

**Competing for a Share of Global Derivatives Markets:
Trends and Policy Choices for the United States[♣]**

Darrell Duffie^{*} and Henry T. C. Hu[♦]

Draft: June 3, 2008^{**}

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** This draft is substantially identical to the draft of February 19, 2008 and speaks as of that date.

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Competing for a Share of Global Derivatives Markets: Trends and Policy Choices for the United States*

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* Copyright © 2008 by Darrell Duffie and Henry T. C. Hu. We have benefited from numerous interviews with market participants in the U.S. and in Europe (including interviews on a no-name basis), but have relied primarily on our analysis of publicly available data and scholarly literature. We are grateful for conversations with, or other help from, Brandon Becker, André Cappon, Alexis Collomb, Paola Galardo, Jeff Golden, the International Swaps and Derivatives Association, Guy Manuel, Stephan Mignot, Kenneth Raisler, and others who prefer to remain unnamed. We are especially grateful for excellent research assistance by Sandra Berg, Linda Bethel, Mark Ditto, Kate Doty, Nicole Goh, Ryan Gorsche, Cliff Gray, Katie Grey, Anthony Kaim, David McClure, Jane O'Connell, Rachael Solomon, and Scott Vdoviak. We are grateful to the Committee on Capital Markets Regulation for research funding, and look forward to receiving comments and suggestions from the Committee and other readers. Opinions expressed in this study are solely those of the authors, and do not necessarily reflect the views of the Committee.

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I. INTRODUCTION

The derivatives markets have been the most dynamic of all financial markets for more than a generation. Exchange-traded derivatives markets, active in the U.S since the 19th century, began an exceptional period of growth and innovation with the introduction of futures and options on financial instruments in the 1970s. Swaps and other over-the-counter (OTC) derivatives only arose in the late 1970s, yet by mid-2007 accounted for notional positions totaling \$516 trillion.¹

Derivatives are central to the global economy. Corporations, hedge funds, individuals, institutional investors, mutual funds, and sovereigns use derivatives to hedge against – or speculate on – changes in the prices of commodities, credit, currencies, equities, and interest rates. Major banks and other financial institutions offer derivatives as dealers and use derivatives for their own risk management and proprietary trading. Financial innovation finds its fullest expression in the market for OTC derivatives.

Our main goals in this paper are to identify trends and some of the policy alternatives that may enhance the efficiency and location advantages of U.S. derivatives markets. Our perspective is not that of a zero-sum game, in which moving derivatives market activity from abroad to the U.S. is a policy goal in its own right. For example, penalizing derivatives services

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provided abroad by U.S. banks could increase U.S.-based derivatives activity but would be undesirable.

In *Section II*, we outline the importance of active and efficient U.S. derivatives markets. High-quality jobs are at stake. Financial services make up the third-largest sector of the U.S. economy and are especially important to such cities as New York and Chicago. In the Bureau of Labor Statistics jobs category that is most directly related to derivatives, employment in New York City in 2006 had 4.5 times the national concentration of these jobs.² The health of the financial services market has significant ramifications for the rest of the economy. More broadly, leadership in financial innovation and in the provision of derivatives-market services is material to the influence of the United States in international economic affairs.

In *Section III*, we analyze the status and efficiency of U.S. derivatives-market service providers. The U.S. was dominant in the early years of the modern derivatives industry. Important new financial products were typically invented and introduced here. Essential conceptual developments, especially the celebrated financial engineering framework of Fischer Black, Myron Scholes, and Robert Merton, were largely the province of American universities and financial institutions. The U.S. now shares its dominant position with Europe, and in particular with the United Kingdom. Challenge from Asia looms.

Our analysis suggests that the status of derivatives markets in the U.S., in absolute terms and relative to those abroad, is not as adverse as some have suggested. The U.S. has long been dominant in the market for exchange-traded derivatives, and although this market is undergoing dramatic changes, U.S. exchanges should continue to be well positioned. U.S. players in the OTC derivatives market are not as dominant, but U.S. strengths remain notable, especially in volume terms. Some observers, however, believe that London has taken over as the leading breeding ground for more innovative and higher-profit-margin products.

A tight focus on the relative status of the U.S. derivatives markets would be too narrow. The efficiency of the U.S. derivatives markets, as well as that of other markets, bears consideration. Recently, it has become clear that U.S. and non-U.S. financial institutions have made serious errors in developing, pricing, and risk managing structured credit products, particularly CDOs and related derivatives. Recent writedowns associated with securitizations and credit derivatives, currently estimated at over \$150 billion among financial institutions alone,³ inspire little confidence. These weaknesses as well as documentation problems associated with equity and credit derivatives, and other derivatives-related concerns, also contribute to systemic risk.⁴

In *Section IV*, we discuss factors that play a role in determining where a provider of derivatives services is located and where a derivatives trade is made. By far the dominant factors are the regional concentration of customers and overall financial market activities. (*Section IV(A)*) Large positive externalities are associated with the co-location of similar or complimentary economic activities. For financial services firms in London and New York, as for high-tech entrepreneurs in Silicon Valley, co-location reduces informational and other transaction costs, concentrates the pool of talented specialists in management and technology, and contributes to the development of crucial personal and organizational relationships.

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Derivatives market activities are naturally drawn to locations at which the underlying assets are predominantly traded, and to where customers, dealers, financial services providers, and related professional-services providers already do business. Especially in the OTC derivatives markets, being able to interact with customers in person or by phone is considered important. We were repeatedly reminded of the convenience of London's time zone for European and Asian customers. Because many derivatives activities are closely tied to financial activities generally, the presence of a deep and stable international banking community is critical.

Co-location factors are not the sole determinants of location. A domicile's regulatory, legal, accounting, and tax environments, as well as the availability of a work force of highly specialized personnel, can tip the balance. The global-currency status held by both the U.S. dollar and the euro also plays a role.

Among these, we turn first to regulatory and legal factors. (*Section IV(B)*) Fragmentation in the U.S. regulation of financial institutions, exchanges, and products is almost surreal. U.S. Treasury Secretary Henry Paulson has initiated a comprehensive review of financial market regulation. The Treasury Department has requested comment on the possibility of a single financial market regulator, in the spirit of the U.K.'s Financial Services Authority (FSA), and on the possibility of adopting a more principles-based, and less rules-based, approach to regulation. We applaud this reexamination, and direct attention to several derivatives-related regulatory matters:

- (a) *Regulatory factors play a smaller role in the derivatives market than in the market for equities.* For example, because of the Commodity Futures Modernization Act of 2000 (CFMA), OTC derivatives products are now substantially unregulated.
- (b) *Regulatory "turf" battles continue to hinder innovation.* For instance, in 2007, conflict between the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) led to delays in the introduction of exchange-traded credit derivatives in the U.S. and a corresponding first-mover advantage for a European derivatives exchange.
- (c) *At least in the area of derivatives, U.S. financial regulators now rely in material ways on a principles-based approach to regulation.*
- (d) *Legal risks from derivatives-related activities in the U.S. outweigh those in the U.K.* The intensity of enforcement by U.S. financial regulators dwarfs that of the FSA. The United Kingdom, moreover, has no securities class actions.
- (e) *Although U.K. financial regulators are generally less interventionist than U.S. financial regulators, there are important derivatives-related exceptions.* U.K. financial regulators have, for instance, required more disclosure with respect to the acquisition of large ownership stakes through derivatives positions.

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(f) *Cost-benefit analysis plays a more peripheral role at the SEC than it does at the FSA.*

Effective accounting is essential to investment decisions and to corporate governance. Derivatives pose special challenges. (*Section IV(C)*) Some derivatives are difficult to value. Derivatives can “morph” into the substantive forms of many types of financial instruments or strategies in a way that is not transparent to conventional “book-value” accounting standards. We discuss important policy tradeoffs associated with fair-market valuation, hedge accounting standards, and the convergence of accounting standards established by the Financial Accounting Standards Board (FASB) used in the U.S. and those of the International Accounting Standards Board (IASB) used in various forms in peer jurisdictions.

Tax burdens and costs of living play obvious roles in location planning. (*Section IV(D)*) New York is a less expensive city than London in which to live. It appears that tax burdens (broadly conceived) on financial services firms are higher in New York than in London, while tax burdens on employees of these firms are modestly higher in London than in New York.

There are strong advantages for locating derivatives market activities in cities that already have, or can attract, a large number of individuals with significant post-graduate training in science or mathematics. (*Section IV(E)*) Because of free migration in the European Union and because of London’s attractiveness as a city, London has access to a large pool of individuals with the skills necessary for the structuring, pricing, and risk management of derivatives. A low fraction of the highly quantitative Ph.D.’s produced by U.S. schools is native-born, although there is nevertheless a significant talent pool resident in the United States. The U.S. has recently had to compete for highly specialized human resources internationally, but at the same time has imposed more onerous procedures for obtaining visas and permanent-resident status.

In Section V, our report concludes with our one affirmative recommendation and a brief review of our findings. An analysis of the effectiveness of the various policy alternatives that we outline is beyond the scope of this report.

We advocate the development of a dataset bearing on the co-location advantages of financial services firms within the U.S., particularly in and near New York City, along with data pertinent to related human resources. (*Section V.A*) The data should incorporate measures of concentrations of each of several types of financial services, as well as related primary location factors. These location factors include concentrations of customers and of related professional services, corporate and individual tax burdens for financial services firms and professionals relative to those of competing financial centers, as well as measures of attractiveness from the viewpoint of residence. Special attention should be paid to timely information on the availability of, and roadblocks to the availability of, qualified financial services professionals as well as scientists and others with advanced quantitative skills.

Without these data, it will be difficult to judge where and how efforts can be made to effectively exploit and improve U.S. co-location synergies. We suspect these synergies are the primary determinants of new location decisions by derivatives services providers – and by financial services providers generally. The dataset that we propose could also be used to publicize the attractiveness of the United States as a location of choice. With corresponding

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goals, the City of London appears to have already invested in the development and maintenance of a corresponding dataset.

II. THE IMPORTANCE OF U.S.-DOMICILED DERIVATIVES MARKETS

A. Overview of Benefits

Active and efficient U.S. derivatives markets matter. They contribute to general economic growth, the availability of rewarding jobs, and the attractiveness of the U.S. as a venue for financial-market services generally. Significant participation in financial markets has the spillover benefit of enhancing U.S. influence in the shaping of worldwide rules for accounting, banking, securities, and trade. These benefits aside, a leadership role in one of the world's most vibrant and important knowledge-based industries contributes to sustaining U.S. prestige, and the attendant benefits.

Access to a deep and rich set of derivatives markets offers individual Americans, U.S. corporations, and government entities the opportunity to manage risks appropriately to their investment objectives, generally resulting in an improved allocation of financial risk and real investment. For example, a U.S. manufacturer may be more willing to participate in foreign markets if given the opportunity to lay off foreign-exchange risk, or to borrow funds for a long-term capital investment if given the opportunity to offset interest-rate risk. Although perfect-markets theory tells us that the mere transfer of financial risk by publicly held corporations has no real economic benefits, a host of market imperfections, including financial distress and principal-agency costs, imply that derivative hedging strategies can sometimes offer significant gains in real economic efficiency. Derivatives markets also offer substantial benefits through "price discovery." For example, credit derivatives markets have recently provided an important new window on borrower credit quality. Options markets reveal information about investors' expectations of future changes in prices and price volatility. Better price discovery leads to more efficient real economic decisions.

American investors and corporations can obtain these risk-management, price-discovery, and asset-class benefits from derivatives markets located in any financial center, U.S. or foreign. This report is not focused uniquely on the U.S. share of the derivatives-market pie. We are concerned with how policy can improve or detract from the general efficiency of global derivatives markets. U.S. policy makers can play a significant role in this respect.

B. Direct Economic Benefits

High-quality jobs constitute an especially important and concrete benefit flowing from vibrant U.S. derivatives markets. An examination of factors determining employment in derivatives markets inevitably addresses the entire financial services sector, which accounts for a significant level of U.S. economic activity. As we argue in Section IV, the degree to which U.S. derivatives markets are active contributes to the attractiveness of the U.S. as a venue for financial market services generally. The Centre for Economic and Business Research (CEBR) estimates⁵ that U.S. wholesale financial services grew by about 76% between 1997 and 2006, and have represented approximately 37% of global activity in this sector at both the beginning and end of

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this decade. By this measure, America leads the world and its lead has not been diminished. More important than the fraction of global activity, however, is the magnitude of the value added to the American economy. The Bloomberg-Schumer study⁶ reports that financial services form the third-largest sector of the U.S. economy, accounting for approximately 8% of U.S. gross domestic product. Financial services are also important to U.S. exports. The U.S. share of global financial services exports has grown from 12.6% in 1995 to 19.7% in 2004, according to CEBR estimates.⁷

Job statistics specific to the derivatives industry are difficult to obtain. The United States Bureau of Labor Statistics breaks employment in the financial services arena into three buckets: Credit Intermediation (NAICS 522), Securities and Commodities Contract Brokerages & Other Financial Services (NAICS 523), and Insurance Carriers and Other Activities (NAICS 524). Category NAICS 523 includes services related to stocks, bonds, commodities brokerage and exchanges, investment banking, portfolio management, and investment advice. Although category NAICS 523 includes a range of financial service jobs, it is the category of national employment statistics that comes closest to derivatives-market jobs.⁸

Employment in derivatives market activities is crucial to the economies of certain U.S. cities, especially those of Chicago and New York. As of 2006, employment in Chicago was 96% more concentrated in category NAICS 523 than was the national concentration of these jobs, according to the Chicago Federal Reserve.⁹ In New York City, employment in this sector had 4.5 times the national concentration.

Figure 1 shows the cumulative growth in NAICS-523 employment in New York City from 1999 to 2006, based on data from New York State Department of Labor. This chart also provides a comparison with the growth path of London's "City-type" jobs in financial services, based on data from International Financial Services, London (IFSL). Although the patterns of growth and decline of employment in both financial centers are in tandem with general activity trends in global capital markets, London has managed a higher overall employment growth path. This may be a matter of concern to policy makers with a mandate for fostering American job growth.

Employment in the securities industry has spillover benefits. For example, Schwabish (2005) estimates that a 10 percent decrease in New York City securities industry employment would depress employment in the retail, services, and restaurant sectors by more than 1 percent; in the business-services sector by about 4 percent; and in total would reduce private-sector jobs by about 1 percent.¹⁰ The absolute number of jobs is high, and thus so are the consequences. New York State Department of Labor data show employment of 191,000 in New York City in the category "Securities, Commodities Contracts, and Other Financial Investment and Related Activities," as of October, 2007. Nationally, according to the latest (2004) data available from the U.S. Bureau of Labor Statistics, 281,000 were employed as "securities, commodities, and financial services sales agents" and 197,000 were employed as financial analysts.¹¹

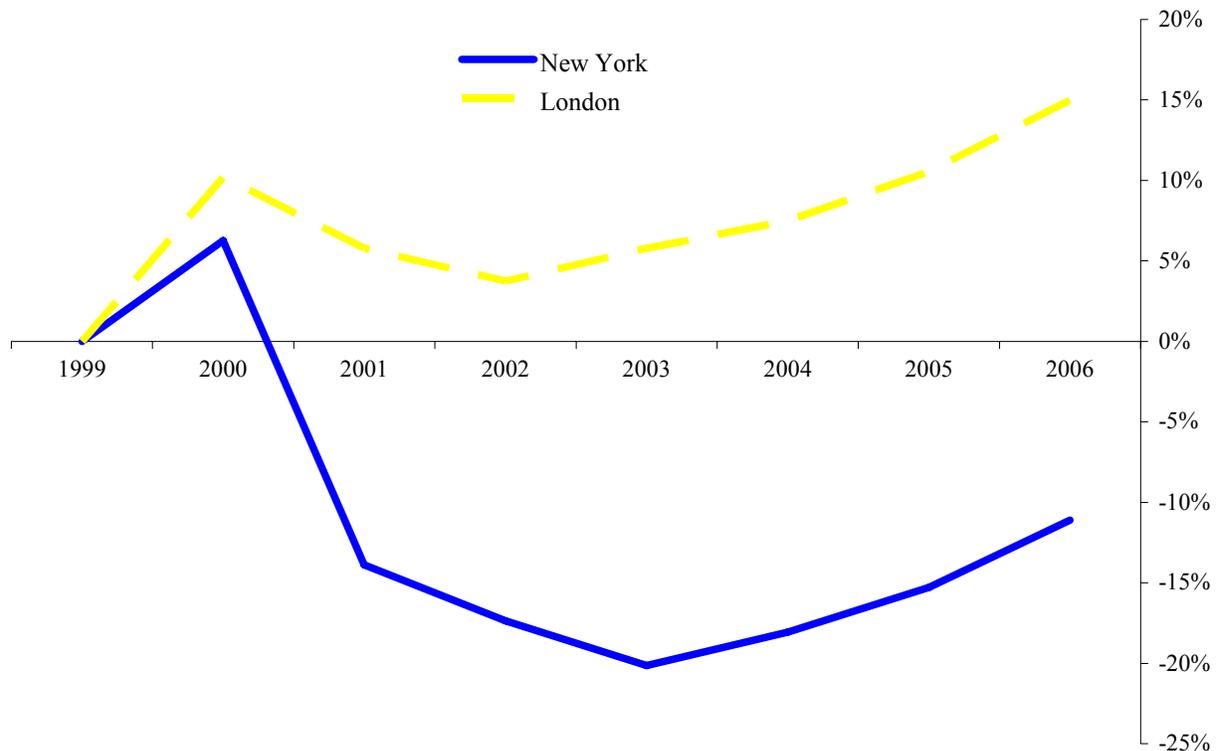
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III. TRENDS IN THE LOCATION OF DERIVATIVES MARKET ACTIVITY

Much of the recent policy-related commentary¹² assumes or asserts a significant across-the-board migration of derivatives market activity away from the U.S. and toward London. While there is indeed cause for concern on some fronts, the actual statistical record does not support the presumption of such a general migration. We provide some of the available data, focusing on some trends that are material for policy choices. We are especially interested in U.S. market activity in the innovative, higher-margin, segments of the market for derivatives services.

Figure 1. Employment in Financial Services Related to Derivatives (Cumulative Growth)

Source: New York Employment in Securities and Commodity Contracts, New York Department of Labor. Central London "City-type" jobs in financial services, IFSL from data provided by ONS Annual Business Inquiry and CEBR.



In terms of exchange-traded derivatives, trading volumes at U.S. exchanges have been higher than those at European exchanges throughout the period 2001 to 2007, according to the quarterly reports of the Bank for International Settlements (BIS). The Chicago Mercantile Exchange (CME) is the world's dominant derivatives exchange, and seems likely to remain so. However, the significance of this leadership in exchange-traded derivatives may be less than it first appears. The vast majority of exchange-traded derivatives trading is now conducted electronically from desks around the world. This makes it relatively difficult to attribute to

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particular domiciles the benefits associated with the volume of trading on a particular exchange. The increasing number of cross-border exchange mergers makes such an attribution even more difficult.

In terms of OTC derivatives, from 1998 to 2007 the U.S. has maintained its worldwide market share of trading in traditional OTC derivatives (specifically, currency and interest-rate derivatives). As for more innovative derivatives, the U.S. share of trading varies by product. The U.S. share of the total worldwide credit derivatives market has been roughly constant in the period 2002 to 2006, while the U.K. share has declined significantly. In terms of OTC commodity and equity derivatives, direct volume data are not available. Judging from the shares of these markets held by U.S. commercial banks, however, it seems likely that over the period 2000 to 2007 the U.S. share of the OTC commodity derivatives market has increased, while its share of the OTC equity derivatives market has declined significantly. The U.S. remains the leader in the issuance of structured credit products such as CDOs, but worldwide CDO issuance has dropped dramatically with the sub-prime credit crisis of 2007-2008, as shown in Figure 2.

