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Assessing the economic interdependence between states and regions

by

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Abstract

In this paper we discuss how, and to what extent, the states and regions of the world are linked, and analyse how increased globalisation has affected the type and magnitude of linkages. Issues we address include: what are the channels for the transmission of good and bad shocks across borders and regions, and how does increased globalisation affect the type, number and magnitude of international transmission channels. The empirical evidence on international linkages, how these have evolved, and their impact on economic development, illustrates well that globalization has pros as well as cons. In sum, there is however little doubt that the globalization process – through the expanding and strengthening of international linkages – contributes to growth and economic development in the participating countries. The major downside of increased international interdependence relates to the issues of vulnerability and instability. We conclude with the discussion of two measures to reduce vulnerability: the choice of currency regime, and the supervision and practice of the banking sectors in the developing economies. It is important to keep in mind, however, that although international linkages imply an exposure to externally generated economic fluctuations and instability – this is just part of the story. International trade and international capital markets may in fact work as a means to dampen domestically generated fluctuations, and thus have a stabilizing impact.

1. Introduction

The purpose of this paper is to discuss how, and to what extent, the states and regions of the world are linked, and moreover to analyse how increased globalisation has affected the type and magnitude of linkages. Issues we shall address include: what are the channels for the transmission of good and bad shocks across borders and regions, and how does increased globalisation affect the type, number and magnitude of international transmission channels.

In particular, we shall focus on the linkages and international interdependencies which are created through international trade and international capital movement. First, we aim at presenting empirical evidence that can provide a more complete picture of how countries and regions of the world are linked through international trade and FDI. We want to elaborate on this issue along a set of dimensions, covering *bilateral aspects, industrial aspects, and size aspects* of international linkages. Also to be discussed is how increased globalisation is likely to affect the nature, geographical pattern and magnitude of international interdependencies. Special attention will be drawn to the emerging economies and links to the industrialised economies. Secondly, we shall examine the evidence on the extent to which exposure to trade and international capital mobility determines a country's vulnerability to crises that originate from elsewhere in the world.

This paper is organized as follows: Section 2 discusses the channels for international spill-overs, focusing on the trade channel and the capital movement channel. Section 3 elaborates on the pros and cons of international linkages, examining the issues related to openness and growth, openness and synchronisation and openness and vulnerability. In section 4 some policy implications are discussed.

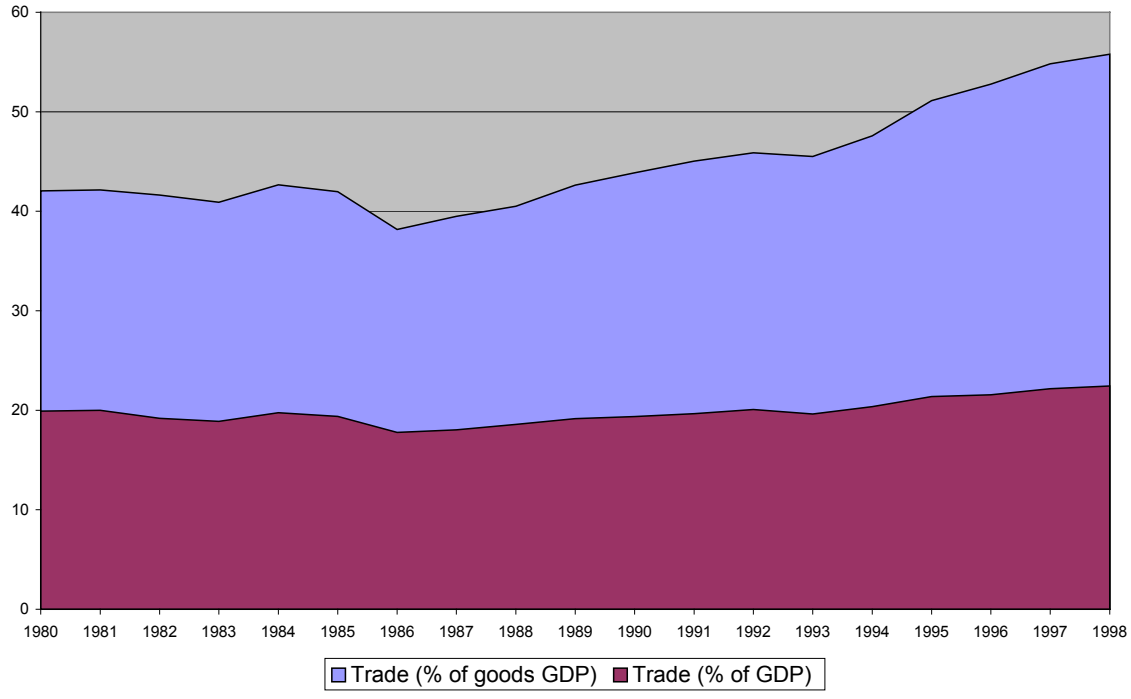
2. The channels for international spillovers

States and regions are linked through various channels. In economic terms the most important ones are trade, capital movement, and the mobility of individuals. These channels not only allow for the flow of goods, factors and people, they also facilitate the flow of information. We shall here focus on the trade and capital movement channels, and on how these have been affected by the globalization process.

2.1 The trade channel

Trade patterns today are distinctly different from what they were 20-30 years ago. In 1970 world trade (exports) accounted for around 14% of world GDP, in 1982 the equivalent share was 19%, while today it is around 26%. The international interdependencies are even stronger if we concentrate on trade in goods as a share of GDP (excluding services and construction), which approaches 60%, see Figure 1.

