

HONG KONG INSTITUTE FOR MONETARY RESEARCH

ASPECTS, MODELS AND MEASURES FOR ASSESSING THE
COMPETITIVENESS OF INTERNATIONAL FINANCIAL
SERVICES IN A PARTICULAR LOCATION

George M. von Furstenberg

HKIMR Working Paper No.18/2007

September 2007



Hong Kong Institute for Monetary Research

(a company incorporated with limited liability)

All rights reserved.

Reproduction for educational and non-commercial purposes is permitted provided that the source is acknowledged.

Aspects, Models and Measures for Assessing the Competitiveness of International Financial Services in a Particular Location

George M. von Furstenberg*

National Science Foundation, USA

Hong Kong Institute for Monetary Research

September, 2007

Abstract

The International Financial Services (IFS) industry is restructuring internally and by location. This paper outlines the economic forces and analytical methods that may be applied to examine the economic drivers of these processes as ever more countries and cities are vying for attracting IFS providers and their clients. The ICT revolution has made those IFS that can be commoditized footloose in search of cost efficiency. High value-added services, however, will continue to be developed and co-ordinated in a few major IFS centers that have invested in, or capitalized on, regional or global advantages for themselves and their clients. This fragmentation and geographic dispersion of the industry by service function and sophistication may facilitate analyses of the comparative economic efficiency of particular financial services by methods such as stochastic frontier analysis.

JEL Codes: G20, F30, E44.

Keywords: Offshore financial centers, international financial services, financial business location, financial business efficiency, data envelopment analysis, stochastic frontier analysis

* The views expressed are my own and do not represent those of the U.S. government or the National Science Foundation. Contact: gvonfurs@nsf.gov.

Acknowledgment: The first draft of this paper was prepared in conjunction with a visiting research fellowship at the Hong Kong Institute for Monetary Research in January 2007 for which I am most grateful. Though responsible for remaining errors, I am indebted to a referee for useful comments on that draft which since has been substantially revised.

1. Introduction

The international part of financial services is big business not just for some very small but functional offshore financial centers (OFCs).¹ Kaufman (2000, p.6) cites an estimate that 7 percent of British GDP around 1998 was brought forth within one square mile of what is known as “the city” by 1 million employees, indirect employment included.² In Luxembourg, financial services in 2003 accounted for 30 percent of gross value added³ not counting ancillary services such as legal and accounting and tourism. Such percentages were considerably smaller for Hong Kong and Singapore. Zhao *et al.* (2004, p.587) report that only 2.25 percent of Shanghai’s total employment was in the FIRE sector in 2000.⁴ Still, there are several countries and cities of appreciable size for whom supplying international financial services is one of their most important, and often subsidized businesses. Lessard and Tschoegl (1988) have documented that the direct local employment effect is proportionately much smaller than the effect on GDP because value-added per employee tends to be high.

This paper outlines what is required to attract the high-value lines of the international financial services business to a particular location (Section 2) and what are the economic benefits and fiscal costs of promoting these lines (Section 3). Keeping them in place requires macroeconomic stability (Section 4) and maintaining an internationally competitive level of technical and allocative efficiency of operations (Section 5) with the cost-saving infrastructure and local amenities provided. This infrastructure may relate not only to operational assets such as communications, automated trading platforms, and international accessibility, but also to characteristics of the macroeconomic system and the quality of governance, industry institutions, and regulatory oversight. The paper then sketches how developments in financial ICT that affect the operation of capital markets and the need for relationship banking and finance may affect the outlook for offshore financial services (Section 6) before concluding (Section 7).

¹ Throughout, we are not concerned with OFCs that are merely booking centers. Such centers provide a legal place of record for transactions that actually take place elsewhere. Tschoegl (2000, p.5) explains the terminology distinguishing between functional OFCs with substantial value-added activities and pure booking centers or “brass-plate” OFCs supporting concealment activities. Some of the latter types of centers are identified in McCann (2006, pp.449-450). The heterogeneity of offshore jurisdictions by stage of financial development is obvious from the composition of the Offshore Group of Banking Supervisors: Hong Kong and Singapore are members as are Labuan, Mauritius, and Vanuatu (see BIS, 2006a, p.61). Jao (2003) provides a comprehensive typology of financial centers.

² McKinsey & Co. for Bloomberg, Michael R., and Shumer, Charles E. (2007, pp.10, 15) contains an estimate of 318,000 for London’s financial services workforce, and 328,400 for New York’s in 2005. It cites an estimate suggesting that every “securities” job accounts for two additional jobs in other industries. Applying a multiplier of 3 to “securities” jobs would lead back to the earlier estimate of an employment effect in London of about 1 million.

³ For the sources see von Furstenberg (2007).

⁴ This percentage may more than double by 2010, and it does not include employment in government agencies associated with foreign exchange administration and trading, banking supervision, and related financial functions.

2. Requirements for Operation of Offshore and International Financial Service Centers

Lists of these requirements often start with libertarian criteria such as political independence of such centers from the government and a free-market and private-enterprise environment (see, for instance, Kaufman, 2000, p.15). However, such centers depend on their Financial Services Authority or similar institution to be a facilitator and promoter of their international financial business, rather than a mere supervisor. They also look to central and local governments for business subsidies and preferences of various kinds and not just for prudential regulation to level the playing field and to protect depositors and investors. Indeed, Offshore Financial Centers (OFCs) and International Financial Service Centers (IFSCs) often have been planned as part of an industrial development policy by national or subnational units of government. Gordon (1998) and Zhang (2003) provide vivid accounts of the strong and quite visible hand of government in particular with regard to Shanghai's Pudong New Area Liujiazui development.⁵ For three or four decades after 1949, Shanghai had actually been penalized, rather than favored, by the central government.⁶ Hence, the private enterprises engaged in international financial business are not always far removed from their host government or its, normally supportive, "interference" and confidentiality requirements. Although state aid may not always be successful or decisive, principled libertarianism is not what such centers generally seek or practice. Rather, they want the government to get out of the way and have its ear all the same.

There are, however, a number of fairly universal prerequisites for OFC/IFSC success that have been enumerated by Kaufman (2000, p.15), Jao (2003), Park, Ito and Wang (2005, p.9), Bossone, Honohan, and Long (2005, p.122), and others. In Table 1 these are assembled, condensed, and then organized by me into macroeconomic prerequisites, infrastructure and human-capital requirements, and industry prerequisites. Not all of these prerequisites are immediately persuasive. Why, for instance, should stable exchange rates and low inflation be a "requirement" under A-3 when offshore centers do not operate in a minor local currency anyway and would have no immediate reason to care about its stability? The answer is that reasonably stable exchange rates and low inflation are relevant to banking soundness, the depth of the domestic financial system (see Hausmann *et al.*, 2000), and the credibility of the national government and all its undertakings. Also, each of the main criteria listed in Table 1 could be expanded. For instance, point C-1 of Table 1 relates to the availability of well-motivated and sophisticated bank supervisors. The 25 *Core Principles for Effective Banking Supervision* promulgated by the BIS (2006b) might then be referenced to spell out what sophisticated supervisors are to accomplish. Such instructive detail aside, note that roundly failing at a particular time to meet just a few of the main criteria listed in Table 1 may be fatal to countries' starting, growing, or keeping a legitimate international financial services business.