Qualitative data, including from our own interviews, offer a somewhat more adverse picture for the U.S. in three respects. *First*, market participants believe that there is greater relative demand in London for more highly engineered products. These products have higher dealer margins, enhance a dealer's reputation for innovativeness, and are often associated with follow-on financial services. Although banks headquartered in the U.S. are generally among the leading developers and distributors of innovative products, a significant fraction of their business in these products occurs in London. *Second*, in the area of OTC equity derivatives, market participants generally believe that banks headquartered in Europe, particularly Société Générale, are dominant. Société Générale's standing has presumably been weakened by its recent equity-derivatives-related rogue-trading scandal. *Third*, the distribution among dealer firms of awards by RISK (a publication widely followed in the derivatives industry) shows a modest trend over time toward increasing leadership for banks headquartered in Europe. These judgmental, interview-based awards, summarized in Appendix II, provide some judgment-based evidence of the geographic distribution of leadership in the provision of derivatives market services.

A. Exchange-Traded Derivatives Volumes

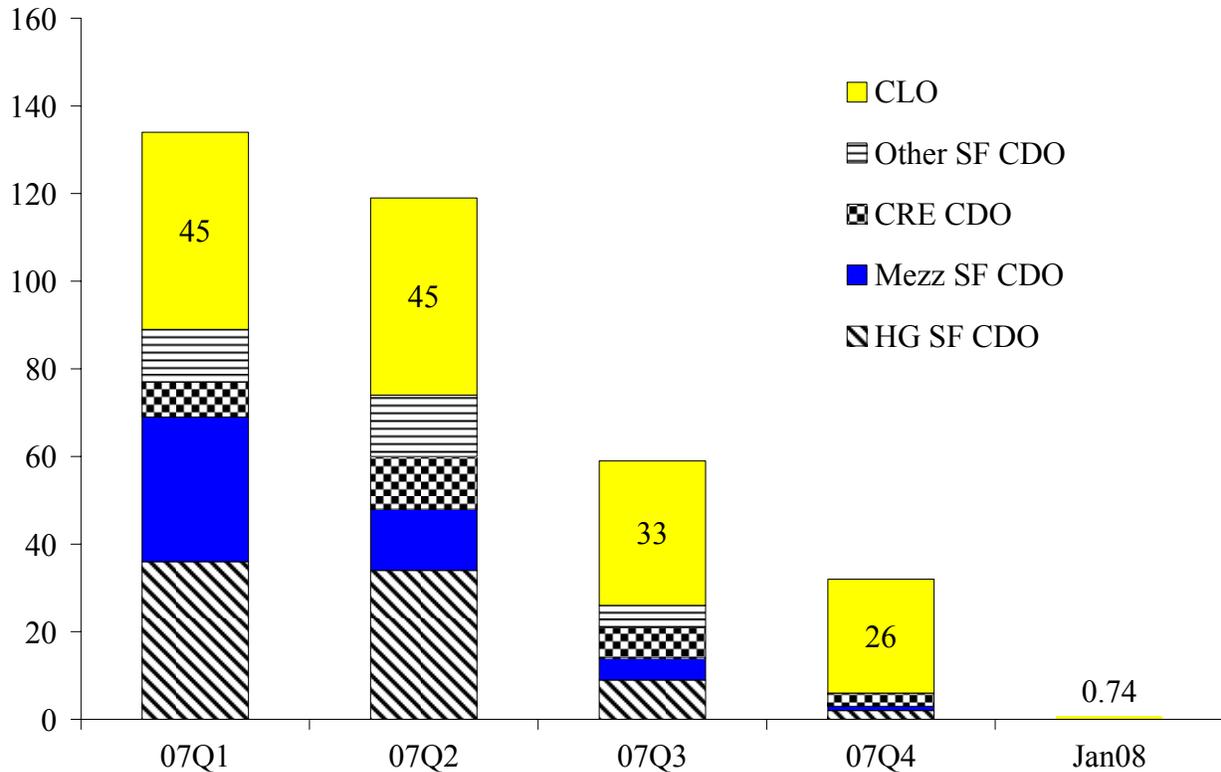
With respect to exchange-traded derivatives, Figure 3 shows that U.S. exchanges, boosted particularly by the Eurodollar family of derivatives offered on the CME, have maintained their leading share of global trading volume. In general, if there is a claim that derivatives trading is leaving the United States for Europe, that claim cannot be based on volumes of exchange-traded derivatives.

The CME (including its newly acquired arm, the Chicago Board of Trade) has moved the majority of its trading volume from open-outcry to more efficient electronic platforms. With its thriving interest-rate and stock index futures and options contracts, the CME appears well-poised to compete for global business going forward. As of this writing, the CME is negotiating the purchase of Nymex, the New York based exchange that dominates the exchange trading of U.S. energy futures. In February, 2008, however the U.S. Department of Justice raised concerns about concentration of clearing services in the hands of the CME and its affiliates.

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Figure 2. 2007-08 Quarterly CLO and Structured Finance CDO Issuance (\$ Billion)

Source: Morgan Stanley



While the shareholders and employees of the CME obviously benefit from its success, it is more difficult to attribute the associated benefits to traders and dealers in geographic terms. The bulk of exchange trading in derivatives is executed electronically from desks located around the world. Moreover, the increased activity in cross-border exchange mergers means that the geographic distribution of a derivatives exchange's shareholders and employees is increasingly less clear.¹³ For example, consider Eurex, an exchange whose parent firms are the Deutsche Borse and the SWX Swiss Exchange. The share of Eurex contracts executed by U.K.-based traders has increased from 7% in 1997 to 46% in 2005, according to Eurex data. In 2006, the CFTC invited comment on whether the fraction of U.S.-based volume on a foreign futures exchange should determine whether or not that exchange would fall under the 1996 so-called "no-action" regime regarding the regulation by the CFTC of foreign futures exchanges.¹⁴ It is estimated by IFSL that 75% of the customers and clearing firms of the London International Financial Futures Exchange (LIFFE) are foreign based. This figure rises to 90% for the London Metals Exchange (LME). With the 2007 merger between the New York Stock Exchange and Euronext, which in turn controls LIFFE, and with the pending completion of a merger between Eurex and New-York-based ISE,¹⁵ the world's highest-volume options exchange, it will be even more difficult to attribute to any one domicile the benefits of exchange-traded derivatives activities. It is not so clear, moreover, that such an attribution is crucial to policy planning.

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B. Traditional OTC Derivatives Volumes

Turning to geographic trends in OTC derivatives trading, we can draw on the “BIS Triennial Surveys” issued by the Bank for International Settlements (BIS), based on polls of derivatives dealers that are conducted by 54 central banks and monetary authorities. These surveys, available from 1998 to 2007, show that the U.S. has actually increased its share of the global trading of traditional OTC derivatives (specifically, FX and interest-rate derivatives, notably excluding credit derivatives). The U.S. share of trading volume in this domain increased from 18.9% to 23.8% of the global market from 1998 to 2007. Although the U.K. maintains its position as the most active financial center in terms of total volume, Figure 4 shows that the cumulative growth of traditional OTC derivatives trading in the U.S. over the past nine years has actually been slightly higher than that of the U.K. More importantly to those concerned with the actual amount of derivatives business done in the U.S. than with the U.S. “fraction of the pie,” the daily average volume of U.S.-based traditional OTC derivatives trading has increased from \$90 billion in 1998 to \$607 billion in 2007.¹⁶ Over the same period, the United Kingdom exhibited an annual growth rate in traditional OTC derivatives volume similar to that of the U.S. (The U.K. share increased from 36% to 42.5%.) Thus, if there is a claim that the United States is losing ground to London, it is not supported by trends in traditional OTC derivatives volumes over the past decade.

C. Innovative OTC Derivatives

With respect to OTC credit derivatives, British Bankers Association (BBA) data show that London has been losing a significant share of the market. (The BIS Triennial Surveys do not cover turnover in credit derivatives.) London’s share of gross turnover shrunk from 51% in 2002 to 37% in 2006. Other domiciles in Europe have increased their total share of global credit derivatives volume to roughly 10% by 2006. The U.S. share of the total market has remained relatively constant at around 41%, as indicated in Table 1. This relatively stable U.S. market share is reflected as well by a comparison of the credit-derivative volumes of U.S. banks, based on data from the Office of the Comptroller of the Currency (OCC), with global credit derivatives notional volume statistics provided by the BBA. Figure 5 indicates that the U.S.-bank share of credit derivatives volume has not changed significantly since 2000, although these measurements are volatile.¹⁷

Qualitative measures are consistent with the leading role of U.S.-headquartered banks in credit derivatives. For example, J.P. Morgan often receives awards as the world’s top provider of credit derivatives.¹⁸ One should not, however, confuse the domicile of a dealer’s headquarters with the location of the services that it provides.

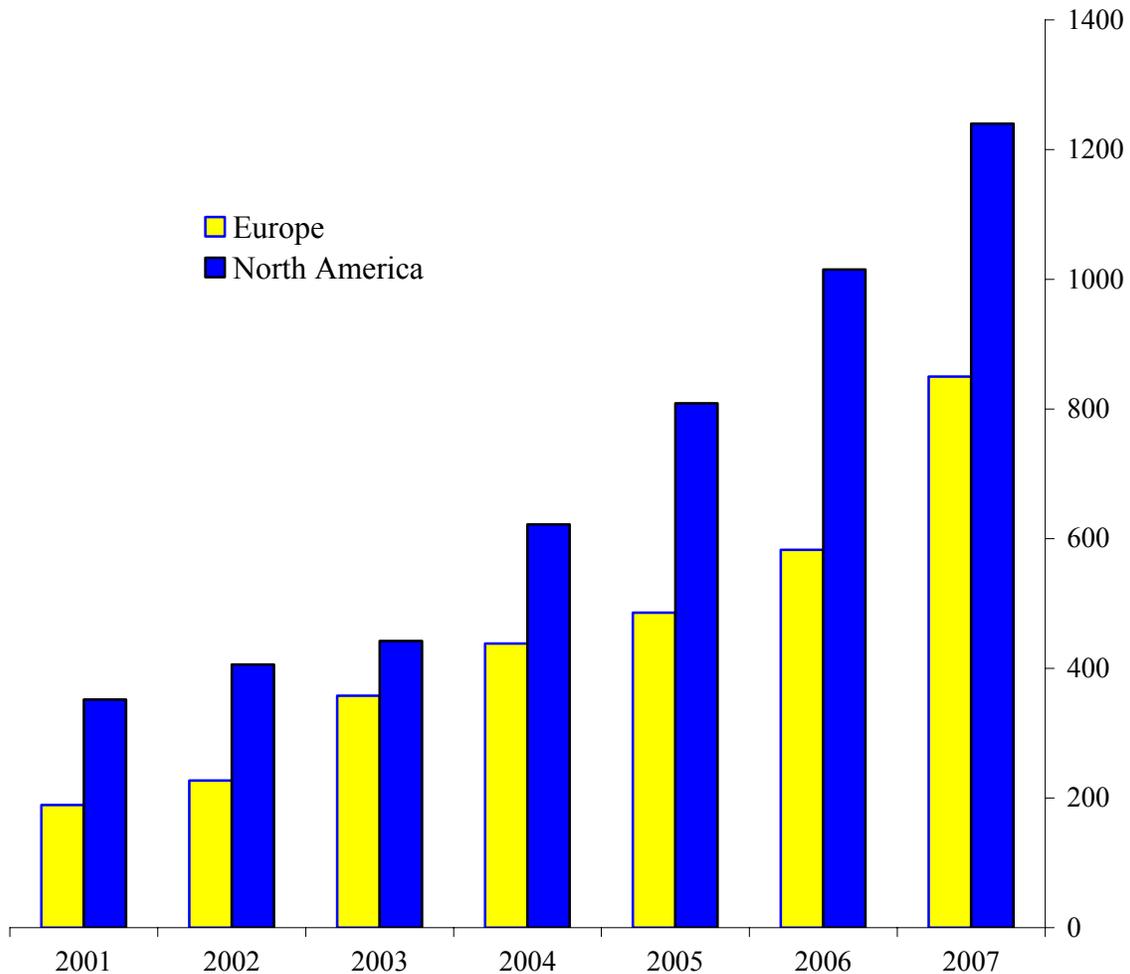
We have been unable to find a source of data on the geographic distribution of global trading in the important and quickly growing OTC markets for equity and commodity derivatives. We can nevertheless estimate the shares of these global markets held by U.S. commercial banks. From June 2005 to June 2007, the outstanding global notional amount of OTC equity derivatives doubled from \$4.55 trillion to \$9.22 trillion, according to BIS semi-

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annual survey data. According to data from the OCC, the total notional outstanding amount of OTC equity derivatives positions of U.S. commercial banks grew from \$1.26 trillion in the

Figure 3. Turnover, in Exchange Traded Derivatives (Futures and Options, Notional Underlying, US dollars, Trillions)

Source: Bank of International Settlements. Various Quarterly Reports, Statistical Annexes.



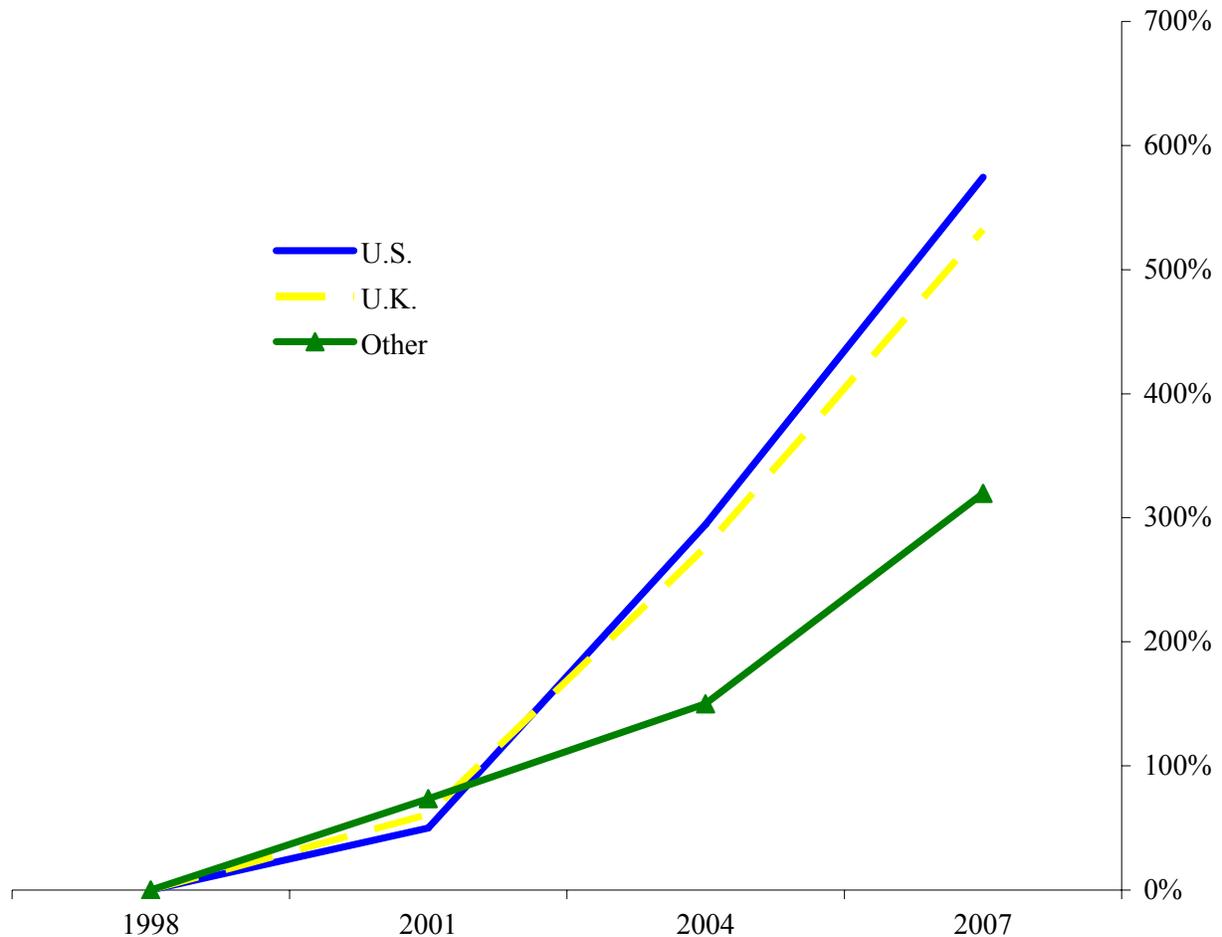
fourth quarter of 2005 to \$2.64 trillion in the second quarter of 2007, representing a slightly higher growth rate than that of the global market over this period. From December 2000 to June 2007, however, the U.S. commercial bank share of global notional outstanding OTC equity derivatives contracts dropped from¹⁹ 52% to 29%. Assuming that U.S. investment banks and other U.S. dealers have not increased their share of this market by a compensating amount, this represents a significant reduction in the U.S. share of global OTC equity derivatives business since the turn of the century. Our private conversations with market participants, as well as industry surveys of the leading derivatives dealers, suggest that Société Générale has been pulling away from other banks as the world's leading provider of OTC equity derivatives.²⁰ It

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remains to be seen how seriously Société Générale's position will be affected by its recent rogue trading scandal. The strength in equity derivatives of another major European bank, ABN Amro (part of a banking group with RBS and Santander), has also been mentioned to us.

Figure 4. Average Daily Turnover in OTC Interest Rate and FX Derivatives (Cumulative Growth)

Source: BIS Triennial Surveys, notional amount traded, by sales desks locations, in US dollars.



The global OTC commodity derivatives business has grown even more rapidly than the OTC equities derivatives market, with an outstanding notional amount that has increased from \$2.94 trillion in June 2005 to \$7.6 trillion as of June 2007, according to BIS data. From December 2000 to June 2007, based on the combined use of BIS and OCC data, the U.S. commercial-bank share of global notional outstanding OTC equity derivatives has increased from 28.5% to 34%. Morgan Stanley, an investment bank, is considered by some to be the world's leading dealer in commodity derivatives.²¹

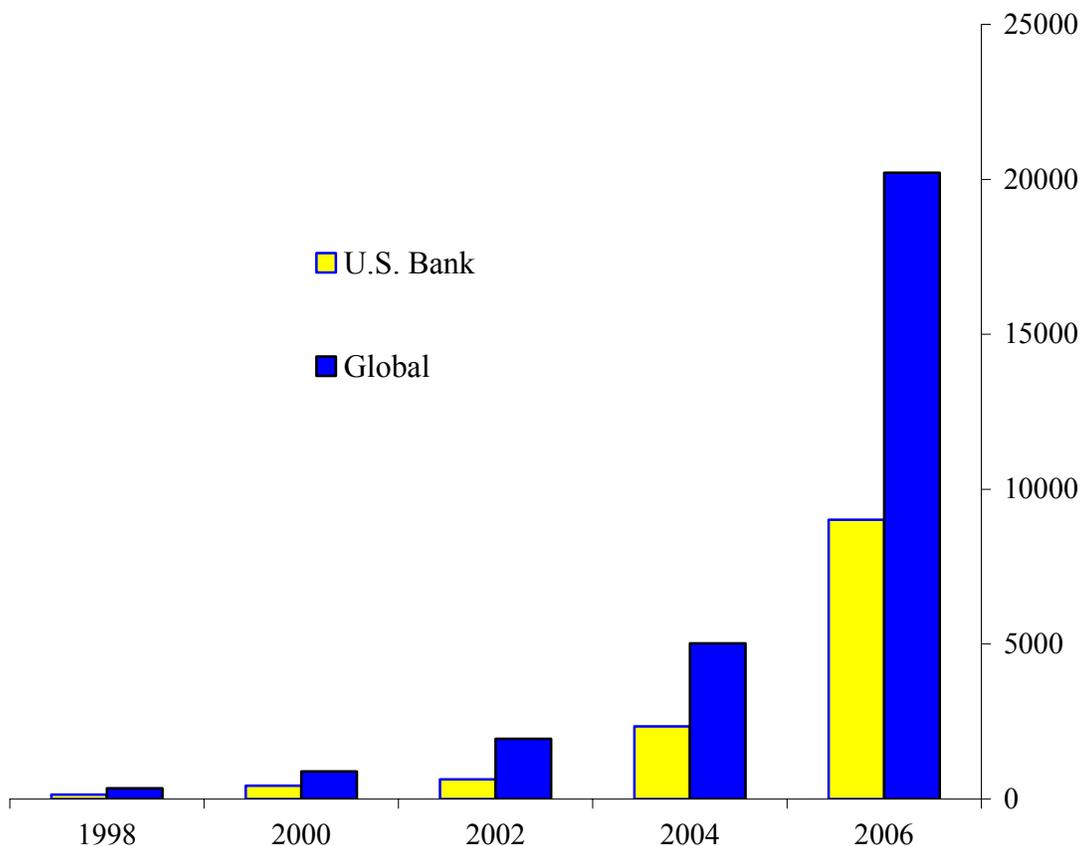
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D. The Importance of Innovative OTC Derivatives

Although the data on exchange-based and OTC-based traditional derivatives trading volumes show no relative or absolute broadly-based loss in U.S. competitiveness over the past decade, the volume data do not address dealer margins or the advantages of developing and marketing relatively sophisticated or innovative products. Indeed, the U.S. may be keeping pace in overall volume while losing ground to other financial centers in the markets for more complex, and more lucrative, derivatives.

