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Policy Development and Review Department

Trade in Financial Services and Capital Movements

Prepared by Natalia T. Tamirisa[1]

Authorized for distribution by Robert Sharer

July 1999

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Abstract

International financial liberalization may alter saving-investment imbalances and patterns of capital flows across countries. In a panel of OECD countries for 1990–96, this study examines how the liberalization of capital movements and financial services trade affects net private capital flows. Capital inflows tend to fall (rise) with the liberalization of commercial presence in banking and securities (insurance) services, possibly reflecting an increase (decrease) in saving. Capital account liberalization is found to stimulate capital inflows, suggesting that better access to external financing helps sustain larger fiscal and current account deficits. When cross-border trade is liberalized, capital flows change insignificantly.

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Key words: financial services, capital movement, trade, OECD

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I. INTRODUCTION

How international financial liberalization affects capital flows is a key question for policy makers in both industrial and developing countries. As countries remove capital controls and open their financial sectors to foreign competition, balances between saving and investment may shift, thereby altering patterns of private capital flows among countries. This in turn may require a fundamental rethinking of the overall framework for macroeconomic and financial sector policies.

The existing empirical evidence does not resolve the theoretical ambiguity concerning the relationship between international financial liberalization and net capital flows. The literature generally concludes that capital controls may create a differential between domestic and international yields on similar short-term financial instruments, but have a limited effect on net capital flows. Regarding controls on trade in financial services, evidence is sparse and unsystematic. An exception is Kono and Schuknecht's (1998) study, which found in a cross-section of emerging countries that the policy regimes that are relatively more liberal with respect to foreign commercial presence in the financial sector are associated with relatively larger portfolio inflows.

This paper examines how international financial liberalization affects net private capital flows in a panel of OECD countries for 1990–96. The impact on capital flows is found to depend on the area of liberalization (financial services trade versus capital movements), the type of financial service being liberalized (banking, securities, portfolio management services versus insurance and insurance-related services) and the mode of supply of financial services (commercial presence versus cross-border trade). In particular, the liberalization of commercial presence in insurance and insurance-related services tends to increase capital inflows, and otherwise for banking, securities and portfolio management services. The findings suggest that the liberalization of commercial presence has differential effects on saving-investment gaps in different financial service sectors. In the insurance sector, liberalization discourages precautionary saving, thereby widening saving-investment gaps; while in other financial service sectors liberalization promotes saving and helps reduce saving-investment gaps. As regards capital controls, their weakening is found to stimulate capital inflows, possibly because the improved access to external financing helps countries sustain larger fiscal and current account deficits. The liberalization of cross-border trade is found to affect capital flows insignificantly in all financial service sectors.

The paper is organized as follows. The next section discusses concepts relating to capital movements and trade in financial services and is followed by a review of the literature on international financial liberalization and capital flows in the third section. The fourth section presents an empirical model of net private capital flows with controls on trade in financial services and capital movements, and the fifth section describes the data necessary for estimating this model. The findings concerning non-neutrality of international financial liberalization with respect to net capital flows are discussed in the sixth section. The last section concludes with policy implications.

II. Concepts Related to International Financial Liberalization

The removal of restrictions on international capital movements and the opening of the domestic financial sector to foreign competition are two interrelated, yet distinct, components of international financial liberalization. Capital movements—capital transfers, acquisition or disposal of non-produced, non-financial assets; direct investment, portfolio investment, and other investment—arise from investment or loan operations or the transfer of personal assets (for example, by emigrants) and generate payments of interest, dividends, rent or profit (IMF, 1993). Free capital mobility means that residents have access to international financial markets, and nonresidents may access domestic financial markets. Trade in financial services—insurance, banking, securities trading and portfolio management services—takes place when services are provided in exchange for payment of fees, commissions and other charges (IMF, 1993).[2] Free trade in financial services means that domestic consumers may use services of foreign financial institutions, and domestic financial institutions may provide services to foreigners.

Financial services, like other services, are intangible, invisible and non-storable, and are traded through flows of goods, people, information or money (Feketekuty, 1988). There are four basic ways of trading financial services (modes of supply): (I) cross-border trade (domestic consumers purchase services from a foreign financial institution located abroad); (ii) commercial presence (a foreign financial institution establishes an affiliate—a branch or a subsidiary—in a territory of a country through direct foreign investment and sells financial services to domestic consumers); (iii) consumption abroad (domestic consumers purchase financial services while traveling abroad); and (iv) movement of natural persons (foreign natural persons supply financial services to domestic residents in the territory of a country).