⁵ GHK (2007, p.18 (2.10) finds the proposition, that the relation between the Hong Kong and Mainland financial markets could be left to the market, unrealistic. GHK (2007, p.50 (4.20), and p.47 (4.11)) then calls for "central government authorities to adopt a proactive policy to facilitate the use of Hong Kong's financial system for Mainland's international financial activities." The report notes further that Ireland and Dubai have been pursuing proactive measures in recent years and that Japan, Singapore, Australia, and Korea are also actively developing their international financial centers. It thus appears to argue for the second-best solution of competitive subsidization.

⁶ During this time as little as 13 percent of Shanghai's revenue was left in the city rather than remitted to the central government, while local retention averaged 30 percent elsewhere, including Beijing (see Lai, 2006, p.4).

3. Economic Benefits and Fiscal Costs of Hosting an IFSC

IFSCs, old and new, worry about the future of the business in and from their particular location, and they may support international financial service zones that offer tax incentives. A recent McKinsey (2007, p.27) report proposes that such a zone be considered even for New York, and that the concept of an international banking zone, already based there, be expanded and adapted to other financial sectors. How hard countries or jurisdictions should fight to attract international financial services business obviously depends on the benefits to be expected from success in the endeavor. However, there are few studies of whether having an IFSC adds to an economy's rate of growth and to the living standards of its people, and not just of those employed in the industry. There is also little or no quantitative work on the optimal degree of integration of offshore and onshore operations.

In the absence of solid evidence, it may be presumed that a high value-added financial services activity, unlike a routinized back-office operation, also draws government investment to supporting high-tech development, education, and the quality of life. A number of quasi-public goods may be created in the process. Capacities created for one purpose, the promotion of international financial services, can be made available with little extra cost to serve other economic development purposes as well. This positive spillover is maximized if the separation between onshore and offshore operations is minimized. Similarly, any reduction of the cost of capital available in offshore markets will benefit the domestic economy most when there are openings for true, i.e., riskless, arbitrage between offshore and onshore markets. Hence there may be a reasonable presumption that those jurisdictions meeting all, or almost all, of the requirements listed in Table 1 are qualified to become an IFSC provided the fiscal system is not burdened excessively in the process. But being qualified is merely a necessary condition for entry into the business since future operations also have to look sufficiently profitable to warrant any start-up subsidies involved.

Fiscal costs of international financial business. The list of government measures to establish and grow IFSCs is long and varied. The general practice is to tax very sparingly, if at all, income earned from international financial service business either by those conducting it or by nonresident entities financing it through their deposits, investments, and loans. For instance, withholding taxes are generally not imposed on the interest income of such entities. Outright discrimination in favor of offshore over onshore activities is common and pervasive as, for instance, when the tax on bank profits from the Asian-Currency Unit (ACU), but not the Domestic-Banking Unit (DBU) of Singapore banks was cut from 40 to 10 percent in 1970 (Jin, 2005, p.211). Such discrimination is also involved when expatriates employed in the international financial service business receive generous tax-free allowances in Hong Kong, or when those who have been accorded "enhanced fund manager" status in Singapore enjoy a complete tax holiday on fee income from providing investment management and advisory services to foreign investors (Jin, 2005, p.222). Where there are value-added taxes as in Ireland, the international financial business may be exempt.

Pump-priming of lines of the financial business that are to be drawn to a particular location is also common. The Monetary Authority of Singapore and the Government of Singapore Investment Corporation, for instance, have placed \$35 billion with managers in the private sector to encourage the growth of the fund management industry (Ito, Park, and Wang, 2005, p.9). In addition, the government provides almost one-fifth of the venture capital funding made available in Singapore, and there is preferential tax treatment for capital gains that are particularly important for the venture-capital industry (Jin, 2005, pp.225-26).

In some jurisdictions, almost any income directly or indirectly generated in the international financial services industry may be the subject of tax privileges. In addition, there are subsidies and direct government expenditures on regulation, training, construction, and pertinent facilities and services that provide cash and in-kind benefits for that industry. These lower its costs and help meet its infrastructure requirements.

Another tax expenditure is due to the loss of seignorage that is associated with currency substitution being facilitated by the operation of OFCs in countries that do not have a domestic currency of international standing. While the development of OFCs which operate almost exclusively in major international currencies could actually promote the seignorage earned on currencies with such standing (see Kaufman, 2000), the evidence is that seignorage is lost from currency substitution against lesser currencies in open capital markets. In Hong Kong, for instance, over 50 percent of banking business was in foreign currency denominations before use of the RMB started to spread (Huang, 2005, p.195).⁷ Thus, risk reduction through internationalization and currency substitution has tended to shrink the relative size of the domestic-currency component of the financial sector of financially open countries with minor currencies (see Bossone, Honohan, and Long, 2002, p.120). The size of the inflation tax base is diminished and the disincentive to inflate is strengthened by (the threat of) currency substitution.

Considering tax preferences, subsidies, lower seignorage revenue, and government industry-development expenditures together, IFSCs and OFCs are not likely to make a direct positive fiscal contribution to the countries that compete for them by market and nonmarket means. Rather, they are associated with a narrowing of the tax base toward non-traded goods and immobile factors, a contraction that may or may not be justified under the inverse-elasticity rule of optimal taxation or under international trade rules against competition-distorting government subsidies. Hence the extra economic benefits of growing IFSCs rather than some other business would have to be sufficient to compensate for the extra fiscal costs. Given that government promotion, subsidies, and industrial planning appear invariably to be feeding and cradling the newer IFSCs, the laissez-faire approach of just letting the upper levels of the industry find their most suitable locations in the world on their own is attracting few practitioners. Only the location of the commoditized parts of the IFS business appears increasingly to conform to the economic laws of global competition and cost efficiency. Thus, more quantitative evidence on the current fiscal flow balances and on the rate of return on the entire fiscal investment in advanced-IFSC development and nurture is urgently needed to better inform this process of public choice.

⁷ Since 2006, growing amounts of liquid funds and currency obtained from RMB deposits at banks in Hong Kong have tended to be "returned" to the Mainland through the issuance in the Hong Kong market of RMB-denominated bonds by official and some private borrowers from the Mainland.

4. Macro-Level Efficiency Criteria for IFSCs

Two aspects of efficiency, macro and micro, are commonly distinguished. Macro-level efficiency of the financial system relates to the efficient transfer between surplus and deficit units, or lenders and borrowers, savers and investors, both within and between countries at low cost and with minimal risk of a major financial crisis. OFCs are not designed to arrange for net capital exports by the country in which they are domiciled because nonresidents account for the bulk of both their sources and uses of funds. Nevertheless, an OFC can have substantial net flow balances with any of the foreign countries whose residents are its clients. National balances with the OFC have to net out only for rest of the world (ROW) combined.