Figure 5. U.S. Bank Share of Credit Derivatives Volume

Source: U.S. Commercial banks, credit derivatives notional outstanding, billions of US dollars. Office of the Comptroller of the Currency. Global credit derivatives notional outstanding, billions of US dollars. British Bankers Association.



The bulk of the growth in U.S.-based derivatives trading volume has been in low-margin plain-vanilla products such as interest-rate swaps, futures, and default swaps. Plain-vanilla U.S.-dollar 5-year interest-rate swap rates have a bid-ask spread of roughly two or three basis points. Assuming that on average the dealer captures, say, one basis point of this spread, the result would be a dealer profit of around 0.04% of the notional volume.²² On more innovative or more highly engineered products such as complex equity-linked derivatives or synthetic bespoke

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collateralized debt obligations (CDOs), the dealer profit margin could be an order of magnitude higher, perhaps as much as 0.5% to 1.0% of the notional volume.

Comparing the types of derivatives handled in London versus New York, one respondent to the British Bankers Association 2006 Credit Derivatives survey stated:

“Banks are more active in London. Hedge funds are more active in New York. Real money accounts in London are more active in structured credit derivatives, while the New York real money accounts are more active in index and single names.”

	North America	London	Other Europe	Rest of World
2002	NA	51%	NA	NA
2003	41%	45%	5%	9%
2004	40%	44%	6%	10%
2006	41%	37%	11%	12%

Table 1. Shares of the Credit Derivatives Market. Source: BBA Credit Derivatives Report 2006.

Regarding the profitabilities of traditional and innovative derivatives, we do not have direct measures of dealer margins by type of derivative. It is possible that revenues may be correlated with profitability.²³ From OCC data, interest-rate derivatives constituted 81% of the notional volume of derivatives for U.S. commercial banks in the second quarter of 2007, but only 49% of the associated revenue. Equity OTC derivative contracts accounted for only 1.7% of the volume, but 16.6% of the revenue during this quarter. Assuming that revenue-to-volume ratios for large foreign banks are like those of U.S. commercial banks, one might be able to reach some sense of the degree to which revenue from OTC derivatives trading has been shifting from U.S. to foreign locations. Because revenue data are rather volatile, we base our estimates on average quarterly revenue for the past 12 quarters.²⁴ Based on our rough estimates, equity and commodity over-the-counter derivatives generate, on average, well over 10 times more revenue per dollar of notional outstanding positions than do interest-rate derivatives, as indicated in Table 2. Credit derivatives appear to have generated roughly 7 times more revenue per dollar of notional volume than have interest-rate derivatives, but this comparison has a particularly large potential for variation because of the rapidly changing mix of credit derivatives volumes across products of rather different revenue structures, as well as the volatility of dealer margins in some categories. Plain-vanilla default-swap index products such as the CDX.NA.IG 5-year swap now trade at thin dealer margins similar to those of interest-rate swaps. The vast majority of the credit derivatives covered by the OCC are default swaps. These data do not include derivatives such as synthetic CDOs, which are likely to have constituted a significant source of revenue, at least until the recent sub-prime crisis affected the entire CDO market. The BBA survey data indicate that, in terms of outstanding notional amounts, default swaps (both single-name and index) constituted about 63% of the notional outstanding of the global credit derivatives market.

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Derivative Type	Q2 07 Notional (Y)	Quarterly Revenue (X)	X/Y
	(\$ trillions)	(\$ billions) (avg. of last 12 qtrs.)	
Interest Rate	122	1181	9.7
Foreign Exchange	13.8	1336	96.8
Equity	2.6	333	128
Credit	7.7	853*	72.3
Commodity, Other	1	115	121

*Based on last two quarters, due to lack of earlier data.

Table 2. The Relationship of Volume to Revenue by Underlying Asset Type.

Source: Office of the Comptroller of the Currency.

Figures 6, 7, and 8 show that the U.S. has maintained its issuance lead in most categories of CDOs, including CLOs. While the classification of CDOs is open to debate, we believe that that a CDO should be treated as a derivative security, as opposed to a primary debt security. In any case, volumes in the CDO market are at least indicative of levels of activity in structured credit derivative products such as synthetic CDOs, which are included in the BBA credit derivatives survey. Both European and U.S. issuance of CDOs had been growing at rapid rates. With the recent credit squeeze, however, issuance of CDOs of all types, most especially those backed by “sub-prime” mortgage assets, has fallen off dramatically, according to the Morgan Stanley data illustrated in Figure 2. From the available data, it is reasonable to conclude that the United States is dominant in CDO issuance, and that it is generally holding its share of this market, but the prospects for the market have been considerably dimmed for the next few years.

Research by Peter Tufano²⁵ suggests that high dealer margins and underwriter profits accrue to innovators for some time before a successful financial product becomes more “commoditized.” This is likely to be the case for highly structured derivatives. Moreover, innovation in derivatives is likely to lead to profits in related lines of business such as underwriting,²⁶ and also to value-adding improvements in reputation. Over many years, U.S.-headquartered commercial and investment banks have been leaders in derivative product development, especially in fixed-income derivatives. London is generally considered by commentators to be the leading center for the sales of more complex credit and equity OTC derivative products, which, as we have mentioned, tend to offer substantial dealer margins.

The distribution among dealer firms of awards by RISK Magazine provides some qualitative, albeit judgment-based, evidence of the geographic distribution of leadership in the provision of derivatives market services. These awards are based in part on the magazine’s interviews with dealers and brokers in derivatives of various types. The RISK awards over the

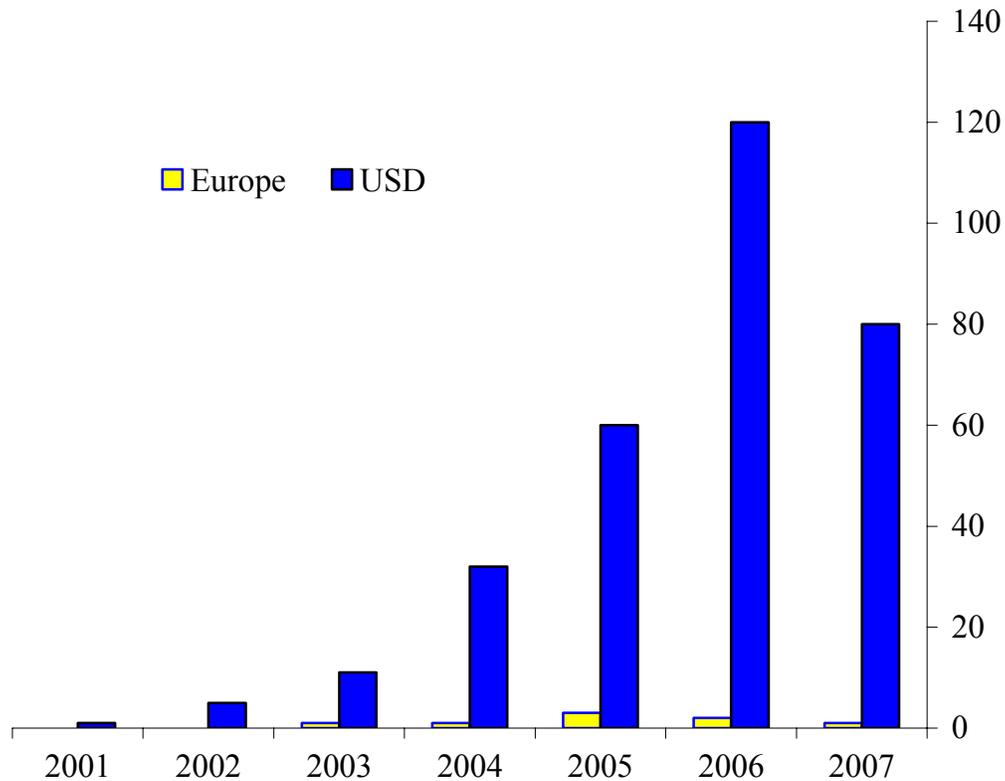
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past decade, summarized in Appendix II, show a modest trend over time toward increased leadership for European banks, particularly in equity derivatives.

Pinedo (2006) states that “[a]lthough significant, the U.S. structured-products market remains small by comparison to the European market, where issuances surpass \$100 billion annually.” An example of the appetite of Europeans for complex derivatives is the exceptional recent growth of the market for “equity certificates,” sold mainly to European investors such as high-net-worth individuals. (We do not necessarily suggest that all such investors understand what they are buying, and likewise do not presume that greater derivatives activities in this sphere is necessarily beneficial to Europeans.)

Figure 6. Global High Grade Structured Finance CDO Issuance (\$ Billions)

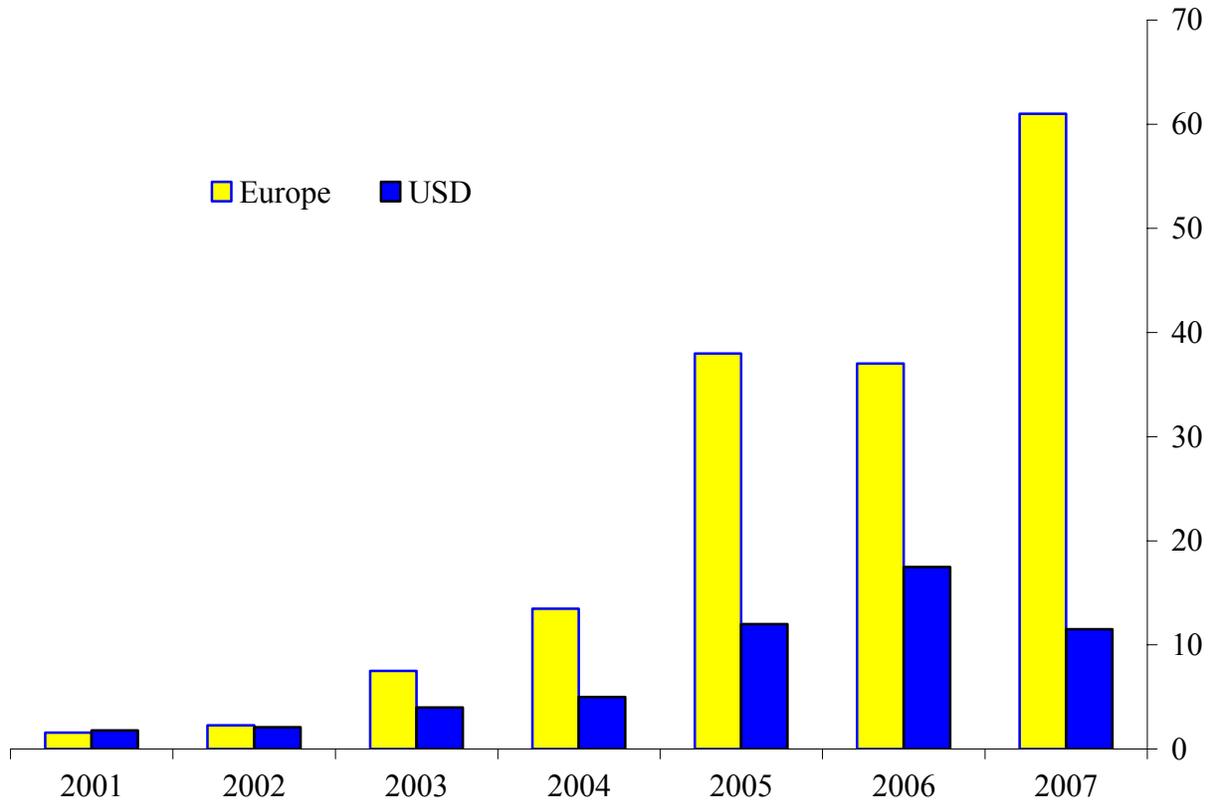
Source: Morgan Stanley, Moody’s, S&P, Fitch IBCA, MCM Corporate Watch, Asset-Backed Alert



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Figure 7. Global Middle-Market CLO Issuance (\$ Billions)

Source: Morgan Stanley, Moody's, S&P, Fitch IBCA, MCM Corporate Watch, Asset-Backed Alert



We have heard various explanations for the relatively strong growth of high-margin structured equity derivative products in Europe, as compared to that in the United States. On the supply side, as mentioned above, European-headquartered banks have a relatively large and sophisticated presence in innovative equity derivatives. As for demand, some commentators characterize European investors as less wary of complex derivatives, or at least less litigious, than their U.S. counterparts. It has been said that U.S. dealers and some U.S. investors are more wary of the use and suitability of complex derivatives, based in part on the chilling effects of scandals associated with Bankers Trust's sale of complex derivatives to Procter and Gamble, and Enron's use of derivatives and derivatives accounting to obscure its true financial condition. As we will discuss in Section IV.B, the prospect of regulatory intervention or private litigation is generally higher in the U.S.

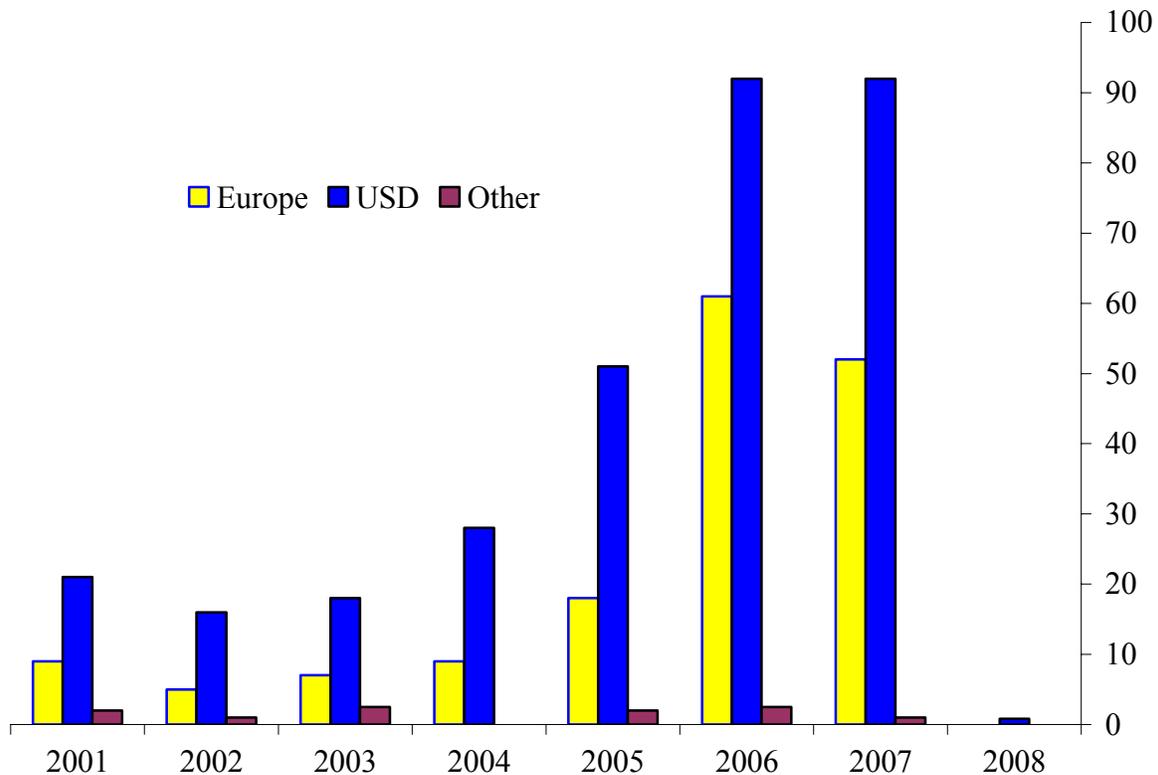
In summary, over the past decade the U.S. has maintained its worldwide market share of trading in exchange-traded and OTC derivatives. The dominance of electronic platforms for exchange trading of derivatives complicates the association of benefits of exchange-traded derivatives volume with a particular locality. The U.S. does not appear to play as dominant a role in the markets for some categories of highly structured derivative products, particularly structured equity derivatives, but the available data on these categories of derivatives are less

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comprehensive.

Figure 8. Global CLO Issuance (\$ Billions)

Source: Morgan Stanley, Moody's, S&P, Fitch IBCA, MCM Corporate Watch, Asset-Backed Alert



IV. FACTORS AFFECTING U.S. COMPETITIVENESS

We turn to some of the factors that contribute to the location decisions of derivatives-market service providers and, briefly, to the economic health of the U.S. derivatives industry. Where derivatives markets are most active is largely determined by the locations of customers and of concentrations of overall financial market activity. The geographic distributions of these activities are jointly determined. An understanding of co-location synergies is the first step toward effective public policy, and leads directly to our recommendation in Section V for the establishment of a suitable database. Some of primary factors that “seed” location decisions are also discussed in this section.²⁷

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A. Co-location Externalities

Perhaps the biggest factor determining the location decision of a provider of financial services is merely where its potential customers are already located. Common sense, as well as a significant amount of theoretical and empirical research, tell us that there are also large positive externalities associated with the co-location of similar or complimentary economic activities. Research on co-location externalities can be traced back at least to Marshall (1890), who explains that the productivity of firms is improved if they are located in the same city, because of knowledge spillovers. Glaeser, Kallal, Scheinkman, and Shleifer (1992) provide a synopsis of a more general “Marshall-Arrow-Romer” theory of the economic growth of industries in cities through knowledge externalities. Henderson (1986) offers empirical evidence that worker productivity is higher in firms that are located near other firms in the same industry. Benner (2003) likewise emphasizes the presence of “cross-firm learning networks” in explaining the economic development of Silicon Valley.

Several points stand out when considering positive co-location externalities in the context of financial services. *First*, as Kindleberger (1974) and Gehrig (1998) emphasize, co-location can reduce transactions costs, particularly communication costs. “Financial Services Clustering and its Significance for London,” a 2003 report commissioned by the City of London, asserted that “banks in particular, acknowledged [in a survey whose results are provided with its report] that proximity to the market and organizations which provided real-time data is crucial for their survival in the market, which is mediated in many instances through personal interaction and social relations.”²⁸

Poon (2003) emphasizes the focus on banking services in the literature exploring the growth of international financial centers.²⁹ A related literature on the emergence of “world cities,” however, places a broader emphasis on the joint location of various knowledge-related activities, such as legal services, accounting, corporate headquarters, political, educational, and cultural functions, and of course financial services. For example, Amin (1999), Rantisi (2002), and Falconbridge (2007) emphasize the role of clusters of professional services (manifested in professional associations such as those for law, advertising, and accounting) in explaining regional economic development through collective learning. The City of London (2003) notes the “importance of proximity to professional and regulatory bodies (Bank of England, Law Society, FSA).”³⁰

Second, proximity to customers is especially important. For example, location determines the ease with which a dealer or investment banker can meet with hedge-fund and corporate clients in order to structure appropriate derivatives strategies or products.

