Offshoring of Service Industry in Japan

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Introduction

In spite of the dominant role in the economy, has the service industry in Japan changed her character such as the manufacturing industry has strengthened the offshoring confronting to the globalized economy? In his sensational article on a potentially growing offshoring service industry in U.S.A., Alan Blinder (2006)[1] estimated about 40 million employments which loose the job opportunity. There is a growing interest in this business activity.[2] In this paper, we analyze the offshoring activity in Japanese service industry. In this paper, we adopt the index of VSL developed by Hummels et al. (2001)[3] as the offshoring activity. Japanese service trade compared with non-service trade is analyzed in time series data for the year 1990 to 2008.

VSL is defined as the import content of export in the economy. In the several OECD researches, they show a certain growing tendency of offshoring under the globalizing world. Backer-Yamano (2008) and Meng-Yamano-Colin (2010)[4] compared the strength of offshoring among 32 economies using OECD Input-Output tables.[5]

Overview of Service Industry in Japan

Service industry in aggregate has a largest portion in production size and in employment. The following Figure 1 and Figure 2 show the output and the employment of service industry in Japan compared with non-service industry for the year 1990 to 2008. Figure 3 also shows the relative size of Japanese export of service industry to non-service industry. The relative ratio of output in service is 65% in 2008 and the ratio of employment is 78% in the total economy. However, as Figure 3 shows, the same ratio of export is only about 23% in 2008.

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[1] Alan S. Blinder, “Offshoring: The Next Industrial Revolution?” Foreign Affairs, 2006.
[2] Michael Spence, “The Impact of Globalization on Income and Employment”, Foreign Affairs, 2011.
[3] Hummels, D., Ishii, J., and Yi, K.-M. (2001) ‘The nature and growth of vertical specialization in world trade’, *Journal of International Economics* 54, 1: 75-96.
[4] Koen De Backer and Norihiko Yamano, “The measurement of Globalisation using International Input-Output Tables”, in OECD, Staying Competitive in the Global Economy, 2008. And, Bo Meng, Norihiko Yamano and Colin Webb, “Vertical Specialisation Indicator based on Supply-driven Input-Output Model”, IDE Discussion Paper, No. 270, JETRO-IDE, 2010.
[5] OECD I-O Database: www.oecd.org/sti/inputoutput