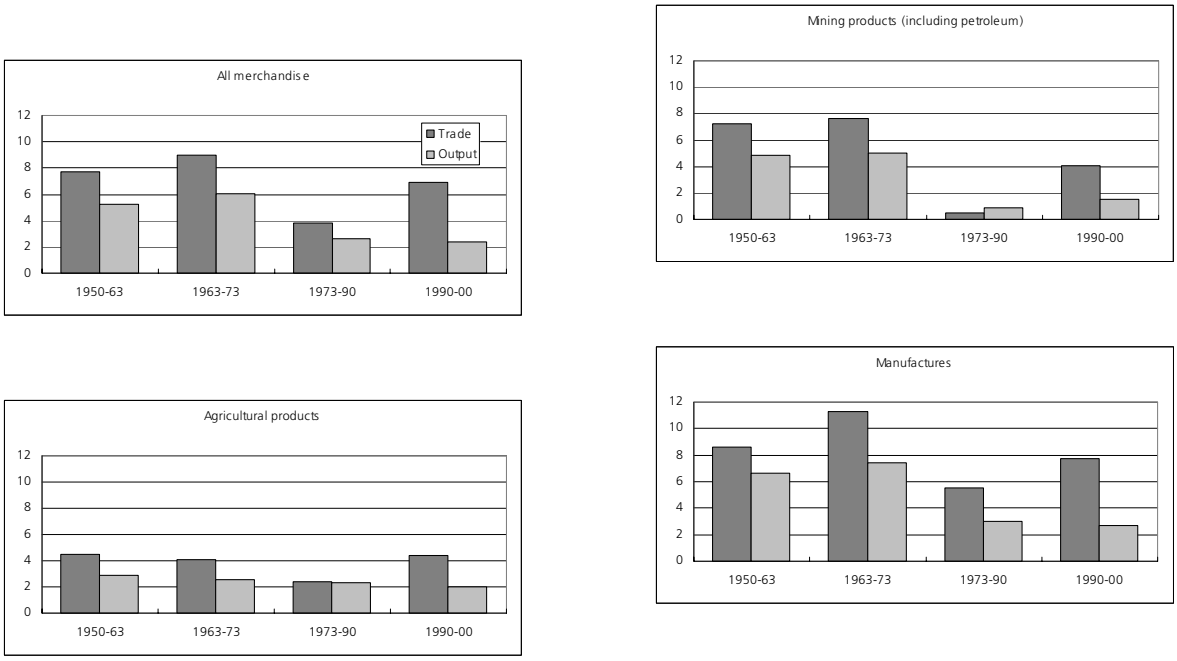
Figure 1: World Trade



Source: World Development Indicators 2001 (The World Bank)

However, it might also be worth noting that in a historical perspective the most dramatic increase in trade in goods took place in the period 1963-73. This is true also if we look at the different commodities; agricultural products, mining products, and manufactures, see Figure 2. In the 1990s the type of commodities that experienced the most significant increase in trade, was manufactures.

Figure 2: World merchandise trade and output by major product group, 1950-2000 (Average annual percentage change in volume terms)



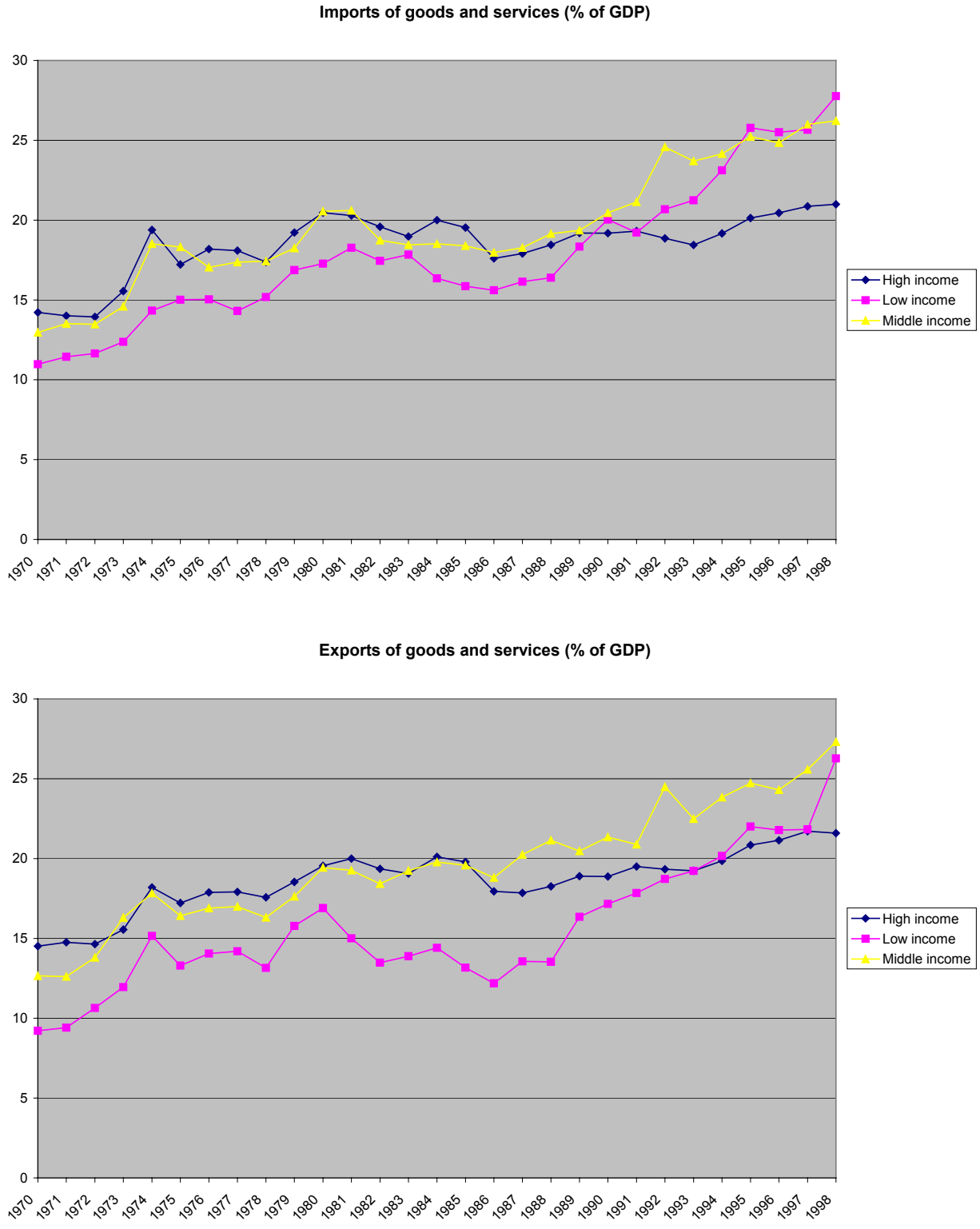
Source: Trade Statistics 2001 (WTO)

High, Middle and low income countries

Examination of the country patterns of trade reveals that magnitude and development differ substantially across three categories of countries: high income, middle income, low income countries. Around 1970 imports and exports – measured as shares of GDP – were most important for the high income countries. However, over the last 30 years the low and middle income countries have seen a much more substantial increase in imports and exports than what applies to the high income countries, see Figure 3.

