Liberalising Trade in Financial Services:
Global and Regional Economic Effects

George Verikios and Xiao-guang Zhang
Productivity Commission, Australia

Abstract

This paper applies a global general equilibrium model to quantify the impact on the global and regional economies of liberalising trade in financial services. The paper uses recent estimates of trade barriers for financial services in both developed and developing countries. The simulation results indicate that liberalising trade in financial services would benefit the world as a whole in terms of increased real income. Most regions are projected to gain as well, although the distribution of gains among regions is not even. In general, regions with the highest barriers, such as developing countries, benefit most. The analysis demonstrates that commercial presence of foreign firms via foreign direct investment (FDI) is a major source of gains from services trade liberalisation.

- **JEL Classifications:** C68, D58, F21.

- **Key words:** Trade in services, Financial services, Foreign direct investment, International

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*Corresponding Address: Xiao-guang Zhang, Productivity Commission, Locked Bag 2, Collins Street East, Melbourne, Victoria 8003, Australia. Tel: +61-3-9653-2192, Fax: +61-3-9653-2302 Email: xzhang@pc.gov.au George Verikios, Tel: +61-3-9653-2100, Fax: +61-3-9653-2302, Email: gverikios@ pc.gov.au

capital mobility, Computable general
equilibrium modelling

I. Introduction

  Since the General Agreement on Trade in Services (GATS)
was reached in 1993, progress has been made among WTO
members to open up their trade in some key services
sectors. Despite the agreement reached, barriers to trade
in many services sectors remain significant in most
countries. This means potentially large gains for many
countries are possible from further liberalisation in
services trade. However, unlike trade in goods, trade
liberalisation in services is more complicated and
requires careful assessment. Empirical investigation into
the economic effects of multilateral services trade
liberalisation has been hampered by lack of reliable data
on services trade flows and barrier estimates, as well as
a proper analytical framework. A small literature has
emerged in recent years in which services trade
liberalisation is analysed within a general equilibrium
framework.[1] Most of these studies, however, treat
services trade as a whole, despite that trade
liberalisation under the GATS is conduced on a sector by
sector basis. This study contributes to this literature
by providing a sectoral analysis of multilateral
liberalisation of trade in services. It focuses on a key
sector: financial services. Despite the fact that WTO
members have already reached an agreement on liberalising
trade in banking and financial services, the current
scheduled commitments of WTO members represent only a

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[1]See for example Brown et al. (1995), Petri (1997), Hertel (1999),
Markusen, Rutherford and Tarr (1999), McKibbin (1999) and Dee and
Hanslow (2000).

partial removal of all the barriers to trade in financial services (The Secretariat of the Council for Trade in Services, 1998). By offering some insight into the likely effects on global and regional economies of complete liberalisation of trade in financial services, this study is intended to provide further impetus for more open trade among WTO members in this important sector.

Many previous studies on quantifying the effects of services trade liberalisation are based on the models originally designed for trade in goodsrather than servies. Dee and Hanslow (2000) address the limitations of such models for services trade analysis. They incorporate bilateral foreign capital investment in a global computable general equilibrium (CGE) trade model, FTAP,[2] in order to capture services trade generated by foreign firms in local markets. Like some other studies, however, the aggregation of all services into one sector confines their analysis to the regional effects of liberalising trade in all services. This study extends Dee and Hanslow's approach to concentrate on distinctive features of trade in individual services, with a special emphasis on financial services.

The remainder of the paper is organised as follows. Section II highlights some unique features of services trade and how they affect the key issues involved in liberalising trade in financial services. Section III outlines the analytical framework, the FTAP2 model, a multiregion and multisector general equilibrium model incorporating FDI. Section IV discusses the database used in this study. Section V explores the nature of trade liberalisation policies under the GATS. The projected effects of trade liberalisation in financial services are presented and discussed in section VI, while the final section summarises the policy implications of this study and indicates avenues for future research.

II. The GATS and Unique Features of Services Trade

The GATS reached during the Uruguay Round of trade negotiation(UR) is perhaps the most important development in the multilateral trading system since 1948, when the General Agreement on Tariffs and Trade (GATT) came into effect. The GATS extends internationally agreed rules and commitments into a rapidly growing area of international trade, services. To some extent, the GATS goes even beyond the GATT: it extends the GATT's free trade principles to cover not only border measures, but also regulations relating to access by foreign service suppliers to a host region's domestic markets. In this regard, the GATS represents a major step beyond the GATT. On the other hand, however, unlike the GATT, many of the GATS rules apply only to selected sectors in which scheduled commitments are made by the members (WTO Secretariat, 1999).

Understanding the issues involved in services trade liberalisation requires an assessment of the unique features of services trade. Services are different in nature from goods. Unlike goods, services cannot be separated, geographically, and consumed away from their producer. International trade in services, therefore, is different from international trade in goods. According to the GATS, international trade in services can be conducted in any of the four different modes of delivery: cross-border supply; consumption abroad; commercial presence in the consuming country; and the presence of natural persons (WTO Secretariat, 1999). Among these four modes, only the first one coincides with trade in goods. Unlike trade in goods, however, cross-border supply is not the most important mode of trade for many services. If free access of foreign firms to a country's domestic market is granted,

Figure 1. A diagrammatic illustration of the gains from
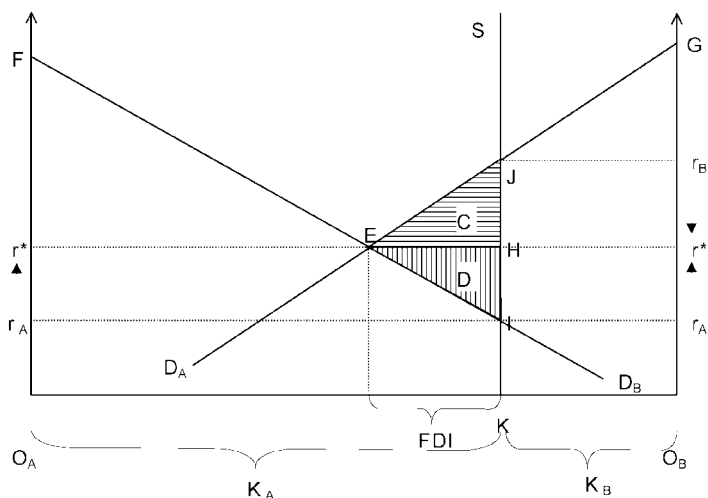
services trade via commercial presence of foreign suppliers is most likely to expand, or exceed its conventional trade via cross-border delivery.

This definition of trade in services is crucial for understanding the theoretical and policy issues involved in liberalising services trade. For instance, gains from services trade liberalisation are closely related to the modes of delivery and the barriers imposed on different modes of delivery. The gains from liberalising trade in goods result almost exclusively from removal of barriers to cross-border trade. The subsequent reallocation of domestic resources between sectors within a country benefits both the liberalising country and its trading partners, through changes in the comparative costs of their production. However, the gains from liberalising trade in services may not come exclusively from the removal of barriers to cross-border trade.