Figure 1 Output in Japan

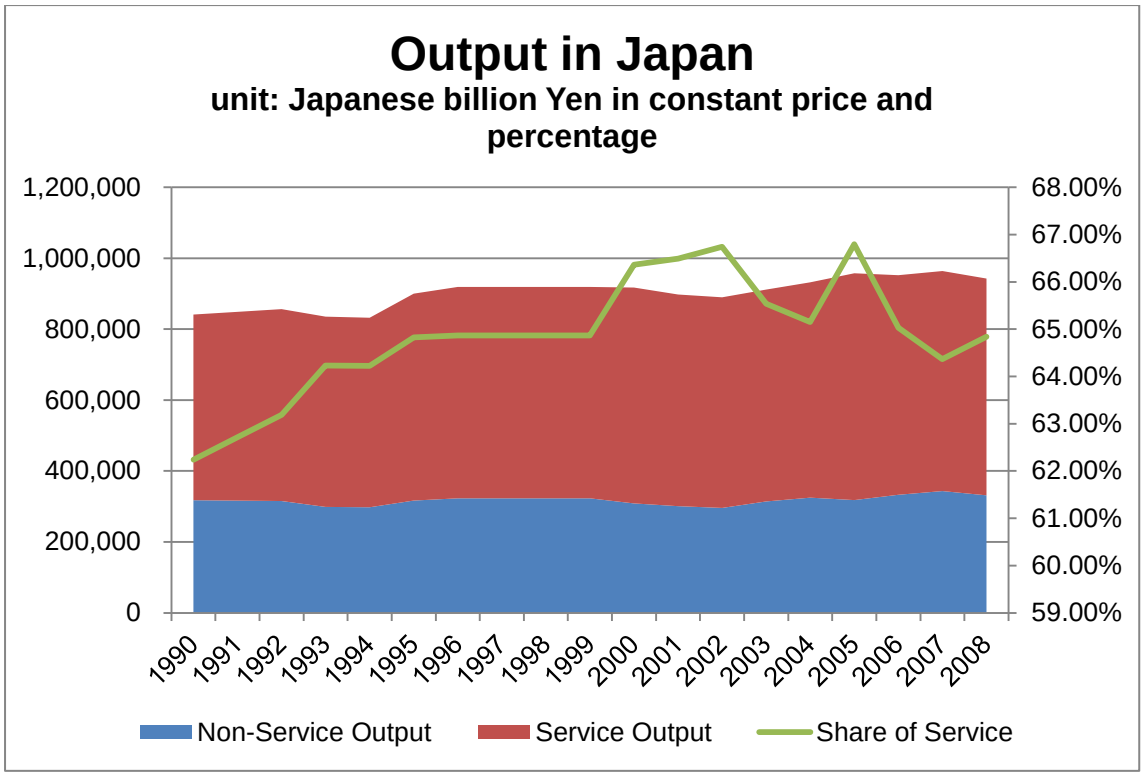


Figure 2 Employment in Japan

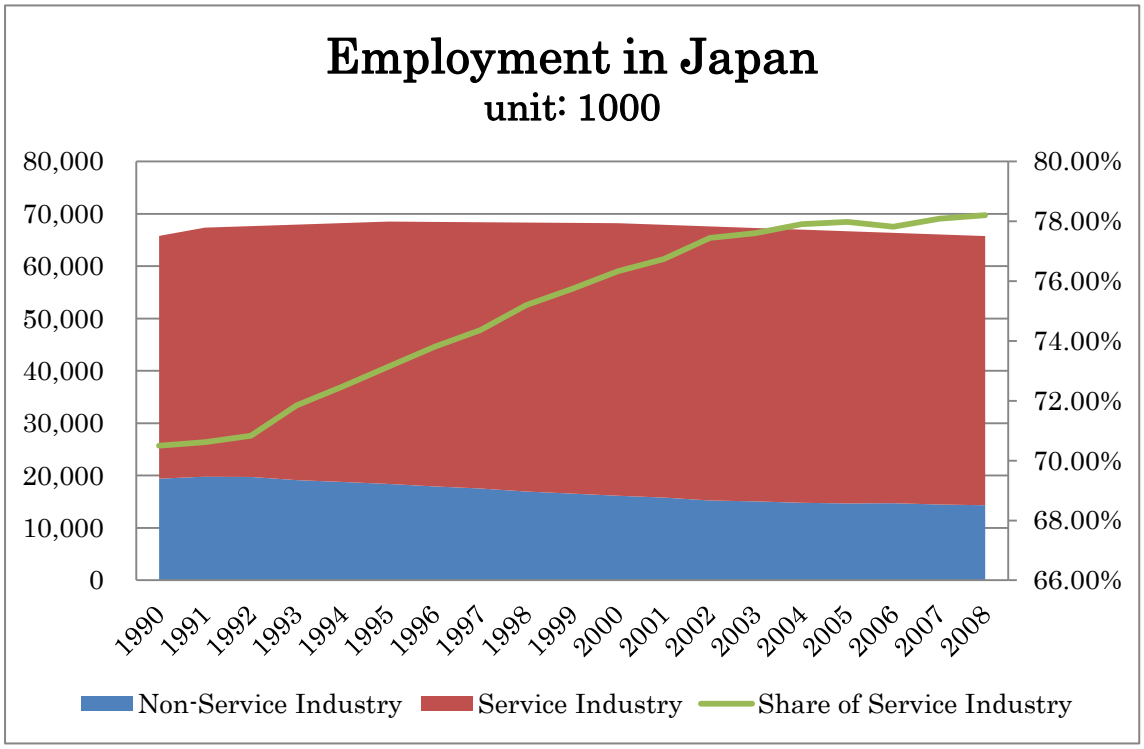
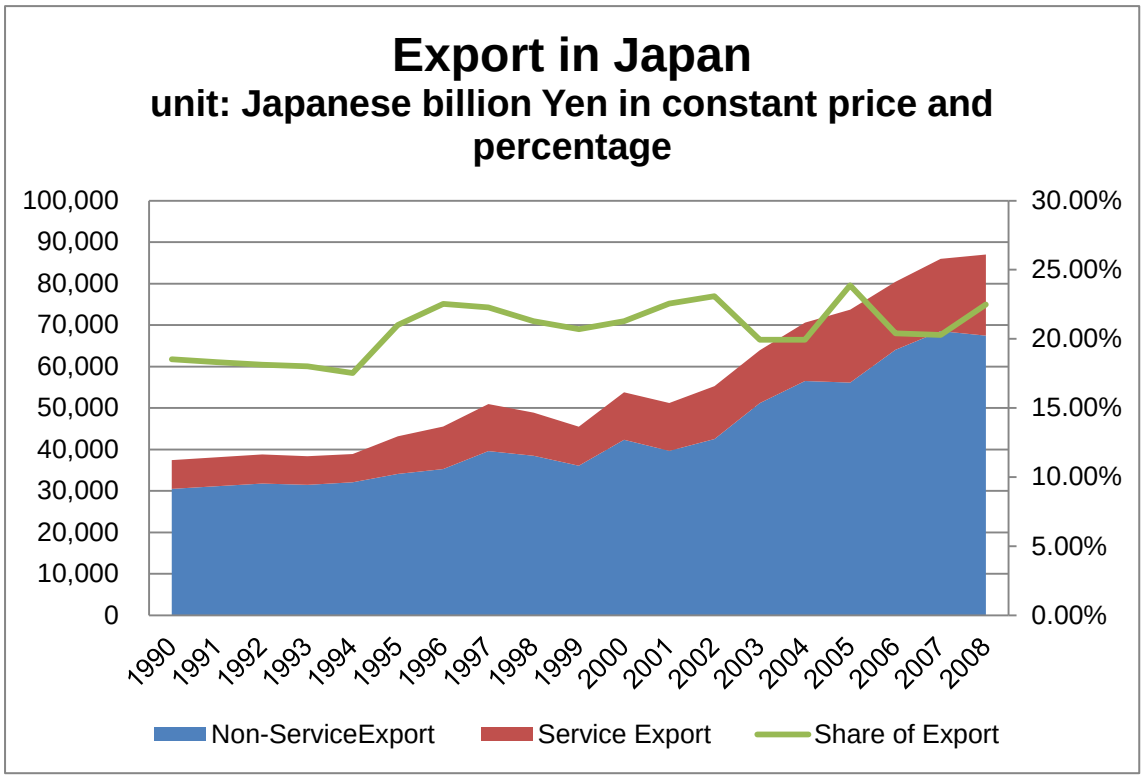


Figure 3 Export in Japan



The export in the service industry in Japan has kept the share of 20s' % since 1990.

Japan and U.S.A. in Growing World Service Trade

WTO classified the activities of service trade across the border in several modes. Under the growing globalization, service trade has attaracted attension. According WTO (2008), the share of service trade in the total global trade is about 20%.[6] Service trade is known to have the complimentalitywith goods trade.[7] According to WTO-WTR (2008)[8], the "other commercial services" in WTO database for the period 1988-2006 have been growing faster than trade in intermediate goods.