Third, proximity is determined not only by physical geography, but also by time zone. A time zone convenient for meeting or phoning customers – or the firm’s overseas trading desks – facilitates personal interactions and increases efficiency. A number of professionals in the derivatives industry in New York and London spoke to us of London’s advantageous time zone. One wrote that it is “easier to be global from London (for Asian and US time zones). We can catch Asian close and work through the US open (obvious but not to be discounted!).” Another noted that “most global correlation books are run out of London (time-zone reasons).” London

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also has time-zone advantages with respect to the Europe, including the fast-growing countries of Eastern Europe.

Fourth, the depth and effectiveness of business relationships are influenced by co-location. Storper and Venables (2003) analyze the role of face-to-face (“F2F”) encounters in urban concentration. Beyond the obvious benefit of facilitating communication, Storper and Venables focus on the role of F2F encounters in solving incentive problems, in facilitating socialization, and in providing psychological motivation. These contribute to what they term “buzz environments.”

Indeed, a number of financial professionals have mentioned to us the current “buzz” in London's City as a location advantage. The 2003 report of the City of London cited above is replete with examples and survey data supporting the premise that face-to-face interaction is extremely highly valued in London's City. This report states that:

personal relationships supported by close geographical proximity and on-going face-to-face are vital processes that sustain the London financial cluster. The localised nature of relationships between skilled labour, customers and suppliers is a critical factor which helps firms achieve innovative solutions, develop new markets and attain more efficient ways to deliver services and products to clients.³¹

These “[c]lusters provide knowledge-rich environments which are associated with innovation and, importantly, the building of relationships, trust, and reciprocity.”³² Similarly, Beaverstock, Hoyler, Pain, and Taylor (2001) quoted a London-based manager at non-UK bank as saying that London is:

the happening place it's terribly important we're trying to pack more and more people on to the dealing floor so we're all together ... you downsize the satellites and you pump up the centre ... your clients are doing the same thing. No wonder London's thriving.

McKenzie and Millo (2001) found socialization to be critical to the development of the Chicago Board Options Exchange. Drawing from Granovetter (1973, 1985), they believe that the “cognitive complexity” of derivatives markets increases the importance of socialization.

Fifth, with a critical mass of financial service providers in place, co-location advantages are likely to persist. “[O]nly when there is significant deterioration in the environment will firms be motivated to relocate.” (Poon, 2003). The exceptionally low ratio of variable costs to fixed costs in processing financial trades, moreover, lowers the incentive to split processing activities across financial centers, and further reduces the ability of a second-tier financial center to compete for a first-tier position. A respondent to the survey of the City of London cited above wrote:³³ “Things would have to change dramatically before we would leave the City. There's a buzz about the place ... the reason we have an office in the City now is that this is the biggest legal market in the UK and one of the biggest legal markets in the world. We want to be a part of that.”

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In summary, both the scholarly literature and commentary by financial-market professionals emphasize the importance of the co-location of financial service providers with each other, with other professional service providers, and especially with their customers.

These positive co-location externalities, and economies of scale and scope, lead us to believe that policies aimed at increasing the concentration of OTC derivatives-market services in New York should be directed primarily at the attractiveness of New York to financial services providers, generally. The same could be said for policy makers who are concerned about trading activities in, say, debt markets, or equity markets. Our conjecture that this is the case can be addressed with quantitative models supported by data. In Section V, we suggest the collection of pertinent data, which could be used as well for other purposes that we suggest.³⁴

B. Regulatory and Legal Factors

1. Overview

The Committee's Interim Report³⁵ provides evidence of erosion in the competitiveness of the U.S. market for public equity. For remedies, the Interim Report focuses on matters related to the regulatory and legal environment, such as the regulatory process, the private and public enforcement system, and implementation of Sarbanes-Oxley. The status of the U.S. market for derivatives services and the nature of suggested reforms are sometimes characterized similarly.

For example, Charles McCreevy, the European Commissioner for Internal Markets and Services, recently said, "We are the innovators in the derivatives market."³⁶ The Bloomberg-Schumer Report, noting the remark by a business leader that the US was running the risk "of being marginalized" in derivatives "because of its business climate, not its location," emphasized that:

The more amenable and collaborative regulatory environment in London in particular makes businesses more comfortable about creating new derivative products and structures there than the U.S.³⁷

We believe that the derivatives-market picture is more nuanced than this suggests. Some of the evident strengths of U.S. derivative markets are indicated in Part III. The regulatory and legal environments for derivatives in the U.S. can be improved, but a wholesale characterization of the U.K. environment as being superior seems unwarranted.

One of the weaknesses of the U.S. regulatory structure is that it is deeply fragmented, at the product level as well as at the level of service providers. (*Part IV(B)(2)*) Regulatory "turf" battles continue, and impose especially heavy burdens on the introduction of new exchange-traded derivatives. However, a simple move in the U.S. to a unitary regulator in the fashion of the U.K.'s FSA would not necessarily further U.S. derivatives competitiveness. The FSA's regulatory approach offers useful ideas for improving U.S. regulation. It is not obvious, however, that FSA regulation is always less burdensome, and it is not fully clear that the FSA is more efficient and effective. (*Part IV(B)(3)*) U.K. financial regulators have, for instance,

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tougher rules regarding the disclosure of certain equity derivatives activities and have been more intrusive in the matter of hedge fund visits. Distinctions between the FSA's presumptively-more-efficient "principles-based" approach and the U.S. regulators' supposed "rules-based" approach appear over-drawn. Although the FSA's "prudential supervision" model has advantages over the SEC's more enforcement-oriented model, the extraordinary differences in enforcement intensity give us some pause. On the other hand, the FSA's far greater emphasis on cost-benefit analysis could well be worth careful examination in the United States.

We largely leave aside the implications for derivatives markets of the Sarbanes-Oxley Act, a hastily-drafted statute passed at a time of perceived crisis, and one that has attracted an enormous body of commentary. The Act consists of many disparate elements, which are likely to have widely varying cost-benefit patterns. In the derivatives area, we have been told that compliance costs have been substantial, including those associated with documentation burdens and the monitoring of models and risk management of derivatives. The documentation and monitoring activities have benefits, of course, but a proper calculation of costs and benefits would consider, in addition to compliance costs, potential unintended incentive effects. That said, disclosure matters that have arisen in connection with the subprime crisis (including the December 2007 SEC letters to two dozen financial institutions, and the February 2008 report of regarding AIG-PriceWaterhouseCoopers sub-prime accounting writedowns) suggest that material roll-backs in the disclosure or internal-control-related provisions of the Act are unlikely to occur in the short-run.

2. Regulatory Structure: Fragmentation and Policy Choices

At the level of financial institutions, fragmentation of U.S. regulation borders on the comical. In addition to oversight by the Federal Reserve, a single financial holding company could potentially be subject to oversight (a) at its depository units, by the Federal Deposit Insurance Corporation, the Federal Reserve, the Office of the Comptroller of the Currency, the Office of Thrift Supervision, and state banking authorities; (b) at its broker-dealer units, by the SEC and by various state securities authorities; (c) at its futures commission units, by the CFTC and various self-regulatory organizations (SROs), and state authorities; and (d) at its insurance units, by state authorities.³⁸

Exchanges are subject to similarly fragmented regulation. NYSE-Euronext is subject to SEC regulation in relation to the securities and options exchanges that it operates in the U.S., while the European equity and derivatives exchanges are subject to CFTC oversight and, in other instances, are subject to the oversight of the SEC in relation to the activities that they are permitted to undertake in the U.S.³⁹ The U.S. presence of NYSE-Euronext's LIFFE relies on CFTC no-action relief (in order to make most of its major derivatives products available) and also relies on SEC no-action relief (in order to make certain equity and index option contracts available). NQLX, NYSE-Euronext's now-dormant U.S. securities futures exchange, has the blessing of being jointly regulated by the SEC and CFTC.

At the level of financial products, although the Commodity Futures Modernization Act of 2000 (CFMA) has improved matters considerably, wasteful internecine regulatory warfare persists, including turf battles inimical to financial innovation.

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Historically, the primary legal uncertainty associated with derivatives in the U.S. had been over provisions of the Commodities Exchange Act (CEA), pursuant to which the CFTC arguably possesses exclusive jurisdiction over “transactions involving contracts of sale of a commodity for future delivery” (that is, futures contracts), as well as options on such contracts.⁴⁰ On the other hand, a “security” was subject to SEC jurisdiction, and thus a regulatory regime that was completely different in structure and philosophy. Equity options were expressly included in the statutory definition of “security,” and generally subject to the securities laws rather than the CEA. Whether, and to what extent, a product was subject to one regulatory regime or the other has determined whether, or under what circumstances, a product could be offered or sold.

The CFMA, the most substantial revamping of federal derivatives regulation since such regulation began in 1922, reduced legal uncertainty and, to a significant degree, freed large institutions and high-net-worth individuals (“eligible contract participants”) from regulatory intervention. The statute excluded a wide range of derivatives from regulation under the CEA, such as transactions that are individually negotiated (not executed on multilateral execution platforms) and are between parties that are considered eligible contract participants. In addition, the CFMA excluded qualifying swaps (including certain interest rate, currency, commodity, and equity swaps) from being considered a “security” for certain purposes of the Securities Act of 1933 and the Securities Exchange Act of 1934.

This new regulatory structure has reduced the overall costs of SEC-CFTC fragmentation by effectively exempting most OTC derivatives activities. Nevertheless, turf battles continue in the area of exchange-traded derivatives, and have delayed the introduction of new products.

For instance, Eurex, the Frankfurt-based derivatives exchange, launched the first exchange-traded credit derivative on March 27, 2007, beating its American competitors by nearly three months. In October, 2006, the Chicago Board Options Exchange had filed for approval of its option with the SEC while the CME had filed for approval of its futures with the CFTC. The CBOE challenged the CME’s decision to file with the CFTC, arguing that the nature of the CME’s product mandated that approval should instead have been sought from the SEC.⁴¹ The SEC initially sided with the CBOE. In April 2007, the CFTC extended its review period in order to allow time for CFTC and SEC staffers to resolve their differences, among other reasons. The following month, the two regulators finally approved their respective filings.⁴²

Similar turf issues arise over the introduction of other exchange-traded derivatives. Consider, for instance, the matter of options on exchange-traded funds (ETFs) investing in gold, as well as the ETF itself. The CBOE filed a proposal in June 2005 with the SEC to trade options on gold ETFs. Nearly three years later, regulatory approval has not occurred. At least according to the CBOE, the Options Clearings Corporation, and some other observers, this delay is due to the fact that the SEC and CFTC have still not determined who should regulate the product. A similar turf battle could also have held up trading in the underlying gold ETF but, luckily, did not.⁴³

Regulatory fragmentation extends beyond battles between the CFTC and SEC. Consider, for instance, problems created by the adoption of the Energy Policy Act of 2005 (EPA-2005),

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passed in the wake of Enron.⁴⁴ At the end of 2007, the Federal Energy Regulatory Commission (FERC) and the CFTC were fighting in federal court over which agency had the exclusive rights to bring actions against Amaranth Advisors over certain energy trades. The lack of legal clarity – FERC anti-manipulation provisions differ from those of the CFTC, for instance – introduces industry-wide costs.⁴⁵

From an economic standpoint, relatively little distinguishes derivatives from the underlying primary securities or assets. Likewise, there are often only minor differences among different types of derivatives on the same assets. Underlying the fungibility of positions in derivatives with those in primary instruments is the celebrated Black-Scholes-Merton theory, by which derivatives can be synthesized from the underlying primary securities, and vice versa. While this “equivalence” is far from exact, the underlying principle points to the value of a more unified regulatory treatment.

The foregoing discussion might seem to suggest the value of a merger of the SEC and the CFTC, a familiar issue. This report does not take up a general cost-benefit analysis of that issue, but we do point out that, even if a merger is politically feasible, it would not necessarily further financial innovation. In particular, a merged agency of this type is likely to be dominated by the predecessor SEC, because of its relative size and standing.

The SEC has historically been more interventionist than the CFTC, and has relied less on self-regulation.⁴⁶ From its establishment in 1933, the SEC’s overarching regulatory philosophy has been that of disclosure. The cornerstone for virtually everything the SEC does is Louis Brandeis’ notion of sunlight as a disinfectant.⁴⁷ There was no comparable concept in the Commodity Exchange Act of 1936.⁴⁸ The SEC was given authority to enforce margin requirements set by the Federal Reserve. The Commodity Exchange Authority of that day had no such authority, and informed Congress during hearings on the Commodity Exchange Act of 1936 that no such authority was needed. Although both agencies had antifraud provisions, the SEC used provisions such as Section 10(b) of the Securities Exchange Act of 1934 to cover a wide variety of abuses, including insider trading. At the same time, Section 4b of the Commodity Exchange Act focused on a far more limited set of fraudulent practices, and there was no interest in using the CEA to deter insider trading in the futures industry.

Perhaps more importantly, a general attitudinal difference has long separated the SEC and CFTC. Congress established the CFTC in 1974 in part because its predecessor agency, the Commodity Exchange Authority, was thought to be too deferential to the commodity exchanges. Speaking of the 1980s, one observer suggested⁴⁹ that the CFTC was dominated by economists willing to defer to exchanges, and who had an antipathy toward a heavily rule-based regulatory structure. In contrast, the SEC maintained an activist culture driven by lawyers who believed fervently in regulation. At least two knowledgeable market participants that we interviewed for this report believe this attitudinal difference continues.

At least in the short run, better coordination between the SEC and CFTC would presumably reduce barriers to the introduction of new exchange-traded derivatives. The SEC and CFTC have long tried to coordinate their efforts, formally as well as informally. Thus, for the two decades prior to the CFMA, the roles of the two agencies with respect to securities-

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related derivative products were defined by complex statutory provisions codifying an agreement, the “Shad-Johnson Accord,”⁵⁰ reached by their respective chairmen. Since the enactment of the CFMA, the two agencies have, for instance, entered into a memorandum of understanding on the oversight of securities futures product trading.⁵¹

There are limits to what can be resolved by leaving such matters to the agencies. Inevitably, there will be disputes. The tie-breakers in such disputes have been federal judges, acting in the shadow of potential Congressional intervention.

Treasury Secretary Henry Paulson indicated a need for fundamental reform in his June 2007 decision to examine the structure of the regulatory system for all financial services providers.⁵² The Treasury Department has requested comment on, among other things, the possibility of a single financial-market regulator resembling the U.K.’s FSA and the possibility of adopting a more “principles-based” approach to regulation.⁵³ This request asked for views on the impact of securitization and financial-product innovation on the traditional “functional” regulatory lines of banking, insurance, securities, and futures. The Treasury’s blueprint for reforms will be unveiled this year. We welcome such a comprehensive review.

3. Regulatory Approach: The FSA Model

Conventional wisdom holds that, beyond the FSA’s virtues as a unitary regulator, the FSA is superior to U.S. financial regulators in two key respects. First, supposedly, regulation in the U.K. is “principles-based” while in the U.S. is “rules-based.” An important subtext is that, as a substantive matter, the FSA is less intrusive. Second, the FSA is run more on a “prudential” model rather than an “enforcement” model. As a result, FSA-regulated institutions are assumed to be able to expose their problems to regulators with less fear of triggering sanctions. We look at the U.S. and U.K. regulators along these two dimensions, turn to the related matter of enforcement differences between the U.S. and the U.K., and then to the role of cost-benefit analysis in their respective regulatory activities.

Regarding the dimension of principles versus rules, differences that exist in the area of derivatives may be exaggerated. *First*, U.S. regulation in the area of derivatives is not as rules-based as one might first think. The CFMA introduced important principles-based elements. Indeed, Walter Lukken, the acting chairman of the CFTC recently claimed that, with the enactment of the CFMA, the CFTC “became the only federal financial regulator that operates under a principles-based regulatory approach.”⁵⁴ The CFMA amended the Commodities Exchange Act to replace the traditional “one-size-fits-all” regulatory framework with a risk-based model in which regulation is tailored to the nature of the market and its participants.⁵⁵ Similarly, the CFTC believes that it has long used a principles-based approach with respect to exchanges and clearinghouses.⁵⁶ Thus, exchanges and clearinghouses must adhere to statutory “core principles” to the point that, with a few exceptions, there are no longer prescriptive regulations that dictate the exclusive means of compliance.

The CFTC is not unique in this respect. Consider for example, one of the core responses to Enron undertaken on a joint basis by other U.S. financial regulators, one based on principles rather than rules. In January 2007, the Office of the Comptroller of the Currency, Office of

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Thrift Supervision, Federal Reserve Board, the Federal Deposit Insurance Corporation, and the SEC jointly adopted a statement on “sound practices” relating to “elevated risk complex structured finance activities.”⁵⁷

At the SEC, commonly regarded as the most rule-oriented of financial regulators, the central anti-fraud provisions – Section 10(b) of the Securities Exchange Act of 1934 and in particular Rule 10b-5 – are essentially based on principles. These two sections together constitute a total of 227 words. Former SEC Commissioner Roel Campos said he “would guess that a majority of the SEC’s enforcement cases are based primarily on these 227 words.”⁵⁸

Second, the U.K.’s regulatory approach is not quite as principles-based as one might gather from public commentary. As FSA Chairman Callum McCarthy noted in January 2007, the FSA Handbook of Rules and Guidance includes over 8,500 pages. Unlike U.S. financial regulators, U.K. financial regulation is bound up with extra-national regulation. In the derivatives area, the European Commission is currently reviewing its financial regulatory framework for commodity and exotic derivatives. As the FSA and the U.K.’s treasury ministry stated in a report issued in December 2007, this could result in “fundamental changes to the regulation of this business with associated risks and benefits for the UK commodities derivatives market.”⁵⁹

Third, as to the subtext that U.K. financial regulations are less burdensome than those in the U.S., there are important derivatives-related exceptions. In the U.S., hedge funds and others sometimes seek to avoid the Schedule 13D “5% and over” disclosure requirements through the use of cash-settled OTC equity derivatives.⁶⁰ In contrast, in November 2005, the U.K. Takeover Panel changed its rules to explicitly prevent such attempts at hiding stakes during takeover bids. In November 2007, the U.K. issued a consultation paper on disclosure reforms, which would apply generally, not only during takeover bids.⁶¹

Relying on a wider statutory base, the FSA has also been more intrusive than U.S. financial regulators over matters relating to hedge funds, who are major actors in derivatives markets. In 2007, the FSA released recommended best practices that may become rules for U.K.-based hedge funds. These would include asking hedge funds to tape their telephone calls and to send letters to companies that the funds plan to meet, requesting that the hedge fund does not receive any material nonpublic information.⁶² Consistent with this “hands-on” approach, the FSA, after making fact-finding visits to a wide range of hedge funds, issued a warning over deficiencies in internal controls related to market abuse, and promised further visits in 2008.⁶³

Moving to the dimension of prudential supervision versus enforcement, significant examples of U.S. moves towards prudential regulation include:

- (1) Implementation by the SEC of a “Consolidated Supervised Entity” program to work closely with the five largest U.S. investment-bank holding companies on their risk-management capabilities.⁶⁴ This program emphasizes a prudential approach to supervision. SEC staff members meet with the five firms on a regular basis to review risk management controls and liquidity.

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(2) U.S. financial regulators, working with regulators abroad, adopted a prudential approach to credit derivatives documentation backlogs.⁶⁵ Instead of relying on a series of “message” enforcement cases, the SEC, the OCC, and, in particular, the Federal Reserve Bank of New York, sought to work closely with derivatives dealers to craft workable solutions. The result was a significant reduction in the documentation backlog, fortuitous in light of the impact on the credit derivatives market of the subsequent sub-prime crisis. Unfortunately, the backlog remains large. A dramatic increase in credit derivatives volumes by U.S. banks in the third quarter of 2007, presumably associated with the sub-prime crisis, placed additional strains on order processing, according to the OCC.⁶⁶

In summary, while there are differences between the regulatory approaches of the U.K. and the U.S., these differences can be easily exaggerated. There is, however, a striking regulatory difference to which we now turn, and which should be considered carefully by U.S. regulators before adopting a more wholesale shift toward the U.K.-style regulatory approach.

