Trade in Financial Services: Procompetitive Effects and Growth Performance

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ABSTRACT

In this paper we explore linkages between financial services trade and growth. We offer a formalization of the argument that trade, through the fostering of financial market integration, may yield important long-run effects related to increased competition. The relationships formalized here link long-run economic performance to scale economies and cost structures in the financial services sector, and to market concentration in the sector. We first develop an analytical model. This motivates an econometric exercise. Cross-country growth regressions point to a strong positive relationship between financial sector competition and financial sector openness, and between growth and financial sector competition.

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NONTECHNICAL SUMMARY

From the inception of the General Agreement on Tariffs and Trade (GATT) in 1947 until the launch of the World Trade Organization (WTO), the world trading system was focused on trade in goods. The launch of the WTO saw the incorporation of services into the multilateral trading system under the General Agreement on Trade in Services (GATS). However, the actual degree of liberalization has been relatively limited, with many of the GATS schedules involving simple stand-still commitments (or less). The conclusion of the Uruguay Round in 1993 was followed in 1997 by the completion of negotiations on financial services trade under the GATS. However, it is generally recognized that there still remains significant scope for liberalization in this sector. The implications of trade in financial services and trade liberalization in this area are potentially far reaching. Because finance is at the heart of the savings investment mechanism that underlies economic growth, the prospect of financial services trade raises important analytical and empirical questions. This paper is concerned with these questions.

The recent literature emphasizes two ways in which financial services affect growth. The two growth mechanisms emphasized are capital accumulation and technical innovation. Gains in these areas can result either in temporarily higher growth rates (transitional or bounded growth effects) or in permanently higher growth rates. In bounded-growth models, financial services induce higher savings and investment ratios or more productive capital use. This in turn allows for higher per capita income levels. While the effect on growth rates and per-capita income can then be quite significant and the transition period can be quite long, ultimately growth reverts to its equilibrium rate. With permanent growth models, capital formation is influenced through induced changes in the savings rate or in capital producing technologies. This results in permanently higher growth rates. Financial innovations can also alter the rate of technological change, if they facilitate faster rates of technical progress.

A number of recent empirical studies have applied both endogenous and bounded growth frameworks to identify the effect of financial service sector development on growth rates and per-capita income levels. In general, the approach involves employing financial sector development indicators as independent variables in growth regressions. Most of this literature has looked at (i.) indicators of banking sector development, and the degree of private sector involvement in financial services and the allocation of savings, and (ii.) distortion and financial service cost measures. In addition, a few studies have examined the relationship between stock-market development and growth. Almost no attention has been paid in this empirical literature to the role of international trade in services. By this, we mean a causal chain linking financial sector openness, financial sector performance, and growth performance.

In this paper we focus on this causal chain. We emphasize procompetitive effects of trade in financial services. Because financial services are at the nexus of the savings and accumulation mechanism that drives economic growth, we consider it appropriate to emphasize services trade and growth. Following a brief review of the literature, the paper develops an analytical model characterized by Ramsey accumulation and an oligopolistic financial services sector. This model is used to highlight channels through which financial services trade may lead to dynamic procompetitive effects. This analytical exercise in turn motivates an empirical exercise. Working with a cross-country sample of 93 countries, we conduct cross-country growth regressions. We find that there is a strong positive relationship between financial sector competition and financial sector openness, and between growth and financial sector competition. We interpret this as indicative of a causal chain linking openness with competition, and competition with growth. The net effects of this causal chain are significant. Our results suggest that moving from a closed to a relatively open financial services regime is correlated with significant procompetitive pressures, and ultimately with large differences in growth rates (1.3 to 1.5 percent). Because it is the developing countries in our sample that tend to be closed, this points to a significant potential growth bonus for developing countries who move from closed regimes toward regimes comparable (in terms of openness) to those of the OECD countries.

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1. Introduction

From the inception of the General Agreement on Tariffs and Trade (GATT) in 1947 until the launch of the WTO World Trade Organization (WTO), the world trading system was focused on trade in goods. The conclusion of the Uruguay Round and the launch of the WTO saw the incorporation of services into the multilateral trading system under the General Agreement on Trade in Services (GATS). In December 1997, negotiations on financial services trade liberalization under the GATS were completed. However, it is generally recognized that there still remains significant scope for liberalization in this sector. (Kono et al 1997). The implications of trade in financial services and trade liberalization in this area are potentially far reaching. Because finance is at the heart of the savings investment mechanism that underlies economic growth, the prospect of financial services trade raises important analytical and empirical questions. This paper is concerned with these questions.

Traditionally, the formal trade literature has focused on trade in goods. The literature on services trade is a relatively limited addition to this literature, and has been largely theoretical. (See for example Francois 1990 and Markusen 1989). In addition, while there is a sizable empirical literature on service sector policy and deregulation, this is largely focused on domestic deregulation. (A thorough overview is provided by WTO 1998). In contrast, this paper is concerned with the possible dynamic effects of financial services trade and trade liberalization. The questions we are concerned with are *not* those related to capital market liberalization and financial capital flows. They are instead concerned with

trade in services, and the impact of an open financial services regime, in terms of foreign institutional participation in domestic capital markets.

The paper is organized as follows. We review the literature on finance and growth in Section 2. We then develop an analytical model linking financial services trade and growth in Section 3. This is followed by an econometric assessment in Section 4. Our results are summarized in Section 5.

2. Finance and Growth: Some Background

The early neoclassical growth literature did not emphasize a role for financial services in promoting growth. Rather, financial intermediaries were assumed to play a passive role, simply funneling household savings to investors. Studies by Goldsmith (1969) and McKinnon (1973) were among the first to make a break from this approach. They emphasize the role of financial services in the directing of investment funds to their most productive use and, thereby, promoting growth and income. Since then, a considerable theoretical and empirical literature has emerged analyzing the role of finance in growth and development. (See Levine 1997 for a survey).

Financial systems reduce transaction and information costs, improving the allocation of resources across space and time through five basic functions (Levine 1997). First, financial markets and institutions allow investors to trade, hedge, diversify, and pool risks. Financial markets, for example, allow investors to turn capital which otherwise is tied to individual risky long-term investments into tradable financial instruments. This makes possible the second role. Pooling innovative but risky investments into a combined portfolio reduces risk and promotes investment in growth-enhancing (but risky) activities. The mobilization and pooling of financial savings allows savers to hold more diversified, less risky and more liquid portfolios. Third, financial intermediaries play an information role, generating information about the relative merits of different investment opportunities. Related to this is a fourth role.[1] Intermediaries monitor managers and hence provide incentives for improved corporate control. Finally, banks facilitate the exchange of goods and services through the providing trade financing and maintaining payment systems. This

[1] The literature offers theoretical treatment of intermediation that follows from monitoring costs due to informational assymetries, as well as from indivisibilities, as when investment projects involve high fixed costs or otherwise require large minimum amounts of capital relative to that held by individual investors. See Diamond (1984, 1991), Francois (1996), Leland and Pyle (1977), and Williamson (1987a, 1987b).

last role helps to reduce transaction costs and facilitates specialization (Levine 1997, Finger and Schuknecht 1999).