The service trade in the global economy provided by WTO data is broadly defined in three groups such as transportation, travel and other commercial services. In this analysis, we compared Japanese service trade (measured in export) with USA's service trade which is the biggest exporter in the world. We can examine how countries have developed the service trade. In this moment, we show the growth trend of service trade in Japan and U.S.A. Service trade by U.S.A. seems a biggest contributor to a globalized economy. Japan has a same biggest share of transportation trade in service trade as U.S.A. The second biggest share in service trade in U.S.A. is travel trade. Differently from U.S.A., Japanese second largest

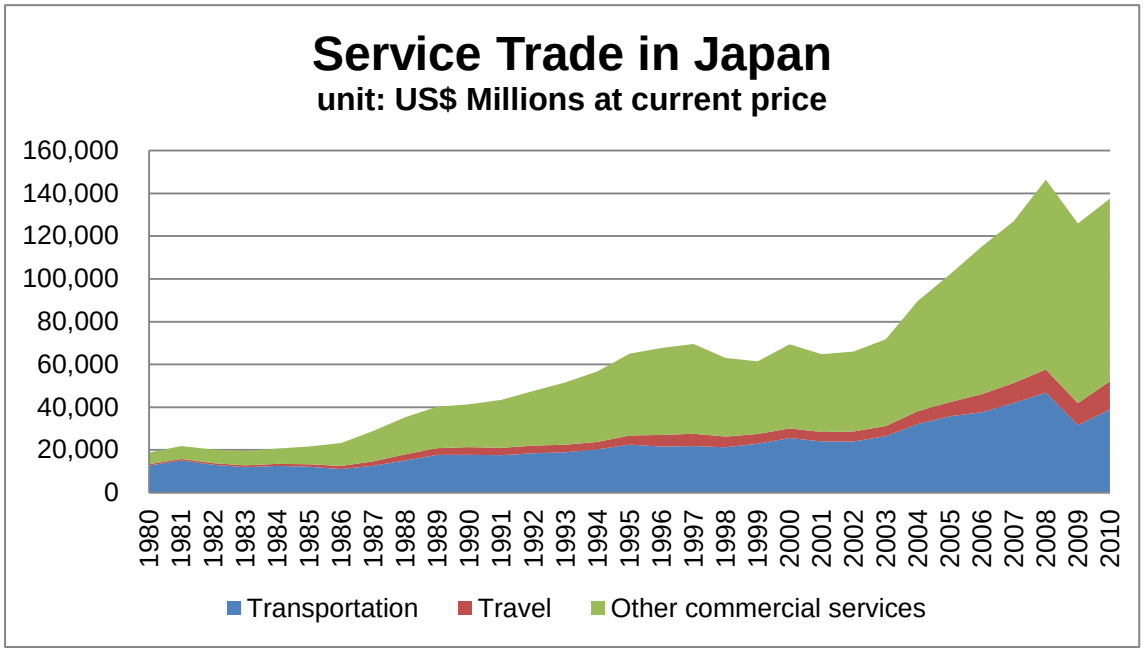
[6] WTO, World Trade Report, 2008.

[7] Lennon, C. (2006) 'Trade in services and trade in goods: Differences and Complementarities', Mimeo. Available at ttp://www.etsg.org/ETSG2006/papers/Lennon.pdf.

[8] WTO, ibid.

service trade is the other commercial services.

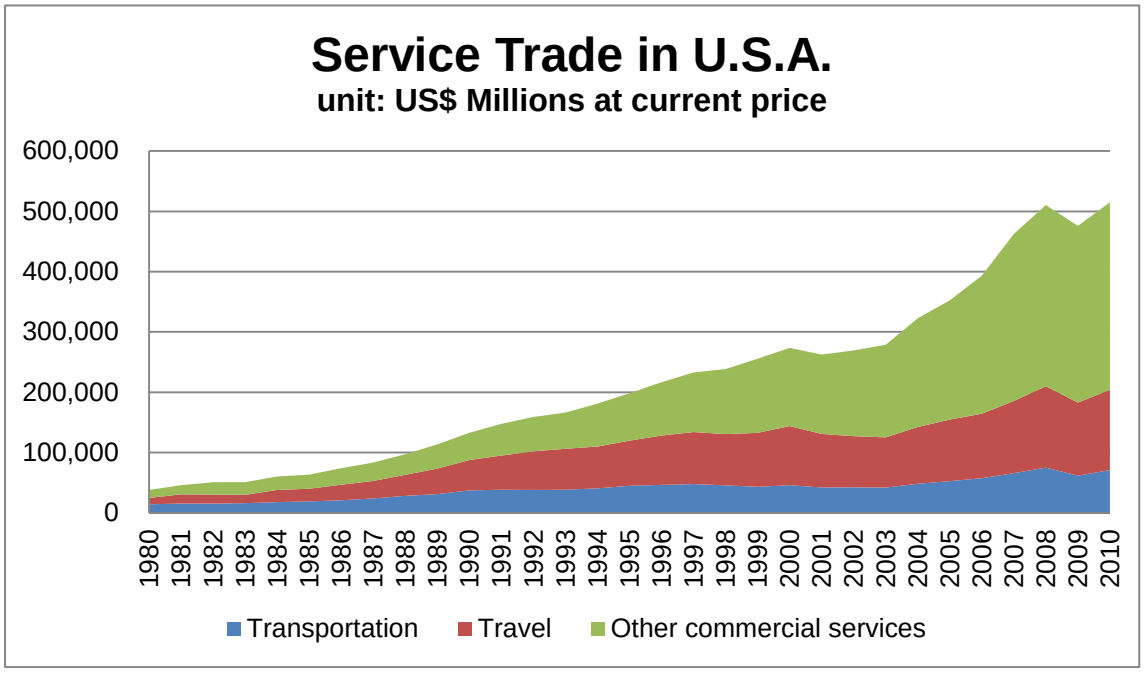
Figure 4 Service Trade in Japan



Data source: World Trade Organization, Statistics Database.

http://stat.wto.org/Home/WSDBHome.aspx?Language=E

Figure 5 Service Trade in U.S.A.