Macroeconomic aspects of efficiency. An IFSC's contribution to the macroeconomic efficiency of its host country or jurisdiction can come through two channels. The IFSC may contribute to growth and stability first through its influence on the choice of the tax, currency, and exchange-rate regimes (as discussed in von Furstenberg, 2007) and secondly through increasing the correlation of its business cycle with the world business cycle still frequently represented by the experience of the United States. Although raising the correlation with the business cycle of the United States adds to macroeconomic beta, this may be desirable for a country that does not pursue an independent monetary or other stabilization policy of its own because the variance of its idiosyncratic growth-rate component, macroeconomic alpha, falls at the same time. GDP volatility is costly on account of being far less diversifiable through international financial markets than national stock market volatility. Hence, reducing a country's GDP volatility is unambiguously beneficial for its representative household. If U.S. stabilization policy can be trusted to respond appropriately to recessionary impulses, a country may expect to experience a net reduction in volatility from the growing correlation.

This is particularly true for jurisdictions such as Hong Kong that have maintained a fixed exchange rate with USD and have a high exposure to world-economy shocks represented by the United States (see Genberg, 2005, p.22). For Hong Kong, the IMF (2006, p.4, ftnt. 1) recently found that a 1 percentage point reduction in U.S. growth through trade channels would tend to reduce Hong Kong's growth by 1/2 to 1 percentage point, depending on its spillover impact on Mainland China's economy. The simultaneous influence through financial channels was not estimated by the IMF. Although some lines of the financial business, such as IPOs, may be dragged down together with non-financial business in a recession, the overall influence of financial channels may be stabilizing. The reason is that U.S. real interest rates, that influence Hong Kong's, have moved in a manner consistent with an active application of the Taylor rule for at least two decades, thereby providing countercyclical policy spillover for Hong Kong as well.⁸ For comparison, a recent study (Cheung, Tam, and Yiu, 2006, p.11) found "no substantial evidence that the Chinese interest rate is driven by the U.S. rate" in spite of the Mainland's commitment to a fixed-exchange-rate arrangement (with one small break) over the sample period of February 1996 to April 2006.

⁸ Jeon, Oh, and Yang (2006, p.85) have estimated that the Chinese stock markets (Shanghai and Shenzhen) are on average the least correlated with other stock exchanges, in particular the U.S. market (correlation coefficient 0.019), while the Hong Kong market has been the most correlated (0.594) with the U.S. among the 10 East Asian markets analyzed. This suggests much more idiosyncratic noise in the Mainland than in the Hong Kong-China market.

Risk assessment. If there is a substantial leakage of funds raised from nonresidents into the domestic financial system, known as *out-in* by its sources and uses, the regulatory and reserve standards applied onshore will in fact be no higher than those applied offshore, currency-denomination and maturity mismatches may intensify, and domestic monetary policy may be undermined. Kaufman (2000, p.6) relates that fully 60 percent of the \$50 billion in loans made by the ostensibly “offshore” Bangkok International Banking Facility (BIBF) in the year before the East-Asian crisis that started in 1997 were “out-in” transactions used to finance domestic firms. Especially when there is a strong expectation that exchange rate fluctuations with the USD will continue to be small, maturity mismatches and carry trades of borrowing cheaply in major foreign currencies to lend at much higher interest rates in local currencies may be encouraged. As the 1997-98 East-Asian troubles showed, a deep crisis ensues when such fair-weather strategies come to grief and end up disrupting much of the financial intermediation system that is critical to economic vitality. Fragility may also have been raised by offshore operations because banks that operate in branch form in the offshore sector may not be required to hold capital and hence are not subject to minimum capital adequacy requirements or to capital-based limits on large exposures (Huang, 2005, p.204). Add the increased probability of supervision failures in complex networks of financial relationships and the result is that “some offshore centers have magnified any financial problems in their countries” (Kaufman, 2000, p.6).

If a substantial leakage develops in the opposite direction, *in-out*, there may be sudden credit contraction and asset deflation associated with capital flight. It appears that business-cycle synchronization among Asian countries in the 1990s can at least partially be explained by synchronization of net capital flows and the ensuing boom-bust cycles after financial market liberalization (Ito, Park and Wang, 2005, p.5). Particularly under conditions of high leverage, greater fragility and risk could be associated with the increased macroeconomic exposure to the flow and ebb of international capital flows, which IFSCs and offshore financial activity could bring. On the other hand, to the extent IFSC activities are not segregated from those of internal banking, as in Hong Kong, net capital exports by Hong Kong residents can safely be intermediated by their acquiring direct or indirect claims on ROW by taking a position in their resident IFSC. For advanced structural net capital exporters, exposure to “sudden stops” of gross capital inflows is small unless they intermediate such flows for and to less advanced countries.

Policy obstacles to financial development. IFSCs can function as market makers for their region’s securities to the world. Conversely, they also can provide risk reduction through internationalization of the portfolios of domestic investors. Bossone, Honohan and Long (2005, pp.120-1) judge that risk reduction possibilities opened up by international financial integration are exploited more by nonfinancial than by domestic financial institutions. If this is so, foreign financial institutions established either in the IFSCs and OFCs of a country, or providing their services cross-border, may have to be relied upon to achieve adequate international portfolio diversification. However, capital controls may transform diversifiable into non-diversifiable risk for the residents of the area under such controls, and the Mainland stock markets appear to present a high level of, otherwise diversifiable, risk. Jeon, Oh, and Yang (2006, p.85) have estimated that the Chinese stock markets (Shanghai and Shenzhen) are on average the least correlated with other stock exchanges, in particular the U.S. market (correlation coefficient 0.019), while the Hong Kong market has been the most correlated (0.594) with the United States among the 10 East Asian markets analyzed in their study. This suggests that there is much more idiosyncratic noise in the Mainland than in the Hong Kong-China market. To the extent capital controls continue to hamper international

portfolio diversification in the Mainland in spite of the progressive expansion of quotas to invest abroad under the Qualified Domestic Institutional Investor (QDII) scheme, the globally non-systematic part of the volatility of its stock market, like China's political risk, is non-diversifiable for its residents.