U.K.-style prudential supervision has resulted in levels of enforcement that are orders of magnitude lower than those of the U.S. The FSA levied fines totaling £5.3 million in 2007 and £13.3 million in 2006.⁶⁷ In the U.S., a single financial regulator – the SEC – collected disgorgements and penalties of \$496.4 million in fiscal year 2007 and \$1.804 billion in fiscal 2006.⁶⁸ The CFTC, in the five years to December 2007, levied more than \$1.8 billion in total monetary sanctions.⁶⁹ According to the FSA, 40% of the SEC’s staff works on enforcement, compared with 10% of the FSA’s staff.⁷⁰

The foregoing statistics understate the difference in enforcement intensities, once one considers the vast differences in the levels of private enforcement activities of the two legal environments. In particular, there are no securities class actions in the U.K. In the U.S., for the period 2002-2004, class actions resulted in sanctions of \$3.3 billion – more than the monetary sanctions obtained by the SEC and the Department of Justice combined.⁷¹

We do not offer an explanation of these large differences in enforcement intensity, nor do we suggest that levels or types of public and private enforcement in the U.S. are optimal. Some observers believe that high levels of enforcement contribute to a lower cost of capital in the U.S. and to a valuation premium for foreign firms cross-listing in the U.S.⁷²

In the U.K. itself, there is concern over the FSA’s low enforcement levels. In terms of derivatives-related matters, for instance, the FSA itself has complained that its enforcement efforts have been hobbled by the use of complex derivatives strategies to disguise insider trading.⁷³ The U.K.’s treasury ministry is rumored to be considering plans to address these enforcement and other concerns over FSA performance.⁷⁴

What are the policy implications of the foregoing enforcement differences? There is a critical relationship between the use of a principles-based approach and enforcement intensity. A significant shift to a more principles-based approach is likely to be accompanied, barring other changes, by a significant shift away from enforcement. The absence of specific rules would increase legal uncertainties for both regulators, in bringing enforcement actions, and for defendants, in responding to such enforcement actions. Perhaps there are mechanisms in the

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U.K. that serve as effective substitutes for the deterrence flowing from significant public and private enforcement. In the U.S., it is far from clear whether the loss of such deterrence would improve the efficiency of capital markets.

Such enforcement issues, together with other matters that we have discussed, lead us to believe that a significant amount of additional analysis should come before any substantial shift by the U.S. toward the FSA's principles-based and prudential strategies.

One aspect of the FSA regulatory approach that does deserve closer attention than it has thus far received is the FSA's reliance on cost-benefit analysis. Historically, the SEC and other U.S. financial regulators have not relied as much as the FSA on formal cost-benefit analysis. The term "cost-benefit analysis" is nowhere to be found in the index to the widely cited 11-volume, 5,961-page treatise on U.S. securities regulation by Professors Louis Loss and Joel Seligman. In terms of internal SEC deliberations, meaningful cost-benefit analysis appears not to have been undertaken before the institution of some key initiatives, and pertinent economic studies are sometimes not circulated among the Commissioners.⁷⁵ The SEC does make public disclosures of some cost-benefit analyses, primarily in connection with reports submitted to the Comptroller General and in connection with its Federal Register notices of proposed and final rulemaking. However, these public disclosures do not give a clear sense of the depth of the underlying cost-benefit analysis.⁷⁶

By statute, the FSA approach to cost-benefit analysis is much different. Pursuant to the Financial Services and Markets Act 2000 (FSMA), the FSA is required to publish a cost-benefit analysis of both its proposed rules and its guidance.⁷⁷ The FSA uses cost-benefit analysis as a means to explain the compatibility of proposed rules with its general duties, which specifically includes "the competitive position of the UK."⁷⁸ With narrow exceptions, the FSA must release for public comment a draft of the proposed rules along with a cost-benefit analysis.⁷⁹ In fact, even for proposals that are exempt from the requirement of a cost-benefit analysis, the FSA "will generally wish to carry out at least a preliminary cost-benefit analysis."⁸⁰ The transparency of the FSA's cost-benefit analysis procedure is apparent: In addition to requiring publication of these analyses, the FSA published a guide detailing its criteria, including how, when, and why it conducts cost-benefit analysis. There is no analogous guide at the SEC.

The SEC is increasingly hospitable to the use of cost-benefit analysis, and to considerations of competitiveness as part of its analyses. For instance, in testifying before Congress on Sarbanes-Oxley Section 404, Chairman Christopher Cox indicated that SEC staff would be conducting "an economic analysis—using real-world information—to evaluate whether the costs and benefits of implementing Section 404 are in line with our expectations."⁸¹ He noted that "Congress has charged the SEC with making Section 404 work both effectively and efficiently and we recognize that doing so will greatly benefit U.S. investors as well as the competitiveness of U.S. companies and financial services providers in the global capital markets."⁸² SEC Commissioner Paul Atkins has explicitly called on the SEC "to apply stringent cost-benefit analysis in setting regulatory standards."⁸³

Any systematic re-examination of the proper role of cost-benefit analysis at the SEC would need to address the issue of which factors should "count" as benefits, and how to weigh

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them. The SEC has historically focused on investor protection. Considerations of market integrity, the competitiveness of U.S. financial services in the global economy, and financial stability can sometimes involve tradeoffs with investor protection.

C. The Available Pool of Skilled Labor

There is an instructive analogy between Silicon Valley, the world's leading cluster of high-technology entrepreneurial activities, and the New York and London centers for OTC derivatives innovation and financial engineering. A key ingredient supporting the pre-eminence of Silicon Valley is its large pool of talented engineers and scientists, and its ability to attract new talent. The magnet effect of Silicon Valley is based on business and technology activities already in place, and also on the highly-rated living environment of the San Francisco Bay Area. Likewise, a key ingredient in the dominant positions of New York and London in the derivatives industry is access to a large pool of individuals with high levels of financial engineering and mathematical modeling skills. These skills are crucial to the design, pricing, and risk management of derivatives, particularly derivatives of the more innovative sort that arise in the over-the-counter market.

Recent job postings illustrate the point. For instance, The UK Grad Programme, sponsored by Barclays Capital, Credit Suisse, Deutsche Bank, JPMorgan, Lehman Brothers, Merrill Lynch, Morgan Stanley and UBS, posts web advertisements of positions in quantitative financial modeling.⁸⁴ The posted advertisements emphasize the need for entrants whose main qualification is significant post-graduate training in science or mathematics. The Deutsche Bank advertisement posted in December 2007 is illustrative:

Candidates should be in their final year of their PhD degree during the current school year (Class of 2008). Preferred degrees: Maths/Natural Science/Engineering. Must be highly analytical with experience in solving mathematical and financial problems, technically adept with solid experience of at least one standard programming language (preferably C++ or Java), and have excellent communication skills. Leadership potential is highly valued. Strong written and oral communication skills, a commitment to integrity, professionalism and teamwork is required.

A country-by-country comparison of doctoral degrees granted in science and engineering each year shows that the U.S. still grants more of these degrees than any other country.⁸⁵ This statistic is not as reassuring to U.S. financial services employers as it may initially appear. The rate at which doctoral degrees in engineering, mathematics, and the physical sciences are awarded in the U.S. fell from 1995 to 2004.⁸⁶ Specifically:

[D]octoral engineering degrees fell by three percent, doctoral math degrees fell by 10 percent, and doctoral physical science degrees fell by 14 percent. Even doctoral computer science degrees only grew by two percent, despite the explosive growth of the Internet during this time.⁸⁷

While the overall number of science and engineering doctoral degrees granted in the U.S. during the decade between 1993 and 2003 increased by one percent, the rate at which these

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degrees are granted in many other countries grew much faster.⁸⁸ Over that same time period, the U.K.'s production of PhDs in science and engineering increased by 44 percent, and that of Japan increased by 71 percent.⁸⁹ At the undergraduate level, China awards six times more engineering bachelor degrees annually than the U.S., Japan awards 60 percent more, and South Korea (with a population one sixth the size of America's) awards slightly more than the U.S.⁹⁰

Compounding the comparatively poor growth rate of doctoral degrees in quantitative fields awarded in the U.S., many of those receiving these Ph.D.'s in the U.S. are foreign, and are apt to leave the U.S. after graduation, either by choice or by mandate.⁹¹ "Between 2001 and 2005, U.S. [science and engineering] doctorates awarded to foreign nationals increased by 25 percent and comprised nearly all of the overall growth in [science and engineering] doctorates awarded over this time period."⁹² According to a Congressional Research Service report, in 2005, foreign students received 46.1 percent of the doctorates awarded in the physical sciences in the U.S., 55.1 percent of the doctorates in mathematics, and 58.7 percent of the doctorates in computer sciences.⁹³

The paucity of U.S. nationals receiving Ph.D.'s is aggravated by the fact that foreign-born Ph.D.'s face increasing difficulties in staying in the U.S. to work because of red tape and limited visas.⁹⁴ From 1996 to 2005, the majority of foreign students earning science and engineering doctorates only received temporary resident status.⁹⁵ Of the foreign students who earn doctorates in the U.S., only about 13 percent stay and work here.⁹⁶

Europe is also concerned about its ability to attract highly trained workers, but Europe's situation is less worrisome in this dimension. The European Union (EU) is now graduating science and engineering doctorates at about twice the U.S. rate. This figure will increase with the integration of new countries into the EU,⁹⁷ further increasing London's access to a talented workforce. Because of the mobility of workers in the European Union, London has access to Ph.D.'s from other European countries. In personal communications, a number of financial professionals have emphasized London's advantageous access to a large pool of highly educated "quants" from the "grandes écoles" of France, well positioned to meet the high demands that the structuring, pricing, and risk management of derivatives places on financial engineering and mathematical modeling skills.

In addition, Europe appears to have taken a more active approach with respect to the human capital issue. For example, concerns by the EU Justice and Home Affairs Commissioner that "[q]ualified and highly qualified migrants prefer the U.S.A., Canada and Australia [over the EU]," played a large role in the "blue card" plan that the EU unveiled in late 2007.⁹⁸

As other regions increase their production of quantitatively oriented doctoral degrees and as U.S.-educated foreigners continue to leave the country after graduation, employers in the derivatives industry are likely to follow the talented workforce and locate some of their technically demanding quantitative modeling work abroad. We are aware of at least one major derivatives dealer that has developed a center for advanced quantitative financial modeling in Europe, drawing on mathematicians there. Most of the needed work will be accomplished in one place or another, but it is hard to imagine that constraints on the availability of talented U.S.

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quantitative specialists are a good thing for the U.S. derivatives industry, and more generally for the position of the United States in the world's increasingly knowledge-based economy.

D. Accounting Standards

The growth and economic efficiency of the derivatives industry, both in the U.S. and abroad, rely on international harmonization of accounting standards based on fair-market valuation. Effective accounting disclosure provides information that is crucial to investment decisions and corporate governance. Accounting standards in the United States are promulgated by the Financial Accounting Standards Board (FASB), subject to the oversight of the SEC. Important policy tradeoffs related to derivatives accounting involve the transition underway toward accounting based on fair-market valuation, hedge-accounting standards for derivatives, and the convergence of U.S. accounting standards with those of the International Accounting Standards Board (IASB). IASB standards have been adopted, in one form or another, in most other significant regulatory jurisdictions.

Derivatives pose special challenges to effective accounting disclosure. The fair market values of some types of derivatives can be difficult to estimate because of reliance on complex mathematical models, whose empirical relevance or inputs are often difficult to validate. This has been especially the case for structured credit products that are exposed to the degree of correlation of default of different borrowers. Moreover, a derivative contract can pack a lot of economic exposure into a contract that has little or no market value when written. Thus, even if the market values of derivatives are accurately disclosed, investors may not learn until too late about the risks to which they have been exposed through derivatives positions.

The flexibility of derivatives contracts also affords opportunities for abuse. For example, the report of the court-appointed examiner⁹⁹ of Enron's bankruptcy illustrates how Enron was able to borrow significant sums from investors without showing the associated debt in its public accounts, by using families of options or forwards on energy commodities. Each such family of derivatives positions formed a circle of offsetting contracts whose net cash flows were those of a routine debt contract. Even ratings agencies were unable to see through the lack of disclosure of these debt positions.¹⁰⁰

In June 2007, the SEC established an "Advisory Committee on Improvements to Financial Reporting" (ACIFR) with a mandate to examine the U.S. financial reporting system, and to provide recommendations to reduce complexity in the system and to improve the system's usefulness to investors.¹⁰¹ SEC Chairman Cox appointed to the committee 17 individuals representing a wide-cross section of constituencies, including audit committees, bank regulators, broker-dealers, credit rating agencies, investment professionals, pension funds and mutual funds, and securities attorneys. Official observers include senior officials from the FASB, the International Accounting Standards Foundation, the Public Company Accounting Oversight Board, the Treasury Department, and the Federal Reserve. Issues pertinent to derivatives competitiveness appear likely to receive close attention.

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Appendix I reviews progress in some key areas in which U.S. derivatives markets may benefit from improvements in accounting standards, reviews some of the associated practical difficulties, and discusses some recent steps to harmonize U.S. and international standards. Improvements in accounting standards will promote greater use of derivatives by dealers and their customers, and will reduce incentives to use derivatives to obtain unrepresentative disclosure. In the past, such accounting-related abuses have had a detrimental impact on the reputation of derivatives markets and have given ammunition to those who have asked for more burdensome regulation of the market. Further harmonization of U.S. and international accounting standards will reduce the incentives for firms to migrate to jurisdictions with less burdensome accounting requirements, regardless of their disclosure effectiveness.

E. Taxes and The Cost of Living

Tax and cost-of-living factors obviously affect location decisions. Among other location choices, banks and other financial services firms can keep their headquarters in the U.S. while adjusting the geographic distribution of their professional staffs and trading activities. As we outline in Appendix III, hedge fund managers are particularly responsive to differences in tax burdens.

London is a more expensive city than New York. Each year, Mercer Human Resource Consulting conducts a survey of over major 100 cities around the world to measure the comparative costs of over 200 items across locations, including housing, transport, food, clothing, housing goods, and entertainment. This survey is used to help companies and governments determine compensation adjustments for their expatriate employees. The two most recent Mercer surveys show London to be materially more expensive than New York, which is the most expensive U.S. city covered by the survey. As of March 2007, London was the second most expensive city in the world. New York was fifteenth on this list (Mercer, 2007). Relative to New York, London was 26.3% more expensive in terms of Mercer's cost-of-living index.

A comparison of New York and London with respect to tax burdens is more mixed. It appears that tax burdens (broadly conceived) on financial services firms are materially higher in New York than in London, while the tax burdens on such firms' employees are modestly higher in London than in New York. Based on data gathered by PricewaterhouseCoopers (PwC) for the World Bank, Yeandle, Mainelli, and Harris (2007) found that the total tax rate for such firms (that is, a combination of corporate income tax, social security or other labor taxes, and also property and turnover taxes) was 35% in London but 46% in New York. The effective tax rate for such employees was 34% in London and 33% in New York. Subsequent World Bank-PwC non-industry- and non-city-specific data, released in November 2007, is broadly consistent.¹⁰² (World Bank and PricewaterhouseCoopers, 2007) Figure 9 provides a few basic comparisons of New York personal and corporate tax rates with those of a small selection of alternative financial centers.¹⁰³

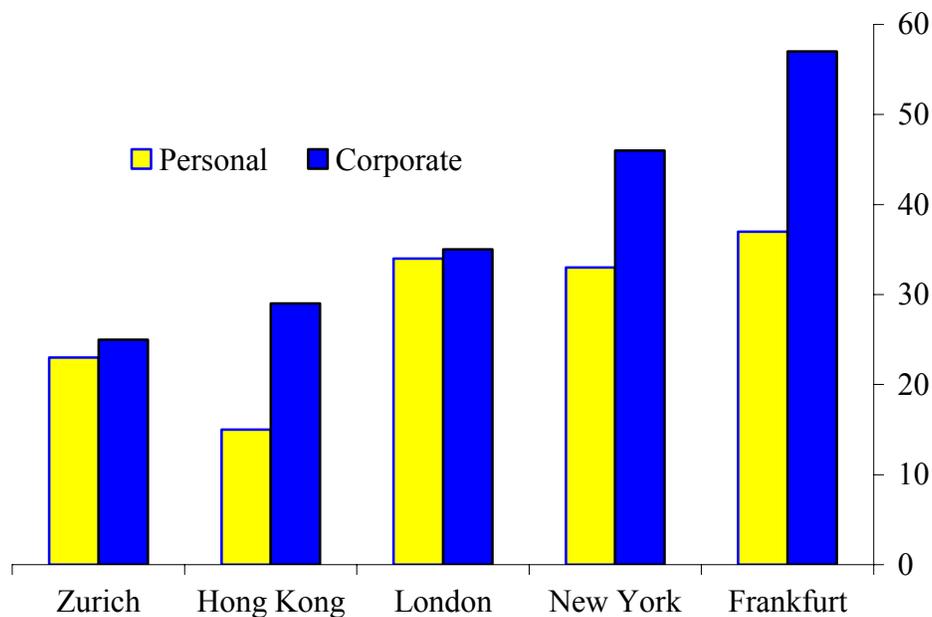
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F. A Global Currency

The status of the U.S. dollar as a global currency promotes trading in derivatives that are based on foreign exchange against the U.S. dollar or based on U.S.-dollar interest rates. Until recently, the dollar held the status of “global currency” uniquely. The emergence of the euro as a global currency rivaling the dollar, and the accompanying birth of a vibrant euro-based bond market, have contributed significantly to growth in euro-based derivatives on currency, interest rates, and credit risk.

Figure 9. Corporate and personal effective tax rates (%).

Source: Source: Yeandle, Mainelli and Harris (Sept. 2007)



According to calculations by the European Central Bank (ECB) based on BIS data,¹⁰⁴ from September 1999 to September 2006, the outstanding amount of European domestic debt securities more than doubled from about 7 trillion U.S. dollars (USD) to almost 15 trillion USD. During this period, U.S.-dollar domestic debt securities outstanding grew at a slower rate (from about 15 trillion USD to about 25 trillion USD). More telling, the fraction of foreign-currency USD-denominated debt (“international bonds”) fell from about 50% of the global stock to about 45%, while the fraction that was euro-denominated grew from about 20% to about 30%. (The yen’s position in the international bond market suffered quite dramatically during this period.) There has also been a significant reduction in the use of the dollar, in favor of the euro, as a central-bank reserve currency. From March 1999 to December 2007, according to the IMF, the fraction of central-bank reserves held in dollar-denominated securities declined from 71.1% to 63.8%, while reserves held in euros increased from 18.1% to 26.4%.

The European securitization market has grown from almost nothing in 2002 to roughly 1 trillion euros in 2006. While significantly larger throughout, the U.S. securitization market grew

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at a much slower rate during this period. Overall, according to ECB calculations, from 1999 to 2006, the share of the global stock of debt securities denominated in euros grew from 22% to 27%.

The dramatic increase in the liquidity of European bond markets is an important determinant of related derivatives market activity. For example, the ECB writes that “As they are denominated in the same currency, yields on bonds issued by different euro area governments are very similar. Accordingly, derivatives on German government bonds can be used to hedge positions in any euro area government bonds. Trading can therefore be concentrated on German government bond derivatives alone.” Trading in Eurex government bond futures grew 65% from 2002 to 2006.

The liquidity of the underlying European bond markets has been assisted by the development of deep electronic dealer markets (MTS) and clearing platforms (Euroclear and Clearstream). Trading in credit derivatives based on European corporate debt have thrived on the back of exceptional growth in European corporate bond issuance, the development of the Itraxx family of standardized credit derivatives indices, as well as new inter-dealer execution platforms (GFI and Creditex) and dealer-to-customer trading platforms (MarketAxess and TradeWeb). We have already reported that non-U.K. credit derivatives trading in Europe has taken a significant fraction (about 10%) of the global credit-derivatives market away from London over the years 2002-2006, according to volume data from a survey by the British Bankers Association.

