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# A

## ANNEX A: THE UK'S POSITION AS AN INTERNATIONAL WHOLESALE FINANCIAL CENTRE

**A1** This annex, containing a comprehensive survey of wholesale activity in the UK, forms a central part of the evidence base for the financial services test. It complements the analysis contained in the EMU study by HM Treasury *EMU and the cost of capital* which considers developments in euro area capital markets since the start of EMU.

### 1) Overview

**A2** Table A1 provides an overall picture of the UK's importance as an international wholesale financial centre. The UK holds a commanding position in a wide variety of wholesale markets even compared to larger economies such as the US and Japan. Some recent growth has, however, been seen in other European centres. For example, Frankfurt has established a presence in the over-the-counter (OTC) derivatives sector (Table A2). Paris is another leading European centre and continues to hold a significant share of some key wholesale markets.

**Table A1: Global market share held by major financial centres in key wholesale markets**

Per cent – rounded	UK	US	Japan	France	Germany	Others
Cross-border bank lending (Jun 2002)	19	10	9	6	10	46
Foreign equities turnover (Jan – Aug 2002)	56	26	–	–	3	15
Foreign exchange dealing (Apr 2001)	31	16	9	3	5	36
OTC derivatives turnover (Apr 2001)	36	18	3	9	13	21
Gross insurance premium income (2000)	10	35	21	5	5	24
Marine insurance net premium income (1999)	19	13	14	5	12	37
Aviation insurance net premium income (1999)	39	23	4	13	3	18

Source: International Financial Services London (IFSL), International Financial Markets in the UK, various editions, and Bank for International Settlements (BIS), 2002a,b.

**Table A2: Recent financial market trends in Frankfurt, Paris and London**

	Frankfurt		Paris		London	
	1998	2001	1998	2001	1998	2001
Foreign banking institutions (number)	138	129	187	188	332	293
Cross-border bank lending (global share, per cent)	8.4	9.7	6.7	6.0	19.2	19.7
OTC derivatives turnover (global share, per cent)	7.3	12.7	9.7	8.8	36.0	36.1
Foreign exchange turnover (global share, per cent)	4.8	5.4	3.7	3.0	32.5	31.1
Foreign equity turnover (global share, per cent)	3.7	2.9	0.5	1.3 <sup>1</sup>	64.0	55.8

<sup>1</sup> Data are for Euronext, created in September 2000 by the merger of the Paris, Brussels and Amsterdam exchanges.

Note: The distinction between data for individual centres and for entire countries is often not clear. See the relevant charts and tables in Annex A for clarification of what each series represents.

Source: Bank of England, IFSL, International Financial Markets in the UK, various editions, and BIS, 2002a,b.

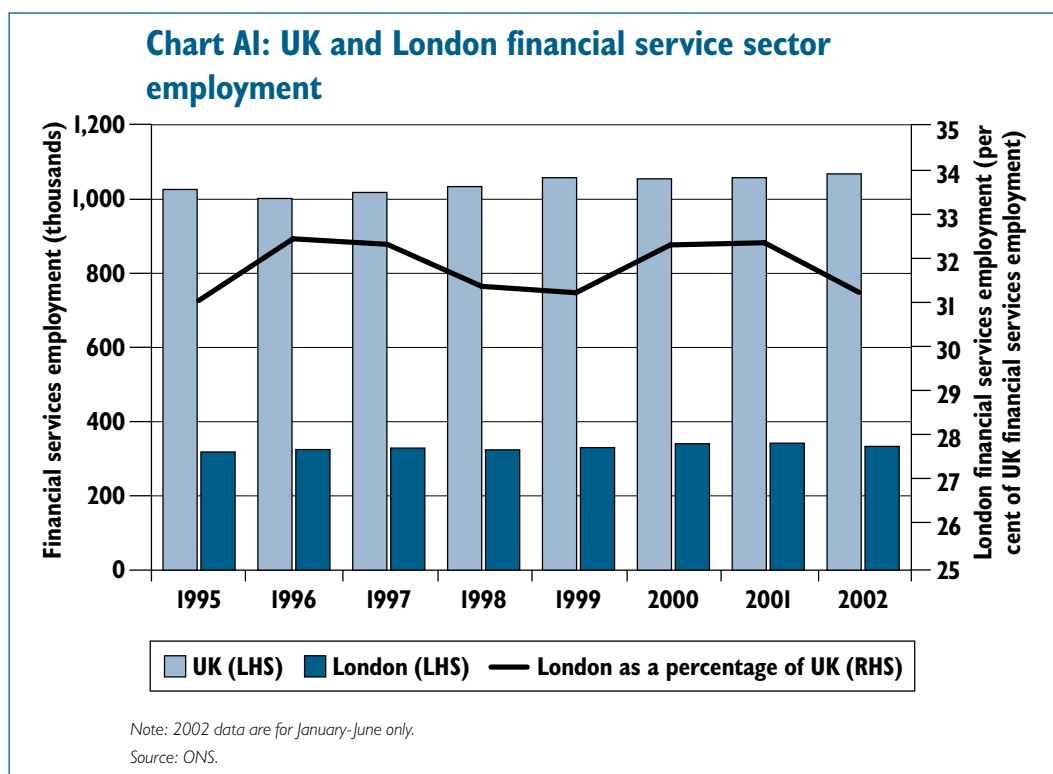
### 2) UK financial services sector employment

#### Marked regional concentrations

**A3** Financial services are an important source of employment for the UK economy. High degrees of concentration are seen in London and the South East of the country, with Scotland also seeing significant and rising levels of employment in the sector (Table A3 and Charts A1 and A2).

**Employment levels linked to market performance** **A4** Employment levels especially in wholesale activities, are marked by quick adjustments according to underlying market conditions. This is also a reflection of the flexible nature of the UK's jobs market and is most clearly seen in London, the major UK wholesale financial centre. The Centre for Economics and Business Research (CEBR, 2003) estimates that, due to the impact of equity market falls, 10,000 jobs will be lost in the City in 2003, the highest number since 1992.

**High levels of supporting services** **A5** Another feature of financial services employment is the high presence of supporting activity (for example, management consultants and legal and accountancy services) within the overall total (Chart A3). These are important to support and serve international wholesale financial activity.



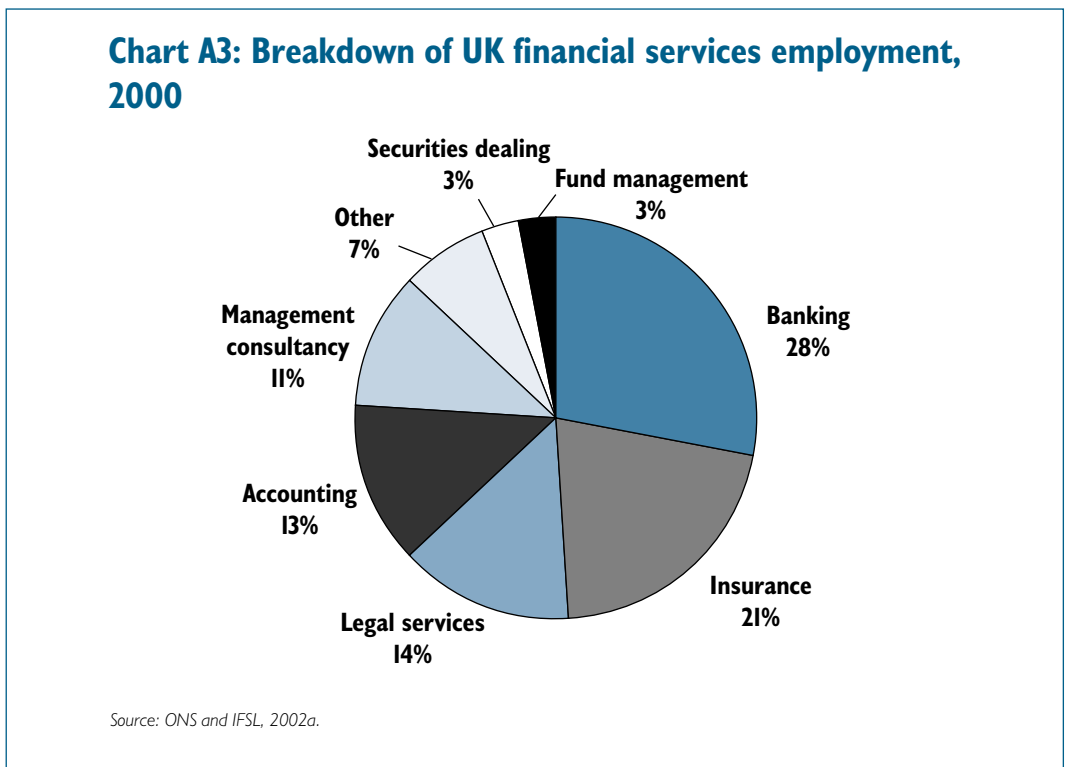
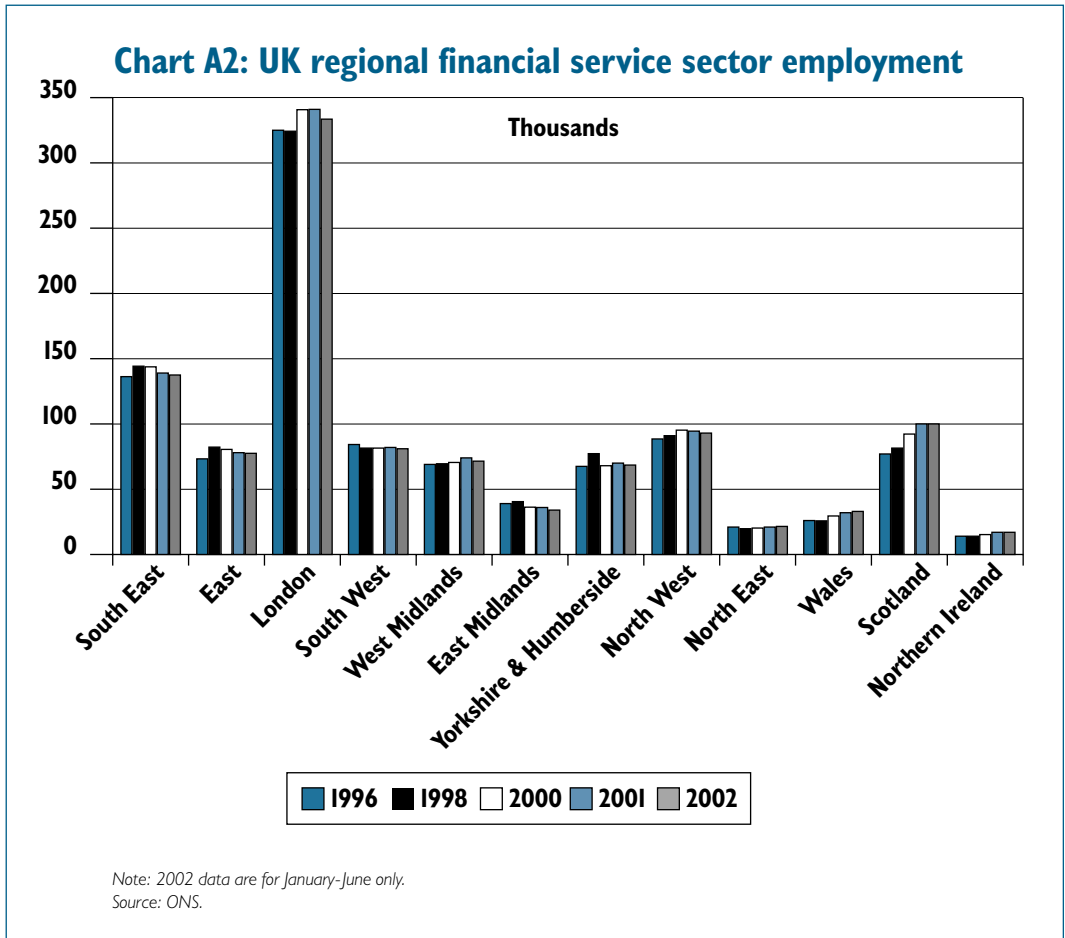
**Table A3: Location quotients for financial services employment<sup>1</sup>**

UK = 1.00	1996	1997	1998	1999	2000	2001	2002
London	2.23	2.19	2.07	2.01	2.03	2.01	1.96
Scotland	0.84	0.88	0.90	0.93	1.01	1.07	1.09
UK	1.00	1.00	1.00	1.00	1.00	1.00	1.00
South West	1.05	0.96	0.98	0.98	0.97	0.96	0.94
South East	0.99	0.99	1.01	0.97	0.95	0.92	0.91
East	0.84	0.91	0.91	0.93	0.88	0.84	0.83
Yorkshire & Humberside	0.78	0.85	0.89	0.85	0.79	0.78	0.79
North West	0.78	0.75	0.78	0.81	0.80	0.80	0.78
West Midlands	0.72	0.71	0.72	0.75	0.73	0.74	0.75
Wales	0.60	0.59	0.59	0.60	0.65	0.73	0.74
Northern Ireland	0.49	0.47	0.48	0.49	0.52	0.54	0.56
North East	0.52	0.49	0.48	0.52	0.50	0.54	0.54
East Midlands	0.55	0.54	0.56	0.53	0.50	0.49	0.46

<sup>1</sup> Quotients calculated as the ratio of the share of financial service employment in total employment for the region to the share of financial service employment in total employment nationally. Financial services defined as item J in the Labour Force Survey, 'financial intermediation'.

Note: 2002 data are for January-June only.

Source: ONS and HM Treasury calculations.

