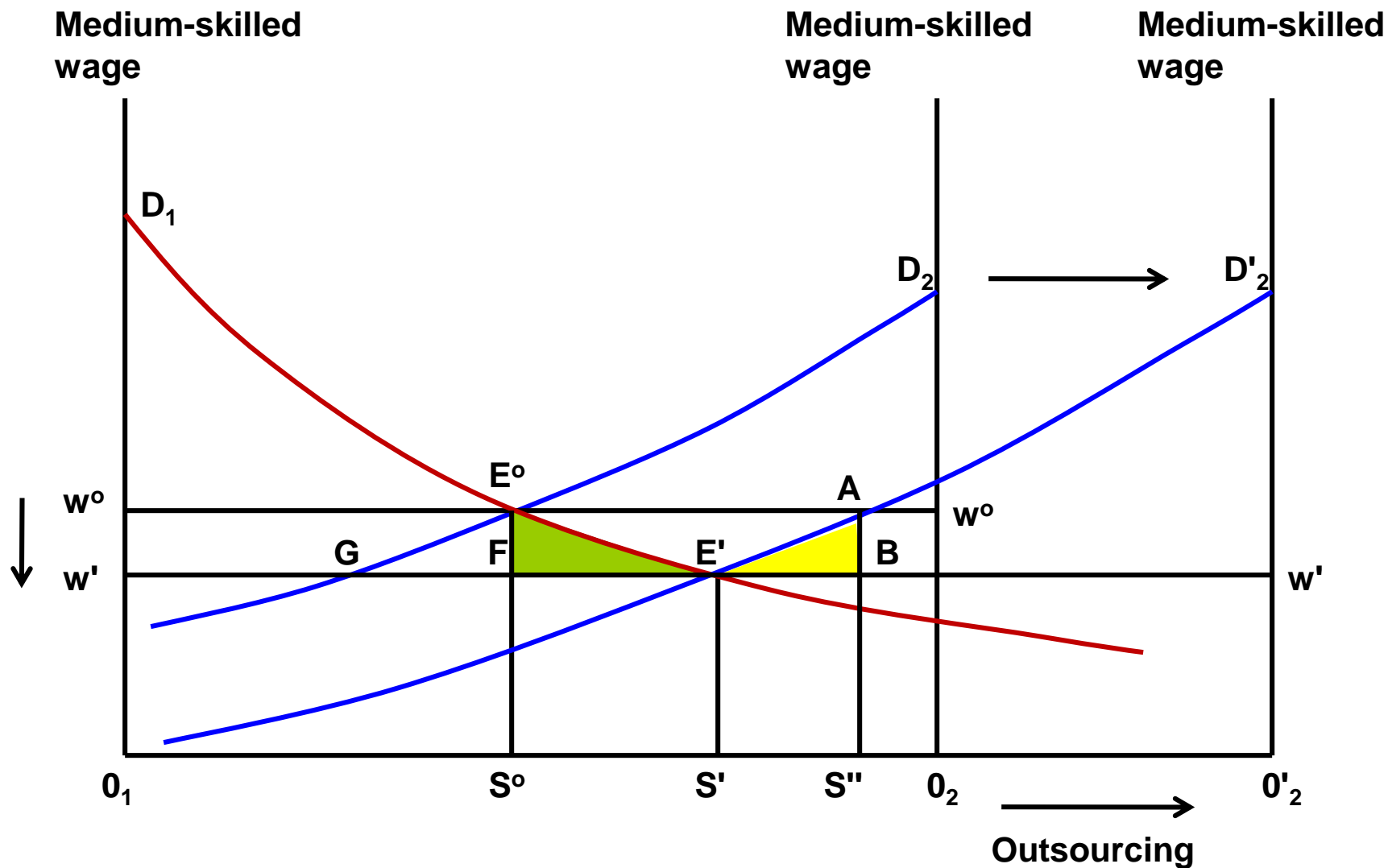
Figure 1



Economic Analysis

- ◇ Each sector uses medium-skilled labor (S), import-competing sector uses unskilled labor, export sector uses high-skilled labor (human capital)
- ◇ Prior to outsourcing, equilibrium at E^0 , S^0 allocation of medium-skilled workers, wage w^0
- ◇ Suppose innovation allows outsourcing of medium-skilled labor at wage w' , creating excess demand of GE'
- ◇ Excess demand met through outsourcing – expands total supply of S by $O_2O'_2$
- ◇ Shift sector 2's demand for labor to D'_2

Economic Analysis



Economic Analysis

- ◇ **$GE' = E^0A$ by construction, sector 1 employs extra medium-skilled labor S^0S' , and sector 2 employs $S'S''$**
- ◇ **Outsourcing increases national income – net gain in sector 1 is E^0FE' , and in sector 2 is ABE'**
- ◇ **Given diminishing returns to all factors, outsourcing of medium-skilled labor, and decline in its wage, results in unskilled wage and return to human capital increasing**
- ◇ **Outsourcing benefits economy as a whole, but redistribution to unskilled labor and human capital**