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Article — Accepted Manuscript (Postprint)

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The journal of world investment & trade

Provided in Cooperation with:
Kiel Institute for the World Economy – Leibniz Center for Research on Global Economic Challenges

Suggested Citation: Langhammer, Rolf J. (2004) : Revealed comparative advantages in the services trade of the United States, the European Union and Japan: what do they tell us?, The journal of world investment & trade, ISSN 1660-7112, Werner, Geneva, Vol. 5, Iss. 6, pp. 887-896

This Version is available at:
https://hdl.handle.net/10419/3429

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Revealed Comparative Advantages in Service Trade of the USA, EU, and Japan. What Do They Tell Us?

Rolf J. Langhammer

I. INTRODUCTION

The measurement of standardised net export shares called revealed comparative advantages (RCA) pioneered by Balassa[1] and refined by many researchers afterwards has become the workhorse of empirical research on trade patterns. Taking inter-country differentials in factor endowment and factor intensity of production into account led to the widely shared result that relatively labour abundant countries should have positive RCA in labour intensive products and negative ones in capital intensive products while relatively capital abundant countries would enjoy positive RCA in relatively capital intensive products. The Heckscher-Ohlin-Samuelson (HOS) framework of inter-industry trade under perfect competition and lack of factor mobility provides the theoretical underpinnings of RCA measurement and fits well into North-South trade patterns between countries with significantly different factor endowments and relative factor immobility. In cases where North-South trade flows failed to yield theoretically expected RCA values, import substitution policies protecting the least abundant domestic factor, that is labour in the North and capital in the South, were found to be largely responsible. Yet, in the empirical analysis, it has always proven difficult to clearly disentangle the endowment part and the trade policy part as explanatory factors of RCA indices (Bender and Li)[2].

Explaining RCA patterns in goods trade between industrialised countries ("North-North" trade) under imperfect competition with scale economies and intra-industry specialisation has been less straightforward than in North-South goods trade. This is because factors are more mobile, especially physical capital and increasingly also human capital. Endowment differences are smaller and technological diffusion is faster. Therefore, the range which RCA indices can take between the polar points shrinks and the indices themselves are less easily to interpret. Aspects like vertical vs horizontal foreign direct investment (FDI) and intra-firm trade within sectors get more importance. With vertical FDI, for instance, cross-border value added chains expand within sectors and the magnitude of RCA values very much depends on the level of sectoral aggregation. With rising aggregation, intra-sectoral trade will increase and thus compress RCA values in a middle range with growing similarity between countries. Horizontal FDI targeted toward host country market supply may substitute exports for domestic production and may reduce net exports in a sector. Ceteris paribus, RCA values are

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1 Balassa (1965: 99–123; 1979: 259–266; 1981: 149–167; 1986: 315–319).

2 Bender and Li (2002).

then expected to decline compared to the reference scenario of lack of horizontal FDI. Unlike in North-South trade, the trade policy influence on RCA in North-North trade is smaller because protection levels are lower and not systematically biased against unskilled labour as it the case when nominal tariffs rise with increasing stage of production (tariff escalation). These underpinnings of RCA in North-South trade and North-North trade are based on the determinants of cross-border merchandise trade, that is goods trade. It is open whether we can subject trade in services to the same conceptual roots.

Therefore, this paper raises the point that our HOS-rooted understanding of RCA derived from goods trade and the comparison of RCA in goods and service trade must be revised if we deal with trade in services (Section II). In Section III, this argument is stressed by pointing to the major difference in goods vs service trade, that is the existence of different modes of supplying services either by moving services cross-border or by allowing factors of production to move. Section IV presents empirical estimate of RCA in service trade of the USA, EU, and Japan. Section V concludes and points at further issues for research.

II. Why RCA for Service Trade Cannot be Compared to RCA for Goods Trade

Basically, there are three reasons why RCA measured in service trade cannot be compared straightforwardly to RCAs measured in goods trade.