Of all the barriers to services trade, border restrictions may be the least effective one. This is not just because the nature of services makes it difficult for governments to monitor and quantify the level of cross-border trading activities, let alone to impose any

enforceable restriction on these activities. More importantly, unlike traded goods, many cross-border traded foreign services do not compete directly with their domestic counterparts. For instance, a foreign bank note sent from abroad is not the same product as a domestic bank note for consumers. Moreover, cross-border traded services are usually conducted jointly by both foreign and domestic financial providers on a contractual or reciprocal basis. Such traded foreign services are not a substitute for their domestic counterparts. As a result, restricting cross-border traded foreign financial services is unlikely to benefits domestic producers, which is quite different from that of restricting trade in goods. Restricting cross-border traded financial services is unlikely to shift domestic resources from other sectors into the domestic financial services sector, simply because domestic firms cannot provide similar services as those provided by foreign firms across the border.

Compared with border measures, domestic regulations have a more fundamental impact in restricting trade in financial services. This is because, unlike cross-border delivered services, financial services provided by foreign firms located in a domestic market directly compete with local financial firms. Any domestic regulations that grant monopoly power to local firms or restrict the access of foreign firms to the local market will reduce the trade in financial services delivered via foreign commercial presence.

This implies that gains from trade in financial services come, most likely from removing barriers to foreign commercial presence rather than remaining barriers to conventional cross-border trade. As foreign commercial presence is associated with the

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[3]FTAP2 is detailed in Verikios and Zhang (2001).

movement of foreign factors of production such as capital and labour, the gains from trade can then be seen as accruing from the reallocation of factors of production across the border. Compared with cross-border supply, financial services delivered through foreign commercial presence potentially represents a much larger portion of total trade in this sector, Removing barriers to the commercial presence of foreign firms could bring about significant gains for the liberalising country in terms of more efficient use of foreign resources. The increased competition could lower the price and improve the quality of services for consumers as well.

The essence of analysing trade in services, therefore, is to understand the gains from the market access of foreign firms or the movement of factors across the border, in addition to the gains from conventional trade or the movement of products across the border. The gains from factor mobility can be illustrated using figure 1.

Let capital be the only internationally mobile factor. Imposing a barrier to foreign commercial presence distorts the capital market. Figure 1 illustrates the impact of a barrier to foreign capital on the investing country and the host country, and the gains from removing this barrier. The figure combines the capital markets of two countries, A and B. The horizontal axis measures the total capital stock for this two-country world. The total capital stock is divided between two countries as indicated by the vertical supply curve S: K_A is owned by country A while K_B is owned by country B. The vertical axis measures the rate of return to capital (or the value of marginal product of capital). The two downward-sloping curves D_A and D_B represent the demand for capital in country A and B, respectively. Labour is assumed to be

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[4]Note that net foreign debt for a region can be positive or negative.

Figure 2. Allocation of capital by a home region
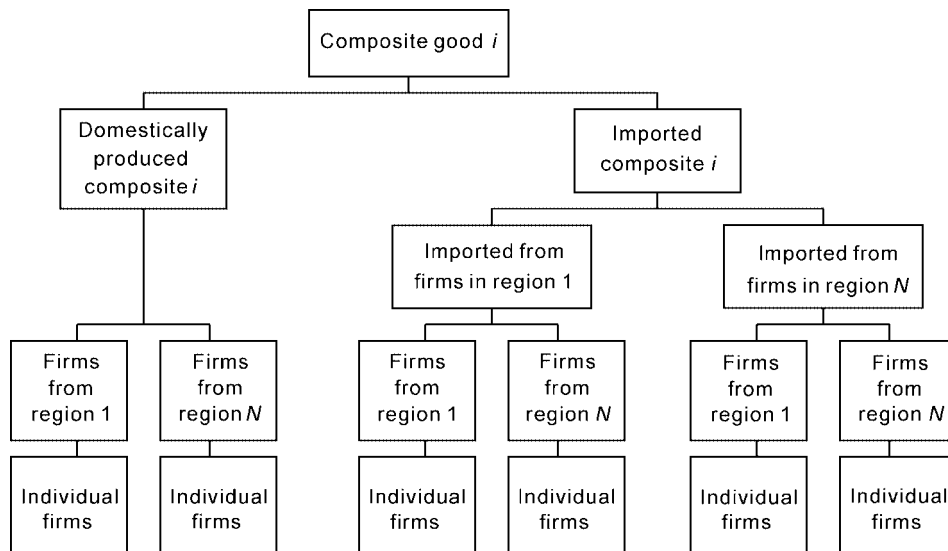Source: Modified from figure 2.3 of Hanslow, Phamduc and
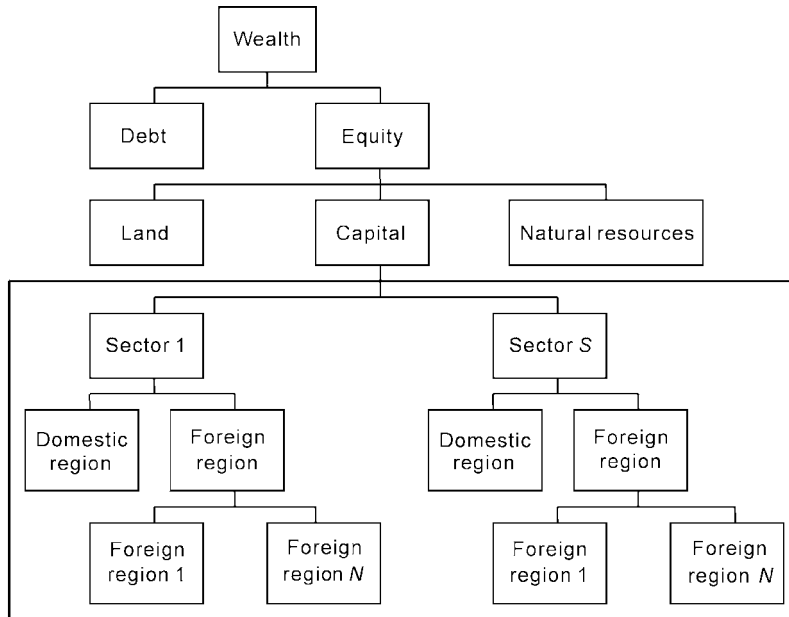
fixed and immobile between the two countries.

By assumption, country A is more capital-abundant than country B. If foreign investment is prohibited in country B, the rate of return to capital in country B is r_B which is above that of country A, r_A. If this barrier is removed, country A will keep investing in country B until the rates of return in both countries are equalised at r*. At the equilibrium point E, country A's supply of capital exceeds its domestic demand, whereas country B's supply of capital is less than its domestic demand. Country A's investment in country B is measured by the distance EH (FDI).