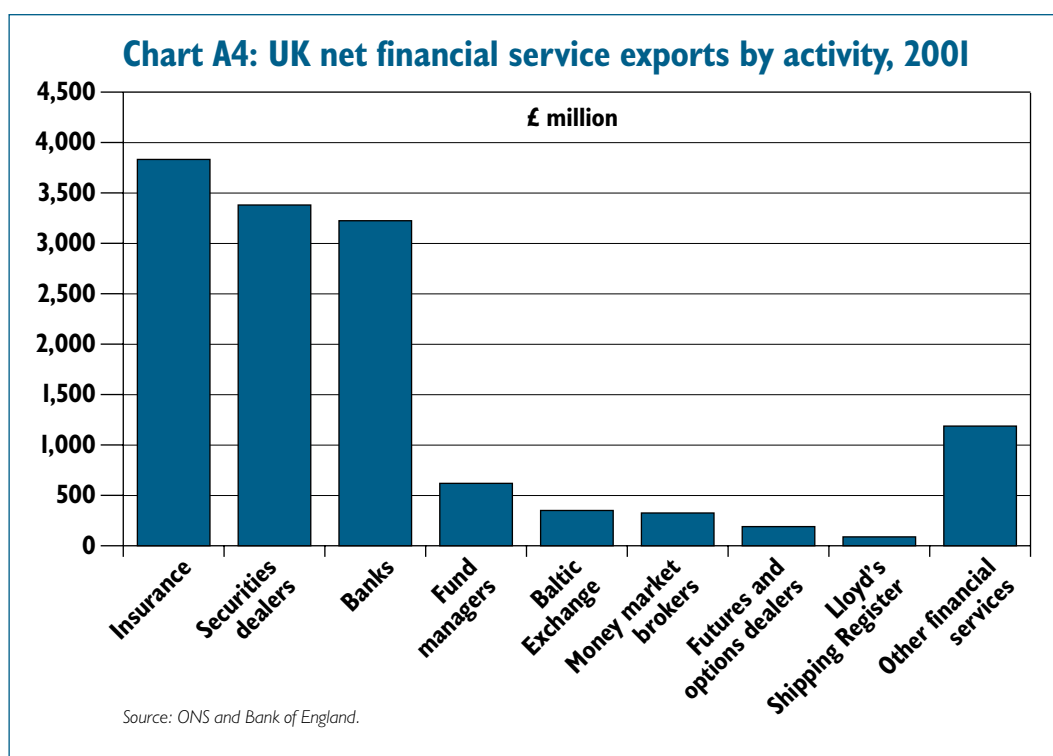


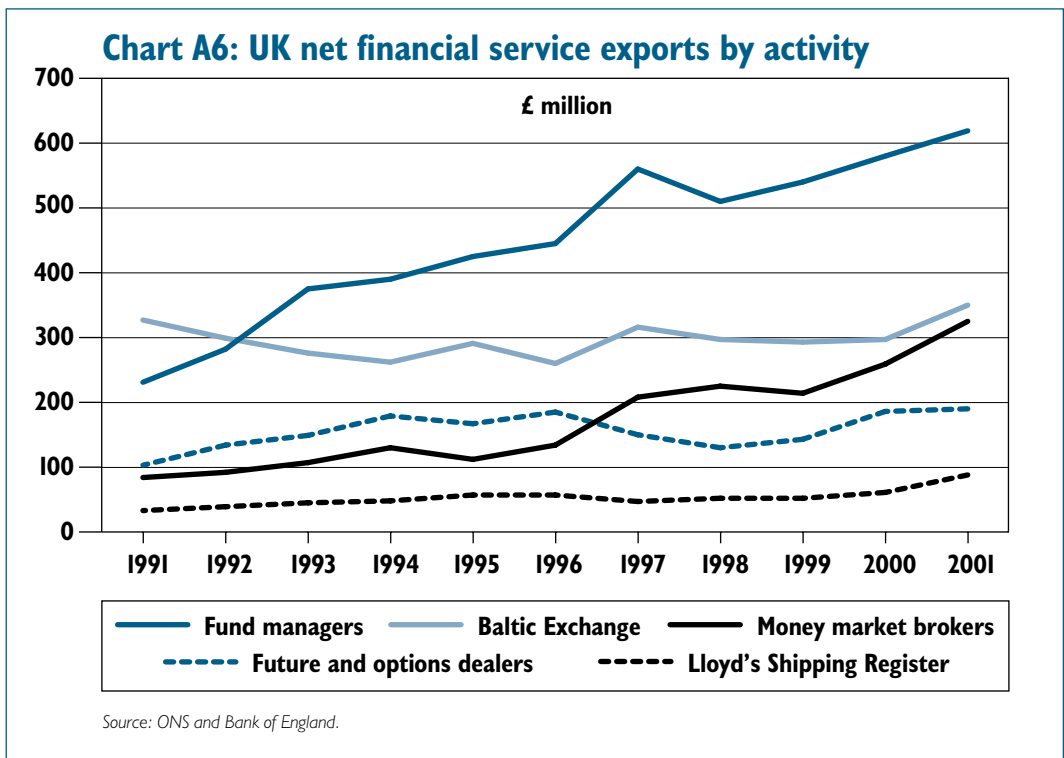
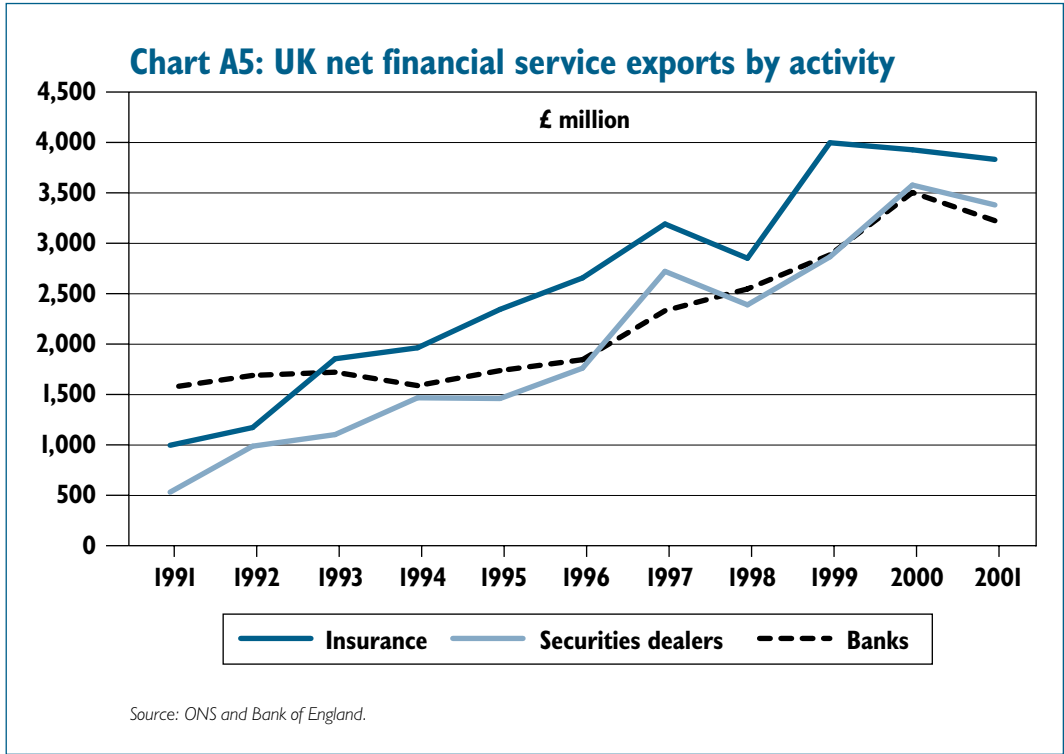
### 3) Overseas earnings

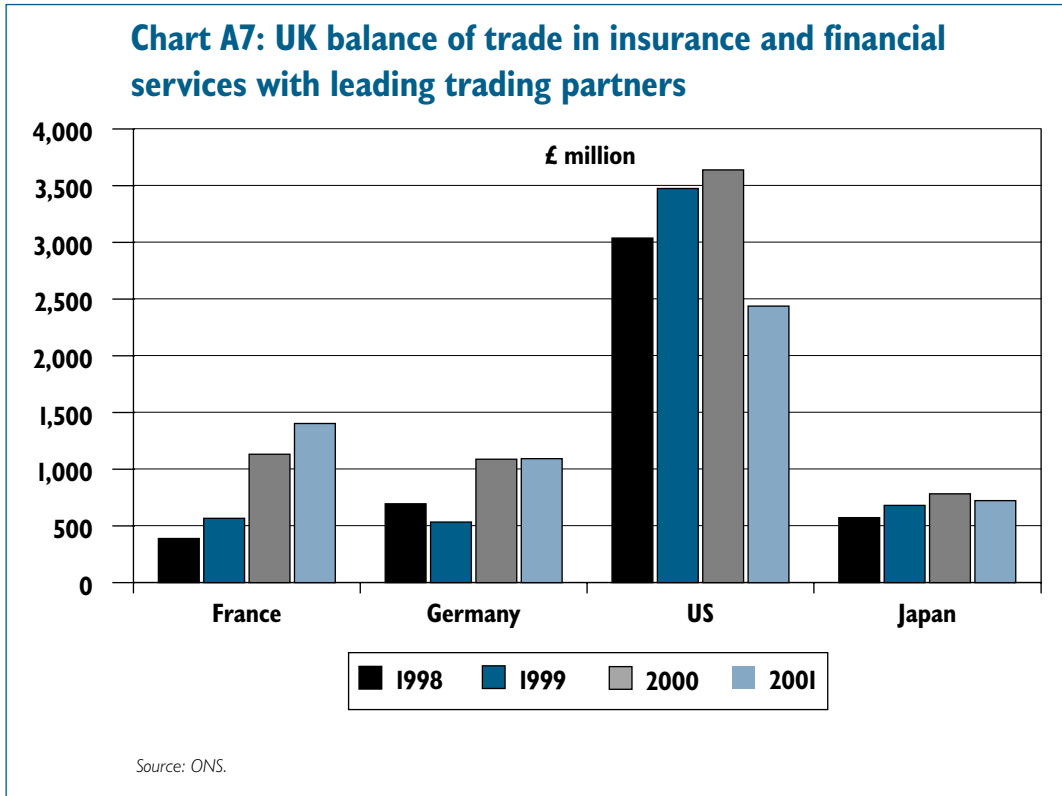
**Trade balances an indicator of competitiveness** **A6** The balance of invisible trade provides a good indication of the UK's competitive position in wholesale activity. Surpluses would suggest relative strength in that area of activity, deficits a relative weakness.

**A7** Chart A4 shows that, on this basis, the UK enjoys a significant competitive advantage over the range of wholesale markets. Moreover, Charts A5 and A6 show that this has been increasing in recent years, though gains have been trimmed by recent market reversals as investors shy away from capital markets.

**Significant surpluses with main trading partners** **A8** Chart A7 completes the picture. This shows that the UK has significant trade surpluses with its major trading partners, with surpluses with France and Germany growing over the period 1998-2001, during which time the euro was introduced. The surplus with the US fell substantially in 2001, driven mainly by deteriorating market conditions, as well as a fall in the value of insurance exports, the result of large claims from US policy holders.



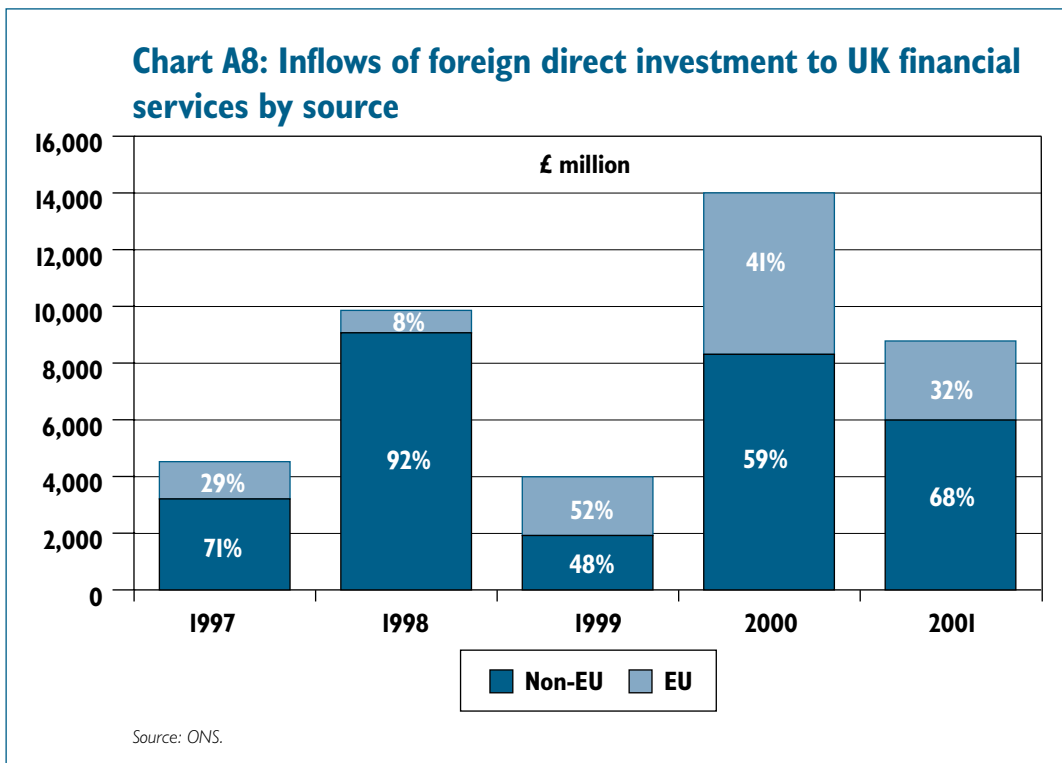


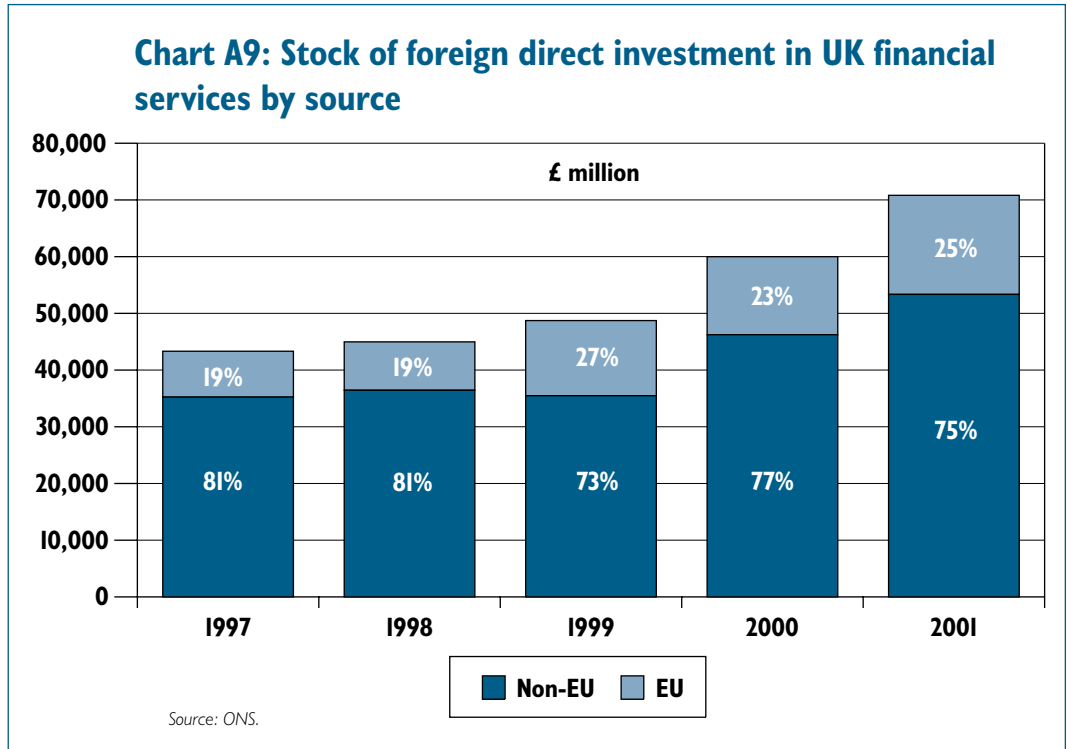


#### 4) Foreign direct investment

**UK the recipient of large FDI flows into financial services**

**A9** As well as illustrating the cyclical nature of FDI flows, Chart A8 shows that the UK is a major beneficiary of FDI flows into financial services. The result of these inflows is that the stock of FDI in the UK financial services sector is over £70 billion, with the stocks originating in the EU increasing from around 19 per cent of the total in 1997 to 25 per cent in 2001 (Chart A9).