First, services are not only supplied by cross-border trade (so-called mode of supply 1, for instance, via data, or document or voice transmission) but also by movement of the consumer to the producer (so-called mode of supply 2: consumption abroad) or by factor movements, for capital via commercial presence (mode of supply 3) and for labour via movement of natural persons (mode of supply 4). Any aggregate view on net exports of services supplied by all four modes may be misleading if there is no information on which mode of supply dominates. This is very sector specific due to the high heterogeneity of services. For some services, specific modes of supply are either technically impossible (for instance, construction services through mode 2) or virtually excluded. With factors of production whose mobility determines the tradability of services and with immobile factors which are defined locally rather than nation-wide (leading, for instance, to the clustering of computer software services in some Indian cities only), the endowment factor behind RCA in trade in services is difficult to explain. At least, it is no longer simply labour or capital endowment but locational characteristics such as schooling quality, cultural tradition and quality of living.

Second, trade policy in services basically interferes through domestic policy measures not through border measures. Hence, when services are supplied through movement of capital (mode 3 supply), the impact of trade policies on RCA will depend on whether foreign companies are allowed to supply their services to local residents through subsidiaries or affiliates in the consuming countries (market access) and which conditions they face relative to domestic competitors once there are in the domestic market (national treatment). When

services are supplied through movement of labour (mode 4 supply), it is essential whether temporary presence of foreign service suppliers in the country of consumption is allowed and not discredited as circumvention of restrictive migration policies (market access) and whether or not foreign suppliers are less favourably treated in the domestic market than local competitors (national treatment). Trade policies against market access through cross-border supply (mode 1 supply) are rarer, for instance, either by hindering local demand from using the internet or by suppressing foreign supplier's access to local demand.

Third, services if supplied by factor movements are exchanged between residents and non-residents in the same country not between countries. Hence, what is measured as positive net exports of country A, for instance, is that foreign affiliates of a company with a headquarter in country A sell more to foreign residents than country A residents buy from other countries' affiliates in country A. RCA may thus better measure company's rather than country's comparative advantages. This example also suggests that measuring RCA in North-South service trade can be meaningless (except for cross-border trade) if commercial presence is essential for service supply unless there are developing countries' multinationals offering their services through their affiliates in industrialised countries. Hence, RCA suggest conclusions about the degree of internationalisation of companies especially in business service like banking, insurance, advertising etcetera.

III: Cross-Border Trade vs Commercial Presence: How Modes of Supply Affect RCA

Compared to goods trade statistics, service trade statistics are notoriously deficient. One reason is that services are often intangibles and thus defy border registration or escape reporting systems through balance of payments (BoP) documentation. Second, one can doubt whether the separation between services and goods is as clear as BoP statistics suggest. More often than not, they are joint products even when services are disembodied from goods and when stored electronically as a file as an alternative to be printed as a book their final appearance is of dual nature. Third, BoP statistics cover cross-border trade only. Other modes of supply, in particularly those via factor movements, are covered either by company surveys (commercial presence) or remain uncovered (movement of natural persons). Given the very different coverage of modes of supply, it is not surprising that estimates for the end of the nineties suggest almost 39 per cent of total service trade delivered by mode 1, 40 per cent delivered by mode 3, about 20 per cent delivered by mode 2, and only 1.5 per cent delivered by mode 4 (Maurer and Chauvet)[3].