The recent literature emphasizes two ways in which financial services, through the functions outlined above, affect growth -- capital accumulation and technical innovation. (See King and Levine 1993a.) Gains in these areas can result either in temporarily higher growth rates (transitional or bounded growth effects) or in permanently higher growth rates. In bounded-growth models, financial services induce higher savings and investment ratios or more productive capital use. This in turn allows for higher per capita income levels. While the effect on growth rates and per-capita income can then be quite significant and the transition period can be quite long, ultimately growth reverts to its equilibrium rate. With permanent growth models, capital formation is influenced through induced changes in the savings rate or in the rate of innovation in capital producing technologies. This results in permanently higher growth rates. Financial innovations can also alter the rate of technological change, if they facilitate faster rates of technical progress.

A number of empirical studies apply both endogenous and bounded growth frameworks to identify the effect of financial service sector development on growth rates and per-capita income levels. In general, the approach involves employing financial sector development indicators as independent variables in growth regressions. (See Galetovic 1996 and Levine 1997 for surveys.) Most of this literature has looked at (i.) indicators of banking sector development, and the degree of private sector involvement in financial services and the allocation of savings, and (ii.) distortion and financial service cost measures. In addition, a few studies have examined the relationship between stock-market development and growth. Almost no attention has been paid in this empirical literature to the role of international trade in services. By this, we mean a causal chain linking financial sector openness, financial sector performance, and growth performance.

An early study by Goldsmith (1969) worked with a sample of 35 countries for the 1860-1963 period. Goldsmith reported a rough correlation between financial development (as measured by total domestic credit over GDP) and growth. Since then, Jung (1986) and Odedokun (1991) have found that the depth and growth of financial markets had a significant effect on growth in developing countries. King and Levine (1993a,b,c) and Barthelemy and Varoudakis (1995) have found that the depth of financial markets (as measured by liquid liabilities and gross claims on the private sector) and the share of credit channeled through commercial banks (instead of the central bank) are positively related to investment, productivity, and real growth. Financial sector reforms have promoted

financial sector developments that, in turn, have stimulated growth. DeGregorio and Guidetto (1995) report a significant link between private sector credit and economic growth, while Demetriades and Khaled (1996) and Jung (1986) find that financial sector development/depth and growth have a bi-directional relationship. Roubini and Sala-i-Martin (1992) and Mattesini (1996) both report a negative relationship between real interest rate distortions and lending-deposit spreads and growth. Finally, Levine and Zervos (1998, for 49 countries) and Harris (1997, also for 49 countries) provide evidence linking growth to stock market activities.

While the empirical literature has moved us from assumptions of a passive financial intermediation mechanism to explicit linkages between intermediation and growth, the role of open markets in general, and trade in financial service in particular, has not been emphasized in this context. However, Claessens and Glaessner (1998) have shown that barriers to financial services trade have slowed down the development of financial markets in East Asia. Claessens, Demirgüç-Kunt and Huizinga (1998) show that greater foreign presence reduces profit margins for domestic banks in developing country financial sectors. In our view, this suggests the first chain in a likely causal link between financial sector openness, financial sector performance, and economic growth in that openness promotes competition, lower profits and higher quality financial services through entry. An examination of such a link is the point of departure for the present paper.

3. Theory

3.1 Basic structure

We start with the development of a basic theoretical framework. We do this for two reasons. The first reason is to explore analytically the relationship between financial services trade, the degree of competition in the financial services sector, and the long-run performance of an economy. The second reason is that this allows us to formalize the theoretical rational for the empirical exercise offered in the next section. We are primarily concerned with the location of finance firms at the nexus of the savings and investment mechanism, and the implications of trade and competition for the working of this mechanism. To formalize this relationship, we first assume that the national GDP function is Cobb-Douglas.

$$Q = AK^{a}L^{1-a} \tag{1}$$

In equation (1), Q is GDP, K is production capital, L is labor and $0<a<1$. The composite Q also serves as the numeraire good. We assume a Ramsey-type long-run macroeconomic closure, with constant relative risk aversion (CRRA) preferences defined over consumption of the composite good Q and with consumers engaged in intertemporal optmization. This means the model has certain well-known properties (Blanchard and Fischer 1989). Consumers strike a balance between present and deferred consumption, yielding the following modified version of the well-known steady-state condition in equation (2).

$$r = \rho + \delta + \phi \qquad (2)$$

In equation (2), r is the return earned by capital, δ is the rate of capital stock depreciation, and ϕ is the cost of financial intermediation (i.e. the payment made in units of numeraire Q as discussed below).

The critical assumption at this juncture is that financial service firms provide a necessary bridge between savings (i.e. the creation of financial capital) and actual investment (the creation of physical capital available for investment expenditures). As noted above, the theoretical literature on financial intermediation is extensive, and offers numerous alternative explanations for the observation of intermediation activities. All that we require here is that in the reduced form financial intermediation involves a real resource cost that drives a wedge between the gross returns earned by physical capital and the net returns realized by financial capital owners.

To facilitate simplification of the analytics we employ several normalizations. These follow from the following assumption. While we have assumed a concave aggregate production technology in terms of K and L, we also assume Ricardian (i.e. linear) transform technology between the composite Q and each of its alternative uses as (i.) consumption good C, (ii.) investment good (physical capital) K and (iii) financial services F. Hence we define units so that one unit of Q yields one unit of C or K, and we assume that financial intermediation activities are also scaled so that one unit of financial services (at price ϕ) is required per physical capital unit per period. The resource cost and pricing of financial services is discussed below.

The market for Q is competitive, as are factor markets. Capital and Labor both earn their value of marginal product measured in units of the numeraire Q. Hence, from the first order conditions, we will have the following:

(3) $$r = \alpha Q / K$$

Combining equation (3) with the steady-state condition in equation (2) allows us to derive the following steady-state values (for a given price of financial services):

(4)
$$Q^* = A\Psi^{\alpha/1-\alpha} L$$
$$K^* = \Psi^{1/1-\alpha} L$$
$$S^* = \delta\Psi^{1/1-\alpha} L$$

In equations (4) a * denotes a steady-state value while $\Psi = \alpha A/(r + \delta + \phi)$ and S denotes the level of savings.

To close the system we specify the competitive structure of financial markets so that ϕ is determined along with the other variables in equation (4). To do this we assume a Cournot-Nash equilibrium in the financial services sector, with constant marginal cost in the financial services sector (measured in units of Q) represented by *b*. There are *n* financial service firms. For now, the value of *n* is set exogenously by regulatory authorities. These firms set quantities strategically in the sense that they are engaged in a game where they exercise market power by limiting the level of services supplied (or identically they strategically set the size of the investment basket they are willing to service). We adopt the classic Cournot assumption. Each firm believes that other firms will not adjust quantities when it does.