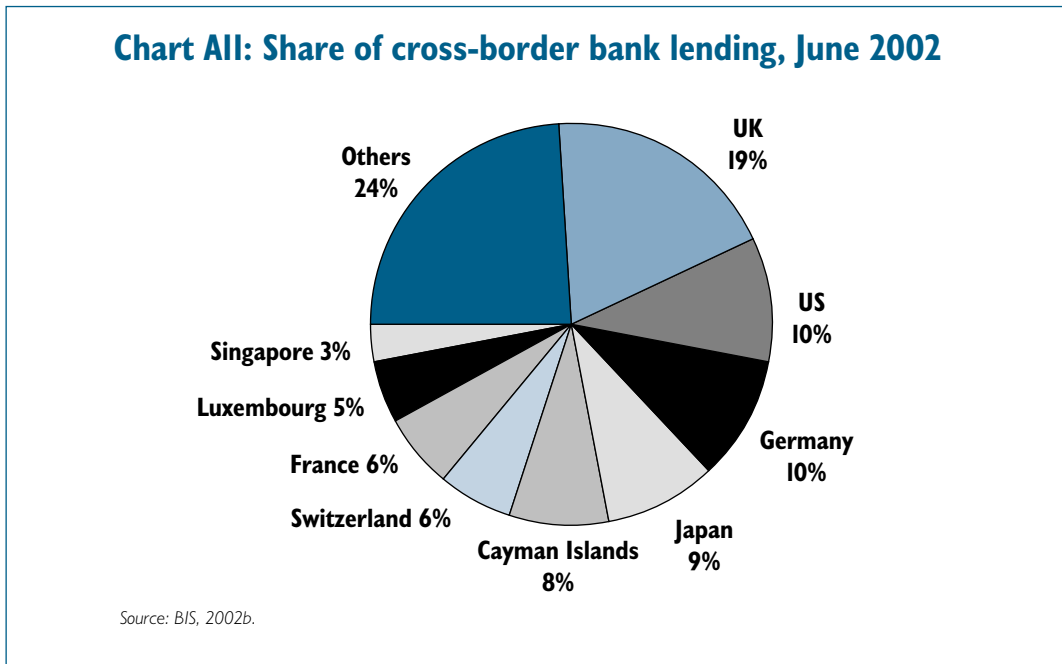
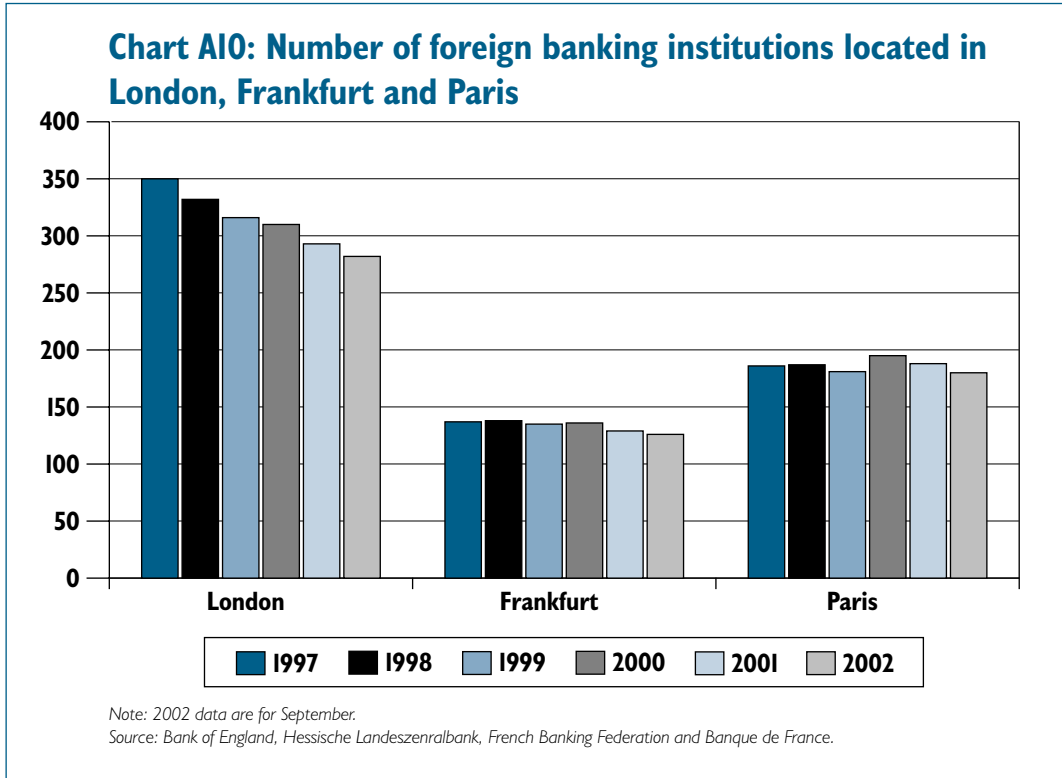


## 5) Banking

### London as an international banking centre

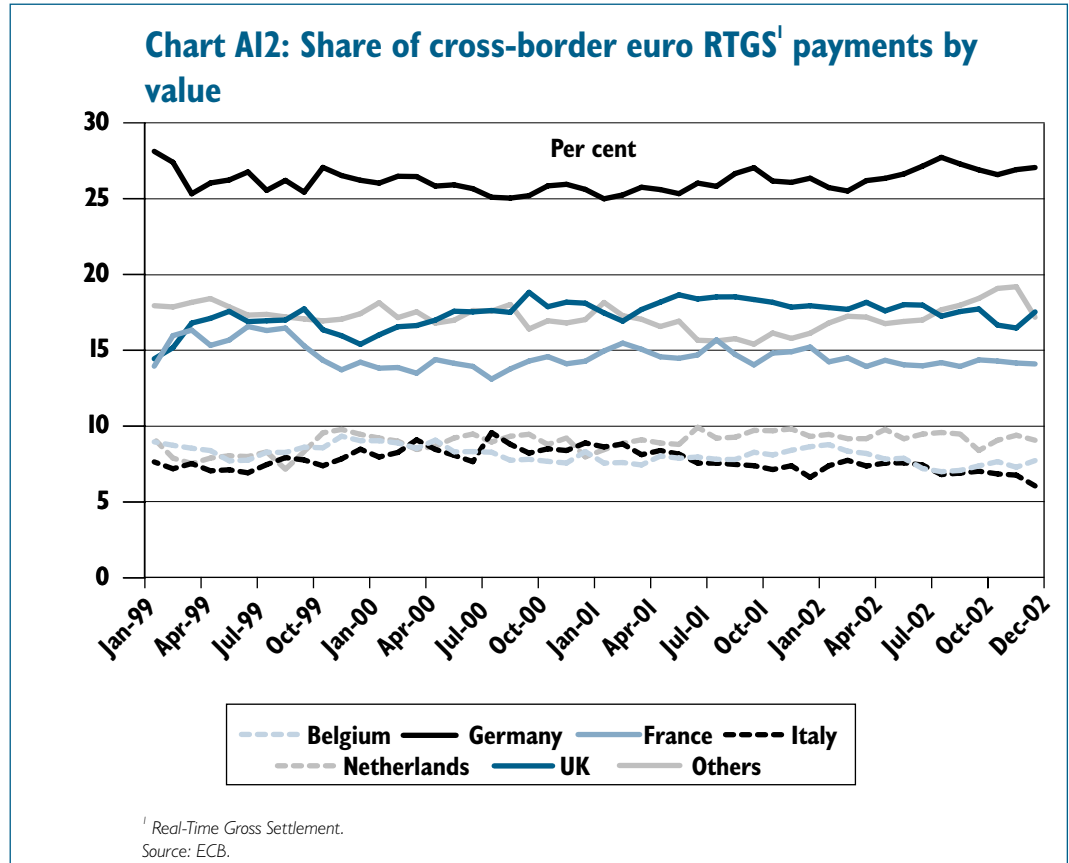
**A10** London hosts a greater number of foreign bank branches and subsidiaries than any other international centre (Chart A10). Some decline in numbers has, however, been seen in recent years, the result of industry consolidation and the concentration of market activity in a smaller number of large market firms, and the withdrawal of some Japanese banks due to their domestic difficulties. Against this background, the number of foreign banks in Frankfurt and Paris has remained broadly unchanged, in part a reflection of their growth as financial centres. The number of foreign representative offices (not included in Chart A10) in London has fallen from 209 in 1997 to 167 in 2001. Rough estimates indicate that the number of foreign representative offices in Paris has remained at around 80, while the figure for Frankfurt fell slightly from 75 to 70 over the same period.

**All** UK shares in cross-border banking lending remain stable at around 19 per cent of the global total, and nearly twice as high as the two following countries, the US and Germany (Chart A11).



## 6) Payments

**TARGET A12** Despite the fact that UK banks are heavy users of other payment systems, the UK wholesale payments system accounted for around 18 per cent by value of cross-border payment flows in TARGET in the fourth quarter of 2002, up from 15 per cent when the euro was launched in January 1999. Only Germany exceeds the UK in cross-border payments (Chart A12).



**A13** The Bank of England (2002) reports that the value of payments through CHAPS Euro has increased significantly in the period since 1999. ECB data show that average daily turnover for cross-border euro payments handled by CHAPS Euro during 2002 was €85 billion, and domestic euro payments €26 billion. This compares with respective daily turnovers of €59 billion and €18 billion in 1999.

## 7) Foreign exchange dealing

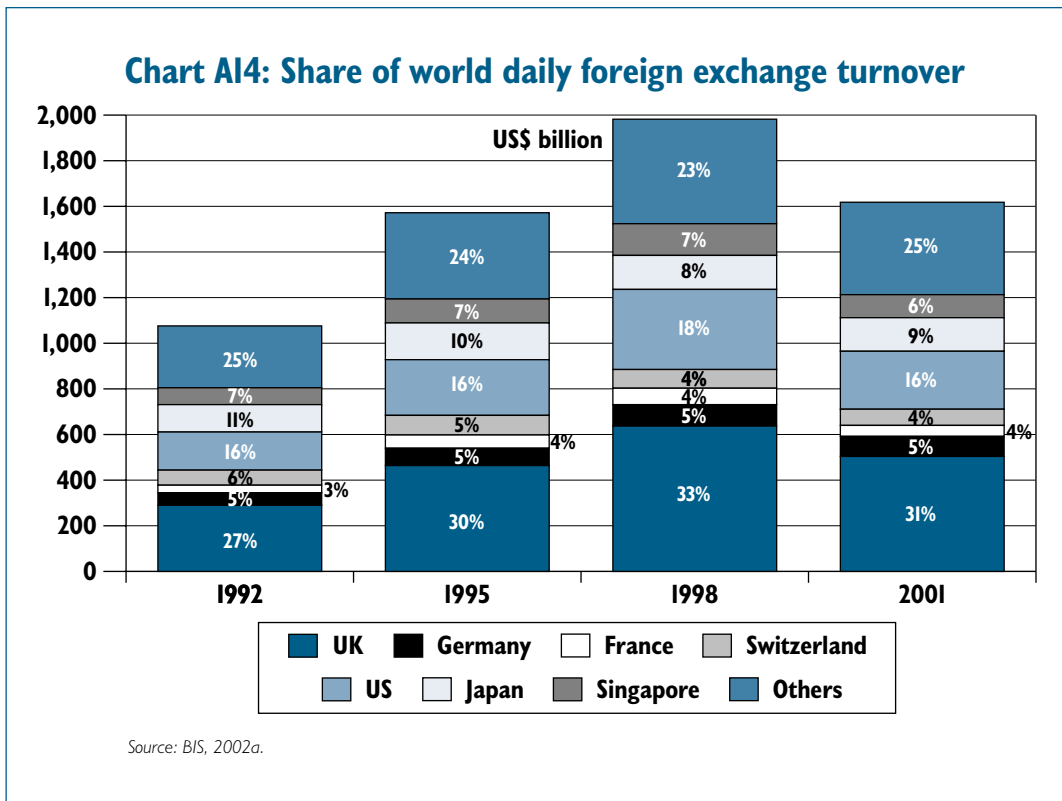
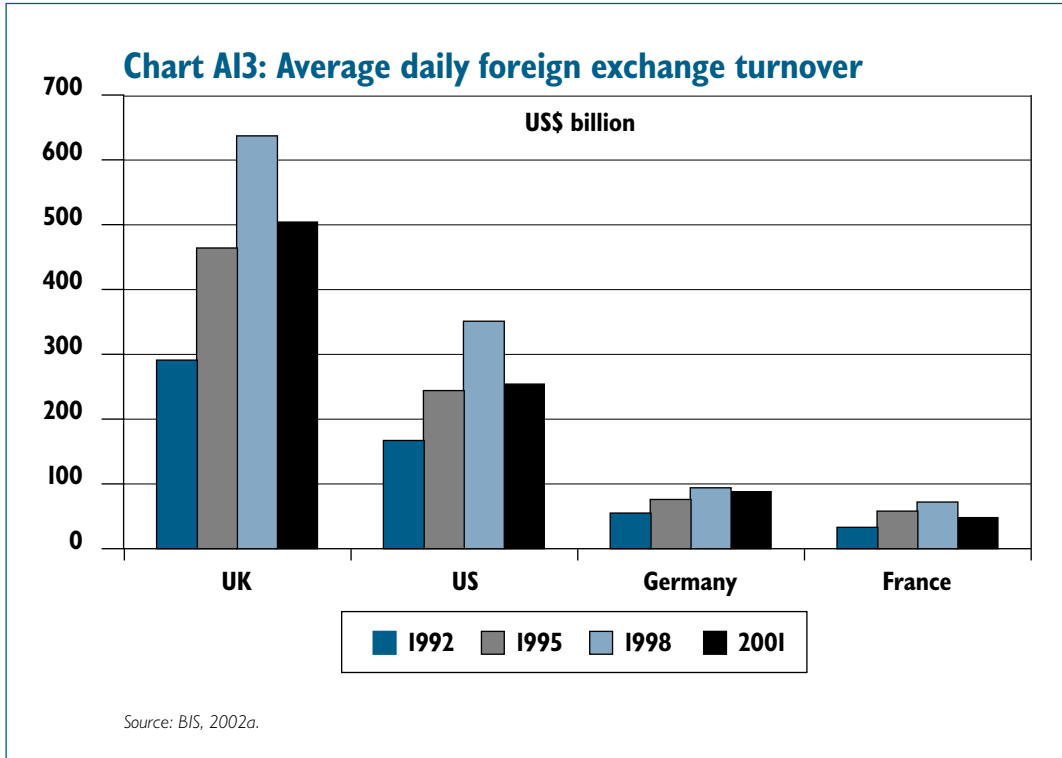
### UK the largest foreign exchange dealing centre