These deficiencies invite two conclusions. First, unrecorded service trade is by far higher than unrecorded goods trade and second, it is necessary to differentiate between the two major modes of supply (mode 1 and mode 3) not only because of their different meaning with

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3 Maurer and Chauvet (2002: 235–246).

respect to measuring RCA (trade vs capital movements) but also because of their different statistical base (BoP documentation vs company surveys). The only reporting country disclosing both statistical sources and allowing for assessing such differences is the US.[4]

Once RCA are measured only on the basis of mode 1 supply, similarly to goods trade, the endowment with relatively immobile factors may have an important impact on the magnitudes. Instead of shipment of unskilled labour embedded in labour-intensive goods from relatively labour-abundant countries to relatively capital-abundant countries, labour intensive services such as call centre services or data processing activities are shipped from labour-abundant countries via internet facilities to capital abundant countries. Vice versa, relatively capital-abundant services such as medical advisory services are transported via internet facilities from capital-abundant countries to labour-abundant countries. It is a matter of convenience and urgency that the substance of the services is not shipped in terms of goods, such as hard copy manuals.

The policy influence which is prevalent in every RCA measurement in goods trade because of border restrictions is important for service trade too. It can be traced in mode 1 supply less through border charges which are rare in services trade but for instance through implicit or explicit impediments against residents using internet facilities. Moreover, the state of the infrastructure endowment such as the availability of a reliable internet access, roaming systems and electronic payment facilities may be decisive for the magnitudes of RCA as well as for the sign of the indices if exports and imports are very unevenly affected by the infrastructure endowment.

If services are supplied by mode 3 supply, however, so that services are sold to or purchased from non-residents via foreign affiliates operating in the host country (FAT), sector-specific or sector-wide restrictions against foreign direct investment or more generally, all domestic policies affecting the attractiveness of the host country for foreign direct investment matter. These policies can comprise tax policies, labour legislation, rules referring to corporate governance and policies regulating the repatriation of investment income to mention but few of them.

Should trade in services be supplied by different modes subject to a variety of both border restrictions and domestic policies, RCA indices will be difficult to interprete once policy factors are generally important relative to endowment factors.

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4 See for a detailed discussion of the differences in the statistical entities of mode 1 and mode 3 supply for the US Chang et al. (1999). The authors call service trade supplied by commercial presence FAT (Foreign Affiliates Trade). An indepth survey on measuring barriers to service trade and the pitfalls of such measures is provided by Whalley (2004).

IV. Estimating RCA for Trade in Selected Services

It becomes evident from the above discussion that any interpretation of RCA in service trade critically hinges upon the mode of supply of individual service sectors, in particular whether services are supplied by cross-border trade or by commercial presence. The only statistical source reporting on the two modes of supply is provided by the US Department of Commerce (DC). In addition to Balance of Payments (BoP) statistics covering cross-border trade, the US DC publishes data which indicate the magnitude of trade through commercial presence. In this mode, services exports are exported from the US when majority-owned affiliates of US companies (MOFAs) sell services to non-US residents. Likewise, services are imported by the US when majority-owned US affiliates of non-US companies (MOUSAs) sell services to US residents. This source is essential to qualify RCA calculations which are solely based on BOP statistics and thus disregard trade supplied by the other mode. Except for few service sectors, trade can be either cross-border or through foreign affiliates sales. Yet, proportions between the two strongly differ by sectors if one follows the US data. In the nineties, cross-border supply has dominated US exports (imports) of transport services over commercial presence by a factor of about 4 (6) while commercial presence has dominated US exports (imports) of services in advertising over cross-border supply by a factor of about 10 (4).

In the following, RCA are calculated for six selected service sectors of the EU, the US and Japan (Figure 1). They are based on EU Eurostat BoP (cross-border trade) statistics which include US and Japanese data supplied by the US Department of Commerce and the Bank of Japan, respectively. The six sectors (financial services, insurance services, computer and information services, communication services, personal, cultural and recreational services, and royalties and licence fees)[5] are business services which either can be exchanged cross-border or by commercial presence. Consumer services such as travel, tourism and transport have been disregarded as they are also supplied by mode 2 (consumption abroad) and cannot not be predominantly explained by HOS factors.[6] In addition, for three of these service sectors (insurance services, computer and information services, and communication services), RCA for mode 3-supplied services (foreign affiliates trade) are calculated based on US MOFA and MOUSA data (broken line). They allow for comparing RCA in cross-border trade and FAT trade but are available for shorter periods only because of lack of disclosure of

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5 Revenues and expenditures on royalties and licence fees reflect income from technological and knowledge-based services.