Over the period 1970-98, the low income countries experienced a 150% increase in imports (as share of GDP) while exports (as share of GDP) rose by around 185%. The respective numbers for the middle income countries were lower, although very high as well; around 100% for imports and 116% for exports. By the end of the period, both low income and middle income countries had import and export shares above 25% of GDP, while the similar shares for high income countries were closer to 20%. This development highlights one important point, namely that over the last decades the links between the developed and developing countries have increased dramatically.

Figure 3: Imports and Exports for high, middle and low income countries



Source: World Development Indicators 2001 (The World Bank)

International Fragmentation of production and the changing nature of world trade

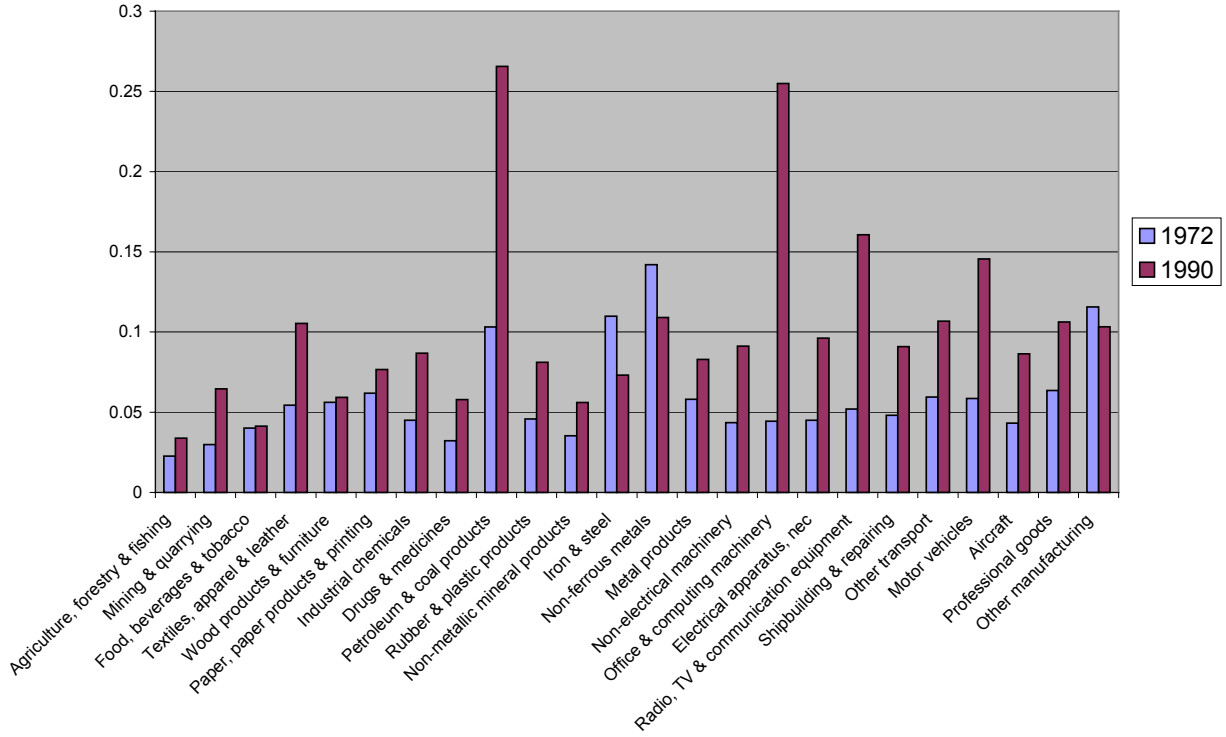
The world economy is characterized by a significant – and rising – degree of international fragmentation, i.e. global outsourcing. The fact that firms buy a rising share of their intermediates from abroad, means that international linkages within the producing sector have been strengthened. This in turn implies that a country or regional specific shock may be transferred in a more direct way today, than what was the case 20-30 years ago.

The trend towards more outsourcing is well documented. Hummels, Rapoport, and Yi (1998) and Hummels, Ishii and Yi (2001) estimate that trade in intermediates – called vertical specialization – accounts for up to 30% of world exports, and has grown as much as 40% in the last 25 years. As for the substantial growth in exports over this period, more than 30% of this growth can be ascribed to the growth in vertical specialization.

Looking at e.g. the US manufacturing industry and use of intermediates, Figure 4 gives the imported share of intermediates used in the respective industries. We see that with few exceptions, there has been a substantial increase in global outsourcing across all industries. The most dramatic change is seen with respect to petroleum and coal products, office and computing machinery, radio, TV and communication equipment, and motor vehicles. These industry groups are among the commodities with fast growing consumption in the 1990s (see Survey of Current Business, December 2001, Bureau of Economic Analysis), and their growing importance in the world economy is moreover supported by the evidence on sectoral export levels and export growth, see Figure 5.

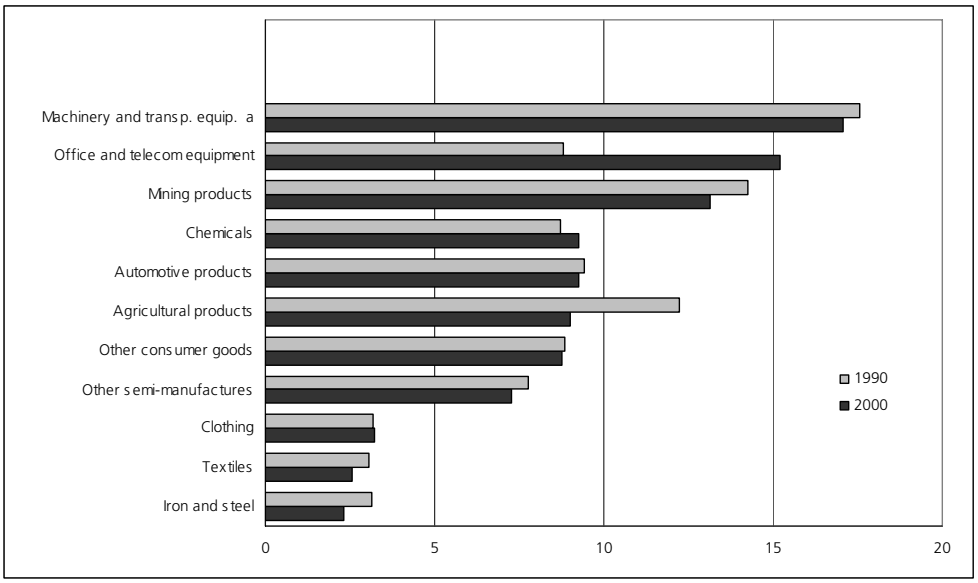
The evidence on global outsourcing as well as on sector specific consumption growth points to the rising importance of petroleum and coal products, office and computing machinery, radio, TV and communication equipment, and motor vehicles as sectors through which international spillovers will be transferred.