**A14** The UK remains by some distance the world's dominant foreign exchange dealing centre (Chart A13) and its position relative to other countries has strengthened over the past decade (Chart A14). Daily trading volumes were over US\$500 billion in 2001 or around 31 per cent of daily global foreign exchange turnover. In all the main centres, a significant decline was seen between 1998 and 2001 in the value of turnover. This can be explained by:

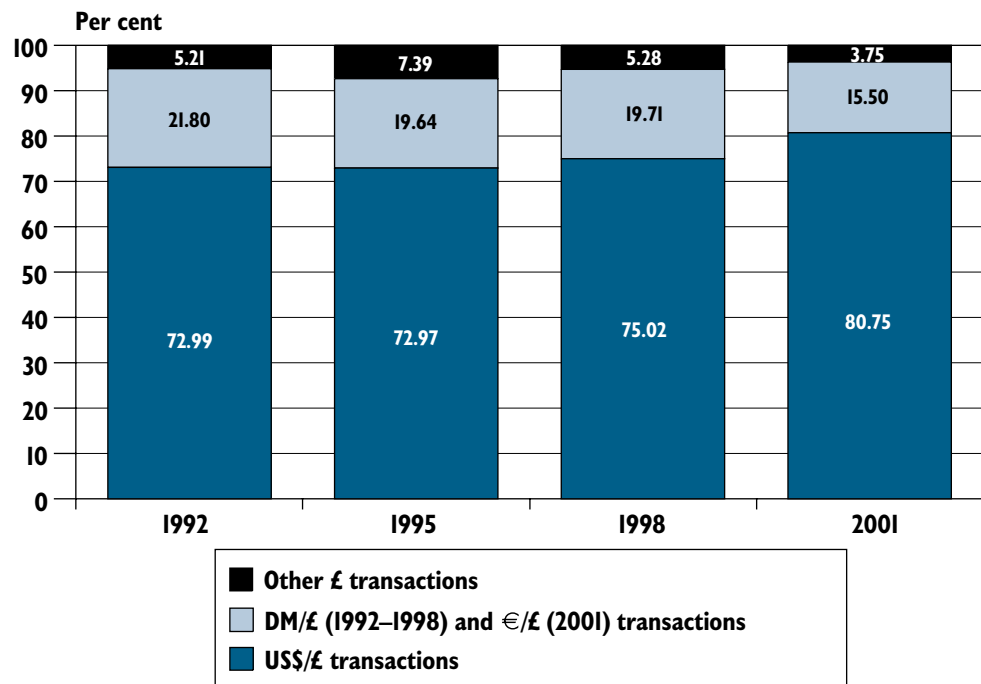
- the substitution of legacy currencies by the euro;
- consolidation in the banking industry; and
- the increasing use of efficient electronic trading systems.

### The international nature of London's markets

**A15** The international nature of London's markets is underlined by the fact that transactions involving its home currency (sterling) accounted for only 13 per cent of global market turnover (Table A4). London is usually the most active trading centre for currencies outside their home market.



**Chart A15: Currency share of average daily turnover of foreign exchange involving sterling**



Source: BIS, 2002a.

**Table A4: UK share of global foreign exchange trading activity**

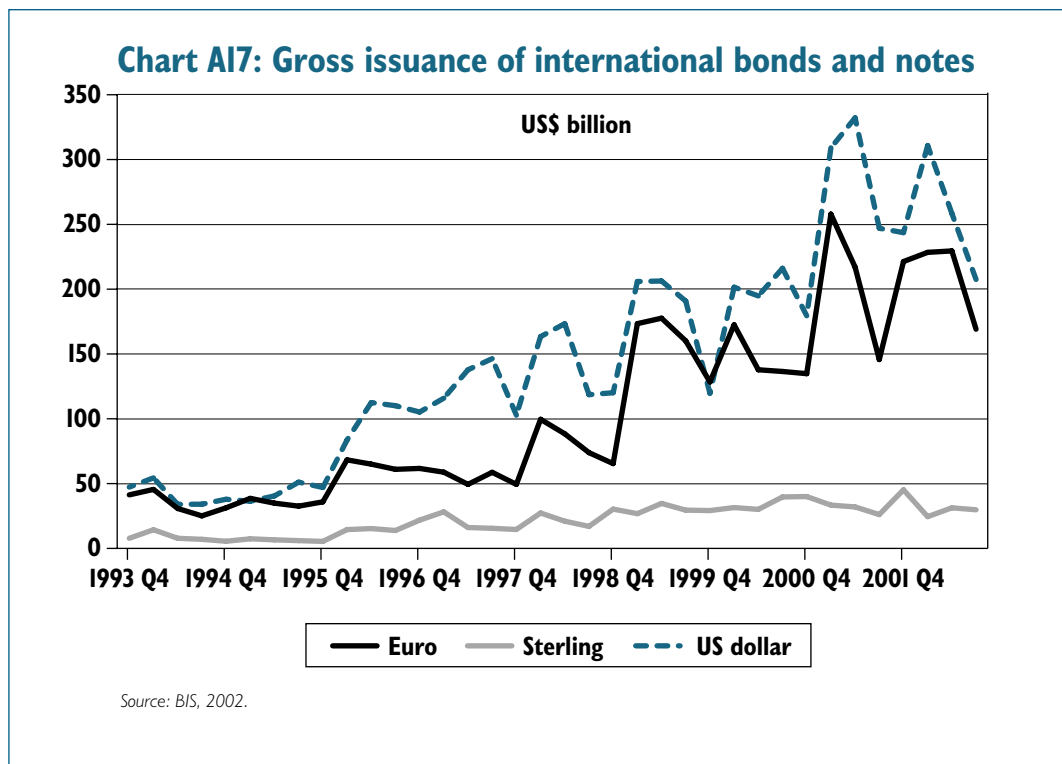
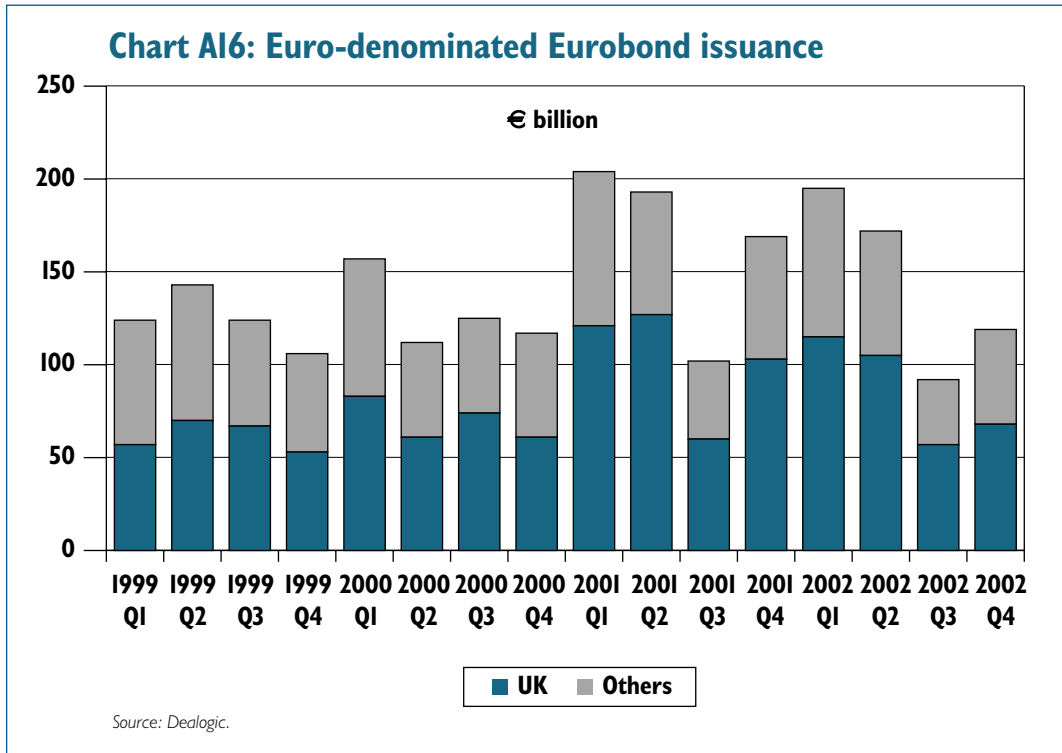
Per cent	1992	1995	1998	2001
UK market total	27	30	33	31
UK share of major currencies:				
US dollar	25	29	30	31
Euro currencies	26	26	34	35
Pound sterling	49	55	83	61
Japanese yen	16	24	22	24
Swiss franc	22	26	29	29
Other	14	18	19	20
<b>Pound sterling (global total)</b>	<b>14</b>	<b>9</b>	<b>11</b>	<b>13</b>

Source: Bank of England and BIS, 2002a.

## 8) Bonds

**Eurobonds A16** The Bank of England estimates that London's market share of the issuance of euro-denominated Eurobonds in 2002 was around 60 per cent, compared with 50 per cent in 1999 (Chart A16). These figures exclude domestic issuance and use the location of the bookrunners as a proxy for the centre from which bonds are issued.

**A17** The international bond market grew strongly in the first years of EMU (Chart A17), primarily driven by issuance by the financial sector. The average size of issues has increased, as has the range of credit ratings offered. Factors other than the introduction of the euro have played a part in these trends – other international markets also witnessed increases in issuance in 1999. One important factor was a market rebound after the Russian debt default and the Long Term Capital Management (LTCM) crisis in late 1998. In addition, the sector received a boost from several large issues from the telecommunications sector, used to finance the purchase of third-generation mobile phone licences. However, in 2002, the corporate bond market fell back due to the deteriorating global economic environment.



## 9) Equities

**A18** Euro area equity markets grew rapidly in 1999 and 2000, reflecting technology and telecommunications firms tapping capital markets through share issuance. Since 2000, these markets have fallen back as the 1990s bull run came abruptly to an end.

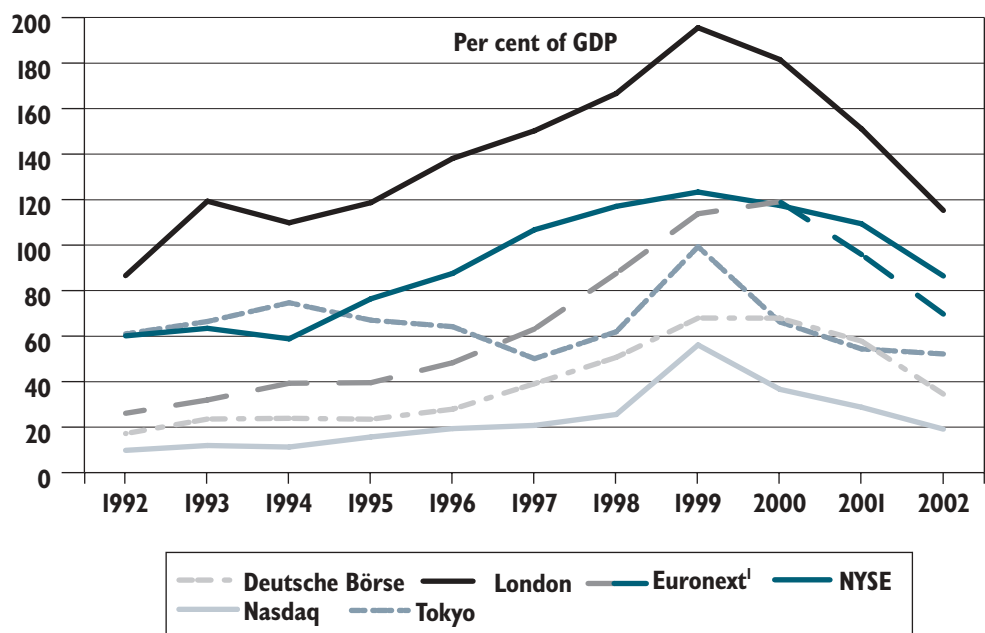
### London Stock Exchange's capitalisation high compared to UK GDP

**A19** The market capitalisation of companies traded on the London Stock Exchange remains a far larger proportion of GDP than any other of the European exchanges (Chart A18), although in part this simply reflects the greater reliance on stock markets as a means of raising finance by British and American firms compared to their continental European counterparts. While the capitalisation of the London Stock Exchange relative to other European bourses has diminished, turnover remains far higher in London (Chart A19). The numbers of companies listed on the London Stock Exchange exceeds by a large margin that of other exchanges within Europe (Chart A20), reflecting the international and open nature of the UK's markets.