6 The flow of services in tourism, for instance, is very much determined by natural endowment factors. Such resource-intensive goods are often labelled as Ricardo goods. Travel and transport both comprise business and consumer services making the interpretation of standardised net exports difficult. Furthermore, strong policy interventions in transport (bilateral treaties on air transport, freight sharing and liner codes in maritime transport) do not facilitate a meaningful explanation of RCA.

individual company data from the US Department of Commerce. The results confirm some a priori assumptions which are known from the annual WTO reports on the regional distribution of trade in commercial services as well as from the positions of the countries in WTO negotiations on liberalising trade in services.

First, the US has comparative advantages relative to the two other trading partners in trade in financial services, computer and information services, personal, cultural and recreational services (also known as audio-video services plus income from cross-border supply of educational services), and in technological services. These are just those services which in recent years the US has urged to liberalise in bilateral and multilateral negotiations with their trading partners.

Second, insurances are the only services, in which the EU enjoys clear comparative advantages over the US and Japan. Traditionally, EU insurance companies are very active in US markets.[7]

Third, except for communication services (postal and telecom services) and royalties and licence fees, Japan always stays behind the US and also the EU. The latter sector may reflect the strong Japanese position as exporter of technology-intensive goods which require respective after-sales services as a joint product. In the former sector, the Japanese policy toward market access of foreign supplier of communication services has been restrictive thus suppressing import competition. However, for some sectors, Japanese data prior to 1995 are not available thus limiting conclusions. Yet, the overall picture fits into the general pattern of Japanese export supply which is dominated by manufactures and is still weak in services as it also shown by Japanese lower rankings (relative to manufactures) among the world's leading suppliers of commercial services, one of the standard tables in the annual WTO Annual Report.

The overall US dominant position in business services may partly mirror its leadership in making services tradable through telecom innovations and thus enabling productivity gains. Yet, the US service industry may have also gained from its homogenous single high-income market for services which is not yet matched by the EU and from its strong foreign direct investment (FDI) position in services. During 1980 and 2000, the service share of US FDI stocks abroad in total US FDI doubled from 28 per cent to 58 per cent (US Department of Commerce, Survey of Business, monthly issues).

Comparing cross-border trade and FAT in the three service sectors for the US shows that in two sectors (insurance services as well as computer and information services) the general direction was similar: the US enjoys comparative advantages in each of the two modes of

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7 The Economist in its October 23, 2004, issue, p. 69, reports that "Swiss Re writes 40 per cent of its property and casualty business in America although only 20 per cent of these contracts are done via brokers. A similar portion of Zurich Financial Services' non-life policies are written in America, mostly directed through brokers".

supply while it incurs comparative disadvantages in both modes in insurance industries. In contrast, in the third sector, communication services, FAT trade shows positive RCA while cross-border trade has negative RCA.

Factors which could have an influence on explaining RCA, for instance, are either technological innovations changing the relative competitiveness of different modes of supply, for instance in favour of cross-border trade instead of commercial presence. Furthermore, differences in either investment or trade policies affecting the accessibility of markets either through FDI or cross-border trade could influence the preferences for a specific mnode of supply. Finally, the changing service intensity of the product may influence the choice of a specific mode if a direct producer-consumer link in an early non-standardised stage of the service market penetration requires commercial presence while in a later stage of standardisation of a service, a cross-border supply may be more efficient.