What does the steady-state equiulibrium look like? From equations (4), we can derive the following steady-state demand elasticity:

(5) $$\varepsilon^* = -\left[\frac{\phi}{1-\alpha}\right][r + \delta + \phi]^{-1} < 0$$

The standard Cournot-Nash equilibrium conditions combined with equation (5) then give us the following relationship between *n* and ϕ.

(6) $$b = \phi\left[1 - \left(\frac{(1-\alpha)(r + \delta + \phi)}{n\phi}\right)\right]$$

We can, in turn, solve equation (6) for the value of ϕ. This yields the following expression:

$$\phi = \frac{bn + (\rho + \delta)(1-\alpha)}{n - (1-\alpha)} \tag{7}$$

Equation (7) tells us the price of financial services for a given level of *n.*

As an extension, we are interested in the case where *n* is adjusted by regulatory authorities. In particular, we assume regulators follow a profit rule. Entry/exit is encouraged when per-unit profits exceed/falls below the value π^{max}. We then have the constraint in equation (8).

$$0 \le \phi - b \le \pi^{max} \tag{8}$$

We now want to solve for the border level of *n* that divides the set of parameter configurations and values of ϕ where profits exceed/fall below the induced entry/exit level value π^{max} from the set where profit is less than the induced entry level. This value of *n*, designated $\tilde{n}$, is represented in equation (9).

$$\tilde{n} = \left(\frac{1}{\pi^{max}}\right)(\pi^{max} + \rho + b + \delta)(1-\alpha) \tag{9}$$

The number of firms is a decreasing, nonlinear function of the value of target profits, with $n \to \infty \; as \; \pi^{max} \to 0$.

The full autarky equilibrium system is represented in Figure 1 below. In the upper-right quadrant, we have mapped the steady-state capital stock against the price of financial services from equation (4), while in the upper left quadrant we have mapped price against the number of firms from equation (7). The vertical line marking $\tilde{n}$ is the limit profit condition from equation (9). Finally, recall that the total quantity of financial services in equilibrium F is indexed by the steady-state capital stock.

3.2 Trade: constant returns

There are several ways in which trade may affect long-run economic performance in our analytical framework In this section we focus on two. The next section then introduces additional effects related to scale economies.

The simplest case involves introduction of trade to a small country. This move from an autarky to a trade equilibrium is indicated in Figure 1 by a world price ϕ^W below the autarky price ϕ^A. Basically, the oligopoly pricing structure collapses. The result is a rise in the per-capita capital stock from $[K/L]^{*A}$ to $[K/L]^{*T}$, and a consequent rise in steady-state incomes as well.

Consider next two large and identical countries. In the present context, this can be treated as the integration of two economies. We turn again to Figure 1. If the number of firms remains fixed by regulatory authorities, then this implies a larger number of firms operating in each national market than under autarky. In terms of Figure 1, merging identical economies implies a left shift in the dotted line marking the number of financial firms from $\tilde{n}^A$ *to* $2\tilde{n}^A$. The result again is a fall in price and a rise in the steady-state capital stock in each country. Both economies expand, with an increase in steady-state GDP.

This result breaks down in a setting where regulators seek to preserve profits. In particular, the increased number of financial firms operating in each market leads to increased competition through a rise in the perceived elasticity of demand in equation (5). This leads to a fall in price (and hence in rates of profit.) If regulators follow a strict rule of encouraging mergers/exit to restore industry profit levels, then the number of financial firms in the integrated market will be set at the old autarky level. Similarly, under a setting of zero profits and free entry/exit (operationally identical to the case where $\pi^{max}=0$), mergers will restore the old equilibrium.[2]

In the case of identical economies and constant returns to scale in financial services, we therefore have potential pro-competitive gains *if* there is an underlying degree of imperfect competition in financial markets. If regulators target the maintenance of profits after trade, they are then fully capable of ensuring there are no gains from trade.

[2] There may still be steady-state effects if we allow for differences in the Ricardian technology paramaters underlying the model. This would follow from incentives for trade based on relative cost differences. In fact, skill and technology transfers allowing cost reductions are in practice one of the main motives for allowing foreign entry. See Francois (1995) for an overlapping generations model of trade in financial services and cross-country differences in Ricardian production technologies.

We will see in the next section however that, with scale economies, there is scope for gains even if the regulatory authorities are working to maintain profits by pursuit of mergers.

3.3 Trade: increasing returns

We now add scale economies in the finance sector to the analytical mix. Costs in the financial services sector are assumed to involve the marginal cost *b* as well as a fixed cost *a*. The mark-up relationship represented by equation (6) remains unchanged. However, the entry/exit (or zero profit equation) must be modified as follows:

$$0 \le \phi - \left(\frac{a}{q^f} + b\right) \le \pi^{max} \tag{10}$$

Equation (10) in turn yields a non-linear relationship between n and q^f, given π^{max}. (In the case of zero profits, this is actually a linear relationship). This yields equation (11), which is derived by combining equation (10) with the oligopoly pricing equation.

$$\tilde{n} = \left(\frac{1-\alpha}{a + q^f \pi^{max}}\right)\left(a + q^f \pi^{max} + q^f \rho + q^f b + q^f \delta\right) \tag{11}$$

Equation (11) is mapped in the lower quadrant of Figure 2, as the curve FF. Combinations of *n* and q_f to the left of the FF line involve profits below π^{max}, while combinations to the right involve profits above this level. Under free entry and zero profits, this would delineate economic profit and loss.

In addition, we have another relationship implied by confronting the real economy, from equations (4), with the pricing that follows from oligopoly pricing. This yields equation (12).

$$q_f = [\alpha A]^{\frac{1}{1-\alpha}} \left[\rho + \delta + \frac{bn + \rho + \delta}{n - (1-\alpha)}\right]^{\frac{1}{\alpha - 1}} n^{-1} L \tag{12}$$

This is also plotted in Figure 2 as the CC line. The slope of the CC line (which is also present but not as a determinant relationship in the core equilibrium in the constant returns to scale case) can be shown to be determined by equation (13) .

$$(13) \qquad dq_f / dn = -\frac{K}{n}\left[1 - \frac{1}{n-(1-a)}\right] < 0$$

Consider market integration through trade in this framework. As in the previous section, we again start from autarky, and again assume two identical countries. In each country, we will initially have an equilibrium like that characterized by lower capital stock $[K/L]^{*A}$, price ϕ^A and $\tilde{n}^A$ service providers Figure 2. In contrast to autarky, in a steady-state trade equilibrium the combined economy is represented by the dashed CC curve in the figure. In terms of our graphic system, market integration implies that existing financial service firms earn lower profits due to eroded market power. As in the constant returns case, this leads to exit/mergers. However, this effect of exit on market power is now partially offset by scale economies, so that the new equilibrium is characterized by lower financial services prices of ϕ^T (even if profit rates are fully restored) and hence by higher capital stocks $[K/L]^{*T}$. The critical reason for this, in contrast to the constant returns case, is that larger markets, combined with scale economies, offer the potential for lower financial service prices for both markets through the procompetitive effects of trade.