### London Stock Exchange high international exposure

**A20** The level of foreign equity turnover further illustrates the international flavour of the London Stock Exchange. Foreign equity turnover was 55.8 per cent of total equity turnover in London in 2001, compared to 16.6 per cent on the New York Stock Exchange and less than 3 per cent on German exchanges (Chart A21).

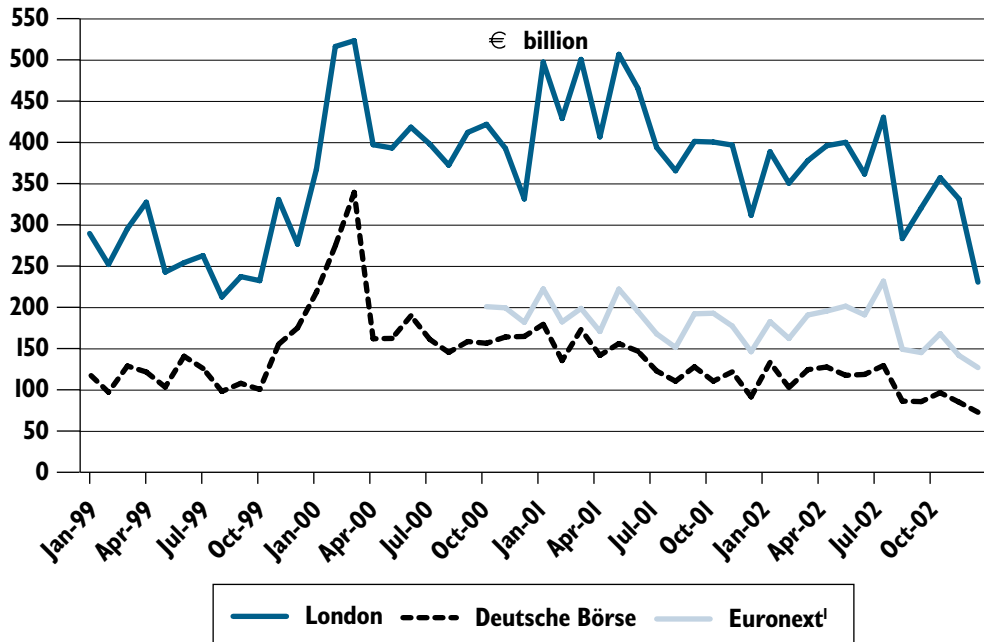
**Chart A18: Stock market capitalisation (year-end)**



<sup>1</sup>Euronext was created in September 2000 by the merger of the Paris, Brussels and Amsterdam exchanges. 1992-2000 data represent the combined capitalisation of the separate exchanges. 2001 and 2002 data are for the new merged exchange. Euronext capitalisation is measured as a percentage of the combined GDP of France, Belgium and the Netherlands. Lisbon, now also part of Euronext, is not included.

Source: OECD, World Federation of Exchanges and HM Treasury calculations.

**Chart A19: Monthly value of turnover on European stock exchanges**

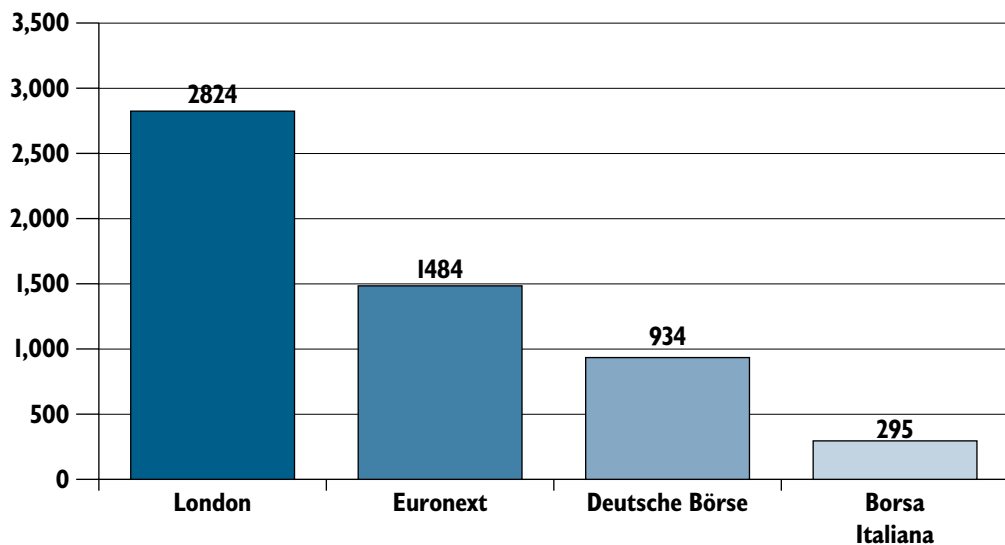


<sup>1</sup>Euronext was created in September 2000 by the merger of the Paris, Brussels and Amsterdam exchanges, and now also includes the Lisbon exchange.

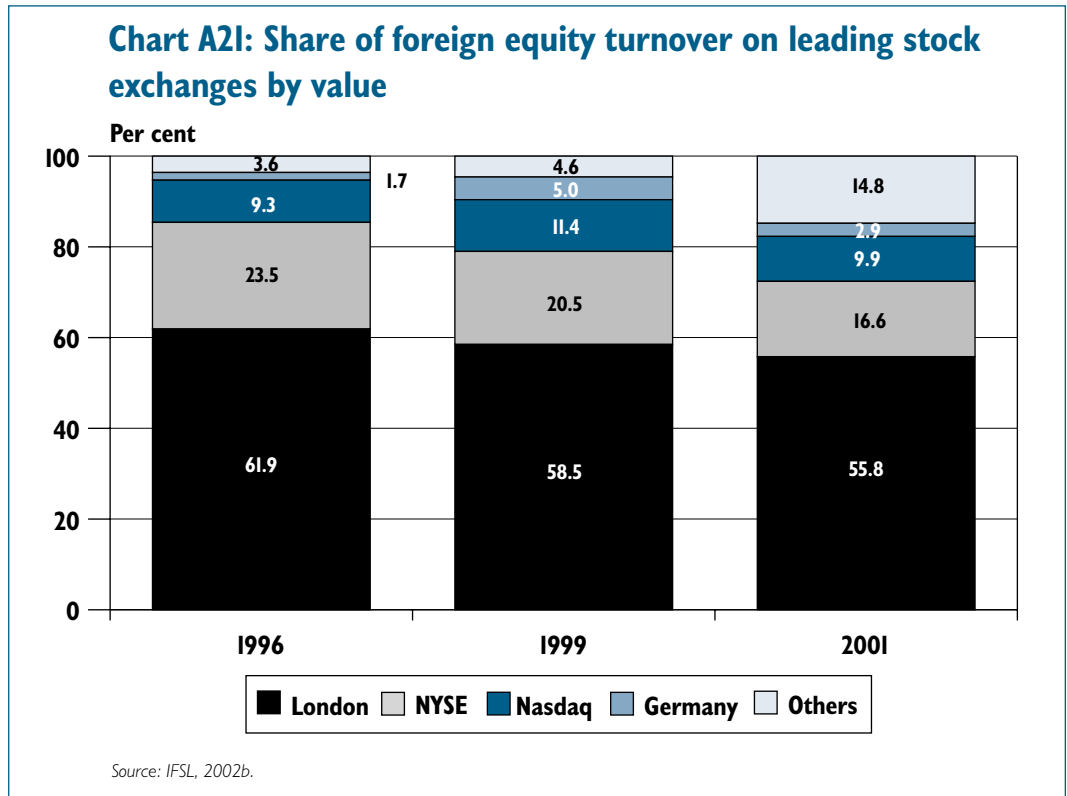
Note: London, Euronext and Paris exchanges report turnover data in Regulated Environment View (REV) terms, whereas the Deutsche Börse uses the Trading System View (TSV). REV statistics include all trades subject to supervision by the market authority, whereas TSV statistics include only trades which pass through the exchange's trading systems or take place on its trading floor. REV and TSV statistics are therefore not entirely suitable for comparison at a single point in time, although they do allow for observation of trends over time on each exchange. Euronext data have been adjusted to remove 'other stock movements', which are not included in the London and Deutsche Börse figures.

Source: Federation of European Securities Exchanges.

**Chart A20: Number of companies listed on leading European stock exchanges, December 2002**



Note: Excludes investment trusts, listed unit trusts and UCITS.  
Source: Paris EUROPLACE.



## 10) Derivatives

**Exchange-traded derivatives** **A21** Through remote traders, the UK accounts for the largest source of turnover on Eurex, the Swiss-German exchange through which the majority of Bund future contracts are traded. This quickly reversed the initial dominance of traders based in Germany in these markets (Table A5).

**Table A5: Eurex market turnover by country of origin**

Per cent	1997	1999	2001	2002
UK	7	25	33	41
Germany	81	41	31	25
US	1	7	10	11
France	3	8	9	10
Others	8	19	17	13

Source: Eurex.

**A22** Taking euro STIR, bond and other contracts together, Euronext-LIFFE is also the largest derivatives exchange in Europe by notional value of contracts traded, though Eurex has been the largest derivatives exchange in Europe by volume of contracts traded since 1998 (Tables A6 and A7). Since March 2001, over 99.5 per cent of euro STIR contracts have been traded on LIFFE.

**Table A6: Share of exchange-traded derivatives turnover by value**

Per cent	LIFFE	Eurex	Other Euronext	Other Europe	US	Asia
1999	22.6	10.6	1.1	0.9	49.8	15.0
2000	22.3	8.8	1.1	1.4	50.7	15.7
2001	23.4	7.7	0.3	0.3	59.1	9.3
2002	21.8	7.0	0.2	0.3	62.0	8.7

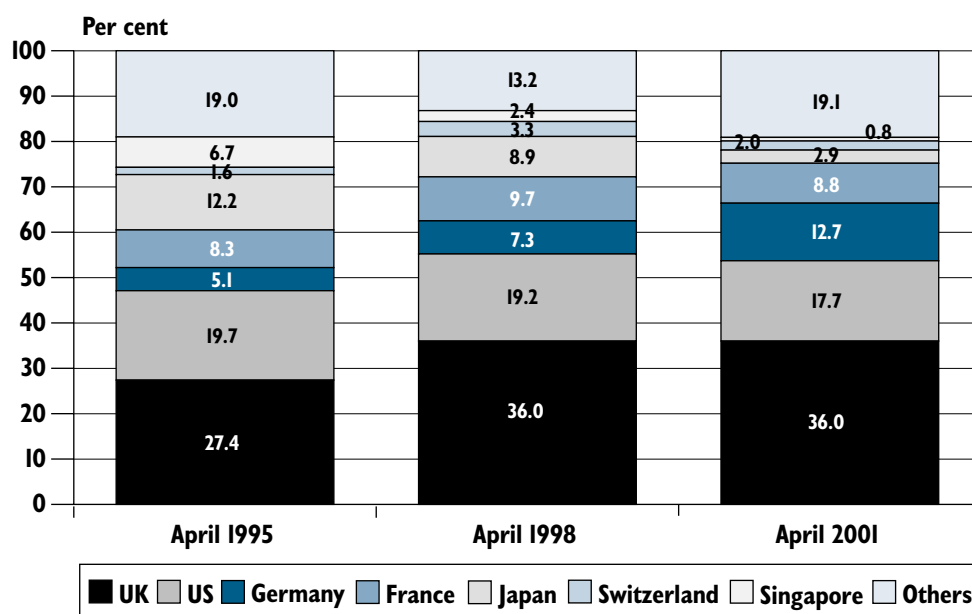
Note: 2002 data are for the first two quarters only.  
Source: BIS and individual exchanges.

**Table A7: Eurex and LIFFE interest rate product turnover, December 2002**

Derivative exchange	Country	Interest rate options		Interest rate futures	
		Contracts traded	Notional turnover (€ million)	Contracts traded	Notional turnover (€ million)
LIFFE	UK	3,893,725	3,752,847	9,979,510	8,671,713
Eurex	Germany/Switzerland	2,082,758	227,046	23,834,618	2,612,017

Source: Federation of European Securities Exchanges.

**OTC derivatives A23** The UK has the largest market share in OTC derivatives (Chart A22). It takes 36 per cent of the market, a share unchanged since 1998. Germany, however, has increased market share from around 5 per cent of global turnover in 1995 to just below 13 per cent today. Paris has seen market share increase only marginally over the same period.

**Chart A22: Share of OTC derivatives turnover by value**

Source: IFSL, 2002b.

## II) Asset management

### UK a leading international asset management centre

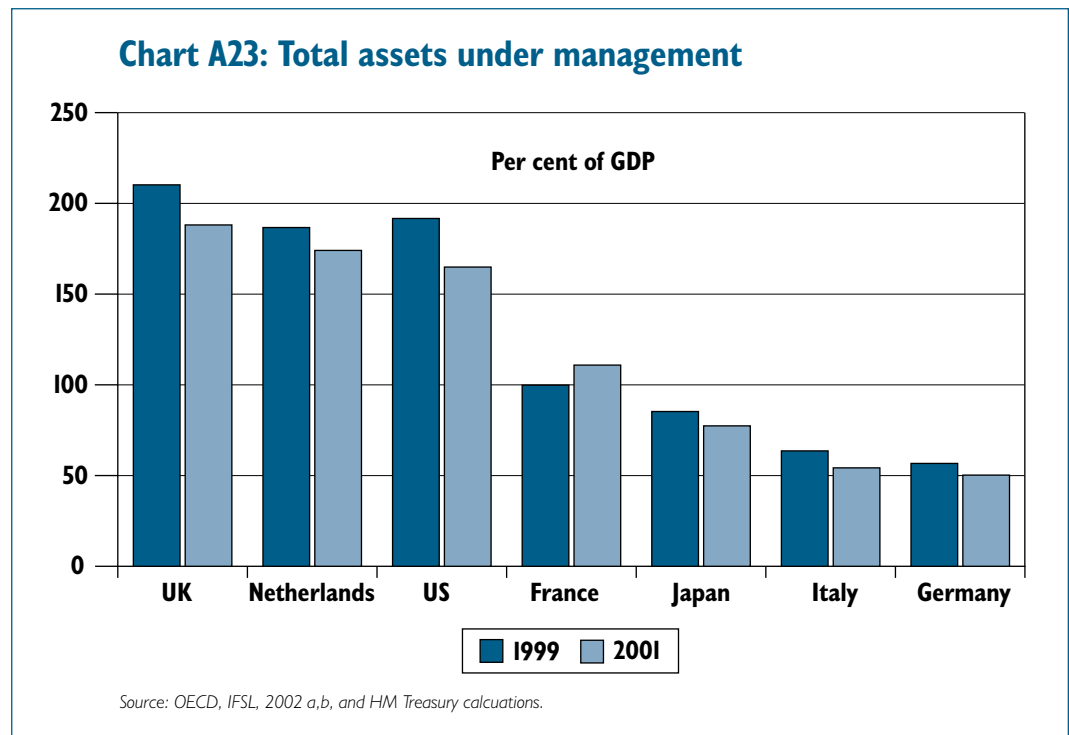
**A24** The UK is the third largest home of assets under management internationally and the leading European centre for asset management. In terms of assets managed as a percentage of GDP, London is the largest of the major asset management centres (Chart A23). A particular feature of the UK asset management sector is its management of funds on behalf of overseas clients, reflecting the UK's expertise in international asset management.