Data source: World Trade Organization, Statistics Database.

http://stat.wto.org/Home/WSDBHome.aspx?Language=E

Measurement of Offshoring in Service Industry

The equation of vertical specialization used by Hummels et al. (2001)[9] for measuring the import content of export) was rewritten by B. Meng, N. Yamano and C. Webb (2010)[10] as follows:

$$\mathbf{VSL = m\ (I - A_d)^{-1}\ F^f}$$

where m indicates 1 by n row vector of import coefficients (share of imported intermediate goods to total input by n sectors), A_d is the domestic input coefficient matrix of sectors (n by n), I is the unit (or identity) matrix, $(I - A_d)^{-1}$ the domestic Leontief inverse matrix, and F^f is the n by 1 column vector of exports. F, final demand consists of F^f and F^f. Meng- Yamano-Webb compared the national wide VSL among nations each other using OECD Input-Output tables in 1995, 2000, and 2005. According to their paper, VSL shows that economy and industry's degree of participation in international production networks, also implies the backward linkages in domestic inter-industrial production chains. Our analysis focuses on the industrial sectors with the time series data during 1990 to 2008 (or 2007) in Japan.

Robert Feenstra (2010)[11] could find the relation between

Figure 6 Relative Per Capita Wage Rate of Service Industry to Non-Service Industry

Note: In this figure, the Non-Service industry covers the 1st-44th, and the service industry covers 45th -73rd sectors

[9] Hummels, D., Ishii, J. and Yi K.-M. (2001),ibid, pp.75-96.

[10] Meng, B., Yamano, N. and Webb, C., "Vertical Specialisation Indicator Based on Supply-Driven Input-Output Model", IDE Discussion Paper, No.270, JTERO-IDE.

[11] Robert Feenstra (2010), Offshoring in the Global Economy – Microeconomic Structure and Macroeconomic Implications, MIT Press.

Figure 7 Export Dependence measured by the Ratio of Export to GDP in constant price