A similar pattern emerges as we compare countries that vary by size. If we increase the size of an economy, the FF curve represented by equation (13) will move out to F 'F '. This means that the scale of each financial services firm will be such that they earn excess profits. To counter this (either by regulators encouraging entry, or through free entry) we must have a larger number of financial firms in the larger market than in the smaller one, with a consequently lower financial services price. The new long-run trade equilibrium involves lower services prices, a more competitive financial services sector, a greater per-capita capital stock, and higher per-capita incomes.[3]

4. Empirics

We now turn to an empirical examination of the relationship between financial services trade and macroeconomic performance. The model developed in Section 2 highlights links in a causal chain that lead from trade to more competition in the financial services sector, from more competition to lower intermediation prices, and from there to higher long-run capital stocks and income levels.

[3] Note that, while beyond the scope of the present paper, scale economies in the financial service sector could be sufficient to sustain an endogenous/permanent growth mechanism.

Because the model integrates an imperfectly competitive financial services sector into an otherwise standard Ramsey model, the same mechanisms that link services trade with long-run incomes will also link financial sector openness with transitional or medium-term economic growth. To test for such a relationship, we follow the approach of the recent empirical literature. (Again, see Galetovic 1996 and Levine 1997 for surveys). This involves cross-country growth regressions, wherein we include a number of variables that seem to perform robustly in the literature. To this mix of variables, we also add measures of financial sector openness and the degree of competition in the financial services sector.

Our data are drawn from a number of sources, and provide a set of indicators for 93 countries for the period 1986-1995. (These data are available from the authors upon request.) The variables we work with are summarized in Table 1. We are ultimately interested in economic growth, for which we take the average growth rate for per-capita income (in ICP dollars) for the period 1986-95. Based on the literature, we also work with the standard deviation of inflation over this period (as an indicator of macroeconomic stability), and the degree of trade openness (measured by the share of trade in GDP, and corrected for country size and income level). Initial per-capita GDP serves as an overall indicator of development. Country size is measured by GDP, and scaled by world GDP. Population growth is also the average for the same period. Finding a general cross-country measure of the degree of competition in banking is problematic at best. The measure we choose to work with is the share of domestic banking assets held by the three largest banks. For financial sector openness we have two measures. One is a crude estimate of tariff-equivalents for financial services trade, based on GATS (General Agreement on Trade in Services) commitments within the WTO. (Hoekman, 1995). The other is the degree of stock market openness, indexed from 1 to 5.

Figures 3 through 5 present a graphic overview of the data. In Figure 3, we have plotted our measure of the degree of competition in the banking sector against per-capita income levels. In panel a of Figure 3, we present the raw data. It is clear that the higher income countries tend to have relatively competitive financial service sectors. From Section 2 above, we may expect that larger markets can lead to more competition within the financial services sector. To correct for this possibility, panel b of Figure 3 presents a plot of residuals from a regression of concentration on GDP against income levels. The same pattern as in panel a is exhibited by these data.

Figure 4 presents our data on banking sector concentration plotted against economic growth. As in Figure 3, the top panel of Figure 4 presents the raw data. In the

bottom panel, we have corrected growth rates for the well-known correlation between income growth and income (i.e. conditional convergence). The lower panel is a plot of the conditional convergence regression residuals against financial concentration. In both figures, there is an apparent pattern wherein more competitive financial sectors are associated with higher growth rates. Finally, Figures 5 and 6 present two views of our financial sector openness measures, and the range of these measures plotted against our measure of competition and income.

The results of OLS regression analysis of these data are presented in Table 2. We are first interested in the relationship between financial sector openness and competition (i.e. Figure 5). To do this, we specified the following regression equations:

$$(14) \qquad \begin{aligned} CONCENT_i &= a_0 + a_1 SIZE_i + a_2 CTOPEN_i + a_3 TARREQ_i + \varepsilon_i \\ CONCENT_j &= b_0 + b_1 SIZE_j + b_2 CTOPEN_j + b_3 STOCKOPEN_j + \varepsilon_j \end{aligned}$$

In equations (14), *SIZE* is included because, as discussed in Section 2, larger markets can imply more scope for competition, particularly if scale economies are present. *CTOPEN* is included as a measure of the general degree of trade openness. *TARREQ* and *STOCKOPEN* are included as our two measures of financial sector openness. The results of these regressions are presented in rows A.1 and A.2 of Table 2. The *SIZE* variable emerges as significant at the .01 level, and with the expected sign. Smaller economies are correlated with a greater degree of concentration. The *CTOPEN* variable has the expected sign, but is insignificant. Critical to the present exercise, our financial sector openness variables, *STOCKOPEN* and *TARREQ*, both emerge with coefficients that are significant at the .01 level, and that have the expected sign. We will examine the "significance" of these coefficients, in terms of the size of this effect, after we look at growth.

Consider the next link in the causal chain -- competition in the financial services sector and growth. To do this, we specify the following regression equation:

$$(15) \qquad \begin{aligned} PCGDPGR_i = c_0 &+ c_1 CTOPEN_i + c_2 INFLATE_i + c_3 PCGDP85_i \\ &+ c_4 CONCENT_i + c_5 POPGR_i + \varepsilon_i \end{aligned}$$

OLS results for equation (15) are reported in row 3 of Table 2. All of the standard cross-country growth variables emerge with significant coefficients (in the .01 to .05 range) and the expected sign. What is striking is that our measure of financial sector competition,

CONCENT, also emerges with a significant coefficient (at the .01 level) and the expected sign. From the results for equations (14) and (15), we have identified the following pattern in the data. Open financial sectors are more competitive, and more competitive financial sectors are strongly correlated with higher growth rates. As a follow-up, the fourth and fifth rows present variations of equation (15), where we have directly added our measures of financial sector openness. We do this to seek if there may be additional effects of financial sector openness on growth, beyond the competition channel we have focused on. In both cases (rows 2.B and 2.C) the signs of the coefficients point to a further positive effect of openness. However, the coefficients themselves are statistically insignificant.

How strong are the effects we have identified? Within our sample, protection in the financial services sector (or identically closed financial sectors) are concentrated in the lower income countries. The OECD countries in the sample, led by the United States, tend to have the most open financial service sectors. In part, therefore, the question of gains from liberalization can also be viewed as one particularly relevant for developing countries. Based on the coefficients in Table 2, moving from the most closed financial services regimes in our sample (representing some developing countries) to the most open is associated with an increased degree of competition in the financial services sector. This increase in competition, across the range of our sample, is in turn associated with growth rates that are 1.3 to 1.6 percent higher. This is somewhat higher than other recent estimates of financial development and growth linkages. (See the various Levine studies, for example). However, the mechanism we have emphasized is a different one. Empirical and computational assessments of trade policy often find that including market structure-related effects can lead to identification of much greater income effects than in perfectly competitive analytical settings. Viewed in this context, our results are fully consistent with this pattern. They are grounded in dynamic effects of market structure and competition mechanisms.