[5]It should be emphasised that the expected rate of return referred to here is risk-adjusted. Capital investment involves uncertainty and risk. An observed high market rate of return may include a high risk premium, implying that the probability of earning such a high rate of return is low. Therefore, when making decisions investors have to adjust the observed rate of return by the probability of not receiving it. The rate of return that the capital owner responds to here is defined as the risk-adjusted rate of return or the expected

Figure 3. Structure of demand for firm-specific products by a host region

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                           ┌─────────────────────┐
                           │  Composite good i   │
                           └─────────────────────┘
              ┌───────────────────────┴────────────────────────────┐
    ┌───────────────────┐                            ┌──────────────────────┐
    │  Domestically     │                            │  Imported            │
    │  produced         │                            │  composite i         │
    │  composite i      │                            │                      │
    └───────────────────┘                            └──────────────────────┘
          │                              ┌──────────────────┴───────────────────┐
          │                    ┌───────────────────┐              ┌───────────────────┐
          │                    │  Imported from    │              │  Imported from    │
          │                    │  firms in region 1│              │  firms in region N│
          │                    └───────────────────┘              └───────────────────┘
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Firms from region 1	Firms from region N	Firms from region 1	Firms from region N	Firms from region 1	Firms from region N
Individual firms	Individual firms	Individual firms	Individual firms	Individual firms	Individual firms

It can be seen that with barrier in place world income is lower as measured by the shaded triangles D and C, which represent the losses to country A and country B, respectively. This implies that when the barrier to foreign capital is removed and capital is allowed to move between country A and country B, both countries gain in terms of these triangles. These gains represent a more efficient use of capital worldwide.

The above discussion suggests that the financial services sector has unique characteristics that must be distinguished from trade in goods. Analysing the effects of liberalising trade in this sector requires a clear sectoral perspective to accommodate these differences. To quantify the global and regional impact of liberalising trade in these services in a consistent manner, requires a general equilibrium framework. This framework should incorporate not only cross-border trade flows but also bilateral foreign capital allocation at the sectoral level, so that services trade via both cross-border supply and foreign

commercial presence is adequately captured.

III. Analytical Framework

The model used in this study is FTAP2, a modified version of the FTAP model applied in Dee and Hanslow (2000).[3] The original model was developed from the GTAP model (Hertel 1997). The following discussion of the FTAP2 model structure highlights only the extension from the GTAP model.

The model distinguishes three economic agents in each region: firms, a representative household and a government. The household owns all primary factors of production: land, natural resources, capital and labour. Land and natural resources are used only in the primary industries sector in each region and are not mobile between sectors. Labour is mobile between sectors but not across regions. Capital is mobile between sectors in a region and between regions themselves. Firms purchase primary factor services from the household to produce goods and services for domestic sales or exports.

Unlike the GTAP model, in each sector of a region there are two types of firms: domestic firms and foreign affiliates. Thus, firms in FTAP2 are identified by location (sector and host region) and by ownership (home region). Foreign affiliates represent commercial presence of foreign suppliers. In each sector, goods or services can be produced by domestic firms and foreign affiliates simultaneously.

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[7]The domestic-import substitution elasticities for similar services sectors are also considered to be zero in other CGE models. See, for instance, Dixon and Rimmer (2001) and Peter et al. (2001).

[8]The values are for taken Dee and Hanslow (2002). Also note that the communications sector is assumed to have the same elasticities of substitution (levels one and two in figure 3) as the financial services sector.

Like domestic firms, foreign affiliates have their own cost structure for intermediate inputs and primary factors. They also have their own domestic sales and exports. Foreign affiliates compete with domestic firms and with each other, not only in the host region's domestic markets but also in foreign markets for their exports. Firms are assumed to source capital from their home regions and other factors of production from host regions. Given input prices and output demands, firms are assumed to

Table 1. Inward FDI stocks by host region and sector, 1995

(US$ million)

Region	Pri[a]	Sec[b]	Con[c]	Tt_[d]	Cmn[e]	Fib[f]	Osr[g]	Total
Australia	14,207	13,137	524	12,274	627	388	5,030	46,188
New Zealand	1,700	3,134	79	207	138	3,576	478	9,312
Japan	—	16,230	101	5,332	289	61,720	4,315	87,987
Korea	—	4,216	63	218	169	868	1,858	7,392
Indonesia	77,550	5,305	218	537	33	181	434	84,258
Malaysia	6,946	7,272	608	1,545	21	27	292	16,711
Philippines	3,178	862	20	156	22	397	210	4,845
Singapore	—	11,682	329	2,981	42	268	59	15,361
Thailand	1,550	4,002	1,227	2,024	11	1,213	673	10,701
China	3,902	15,557	289	905	2	47	5,418	26,120
Hong Kong	4,315	5,691	336	3,572	916	9,127	546	24,503
Taiwan	—	11,823	12	554	61	268	1,218	13,937
Canada	5,610	47,006	4,104	7,503	155	9,866	2,741	76,987
USA	28,899	131,977	2,215	93,630	7,153	35,393	52,637	351,905
Mexico	5,680	10,714	86	6,217	225	7,918	494	31,335
Chile	9,757	995	52	934	106	107	400	12,351
Rest Cairnsh	8,182	32,968	297	5,332	523	8,342	2,286	57,931
Europ Union	148,818	222,269	—	59,536	13,586	72,066	4,583	520,858
Rest of World	47,438	109,308	2,163	23,222	29	3,479	14,405	200,044
World	367,733	654,149	12,723	226,680	24,110	215,253	98,078	1,598,726

¹ Despite this sector including non-financial services (as defined by the GATS) such as business services, modelling trade in financial services is generalised to the whole sector in this study. Throughout

Table 2. Outward FDI stocks by home region and sector, 1995

(US$ million)

Region	Pri[a]	Sec[b]	Con[c]	Tt_[d]	Cmn[e]	Fib[f]	Osr[g]	Total
Australia	9,807	6,622	550	1,293	498	358	2,326	21,453
New Zealand	695	1,459	82	568	48	110	330	3,293
Japan	49,987	87,043	2,058	53,845	8,585	46,818	27,973	276,309
Korea	4,508	1,340	26	178	12	124	104	6,292
Indonesia	217	775	41	261	23	116	89	1,523
Malaysia	247	781	30	369	–	5	89	1,520
Philip-pines	–	144	12	77	5	41	362	642
Singapore	1,797	3,933	174	1,191	73	869	694	8,731
Thailand	–	120	25	170	14	124	102	554
China	548	129	49	115	3	29	37	910
Hong Kong	6,625	14,614	289	1,829	170	6,066	3,808	33,400
Taiwan	100	5,282	–	324	–	267	316	6,290
Canada	12,721	33,478	–	5,804	114	11,714	7,548	71,380
USA	84,235	161,579	370	50,749	5,494	58,855	5,222	366,505
Mexico	177	433	21	261	14	138	73	1,117
Chile	–	177	7	51	2	31	30	299
Rest Cairnsh	657	1,519	72	487	30	293	284	3,341
Europ Union	140,863	235,818	4,160	76,714	9,001	86,049	29,642	582,246

select a combination of inputs to minimise the costs of production. As capital is internationally mobile, firms are able to minimise the costs of their production by allocating productive activities across regions, or between their domestic parent firm and their overseas affiliates.