Returning to our theme of co-location externalities, European-based fixed-income securities and derivatives dealers (whether headquartered in the U.S. or not) are the most important beneficiaries of the dramatic improvement in the depth and liquidity of the European bond and credit derivatives market. According to April 2007 BIS survey data, 39% of the volume in the interest-rate segment of the OTC derivatives market was based on the euro, while dollar-denominated contracts accounted for 32 percent.

V. CONCLUSIONS AND A RECOMMENDATION

Any suggestion that derivatives trading is leaving the United States for Europe in a wholesale way is not well supported by the facts. The U.S. continues to hold the dominant position in exchange-traded derivatives. Although London is the world’s leading center for trading OTC derivatives, New York has generally maintained or improved its position over the past decade. New York does seem to be losing some fraction of the markets for certain high-value-added products, including OTC equity derivatives. In absolute terms, growth in the volume of U.S. derivatives trading has been exceptionally high in all areas. The U.S. (and global) derivatives industry has been in an almost continual boom for a generation.

The ability of U.S. financial services firms to compete in the global derivatives market depends largely on the strengths of U.S. financial centers, particularly New York, across a broad array of other markets and services. A derivatives dealer considers the benefits of co-location with customers, knowledge spillovers, and synergies with the underlying asset markets. The depths of a financial center’s commercial banking services and securities markets are crucial, as

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is the pool of highly-numerate human resources. The U.S. has not sufficiently encouraged the growth of the available pool of highly educated scientists and mathematicians essential to the derivatives industry.

Co-location synergies are not everything. The efficiency of financial markets, including derivatives markets, relies on regulation that effectively balances costs (including those imposed on financial services providers) with benefits, particularly investor protection, market efficiency, and financial stability. Explicit cost-benefit analysis may be useful. The U.S. regulation of financial markets and products suffers from excessive fragmentation, which unnecessarily raises compliance costs and slows financial innovation.

In discussions among derivatives-market practitioners and regulators, and in general public discourse, recurrent concerns are expressed over standards for sales practices, disclosure, appropriate use, modeling, and risk management. Derivatives activities sometimes contribute to systemic risk. Elsewhere in this report, we have noted how some of these concerns have come up again in the recent and ongoing string of dramatic losses involving credit derivatives and securitizations.¹⁰⁵ The long-term overall viability of derivatives markets depends on constant consideration of standards for best practice and systemic-risk issues. Attempts to establish standards for derivatives practice, such as that of the 1993 Group of Thirty report, “Derivatives: Practices and Principles,” are valuable and should be periodically updated.

U.S. regulation cannot be formulated in isolation of regulation elsewhere. Doing so may invite the migration of financial services to “lower-cost, lower-quality” regulatory environments. In the long run, U.S. financial regulation is effective only if well-coordinated with regulation in alternative jurisdictions. In the derivatives area, the harmonization of capital requirements¹⁰⁶ and disclosure requirements are especially important arenas for international cooperation. In the area of disclosure standards, important efforts at harmonization are on-going. U.S. accounting standards should continue to converge with international standards, with a focus on fair-market valuation and a treatment of derivatives that is simpler and more consistent with the market valuation of underlying assets and liabilities.

We believe that the U.S. can improve its competitive position mainly by strengthening the location advantages of its financial centers, particularly New York, and by better promoting those advantages. The U.K.’s financial industry and policymakers have been similarly focused on improving and advertising the strengths of London as a financial center.¹⁰⁷

In Section IV.A, we listed specific factors that influence financial firms to provide derivatives-market services in a particular financial center. Most of these factors are applicable to financial services generally. We believe that an important first step is to collect, analyze, and maintain data bearing on the concentration of location advantages in U.S. financial centers. A commonality of interest in the proposed database should exist among a wide range of financial services firms and policy makers. Data regarding the pool of suitably trained human resources takes on extra significance, however, for derivatives markets.

It is crucial that policy makers have better access to solid information on the location factors that we have outlined. Among other goals, this would serve better-focused policy

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research and choices. While some of the data that we propose are already available, we are not aware that they exist in any suitably organized and jointly accessible form. These data could also be useful when promoting the United States as a location of choice for financial services firms, especially if there are comparative data for other major financial centers. Econometricians with expertise in co-location economics could be of assistance in developing a blueprint for data collection and some of the statistical methods that could exploit these data for a better understanding of the location decisions of financial services firms.

The efficient transfer of financial risk through derivatives trading benefits individuals, corporations, and governments. A vibrant U.S. derivatives industry is an essential element of the U.S. financial services sector, one of the pre-eminent components of the U.S. economy. Aided by intelligent policies and industry practices, the U.S. is well positioned to build on the existing strengths of its derivatives markets.

APPENDICES

APPENDIX I. ACCOUNTING STANDARDS RELATED TO DERIVATIVES

This Appendix I reviews progress in the three key areas in which the U.S. derivatives markets may benefit from improvements in accounting standards, and reviews some of the associated practical difficulties. These three areas are hedge accounting, convergence of U.S. and international accounting standards, and fair-market valuation of financial instruments.

A. Hedge Accounting

A special challenge to effective accounting standards arises when derivatives are used to hedge against changes in the market values of economic positions that are not themselves marked to market. For example, the market value of a commitment by an airline to purchase jet fuel is typically not marked to market in the accounts of the airline as liability. Such a commitment could be hedged with forward contracts (or swaps, or options) to purchase jet fuel. Reducing the risk of changes in jet fuel expenses with a hedge typically improves the efficiency of the airline, facilitating its planning and reducing financial distress costs, such as those associated with emergency capital raising.

In some situations, however, accounting standards may require recognition of changes in the market value of the derivatives hedge on the airline's balance sheet, or on the income statement, even though the underlying commitment to buy jet fuel is not recorded at market value. In the event that jet fuel prices decline dramatically, a derivatives hedge would be marked in the airline's accounts at a loss that is in fact, although not recognized in the accounts as, offset by a gain associated with a reduction in the present value of future jet fuel input costs. The airline is faced with a choice of hedging and having its accounts reflect risk that is not actually present in reality, or the alternative of foregoing the benefits of the hedge. U.S. Generally Accepted Accounting Principles (U.S. GAAP) have moved, via a slow and tortuous route,

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toward “hedge accounting,” whose general intent is to have hedges marked to market only as changes in the market value of the underlying commitment are reflected in the accounts. When effective, hedge accounting therefore improves disclosure. The current U.S. GAAP standard, SFAS 133, is notably complex and limited. Of course, hedge-accounting complexities disappear if the underlying positions to be hedged are themselves marked to market.

In a systematic and detailed comparison of International Financial Reporting Standards (IFRS) and US GAAP issued in October 2007, PriceWaterhouseCoopers concluded that the hedge-accounting provisions of the two standards were “similar” but that “differences can arise in the detailed application.”¹⁰⁸ For instance, under the IFRS accounting standard dealing with hedge accounting, IAS 39, but not under US GAAP, an entity is generally permitted to separate a derivative into components representing different risks and to designate a such component as a hedging instrument for hedge-accounting purposes.¹⁰⁹ In other cases, however, corporations sometimes find the IFRS hedge accounting provisions more restrictive.¹¹⁰

At its November 7, 2007 meeting, the FASB continued its ongoing discussions of a fair-value hedge-accounting approach that would eliminate some of the complex elements of the current SFAS 133 hedge accounting model.¹¹¹ In September 2007, the IASB published an exposure draft that would amend IAS 39, clarifying the IASB’s original intentions regarding the hedge accounting of financial items.¹¹² SFAS 133 focuses solely on derivatives accounting, while IAS 39 covers the recognition and measurement of financial instruments, with a section on derivatives and hedge accounting. Achieving hedge accounting treatment under even the “principles-based” IASB scheme is complex; one accounting firm’s hedge-accounting guide runs over 170 pages.¹¹³ In the U.S., prior to the issuance of SFAS 133 in 1998, accounting guidance for derivatives and hedging was in a state of disarray.¹¹⁴ In a 2004 review of the derivatives accounting of 57 international companies, Fitch concluded that earnings restatements may occur because of the difficulty of correctly applying the accounting provisions of both IAS 39 and SFAS 133.¹¹⁵

In 2005, following well-publicized problems at Fannie Mae that centered on hedge accounting issues, 57 reporting companies restated their financials due to hedge-accounting errors.¹¹⁶ Fannie Mae did not complete its 2004 restatement until December 2006, and reduced its statement of retained earnings by \$6.3 billion.¹¹⁷ In 2006 alone, Fannie Mae spent \$1.05 billion on restatement-related costs.¹¹⁸ By one estimate, in the three years ended August 31, 2007, there were 186 restatements because of SFAS 133.¹¹⁹ One important cause of such restatements involved the misapplication of the so-called “short-cut method” allowing entities to obtain hedge accounting treatment without meeting certain general criteria for such treatment.¹²⁰

B. Convergence Toward Global Accounting Standards

The development of high-quality globally accepted accounting standards would facilitate comparability of financial results for investors, reduce burdens on issuers, and permit better and more uniform global access by firms to capital. The move toward convergence of FASB and IASB standards began in 1994.¹²¹ Convergence seems likely to entail a move by the U.S. toward a more IASB-style principles-based approach.¹²² In October 2007, the FASB chairman indicated that this may occur in five or six years.¹²³ Obviously, the benefits of convergence are not

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restricted to the area of derivatives. Moreover, convergence in disclosure should extend beyond accounting standards: narrative disclosure (such as that relating to the SEC's "Management's Discussion and Analysis" requirements) is also important, and there are benefits to convergence as to this type of disclosure as well.

On December 21, 2007, the SEC took a major step to facilitate convergence as to accounting standards.¹²⁴ The SEC adopted final rules that would allow foreign private issuers to use financial statements prepared in accordance with the International Financial Reporting Standards (IFRS) as issued by the IASB, without requiring those issuers to reconcile the statements to U.S. GAAP. (Jurisdictional adaptations of IFRS would not be entitled to this treatment.) The SEC stated that "IFRS as issued by the IASB and U.S. GAAP are both sets of high-quality accounting standards that are similar to one another in many respects, and the convergence efforts to date have progressed in eliminating many differences." The SEC has yet to allow US companies to use IFRS instead of US GAAP, but held a roundtable on this issue in December 2007.

A more principles-based, and less rules-based, approach to accounting may lead to somewhat more variation in reporting practices across firms. In the derivatives context, there is some evidence that the IASB standards may be sufficient, at least in general terms. For instance, Credit Suisse Group reported that, based on its experience, analysts and investors rarely make use of the reconciliation that Credit Suisse provides of its IASB accounts with U.S. GAAP: "[r]ather, analysts and investors focus almost exclusively on the financial statements prepared under the primary GAAP, irrespective of whether it is IFRS or U.S. GAAP."¹²⁵ Similarly, the International Swaps and Derivatives Association (ISDA) notes that its members "receive few if any requests from analysts or other users for further technical explanation or supplementary information in relation to their U.S. GAAP reconciliation from IFRS."¹²⁶

It remains to be seen whether convergence toward IASB-style principles-based accounting standards will be achieved through some sacrifice of the traditional investor-protection goals that have been a hallmark of the SEC's approach to accounting disclosure. The SEC has broad authority to establish accounting principles; the FASB is subject to SEC oversight. In order to address concerns over FASB independence, flowing from its reliance on voluntary contributions from accounting firms and companies, Section 109 of the Sarbanes-Oxley Act of 2002 provides that funding for the FASB is through fees imposed on reporting companies.

The SEC has joined with the European Commission, the Financial Services Agency of Japan, and the International Organization of Securities Commissions to work together to achieve a means of greater accountability of the IASB and International Accounting Standards Foundation (IASF) to governmental authorities charged with protecting investors and regulating capital markets. As for funding, the IASF relies on a combination of voluntary contributions and levied funds. The SEC is rightly concerned that the IASF has a more independent and stable funding system.

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C. “Fair Value” and the “Fair Value Option”

Effective November 15, 2007, U.S. companies are subject to new FASB provisions mandating greater disclosure of financial instruments on the basis of fair value. The new standards are SFAS 157 (“Fair-Value Measurements”) and SFAS 159 (“Fair Value Option for Financial Assets and Financial Liabilities”). These standards offer more harmonization with IFRS¹²⁷ and substantially reduce the significance of SFAS 133. During the transition to fair-value accounts, however, some firms will be tempted to manage their earnings through the option granted under the new standards to select when each individual instrument makes the transition to mark-to-market valuation.

These new standards also mandate additional disclosure for financial instruments regarding the degree of precision of the market-valuation methodology. The fraction of a bank’s instruments that are reported to have a low-precision (“Level 3”) valuation methodology is useful information to investors in judging the overall reliability of the bank’s accounts. To assuage investor concerns, some European banks are apparently considering providing such Level-3 information on a voluntary basis.¹²⁸ A front-page *Wall Street Journal* story on October 12, 2007 reported on the proliferation of difficult-to-value mortgage-related securities, claiming a variety of valuation abuses, and noting that securities regulators were examining whether financial firms were valuing assets consistently and fairly.¹²⁹ We have commented in the main text on the recent AIG writedowns of sub-prime related assets that was prompted by a finding by PriceWaterhouseCoopers, its auditors, that AIG had a “material weakness” in its reporting.¹³⁰ More generally, Warren Buffett stated that:

Many institutions that publicly report precise market values for their holdings of CDOs and CMOs are in truth reporting fiction. They are marking to model rather than marking to market. The recent meltdown in much of the debt market, moreover, has transformed this process into marking to myth.¹³¹

Even prior to the subprime crisis, members of an advisory group to the PCAOB expressed concerns that auditors knew so little about valuation of financial assets that the industry would not be up to speed for another 20 to 30 years.¹³² In December 2007, the PCAOB felt compelled to issue a “staff audit practice alert” in light of the auditing challenges posed by the subprime finance crisis and the transition to FAS 157.¹³³ The alert highlighted the auditing of fair-value measurements, the classification of fair-value measurements within the 3-level scheme, the use of specialists in fair value measurements, and the use of pricing services. FASB has formed a “Valuation Resource Group,” including individuals with a range of experience and expertise in valuation matters, to help determine whether supplementary guidance on FAS 157 may be needed. The FASB is also coordinating its fair-value measurement efforts with the IASB.¹³⁴

The financial services industry recognizes these difficulties. In December 2007, Josef Ackermann, the CEO of Deutsche Bank stated that the sub-prime crisis had shown that although there were general principles for valuing complex products, these needed to be interpreted consistently and more precisely across the market, especially when there was temporarily no market price for a product.¹³⁵ The relative exposure to difficult-to-value instruments has

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increased. Speaking in November 2007, Jamie Dimon, the CEO of JPMorganChase, noted that a larger proportion of the balance sheets of financial companies is now in illiquid assets: “[i]n the old days the investment banks had very few illiquid securities and now they have quite a few.”¹³⁶

APPENDIX II. AWARDS TO DERIVATIVES DEALERS

In the text of this report, we examined various measures of the relative activity of U.S. and non-U.S. derivatives providers. This appendix provides some views of the perceived qualitative strengths of derivatives providers. Since 1995, RISK, an influential business magazine focused on the worldwide derivatives market, has provided “RISK Awards.” These are awarded to individual financial institutions to “recognize best practice and innovation in the derivatives and risk management industries globally” (2007 RISK Awards, at 1). The categories for these awards include Derivatives House of the Year, Risk Manager of the Year, Equity Derivatives House of the Year, Commodity Derivatives House of the Year, Credit Derivatives House of the Year, Currency Derivatives House of the Year, and Derivatives Exchange of the Year. A few categories (such as structured products) were added over the life of the awards, and in some years one or two categories of awards were not given. Generally, however, the categories (as well as the general methodology for selecting the winners) remained consistent over the life of the awards. The winners are “based solely on the judgment of Risk’s writers and editors” (2001 RISK Awards, at 28). They are said to “base [their] product award decisions solely on the basis of interviews with a broad range of clients, and not pitches by the dealers themselves.” (2003 RISK Awards, at 1). The decision process as to the 2006 RISK Awards was explained as follows:

“An editorial panel at RISK decided the awards winners over a three-month judging process spanning September to December. Candidates were asked to submit information on their business in each of the product categories over the past 12 months. Those firms, or individuals, on the shortlist then underwent a series of interviews. RISK then performed a lengthy due diligence process, contacting banks’ clients to confirm that trades took place and that customers were happy with the end results. In making the final decisions, a number of factors were considered, including innovation, infrastructure, organization, risk management, quality of post-sales service and end-user feedback.”¹³⁷

We reviewed the RISK Awards for the period from 2000 through 2007. Table 3 below shows the results of our analysis. Instead of listing the name of the financial institution, we set forth the location of its headquarters. This analysis offers insight into the competitiveness of derivatives houses headquartered in the U.S. as compared to their foreign-headquartered competitors in various derivatives categories. Of course, and as noted in the discussion below, a U.S.-headquartered bank’s award may be due to its derivatives activities overseas.

Overall, Table 3 shows that U.S. banks have remained major players in many derivative fields, especially credit derivatives and commodity derivatives, while foreign banks have consistently dominated other derivative products. For example, French banks show up in equity derivatives awards, and European banks in currency derivatives awards. U.S. derivatives

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exchanges also won the Derivatives Exchange of the Year award six out of the seven years that it has been given.

That U.S. banks continue to hold a leading position in derivatives markets is also highlighted by their receipt, in 5 of the last 8 years, of RISK's Derivatives House of the Year awards, with the last win coming in 2007 by Merrill Lynch. Notably, in documenting Merrill's successes in 2007, RISK cited its aggressive global expansion marked by the hiring of 700 people (2007 Risk Awards, at 2). Also of note was Merrill's \$3 billion CDO transaction, titled Jazz III, which it managed in France (id. at 5).

	2000	2001	2002	2003	2004	2005	2006	2007
Derivatives House of the Year	US	US	US	German	US	UK	German	US
Risk Manager of the Year	US	US	Australia	Swiss	German	Swiss	US	US
Equity Derivatives House of the Year	US	French	French	German	French	French	French	French
Commodity Derivatives House of the Year	US	US	US	German	UK	US	UK	US
Credit Derivatives House of the Year	German	US	US	German	US	German	US	US
Currency Derivatives House of the Year	Swiss	German	Swiss	Dutch	US	Swiss	UK	UK
Derivatives Exchange of the Year	US	US	US	UK	US	N/A	US	US

Table 3. Domicile of RISK Derivatives Dealers Awardees, 2000-2006

Similarly, the 2007 Credit Derivatives House of the Year winner, U.S. bank Lehman Brothers, prevailed due to both a global presence and a strong U.S. presence. The report points to over \$700 million in capital that Lehman Brothers raised for New York-based credit derivatives products companies, while also noting billion dollar successes in Hong Kong and Singapore (id. at 19–20).

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While U.S. banks have dominated the commodity derivative and credit derivative awards over the last eight years, French banks, particularly Société Générale and BNP Paribas, have led in equity derivatives. But, again, the success of the French banks has come globally, including in the U.S. The 2005 report cites Société Générale's equity derivative accomplishments in European countries, in Greece, and in Hong Kong, but also notes that "a quarter of [their] revenues now stem from the US." (2005 Risk Awards, at 17). The report for the 2007 winner, French bank BNP Paribas, discusses this bank's high marks in China and the addition of equity-linked structured products to its already large U.S. market offerings. (2007 RISK Awards, at 21).

Table 3 also shows that European banks lead in currency derivatives awards; a U.S. bank has won only once in our sample period, in 2004. U.K.-based banks Barclays Capital and Royal Bank of Scotland won in 2006 and 2007, respectively; both banks were noted for their ability to hedge shifts in the price of the U.S. dollar.

Overall, the allocation of RISK Awards suggests that banks headquartered in the U.S. have retained an international presence in the derivatives markets over the last eight years. Strong recent results in the overall award category of Derivatives House of the Year and the Derivatives Exchange category contradict any suggestion of a general decline in the ability of U.S.-headquartered banks to compete in global derivatives markets. Over the eight-year period, U.S. derivatives houses dominated the awards for commodity and credit derivatives; foreign-headquartered derivatives houses dominated in the currency and equity derivatives.