Figure 4: Imported intermediates as share of total use of intermediates, US producing industries



Source: OECD, Input-Output tables

Figure 5: World merchandise exports by product, 1990 and 2000 (share based on value)



Source: Trade Statistics 2001 (WTO)

A substantial part of the ongoing, and increasing, vertical specialization is related to firms outsourcing parts of their production internationally. Much, although not all of this, takes place within MNEs. In 1999 there were more than 39 000 parent firms and 279 000 foreign affiliates worldwide. Intra-firm trade covers a large share of total exports of US (45%), Japanese (30%) and Swedish (50%) parent companies (see Barba Navaretti et al, 2001). Moreover, a large share of exports from US and Swedish parents to their subsidiaries is made up of parts and components for further reprocessing.

Despite the growth of outsourcing from developed countries to some developing and transition areas, vertical specialization is especially high in North-North trade. As for the EU, the highest shares are observed for trade with North America and within the EU. This reflects the low trade costs between these regions as well as the presence of multinational corporations. It also suggests the potential for further growth of international production networks as lower wage countries become integrated with the EU and the US. The growth of outsourcing from EU countries to Eastern and Central European countries following their gradual integration in the European economy after 1989 is especially remarkable, and is thoroughly analysed and discussed in Barba Navaretti et al (2001).

2.2 The capital movement channel

When examining international capital movements, it is instructive to distinguish between capital market flows and foreign direct investment (FDI).[1] While both types of capital flows constitute important features of the globalization process, their determinants and impacts may differ significantly. Here we shall consider them in turn. We start with a brief discussion of capital market flows before we move on to a more detailed discussion of FDIs.

2.2.1 Capital market flows

Capital market flows consist of bank loans and portfolio investments in bond and stock markets. Focusing on capital market flows to developing countries, we note the following highlights from the survey of Bourguignon et al (2002):

- Capital flows to developing countries have been on a sharply rising trend for the last three decades – but the volatility in the annual magnitudes is substantial.

- Looking at private flows, one third is capital market flows, while two thirds are FDIs.

- While the FDIs have been remarkably resilient, capital market flows are much more volatile. This is most of all due to a very high volatility in bank lending. For example, bank lending to developing countries shifted from an inflow of 50 billion USD in 1998 to an outflow of 25 billion USD in 1999. This obviously reflects a giant revision of the risk perception of financial institutions and investors in response to the Asian crises, the debt default of Russia and the collapse of the large LTCM hedge fund.

The latter bullet point is crucial for many developing economies' currency and banking crises. First, large fluctuations in these flows obviously put a lot of pressure on the exchange rates of the developing economies. Secondly, an important underlying problem is that developing countries' banks in many cases tend to accumulate large short-term liabilities denominated in foreign currencies (while their lending is in domestic currency). If the currency risk is not hedged (due for example to a combination of inexperienced banks and high hedging costs), this creates a double maturity and currency balance sheet mis-match for these banks. When

[1] FDI refers to investment flows which generally include equity flows and debt between a parent company and an affiliate in which the parent holds at least a 10 percent ownership interest, as well as retained earnings of the affiliate. However, both the components and threshold differ for some reporting economies.

the currency of a developing country starts to depreciate for one reason or another, the short-term liabilities of its banks may be impossible to handle. This results in a collapse of the banking sector or alternatively – if the government comes to rescue – severe fiscal budget problems.

At the outset it is not surprising that capital market flows are more volatile than FDIs. While investors' expectations of rewards and risks guide both types of flows, it seems clear that capital market flows do not involve the same amount of commitment over a certain time span as in the case of most FDIs. Most portfolio positions may be reversed very quickly and it is also the case that a major part of the bank lending to developing countries is short-term (i.e. the option of the developing economies to roll over debt may be quickly halted).

It follows that the allocation of capital market flows may be strongly influenced by changes in global trends and attitudes. For example, the "new-economy" paradigm was probably responsible for the enormous capital inflow to the US in the last part of the 1990s. Moreover, the general increase in developing economies' risk perception following the Asian crises and the Russian default is most likely responsible for the drop in capital market flows to these economies after 1998. Such incidents tend to trigger "safe haven" mechanisms in the sense that an increased risk perception tends to favour capital movements away from emerging economies and into OECD economies in general, and in most cases to the US in particular.

Looking forward, we are optimistic about the prospects for a still increasing trend in the capital market flows to the emerging economies (even if we are still somewhat below this trend at the moment). The tendency for investors to allocate larger parts of their portfolio investments abroad will continue. This means in effect that the well-known "home bias puzzle" (i.e. the observation that very large shares of investors' portfolios are held in domestic stocks, see French and Poterba (1991)) will gradually vanish – or at least become much weaker. Recent Norwegian evidence shows, for example, that the percentage of equity mutual fund holdings invested in international funds increased from less than 10 per cent in 1995 to more than 60 per cent in 2001, see Matsen and Thøgersen (2002). We must admit, however, that large parts of the amounts which are reallocated to international funds, are invested in neighbouring countries. Norwegian investors are, for example, overexposed in European stocks compared to American and Asian stocks. Still, the tendency clearly implies more

global diversification – including emerging markets. This makes sense for investors (increased diversification) as well as for the supply of capital in all economies.