Domestic interest-rate controls, such as maximum deposit and minimum lending rates in Mainland China, and official credit guidance, long have stunted the development of the RMB loan and bond markets (see HKIMR/BIS/CEPR, 2006). In a dialectic play on the "overborrowing syndrome" held partly responsible for the 1997-98 East-Asian crisis, Liu and Yang (2005) thus had noted an "underlending syndrome" on the Mainland. Furthermore, market-based yield curves suitable for national and international financial instruments and for the construction of derivatives have remained incomplete. Derivatives need such yield curves for information, pricing, arbitrage, and product development. They also need interest rates that are determined in international financial markets. These rates would allow covered interest parity to be market-enforced through use of forward markets other than those for non-deliverable forwards (NDF) or forwards priced on domestic interest rates. For instance, the combination of an either absolutely fixed or tightly upward crawling RMB against the USD and domestic interest rate controls meant that interest parity — subsuming that controlled rate of little or no change in the exchange rate — often was grossly violated (Ma and McCauley, 2008) as the pricing of NDFs was not tied down. Cutting the tight web of otherwise fully arbitrated financial price relations at one point severs it at many more. For instance, the first (fixed for floating rate) RMB interest rate swap in Mainland China was executed (between two of its banks) only in February 2006.⁹ However, underlying conditions have started to change in these respects, with forward exchange rates built on Shibor, the Shanghai interbank offered rate, and its yield curve up to one year, becoming available in early 2007.

5. Microeconomic Efficiency Measures for IFSCs

Because there is widespread use of netting of costs against income and of indirect provisioning for contingent costs in financial contracts and banking,¹⁰ measuring the efficiency of the financial service industry and its different lines of business presents special challenges. This difficulty arises especially with the "intermediation" or costs-and-returns flow approach commonly used. As Welch (2006) explained, that primitive approach, of using cost-of-funds to gross income ratios as an inverse indicator of efficiency, also has other problems. The reason is that high-value added services that are fee intensive inherently are cost intensive as well. Hence, their cost/income ratios tend to be exceptionally high even though they may be highly profitable.

Major providers of international financial services are multi-product firms. The allocation of costs that is required to establish the profitability of each product is inherently difficult because many of these products utilize common facilities of the firm. Cost and value attribution are even more complicated because many of the financial products of the firm potentially are in joint demand by its customers and also

⁹ Source: <http://en.chinabroadcast.cn/3130/2006/06/22/501@105756.htm>, p.3 of 4.

¹⁰ Examples are service charges on checking accounts being netted against the interest otherwise paid on such accounts, or compensating balance requirements instead of fees being imposed on contingent loan commitments. Cross-subsidies and synergies between different lines of financial business make it difficult to determine the profitability of each line, such as deposit taking, separately.

function as service inputs into some of its outputs. Nevertheless, progressive commoditization and outsourcing of subfunctions have facilitated the accurate pricing of those functions that are performed, not only in-house, but also by specialized suppliers and monolines who price them directly in the market. Thus, the fragmentation that has reached the international financial service business is both enabling, and creating pressure for, more precise cost and profit accounting for a range of functions.

On the other hand, the price of functions that can be commoditized is declining sharply relative to that of actively managed, custom-tailored, and selective functions. Hence, discussion of costs and benefits of advanced IFSCs increasingly relates to those upper-level functions that are subject to performance-related remuneration schemes and economic-rent sharing arrangements. In private banking, for instance, an accepted premise is that wealth management is not about products, not even about selling the firm's own products, but about advice. Just as cost content is changing, so is the nature of the benefits. For IFSCs, attracting high net-worth individuals as clients and as, at least part-year, residents may benefit not just these clients' financial and other business, but also give a lift to economic activity more generally.

Data envelopment analysis. The development and introduction of new products is subject to financial-engineering and market-acceptance risk. But once the profitability of new products has been established, there will be pressure on financial service providers to introduce and offer them equally elsewhere, and the technology of creating and managing these products will be diffused. Nevertheless, at any one time, there may be significant differences in the types of financial services offered in a particular location, and there may be productivity differences between locations in performing the same types of services. If efficiency leaders that can be taken to represent the technical efficiency frontier can be identified, there may be useful comparative measures of the degree to which other firms, or groups of firms, in a particular location fall short of this frontier.

One such measure may be obtained with Data Envelopment Analysis (DEA). DEA is a nonparametric "extreme-point" method used in operations research for the estimation of efficiency frontiers for multiple outputs produced with given inputs. Given this efficient set and an assumption of linear returns to scale, inefficient producers are defined by the percent, less than 100, of the radial distance to the frontier which they achieve. For instance, if the score of a particular producer, known as a decision-making unit (DMU), is 68 percent, then the implication is that the most efficient corresponding "virtual" producer (a linear combination of efficient producers producing the same output mix as the inefficient producer) could achieve the same output combination efficiently by using only 68 percent as much of each and every resource as the inefficient producer.

DEA methods are often applied informally without being so labeled. For instance, using labor productivity in two-digit (ISIC) manufacturing industries in the United States or Japan, whichever is the highest, as the standard for the frontier, Jefferson, Hu and Su (2006, p.10) found inefficiency of 77 percent¹¹ in manufacturing for the coastal provinces and autonomous municipalities of China (excluding Hong Kong)

¹¹ The percentage is calculated as $100(1 - 4.31^{-1})$ from the measure of 4.31 which they published for 2002.

where financial services are concentrated. This finding applied to the most recent year of the period 1995-2002 examined. However, any comparison with the situation in financial services is hampered by the absence of a theory about why and how relative international backwardness in manufacturing and services may differ.

To be insightful, the DEA method requires distinct outputs and appreciable differences in output mix to define the efficiency frontier in multiple output space; Casu and Girardone (2006) provide an application. For a bank, for instance, outputs could include the returns on loans to business, home mortgages, and securities held or originated or underwritten, while inputs could include the cost of deposits, federal funds purchased, and the required return (including risk premiums) on equity, plus the cost of the services of labor, fixed capital depreciation, and space rent. Then if the efficiency level of the leaders in principle is assumed to be available to all industry participants wherever they may be located *and* inefficiency is assumed to arise solely from less output being produced with given inputs, this shortfall is known as the degree of *X-inefficiency* as Altunbas and Chakravarty (1998) explain.

However these assumptions may not hold. Instead:

- (1) The level of best production and distribution technology available in a particular location or industry setting unavoidably may lag behind that of the global industry leaders,
- (2) the efficiency of global leaders and others may be subject to random influences and errors of measurement which can not be taken into account under the distribution-free DEA method,
- (3) the mix by lines of business and their quality, scale, and marketing may not be optimal for a given DMU, but that DMU, and its degree of efficiency, are defined by and for whatever combination of outputs it produces,
- (4) the mix of inputs — including management, operations and procedures — used in any or all of the lines of business may not be optimal, and
- (5) the entire analysis is designed to measure the degree of inefficiency, not its sources.