Trade via commercial presence is the primary mode of supply of financial services, followed by cross-border trade.[3] In the United States, for example, about 72 percent of

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[2] Including intermediary service fees (such as those associated with letters of credit, bankers' acceptances, lines of credit, financial leasing, and foreign exchange transactions), commissions and fees related to transactions in securities (for example, brokerage, placement of issues, underwritings, redemptions, and arrangements of swaps, options and other hedging instruments), commissions of commodity futures traders, and fees related to such services as asset management, financial market operational and regulatory services, security custody services (IMF, 1993).

[3] Since the balance of payments reflects transactions between residents and nonresidents, it covers cross-border transactions in financial services but not transactions of foreign affiliates. If the balance of payments accounting had been based on the nationality or ownership principle, it would cover trade by foreign affiliates. For more details, see Hooper and Richardson's (1991) review of the literature on the measurement of transactions in services.

(continued...)

banking, securities and portfolio management services were traded through foreign affiliates in 1995 (USITC, 1997). In the insurance sector, trade through commercial presence also appears to be more important than trade across border (USITC, 1997; and Skipper, 1996). This is not surprising. Commercial presence tends to be an attractive alternative to trading financial services across border, because it allows financial service suppliers to lower information and other transaction costs and avoid restrictions on cross-border trade. Consumers may also prefer to purchase financial services from familiar local suppliers (including foreign-owned ones) rather than foreign suppliers located abroad, i.e., consumers' preferences may be characterized by a "home-country bias." This bias could be exacerbated through official policies, for example, a requirement to purchase compulsory insurance only from domestic suppliers, which are regulated and supervised locally (Skipper, 1996).

Trade restrictions in financial services relate to market access and national treatment of foreign-owned financial institutions. Governments may restrict the ability of foreign suppliers to access local markets by establishing commercial presence or providing services across border (for example, restrictions on the entry of foreign banks and foreign equity participation in existing banks, and a prohibition on the establishment of foreign banks' branches). Foreign suppliers could also be subject to discriminatory regulations compared to domestically-owned local suppliers, i.e., denied national treatment (for example, restrictions on location of foreign branches, restrictions on promotional activities of foreign-owned banks, and special tax privileges granted only to local banks). Additionally, certain domestic regulations (for example, competition policies and consumer protection laws) may inhibit trade indirectly.

Trade in financial services is closely linked to capital movements. Establishing commercial presence in local markets through entry or equity participation requires foreign direct investment. The cross-border supply of some financial services, e.g., lending, involves portfolio and other capital flows. (However, the provision of other financial services, e.g., advisory services, does not require capital transfers.) Given such close links between financial service and capital transactions, it would be useful to examine theoretical and empirical evidence on the relationship between free trade in financial services and capital flows in more detail, and this is the subject of the next section.

III. Existing Literature on Implications of International Financial Liberalization for Capital Flows

Private capital flows reflect reallocation of savings across countries and diversification of investment portfolios. These flows are driven by the incentives created by economic fundamentals, capital market distortions, and government policies, as reflected in the existing theories of capital flows. According to the conventional portfolio balance approach based on

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[3](...continued)
Baldwin and Kimura (1998) discuss alternative methods of accounting for foreign affiliates' trade in the balance of payments statistics.

the Markowitz-Tobin portfolio selection model, capital flows depend on the relative risk-adjusted rates of return that reflect the set of investment opportunities, the covariances between the expected returns on various investments, investors' wealth and their intertemporal and risk preferences (Markowitz, 1959; Tobin, 1958; and Branson, 1968). The monetary approach to the balance of payments implies that capital flows are driven by the monetary disequilibrium resulting from the difference between the demand for money and domestic credit (Kouri and Porter, 1974). Additionally, capital market distortions such as information asymmetry and incompleteness may lead to adverse selection, moral hazard and herding, which could amplify market disequilibria and asset price volatility and require a larger adjustment in international capital markets (Eichengreen, Mussa, and others, 1998; and Devenow and Welch, 1996).

Although the weakening of controls on capital movements and trade in financial services makes international financial markets more integrated, it does not necessarily alter patterns of international capital flows. As financial markets become more integrated, the role of capital flows in restoring market equilibrium through arbitrage may actually diminish (Goldstein, Mathieson, and Lane, 1991). As international financial integration through free capital mobility and free trade in financial services facilitates arbitrage and tends to equalize risk-adjusted rates of return, market equilibrium increasingly tends to be restored primarily through asset price adjustment rather than net capital flows. Capital flows need to take place only if market participants have different interpretation of news, since in these cases asset price adjustment alone cannot eliminate the disequilibrium.

Generally, the liberalization of capital movements and trade in financial services should influence net capital flows only to the extent that it shifts cross-country balances between saving and investment.[4] As individual investors and countries adjust their saving and investment balances, capital flows from countries with surplus saving to those with deficit saving. In other words, net capital flows intermediate the allocation of savings and investment across countries and accompany the transfer of real resources through current account imbalances. The removal of restrictions on capital movements and trade in financial services may alter incentives for saving and investment, thereby inducing changes in saving and investment rates and net capital flows. In general, it is difficult to reach unambiguous conclusions about the effect of free capital mobility and free trade in financial services on saving-investment imbalances and net capital flows, in part because investment and saving are being effected simultaneously and independently by common factors.