The commercial presence of a firm is determined jointly by the supply of capital in its home region and by the demand for its output in the host region. Figure 2 shows how capital owned by a regional

[11]For complete documentation refer to Verikios and Zhang (2001).

[12]The dwellings sector is assumed to have no FDI.

Table 3. Share of FDI in financial services capital
stock by region

(per cent)

Region	Share
Australia	0.38
New Zealand	9.65
Japan	1.39
Korea	0.55
Indonesia	0.25
Malaysia	0.18
Philippines	1.91
Singapore	1.26
Thailand	2.26
China	0.05
Hong Kong	12.90
Taiwan	0.42
Canada	4.62
United States of America	0.85
Mexico	4.14
Chile	0.35
Rest of the Cairns Groupa	0.98
European Union	1.65
Rest of the World	0.37
World	1.35

aThis region consists of Argentina, Brazil, Colmbia and Uruguay.
Source: FTAP2 database.

household is allocated to local firms across sectors
and how local firms allocate their capital across
regions.

Each region has a given stock of wealth. The wealth
owner, the representative household, is assumed to
maximise returns by allocating wealth to its domestic
firms across sectors. Wealth is composed of productive
assets net of foreign debt.[4] Productive assets include
land, natural resources and physical capital. With the
ratio of net foreign debt to regional income being
constant, the allocation of regional wealth is

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[13]Total net outward FDI stocks are the sum of regional net outward FDI
stocks.

effectively reduced to allocating physical capital only.

Capital is first allocated to home firms across sectors. The home firm in a given sector will then allocate the capital received to domestic operations or its foreign affiliates located in other region in order to minimise the cost of production. The household maximises returns by moving capital from low rate of return sectors to high rate of return sectors until the expected rates of return on its capital stocks allocated in all regional firms, including their affiliates abroad, are equalised.[5] The enclosed area in figure 2 indicates the location of the firms.

In equilibrium the expected rates of return on capital are assumed to be equalised for firms from the same home region, but not for firms operating in the same host regions. This is because capital assets owned by different regions may not have the same quality or composition. For instance, foreign affiliates in a region may have superior technologies or new products, which generate higher rates of return than those earned by their local counterparts. The concept of 'knowledge capital' may account, in part, for the apparently high rates of return enjoyed by multinational corporations in many developing countries.[6]

The location of a firm is also influenced by the demand for its output, particularly by consumers in the host region where the firm is located. This is crucial for services providers. The products of domestic firms and foreign affiliates located in the same region are assumed to be imperfect substitutes in consumption.

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[15]To the extent that the movement of natural persons is associated with the location of production abroad and this movement is greater than one year, this movement is assumed to be accounted for in FTAP2 by FDI flows. Transactions associated with the temporary (less than one

Consumers in each region will maximise utility by selecting a particular bundle of differentiated goods and services to suit their needs. As foreign affiliates compete with domestic firms in the local market, the demand for a given good or service also determines the location or commercial presence of foreign affiliates. The demand structure of the model is represented in figure 3.

At the top node of the nesting in figure 3, the consumer chooses between composite goods from domestically produced goods and imports. On the import

Table 4. Estimated tax equivalents of post-UR barriers to trade in financial services (per cent)

Region	Output		Capital	
	Domestic	Foreign	Domestic	Foreign
Australia	–	1.4	–	43.3
New Zealand	–	1.9	–	8.5
Japan	5.8	7.7	–	3.0
Korea	14.9	18.6	–	80.7
Indonesia	5.3	16.3	–	81.0
Malaysia	6.7	24.6	41.7	97.4
Philippines	3.5	13.4	24.0	109.9
Singapore	8.0	20.4	–	62.7
Thailand	–	7.3	–	58.4
China	14.9	24.7	60.6	140.7
Hong Kong	2.6	4.9	–	6.4
Taiwan	8.6	14.7	–	48.8
Canada	0.0	2.3	–	13.4
United States of America	0.0	2.4	–	8.1
Mexico	0.0	2.2	–	21.8
Chile	7.7	11.3	39.0	57.4
Rest of Cairns Groupa	0.2	9.0	8.1	33.2
European Union	–	2.3	–	12.3
Rest of the World	–	8.2	6.4	51.5

aThis region consists of Argentina, Brazil, Colombia and Uruguay. – Nil
Source: FTAP2 database

Both of these studies use the standard GTAP model for their analysis. The GTAP model does not distinguish foreign affiliates from domestic firms in a host region. Thus the effect of trade liberalisation can

side, the consumer can choose between imports from different source regions. For imports from the same region, the consumer can choose between goods produced by different firms. For domestically produced goods, on the other hand, the consumer can choose between products produced by foreign affiliates or by domestic firms.

The bottom node of the nesting in figure 3 assumes that the good produced by a representative firm in a sector is a composite of all the varieties that individual firms produce within that group. This implies firm-level product differentiation associated with large-group monopolistic competition as developed by Francois, McDonald and Nordstrom (1996).

The above consumer choice is modelled in a nest of CES utility functions. The values for the elasticities used for the first and second nodes of the demand nesting (levels one and two in figure 3) are discussed below. The values used for the elasticity of substitution between goods produced by firms from different home regions but located in the host same region (level three in figure 3) is 7.5. The values used for the elasticity of substitution between different firm types (level four in figure 3) is set at 15.

Goods and services produced by a firm can be exported to a foreign region via cross-border trade or via commercial presence of its affiliate in the foreign region. As mentioned in section II, a unique feature of cross-border supplied financial services is that they are not substitutable with financial services provided by local firms. As a result, the elasticity of substitution between domestic and cross-border supplied financial services (level one in figure 3) are assumed to be close to zero for intermediate input usage and final demand. For the same reason, financial

services imported across the border from different regions (level two in figure 3) are also assumed to be non-substitutable with each other, so these elasticities are also set to close to zero.[7] The nonsubstitutability of domestic and cross-border supplied financial services implies that domestic suppliers of these services do not directly compete with foreign service suppliers in cross-border trade. However, they do compete with each other in the host region's domestic market, which is captured in commercial presence of foreign affiliates.

Finally, the elasticities of substitution between all imported and domestically produced goods and non-financial services (in levels one and two in figure 3) are set at 5 and 10, respectively.[8]

IV. Model Database

The starting point for the FTAP2 database is an updated version of the database used in Verikios and Hanslow (1999), which fully implements the UR agreements. This database divides the world into 19 regions[9] and each regional economy into eight sectors. six of which are services sectors. These are: construction; (wholesale and retail) trade and transport; communications; finance, insurance and business services;[10] other services; and dwellings. Non-services sectors are reduced to two aggregated sectors: primary and secondary industries.