**A25** London is the world's largest centre for institutional equity management (Table A8). In 1999, it managed over US\$2.4 billion worth of institutional equities, nearly three times the 1990 total, and around five times the amount managed by the second largest European centre, Paris. Since 1999, however, there has been a substantial fall in equity markets, which has negatively affected the value of assets managed by London and other major financial centres.

### Scotland as a financial centre

**A26** Scotland is also one of Europe's major fund management centres with around £294 billion under management in September 2002, down from a 2000/2001 high following stock market falls (Table A9). Assets under management in Scotland grew particularly strongly between 1998 and 2000. While this can partly be explained by rises in equity prices, the increase in assets under management in Scotland is mostly attributable to the merger of Scottish Widows Investment Managers and Hill Samuel Investment Management. This followed the acquisition of Scottish Widows by Lloyds TSB and the decision to base asset management operations in Edinburgh.

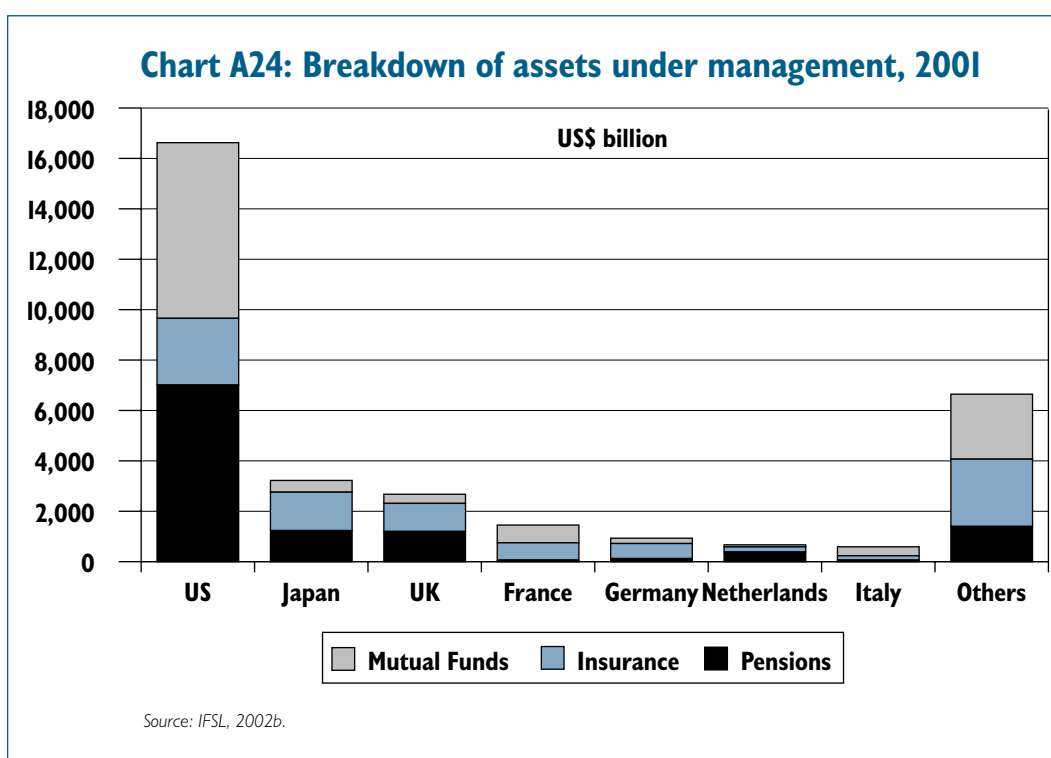
**A27** Nearly 5 per cent of European pension and long-term life assurance funds are managed from Scotland. In 1999, it was the sixth largest centre in Europe for institutional equities, and the fifteenth largest internationally.



**Table A8: Leading fund management centres ranked by institutional equity holdings, 1999 (year-end)**

	Country	US\$ billion
1. London	UK	2,461
2. Metropolitan New York	US	2,363
3. Tokyo	Japan	2,058
4. Boston	US	1,871
5. San Francisco	US	726
6. Los Angeles	US	569
7. Paris	France	458
8. Philadelphia	US	419
9. Zurich/Basel/Winterthur	Switzerland	414
10. Denver	US	340
11. Amsterdam	Netherlands	327
12. Chicago	US	316
13. Frankfurt	Germany	310
14. Toronto	Canada	289
15. Edinburgh/Glasgow	UK	253

Source: Thomson Financial Investor Relations, 2000.



**Table A9: Total assets under management in Scotland**

	Sep-98	Sep-99	Sep-00	Sep-01	Sep-02
Total assets under management (£ billion)	197.1	233.9	350.7	309.8	294.0
Annual growth rate (per cent)	-	18.7	49.9	-11.7	-5.1
Financial Times World Index Series (month-end)	254.06	329.0	356.48	252.89	203.85
Annual growth rate (per cent)	-	29.5	8.4	-29.1	-19.4

Source: Scottish Financial Enterprise, 2002 and Financial Times.

## 12) Insurance

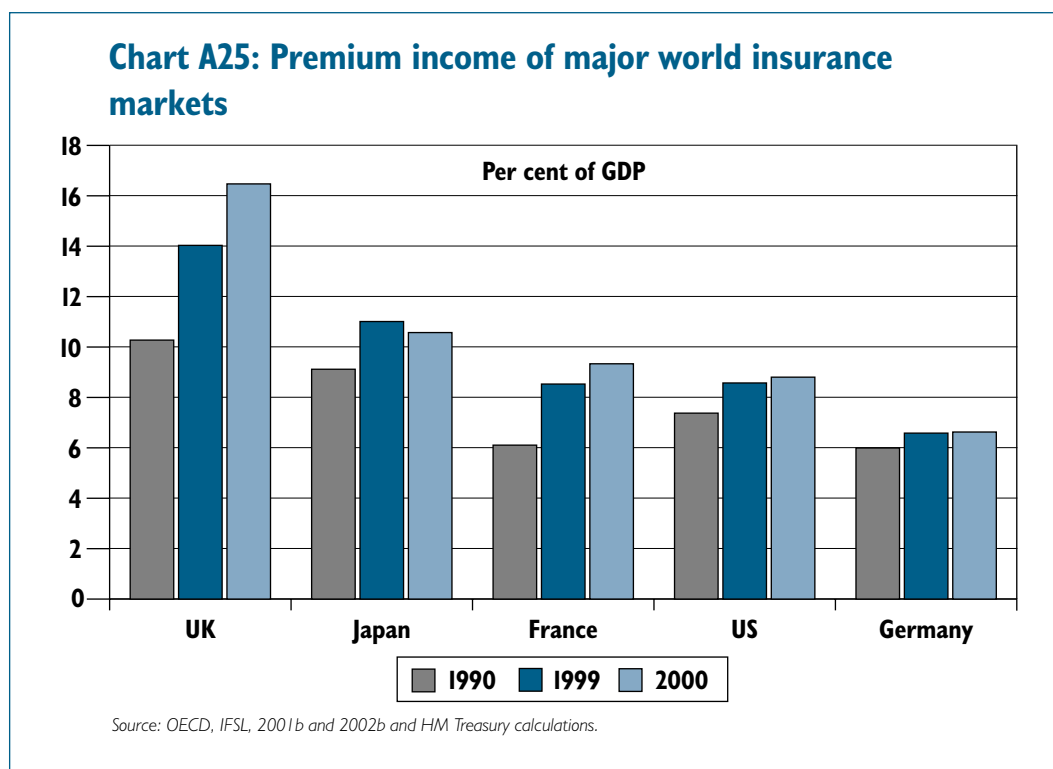
**UK is third largest insurance market** **A28** The UK insurance market is third in size internationally behind the US and Japan, but is the largest of the major international markets as a percentage of GDP (Chart A25). It leads other European insurance markets, with a 10 per cent share of total world premium income, compared to 5 per cent for both Germany and France.

**Reinsurance** **A29** Lloyd's of London is the world's leading specialist insurance market, providing specialist insurance services to businesses in over 120 countries. Approximately 5 per cent of world reinsurance is placed at Lloyd's, which also accounts for half of the London market's international insurance premiums, with most trades carried out in US dollars. It is the world's second largest commercial insurer and sixth largest reinsurer. In 2002, 88 syndicates underwrote insurance at Lloyd's. The world's 20 largest insurance and reinsurance companies are actively located in the market.

**A30** The UK had a 10 per cent share of total world treaty reinsurance in 2000, i.e. reinsurance arranged under a contract applying to a specified portfolio of business. It also has the largest share of net premiums in the world for marine and aviation insurance (19 per cent and 39 per cent respectively in 1999).

**General and long-term insurance** **A31** General and long-term insurance are significant in terms of their weight in asset markets. The UK sector's total investments amounted to £1,060 billion in 2001, with the greatest proportion of assets held in stocks and shares. Insurers hold around one fifth of UK company equity. The Association of British Insurers (2002) reports that £974 billion is invested in long-term insurance products, or around 30 per cent of UK personal sector wealth. £210 billion is invested in insurance-administered occupational pensions, £350 billion in insurance administered personal pensions and £250 billion in life assurance.

**Scotland a leading centre** **A32** As noted earlier, expertise in managing these funds lies both in London and in Scotland. In the insurance sector, Scottish-based life assurance offices alone have over £250 billion of funds under management, employing 15,000 people.



**Table A10: Long-term and general insurance portfolio holdings of UK insurers**

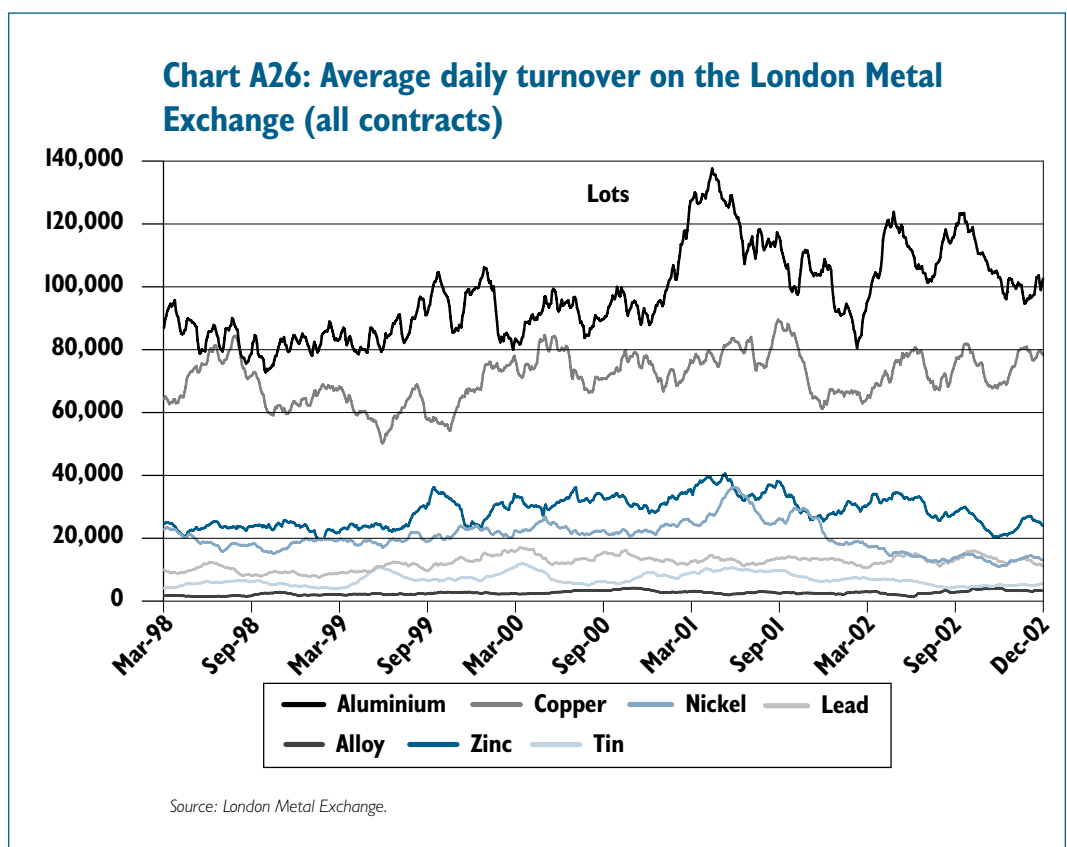
<b>Total long-term and general insurance investment holdings</b>	<b>£1,060 billion</b>
Of which:	
UK public sector securities (including gilts)	£140 billion
Overseas public sector securities	£47 billion
UK ordinary stocks and shares	£307 billion
Other UK company securities	£113 billion
Overseas ordinary stocks and shares	£130 billion
Other overseas company securities	£62 billion
Unit trusts	£69 billion
Property	£76 billion
Other investments	£116 billion

Source: ABI, 2002.