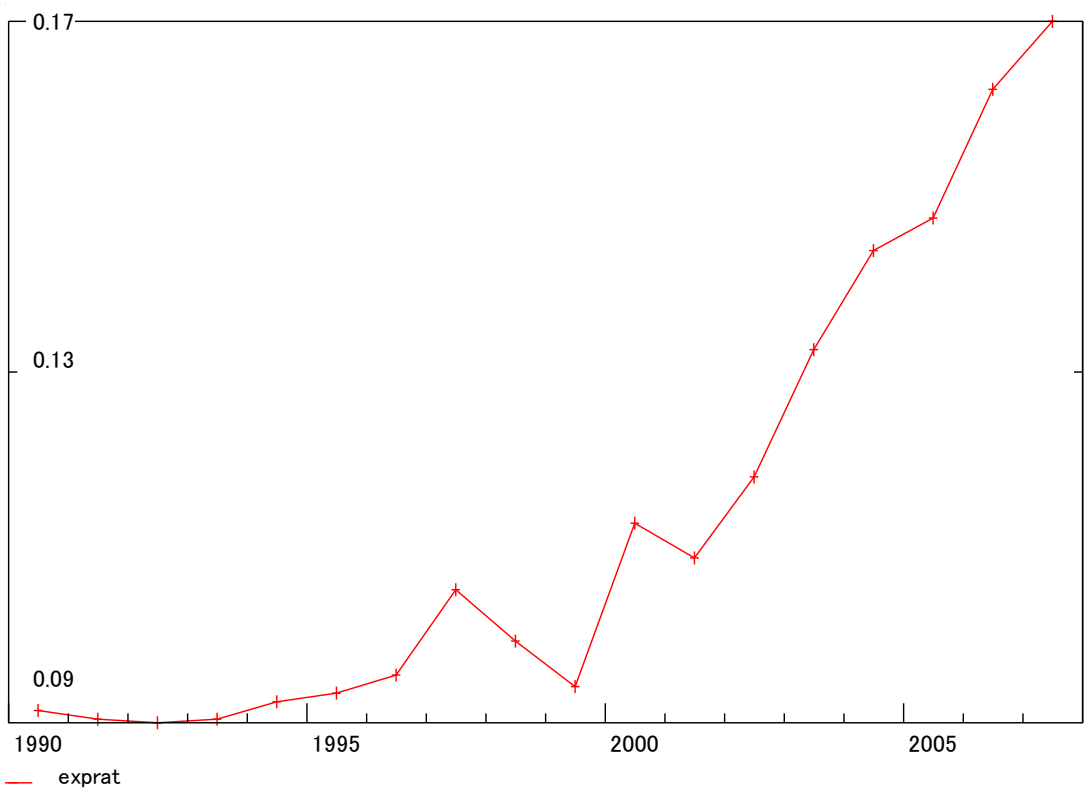


Figure 8 Ratio of Non-Service Export to Total Export in Japan

Calculated by author using JIDEA ver.8 Database

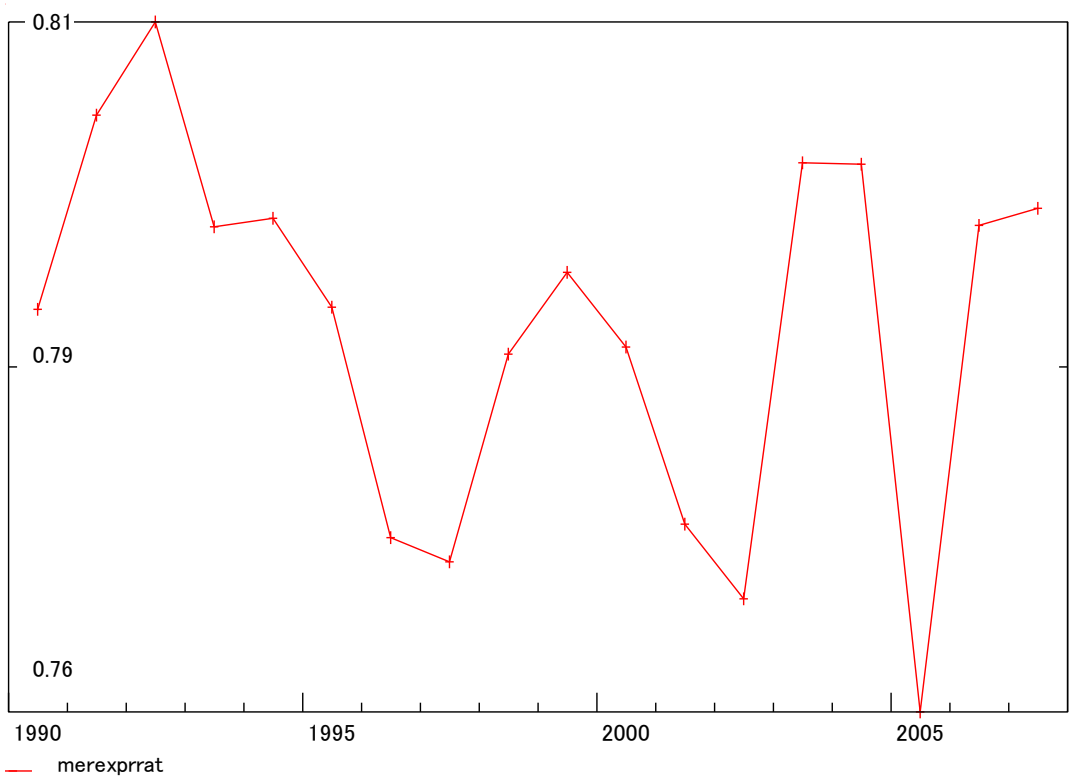


Figure 9 hare of Employment in Manufacturing (sector 1-44) and Non-Manufacturing (sector 45-73)

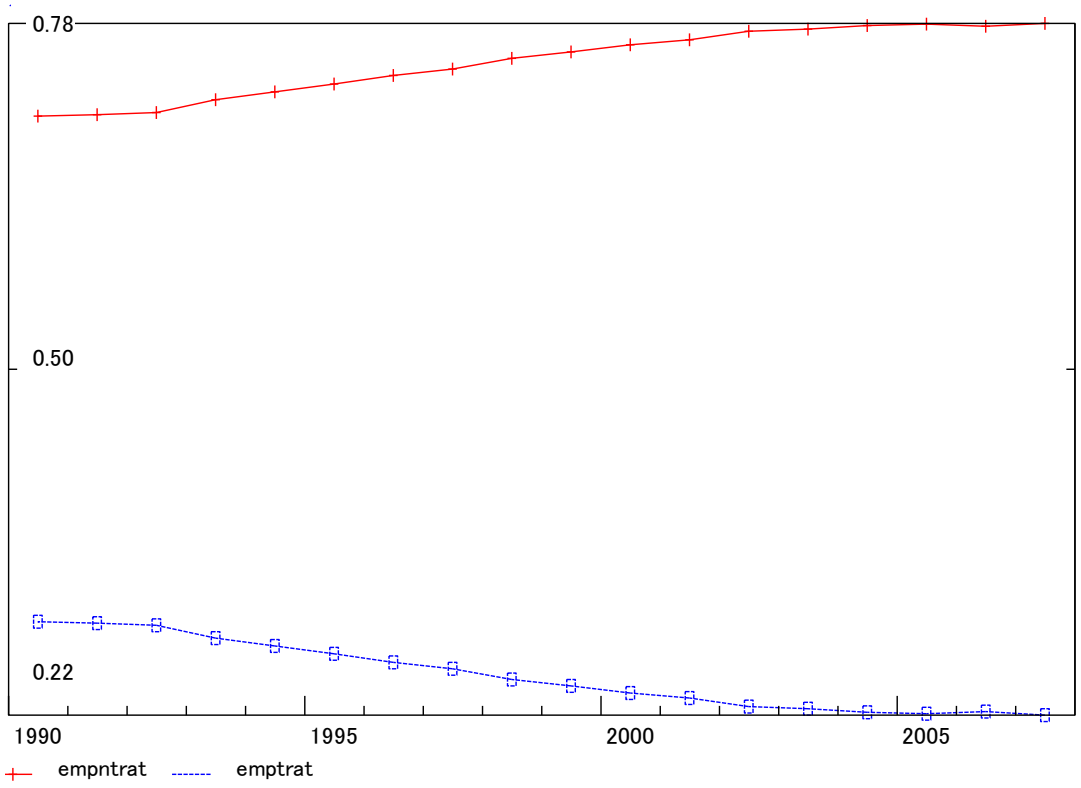
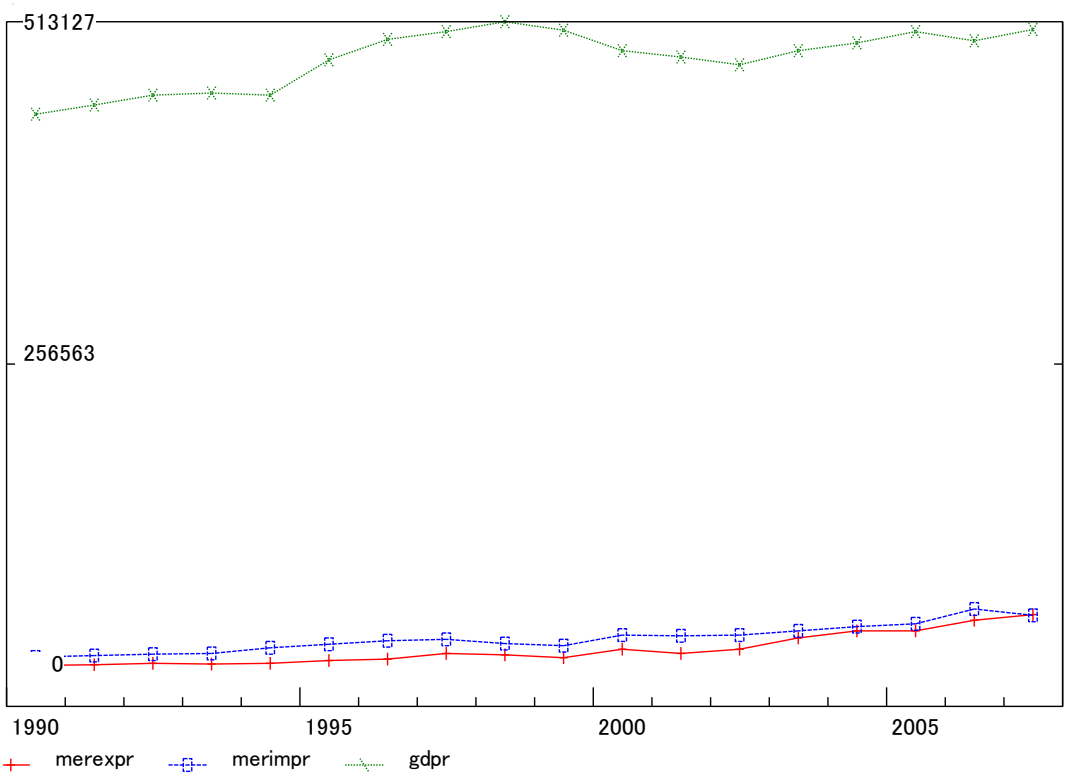