Point (1) often is taken to refer to comparative *technical* efficiency as it measures location-specific differences in total factor productivity relative to an observed global maximum, while points (3) and (4) are aspects of *allocative* efficiency within the local technical efficiency frontier. In principle, the two efficiency indexes are multiplicative. For instance, if level (1) is 90:100 and (3) and (4) together are scored 80:100, a particular IFSC or local establishment would have an efficiency score of 72 relative to the highest level achieved elsewhere in the world. The distinction, though inexact in applications, may be of some value: Moving up in the global comparative technical efficiency ratings could well require major and co-ordinated investments in the development of new human and physical resources, processes, infrastructures, and technical capabilities. By contrast, improving allocative efficiency so as to move closer to the *local* technology frontier normally is quicker, cheaper, and easier to organize and accomplish than to shift out that frontier. In addition, the degree of allocative efficiency can in good part be improved by local establishments acting on their own, while a major push to raise the level of technology, and

hence the degree of technical efficiency, may be largely out of their hands. Isik and Hassan (2002) have provided detailed decompositions by technical, scale, and allocative efficiency of banks that emphasize their heterogeneous characteristics and show how these affect their efficiency in a particular developing country.

Stochastic frontier analysis. This form of analysis, with the measures of production, cost, revenue, and profit efficiency it can yield, provides an alternative method of efficiency analysis of the firm producing multiple outputs with a variety of inputs. This parametric method improves upon the previous method principally in regard to point (2) by estimating the production function representing the maximum output that is achievable with given technology from a bundle of inputs with due allowance for statistical noise. Furthermore, by being explicit about the input-output relationship, defects (3), (4), and (5) are alleviated more easily than under the DEA method. At the same time, advance information requirements about the form of the multi-product production function are high.

An accessible and comprehensive treatment of the stochastic frontier model, its econometric estimation and solution for efficiency measures, has been provided by Kumbhakar and Lovell (2003). The authors start with one input-oriented and one output-oriented concept of technical efficiency that yield equivalent (dual) measures of the distance to a production frontier in both the single-output and multiple-output case. They note that the economic significance of these measures is limited since no behavioral objective is imposed. For instance, whatever production-function solution method is used to measure the distance from the frontier, the solution does not relate to an optimal (i.e., profit-maximizing) point on the frontier since no such point is identified. Hence, from an economic perspective, factor and product price and cost features and rate-of-return objectives need to be added. Cost minimization requires input oriented technical efficiency and allocative efficiency to avoid both excessive input use and misallocation of inputs. Revenue maximization requires the avoidance of output-oriented technical inefficiency (due to not producing as much output as possible with given inputs) and of an inappropriate output mix. Finally, profit maximization requires either of the equivalent forms of technical efficiency as well as input allocative and output allocative efficiency in the authors' terms (2003, Chapter 2). All these different efficiency measures may be appropriate objectives within the limited sphere of particular agents' responsibility, but only the last measure, profit efficiency, provides a comprehensive measure of economic efficiency in co-ordination.

A small amount of notation, taken from Bandyopadhyay and Das (2006, p.167), may be useful to characterize how stochastic frontier analysis separates uncontrollable error representing statistical noise and controllable error representing technical or allocative inefficiency. For the i^{th} of n firms, that model can be written:

$$y_i = f(x_i, \beta) + \varepsilon_i, \quad \text{where } \varepsilon_i = v_i - u_i, \quad \text{and } u_i \geq 0. \quad (1)$$

Here y_i is the output of the i^{th} firm, x_i the vector of non-stochastic inputs, ε_i the random error associated with y_i , and β is a vector of unknown parameters of the production function $f(\cdot)$. The random error ε_i is composed of two unobservable stochastic terms, v_i the statistical noise and u_i the *inefficiency error*. Since $u_i \geq 0$, $y_i \leq f^s_i(x_i, \beta)$, where $f^s_i(x_i, \beta) = f(x_i, \beta) + v_i$ represents the maximum possible output and is known as the stochastic production frontier of the i^{th} firm. In the simplest case, the component errors

v_i and u_i can be represented as independently distributed normals, but with u_i being truncated from below at 0. When equation (1) is estimated in logarithmic form, u_i would be the exponential inefficiency rate so that $100\exp(-u_i) \leq 100$ could be comparable to the relative efficiency percentage described earlier for the DEA method.

Applications to measuring microeconomic efficiency. As noted, on the supply side of IFS, one basic, but empirically difficult, distinction is between technical efficiency and allocative efficiency as recently reviewed in Brissimis, Delis, and Tsionas (2006). Allocative inefficiency may be due to failure at prevailing price relations to optimize the input mix given output, the output mix given inputs, or the effectiveness with which inputs are used given the best technology that is locally available. Such allocative inefficiency is more under the control of individual firms than the level of a country's technical efficiency and thus provides a cushion for adjusting to cost pressures. While it has been estimated that banks in Europe would gain about as much from better allocation of inputs (16%) as from reaching the highest global standard of efficiency (18%), the three co-authors (2006, pp.19-20) note that the use of individual inputs for particular bundles of financial services is still too little investigated.

Studies that do not decompose the measurement of inefficiency into its contributing factors yield a combined measure of the percentage by which financial institutions fall short of operating on the X-efficiency frontier by incurring costs higher than they would need to incur compared with local champions for whatever reasons. Thus, if overall cost efficiency were reported to be, say, only 50 percent for a financial institution, the implication would be that the most efficient comparator from the same country or region would be able to produce twice as much financial service output or revenue with the same inputs. Using this approach, a recent study by Kwan (2006), for instance, found cost inefficiency of 16-30 percent for the banking sector in Hong Kong 1992-99, similar to the average inefficiency level of U.S. and European banks relative to their respective champions, while Fu and Heffernan (2007) estimated a degree of inefficiency of 40-60 percent for banks on the Mainland for 1985-2002. The implications are that differences in the degree of inefficiency between banks, which may be state-owned and subsidized or private and competitive, and the average size of these inefficiencies are much greater in the Mainland than in Hong Kong or other world-class financial centers.

When financial backwardness is attributable to state control and financial repression or implicit government insurance or when there are quasi-private regulated or unregulated service monopolies in some lines of the financial business, there may be policy-induced economic inefficiencies. This assumes that scale economies have by and large been exhausted in developed financial systems — as Brissimis, Delis and Tsionas (2006, pp.16-7) estimate, although Blommestein (2006) reaches a different conclusion — so that regulated monopolies are not the “natural” outcome. In addition to the lack of domestic liberalization, there may be restrictions on foreign entry and other limits on internationalization and cross-border trade in financial services. Such deficiencies of competition policy could affect costs to business and consumers and the location of a country's technical efficiency frontier in the provision of financial services.

Quality differences. To the extent certain IFSCs function as market makers for their region's securities to its citizens and to the world, their microeconomic efficiency in performing this function has been analyzed by the liquidity, volatility, and relative absence of price anomalies or “bubbles” in their regional or national

securities market.¹² Liu and Yang (2005) have applied this approach to evaluate the microeconomic efficiency of the Shanghai market, giving it low marks on all these grounds. They found that, in that market, systematic risk is high as stocks show pronounced co-movement with a “political” factor.¹³ Price/earnings ratios are excessive, volatile, and bubble-prone in their view. They also find positive excess returns for small firms.¹⁴ On the other hand, bid-ask spreads are low compared with those in Hong Kong.¹⁵ Except for the last, these factors are not propitious for growing an offshore market. However, it is possible for inferior services and financial products to remain marketable indefinitely if they can be sold with normal profit at a discount sufficient to compensate clients for the lower quality.