This database does not contain all the detail to support the theoretical structure of FTAP2. To model foreign commercial presence in services and other sectors and liberalising trade in services the database must contain information on bilateral FDI stocks by region and sector; FDI rentals by region and sector; and barriers to the establishment and operation of

Table 5. Projected effects on real GNP of three
multilateral trade liberalisation scenarios for
financial services

Region	National treatment %	Market access %	Complete liberalisation %
Australia	0.04	0.01	0.05
New Zealand	0.42	−0.01	0.40
Japan	0.01	0.01	0.01
Korea	0.08	−0.01	0.36
Indonesia	0.59	−0.09	0.70
Malaysia	0.17	−0.03	0.27
Philippines	0.70	−0.51	0.93
Singapore	0.29	0.00	0.73
Thailand	1.00	−0.01	0.96
China	−0.00	0.04	0.06
Hong Kong	0.12	0.26	0.27
Taiwan	0.02	−0.04	0.03
Canada	0.07	−0.04	−0.01
United States of America	0.01	−0.01	−0.02
Mexico	0.74	−0.04	0.69
Chile	0.04	0.14	0.24
Rest of Cairns Groupa	0.54	0.01	0.70
European Union	0.07	−0.01	0.05
Rest of the World	0.16	0.00	0.17
World	0.09	0.00	0.09

domestic firms and foreign affiliates.

Bilateral FDI stocks at the sectoral level are
estimated from APEC (1995), UN (1999) and a wide range
of publications by various international organisations
as well as individual countries.[11] All data are based
on statistics for the mid-1990s. These sources provide
information on total inward and outward FDI stocks by
region and broad sectors. As this information is
limited and incomplete, a RAS procedure is used to
generate a consistent database of bilateral FDI stocks
by region and sector. The resulting inward and outward

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[17]FTAP2 is implemented using the GEMPACK software suite (Harrison and

FDI stocks by region and sector are summarised in tables 1 and 2. The FDI stocks database specifies the commercial presence of foreign affiliates by origin (home region) and destination (sector of a host region).

Tables 1 and 2 show the sources and destinations of FDI stocks in seven of the eight sectors in the database.[12] The European Union (EU), the USA and Japan are the main sources of FDI, accounting for 36, 23 and 17 percent of total outward FDI stocks, respectively. Both the EU and the USA are also the main destinations of FDI, receiving about the same amount of FDI as they invest abroad. Unlike the EU and the USA, however, Japan's outward FDI far exceeds its inward FDI. Japan is the source of 83 percent of total net outward FDI,[13] making it the single most important net FDI exporter in the world. Among developing countries, Indonesia is the largest recipient, receiving 29 percent of the total net inward FDI stocks.[14] The next most important net FDI importers are Mexico (10 percent), China (9 percent) and Malaysia (5 percent).

Services sectors make up 36 per cent of all FDI stocks, compared with 23 per cent for the primary sector and 41 per cent for the secondary sector. Of the services sectors, the trade and transport sector has the largest share (14 percent) followed by financial services (13 percent) and other services (6 percent).

Table 3 reports the share of FDI in the capital stocks of each host region's financial services sector. Developed regions usually have a larger foreign commercial presence than developing regions. The size

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[18]The results for China can be explained by the very low foreign commercial presence in financial services prior to liberalisation. Despite the removal of significant barriers to national treatment, the small initial market penetration by foreign affiliates in China's financial services market limits the gains from subsequent increase in FDI. In addition, these small gains are largely offset by the

of foreign commercial presence may be closely correlated with trade barriers, especially barriers that discriminate against foreign firms. The low foreign presence in many developing regions are likely to be the result of high barriers. On average, however, the share of FDI in the sector is quite small, accounting for less than 1.5 per cent of the total capital stock in this sector.

The expected rates of return to capital used in FTAP2 are obtained from the updated database produced from the work of Verikios and Hanslow (1999). FDI rentals are thenderived by multiplying FDI stocks by the corresponding rates of return. The FDI capital rental shares are then used in splitting the total output of each sector in the updated database into production by domestic firms and foreign affiliates.

Theresulting database does not contain barriers to trade and foreign investment in financial services. These have to be injected into the database separately. Estimates of the tax equivalents of these barriers for financial services are taken from Kalirajan et al. (1999). The barriers to financial services are imposed using the technique of Malcolm (1998).

Commercial presence and cross-border supply are two important modes of international trade in financial services, and barriers to trade in this sector are usually imposed via these two modes of delivery.[15] Estimating the effects of these barriers is important for modelling the effects of trade liberalisation in

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[19]The percentage changes in real GNP are analysed using the GTAP welfare decomposition (Huff and Hertel, 1996) which is modified to account for cross-border capital flows (Hanslow et al., 1999)

[20]In theory, the 'product variety' effect is associated with consumer utility, not with products themselves. In an applied model, however, welfare changes or consumer utility can be quantified as change in real GNP. As such, changes in real GNP in the model include not only

Table 6. Sources of changes in real GNP of complete trade liberalisation in financial services

(US$ million)

Region	Allocative efficiency	Terms of tradec	Net capital endowment	Product variety	Net FDI income	Row sum
Australia	2	126	14	1	11	154
New Zealand	117	−15	210	66	−158	218
Japan	−2 672	1 348	−4 618	−2 350	8 592	354
Korea	796	−578	1 826	663	−1 229	1 468
Indonesia	753	−340	2 245	549	−1 943	1 250
Malaysia	262	−112	150	70	−144	226
Philippines	796	−820	1 146	331	−853	591
Singapore	326	−259	460	205	−290	440
Thailand	703	−266	2 311	453	−1 797	1 396
China	1 221	−1 157	104	322	−106	384
Hong Kong	−1	340	−260	−87	281	275
Taiwan	88	−188	240	82	−151	71
Canada	22	−108	31	−10	27	-38
United States of America	−1 511	1 794	−5 720	−1 555	5 887	−1 091
Mexico	1 004	−540	3 249	719	−2 718	1 701
Chile	178	−96	142	37	−124	136
Rest of Cairns Groupa	3 092	−749	11 839	2 839	−10 296	6 625
European Union	−1 529	1 775	−3 880	−1 749	8 739	3 375
Rest of the Worldb	2 817	−172	4 676	1 527	−3 728	5 108

this sector. A common effect of any barrier to trade in a service is to restrict the supply of the service and increase the price for its users. In a general equilibrium framework, there are two possible interpretations with regard to the effects of barriers on economic activity. The first views these barriers purely as cost-increasing for users, with no corresponding increase in the price received by producers. This allows the removal of the barrier to be modelled via a productivity improvement. The productivity improvement reduces the price for users,

leading to an increase in consumption and production of the service. This is the approach adopted in Hertel et al. (1999) and Hertel (1999), in which the barriers push up the cost for firms using imported services as intermediate inputs.[16] Removal of trade barriers is assumed to creates 'import-augmenting technical change' for firms in a host region, which is equal to the measured tariff equivalent.