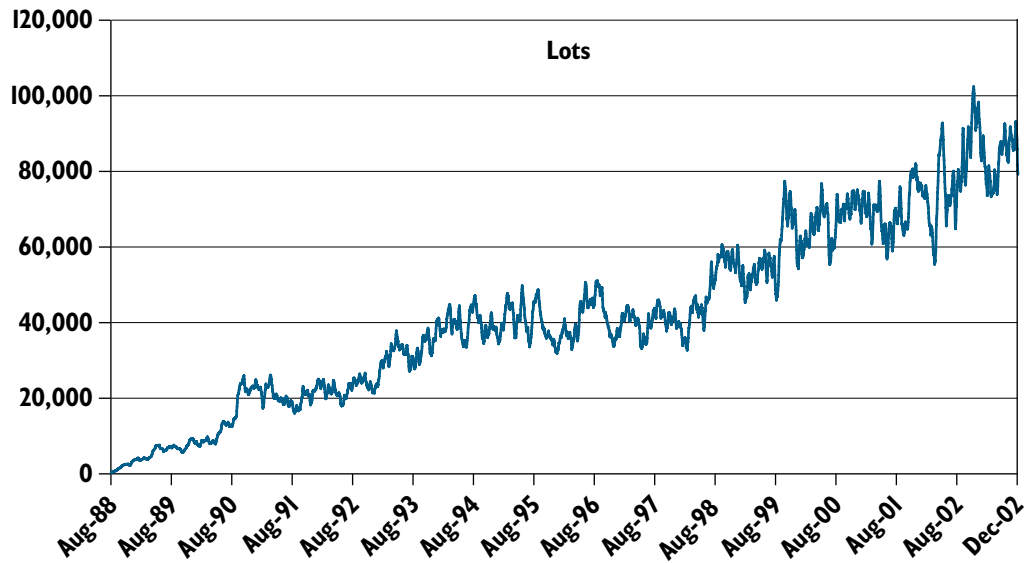
### 13) Commodity exchanges

**A33** London hosts highly liquid commodity markets in the London Metal Exchange (LME) and the International Petroleum Exchange (IPE). Turnover on both remains healthy, with the turnover of trades on the IPE increasing rapidly through the past decade (Charts A27, A28 and A29).

**A34** Trades on the IPE are denominated in US dollars, so little effect would be expected from the introduction of the euro. Similarly, all LME contracts are traded and quoted in US dollars. However, LME contracts can be cleared in currencies other than US dollars – the euro, Japanese yen, and sterling – though the tonnages cleared in currencies other than US dollars are relatively small.

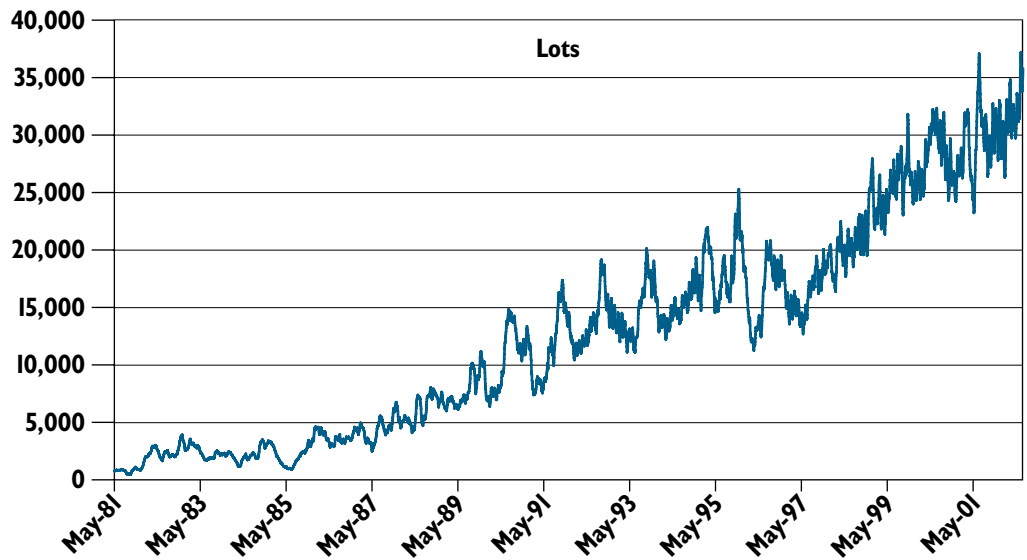


**Chart A27: Turnover of Brent crude oil futures on the International Petroleum Exchange, London**

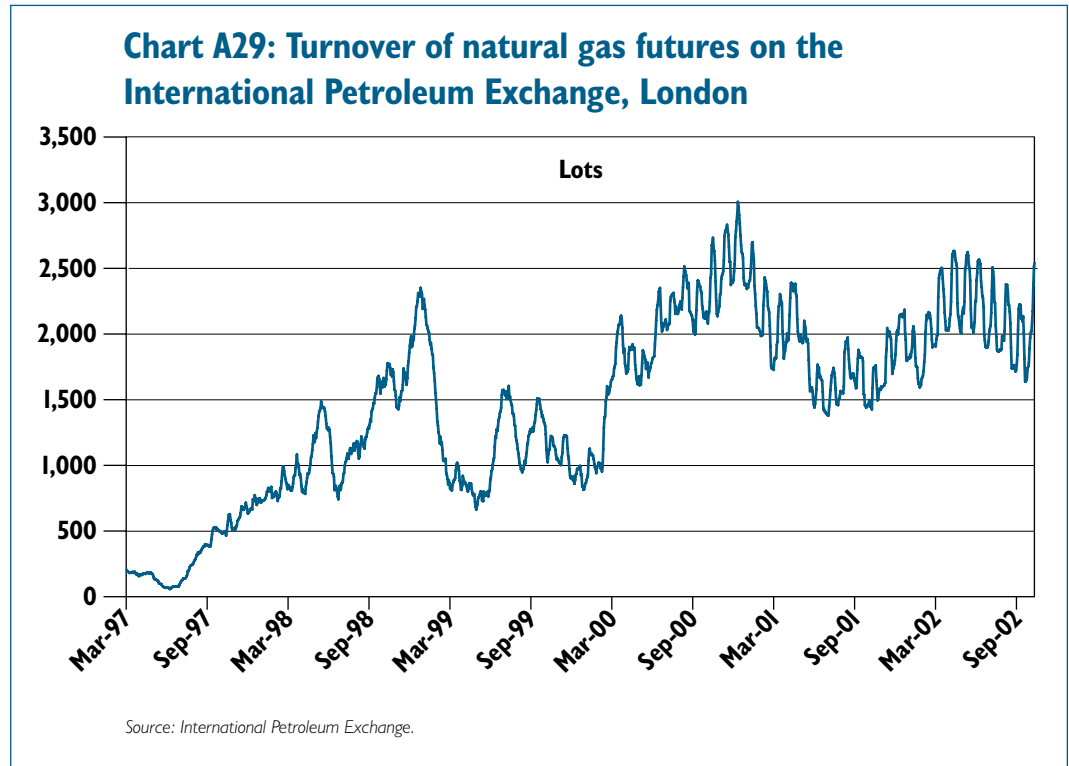


Source: International Petroleum Exchange.

**Chart A28: Turnover of gas oil futures on the International Petroleum Exchange, London**



Source: International Petroleum Exchange.



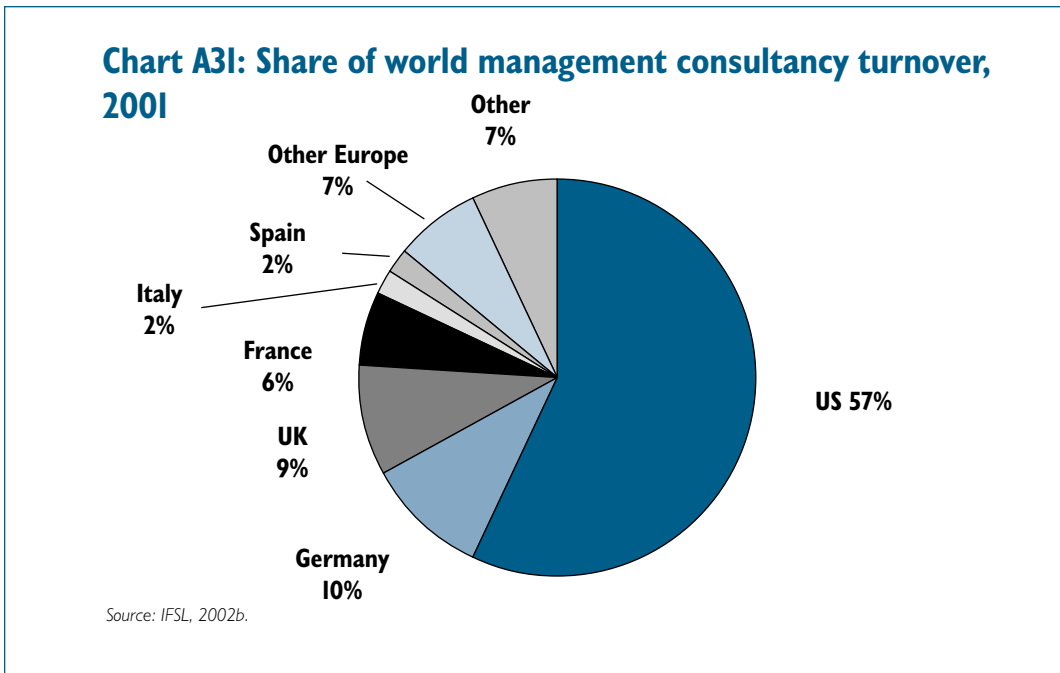
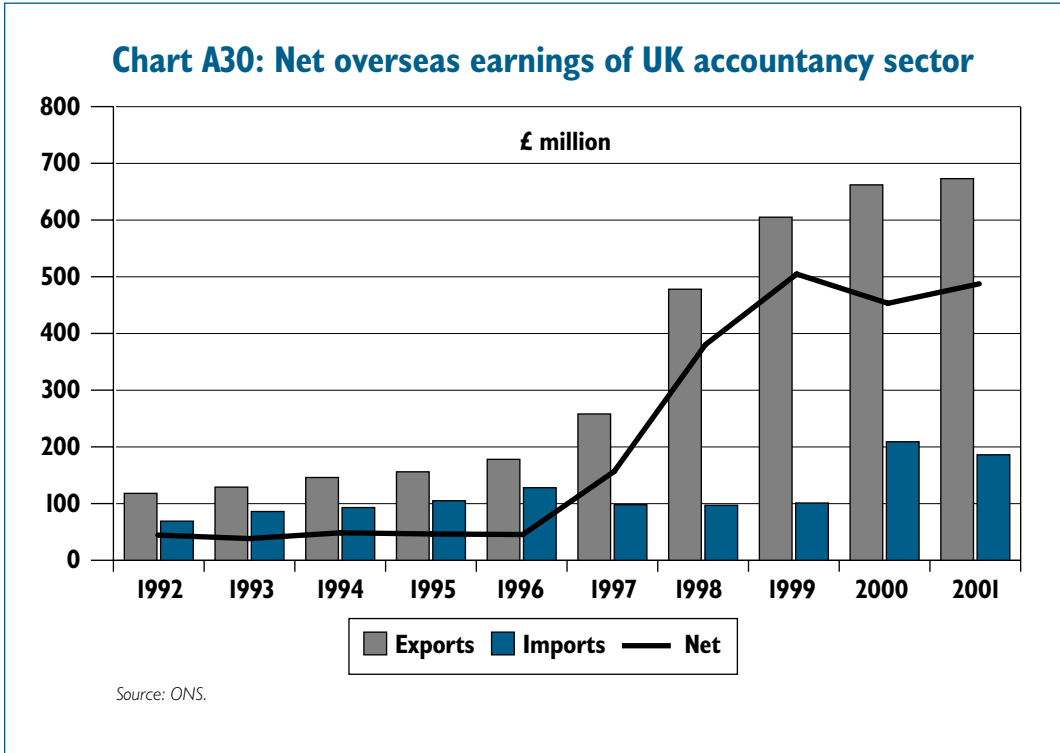
#### 14) Professional and support services

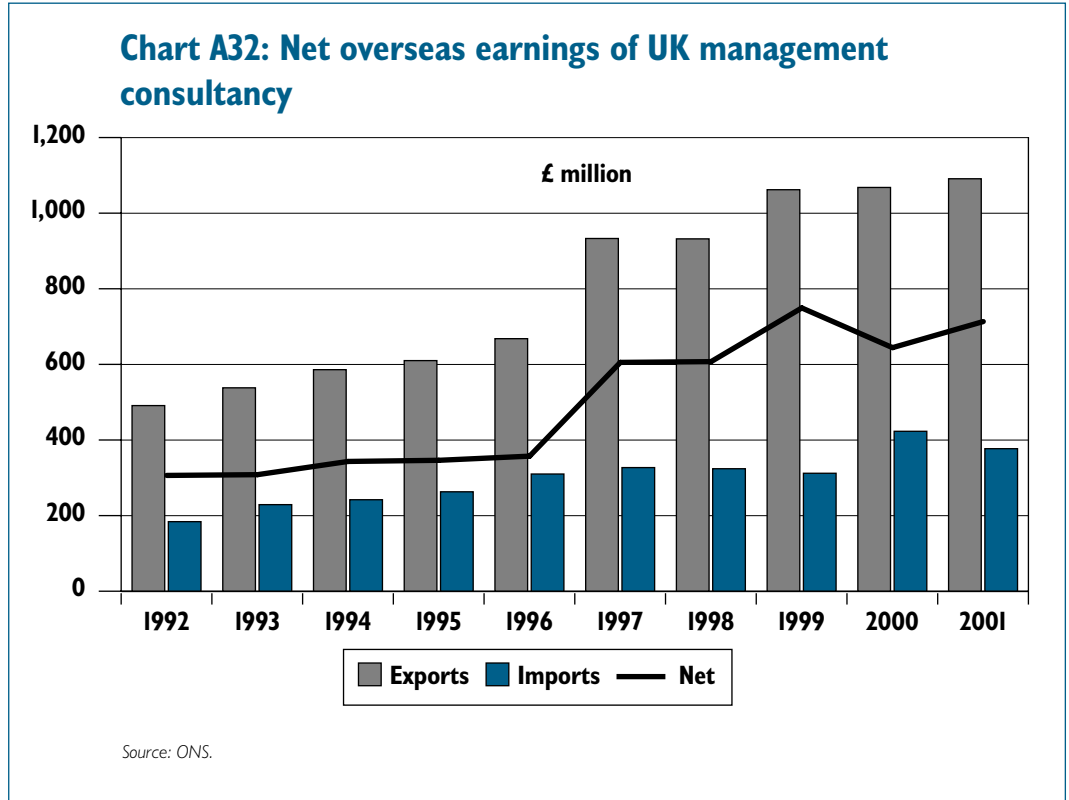
**A35** UK financial services activity benefits from a very wide range of supporting services.