6. The Outlook and Future Location for OFCs and IFSCs

As Tschoegl (2000, p.9) has noted, simple considerations of the cost of labor, land, and capital tells us little about the location of financial centers. Instead, international politics, domestic political stability and peace, suitable domestic regulation, the development of communications and aviation networks and the location of cities have all combined to favor some places and disfavor others. For instance, between the two World Wars, Shanghai was the premier financial center for Asia, and Hong Kong’s rise to prominence owes much to the intentional disabling of this once dominant financial center in 1949. When economics rather than politics is critical to the choice of location, natural start-up advantages and subsequently agglomeration effects and scale economies may be involved. There is, of course, a link from agglomeration back to politics because once an IFSC has acquired economic importance in a particular location, its interests, ably represented, and the government’s desire to protect and promote the IFSC’s reputation and growth of business also will have gained corresponding political weight.

Congested cities, such as Hong Kong, may especially welcome an environmentally clean service industry that requires only low levels of material supplies and utility inputs and relatively little ground area or plant and heavy equipment. Furthermore, the industry’s disproportionate reliance on ICT infrastructure and services and on systems for extensive training of a skilled workforce contribute to the development of quasi-public goods that can be used at very low cost by others without requiring costly investments in additional capacity. Somewhat less tangible benefits of concentrating in one place that are commonly mentioned include direct opportunities for socializing, exchanging (inside?) information, networking, and building trust and fellowship among the finance professionals who reside there and have the inside track in a large specialized job market. Tschoegl (2000) believes that the communications revolution that

¹² Bubbles may arguably occur even in the most advanced financial markets where stock market behavior is dominated by professionally managed financial institutions and there is prompt disclosure and verification of new information. Phillips, Wu, and Yu (2007), for instance, were able to confirm the technology bubble in the NASDAQ, and they date-stamped its origination (June 1995), peak (February 2000), and collapse (August 2001). However, bubbles are more likely to be sustained when markets are driven by “wild” rumors, or highly noisy information with positive error feedback, and by bandwagon behavior of uninformed investors.

¹³ Market reaction to China’s increase of the stamp tax on securities trading from 0.1 to 0.3 percent beginning May 30, 2007 once again showed the “political factor” in operation.

¹⁴ “Size”, however, is a “priced factor” also in the United States, with “small” stocks having higher average returns than other stocks. See Cochrane (2005), p.16.

¹⁵ A referee has pointed out that this is due to cartelization of the local stock broking industry in Hong Kong.

has minimized the economic significance of distance or *space* has not equally diminished the importance of *place*. He dismisses the widely-held thesis of “the end of geography,” such as that reflected in Kaufman (2000, p.9), that acceleration of advances in telecommunications and computer technology in recent years is likely to further reduce the need for physical and permanent IFSCs. Yet the communities and close contacts of top IFS professionals are increasingly global as many of them appear to be in perpetual motion in part for the benefit of clients.

Blommestein (2006) discerned two opposing tendencies at work. Having global communications available at negligible cost indeed has made some lines of the financial service business entirely footloose in that it has no attachment to place. Rather, where it happens to take place is dictated solely by current cost considerations, and there is no habit persistence or other source of hysteresis that could slow relocation. If a particular line of the financial business is subject to economies of scale in service production but also to diseconomies of distance (see Rose and Spiegel, 2005), the business could tend to become more concentrated by location when distance costs fall. Remote locations then can be serviced 24 hours a day at lower cost from a central place.¹⁶ On the other hand, centers of activity selected to perform certain low value-added financial services, such as routine credit card billing, and various payment processing, recording and accounting services increasingly may be established in, and dispersed over, remote locations. In the United States, for instance, they may go to South Dakota and Buffalo and then be dispersed over Central American and Asian locations, and not be concentrated in existing international financial centers like New York City. If scale economies are not pervasive, there may be fragmentation not just between but even within lines of business by geography.

On the other hand, high-value added financial services have to address increasingly complex and long-horizon financial management tasks in close and intimate collaboration with clients. These clients require frequent personal, often face-to-face, contact and almost instant, practically in-house, availability. As GHK (2007, p.50 (4.20)) has observed, market participants generally prefer to conduct financial activities at “home.” They expect prompt execution and settlement during local business hours and under their national legal and accounting system even though universal rules, standards, and protocols may apply. Hence, footloose international financial services and sticky such services that cling to established relationships between IFSCs and their individually distinctive clients will co-exist.

Although Blommestein considered the future of banking and not of IFSCs as a whole, his perspective is valuable for gauging the outlook for the latter, and what aspects of their business remain reasonably secure and potentially growing. His main thesis is that the product-driven financial supermarket model and the bancassurance model of providing “full in-house service” both need to be revised. Instead, a relationship-cum-market-based banking and finance system is emerging in which specialized financial engineering development and applications for clients and the integration of products and services from outside suppliers play a greater role than before. With this open architecture, the share of fee income will grow. His supporting arguments can be summarized as follows:

¹⁶ In favor of keeping China-related IFS business in Hong Kong rather than having it go to centers in different time zones, it has been argued that “given the large scale of China’s international financial activities, the payment and settlement risks could be rather significant if such were to be conducted in an international financial centre located within a different time zone” (GHK, 2007, p. 45 (4.07)). In fact, however, the development of globally accessible RTGS and continuously-linked settlement systems have made “Herstatt” risk largely a thing of the past.

- Credit scoring and online loan processing, loan securitization, and other ICT advances have eroded banks' traditional informational advantages in relationship banking. The scope of offshore banking activities expands as financial institutions can act less locally and more globally as local knowledge becomes more public and accessible from distant locations. In addition, lower costs for the creation, processing, and co-ordination of information have led to the strategic decision to outsource and offshore production and distribution activities.
- The shift in demand away from bank deposits toward debt and equity securities in some bank-packaged, bank-managed or otherwise intermediated form may favor offshore banking by making its cost of funds as low as that of onshore banks even without the assist of tax considerations. The strong link to capital markets in the new hybrid-type (relationship-cum-market) banking system may work in the same direction of making offshore and onshore banking products similar and subject increasingly to the same international regulatory and disclosure standards.
- However, as individuals are obliged to take more responsibility for their life-cycle decisions (education, work, savings, health insurance, retirement, estate planning) and live longer, banks are called upon to develop a new form of life-cycle relationship banking and financial advising and assist with risk management. A physical presence and face-to-face contact still may be necessary to develop this long-term relationship and to build reputation and trust with clients.
- Economies of scale have turned out to be more important than economies of scope: Full-service financial groups of the bancassurance mode will be replaced by highly adaptable but focused groups offering a more limited range of particular core services, while non-core business is being outsourced, or run or pooled through joint ventures and partnerships. Even some large monolines have developed in segments such as securities processing and retail. On the other hand, there are incremental diversification benefits from mergers between banks and life insurance, and even more P & C insurance, companies so that scale economies and diversification benefits both drive M & As.