An alternative approach to modelling barriers to trade in services is by linking the expected reduction in the cost of the service for users to a fall in the price received by producers. This is similar to the loss in tax revenue when import tariffs are removed. In this case, the barriers are both cost-increasing for users and rent-creating for producers. The barriers create rents to factors used in the sector in which trade is restricted. These factors earn supranormal rates of return compared with their counterparts in other unrestricted sectors. For the economy as a whole, the barriers create net losses in allocative efficiency.

Modelling the removal of these barriers then involves removal of these rents. The loss in rents for producers in the restricted sector 'pays' for the increase in the real income of factor owners or consumers elsewhere. For the economy as a whole, however, net gains accrue from the gains in allocative efficiency. This is the approach adopted by Petri (1997) and Dee and Hanslow (2000). This approach is more in line with trade theory on the effects of limiting market entry. This is also the approach adopted in this study.

As services are traded via various modes there are also various ways that trade barriers can be imposed. These barriers can be categorised into two broad types: restrictions imposed on the delivery of the service itself and restrictions imposed on the use of primary factors in producing the service. These barriers create

distortions in the markets for services or for factors. Accordingly, trade barriers in the model are represented as an ad valorem tax equivalent imposed either on the price of firms' output or on the rate of return to capital used by firms. The former measures barriers to ongoing operations of a firm while the latter measures the barriers to the establishment of a firm. Domestic firms and foreign affiliates in a region may face different barriers to ongoing operations and establishment. Thus there are, altogether, four different tax equivalent estimates for trade barriers in the model database. These tax equivalents for all 19 regions are listed in table 4. These estimates are representative of barriers which were in place in 1997.

As the barriers to firms' ongoing operation and establishment capture the effects of all barriers to trade in these services, no additional border restrictions are necessary in modelling the effects on cross-border trade of restrictions on ongoing operations. This includes both export and import taxes on financial services.

V. Policy Options

Services trade liberalisation under the GATS requires WTO members to ensure market access and national treatment for foreign services and service suppliers. In the scheduled commitments, member countries must specify conditions for foreign services or service suppliers to gain access to their domestic markets. Article XVI of the GATS, which deals with market access, stipulates that each member gives no less favourable treatment to service suppliers of other members than is provided in its schedule of commitments (WTO Secretariat 1999). In regards to national treatment, Article XVII of the GATS states that in the

sectors covered by the schedule and subject to any conditions and qualifications set out in the schedule, each member shall give treatment to foreign services and service suppliers no less favourable than it gives to its own domestic services and service suppliers (WTO Secretariat 1999). Based on these requirements, three trade liberalisation scenarios are analysed in the following section: removing only restrictions on national treatment, removing only barriers to market access and completely removing all barriers.

Restrictions on national treatment are discriminatory in nature as they are biased against foreign services and service suppliers only. These barriers distort the prices of foreign services and the returns to foreign capital. Two types of discriminatory barriers are therefore modelled: one on the price of foreign affiliates' output and the other on the returns to foreign capital used by foreign affiliates. Granting foreign service suppliers national treatment requires the host region to lower the barriers for affiliates to the same level as for domestic firms. This implies that all discriminatory barriers on both affiliates' output and capital are removed. This is modelled in the national treatment scenarios. It should be noted that in these scenarios, non-discriminatory barriers, if any, still apply.

Market access barriers are non-discriminatory in nature, imposed on both domestic and foreign service suppliers. Similarly, two types of non-discriminatory barriers are modelled: one on the returns to capital used by all firms and the other on the price of all firms' output. In this scenario, barriers are reduced equally for domestic firms and foreign affiliates in a host region. Barriers to domestic firms will be completely removed, leaving only discriminatory barriers to foreign service suppliers intact.

Table 7. Projected effects on sectoral output of complete trade liberalisation in financial services

(per cent)

Region	Pri[a]	Sec[b]	Con[c]	Tt_[d]	Cmn[e]	Fib[f]	Osr[g]	Dwe[h]
Australia	0.15	−0.09	−0.16	−0.05	0.00	0.04	0.04	0.01
New Zealand	0.88	1.15	0.68	0.70	0.50	0.76	0.36	0.65
Japan	−0.61	−0.90	−0.43	−0.74	−0.61	2.06	−0.93	−0.72
Korea	−0.37	1.38	0.89	0.30	0.32	4.85	−0.34	−0.33
Indonesia	0.61	4.82	1.84	2.12	1.50	3.81	1.55	1.17
Malaysia	−0.27	0.57	0.97	0.91	0.44	2.97	0.63	0.18
Philippines	0.98	7.32	3.77	5.45	1.82	5.12	4.34	0.65
Singapore	0.90	0.93	1.62	2.28	0.52	3.12	2.23	−0.32
Thailand	0.30	3.84	1.45	3.25	1.24	2.94	1.41	1.33
China	−0.37	0.46	0.82	−0.16	0.16	3.31	−0.12	0.27
Hong Kong	−0.34	−1.17	−1.53	−0.13	−0.17	0.63	−0.30	−0.50
Taiwan	0.11	0.37	−0.02	−0.02	0.08	1.28	−0.20	−0.02
Canada	0.18	−0.07	−0.29	0.02	−0.01	0.16	0.02	−0.13
USA	−0.05	−0.36	−0.45	−0.14	−0.10	−0.05	−0.02	−0.19
Mexico	0.96	3.83	0.88	1.76	1.21	1.79	0.99	1.64
Chile	0.00	−0.20	1.66	0.25	0.16	4.61	0.03	−1.77
Rest of Cairnsi	1.59	3.04	2.03	1.72	1.09	2.38	0.86	0.72
European Union	−0.04	−0.31	−0.42	−0.16	−0.06	−0.02	−0.01	−0.08
Rest of World	0.09	0.61	0.32	0.31	0.23	0.77	0.24	0.05
World	0.04	0.02	−0.12	−0.06	−0.06	0.61	−0.07	−0.06

[a]Primary industries. [b]Secondary industries. [c]Construction. [d]Trade and transport. [e]Telecommunications. [f]Financial services. [g]Other services. [h]Dwellings. [i]This region consists of Argentina, Brazil, Colombia and Uruguay.
Source: Model simulations.

All three scenarios are analysed in a long run equilibrium context. As the analysis is comparative static, the results of these scenarios show the difference between two alternative equilibrium conditions: one with all trade barriers in place and the other with some or all barriers removed. The difference is solely the result of reallocation of existing global resources. As no growth of resources is considered, the results could be interpreted as indicative of the minimum changes that may occur under different scenarios of financial trade liberalisation.

VI. Simulation Results

This section examines three multilateral trade liberalisation scenarios for the financial services sector: two partial (national treatment and market access) and one complete.[17] Table 5 details the aggregate changes in regional and world real gross national product (GNP) brought about by each of the three multilateral liberalisation scenarios for financial services. Complete liberalisation of financial services is expected to generate a gain in world real GNP of US$23 billion, or about 0.1 per cent. This is equal to the combined gains from the two partial liberalisation scenarios. The projected global gains from national treatment and market access liberalisation are about US$22.6 and US$0.4 billion, respectively.