5. Summary

This paper is concerned with the procompetitive effects of trade in financial services. Because financial services are at the nexus of the savings and accumulation mechanism that drives economic growth, we have chosen to emphasize services trade and growth. Following a brief review of the literature in Section 2, we develop an analytical model in Section 3 characterized by Ramsey accumulation and an oligopolistic financial services sector. This model is used to highlight channels through which financial services trade may

lead to dynamic procompetitive effects. This analytical exercise is also used to motivate empirical exercise in Section 4. We conduct cross-country growth regressions, and find that there is a strong positive relationship between financial sector competition and financial sector openness, and between growth and financial sector competition. We interpret this as indicative of a causal chain linking openness with competition, and competition with growth. The net effects of this causal chain are significant. Our results suggest that moving from a closed to a relatively open regime is correlated with significant procompetitive pressures, and ultimately with large differences in growth rates (1.3 to 1.6 percent).

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Figure 1.
Constant returns to scale

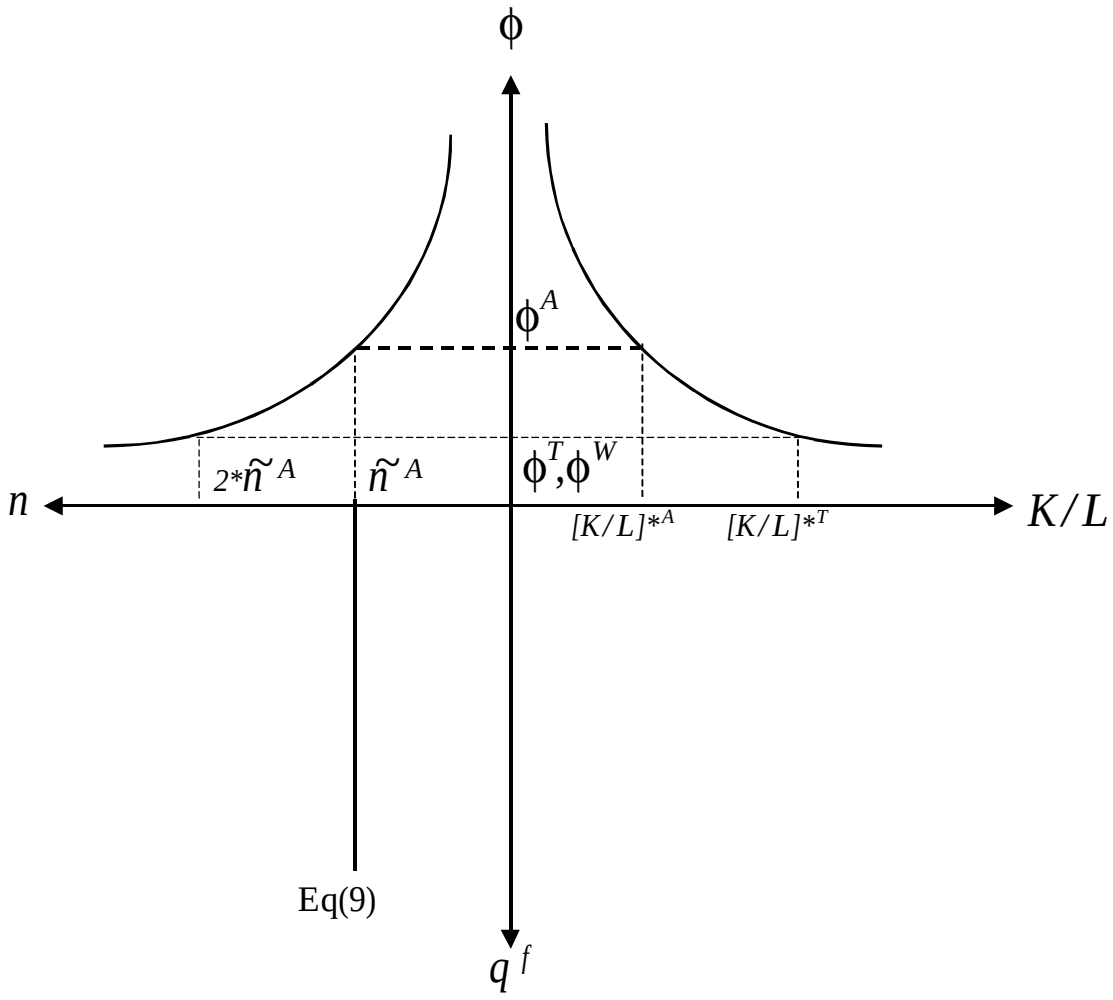


Figure 2.
Increasing returns to scale

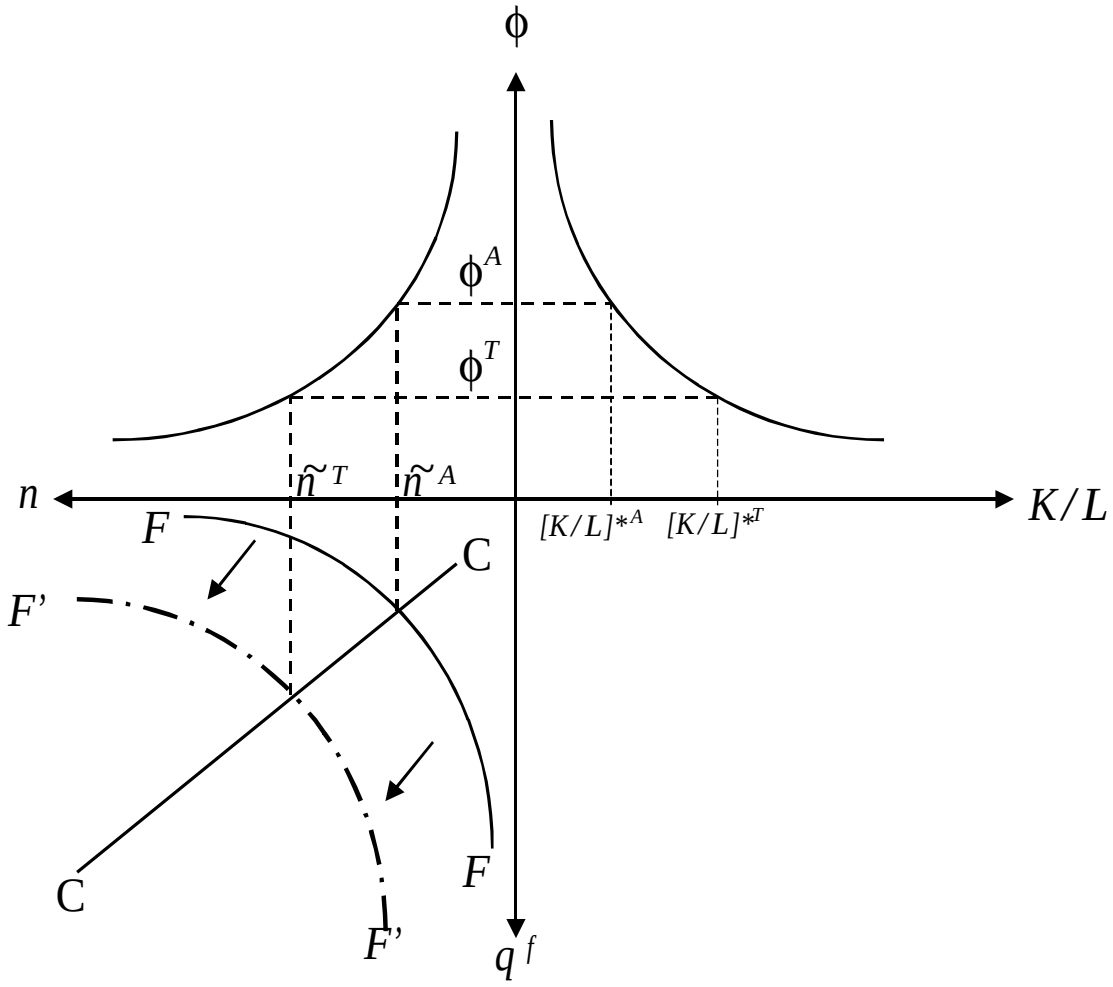
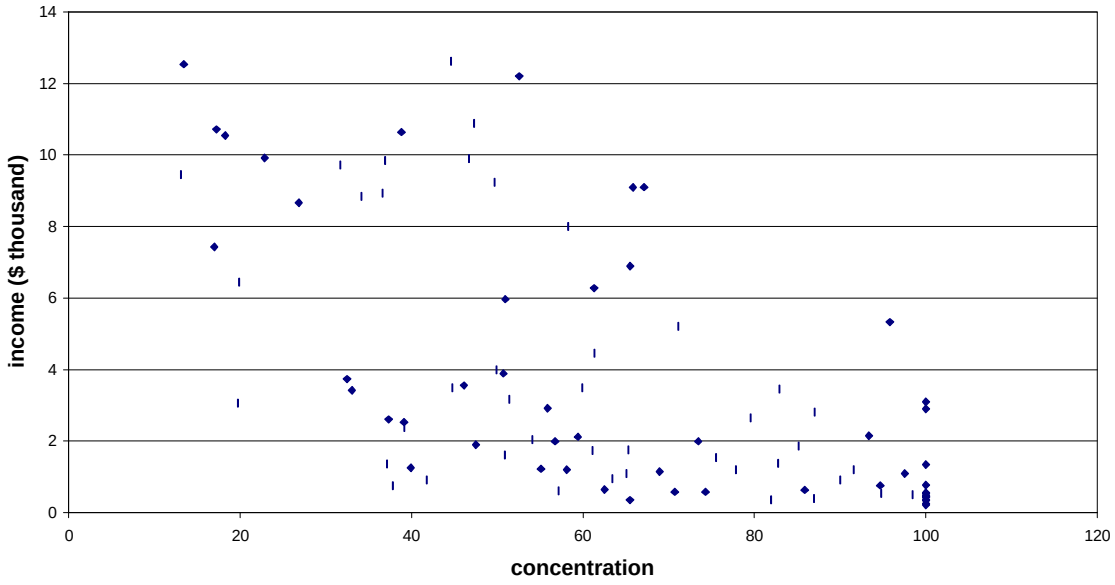


Figure 3 (panel a and b)

Concentration and income levels

a. Per-capita GDP and concentration (uncorrected)



b. Per-capita GDP and concentration (corrected)

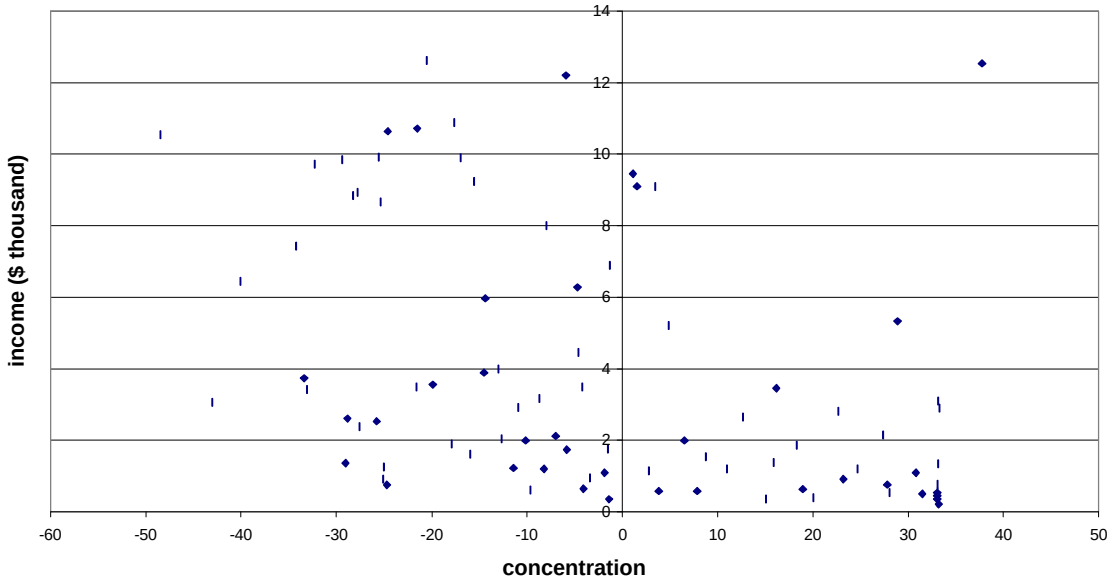
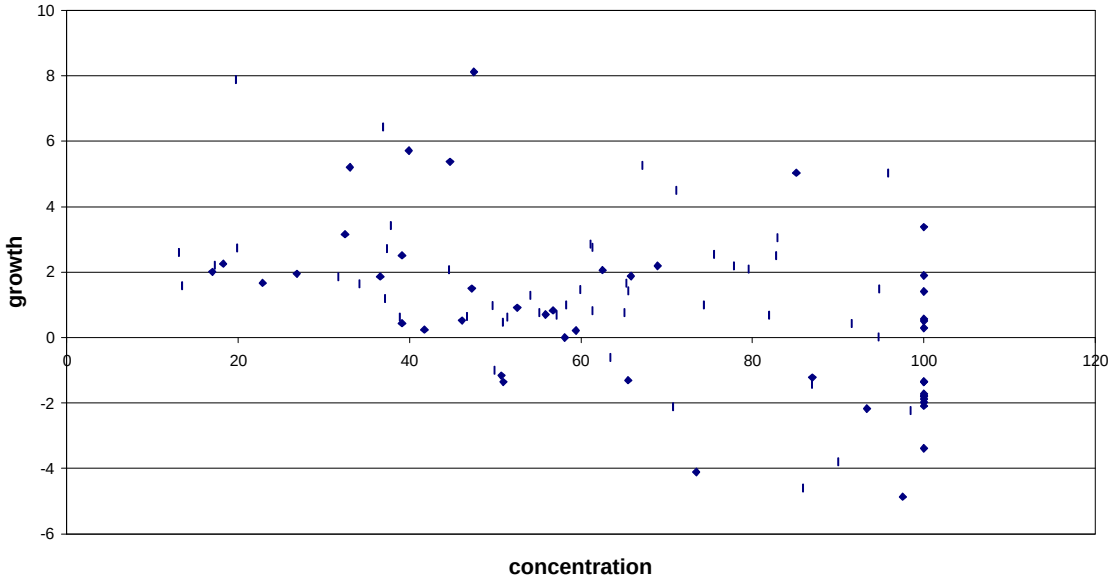