V. OUTLOOK

The explanatory power of RCA in trade in services seems to follow other determinants than RCA in goods trade. This is not only due to the heterogeneity of services and the different character of trade policy interventions which concentrate on “measures behind borders” rather than on border measures. It is primarily the existence of different modes of supply which makes if difficult to explain RCA in trade in services with the HOS theory as in goods trade. Mode 1 supply (cross-border trade) may still follow this theory if services would be exclusively traded this way without allowing for factor mobility. Yet, it has been shown that labour mobility (mode 4) and particularly capital mobility (mode 3) are important determinants of competitiveness in service trade. In some sectors, mode 3 is even the dominant mode as a close producer-consumer proximity is required to sell or purchase non-standardised and “reputation-intensive” services like insurances. Therefore, commercial presence by establishing foreign affiliates in the export market is the dominant mode. Policy factors may bias trade towards mode 3 if cross-border trade is hampered by regulations which require to be physically present in the export market in order to protect the consumer and to impose a minimum level of consultation.

RCA estimates for the US, EU and Japan confirm the leading role of the US in most business services (except for insurances) while Japan has not established itself as a leading supplier of services. Comparisons between RCA in mode 1 and mode 3 do not yield a clear picture but in two of three sectors where US data are available, RCA indices in the two modes point in the same direction.

The empirical base for explaining international competitiveness in services is far from satisfactory since very little is known about the quantitative effects of trade barriers on prices. Future research should concentrate on broadening the BoP data base but should primarily concentrate on case studies in order to identify the major determinants of the international

competitiveness of service suppliers. Among these determinants, one may expect the following factors to be important: the endowment with immobile production factors (especially in consumer services such as tourism), the increasing cross-border mobility of production factors, the policies discriminating between the various modes, technological improvements in making services tradable and, finally, the preferences of consumers for specfic modes of supply.

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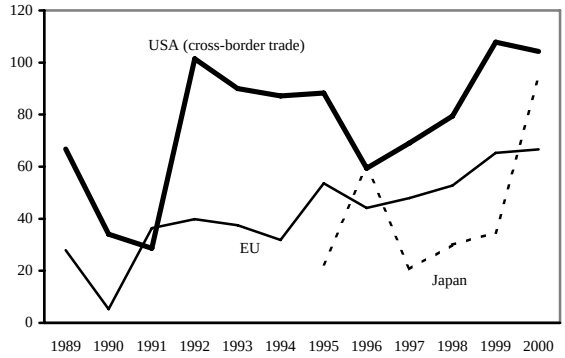
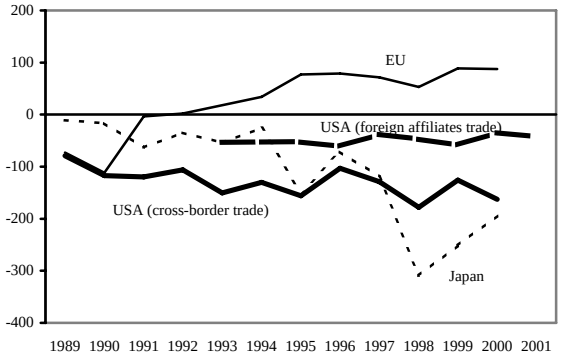
Figure 1 – Revealed Comparative Advantage (RCA)[a] for Trade in Selected Service Sectors of the USA, EU[b], and Japan[c], 1989-2000