The global gains from complete liberalisation mainly come from the removal of discriminatory barriers. This result seems influenced by the incidence of the barriers and the share of FDI in this sector. Firstly, not all regions have non-discriminatory barriers in financial services, so their global impact tends to be modest. Secondly, the most significant non-discriminatory barriers exist only in regions in which foreign firms have a low penetration rate in the domestic for financial services (see Tables 3 and 4). Therefore, the removal of these barriers is not expected to lead to large reallocation of capital and large associated gains for the world as a whole. In contrast, all regions have discriminatory barriers to national treatment, with some having very high discriminatory barriers to establishment. Therefore removal of these barriers is expected to lead to large gains for the world as a whole, compared with the removal of non-discriminatory barriers.

In the scenario of removing discriminatory barriers to national treatment, all regions are expected to gain

except China, which remains unchanged.[18] The biggest winners are Thailand, Mexico, the Philippines and Indonesia. All these regions have high discriminatory barriers. Relatively liberalised and outward-investing regions also benefit from better market access to liberalising regions. These include the three largest investors: Japan, the USA and the EU.

The removal of market access barriers for financial services has a negligible effect on real GNP for most regions. This is due to the fact that many regions do not have market access barriers, while all regions do have barriers to national treatment.

The gains from the two partial liberalisation scenarios do add up for the world as a whole, but not for individual regions. Table 5 shows that complete liberalisation tends to benefit liberalising regions more than others. In the two partial liberalisation scenarios, however, the distribution of the global gains is not always in favour of liberalising regions. For example, the removal of barriers to national treatment leads to a minor fall in real GNP for China and a rise in real GNP for Hong Kong, which is the largest investor in China. This is because removal of barriers to national treatment leaves market access barriers in place, which continues to transfer rents from China to other regions that have invested in China. This mitigates some of the gains that China receives from national treatment liberalisation. It is only when complete liberalisation is undertaken that the negative effects of existing barriers can be avoided for the liberalising regions. This suggests that, regions with high barriers to remove will benefit more from complete liberalisation than from the combination of separate partial liberalisation scenarios.

Overall, most regions are expected to gain from

complete liberalisation of trade in financial services. The biggest winners are South-East Asian and Latin American economies. The USA and Canada are the only countries projected to be slightly worse off. Decomposing the changes in real GNP helps trace the sources of these gains or losses for each region.

The percentage change in real GNP for each region can be decomposed into various contributing factors.[19] For analytical convenience, these factors are grouped into five effects: allocative efficiency effects, terms of trade effects, net capital endowment effects, product variety effects and net foreign income effects.

Allocative efficiency effects measure changes in resource allocation as a result of policy changes. Terms of trade effects measure the changes in the relative price of exports and imports for a region. The net capital endowment effect refers to the changes in the rental value of the net capital endowment located within a region, which is made up of the domestically-owned and foreign-owned capital. Product variety effects refer to the benefits that the increased variety of a particular good or service may provide for consumers. It is captured by an increase in the size of a sector, which can be interpreted as the number of firms in that sector.[20] Net foreign income effects embrace three different forms of foreign income for a region: the net capital rentals and the net barrier rents received by the owners of capital from a region's overseas affiliates, and the interest paid on net foreign debt.

The contributions of the five effects to the change in regional and world GNP are presented in table 6. The results are taken from the complete liberalisation scenario. The row sums of the five contributors, listed in the last column, equal the change in real GNP, which are consistent with the percentage change results

represented in table 5. It can be seen in the table
that, for the world as a whole, only changes in
allocative efficiency, net capital endowments and
product variety contribute to the changes in real GNP.
These three effects can be referred to as 'income
generating' factors. The other two effects do not
change world total GNP, and can therefore be referred
to as 'income redistributing' factors. For the world as
a whole, whether a policy change is beneficial or not
depends on income generating factors rather than income
redistribution factors. At the regional level,
however, both types of contributing factors are
important.

Table 6 indicates that complete liberalisation of
financial services trade is expected to increase world
real GNP by around US$22 billion. The most important
contributor to this gain is the increase in net capital
endowments, which accounts for about 63 per cent of the
projected change in world real GNP. This is the result
of alternative allocation of capital across regions,
which is influenced by two factors. Firstly, all
regions have discriminatory barriers to national
treatment in financial services, which restrict
capital mobility. Secondly, foreign affiliates have a
high market penetration rate in many region's domestic
market for financial services prior to liberalisation.
As a result, financial services liberalisation tends to
causes a large proportion of the world capital stock
to be reallocated across regions, especially in the
financial sector. The gains from this capital
reallocation, measured as the contribution of net
capital endowments, dominate the gains in world real
GNP.

Gains in allocative efficiency (US$6 billion) and
product variety (US$2 billion) contribute to 29 and 9
per cent of the changes in world real GNP,

respectively. The distribution of allocative
efficiency gains across regions tends to favour
liberalising regions relative to some large and
relatively liberalised regions, such as Japan, the USA
and the EU.

Two subeffects determine allocative efficiency: the
effect of changes in output and the effect of changes
in capital usage. The large and relatively liberalised
regions experience a decline in allocative efficiency
due mainly to their outflow of capital. By contrast,
all liberalising regions experience a gain in
allocative efficiency from increased capital usage,
due largely to the inflow of capital. Combined with a
gain from increased output, they experience an overall
gain in allocative efficiency.

The terms of trade effects from trade liberalisation
normally transfer real income from liberalising
regions to others. Liberalising regions experience a
worsening of their terms of trade, while relatively
liberalised regions experience an improvement in their
terms of trade (see table 6). This is because the
barriers in liberalising regions restrict the supply of
financial services and raise the price of exports
relative to the price of imports. When the barriers are
removed, the relative price of exports to imports tends
to fall in liberalising regions and rise in liberalised
regions, dissipating barrier rents flowing from the
former to the latter.

The net capital endowment effect reflects the change
in the rental value of the capital endowment in each
region. An increase in the net capital endowment in a
region results in a rise in its real output. Financial
services liberalisation tends to increase FDI for all
regions as they all have some discriminatory barriers
to remove. The removal of these barriers provides an
incentive for inward FDI in all regions. However,

whether a region's overall net capital endowments rises or falls is determined by what happens to its domestic capital and inward FDI. For large and relatively liberalised regions, such as Japan, the USA and the EU, financial trade liberalisation encourages them to increase investment in liberalising regions. Their outward FDI is financed from their domestic capital stocks. The results show that the negative effect of their domestic capital reduction, due to outward FDI, outweighs the positive effect of increased inward FDI, causing an overall fall in their net capital endowments. This has a negative effect on their real GDP. On the other hand, liberalising regions experience no such a negative effect. On the contrary, their net capital endowments increase as a result of inflows of FDI, contributing to rise in their GDP.