2.2.2 Foreign direct investment

World inward FDI increased almost tenfold between 1980 and 2000, rising from 615 to 6314 billion dollars, which reflects the enormous growth in activity by multinational corporations. FDI has grown much faster than both trade and income; whereas world-wide nominal GDP increased at a rate of 7.2 percent per year between 1985 and 1997, world-wide imports at 9.2 percent, and world-wide nominal inflows of FDI increased by 17.6 percent. From 1996 to 1999, the growth in FDI inflows has been even stronger, around 40 percent per year. These figures comprise the financing of new investments, retained earnings of affiliates, and cross border mergers and acquisitions. Mergers and acquisitions are a large proportion of the whole (especially among the advanced countries), with their value increasing from 52 percent of total FDI flows in 1987 to 83 percent in 1999 (UNCTAD, 2000).

Table 1: Annual growth rates in the world economy, 1986-1999 (percent)

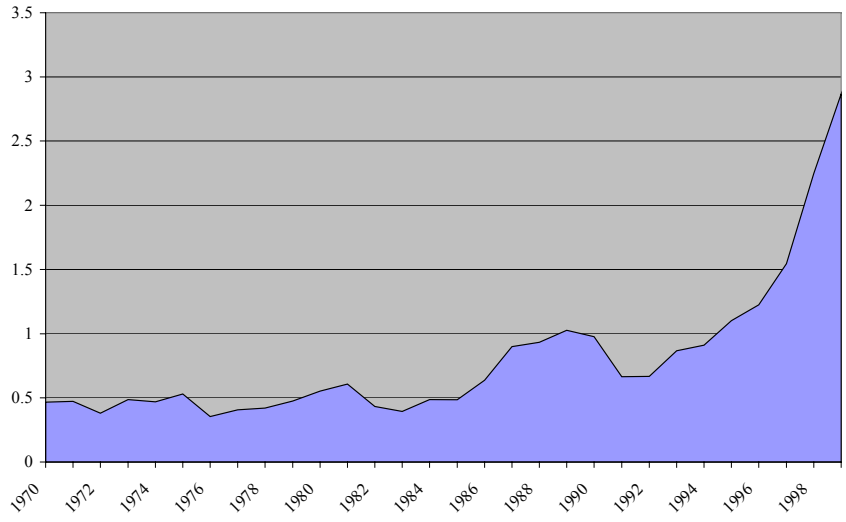
	1986-1990	1991-1995	1996-1999
GDP	11,7	6,3	0,7
Trade	15,4	8,6	1,9
FDI			
• inward FDI -- flows	23,0	20,8	40,8
• inward FDI -- stocks	16,2	9,3	18,4
Cross border Mergers & acquisitions	26,4	23,3	50,0

Source: World Investment Report 2001

The escalating importance of FDI and multinational corporations in the world economy and as a means of linking countries, is well documented both by the inflows of FDI in percent of world GDP (Figure 6) and by multinational firms' sales. In 1998, US multinational parent companies exported $438.3 billion worth of goods out of total US goods exports of $682.5 billion, i.e. two-thirds of the total. Much of this trade was intra-firm – of the $438.3 billion, some $217.1 billion, or 49.5 percent, went to exporters' own foreign affiliates or related companies. Between 1983 and 1999 foreign affiliates of all nationalities accounted for

between one quarter and more than one third of world-wide exports, according to figures from UNCTAD (1998, 1999 and 2000).

Figure 6: Foreign direct investment, % of world GDP



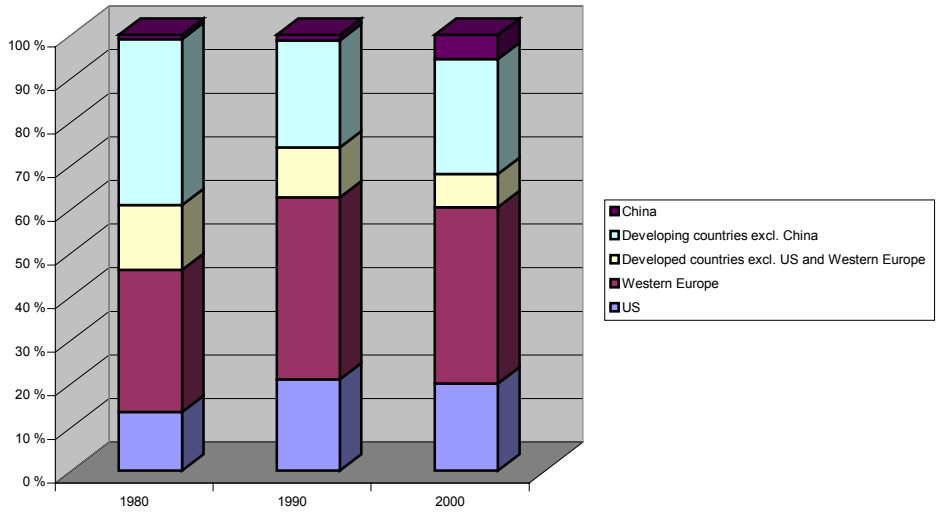
Source: World Development Indicators 2001 (The World Bank)

However, the pre-eminence of multinationals is not spread equally across sectors, but is instead concentrated heavily in industries characterised by high levels of research and development, a large share of professional and technical workers, and production of technically complex or differentiated goods. Firms that invest often have some type of intangible asset they want to keep within the firm, rather than exploit through licensing. Furthermore, investing firms are often the larger firms within their industries.

Regional distribution of inward FDI

All major regions have experienced increased inward FDI, but the magnitude and growth rate vary significantly. The regional distribution of inward FDI stock is heavily skewed towards developed countries, whose dominance peaked around 1990, see Figure 7. In the period 1988 to 1999 the developed countries received around 70 percent of FDI flows. Inevitably, most of this is advanced to advanced country FDI. Of the G-7 countries, France, Germany, and the UK sent more than three-quarters of their 1999 FDI flows to the rest of the OECD; Canada, Japan, and the US sent more than 60 percent. This pattern of reciprocal FDI shows up strongly at the industry level as well, with a large share of flows appearing as intra-industry investment.