We have no independent information on the reliability of the RISK Awards. Comprehensive reports describing the successes of the award winner are provided with the publication of each award. Further, because RISK also publishes alternate rankings of derivatives houses ("Inter-dealer" rankings and "End-user" rankings), which are based solely on feedback from industry players, RISK's discretion in choosing RISK Award winners is tempered to the extent that any significant and unexplained deviation from the judgment of banks, corporate end-users, and institutional end-users, as published in the Inter-dealer and End-user rankings, would discredit the awards.

The three latest annual rankings of "best derivatives provider" announced by Global Finance Magazine are broadly consistent with the RISK awards. The Global Finance rankings also suggest the tendency of European-headquartered institutions to lead in currency and equity derivatives, and with leadership by U.S.-headquartered institutions in credit derivatives. Indeed, in 2006 and 2007, the best equity derivatives providers in North America were two French banks.

Unlike the RISK Awards, the Global Finance rankings also address the strengths of derivatives providers in particular regions of the world (for example, North America, Europe, and Asia). We found it notable that, in Asia, European-headquartered banks won far more designations as "best derivatives provider" than did U.S.-headquartered banks. In Asia, of the 15 awards for the 3 years, only one award went to a U.S.-headquartered bank (in 2007, in interest

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rate derivatives). We were unable to ascertain much about the methodology of the Global Finance rankings, and so do not detail these rankings here.

APPENDIX III. THE ROLE OF HEDGE FUNDS

Hedge funds, with fewer constraints than traditional institutional investors and often run by highly sophisticated managers, are extremely active in the derivatives markets.¹³⁸ Timothy Geithner, the President of the Federal Reserve Bank of New York, has spoken repeatedly of the “large role” played by hedge funds in derivatives markets and how this may exacerbate some of the traditional challenges facing financial markets.¹³⁹

The hedge fund industry is large and continues to grow. In 1993 to 2003, for instance, U.S. hedge fund assets grew by an order of magnitude, from \$50 billion to \$592 billion.¹⁴⁰ According to the HedgeFund.net (HFN), a database covering over 12,000 hedge funds, worldwide hedge fund assets as of September 30, 2007 stood at \$2.68 trillion, compared with \$1.17 trillion only three years earlier.¹⁴¹

The location of hedge fund investment managers (as distinguished from the legal domicile of the hedge fund) affects the locations of their derivatives activities, especially in the OTC derivatives market. Policies influencing the location decisions of hedge funds play a role in the vibrancy of the U.S. derivatives industry.

U.S.-based hedge funds appear to be losing market share to Europe-based hedge funds. Based on HFN data, it appears that, as of June 30, 2004, hedge funds whose investment managers are located in the U.S. accounted for three-quarters of worldwide hedge-fund assets, but by September 30, 2007, this fraction had dropped to roughly two-thirds. In the same period, the fraction of hedge funds whose investment managers are located in Europe increased from about one-fifth to roughly one-third. Table 4 shows quarter-by-quarter changes in the geographic distribution of worldwide hedge fund assets, based on HFN data.

As a general matter, hedge-fund investment managers have exceptional freedom in their location choices. (In our discussion of hedge-fund location, we leave aside activist hedge funds, where proximity to target companies is often critical.) Relative to banks and traditional institutional investors, hedge funds do not depend on proximity to their customers or service providers. For example, no major money-center bank is headquartered in Connecticut, where 17 of the world’s largest hedge funds have their headquarters. Hedge fund assets managed in Connecticut account for one-third of the entire global hedge fund total, according to the Connecticut Hedge Fund Association.¹⁴² The popularity of Connecticut as a hedge fund location may be related to its proximity to New York’s financial center, and its relatively low income tax rate.

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Investment Manager Location	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1	2006 Q2	2006 Q3	2007 Q1	2007 Q2	2007 Q3
US	74.5	73.7	73.0	72.4	71.8	72.6	69.2	65.9	65.2	64.8	65.2	65.2	66.2
Europe	22.7	23.2	23.8	24.5	24.9	24.3	27.3	30.4	31.5	31.6	31.2	31.3	30.1
Asia	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.8	1.7	1.6	1.6	1.6	1.8
Other	1.4	1.6	1.6	1.6	1.7	1.7	1.9	1.8	1.5	1.9	2.0	1.9	1.8

Table 4. Hedge Fund Asset Breakdown by Investment Manager Location, by Percentages

Hedge funds on both sides of the Atlantic closely monitor and seek to influence regulatory developments.¹⁴³ Related to this, hedge funds tend to engage in elaborate forms of self-regulation, such as the Managed Fund Association’s *Sound Practices for Hedge Fund Managers* (in the U.S.) and the Hedge Fund Working Group’s *Hedge Fund Standards: Consultation Paper* (in the U.K.). At least until recently, London may have benefited, in terms of hedge-fund location decisions, from the perceived “light-touch” attitude of the FSA with respect to hedge fund regulation.¹⁴⁴

The key driver of a hedge fund’s success is usually human capital. Differentials in the income tax rates to which fund managers are subject therefore significantly influence hedge fund location decisions. In December 2007, one consultancy claimed that “dozens and dozens” of its London hedge fund clients were moving 20-to-100 percent of their operations to Switzerland because of possible changes in U.K. taxation of non-domiciled residents.¹⁴⁵ With the announcement in February, 2008, of a loss of U.K. tax allowance and increased charges for foreign workers in the U.K., senior City of London bankers expressed deep concern that hedge funds may leave, because of their “shallow roots” in the U.K. and their reliance on people from overseas.¹⁴⁶

It is beyond the scope of this report to discuss the proper roles of the SEC, CFTC, bank regulators, or other domestic or international governmental authorities with respect to hedge funds, or to delve into optimal tax policies. Investor protection, market integrity, systemic risk, and other matters are proper considerations of regulatory policy and enforcement, as are the direct and indirect costs of governmental intervention. We do emphasize, however, the high degree of geographic mobility of hedge fund investment managers, and thus the relatively high sensitivity of their location decisions to almost the entire spectrum of governmental and non-governmental factors that influence activity in derivatives markets in the U.S.¹⁴⁷

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¹ The notional amount of a derivatives contract typically refers to the face value or the market value of the underlying asset whose risks are transferred with the derivative. The reported notional amount is from the Bank for International Settlements (Monetary and Economic Department), Triennial and semiannual surveys on positions in global over-the-counter (OTC) derivatives markets at end-June 2007, at 1 (Nov. 2007).

² As of October 2007, New York State Department of Labor data show employment of 191,000 in New York City in the category “Securities, Commodities Contracts, and Other Financial Investment and Related Activities.”

³ On January 30, 2008, in “Subprime Fault Lines: How Bank Stress Could Stress Other Markets,” Moodys reported total writedowns among financial institutions of \$145.7 billion. This figure did not include a \$4 billion UBS writedown reported in the same week.

⁴ According to ISDA’s 2007 survey of 66 OTC derivatives dealers, about 15 percent of equity derivatives trades contained paperwork mistakes. The survey estimated a 14-day lag in the settlement of unconfirmed OTC equity derivatives, and a 5-day lag in credit derivatives.

⁵ See Said, Jonathan, Richard Snook, Douglas McWilliams and Mark Pragnell. 2007. *The Importance of Wholesale Financial Services to the EU Economy*. Centre for Economics and Business Research (CEBR).

⁶ Bloomberg, Michael R., and Charles E. Schumer. (2006). “Sustaining New York’s and the US’ Global Financial Services Leadership.” Office of Mayor. [hereinafter Bloomberg-Schumer Report]

⁷ The United Kingdom leads in financial-services exports, according to CEBR, with 23.8% of the global market in 2004.

⁸ In a study prepared for the City of London, Said, Snook, McWilliams, and Pragnell (2007), *supra* note 5, estimate that of 247,000 wholesale finance jobs in London, 13,300 are performing activities directly related to the provision of derivatives market services. Of the remainder, 67,800 are estimated to be involved in investment banking, 43,000 in equities, 19,900 in bonds, 6,200 in foreign exchange, 51,300 in fund management, 44,700 in insurance, and 1,500 in central banking.

⁹ See http://midwest.chicagofedbblogs.org/archives/2007/04/financial_servi.html.

¹⁰ See Schwabish, Jonathan A. 2005. “Estimating employment spillover effects in New York City with an application to the stock transfer tax.” *Public Finance Review*, 33:6, pp. 663–89. From these elasticities and other data, Schwabish estimates that a proposed stock transfer tax could cost between 30,000 and 42,000 private-sector New York City jobs.

¹¹ See <http://www.bls.gov/oco/ocos122.htm>.

¹² See, for example, the Bloomberg-Schumer Report, *supra* note 6, at 54.

¹³ Nick Sawyer. “New World Order.” *Risk.net*, June 1, 2007.

¹⁴ See “The CFTC Submission on Foreign Derivatives Exchanges,” and “Derivatives Exchanges Owe Much to Wise Regulation,” at, respectively, http://www.cfr.org/publication/11374/cftc_submission_on_foreign_derivatives_exchanges.html?breadcrumb=%2Fbios%2F1637%2Fbenn_steil and http://www.cfr.org/publication/12104/derivatives_exchanges_owe_much_to_wise_regulation.html

¹⁵ This \$2.8 billion acquisition of ISE by Eurex has received a signal of eventual approval from the SEC, and is reported by Reuters to be nearing completion at the beginning of 2008.

¹⁶ These volumes are adjusted for local double counting, and are based on the location of the sales desk of the reporting dealer. The New York Federal Reserve (NY Fed) collects separate data based on the location of the trading desk of the reporting dealer, rather than the sales desk. In its April 2007 report, “The Foreign Exchange and Interest Rate Derivatives Markets: Turnover in the United States, April 2007,” the NY Fed compares the sales-desk-

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based volume data to the trading-desk-based data and does not find a major difference. The BIS triennial survey figures reflect trading-desk reports whenever a trade is not made through a sales desk.

¹⁷ Notably, only three banks, J.P. Morgan, Citigroup, and Bank of America are responsible for 91% of the U.S. bank volume.

¹⁸ In 2007, JP Morgan was named the top credit derivatives provider in both Europe and North America by Global Finance and by Banker. In 2007, J.P. Morgan received RISK Magazine's award as "Credit Derivatives House – Pioneer and Modern Great." Goldman Sachs and Deutsche Bank received Euromoney's 2006 and 2007 awards, respectively, as the best credit derivatives house.

¹⁹ The outstanding notional amounts of U.S. bank and global equity OTC derivatives in June 2000 were \$858 billion and \$1,645 billion, respectively, according to BIS and OCC data.

²⁰ Société Générale's web site touts that the "Equity Derivatives team of SG CIB is the largest in the world." In 2007, SG CIB was awarded best equity derivatives house by a number of industry publications, including Banker, RISK, and Euromoney. According to Bloomberg reporting on November 29, 2005:

Société Générale takes in more money selling equity derivatives than any other bank in the world: as much as \$2 billion in revenue in 2004, according to estimates by Merrill Lynch & Co. and Morgan Stanley. The bank has deployed mathematics-savvy recruits to become a leader in the lucrative niche. It fashions ever-more-intricate derivatives -- too intricate, some clients say -- and offers them to banks and individuals worldwide. The growth continues. In the first half of 2005 alone, equity derivatives generated about 1.3 billion euros (\$1.54 billion) of revenue for Société Générale, London-based Morgan Stanley analyst Stephen Jarvis estimates.

²¹ In 2006, Morgan Stanley received awards as the world's top dealer in commodity derivatives by Banker and by RISK.

²² This assumes a duration of roughly 4 years on a 5-year swap, for a margin of 4 basis points of notional per basis point of swap rate.

²³ Trading revenues are often used as a proxy for trading profitability, although they do not include trading expenses. See, for example, <http://www.efinancialnews.com/usedition/index/content/2447611477> . For another example, see <http://www.nytimes.com/2004/10/21/business/21bank.html> . The OCC provides the composition of the OTC derivatives trading revenues of U.S. commercial banks, as well as the associated total notional volume outstanding of trading of derivatives of various types. For a pure "matched-book" dealer, revenues would ideally be approximated as volume multiplied by dealer margins, based on the difference between bid and ask prices. In reality, however, revenues include a significant amount of noise associated with changes in the market values of proprietary trading positions, and also with the fact that an intermediary's net effective inventory position in a given market is rarely zero even if there is no intention to take a proprietary exposure.

²⁴ For credit derivatives, we have OCC revenue data for only the last two quarters.

²⁵ Tufano, Peter. 1989. "Financial innovation and first-mover advantages." *Journal of Financial Economics* Vol. 25, pp. 213–40.

²⁶ See Schroth, Enrique Julio. 2007. *The Welfare Gains and Diffusion of Corporate Finance Innovations*.

²⁷ The following quantitative factors determine the "business environment" component of London's Global Financial Centre Index (GFCI): Administrative and Economic Regulation (OECD), Business Environment (Economist Intelligence Unit), Total Tax Rates (World Bank/PwC), Corporate Tax Rates (OECD), Employee Effective Tax Rates (PwC), Wage Comparison Index (UBS), Personal Tax Rates (OECD), Total Tax Receipts As a Percentage of GDP (OECD), Ease of Doing Business Index (World Bank), Opacity Index (Kurtzman Group), Corruption Perceptions Index (Transparency International), Index of Economic Freedom (Heritage Foundation), Economic Freedom of the World Index (Fraser Institute), Financial Markets Index (Maplecroft), and Political Risk Score (Exclusive Analysis).

²⁸ See Corporation of London. 2003. *Financial Services Clustering and its Significance for London*, Peter Taylor, Jonathan Beaverstock, Gary Cook, and Naresh Pandit, authors and contributors, p. 35.

²⁹ A simple statistical procedure known as "hierarchical cluster analysis" has often been used to predict which of the world's cities have the most dominant financial centers. For each of 43 major cities with stock markets (those studied by Everitt, 1993), one can collect as explanatory variables: the market capitalization of the stock market, the number of listed companies, the number of shares traded, the value of shares traded, and the dividend yield. Hypothesis tests can be used to reject some of these variables as insignificant in the identification of world

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financial centers. The strongest explanatory variables are market capitalization and value of shares traded. Using a measure of geographical distance, lower-level clusters of cities can be identified. The lower-level clusters can be grouped into a second level of agglomerated clusters. From those, even fewer clusters containing lower-tier clusters can be identified, and so on, until one identifies a top tier of cities that cannot be further distinguished from each other in importance. In 1980, these top-tier financial centers were New York and Tokyo. In 1990, they were New York, Tokyo and London. In 2000, they were New York and London. Poon (2003) notes that, more recently, the clustering is more hierarchical (has more layers), probably because of the emergence of significant regional financial centers. Poon (2003) further shows that top-tier financial centers are associated with a larger average size of their co-located corporations, and less dispersion in the sizes of these co-located corporations (which may signal deeper markets).

³⁰ See Corporation of London (2003), *supra* note 28, op. cit., at 10.

³¹ *Id.* at 6.

³² *Id.* at 9.

³³ *Id.* at 33.

³⁴ With relevant models and datasets, it becomes possible to determine the precise relationships among derivatives markets and other financial services, and the impact of alternative policy choices on financial services generally. If applied to the financial-services industry, the industry migration model of Dumais, Ellison, and Glaeser (1997, 2002) could be re-interpreted in the context of derivatives-markets location mobility. By analogy, the expectation of the change $Y(t+1)-Y(t)$ in the degree $Y(t)$ to which OTC derivatives market services are located in New York in year t can be decomposed into separate components. One component is associated with the contemporaneous change $F(t+1)-F(t)$ in the concentration of all financial services in New York. The intuition for this component is as follows. When, across various segments of the industry, financial services start up in New York or migrate to New York, we expect that to contribute to an increase in the New York's share of the OTC derivatives markets. Another component is based on the expected reversion over time of OTC-derivatives-market N.Y concentration toward the all-financial-services NY concentration. This second contribution to the expectation of $Y(t+1)-Y(t)$ is suspected be positive when OTC-derivatives-market NY concentration is catching up to the all-financial-services concentration, that is when $Y(t)$ is less than $F(t)$, and is otherwise negative. See Dumais, Ellison, and Glaeser (1997), equation (1). The intuition behind these two components is roughly the same, but they play different roles in the dynamics of $Y(t)$. See Dumais, Guy, Glenn Ellison and Edward L. Glaeser. 1997. "Geographic concentration as a dynamic process." Cambridge MA, National Bureau of Economic Research, NBER Working Paper No 6270, <http://papers.nber.org/papers/W6270.pdf> and Dumais, Guy, Glenn Ellison and Edward L. Glaeser. "Geographic concentration as a dynamic process." *Review of Economics and Statistics* 84:2, pp. 193–204.

³⁵ Committee on Capital Markets Regulation. 2006. Interim Report of the Committee on Capital Markets Regulation (Nov. 30, 2006).

³⁶ Charles McCreedy. "Challenges to Further Integration of EU Financial Markets." *Exchange News Direct*, Dec. 4, 2007 (speech – Dec. 4, 2007).

³⁷ Bloomberg-Schumer Report, *supra* note 6, at 13.

³⁸ See U.S. General Accounting Office. 2007. *Financial Regulation – Industry Trends Continue to Challenge the Federal Regulation System*. Washington, D.C.: GAO, pp.10–11; cf. Gary Rice. 2007. *An Overview of U.S. Regulation of Depository Institutions*, in *Understanding Complex Financial Institutions*. Mitchell S. Eitel & Craig M. Wasserman, co-chairs.

³⁹ Robbins, Rachael F. (Executive Vice President and General Counsel, NYSE Euronext), Comment in Response to Treas-DO-2007-0018 (Nov. 26, 2007).

⁴⁰ This discussion of the regulatory scheme relies in part on: Greene, Edward F. et al., *U.S Regulation of the International Securities and Derivatives Markets – Volume 1*, Chapter 14; Philip McBride Johnson & Thomas Lee Hazen. 2004. *Derivatives Regulation – Volume 1*, pp. 314–41.

⁴¹ See, e.g., Thomas, Jesse. 2007. "CME Delays Credit Indexes Again as CFTC Extends Review," *Dow Jones News Service*, Apr. 26; Grant, Jeremy. 2007. "Regulators play different notes on same instrument," *Financial Times*, Apr. 17, p. 39; Saha-Bubna, Aparajita. 2006. "CME's Duffy: Would Adamantly Oppose Merger of CFTC & SEC," *Dow Jones International News*, Nov. 30.

⁴² Whether futures on credit derivatives will become actively traded remains to be seen, but that is not the point; useful innovation often requires experimentation.

⁴³ The CFTC did not seek to assert jurisdiction over the gold ETF even though, according to one respected derivatives practitioner (and former CFTC chairman), the CFTC had the right to do so under the CEA. Had the CFTC tried to do so, the ensuing turf battle with the SEC could have been an extended one. Other respected

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practitioners have taken the opposite view. See Edward F. Greene et al. 2006. *U.S. Regulation of the International Securities and Derivatives Markets*, Section 14.09[5] n.519 (8th ed.).

⁴⁴ This discussion is based in part on: Kramer, Andrea S. and Catherine M. Krupka. 2007. *Energy Trading: 20/20 Oversight – The CFTC and the FERC*. Oct. 23.; Foster Natural Gas Report. 2007. *House Committee Chairmen Give FERC Strong, Bilateral Endorsement of Its Position on New Enforcement Authority Under EFACT.*, Dec. 14. p. 2; Hearing of the Oversight and Investigations Subcommittee of the House Energy and Commerce Committee. *Federal News Service*. Dec. 12, 2007.

⁴⁵ The Futures Industry Association has asserted that this potential for overlapping jurisdiction may mean that market participants will be asked to comply with “two very different standards for determining and manipulation.” Damgard, John. 2007. *Washington Outlook: Energy Issues Dominate the Congressional Agenda, Futures Industry*. Nov.-Dec., p. 26.