Investment is likely to rise when capital can move and financial services can be traded freely between countries. Capital mobility and trade in financial services tend to raise productivity and investment ratios by facilitating the flow of savings to their most productive

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[4] For reviews of the literature on capital controls, see Dooley (1996) and Eichengreen, Mussa and others (1998). Barfield (1996), Levine (1996), Nicholl (1997), Dobson and Jacquet (1997), and Kono and others (1998) discuss economics of financial services trade.

uses and by encouraging competition and technology transfer among financial institutions. Financial intermediaries enjoy better opportunities for pricing and managing risks and exploiting economies of scale and scope and thus can lower real cost to investors. As a result, access to financing improves, and liquidity and credit constraints ease. In particular, access to foreign capital markets improves, as residents are allowed to borrow abroad and foreign suppliers of financial services are allowed to provide services in which they have a comparative advantage.

The effect of international financial liberalization on saving is generally ambiguous. On one hand, the rising return on saving provides an incentive to substitute future consumption for current consumption, thereby stimulating private saving. Public saving also tends to increase, as the market discipline imposed by the integrated financial markets encourages governments to strengthen credibility and coordination of macroeconomic and financial policies to correct external and internal imbalances and prevent rapid reversals in capital flows. An additional boost to saving may come from the liberalization of trade in insurance services, particularly life insurance, owing to the associated expansion of media for household savings. Higher economic growth induced in part by lower transaction costs associated with financial intermediation (for example, due to lower costs of compliance with economic regulation, higher competition and broader financing opportunities) is another reason why private saving may increase.[5] On the other hand, as international financial liberalization relaxes liquidity constraints and improves opportunities for consumption smoothing, the saving rates tend to decline (Pagano, 1993; Obstfeld, 1994; and Lewis, 1996 and 1997). Better portfolio diversification and risk sharing also reduce the need for saving on the part of risk averse investors. In particular, precautionary saving may fall as access to insurance improves. In the short run, higher expectations about future growth and capital inflows may also stimulate private consumption and depress private savings. Likewise, the availability of external financing would tend to increase saving-investment gaps as creditworthy sovereign borrowers and large corporations raise funds in international securities markets and larger fiscal and current account deficits become sustainable for a longer period of time.

Empirical evidence suggests that capital controls have a limited, if any, effect on net capital flows. Mathieson and Rojas-Suarez (1992), for example, find that capital controls fail to prevent capital flight from countries where inflation and default risk are high. In a cross-section of 52 countries for 1985–90, Johnston and Ryan (1994) show that capital controls help limit outflows of direct and portfolio investment in industrial countries, but not in developing countries. Based on a vector-autoregression model with endogenous capital controls for Brazil, Cardoso and Goldfajn (1998) conclude that in this country controls have

[5] Empirical evidence suggests that financial intermediation and economic growth are positively correlated (for example, King and Levine, 1993, a and b; Roubini and Sala-i-Martin, 1992).

been effective, albeit only in the short run, in influencing the level and structure of capital flows.[6]

Unlike the relatively extensive literature on capital controls, the existing evidence on the relationship between trade in financial services and capital flows is sparse. Anecdotal evidence suggests that policy makers cite capital inflows as well as capital flight as possible consequences of opening the financial sector to foreign competition due to foreign affiliates' close links to parent financial institutions and international capital markets (Levine, 1996). The available econometric evidence points to a more definite conclusion. In a cross-sectional study of commitments under the General Agreement on Trade in Services (GATS) for emerging countries, Kono and Schuknecht (1998) find that the extent of the liberalization of controls on commercial presence in financial services (relative to that on cross-border trade) is positively correlated with the size of portfolio investment (relative to other investment). Given the limited empirical evidence on the issue in question, further analysis is needed to try to resolve the ambiguousness of theoretical conclusions.

IV. An Empirical Model of Capital Flows with Controls on Capital Movements and Trade in Financial Services

To examine the relationship between trade in financial services and capital flows, we develop an empirical model of net capital flows based on the portfolio-balance approach. Net private capital inflows as a share of GDP are modeled as a linear function of domestic and foreign real interest rates, real exchange rate and official policies. The latter include general economic regulation and controls on capital movements, establishment of commercial presence and cross-border trade in financial services.