Figure 7: Regional distribution of world inward FDI stocks

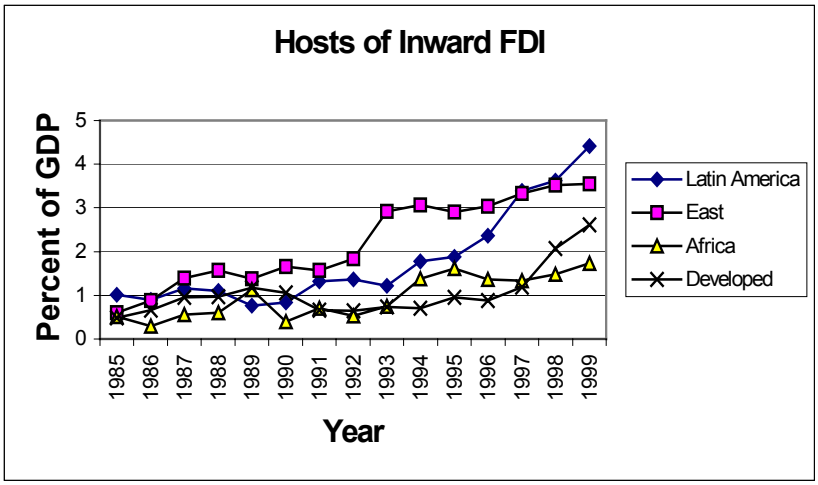


Source: UNCTAD (2000, Table B.3)

While intra-OECD investment and intra-industry investment within the OECD have been long-established facts, an emerging trend is the rise of FDI to developing countries. Over the last decade there has been a noticeable increase in inward FDI in developing countries – as there has been slight declines in both Western Europe's and the US' share in world inward FDI stock. Among the developing countries we particularly note the significant growth in FDI – both in absolute and relative terms – experienced by China, whose inward FDI stock was multiplied by 13 between 1990 and 2000. As a comparison, Western Europe's and the US' inward FDI stocks doubled over the same period. Despite the huge difference in initial stocks, the Chinese experience is rather extraordinary.

The picture of a significant rise in FDI in developing and transition economies becomes even more dramatic if we look at FDI relative to the size of the host country's economy, as shown in Figure 8. During the five years from 1988 to 1992, advanced countries received FDI inflows at an average annual rate of 0.90 percent of their GDP, while the average for developing and transition countries was 0.78 percent of their GDP. From 1993 to 1999, the inflow rate of developing and transition countries as a whole had more than doubled to 2.4 percent of GDP, while that for the advanced countries had increased slightly to 1.3 percent of GDP.

Figure 8: Regional distribution of world FDI inflows, (% of GDP)



MEMORANDUM:	
Percent of World Inflows, 1999	
Latin America	10.45
East Asia	11.14
Africa	1.03
Developed	73.54

Source: UNCTAD FDI/TNC Database and World Bank

However, the distribution of FDI among developing countries is quite uneven. Their rising share of world FDI is mainly driven by substantial investments in some of the Asian countries. Only 10 countries accounted for two thirds of all inward flows during the most recent five years for which data are available, 1995 to 1999 (Argentina, Brazil, Chile, China, Czech Republic, Thailand, Malaysia, Mexico, Poland, and Singapore); China alone accounted for around one quarter. Indeed, China accounts for much of the increase in flows to developing countries, with its share of world total FDI flows rising from 4.6 percent for the period 1988 to 1993, to 9.2 percent for 1994 to 1999. In nominal dollar terms, inward direct investment to China increased from $3.2 billion in 1988 to $40.4 billion in 1999. The source of all these flows, about four percent of China's GDP in 1999, remains hotly debated. The main sources are considered to be Chinese business groups resident in Asia, Chinese businesses resident in China who send their money out and then bring it back to get certain benefits available to foreign investors (the so-called 'round trippers'), and investors from the advanced industrial economies.

There has been some increase in both the share of world investment going to sub-Saharan Africa, and the levels of this investment relative to income. Relative to world inflows, sub-Saharan Africa's share increased slightly, from around 1.1 percent between 1988 and 1993, to around 1.5 percent between 1994 and 1997. In Figure 8 we see some increase in FDI relative to income, but at levels dwarfed by inflows to East Asia and Latin America. Relative to flows

to developing and transition countries, sub-Saharan Africa has lost out, receiving an annual average of 3.7 percent of all flows to these countries between 1994 and 1999, compared to 4.5 percent during the 1988 to 1993 period. In the late nineties, the share of sub-Saharan African in total world inflows has decreased dramatically.

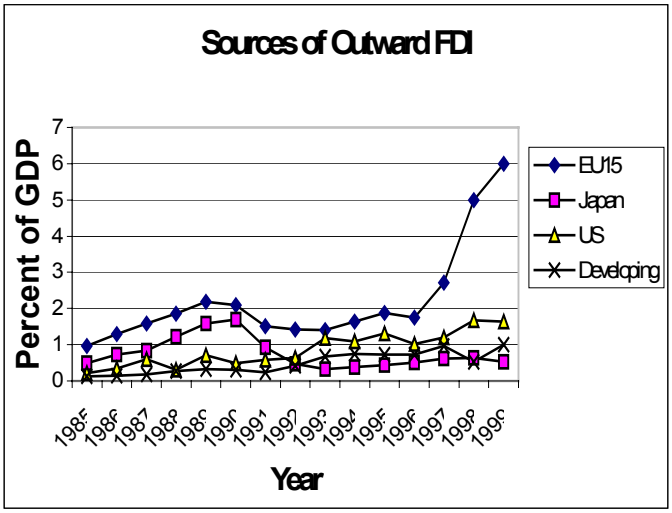
The sources of FDI

Where does FDI come from? The predominant source of supply is, unsurprisingly, the advanced countries.[2] In 1999, they controlled 89.2 percent of world-wide FDI stock, compared to 10.8 percent for the developing and transition countries. In the mid-1990s the dominance of the advanced countries declined somewhat; whereas during the period 1988-92 they accounted for 92.5 percent of total FDI outflows, during the five years from 1993 to 1997, this share had fallen to 85.3 percent. However, in the last few years, the share of advanced countries has again risen above 90 percent. Within advanced countries, the major single investor is the US that, in 1999, controlled 23.8 percent of the world's FDI stock, compared to 49.1 percent for the European Union 15, and 6.1 percent for Japan. Japanese and European flows boomed during the late 1980s, but have since fallen back to a position broadly in line with existing stocks. Most recently, the trends of Japanese and European flows are diverging, with Europe experiencing a new boom thanks to both intra and extra-EU FDI and Japan showing a progressive decline in outward investments.