  The change in product variety is indirectly determined by changes in net capital endowments. Increased net capital endowment leads to increased output. As the variety of products available to consumers is related to the output of an industry, an increase in the output means more varieties for consumers and increased welfare. Table 6 show that product variety effect and the net capital endowment effect move in the same direction.

  The contribution of the net foreign income effect to regional real GNP depends on whether the region concerned is a net FDI investor or recipient, and also whether the region has net foreign debt. Our results show that net FDI rental income tends to be a more important factor than net FDI rents or net debt payment in determining this net foreign income effect for almost all regions. As before, This is again the result of reallocation of capital between liberalising regions and relatively liberalised regions after the policy change. As table 6 shows, major investing

regions are expected to be the receiver of net foreign
investment income from other regions.

  In summary, most liberalising regions benefit from
increases in allocative efficiency, net capital
endowments and product variety, while most relatively
liberalised regions would gain from improvements in the
terms of trade and increases in net foreign income.
Although the change in real GNP for individual regions
depends on which of these effects dominates, the
overall majority of regions are expected to gain from
complete liberalisation of trade in financial
services.

  The USA and Canada are the only regions that may not
benefit from financial trade liberalisation. The USA
has significant commercial presence in many regions,
some of which have substantial barriers prior to
liberalisation. The USA therefore had benefited from
other regions' trade barriers in the forms of rents
earned by its foreign affiliates prior to
liberalisation. When other regions liberalise their
financial services sectors, the USA benefits from
increased FDI income from liberalising regions, but
loses barrier rents as well as net capital endowments
and output. As the world largest investor, the losses
may exceed the gains, resulting in a slight fall in its
real GNP. Canada is affected apparently due to its
close ties with the US economy.

  The projected effects of complete liberalisation of
trade in financial services on sectoral output in all
regions are presented in table 7. World financial
services are projected to increase by 0.61 per cent,
above all other sectors. As expected, the regions with
the highest barriers to trade in financial services
experience the biggest expansion in their financial
sectors. These include the Philippines, Korea, Chile
and Indonesia. Only the USA and the EU experience a

slight fall in the output of their financial services sectors. In fact, these two regions experience a fall in the output of all sectors. This is a direct result of reallocating their capital from domestic sectors to other regions, in response to other regions' trade liberalisation.

Liberalising regions, on the other hand, generally record positive growth in almost all other sectors. This result can be explained by the combination of three factors: the share of the financial services sector in their gross domestic product (GDP), the importance of financial services as an intermediate input into the production of other goods and services, and the expansion of capital endowments.

The share of financial services in world GDP is 13.9 per cent. Financial services also contribute to a larger proportion of GDP in many regions, including the three largest investing regions, Japan, the USA and the EU. The average share of financial services in GDP in these three regions is 16.3 per cent. This high share causes a large proportion of the capital stock to be reallocated from these regions to other regions after trade liberalisation. Such a large outflow of capital can only be accommodated by reducing their own domestic capital. This is observed in the results for both the USA and the EU. A similar result is not observed in Japan as its relatively high market access barriers serve to constrain a substantial outflow of capital after trade liberalisation. Instead, the demand for capital by Japan may even increase, which encourages Japan to withdraw capital from its affiliates abroad.

Another important effect explaining the sectoral results, especially in liberalising regions, is the importance of financial services as an intermediate input into production. The average share of financial services in production costs for the world as a whole

is 8.8 per cent. Thus, removing a given barrier in financial services will lower the production costs and the output prices of all sectors using them as their intermediate inputs. Sectoral outputs are expected to respond to the changes in their prices.

   The largest reductions in the price of financial services occur in the regions with the highest barriers. As output prices in liberalising regions fall, the demand for their exports increases in other regions. This helps drive a strong output expansion in both the financial services and other sectors in liberalising regions. Moreover, the rise in the real GNP of liberalising regions also pushes up their consumption demand for all goods and services, which further re-enforces the expansion of domestic output and imports from other regions.

   Table 7 shows that the primary goods sector experiences the second largest output expansion when barriers to trade in financial services are removed. The effects of capital reallocation across regions cause the rates of return on fixed factors of production to diverge between liberalising and relatively liberalised regions, with higher rates of return to fixed factors in the former and lower rates of return in the latter. The changes in rates of return affect the relative prices of primary goods in these regions and change the patten of trade patterns between them with the price of primary goods falling in liberalised region relative to liberalising regions. On average, this causes exports of primary goods from relatively liberalised regions to those liberalising regions, to increase, and exports of primamary goods from liberalising regions to decrease. while industrial goods tend to be traded in the opposite direction.

VII. Conclusion

This paper uses a multi-region and multi-sector CGE model, FTAP2, to quantify the possible effects on the regional and world economies of liberalising trade in a key sector, financial services, for which WTO members have made commitments for trade liberalisation. As current commitments represent only a partial removal of all the barriers, by modelling the effects of complete liberalisation, this study could provide impetus for further trade liberalisation in this important sector.

The results of trade liberalisation depend, to a large extent, on how trade barriers affect the regional and global economies. The GATS identifies two types of barriers to trade in services: barriers to market access and national treatment. The former restrict the establishment and ongoing operations of all firms and the latter restrict the establishment and ongoing operations of foreign affiliates. The empirical studies have showed that barriers to trade in financial services are generally much higher in developing regions than in developed regions. Discriminatory national treatment barriers are more significant in financial services trade than non-discriminatory market access barriers.

Removal of barriers to trade in financial services will benefit liberalising regions by attracting more foreign investment into their economies and increasing competition between domestic and foreign firms, which eventually provides better services for consumers at lower prices. On the other hand, removing barriers to trade in financial services affects relatively liberalised regions by increasing income earned from outward FDI, reducing the prices of imports from liberalising regions, and thus the cost of using these imports as intermediate inputs or for final

consumption.

The results show that, for the world as a whole, the gains from complete liberalisation come almost exclusively from removing discriminatory barriers to national treatment. For individual regions, however, complete liberalisation is still the preferred strategy as it tends to bring more benefits for most regions, especially those regions with relatively high barriers.

The results also show that the most import sources of gains from financial services trade liberalisation may come from increased commercial presence of foreign services providers, or efficiency improvement due to reallocating capital across regions. This result may have important policy implications for liberalisation of trade in other services.

The results presented in this study capture only the static gains from trade liberalisation. In reality, there are dynamic gains as well, such as increased savings and capital accumulation. To capture such dynamic effects, the model and the database need to be extended to incorporate some key dynamic features, such as investment behaviour and capital accumulation over time. Moreover, the results depend also on the reliability of the information used to compile the services sectors of the database. As more information on regional services sectors becomes available, greater sectoral detail could be incorporated into the model's database, which will make it possible for extending the current analytical framework to estimate the effects of trade liberalisation in other services sectors as well.

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