Figure 10 Japanese GDP, Export and Import in MerchandiseGDP measured in real term



Analytical Results

We could show the index of VSL in Japan calculated in the above equation.

Figure 11 Share of Import Content in Japanese Export

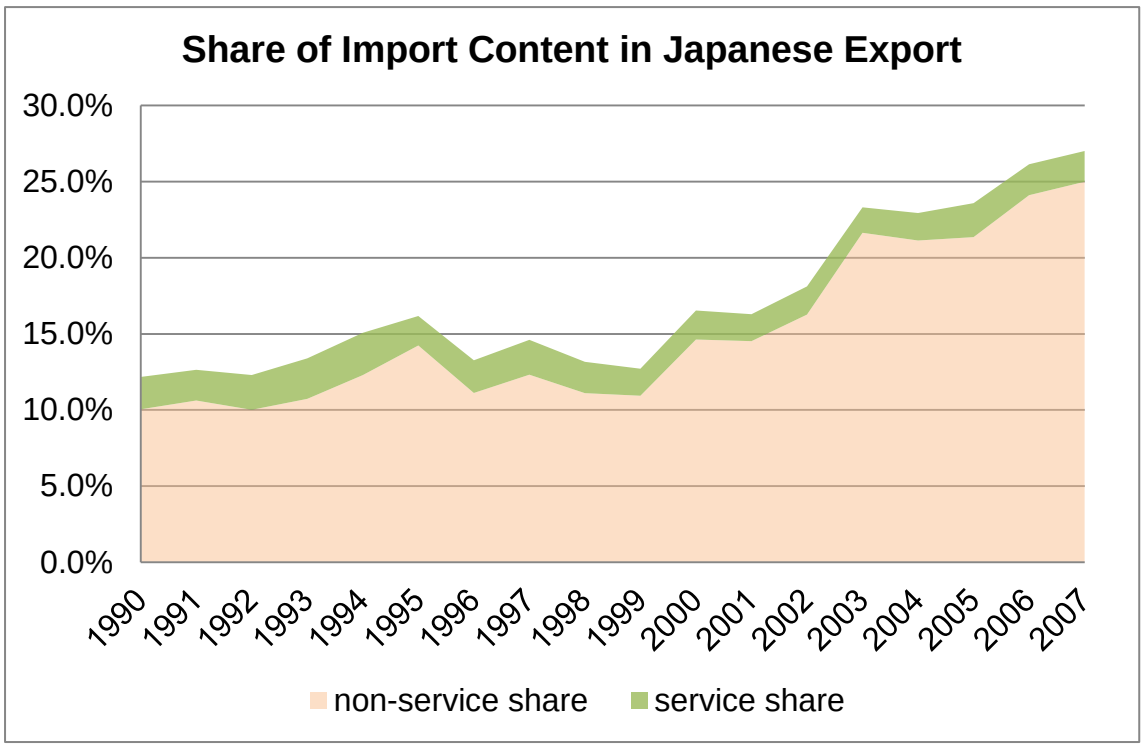

Share of Import Content in Japanese Export
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
non-service share
service share