To control for country-specific individual effects, the model is specified as a panel data regression with fixed effects or random effects.[7] The fixed-effects model assumes that slopes are common, but intercepts vary across countries:

$$NPVI_{it}=\alpha_i+\beta_1 RD_{it}+\beta_2 RF_{it}+\beta_3 \ln ER_{it}+\beta_4 EF_{it}+\beta_5 IC_{it}+\beta_6 IP_{it}+\beta_7 BC_{it}+\beta_8 BP_{it}+\beta_9 KCI_{it}+\varepsilon_{it}, \quad \textbf{(1)}$$

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[6] See Goldstein, Mathieson, and Lane (1991); Dooley (1996); and Eichengreen, Mussa and others (1998) for more detailed reviews of literature on capital flows and capital controls.

[7] Since this study focuses on OECD countries, it would be reasonable to assume that the model is constant for this group of countries and thus the fixed-effects estimator is applicable. On the other hand, the random-effects model may also be valid, if the sample is viewed as having being drawn from a larger population, in which case it would be appropriate to assume that individual-specific intercepts are randomly distributed across cross-sectional units.

where α_i are individual intercepts, *RD* and *RF* are domestic and foreign real interest rates respectively, *ER* is the real exchange rate, *EF* is a measure of the degree of restrictiveness of economic regulation; *IC*, *IP*, *BC*, and *BP* are indices of controls on cross-border trade and commercial presence in insurance and insurance-related services and in banking, securities and portfolio management services, respectively; and ε_{it} is an i.i.d. error. The OLS estimator of the fixed-effects model is consistent independent of whether the error and the regressors are correlated or not.

The random-effects model assumes that intercepts are drawn from a common distribution, and the error term consists of two components: an error term unique to each observation and constant over time (u_i) and an error term representing the extent to which the intercept of a given cross-sectional unit varies from the overall intercept (ε_{it}):

$$NPVI_{it}=\alpha+\beta_1 RD_{it}+\beta_2 RF_{it}+\beta_3 \ln ER_{it}+\beta_4 EF_{it}++\beta_5 IC_{it}+\beta_6 IP_{it}+\beta_7 BC_{it}+\beta_8 BP_{it}+\beta_9 KCI_{it}+u_i+\varepsilon_{it}, \quad \textbf{(2)}$$

where α is the overall intercept. The EGLS estimator of the random-effects model is consistent and efficient, provided there is no correlation between the error and the regressors. Unlike the fixed-effects estimator, the random-effects estimator is inconsistent if the error and the regressors are correlated. A Hausman test for correlation between the error and the regressors can be used to verify whether the random-effects model is appropriate.[8]

V. DATA

Panel data for OECD countries covers the period from 1990 to 1996. The sample includes the following countries: Australia, Austria, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States. The sample size and time period are determined primarily by the availability of data on controls on capital movements and trade in financial services.

The following measures of capital flows are considered: net private inflows including errors and omissions, denoted by *NPVIEO*; net private inflows, denoted by *NPVI*; net portfolio inflows, denoted by *NPFI*; and net other inflows, denoted by *NOI*. Under the assumption that errors and omissions primarily reflect capital flows, *NPVIEO* is the most comprehensive measure of net private capital flows. The above measures of capital flows exclude direct investment, because modeling of direct investment requires incorporating theories other than the portfolio-balance approach (for example, theories of industrial

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[8] Since the data covers relatively few years compared to the number of countries, panel data estimation is more appropriate than EGLS estimation with alternative assumptions on the error variance-covariance matrix. Instrumental variable estimation also results in a notable loss of degrees of freedom.

organization, internationalization, location or the product cycle), and this is beyond the scope of this paper.

The data required for estimation is obtained as follows. Domestic and foreign real interest rates (denoted by *RD* and *RF*, respectively) are calculated as the difference between the respective nominal interest rates and inflation. Domestic interest rates are given by money market rates or by treasury bill rates, if data on money market rates are unavailable. Domestic inflation is given by the percentage change in consumer price index. Foreign interest rate is defined as the Eurodollar rate in London. Foreign inflation is represented by the percentage change in consumer price index for the United States. The above data comes from the IMF's International Financial Statistics (IFS). Likewise, data on real effective exchange rates and net private capital flows is from IFS. Estimates of the economic freedom index (denoted by *EF*) are from Johnson and Sheehy (1996); for those years for which data is unavailable, the economic freedom index is assumed to be the same as in 1995.

All variables, except real effective exchange rates, are found to be stationary. Although degrees of freedom are insufficient for conducting meaningful unit root tests on individual country data following Im, Pesaran, and Shin's (1997) methodology for determining the stationarity of time series data in a panel environment, the Dickey-Fuller (DF) tests on the full sample indicate that all variables, except real effective exchange rates, are stationary, while real exchange rates are integrated of order 1. Therefore, all variables are introduced in levels in the model, except real effective exchange rates (denoted by *DLER*), which are taken in first differences.