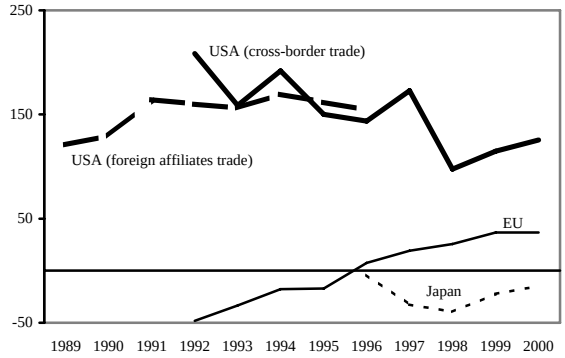
a) Financial services



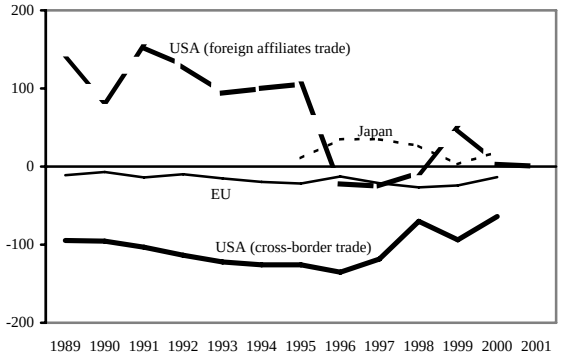
b) Insurance services[d]



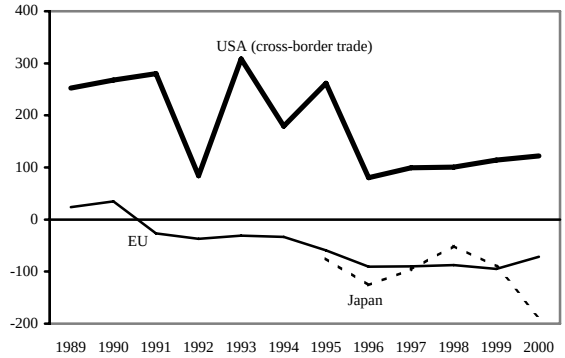
c) Computer and information services[d]



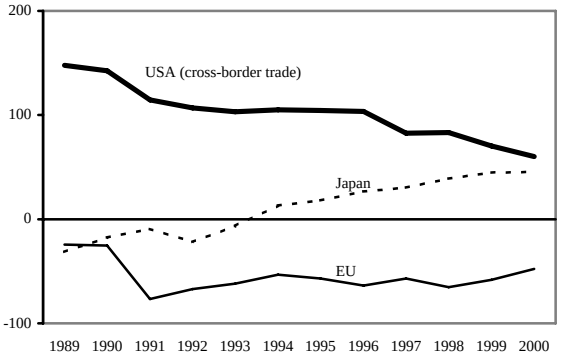
e) Communications services[d]



f) Personal, cultural and recreational services



g) Royalties and licence fees



[a]$RCA_i = \ln [(X_i / M_i) / (X / M)] * 100$, where X_i, M_i are exports and imports in service sector i and X, M are exports and imports in total services.

[b]Trade with Extra-EU.

[c]In some service sectors, data on cross-border trade of Japan are not available for the entire period.

[d]US foreign affiliates trade comprises sales of majority-owned US affiliates abroad to non-US residents (exports) and sales of majority-owned affiliates of non-US companies in the USA to US residents (imports). Missing data on foreign affiliates trade are due to suppression of data to avoid disclosure of individual companies.

Sources: Eurostat: Internationaler Dienstleistungsverkehr - EU. Anhang zur Population "EU international transactions - 1999 edition" bzw. Eurostat: International trade in services - EU. (1989/98); Eurostat: Geographical breakdown of the EU current account, 1997-2000 data. International trade in services - EU, 1991-2000 data on CD-ROM.

Abstract

The paper argues that measuring revealed comparative advantages (RCA) in international trade in services cannot be straightforwardly compared to RCA in trade in goods. The essential difference is that services are internationally exchanged not only by cross-border trade mainly subject to relative resource endowment but also by factor movements (primarily foreign direct investment). The latter modes of supply are determined by characteristics of services such as the need of close producer-consumer proximity. In addition, the policy influence in RCA for trade in services is not dominated by border measures but by a variety of domestic regulations. The paper measures RCA for the US, EU and Japanese service trade and shows strengths on the US side and weaknesses on the Japanese side with the EU in-between. Finally, measuring RCA for US trade in two different modes (cross-border trade and commercial presence) yields similar results in some service sectors but not in all.

Keywords: trade in services, trade liberalization, EU customs union

JEL classification: F1