Most of the difference between the advanced and developing countries is accounted for by sheer economic size, and the difference in outflows relative to GDP is perhaps less than might be expected. Figure 9 maps out the time series of FDI outflows relative to source country GDP. Outward flows from the advanced countries averaged 1.3 percent of their GDP each year from 1993 to 1997, with the EU having by far the highest rate. Furthermore, the EU rate showed a very strong upswing in 1998 and 1999, reaching almost 6 percent of GDP. For developing countries, outward FDI flows averaged 0.8 percent of their GDP from 1994 to 1999, compared to 0.4 percent from 1988 to 1993 - a large increase.

[2] We classify countries in this section according to UNCTAD (1999) with minor changes. Advanced countries include the European Union 15, Gibraltar, Iceland, Norway, Switzerland, Canada, the US, Australia, New Zealand, Japan, and Israel. Developing countries comprise the rest of the world, including the transition economies of Central and Eastern Europe, as well as South Africa; UNCTAD classifies the transition economies as a separate group and South Africa among the advanced countries.

Figure 9: Sources of outward FDI



Source: UNCTAD FDI/TNC Database and World Bank

The role of FDI versus trade: The case of US subsidiaries in the EU and EU subsidiaries in the US

We have already pointed out that FDI has experienced a dramatic growth rate relative to that of trade. Increasing multinational activity implies that markets become more tightly and directly linked than what international trade alone would imply. It also implies that shocks may be transferred internationally more directly – American companies are increasingly European and vice versa. While there is no complete data set available covering all the world's multinationals, we can extract very detailed data on the activities of US multinationals' subsidiaries in Europe and for EU multinationals' subsidiaries in the US.

The US accounts for more than half of inward FDI to the EU from extra-EU countries. The shares of US subsidiaries' employment in total EU employment, sales, import and export by industry for the EU 15 aggregate are reported in Table 2. US subsidiaries account for 7% of EU employment in manufacturing as a whole, and are highest for medical and precision instruments, transport equipment, chemical products, electronic equipment and industrial machinery. The shares of US subsidiaries in EU trade with the US are much larger: approximately 20% of EU manufacturing trade with the US is carried out by US subsidiaries

based in Europe. There is an astonishing peak in office and computing equipment, where US subsidiaries account for 77% of imports and 92% of exports to the US.[3]

Table 2: Share of US subsidiaries in EU total employment, total imports from the US and total exports to the US (1997-1998 averages – percentages). Breakdown by industry.

	Employment	Imports	Exports
Manufacturing	7.01	22.50	19.07
Food and beverages	6.60	39.52	13.11
Chemicals and chemical products	12.12	30.96	28.82
Basic metals	1.68	2.74	2.93
Fabricated metal products	2.48	26.09	11.06
Industrial machinery and equipment	9.78		
Machinery and equipment		16.34	16.17
Office accounting and computing machinery		77.40	91.49
Electronic and other electric equipment	10.38	16.43	30.39
House. appliances, audio, video, and communication equipment	*(D)*	(D)	(D)
Electrical machinery and apparatus	*(D)*	(D)	46.89
Transportation equipment	14.30	(D)	(D)
Motor vehicles, trailers and semi trailers	*(D)*	(D)	(D)
Other transportation equipment	*(D)*	(D)	(D)
Textile products and apparel	2.60	6.20	0.79
Lumber, wood, furniture, and fixtures	1.72	0.66	0.16
Paper and paper products	8.49	27.05	4.42
Printing and publishing	1.47	3.83	4.84
Rubber and plastic products	8.04	24.36	17.39
Glass, stone, clay, and other non-metallic mineral products	3.64	28.02	3.63
Medical, precision, optical instruments, watches and clocks	17.38	29.44	18.84
Other manufacturing	2.06	(D)	(D)

Notes:
a) Data on US subsidiaries refer to all European countries and trade data to the EU15. Data on European countries approximate EU15 data by 96% on average for the manufacturing sector.
b) "(D)" indicates that the data in the cell have been suppressed to avoid disclosure of data of individual companies.
c) The industrial classification used is ISIC rev3.
d) Employment data only refer to 1998.

Source of Data:
U.S. Department of Commerce, Bureau of Economic Analysis (BEA), International Investment Division; COMEXT database (EUROSTAT);UNIDO Industrial Statistics Database (1998).

The overall importance of subsidiaries' sales relative to imports is given in Table 3. For manufacturing as a whole, subsidiaries' 1998 sales are 3.75 times larger than imports from the

[3] The difference between the employment and the trade shares is due to the fact that a large share of EU employment is in small and medium size enterprises that normally cater domestic markets, and that this is only trade with the US.

US. Across sectors, all sectors except transport equipment have subsidiaries' sales exceeding imports, with peak at 23 times larger for food and beverages[4].

Table 3: Ratio of sales of goods by US subsidiaries based in EU15 relative to total EU15 imports from the US

	1995	1996	1997	1998
Manufacturing	4.32	4.30	4.02	3.75
Food and beverages	16.87	21.85	25.44	23.44
Chemicals and chemical products	6.57	6.20	6.29	6.04
Basic metals	1.45	1.66	1.55	1.51
Fabricated metal products	5.15	6.58	5.54	5.55
Machinery and equipment	(D)	5.08	(D)	4.95
Office accounting and computing machinery	(D)	5.86	6.61	5.75
Hous. Appliances, audio, video, and communication equipm.	(D)	(D)	(D)	1.09
Electronic comp., accessories and other electric equipm.	(D)	(D)	(D)	3.39
Motor vehicles trailers and semi trailers	(D)	(D)	(D)	(D)
Other transportation equipment	0.11	0.12	0.12	0.10
Textile products and apparel	2.24	2.27	2.72	2.54
Lumber, wood, furniture, and fixtures	0.72	1.07	1.13	1.64
Paper and paper products	4.54	4.45	5.67	5.91
Printing and publishing	1.58	1.83	1.79	1.77
Rubber and plastic products		6.83	5.82	6.13
Glass, stone, clay, and other non-metallic mineral products	6.65	6.02	5.85	5.07
Medical, precision, optical instrum., watches and clocks	(D)	(D)	(D)	(D)
Other manufacturing	(D)	0.81	(D)	1.04

Notes:

a) Data on US subsidiaries refer to all European countries and trade data to the EU15. Data on European countries approximate EU15 data by 96% on average for the manufacturing sector.

b) "(D)" indicates that the data in the cell have been suppressed to avoid disclosure of data of individual companies.

c) The industrial classification used is ISIC rev3.