The intensity of controls on capital movements and trade in financial services is measured by specially constructed composite indicators. The index of capital controls (denoted by *KCI*) is defined as the ratio of the total actual number of individual controls normalized by the total feasible number of controls. The classification of capital controls is based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions, which in turn follows the OECD's Code of Liberalization of Capital Movements. Table 1 shows the structure of the index. The index is a more comprehensive measure of the extent of capital controls than a dummy variable. It aggregates information on 47 different types of capital control in a simple summary statistic, which can be compared across countries. Although equal weights are assigned to individual controls to limit subjectivity, sensitivity analysis shows that cross-country rankings based on the index are robust to alternative weighing of individual types of control.[9] For the purposes of this study, indices of capital controls are estimated on the basis of the OECD's Code of Liberalization of Capital Movements. Indices of controls on cross-border trade and commercial presence in insurance and insurance-related services and in banking, securities and portfolio management services (denoted by *IC, IP, BC,* and *BP*, respectively) are constructed analogously. The classification

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[9] See Chapter III in Johnston and others (forthcoming) and Tamirisa (1999) for more details on methodology and the sensitivity analysis.

of individual controls is based on the OECD's Code of Liberalization of Current Invisible Operations, and the structure of the indices is shown in Table 1. The indices are estimated based on the above Code.

Controls on capital movements and trade in financial services have different intensity, as measured by the above indices (Table 2). Trade in financial services tends to be more restricted than capital movements (the mean index of 0.22 for capital controls c.f. the mean indices of 0.13, 0.21, 0.34, and 0.37 for controls on trade in financial services). Within trade in financial services, cross-border trade is more restricted than commercial presence (with mean indices of 0.36 and 0.17 respectively). The extent of restrictiveness of cross-border trade in insurance and insurance-related services and in banking, securities and portfolio management services is similar (0.37 and 0.34, respectively), but commercial presence in banking and other services is more restricted than that in insurance services (0.21 and 0.13, respectively). Descriptive statistics and correlations for all variables are shown in Table 3.

VI. Empirical Evidence on the Relationship between International Financial Liberalization and Capital Flows

Results of estimating the effect of capital controls and controls on trade in financial services on net private capital flows are presented in Table 4. OLS estimation on means suggests that controls on commercial presence in banking and securities services are positively correlated with private capital inflows. Other types of control—on cross-border trade in banking and securities services, on insurance, and on capital movements—are found to have insignificant effects on net capital flows.

In the fixed-effects model, controls on commercial presence in banking and securities services are found to be positively correlated with portfolio inflows and private capital inflows in general, while correlation with other investment is insignificant. Controls on commercial presence in the insurance sector are negatively correlated with private capital inflows including errors and omissions. Controls on cross-border trade in all financial services have negligible effects on capital flows. Capital controls tend to reduce capital inflows excluding errors and omissions. However, when the measure of capital flows includes errors and omissions, correlation with capital controls is found to be insignificant; the same result holds for portfolio and other inflows.

Random-effects estimation—which is found to be more appropriate than fixed-effects estimation—renders largely similar results. More intensive controls on commercial presence in banking and securities services are associated with higher private capital inflows and portfolio inflows; in contrast, controls on commercial presence in insurance are negatively correlated with capital inflows. (We interpret these results below.) Capital controls are found to discourage private capital inflows. This suggests that capital account liberalization tends to increase saving-investment gaps across countries possibly because the improved availability of external financing allows countries to sustain larger fiscal and current account deficits. A

Table 1. Indices of Controls on Capital Movements and Trade in Financial Services

A. Capital Movements

1. Proceeds from Exports, Invisibles, and Current Transfers
   - Repatriation requirements for export proceeds
   - Surrender requirements for export proceeds
   - Repatriation requirements for proceeds from invisibles and current transfers
   - Surrender requirements for proceeds from invisibles and current transfers
   - Restrictions on use of funds

2. Controls on capital and money market instruments
   - On capital market securities
     - Purchase in the country by nonresidents
     - Sale or issue locally by nonresidents
     - Purchase abroad by residents
     - Sale or issue abroad by residents
   - On money market instruments
     - Purchase in the country by nonresidents
     - Sale or issue locally by nonresidents
     - Purchase abroad by residents
     - Sale or issue abroad by residents
   - On collective investment securities
     - Purchase in the country by nonresidents
     - Sale or issue locally by nonresidents
     - Purchase abroad by residents
     - Sale or issue abroad by residents

3. Controls on derivatives and other instruments
   - Purchase in the country by nonresidents
   - Sale or issue locally by nonresidents
   - Purchase abroad by residents
   - Sale or issue abroad by residents