⁴⁶ Craig Donohue, of the Chicago Mercantile Exchange, has argued against the merger, analogizing this to being a merger between Ford and Toyota, “and asking the Ford family to run the company.” Grant, Jeremy . 2007. “Regulators’ turf battles prompt talk about reform.” *Financial Times*, Dec. 5, p. 29.

⁴⁷ Loss, Louis and Joel Seligman. 1995. *Fundamentals of Securities Regulation* p. 25 (3rd ed.).

⁴⁸ The discussion on SEC versus CFTC differences is based largely on Markham, Jerry W. 2003. “Super Regulator: A Comparative Analysis of Securities and Derivatives Regulation in the United States, the United Kingdom, and Japan.” 28 *Brook. J. Int’l L.* 319, 342; and Russo, Thomas A. and Marlisa Vinciguerra. 1991. “Financial Innovation and Uncertain Regulation: Selected Issues Regarding New Product Development.” 69 *Tex. L. Rev.* 1431.

⁴⁹ Markham, *supra* note 48, at 360.

⁵⁰ Ervin, Susan C. 2001. “Single Stock Futures.” *Rev. Secs. & Commod. Reg.*, Nov. 14, p. 243.

⁵¹ CFTC and SEC Sign memorandum of Understanding Regarding the Oversight of Security Futures Product Trading and the Sharing of Security Futures Product Information, Banking & Financial Services Report, May 2004, at 12.

⁵² U.S. Department of the Treasury. 2006. *Paulson Announces Next Steps to Bolster U.S. Markets’ Global Competitiveness*, June 27.

⁵³ See Department of the Treasury. 2007. *Review by the Treasury Department of the Regulatory Structure Associated With Financial Institutions*, 72 *Fed. Reg.* 58939, Oct. 17.

⁵⁴ See Energy Speculation: Is Greater Regulation Necessary to Stop Price Manipulation?: Hearing of the Oversight and Investigations Subcommittee of the House Energy and Commerce Committee, Dec. 12, 2007 (statement of Walter Lukken, Acting Chairman, CFTC) [hereinafter Lukken, December 2007 Testimony].

⁵⁵ See Commodity Futures Trading Commission. 2007. *Report on the Oversight of Trading on Regulated Futures Exchanges and Exempt Commercial Markets*, Oct. p. 6..

⁵⁶ See U.S. General Accounting Office. 2007. *Industry Trends Continue to Challenge the Federal Regulatory Structure*. Washington, D.C.” GAO, Oct. 12.

⁵⁷ Office of the Comptroller of the Currency. 2007. *Office of Thrift Supervision, Federal Reserve System, Federal Deposit Insurance Corporation, Securities and Exchange Commission, Interagency Statement on Sound Practices Concerning Elevated Risk Complex Structured Finance Activities*. Washington D.C., Jan. 5.

⁵⁸ Roel Campos, Speech (June 14, 2007).

⁵⁹ HM Treasury and FSA. 2007. *UK discussion paper on the Commission’s review of the financial regulatory framework for commodity and exotic derivatives*. December.

⁶⁰ For a recent discussion of this “hidden (morphable) ownership” issue and related “decoupling” matters, see Hu, Henry T. C. and Bernard Black. “Equity and Debt Decoupling and Empty Voting II: Importance and Extensions.” 156 *University of Pennsylvania Law Review* – (forthcoming January 2008), available at <http://ssrn.com/abstract=1030721>.

⁶¹ Financial Services Authority of the United Kingdom. 2007. *Disclosure of Contracts for Differences: Consultation and Draft Handbook Text*. Nov., available at http://www.fsa.gov.uk/pubs/cp/cp07_20.pdf.

⁶² See “U.S. Hedgies Ponder FSA Best Practices.” *Compliance Reporter*. Nov. 9, 2007.

⁶³ See “FSA Warns on Lack of Market Abuse Controls.” *Hedge World Daily News*. Oct. 29, 2007.

⁶⁴ Annette Nazareth (Commissioner, Securities and Exchange Commission), Speech Before the Council of Institutional Investors (March 20, 2007).

⁶⁵ For a general discussion, see U.S. General Accounting Office. 2007. *Backlogs Increased Dealers’ Operational Risks, But Were Successfully Addressed After Joint Regulatory Action*. Washington D.C.: GAO, June.

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⁶⁶ See U.S. Comptroller of the Currency. 2007. *OCC's Quarterly Report on Bank Derivatives Activities*. Third Quarter, p. 5.

⁶⁷ Moore, Elaine. 2007. "FSA fines for 2007 lowest in six years." *FT.com*. Dec. 30.

⁶⁸ U.S. Securities and Exchange Commission. 2007. *2007 Performance and Accountability Report*. Nov. 15, p. 18..

⁶⁹ Lukken, December 2007 Testimony, *supra* note 54.

⁷⁰ MacDonald, Alistair .2007. "Assessing U.K. Watchdog – FSA's Regulatory Model Gets Some Raves in U.S.; A Lapdog at Home?" *Wall Street Journal*. July 23, p. C1.

⁷¹ Jackson, Howell E. 2007. "Variation in the Intensity of Financial Regulation: Preliminary Evidence and Potential Implications." 24 *Yale J. Reg.* 253, 280.

⁷² See Coffee, John C. Jr. 2007. "Law and the Market: The Impact of Enforcement." Columbia Law and Economics working paper 304.

⁷³ Tett, Gillian. 2007. "FSA on alert over insider dealing concerns." *Financial Times*. Sept. 22.

⁷⁴ MacDonald, Alistair . 2008. "U.K. May Strengthen Its Markets Regulator." *Wall Street Journal*. p. A3.

⁷⁵ See, for example, "Atkins on Regulatory Shortcomings." *Securities Industry News*. Sept. 24, 2007 (statement of SEC Commissioner Paul Atkins that no "meaningful cost-benefit analysis" occurred before the promulgation of Regulation NMS); Atkins, Paul S. 2007. "Is Excessive Regulation and Litigation Eroding U.S. Financial Competitiveness?" *available at* <http://sec.gov/news/speech/2007/spch042007psa.htm> (last viewed 1/17/08) (discussing how certain economic studies relating to the composition of mutual fund boards had not been circulated among the Commissioners).

⁷⁶ One commentator has referred to the disclosures to the Comptroller General as providing "little useful information on the agency's use of cost-benefit analysis" and that the analyses relating to certain mutual fund-related rules discussed in the Federal Register were "rather short and qualitative." See Sherwin, Edward. 2006. "The Cost-Benefit Analysis of Financial Regulation: Lessons from the SEC's Stalled Mutual Fund Reform Effort." 12 *Stanford Journal of Law, Business and Finance* 1, p. 17–18.

⁷⁷ *Financial Services and Markets Act 2000*, Part X Chapter I Section 155(2)(a). Available at http://www.opsi.gov.uk/acts/acts2000/ukpga_20000008_en_12#pt10-ch1-l1g138 (last viewed 1/15/08).

⁷⁸ Financial Services Authority Central Policy. 2000. *Practical Cost-Benefit Analysis for Financial Regulators, Version 1.1*. p. 6. Available at <http://www.fsa.gov.uk/pubs/foi/cba.pdf> (last viewed 1/15/08). The document was initially prepared in 1998 for the use of FSA staff but was released to the public in June 2000.

⁷⁹ *Financial Services and Markets Act 2000*, Part X Chapter I Section 155(8)(a)-(b).

⁸⁰ Financial Services Authority Central Policy. 2000. *Practical Cost-Benefit Analysis for Financial Regulators, Version 1.1*.p. 7.

⁸¹ Statement of Chairman Christopher Cox Before the U.S. Senate Committee on Banking, Housing, and Urban Affairs, July 31, 2007, *available at* <http://sec.gov/news/testimony/2007/ts073107cc.htm> (last viewed 1/18/08).

⁸² *Id.*

⁸³ Atkins, Paul S. 2007. "Is Excessive Regulation and Litigation Eroding U.S. Financial Competitiveness?" April 20. *Available at* <http://sec.gov/news/speech/2007/spch042007psa.htm> (last viewed 1/17/08).

⁸⁴ See *The UK Grad Programme*, (2008), http://www.grad.ac.uk/cms/ShowPage/Home_page/GRAD_courses/Postgraduate_researchers/Other_GRAD_courses/Careers_in_Focus_events/Careers_in_Focus_Investment_Banking/Investment_Banking_sponsors/plfbLdkk.

⁸⁵ American Electronics Association. 2007. *We Are Still Losing the Competitive Advantage: Now is the time to Act* p. 11, *available at* www.aeanet.org/competitiveness.

⁸⁶ *Id.* at 22.

⁸⁷ *Id.*

⁸⁸ *Id.* at 11.

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Id.* at 22.

⁹² *Id.* at 11.

⁹³ Congressional Research Service. 2007. *Order Code 97-746, Foreign Science and Engineering Presence in U.S. Institutions and the Labor Force*. p. CRS-6.

⁹⁴ *Id.* at 23–4.

⁹⁵ *Id.*

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⁹⁶ *Id.* But see “Survey of Earned Doctorates [hereinafter, SED], Doctorate Recipients from United States Universities: Summary Report 2005.” NORC at the University of Chicago 2006. p.78 (reporting that the percent of non-U.S. citizens earning doctorates in the U.S. and subsequently staying in the U.S. is 72.7 percent).

⁹⁷ American Electronics Association, *supra* note 85, at 25.

⁹⁸ Bilefsky, Dan. 2007. “EU ‘Blue Card’ Seeks to Attract Highly Skilled Immigrants.” *International Herald Tribune*. Oct. 23. available at <http://www.ihf.com/articles/2007/10/23/business/card.php?page=1>.

⁹⁹ See United States Bankruptcy Court, Southern District of New York. 2003. *Third Interim Report of Neal Batson, Court Appointed Examiner*. June 30.

¹⁰⁰ See the testimony of Pamela Stumpp of Moodys and of Ronald Barone of Standard and Poors before the Permanent Subcommittee Investigation Hearing of the United States Senate.

¹⁰¹ See Securities and Exchange Commission, Advisory Committee on Improvements to Financial Reporting, Rel. No. 33-8815, 72 Fed. Reg. 36,077 (July 2, 2007); Securities and Exchange Commission, SEC Chairman Cox Announces Members of Advisory Committee on Improvements to Financial Reporting, July 31, 2007 (press release).

¹⁰² See World Bank and PricewaterhouseCoopers. 2007. *Paying Taxes 2008 – The global picture*. Nov.

¹⁰³ See Yeandle et al. (2007) p. 48, Tbl. 12. These rates are by city, not country. For example, Zurich and Geneva have separately shown, and different, effective employee tax rates.

¹⁰⁴ See European Central Bank. 2007. *The Euro Bonds and Derivatives Markets*. June.

¹⁰⁵ See, for example, Duffie, Darrell. 2007. “Innovations in Credit Risk Transfer: Implications for Financial Stability.” working paper, Stanford University; and Hu, Henry T. C. and Bernard Black, (forthcoming 2008), “Debt, Equity, and Hybrid Decoupling: Governance and Systemic Risk Implications.” 14 *European Financial Management*. –available at <http://ssrn.com/abstract=1084075>.

¹⁰⁶ We do not elsewhere in this report discuss the implications of derivatives for regulatory capital requirements. The topic is too complex to receive proper treatment within the limited scope of this report. International coordination beyond the new and arduously negotiated Basel II standards will in any case be extremely limited in the short run.

¹⁰⁷ For example, The Globalization and World Cities (GaWC) project is sponsored by The United Kingdom’s Economic and Social Research Council and by the Corporation of London, and includes a multi-phase research and data collection effort. See www.lboro.ac.uk/gawc/cityoflond.html (visited last February 17, 2008).

¹⁰⁸ PriceWaterhouseCoopers. 2007. *Similarities and Differences – A comparison of IFRS and US GAAP*. pp. 9, 46.

¹⁰⁹ *Id.* at 61.

¹¹⁰ See, e.g., Wood, Duncan. 2006. “The Grass May Look Greener, But Each Side Has Problems.” *Risk* (offering an example involving the issuance of a variable-rate bond and an associated floating-for-fixed interest rate swap).

¹¹¹ FASB. 2007. *Accounting for Hedging Activities* (Last Updated: November 14, 2007), available at http://72.3.243.42/project/st133_hedging.shtml (visited Jan. 1, 2008).

¹¹² Deloitte. 2007. *Clarity on qualifying risks and portions, IAS Plus*. Oct. Special edition. p. 1.

¹¹³ PricewaterhouseCoopers. 2005. *IAS 39 Achieving Hedge Accounting in Practice*. p. 13.

¹¹⁴ Probst, Melissa and Rosemarie Sangiuolo. 2001. *An FASB Perspective on the Objectives, Implementation, and Impact of FASB Statement No. 133, in FAS 133 and the New Derivatives Accounting Landscape*. Henry A. Davis ed. p. 11.

¹¹⁵ Wiggins, Jenny. 2004. “Fitch warns of inconsistency in applying rules.” *Financial Times*, Nov. 11, p. 19.

¹¹⁶ Turner, Lynn E. and Thomas R. Weirich. 2006. “A Closer Look at Financial Statement Restatements.” *CPA Journal*. Dec.

¹¹⁷ Paletta, Damian. 2006. “Fannie Sues KPMG for \$2 Billion Over Costs of Accounting Mistakes,” *Wall Street Journal*. Dec. 13, p. A12.

¹¹⁸ See “Fannie Mae to Pare Operating Costs,” *Wall Street Journal*. Feb. 28, 2007, p. A2.

¹¹⁹ Tejerina, Enrique, Partner, KPMG, 2007. *FAS 133 Practice Issues* (PowerPoint presented at the 26th Annual Current Financial Reporting Issues – Nov. 12–13).

¹²⁰ *Id.*; cf. Katz, David M. 2007. “Hedge Accounting: a Shortcut to a Shortcut?” *CFO.com*. July 26.

¹²¹ For a current review of efforts at convergence, see Robert E. Denham (Chairman, Financial Accounting Foundation) and Robert H. Herz (Chairman, Financial Accounting Standards Board). 2007. “Letter to Securities and

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Exchange Commission – File Number S7-20-07.” Nov. 7, at Appendix A; *see also* Consolacion L. Fajardo. 2007. “The Move Towards Convergence of Accounting Standards World Wide.” *Journal of American Academy of Business*, Sept. 2007.

¹²² In a November 7, 2007 letter to the SEC, Robert E. Denham (Chairman, Financial Accounting Foundation) and Robert H. Herz (Chairman, Financial Accounting Standards Board) stated as follows:

Investors would be better served if all U.S. public companies used accounting standards promulgated by a single global standard setter as the basis for preparing their financial reports. This would best be accomplished by moving U.S. public companies to an improved version of International Financial Reporting Standards (IFRS).

¹²³ Hughes, Jennifer. 2007. “US accounting chief calls for ‘unity’ timetable.” *Financial Times*. Oct. 24, p. 19.

¹²⁴ Securities and Exchange Commission. 2007. *Acceptance From Foreign Private Issuers of Financial Statements Prepared in Accordance With International Financial Reporting Standards Without Reconciliation to U.S. GAAP*. Securities Act Release No. 33-8879. Dec. 21.

¹²⁵ Credit Suisse Group, Letter to Securities and Exchange Commission (File No. S7-13-07), p. 5 (Sept. 24, 2007).

¹²⁶ Allen, Melissa (Chair of ISDA’s European Accounting Committee) and Ed Duncan (Policy Director, ISDA), Letter to Securities and Exchange Commission (File No. S7-13-07), p. 5 (undated).

¹²⁷ PricewaterhouseCoopers, *supra* note 108, at 46.

¹²⁸ See Hughes, Jennifer. 2008. “Banks eye US results model.” *Financial Times*. Jan. 10, p. 13.

¹²⁹ Pulliam, Susan, Randall Smith, and Michael Siconolfi. 2007. “U.S. Investors Face an Age of Murky Pricing – Values of Securities Tougher to Pin Down; Discord at Dillon Read.” *Wall Street Journal*. Oct. 12, p. A1.

¹³⁰ This was reported in the *Financial Times* on February 12, 2008.

¹³¹ Crisis Council. 2007. *Fortune*. Sept. 3, p. 59.

¹³² Johnson, Sarah. 2007. “Fair Value Stumps Auditors, PCAOB Told.” *CFO.com*. June 21.

¹³³ Public Company Accounting Oversight Board, Staff Audit Practice Alert No. 2 – Matters Related to Auditing Fair Value Measurements of Financial Instruments and the Use of Specialists (Dec. 10, 2007).

¹³⁴ Mary-Jo Kranacher & Tom Morris, Nov. 2007, An Exclusive Interview with FASB Chairman Robert H. Herz, *CPA Journal*, at 20.

¹³⁵ See “Deutsche CEO says crisis boosts transparency need,” *Reuters*, Dec. 22, 2007.

¹³⁶ Dimon, Jamie. 2007. “Chairman & CEO, JPMorganChase, J.P. Morgan Chase & Co. at Merrill Lynch Banking and Financial Services Investor Conference.” *FD (Fair Disclosure) Wire*. Nov. 13.

¹³⁷ See 2006 RISK Awards. RISK also publishes other rankings including its Inter-dealer Rankings and End-user Rankings. However, because these rankings are given in categories subdivided into multiple currency denominations for each derivative product, determining the dominant banks in any particular category of derivative product requires either a complex weighting of currency denominations or subjective judgment. In contrast, Risk Magazine’s Risk Awards offer a clear award winner for each single type of product (i.e. currency derivatives, equity derivatives, and credit derivatives).

¹³⁸ See, e.g., Grey, Simon. 2007. “Funds fuel the global derivatives boom,” *Hedgeweek – Derivatives Exchanges 2007*. Feb. Special Report (role of hedge funds in exchange-traded derivatives markets); Henry, Emil Jr., Assistant Secretary of the Treasury for Financial Institutions. 2006. Speech. in *Securities Industry News*. March 20. (noting the nexus of the OTC derivatives market with the hedge fund community).

¹³⁹ Geithner, Timothy F. 2006. Hedge Funds and Derivatives and Their Implications for the Financial System (speech). Sept. 15.

¹⁴⁰ SEC. *Implications of the Growth of Hedge Funds – Staff Report to the United States Securities and Exchange Commission*. p. 1 n.4.

¹⁴¹ HedgeFund.net. *HFN Hedge Fund Industry Asset Flow/Performance Report – Third Quarter Ending September 30, 2007*. p. 9.

¹⁴² See Connecticut Hedge Fund Association, at <http://www.cthedge.org>.

¹⁴³ See, e.g., Letter from John G. Gaine, President, Managed Funds Association to Ms. Taiya Smith, Executive Secretary of the Treasury, U.S. Department of the Treasury, Nov. 21, 2007 (re Treasury Department review of the regulatory structure associated with financial institutions); European Fund and Asset Management Association. 2005. *Hedge Funds Regulation in Europe – A Comparative Survey*. Nov.

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¹⁴⁴ See IFSL, *Hedge Funds*, supra note 142; Zwick, Steve..2007. “Europe warms to modern investments.” *Futures*. Dec. p. 64.

¹⁴⁵ Johnson, Steve. 2007. “Hedge funds flee UK tax clampdown.” *Financial Times*. Dec. 3. Here we are referring to the domicile of the individual fund manager, not the domicile of the fund. As to tax issues relating to the domicile of the hedge funds, see, e.g., “Is tax killing London as a domicile,” *Hedgeweek – London Hedge Funds Services 2006*. Dec. 2006 special report, p. 23.

¹⁴⁶ See “City of London fears loss of talent.” *Financial Times*. Feb. 13, 2008, p. 3.

¹⁴⁷ For a brief and somewhat dated discussion of differences between the FSA and the SEC as to the regulation of hedge funds, see Lartea Tiffith. 2007. “Hedge Fund Regulation: What the FSA Is Doing Right and Why the SEC Should Follow the FSA’s Lead.” *27 Northwestern Journal of International Law & Business* 497.