Similar views appeared earlier in a report on the future of financial services by PricewaterhouseCoopers (2005, see Chapter 1: Demographics; Chapter 2: Economic Cycle). Regarding relationship-based provision of financial services, the report (p.5) notes that "many institutions will spend the rest of the decade positioning themselves to meet the demand for long-term savings products and for life-cycle wealth management services. Branding, product mix, and customer service and performance metrics must all support the goal of building a long-lasting and multi-faceted relationship with the customer." With regard to the industry response to new competitive challenges and structural change, the report (p.6) anticipates that "rising competitive pressures will force institutions to differentiate themselves more aggressively, whether through their product mix, their market focus, or their branding proposition. Conglomerate structures will wear less well than competency-led ones. Cost efficiency will remain key: Expect a further acceleration in the outsourcing of non-core functions ... as institutions seek to increase the efficiency of back-office processes."

Hence two, quite distinct, sustainable strategies for developing competitive advantage, differentiation and cost efficiency, first identified by Porter (1985), are at work in reshaping the financial services industry. On the one hand, the search for cost efficiency leads to simplification and standardization, as for instance,

through the use of index products and passive (computer-driven) screening techniques in asset management to drive down cost (see Moles, 2006). On the other hand, particularly in private banking and in dealing with high net-worth individuals, fee-intensive differentiation through customization is the key to competitive success. Fragmentation of production is becoming almost as pronounced in international financial services as it has been in manufacturing for some time. But, unlike in manufacturing where, outside certain marketing alliances, cross-selling is still not common, employees of IFS firms do not limit their offering to clients to the menu of financial products put out by their own firm. Hence, what keeps international financial services, as a profit- and employment-generating value-added activity, tied to a particular location is a troubling, but unavoidable, question for any metropolis that seeks to keep or attract a substantial share of IFS activity. As advice and long-term personalized financial service to wealthy entrepreneurs and high net-worth individuals become the profit driver, the answer increasingly may have to do with what attracts such individuals to a particular location and keeps them there by causing them to bond with it in a civic-minded way.

7. Conclusion

While global sourcing will affect many individual and fairly routine financial service products, there is still the need to configure and co-ordinate this supply chain and then to integrate it into customized service delivery and long-term management for particular clients. Such enduring relationships are not made entirely in the thin air of e-space, but require a convivial time and place to flourish. From a business development perspective the next question, of course, is what a location can do to make itself more convenient and attractive to clients than actually or potentially competing locations. For planning such steps concretely, the check list that is Table 1 provides some general directions to areas which might be strengthened.

There are some evolutionary trends that favor, and others that disfavor, offshore finance and making financial services, including consultancy services, more suitable for cross-border delivery without the need for a foreign presence. The protections previously provided by the hysteresis in economic geography that is due to agglomeration effects may be weakening as electronic network groups and platforms, including proprietary networks and virtual “communities,” may replace physical togetherness in one place. Yet policy and management responses to a loss of business by and from a particular location may be fierce. Economically, this may give the appearance of downward inelasticity of supply of financial services in a particular location, in particular if there are allocative inefficiencies that can be reduced under pressure to maintain competitiveness.

The McKinsey (2007) report portrays the battle for market share as a turf battle between the United States (New York), Europe (London), Japan (Tokyo), and rest of Asia-Pacific that is to be fought with conventional weapons such as tax incentives and the lowering of regulatory requirements and litigation risks. It provides little evidence on the determinants of growth or shrinkage of different lines of financial services in a particular location or on their location-specificity and attachment to each other. It also does not detail the effects of competition from new means of communication and interaction without a defined geographic presence that have opened up. In addition, global consistency and regional coherence have not been established for whatever projections for the various lines of the financial service business

are available for individual cities around the world. In a global competitive environment, what public/private strategies promise to be most profitable and sustainable to keep and grow ever-changing configurations of financial-business functions? Developing the conceptual, theoretical, and estimation framework, and identifying and structuring the analytical models, tools and data to be used for a comprehensive competitiveness and outlook assessments could provide critical information inputs to answer this question for a particular location. This paper is intended to motivate and help structure such research by outlining the difficult issues that will have to be addressed.

References

- Bank for International Settlements (cited as BIS) (2006a), *Report on International Developments in Banking Supervision*, Basel Committee on Banking Supervision Report No.15, September.
- BIS (2006b), *Core Principles for Effective Banking Supervision*, Basle Committee on Banking Supervision, October.
- Blommestein, Hans J. (2006), *Visions About the Future of Banking*, SUERF Studies 2006/2.
- Bossone, Biagio, Patrick Honohan and Millard F. Long, (2002), "Policy for Small Financial Systems," in Caprio, Honohan, and Vittas: 95-119.
- Brissimis, Sophocles N., Matthaïos D. Delis and Eftymios G. Tsionas (2006), "Technical and Allocative Efficiency in European Banking," Bank of Greece Working Paper No.46, September.
- Caprio, Gerard, Honohan, Patrick and Dimitri Vittas (2002), *Financial Sector Policy for Developing Countries: A Reader*, World Bank and Oxford University Press.
- Cheung, Yin-wong, Dickson Tam and Matthew S. Yiu (2006), "Does the Chinese Interest Rate Follow the U.S. Interest Rate?" HKIMR Working Paper No.19/2006, December.
- Cochrane, John H. (2005), "Financial Markets and the Real Economy," *Foundations and Trends in Finance*, 1:1.
- Fu, Xiaoqing (Maggie) and Shelagh Heffernan (2007), "Cost X-Efficiency in China's Banking Sector," *China Economic Review*, 18(1): 35-53.
- Genberg, Hans (2005), "External Shocks, Transmission Mechanisms and Deflation in Asia," BIS Working Paper No. 187, Monetary and Economic Department, November.
- Gordon, Daisy (1998), "Strong Hand of the State: Redirecting Asian Capital Flows," *Stanford Journal of International Relations*, 1(1) http://www.stanford.edu/group/sjir/1.1.05_gordon.html.
- Government of Hong Kong SAR, Central Planning Unit (cited as GHK) (2007), *Our Way Forward: Financial Services*, Report on Economic Summit on "China's 11th Five-Year Plan and the Development of Hong Kong" (Attachment B).
- HKIMR/BIS/CEPR (2006), *Bond Market Developments in a Comparative Perspective: Asia, Europe, Latin America*, Hong Kong: Conference Dec. 18-19.
- Hausmann, Ricardo, *et al.* (2000), "Financial Turmoil and the Choice of Exchange-Rate Regime," in Eduardo Fernández-Arias and Ricardo Hausmann, eds., *Wanted: World Financial Stability*, Washington, D.C.: Inter-American Development Bank: 131-64.