Table 1 Share of Import Content in Japanese Export

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
total content import	4,639.1	4,887.1	4,821.3	5,295.4	6,071.3	6,653.0	4,943.4	6,113.7	5,270.1	4,759.1
total export	38,115.1	38,662.3	39,209.6	39,544.7	40,291.5	41,141.2	37,265.3	41,856.4	40,035.1	37,438.1
non-service	3,829.5	4,107.3	3,926.9	4,244.4	4,953.4	5,856.9	4,143.7	5,156.2	4,446.7	4,094.6
service	809.6	779.8	894.4	1,051.0	1,118.0	796.1	799.6	957.5	823.4	664.4
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
non-service share	10.0%	10.6%	10.0%	10.7%	12.3%	14.2%	11.1%	12.3%	11.1%	10.9%
service share	2.1%	2.0%	2.3%	2.7%	2.8%	1.9%	2.1%	2.3%	2.1%	1.8%

	2000	2001	2002	2003	2004	2005	2006	2007
total content import	7,328.5	6,814.9	8,018.6	14,904.2	16,198.0	17,391.7	21,030.0	23,223.9
total export	44,327.0	41,836.2	44,267.0	63,953.0	70,634.3	73,758.1	80,476.8	86,007.7
non-service	6,484.0	6,074.8	7,200.0	13,835.7	14,924.0	15,747.6	19,396.9	21,487.5
service	844.5	740.1	818.7	1,068.5	1,274.0	1,644.1	1,633.1	1,736.5
	2000	2001	2002	2003	2004	2005	2006	2007
non-service share	14.6%	14.5%	16.3%	21.6%	21.1%	21.4%	24.1%	25.0%
service share	1.9%	1.8%	1.8%	1.7%	1.8%	2.2%	2.0%	2.0%