4. Controls on credit operations
   - Commercial credits
     - By residents to nonresidents
     - To residents from nonresidents
   - Financial credits
     - By residents to nonresidents
     - To residents from nonresidents
   - Guarantees, sureties, and financial backup facilities
     - By residents to nonresidents
     - To residents from nonresidents

5. Controls on direct foreign investment
   - Outward direct investment
   - Inward direct investment

6. Controls on liquidation of direct investment

7. Controls on real estate transactions

Table 1. Indices of Controls on Capital Movements and Trade in Financial Services

B. Cross-Border Trade in Banking, Securities and Portfolio Management Services

1. Measures related to payment services
   - Measures related to payment instruments (including the issuance and use of cheques, travellers' cheques, cash cards and credit cards, other than for credit)
   - Measures related to fund transfer services [including transfer of funds by mail, telephone, telex, telegraph, telefax, electronic connection or money transfer (giro)]

2. Measures related to banking and investment services (for securities, collective investment securities, other negotiable instruments and non-securitised claims, credits and loans, sureties, guarantees and financial back-up facilities, liquid funds and foreign exchange)
   - Measures related to underwriting (syndication and distribution of new financial assets)
   - Measures related to broker/dealer services (intermediation and market-making in the purchase, sale or exchange of financial assets, including liquid funds and foreign exchange)
   - Measures related to financial market information, communication and execution systems

3. Measures related to settlement, clearing and custodial and depository services (for securities, collective investment securities, other negotiable instruments and non-securitised claims, liquid funds and foreign exchange)
   - Measures related to settlement and clearing systems
   - Measures concerning custodial and depository services

4. Measures related to asset management
   - Measures related to cash management
   - Measures related to portfolio management
   - Measures related to pension fund management
   - Measures related to safekeeping of assets
   - Measures related to trust services

5. Measures related to advisory and agency services
   - Measures related to credit reference and analysis
   - Measures related to investment research and advice (including securities rating agencies)
   - Measures related to mergers, acquisitions, restructurings, management buy-outs, venture capital

6. Measures related to fees, commissions and other charges

C. Commercial Presence in Banking, Securities and Portfolio Management Services

1. General measures
2. Measures related to authorizations
3. Measures related to representation
4. Measures related to representative offices
5. Measures related to self-employed intermediaries
6. Measures related to membership of associations or regulatory bodies
7. Measures related to prudential considerations
8. Measures related to financial requirements for establishment

Table 1. Indices of Controls on Capital Movements and Trade in Financial Services	
D. Cross-Border Trade in Insurance and Insurance-Related Services	
1.	Measures related to insurance concerning goods in international trade
2.	Measures related to life insurance
3.	Measures related to all other insurance
4.	Measures related to reinsurance and retrocession
E. Commercial Presence in Insurance and Insurance-Related Services	
1.	General measures
2.	Measures related to authorizations
3.	Measures related to representatives
4.	Measures related to financial guarantees
5.	Measures related to controlled investments and deposits

Source: Based on *Annual Report on Exchange Arrangements and Exchange Restrictions* and OECD *Code of Liberalization of Current Invisible Operations.*

Table 2. Controls on Capital Movements and Trade in Financial Services in OECD 1/

	KCI 2/	IC 3/	IP 4/	BC 5/	BP 6/
Australia	0.24	0.20	0.37	0.17	0.34
Austria	0.19	0.49	0.00	0.50	0.19
Belgium	0.15	0.20	0.00	0.50	0.19
Canada	0.14	0.00	0.09	0.17	0.24
Denmark	0.14	0.20	0.00	0.17	0.13
Finland	0.36	0.17	0.37	0.50	0.35
France	0.13	0.69	0.20	0.17	0.13
Germany	0.11	0.60	0.00	0.17	0.13
Greece	0.40	0.60	0.00	0.67	0.32
Iceland	0.34	0.20	0.54	0.70	0.39
Ireland	0.30	0.49	0.20	0.33	0.06
Italy	0.13	0.80	0.20	0.83	0.35
Japan	0.19	0.60	0.09	0.33	0.16
Luxembourg	0.04	0.40	0.00	0.00	0.00
Mexico	0.42	0.60	0.43	0.83	0.53
Netherlands	0.07	0.23	0.00	0.10	0.02
New Zealand	0.14	0.00	0.29	0.00	0.10
Norway	0.26	0.29	0.09	0.33	0.18
Portugal	0.48	0.60	0.20	0.33	0.26
Spain	0.31	0.40	0.00	0.50	0.29
Sweden	0.20	0.20	0.00	0.30	0.11
Switzerland	0.20	0.60	0.00	0.17	0.13
Turkey	0.41	0.60	0.11	0.17	0.13
United Kingdom	0.07	0.20	0.00	0.17	0.13
United States	0.08	0.00	0.00	0.33	0.47
Summary Statistics					
Mean	0.22	0.37	0.13	0.34	0.21
Standard Deviation	0.13	0.24	0.16	0.24	0.14
Maximum	0.48	0.80	0.54	0.83	0.53
Minimum	0.04	0.00	0.00	0.00	0.00

Source: Author's calculations.