- Honohan, Patrick and Dimitri Vittas (2002), "Financial Networks and Banking Policy," in Caprio, Honohan, and Vittas: 205-26.
- Huang, Yiping (2005), "Can Hong Kong Survive as an International Financial Center?" in Park, Ito, and Wang, eds.: 194-209.
- International Monetary Fund (cited as IMF) (2006), People's Republic of China – Hong Kong Special Administrative Region: Staff Report for the 2006 Article IV Consultation Discussions, November 27.
- Ito, Takatoshi, Yung Chul Park and Yunjong Wang (2005), "Introduction: A New Financial Market Structure for East Asia," in Park, Ito and Wang, eds.: 1-16.
- Jao, Y.C. (2003), "Shanghai and Hong Kong as International Financial Centers: Historical Perspective and Contemporary Analysis," School of Economics and Finance, Hong Kong University.
- Jefferson, Gary H., Albert G. Z. Hu and Jian Su (2006), "The Sources and Sustainability of China's Economic Growth," *Brookings Papers on Economic Activity*, (2): 1-47, references 59-60.
- Jeon, Jongkyou, Yonghyup Oh and Doo Yong Yang (2006), "Financial Market Integration in East Asia: Regional or Global?" *Asian Economic Papers*, 5(1): 73-89.
- Jin, Ngiam Kee (2005), "Recycling Asian Savings within the Region: The Role of Singapore," in Park, Ito, and Wang, eds., 210-28.
- Kaufman, George G. (2000), "Emerging Economies and International Financial Centers," Draft, Loyola University and Federal Reserve Bank of Chicago, dtd. 11/13/00.
- Kumbhakar, Subal C. and C. A. Knox Lovell (2003), *Stochastic Frontier Analysis*, Cambridge: Cambridge University Press, paperback edition.
- Kwan, Simon H. (2006), "The X-Efficiency of Hong Kong Banks," *Journal of Banking and Finance*, 30(4): 1127-47.
- Lai, Karen (2006), "Developing Shanghai as an International Financial Centre: Progress and Prospects," The University of Nottingham (UK) China Policy Institute, Discussion Paper 4.
- Lessard, Donald R. and Adrian E. Tschoegl (1988), "Panama's International Banking Center: The Direct Employment Effects," *Journal of Banking and Finance*, 12(1): 43-50.
- Liu, Hongzhong and Changjiang Yang (2005), "The Re-Emergence of Shanghai as a Financial Center in China's Financial System," in Park, Ito, and Wang, eds. 353-81.
- Ma, Guonan and Robert N. McCauley (2008), "The Efficacy of China's Capital Controls – Evidence from Price and Flow Data," *Pacific Economic Review*, forthcoming.

- McCann, Hilton (2006), *Offshore Finance*, Cambridge, UK: Cambridge University Press.
- McKinsey & Co. for Michael R. Bloomberg and Charles E. Shumer (2007), *Sustaining New York's and US' Global Financial Services Leadership*, January.
- Moles, Peter (2006), "Developing Sustainable Competitive Advantage in Asset Management," *Journal of Financial Transformation*, 18: Finance Factory, November: 29-33.
- Park, Yung Chul, Takatoshi Ito and Yunjong Wang (2005), *A New Financial Market Structure for East Asia*, Cheltenham: Edward Elgar.
- Phillips, Peter C. B., Yangru Wu and Jun Yu (2007), "Explosive Behavior and the Nasdaq Bubble in the 1990s: When did Irrational Exuberance Escalate Asset Values?" Cowles Foundation for Research in Economics, Yale University, Draft dtd. January 8.
- Porter, Michael E. (1985), *Competitive Advantage: Creating and Sustaining Superior Performance*, New York: Free Press.
- PricewaterhouseCoopers (2005), *Piecing the Jigsaw: The Future of Financial Services*.
<http://www.pwc.com>.
- Rose, Andrew K. (2006), "A Stable International Monetary System Emerges: Inflation Targeting is Bretton Woods, reversed," Revised draft dtd. November 15, presented at the Shanghai Forum 2007, May 26.
- Rose, Andrew K. and Mark M. Spiegel (2005), "Offshore Financial Centers: Parasites or Symbionts?" Federal Reserve Bank of San Francisco Working Paper 2005-05.
- Tschoegl, Adrian E. (2000), "International Banking Centers, Geography, and Foreign Banks," *Financial Markets, Institutions & Instruments*, 9(1): 1-32.
- von Furstenberg, George M. (2007), "The Economics of Offshore Financial Services and the Choice of Tax, Currency, and Exchange-Rate Regimes," *Journal of Financial Transformation*, 19, Monetary Union, April: 49-64.
- Welch, Peter (2006), "Measuring Efficiency in the Finance Factory: Time for a Rethink," *Journal of Financial Transformation*, Vol. 18, Finance Factory, November: 51-60.
- Zhang, L.-Y. (2003), "Economic Development in Shanghai and the Role of the State," *Urban Studies*, 40: 1549-72.
- Zhao, S. X. B., Z. Li and D.T. Wang (2004), "Determining Factors of the Development of a National Financial Centre: The Case of China," *Geoforum*, 35: 577-92.

Table 1. Requirements for Successful OFCs and IFSCs

A. Macroeconomic Prerequisites
A-1. Free international capital flows with all (for IFSCs), or at least special zones (for OFCs), of a country, and remote access from and to its foreign suppliers and clients
A-2. Absence of domestic interest rate controls to allow financial-product development
A-3. Stable exchange rates, low inflation, and freedom of currency substitution
A-4. Fiscal-system and sovereign-debt sustainability
A-5. Domestic tranquility, labor peace, and low levels of crime, fraud, and corruption and of business in furtherance of financial and other crimes or tax evasion
B. Physical and Institutional Infrastructure Requirements
B-1. Excellent ICT, transportation, and amenities systems and public provision of accurate financial information and ratings; appropriate use of privacy safeguards
B-2. Advanced listing and exchange systems, efficient OTC and organized-exchange trading platforms and/or trading privileges on foreign exchanges
B-3. Efficient settlement procedures for payments and for trades in stock, bond, and derivatives markets that are up to international standards
B-4. A strong legal system, including property rights, contract enforcement, functioning court system, bankruptcy processes, and international accounting and auditing rules
C. Ability to Meet Human Capital Requirements
C-1. Availability of well-motivated and sophisticated bankers and their regulators/supervisors and of analytical and managerial support staff critical for financial services
C-2. A favorable living environment and free entry for expatriates employed in the financial-service sector, — conditions that lower the cost of imported talent
C-3. A large talent pool and widespread competence in English
C-4. A tradition of professionalism and honesty in the host country or jurisdiction
D. Industry Prerequisites
D-1. Economically strong and credible financial institutions with free foreign entry
D-2. A large complement of other financial businesses and of those who serve them
D-3. Minimum bank and securities regulation except prudential
D-4. A critical mass of financial activity to achieve economies of scale and scope
D-5. A high degree of efficiency by international standards in financial trading and engineering, intermediation and settlements, risk transformation, and underwriting