Figure 4 (panel a and b)
Concentration and growth

a. Concentration and growth (uncorrected)



b. Concentration and growth (corrected for income levels)

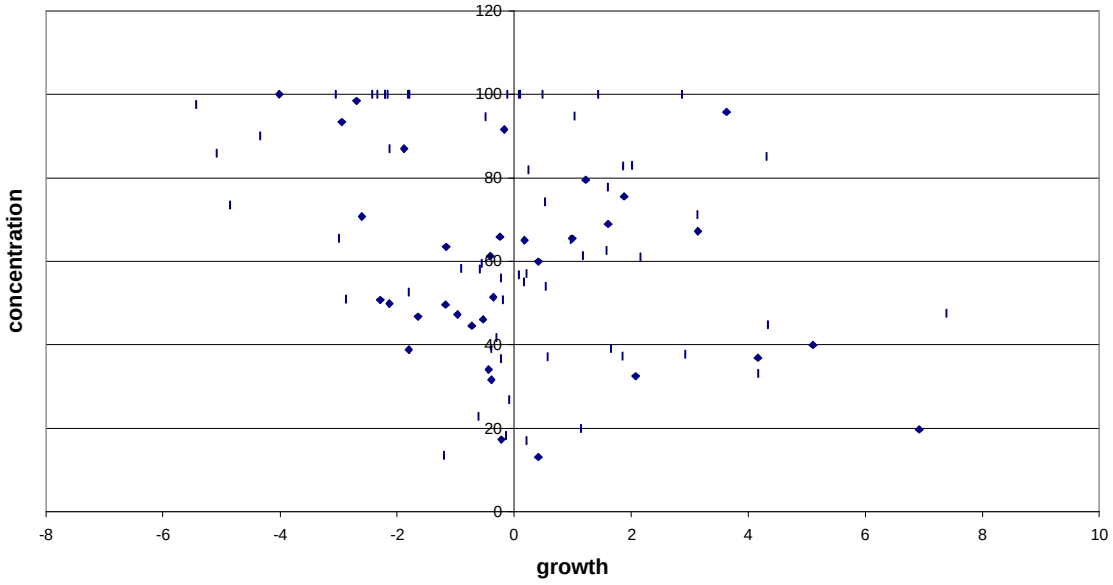
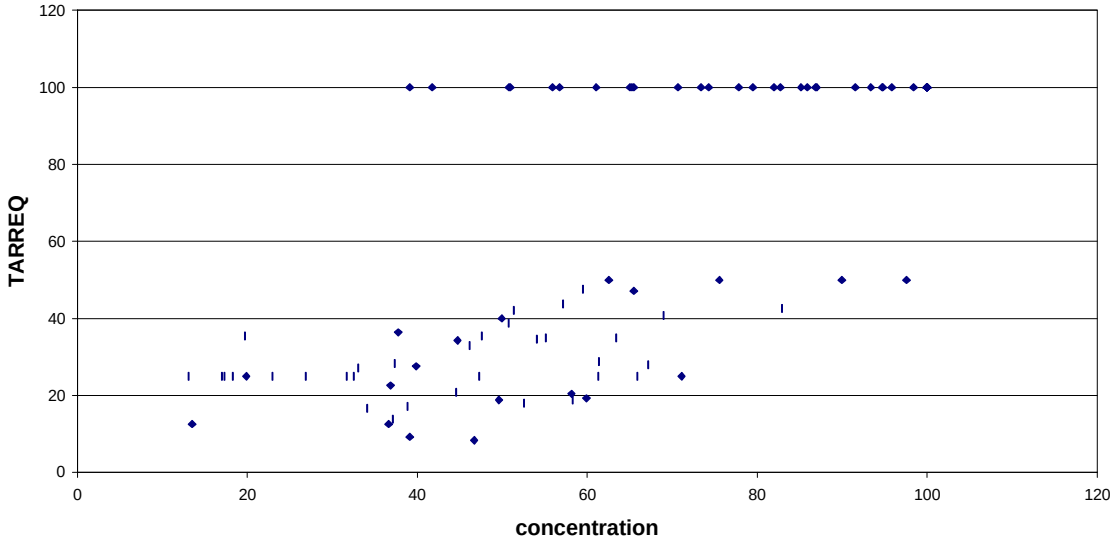


Figure 5 (panel a and b)
Financial sector openness and concentration

a. Concentration and tariff equivalents in financial services trade (TARREQ)



b. Concentration and stock market openness (SMOPAL)