1/ Averages, 1990-96.
2/ Index of capital controls.
3/ Index of controls on cross-border trade in insurance and insurance-related services.
4/ Index of controls on commercial presence in insurance and insurance-related services.
5/ Index of controls on cross-border trade in banking, securities and portfolio management services.
6/ Index of controls on commercial presence in banking, securities and portfolio management services.

Table 3. Descriptive Statistics and Correlations

A. Descriptive Statistics

	IC	*IP*	*BC*	*BP*	*KCI*	*EF*	*DLER*	*RD*	*RF*	*NPFI*	*NOI*	*NPVI*	*NPVIEO*
Mean	0.37	0.10	0.31	0.18	0.21	2.24	0.00	4.13	1.75	0.67	-0.44	0.22	0.03
Standard Deviation	0.25	0.14	0.20	0.13	0.13	0.36	0.06	4.17	0.99	3.49	4.00	3.19	3.10
Minimum	0.00	0.00	0.00	0.00	0.07	1.75	-0.29	-15.81	0.29	-9.60	-13.95	-9.92	-9.15
Maximum	0.80	0.60	0.83	0.50	0.64	3.00	0.17	30.21	3.16	10.28	12.90	7.11	6.54
Count	126	126	126	126	126	126	126	126	126	126	126	126	126

B. Correlations

	IC	*IP*	*BC*	*BP*	*KCI*	*EF*	*DLER*	*RD*	*RF*	*NPFI*	*NOI*	*NPVI*	*NPVIEO*
IC	1.00												
IP	0.03	1.00											
BC	0.37	-0.02	1.00										
BP	-0.21	0.26	0.28	1.00									
KCI	0.31	0.26	0.24	0.13	1.00								
EF	0.42	0.09	0.53	0.12	0.62	1.00							
DLER	0.08	-0.14	-0.06	-0.14	0.00	-0.06	1.00						
RD	0.01	0.14	0.13	0.10	0.05	0.12	-0.36	1.00					
RF	-0.07	-0.13	-0.01	-0.06	-0.22	0.00	0.23	-0.20	1.00				
NPFI	-0.14	0.23	0.09	0.37	0.04	0.04	-0.09	0.16	-0.13	1.00			
NOI	0.07	-0.29	0.07	0.03	-0.08	0.15	0.09	-0.17	0.14	-0.64	1.00		
NPVI	-0.06	-0.10	0.19	0.45	-0.05	0.24	0.02	-0.04	0.04	0.29	0.55	1.00	
NPVIEO	-0.02	-0.09	0.15	0.44	0.03	0.20	0.02	-0.03	-0.03	0.31	0.46	0.91	1.00

Source: Author's calculations.

Table 4. International Financial Liberalization and Capital Flows 1/

A. OLS on Means

	NPVIEO	NPVI	NPFI	NOI
IC	0.583	-0.066	-0.992	0.927
IP	-4.942	-5.169	5.392	-10.571
BC	-2.426	-2.242	0.705	-2.947
BP	11.807**	12.603**	5.590	7.012
KCI	-4.762	-8.865	0.461	-9.327
EF	2.962	4.348	-0.586	4.934
DLER	-1.861	11.460	-16.028	27.488
RD	0.033	0.164	0.233	-0.069
RF	-3.939	-5.356**	-0.315	-5.041
R-squared	0.48	0.59	0.45	0.48
Number of observations	21	21	21	21

B. Fixed Effects

	NPVIEO	NPVI	NPFI	NOI
IC	1.129	1.491	1.409	-2.890
IP	-5.290*	-2.379	-4.230	1.921
BC	17.820	0.450	2.010	-1.559
BP	21.017***	19.435***	19.522***	-0.087
KCI	-3.091	-6.264**	-2.212	-4.052
EF	2.883	-0.122	8.563	-8.685
DLER	4.553	2.747	4.650	-1.902
RD	-0.064	-0.112*	0.068	-0.180*
RF	-0.150	-0.098	-0.406	0.309
R-squared	0.57	0.62	0.45	0.45
F-statistic	3.001***	3.060***	2.334***	2.357***
Number of units	21	21	21	21
Number of observations	126	126	126	126

C. Random Effects

	NPVIEO	NPVI	NPFI	NOI
IC	1.528	0.096	-0.954	0.996
IP	-5.027**	-3.715*	1.760	-5.573*
BC	-2.503	-2.056	-0.221	-1.794
BP	15.242***	14.638***	10.498***	3.740
KCI	-4.090 2/	-7.524***	-1.699	-6.010*
EF	2.602*	4.017***	0.629	3.463*
DLER	4.133	3.085	3.632	-0.101
RD	-0.052	-0.091	0.080	-0.165*
RF	-0.258	-0.165	-0.374	0.200
C	-6.342**	-8.227***	-1.719	-6.560*
R-squared	0.30	0.36	0.18	0.18
Hausman test	5.566	4.641	8.137	7.783
Number of units	21	21	21	21
Number of observations	126	126	126	126

Source: Author's calculations.