**Legal services** **A36** Along with New York, London is one of the two leading centres for international legal services. There are an increasing number of foreign law firms with offices in London, including more than 60 from the US. Five of the ten largest international law firms are based in London. Legal services accounted for around 1.3 per cent of UK GDP in 2000 and employed 246,000 people in 2001.

**Accounting and related services** **A37** London is a leading international centre for the provision of accounting and related services. All the largest accountancy firms have headquarters in London and branches throughout the UK. In 1998, accounting had a UK GDP share of 1.0 per cent, and in 2000 employed 180,000 people. Net overseas earnings of accountancy grew rapidly in the late 1990s to around £500 million (Chart A30), underlining strong growth in the UK sector.

**Management consultancy** **A38** The UK is the second largest centre for management consultancy in Europe measured by turnover (Chart A31), with healthy growth in overseas earnings seen through the 1990s (Chart A32). The total revenue of UK management consultancies was estimated by the Management Consultancies Association (MCA) to be £8 billion in 2001. The revenue of MCA members increased from £1.5 billion in 1995 to £3.7 billion in 2000, and then to £4.4 billion in 2001. Over half of revenue in 2001 was generated by outsourcing and information technology services.







**BI** The US provides a useful example of financial location because the existence of financial markets pre-dates both the creation of the political centre of gravity in the US around Washington, DC, and also the territorial expansion of the 19th century which integrated vast new areas into the economy. Examining this evolution, and how the pattern of business is distributed today, should provide some further insights into how economic integration such as that of EMU can influence the location of markets. A summary of some of the main historical influences is contained in Box B1. Further details are included in the EMU study by HM Treasury *The United States as a monetary union*.

### **Box B1: US financial services location: a historical background**

The first three banks in the US were founded in three cities – New York, Boston and Philadelphia – in the 1780s. They served local markets, isolated from each other in the absence of any banking system. It was in these three cities that the first securities markets developed, soon to be followed by Baltimore. Significantly, the establishment of US securities markets precedes the establishment of the nation's permanent capital in the District of Columbia (Washington, DC) – a fact that may go some way to explaining the dispersal of US securities markets away from the political centre of gravity.

Although in today's terms the three markets appear relatively close geographically (New York and Boston are around 200 miles apart, while only 100 miles separates New York from Philadelphia), communication delays existed between the cities in the early days that helped each to establish themselves and grow independently, catering for regional markets. These communication delays amounted to between one and two days between Philadelphia and New York, and a further week to Boston.

Despite these distance barriers, Sylla (1995) finds evidence of integration between these three major markets from the beginning, and that pricing was efficient even despite delays in communication between the cities. Sylla also notes that New York appears to have been the most active of the markets, even though Philadelphia was widely regarded as the leading financial centre, and was at that time the largest city in the US.

Even as the country expanded with the acquisition of new territory, it was the North East US that witnessed the most rapid development of financial markets and banking. By 1830, Sylla records that the New England and mid Atlantic regions of the US were home to roughly 86 per cent of US banks, and 72 per cent of banking capital.

In some respects, this early strength in the North Eastern stock markets probably also helped to stymie the development of some financial markets in the South and West (though the urbanisation of the South was arguably some 40 years behind the rest of the US). Atlanta and Dallas however emerged as regional banking centres in the South, yet many banks in these cities chose to insure themselves against large credit demands by linking with banks elsewhere in the country. Odell and Weiman (1998) report that in 1880, 90 per cent of Georgia banks had turned to banks in New York for their primary correspondent, while the equivalent figure for Texas was 97 per cent.

In this way, New York's early-mover advantage was reinforced, though as regional financial centres such as Kansas City and St Louis grew, they were able to draw some business away from New York. The rapid spread of banking post-1880 stimulated demand for regional banks, which tended to concentrate around the railroad hubs – Atlanta and the twin cities of Dallas-Forth Worth in particular.

By the time the Federal Reserve was founded, Atlanta and Dallas were the dominant regional financial centres in the Southern US. Both were chosen as home for regional Federal Reserve banks, which arguably helped cement their positions. Odell and Weiman (1998, p. 123) believe that “the Fed... acted as a powerful lever reinforcing economic development within the Lower South”.

**The rise of New York** **B2** Kindleberger (1974) shows that the rise of New York as the financial centre of the US came despite repeated attempts to break its power by rival cities and through various legislative routes. It is an example where economies of scale in the provision of financial services overcame adverse institutional enactments aimed at trimming New York's hegemony over the US financial system.

**B3** Prior to the Napoleonic wars, no North American Atlantic seaport dominated trade and finance. In 1815, New York made its move to become the major trading centre, enacting an auction law that offered favourable conditions to wholesale merchants. These merchants focused their trade on the port, and thus stimulated the demand for sterling to finance their trading activities (mainly cotton and grain) between New York and Liverpool.

**B4** This provided the catalyst that gave New York the advantage over other centres, and set in train a process of agglomeration and self-sustaining growth. It attracted financial talent and capital, as a practice developed of maintaining bankers' balances in the city to handle the seasonal movement of agricultural goods passing through the port. New York funds started to command a premium over other centres, provoking other states to enact measures to prevent a drain of funds. None proved effective in undermining investors' preferences for New York paper and deposits.

**B5** The National Banking Act of 1863 (amended in 1864) formalised the role of New York's banks as the country's banking reserve. Repeated attempts to wrest this dominance away from it were made, the first being in 1887 when the National Banking Act was amended again to allow any city with over 200,000 inhabitants to become a reserve city; and then in 1913, when the Federal Reserve Act envisaged separate regional money and capital markets centred on the 12 district banks.

**B6** There was, however, to be only one US money market and one US monetary policy, and both were centred on New York. Here, discount and open-market policies were unified. The facilities New York offered were more specialised and competitive: other regions therefore used these existing facilities, reinforcing New York's pre-eminence. Half the loans made by New York's banks were for customers outside the city, compared to 8.2 per cent for Chicago, 7.8 per cent for Dallas and 6.3 per cent for San Francisco, its nearest competitors.

**B7** Though New York demonstrates all the hallmarks of self-sustaining growth, it has not dominated entirely the financial landscape of the US. Table B1 illustrates the relative importance of major US cities in terms of institutional equity holdings. The data show that the US fund management industry is dispersed over several different centres, and unlike the EU where London is by some margin the pre-eminent management centre of institutional funds, no city is as strongly dominant. As two of the first three cities to develop securities markets in the late 18th century, New York and Boston are still the two largest centres. New York holds 33 per cent of the holdings of the ten largest US fund management centres, Boston 26 per cent.

**Table B1: Leading US fund management centres ranked by institutional equity holdings, 1999 (year-end)**

	US\$ billion
1. New York	2,363
2. Boston	1,871
3. San Francisco	726
4. Los Angeles	569
5. Philadelphia	419
6. Denver	340
7. Chicago	316
8. Houston	242
9. Hartford	199
10. Minneapolis	186

Source: Thomson Financial Investor Relations, 2000.

**B8** This co-existence of two large fund management centres is despite 200 years of integration, and the two cities being, by US standards, a relatively short distance apart (the cities are significantly closer together than London and Frankfurt, two of the dominant financial centres within the EU). The third of the initial three markets, Philadelphia, also remains host to a significant level of trade. Baltimore is the only obvious exception – one of the first cities to begin securities trading around the turn of the 19th century, Baltimore is conspicuous by its absence from the top ten fund management cities.

**B9** A similar observation is apparent in derivatives trading. Chicago, where derivatives were first developed, maintains its advantage in this form of trading, even though New York is generally thought of as being the more important financial centre (Table B2). Overall, Chicago maintains a greater degree of dominance in this market than is apparent by any city in the fund management industry.

**Table B2: Annual contract volumes on US derivatives exchanges**

Millions of contracts	1998	2001
Chicago (CBOT, CME and CBOE)	715	979
New York (NYMEX and AMEX)	174	293
Philadelphia (PHLX)	39	103
San Francisco (PE)	59	101

Source: IFSL, 1999 and 2002c.

### Stylised facts from the US

**B10** There are several stylised facts that can be drawn from these data. Casual observation seems to suggest that there is a first-mover advantage in financial market business, and certainly in the case of New York – those cities where markets develop first (whether by historical accident or technical expertise) and establish expertise have retained their lead even in the face of competition from other cities. This suggests that once started, agglomeration effects can be long standing, as financial networks and expertise develop in particular areas.

**B11** This also appears to sustain itself in the face of at least some innovation in the industry. Chicago developed as a derivatives market because it was the pre-eminent commodities trading city in the US, and had a competitive advantage in commodities derivatives. More recently, it has used this baseline expertise to exploit new markets in exchange and interest rate derivatives, both of which have seen rapid growth.

**B12** Observation of the geographic pattern of activity in the US shows that it is possible for different financial centres to co-exist in even a relatively small geographical area. The data on equity markets shown above illustrate this point – four of the top ten US cities in these markets are located in the North East US (New York, Boston, Philadelphia, and Hartford), while a further two are located in California (Los Angeles and San Francisco). In addition, the data show that it is possible for cities to specialise in different markets within a single currency zone, and for a city to be a leader in one market but a minor player in others.

**C1** This annex outlines neoclassical theory, and the implications of trade costs and the assumption of increasing returns used in new trade and new economic geography models on the location of activity (Krugman and Venables, 1995a, 1996).

**C2** Neoclassical trade theory<sup>1</sup> assumes constant returns to scale, homogenous goods and perfect competition. The comparative advantage of a location is determined exogenously, for example by the distribution of factor endowments. If firms produce in a location where other firms are located, the theory argues that they risk increasing competition both in factor markets (i.e. competition for scarce land, labour and capital) and in their product markets when they try to sell their outputs. Under these conditions, and assuming trade costs are high, neoclassical theory suggests that firms will tend to disperse according to the distribution of factor endowments. This will minimise competition from other producers for scarce resources and, as a result, means that markets become segmented.

**C3** A dispersed distribution of activity is rarely observed in wholesale financial services. By introducing increasing returns to scale and trade costs, new trade and new economic geography models provide one means for understanding why some locations become specialised in certain types of activity.

**C4** Krugman and Venables (1995a, 1996) show that firms may tend to locate (or agglomerate) in larger markets when trade costs such as transport costs<sup>2</sup> are neither too high nor too low. By agglomerating in one place, firms are able to take advantage of the various cost and demand linkages between their activities. Because of the beneficial synergies between their activities, other related firms are attracted to the location and regions gradually specialise in one form of production, e.g. Detroit in car production, northern Italy in textiles.

**C5** Krugman and Venables' work suggests the location of production can be stable over a range of transport costs. If trade costs gradually increase, then there may become a point where firms disperse to avoid product market competition and markets will become segmented - a similar scenario to that described by the neoclassical model.

**C6** In contrast, if trade costs become sufficiently low, markets can be served easily from any location, and proximity to markets might be a less important criterion in the location decision than the cost of production and the availability of factors of production.

**C7** An example of lower transport costs in the financial services sector is the widespread introduction of technology that has resulted in the reduction of international telecommunications costs for international market firms, and increased their ability to send information quickly over large distances. Because technology allows financial services firms to deliver a variety of services through telecommunication systems over large distances, a fall in transport costs has two contrasting implications for location.

**C8** First, it can create the potential for some forms of financial service activity to relocate to lower-cost locations and serve their clients from there, thereby acting as a dispersion force. This is relevant especially to those financial services firms and activities involved in routine back-office processing of information where, because margins are low, cost imperatives might be greatest.

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<sup>1</sup> As set out in the seminal works of Heckscher (1919) and Ohlin (1933) and subsequent contributions.

<sup>2</sup> New trade models capture this effect through the conceptual tool of 'iceberg costs' – a fraction of a good melts away as it is transported over a distance, usually assumed to be at a constant rate per kilometre travelled. The greater the distance, the greater the transport costs for the producer.

**C9** Second, by allowing some financial services firms to concentrate activity in one location and serve their markets from a central point, it acts as a force increasing concentration. This may apply most to core wholesale operations – treasury and risk management, research and mergers and acquisition – where market firms can centralise their activities in one financial centre and, from there, offer services to a range of national markets. By concentrating operations on one site, firms can reduce the fixed costs associated with multiple sites and capture internal scale economies. If constant returns to scale are assumed, a firm's activity could be simply divided into any number of separate operations (so-called 'backyard capitalism'). In contrast, the exploitation of internal scale economies implies activity takes place in a small number of operations and therefore at fewer locations.

**Table C1: Location theories**

	<b>Neoclassical theory</b>	<b>New trade theory</b>	<b>New economic geography</b>
<b>Seminal papers</b>	Ricardo (1817); Heckscher (1919); Ohlin (1933); Weber (1909); Vanek (1968)	Krugman (1979, 1980, 1981); Dixit and Norman (1980); Helpman and Krugman (1985); Weder (1995)	Marshall (1890); Krugman (1991 a,b) (1993); Krugman and Venables (1995a,b); Venables (1996); Markusen and Venables (1996); Puga and Venables (1997); Fujita, <i>et al.</i> (1999)
<b>Market structure</b>	Perfect competition	Monopolistic competition	Monopolistic competition
<b>Determinants of location</b>	<ul style="list-style-type: none"> <li>• Technological differences</li> <li>• Natural resource endowments</li> <li>• Factor endowments and intensities</li> <li>• Size of home market</li> </ul>	<ul style="list-style-type: none"> <li>• Degree of plant-level increasing returns</li> <li>• Substitutability of differentiated linkages</li> </ul>	<ul style="list-style-type: none"> <li>• Pecuniary externalities (labour market pooling, input-output linkages, migration-induced demand)</li> <li>• Technological externalities</li> </ul>
<b>Distribution of economic activity</b>	<ul style="list-style-type: none"> <li>• Determined by given endowments</li> <li>• Inter-industry specialisation</li> <li>• Unique equilibria</li> </ul>	<ul style="list-style-type: none"> <li>• Exogenously given</li> <li>• Intra- and inter-industry specialisation</li> <li>• Unique equilibria</li> </ul>	<ul style="list-style-type: none"> <li>• Endogenous</li> <li>• Centripetal agglomeration forces</li> <li>• Intra- and inter-industry specialisation</li> <li>• Multiple equilibria</li> <li>• 'U curve'</li> </ul>

Source: Adapted from Brülhart, 1998.