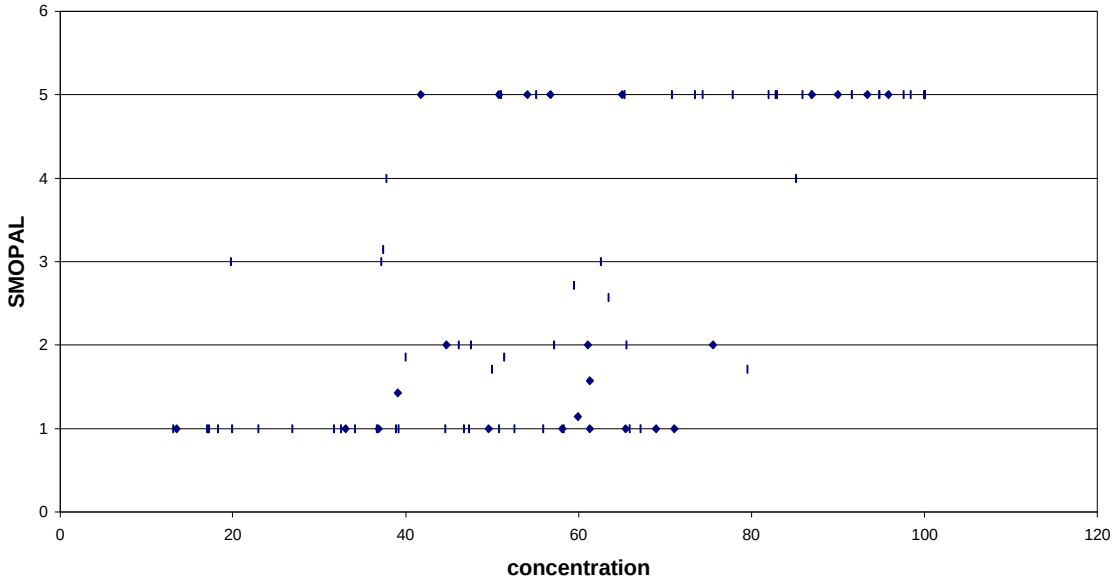
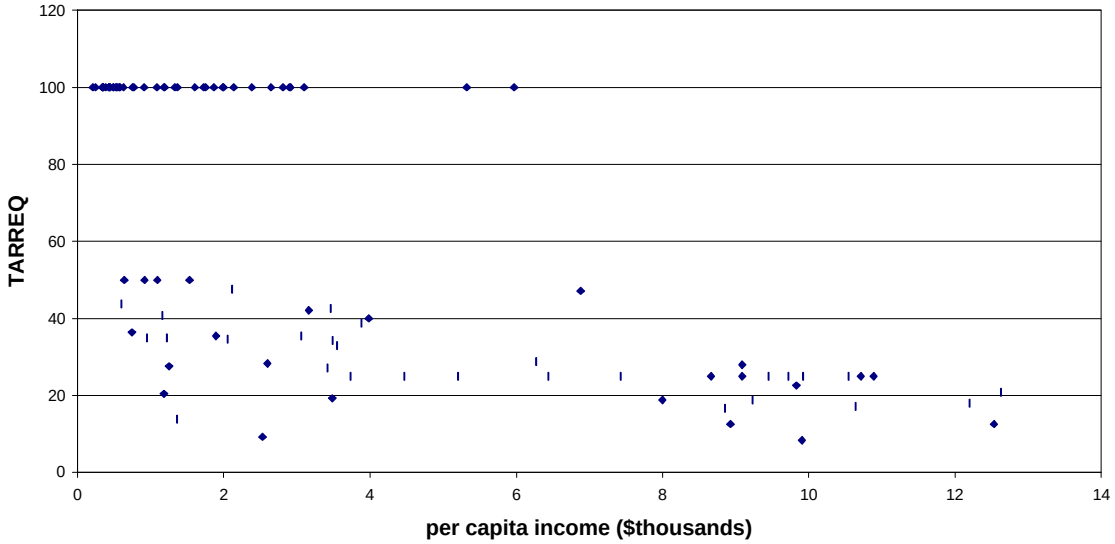


Figure 6 (panel a and b)
Incomes and financial sector openness

a. Incomes and tariff equivalents in financial services trade (TARREQ)



b. Incomes and stock market openness (SMOPAL)

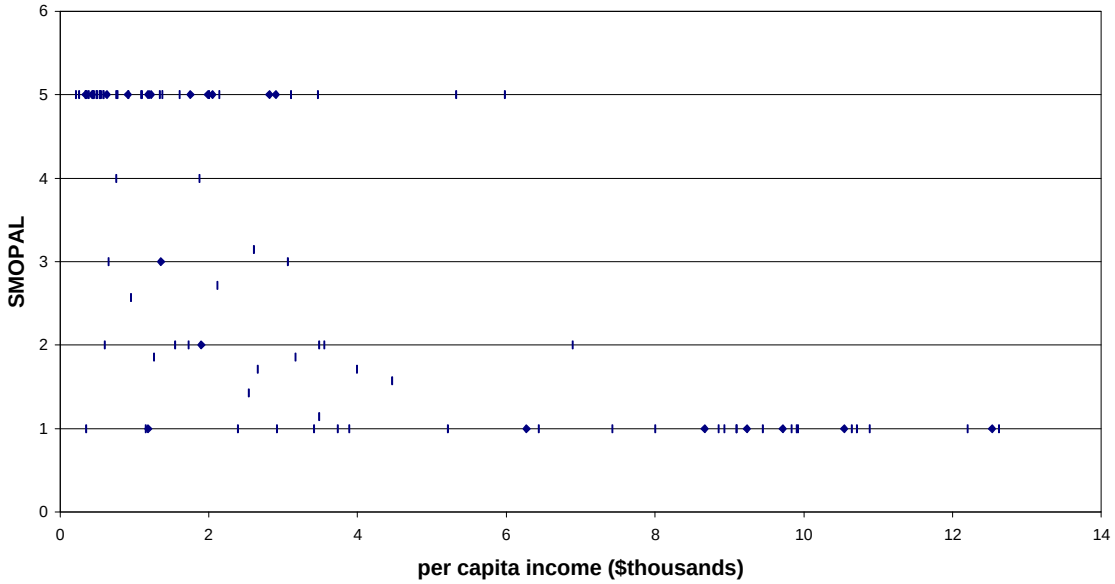


Table 1. Overview of dataset

1. Macroeconomic indicators

INFLATE:
The standard deviation of the inflation rate over the 1986-95 period.

PCGDP85:
Per-capita GDP in 1985.

PCGDPGR:
The average of per-capita growth over the 1986-95 period.

POPGR:
Average rate of population growth over the 1986-95 period

SIZE:
Total value of GDP, averaged over the 1986-95 period and scaled by total value of world GDP.

2. Trade and finance indicators

CONCENT:
Concentration in the financial sector: the assets of the 3 largest banks as a share of total assets in percent, averaged over 1989-95.

CTOPEN:
Corrected trade openness, moving 5 year average of exports plus imports over GDP for the period 1986-95.

STOCKOPEN:
Degree of stock market openness from 1 to 5 (1=free, 5=closed).

TARREQ:
Estimated tariff equivalent of trade protection of the domestic banking and financial services sector in percent.

Table 2. Regression results

Dependant variable	Explanatory variables							
	SIZE	CTOPEN	TARREQ	STOCKOPEN	INFLATE	PCGDP85	CONCENT	POPGR
1. Concentration								
A. Model summary	-1.852	-0.455	0.478					
F:44.292 obs:93 adjR^2:0.596	(-3.345)	(-0.166)	(9.372)					
B. Model summary	-1.909	-0.294		9.462				
F:43.889 obs:93 adjR^2:0.594	(-3.448)	(-0.107)		(9.320)				
2. Per-capita growth								
A. Model summary		0.835			-8.727E-04	-.242	-3.621E-02	-1.214
F:12.271 obs:93 adjR^2:0.377		(2.566)			(-1.974)	(-2.581)	(-3.542)	(-4.467)
B. Model summary		0.835	-2.229E-04		-8.727E-04	-.242	-3.605E-02	-1.212
F:10.110 obs:93 adjR^2:0.370		(2.545)	(-0.240)		(-1.963)	(-2.773)	(-2.983)	(-4.293)
C. Model summary		.816		-0.182	-8.726	-0.266	-3.032E-02	-1.153
F:10.380 obs:93 adjR^2:0.377		(2.503)		(-0.978)	(-1.973)	(-3.011)	(-2.555)	(-4.134)

Note: See the text for description of variable definitions and sample data.