1/ *** (**, *) indicates significance at the 99 percent (95 percent, 90 percent) level.
2/ Significant at the 88.1 percent level.

Hausman test of random effects versus fixed effects is insignificant for all models, implying that the random-effects model is appropriate and its EGLS estimator is consistent and efficient.

An interesting finding of this paper is that the liberalization of financial services trade has a differential impact on net capital flows depending on the type and mode of supply of financial services. In banking and securities services, the liberalization of commercial presence tends to reduce capital inflows, while the liberalization of cross-border trade affects them insignificantly. In the insurance sector, the liberalization of commercial presence increases capital inflows, while the liberalization of cross-border trade has negligible effects on capital flows. It is not surprising that commercial presence has a more significant effect on saving-investment gaps and hence net capital flows than cross-border trade. The liberalization of restrictions on the entry of foreign financial institutions is likely to enhance the contestability of financial markets and improve the efficiency of financial intermediation to a larger extent than cross-border trade, thereby inducing a larger increase in saving. The opposite effects of liberalizing commercial presence in banking and securities services and in insurance services suggests that the liberalization of trade in banking and securities services tends to reduce saving-investment gaps largely by increasing returns on private saving, while the liberalization of trade in insurance services widens these gaps possibly by discouraging precautionary saving.

While we cannot check the robustness of results with respect to alternative time periods or samples because of data limitations, a cautious comparison with Kono and Schuknecht's (1998) findings may be useful. In a cross-section of 22 emerging countries for 1997, Kono and Schuknecht's study finds a positive correlation between a relatively more liberal regulation of commercial presence (compared to cross-border trade) in banking and securities service sector and the relative level of portfolio investment (compared to other investment). (Correlation with the absolute level of portfolio investment is found to be insignificant.) The comparison of the two studies requires caution, given differences in methodology (a panel versus a cross section, respectively), time periods (1990–96 versus 1997, respectively), and the measurement of controls on financial service trade and capital movements. Regarding the latter, Kono and Schuknecht's study uses the relative measures of controls on trade in banking and securities services (commercial presence relative to cross-border trade) and capital flows (portfolio investment relative to other investment), while this study focuses on the absolute measures.

Notwithstanding the above, the comparison suggests that the liberalization of trade in financial services has a differential impact on saving-investment gaps and thus net capital flows depending on the level of countries' development: increases them for developing countries, and otherwise for industrial countries. In the former, acute capital constraints provide incentives for governments, firms and individuals to take advantage of the improved access to external financing. As a result, the liberalization of financial services trade results in larger fiscal and current account deficits. In industrial countries, where capital constraints are not a

major consideration, the liberalization of trade in financial services is likely to encourage saving and thus reduce saving-investment gaps.[10]

VII. Conclusion

In a panel of OECD countries for 1990–96, the paper analyzes how the liberalization of capital movements and financial services trade affects net private capital flows. The impact of international financial liberalization on capital flows is found to vary across areas of liberalization (financial services trade versus capital movement), types of financial services (banking, securities and portfolio management versus insurance), and modes of supply of financial services (commercial presence versus cross-border trade). Specifically, the liberalization of commercial presence in banking, securities and portfolio management services is found to reduce capital inflows, suggesting that the liberalization tends to promote saving. In contrast, the liberalization of commercial presence in the insurance sector stimulates capital inflows possibly by discouraging precautionary saving. Capital account liberalization is found to induce capital inflows, as the improved access to external financing allows countries to sustain larger fiscal and current account deficits. Independent of the type of financial service, the liberalization of cross-border trade affects capital flows insignificantly. On policy implications, the findings underscore the need for differentiating the design of international financial liberalization between capital movement and trade in financial services and, within the latter, across different types of financial services and modes of trading them.

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[10] Although this paper focuses on modeling net capital flows, we estimate the models (1)-(2) for gross capital flows. Results are generally consistent with the theoretical conclusion that international financial liberalization stimulates gross capital flows by facilitating portfolio diversification and risk-sharing. Positive, albeit insignificant, correlation is found between gross capital flows and all controls, except those on cross-border trade in insurance, suggesting that international financial liberalization is more neutral with respect to gross capital flows than net flows. The insignificance of correlation may reflect the imperfect measurement of capital flows on the gross basis, which excludes errors and omissions.

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