unit: Billions of Japanese Yen and Percentage

Table 2 Import Content Ratio of Export by Industry in Japan, 1990-2007

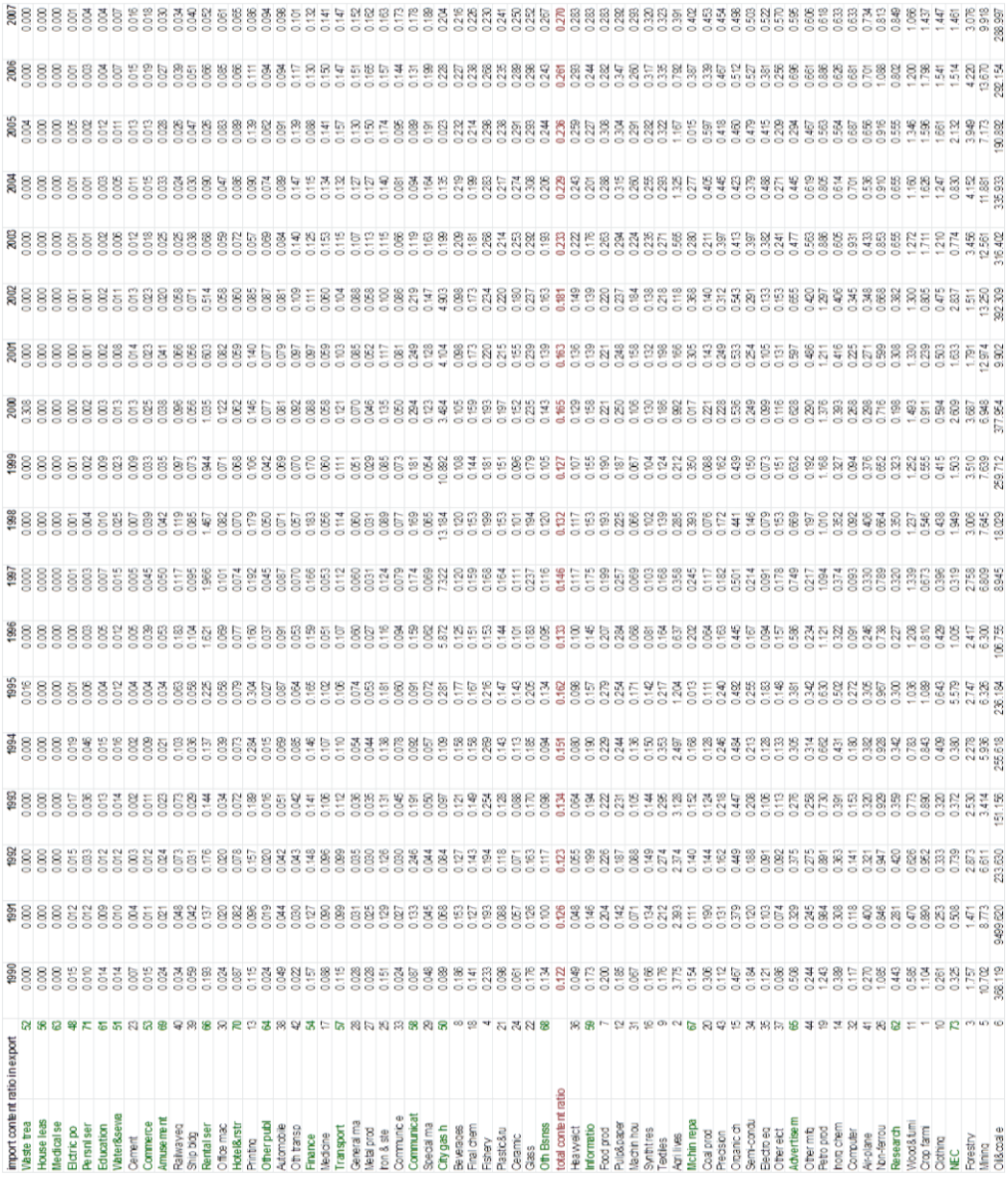


Figure 12 Top 8 Industries in Japanese Service Export

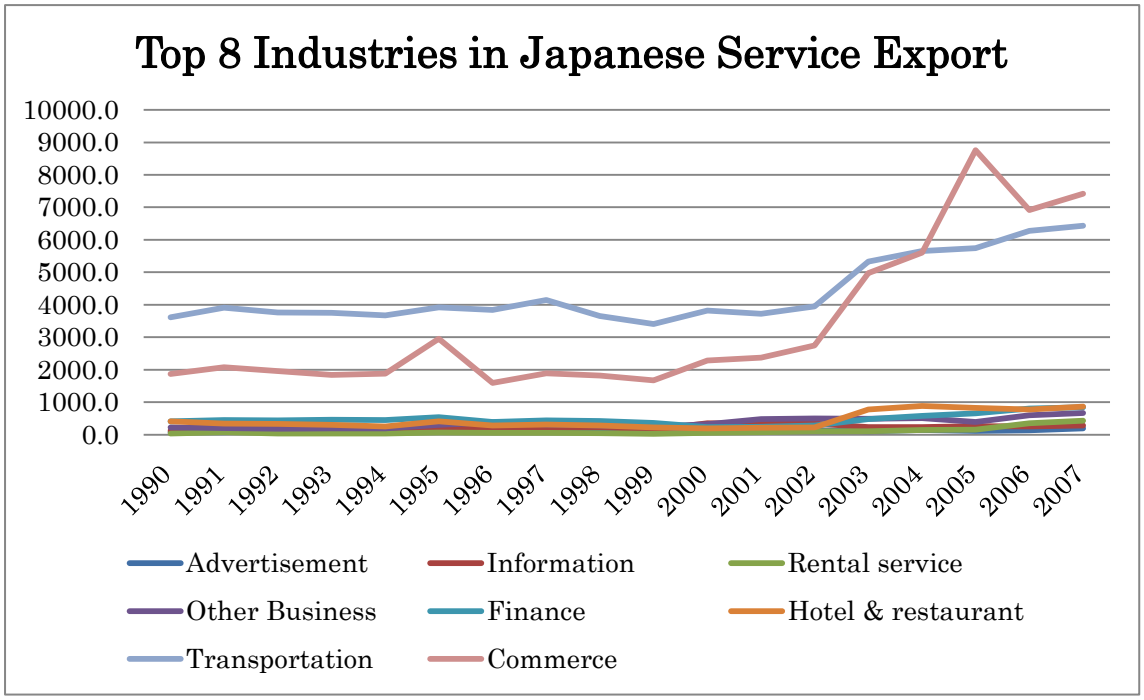
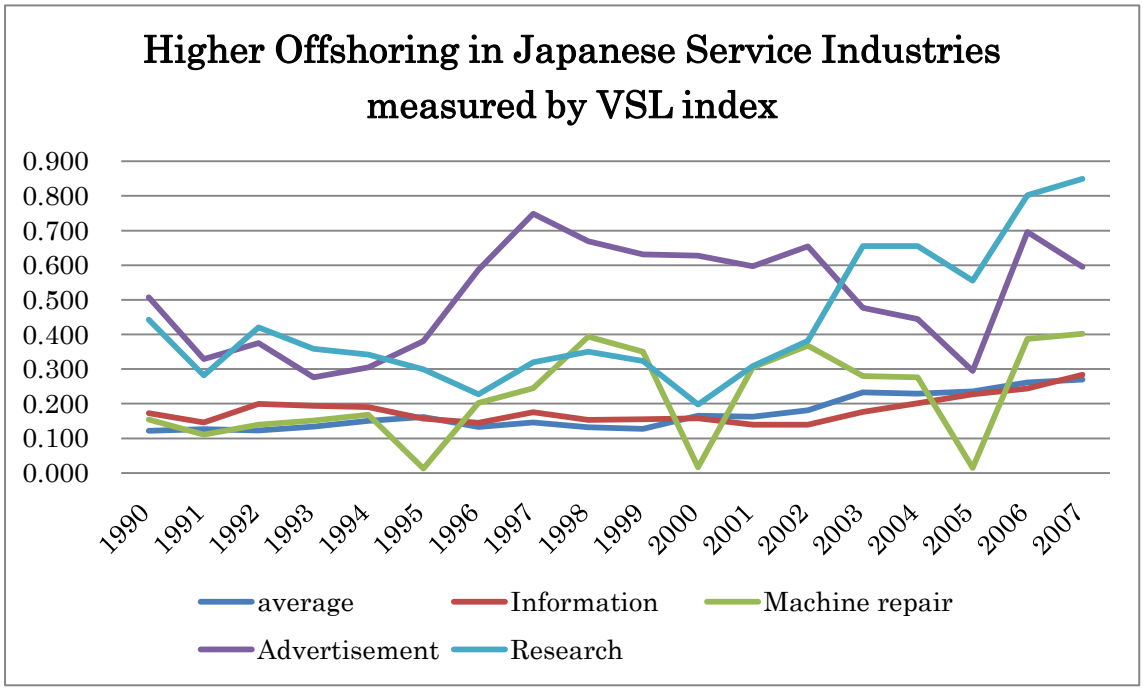


Figure 13 Higher Offshoring in Japanese Service Industries



As Figure 12 and Figure 13 show, the order of the export in service industries and the import content of service export by sectors does not correspondent necessarily. Industries of Advertisement and Information match each other reflecting the globalization.