Source of Data: U.S. Department of Commerce, Bureau of Economic Analysis (BEA), International Investment Division. COMEXT database (EUROSTAT).

The share of foreign subsidiaries owned by Europeans[5] in the total sales of foreign subsidiaries in the US goes from an average of 61% between 1982 and 1985 to 63% between 1994 and 1998. The presence of EU subsidiaries in total US employment and US trade with the EU is given in Table 4. For manufacturing as a whole, 8.6% of US employment is in EU subsidiaries. This varies across industries, with peaks of 36.6% for chemicals, 14% for electric and electronic equipment and 13% for transportation equipment.

[4] The dominance of subsidiaries' sales in food and beverages may be taken as an indication that trade policies matter for the choice of mode of supply.

[5] The data on European subsidiaries in the US include all European countries and not just the EU countries, as only this aggregate is available in the US Department of Commerce data set. Anyhow the Europe aggregate approximates very closely the EU15 aggregate: the share of the EU 15 countries in total employment of the Europe aggregate in total manufacturing was 96% in 1998.

As was the case with US activities in the EU, the size of the activities of EU subsidiaries is far larger than bilateral trade flows. Total sales of EU subsidiaries based in the US are 3.62 times larger than total US manufacturing imports from the EU (Table 5). This ratio varies by industry: the four highest are 7.8 for chemical products, 7.6 for food and beverages, 6.3 for glass, stone, etc., and 6.2 for paper and paper products.

Table 4: Share of EU subsidiaries in US employment, US imports from the EU and exports to the EU (1997-1998 – percentages). Breakdown by industry.

	Employment	Total Imports (d)	Exports (d)
	1998	1997	1997
Manufacturing	8.64	28.25	12.52
Food and beverages	7.47	27.38	24.29
Chemicals and chemical products	36.63	66.64	23.42
Basic metals	6.31	21.37	9.12
Fabricated metal products	5.66	42.85	17.64
Industrial machinery and equipment	6.70	19.10	14.52
Machinery and equipment	*(D)*	11.07	13.23
Office accounting and computing machinery	*(D)*	2.72	0.50
Electronic and other electric equipment	14.38	51.98	16.26
Hous. Appliances, audio, video, and communic. equipm.	*(D)*	54.28	19.51
Electronic comp., accessories and other electric equipm.	*(D)*	48.80	8.90
Transportation equipment	13.08	8.63	4.49
Motor vehicles, trailers and semi trailers	*(D)*	12.68	15.67
Other transportation equipment	*(D)*	3.54	1.73
Textile products and apparel	2.42	5.10	4.76
Lumber, wood, furniture, and fixtures	1.50	(D)	1.75
Paper and paper products	11.09	(D)	13.97
Printing and publishing	0.59	14.24	1.13
Rubber and plastic products	6.85	0.81	17.65
Glass, stone, clay, and other nonmetallic mineral products	18.41	17.72	20.87
Medical, precision, optical instruments, watches and clocks	6.30	(D)	3.63
Other manufacturing	2.52	16.95	(D)

Notes:

a) "(D)" indicates that the data in the cell have been suppressed to avoid disclosure of data of individual companies.

b) The industrial classification used is ISIC rev3.

c) The aggregate Europe includes Norway, Iceland and Switzerland. Employment for the EU15 aggregate corresponds to approximately 96% of Europe's employment in manufacturing.

d) Estimated: the BEA data set does not provide data on exports and imports by country of origin and destination and country of ultimate beneficial owners at the industry level. European subsidiaries' imports and exports from Europe by industry are estimated by multiplying the share of imports and exports from Europe in imports and exports of European subsidiaries from and to all countries by industry specific imports and exports of European subsidiaries from and to all countries. 1997 data.

Source of Data:

U.S. Department of Commerce, Bureau of Economic Analysis (BEA), International Investment Division.

UNIDO Industrial Statistics Database (1998)

Table 5: Ratio of sales of goods by EU subsidiaries in the US relative to total US imports from the EU.

	1994	1995	1996	1997	1998
Manufacturing	3.36	(D)	2.97	3.52	3.63
Food and beverages*	7.70	(D)	7.57	(D)	(D)
Chemicals and chemical products	9.37	9.44	8.34	8.20	7.79
Basic metals	1.92	1.72	1.81	1.81	1.83
Fabricated metal products	6.88	5.74	6.25	5.33	4.67
Machinery and equipment	(D)	1.20	1.38	1.62	1.19
Office accounting and computing machinery	(D)	0.63	0.50	0.26	0.23
Hous. Appliances, audio, video, and communication equipm.	1.72	1.23	1.42	(D)	(D)
Electronic comp., accessories and other electric equipm.	8.60	6.18	5.53	(D)	(D)
Motor vehicles, trailers and semi trailers	0.86	0.72	0.68	1.18	(D)
Other transportation equipment	0.46	0.54	0.75	0.55	0.35
Textile products and apparel	1.12	1.15	1.08	101.80	0.84
Lumber, wood, furniture, and fixtures	1.37	0.53	0.47	0.48	0.48
Paper and paper products	10.17	5.18	5.95	5.21	6.20
Printing and publishing	14.44	(D)	14.23	(D)	(D)
Rubber and plastic products	5.99	5.43	5.55	5.36	4.95
Glass, stone, clay, and other nonmetallic mineral products	5.32	5.40	6.05	6.52	6.30
Medical, precision, optical instruments, watches and clocks	2.30	2.07	1.89	(D)	(D)
Other manufacturing	(D)	(D)	(D)	3.49	3.79

Notes:

a) Data on US subsidiaries refer to all European countries and trade data to the EU15. Data on European countries approximate EU15 data by 96% on average for the manufacturing sector

b) "(D)" indicates that the data in the cell have been suppressed to avoid disclosure of data of individual companies.

c) The industrial classification used is ISIC rev3.

* includes tobacco

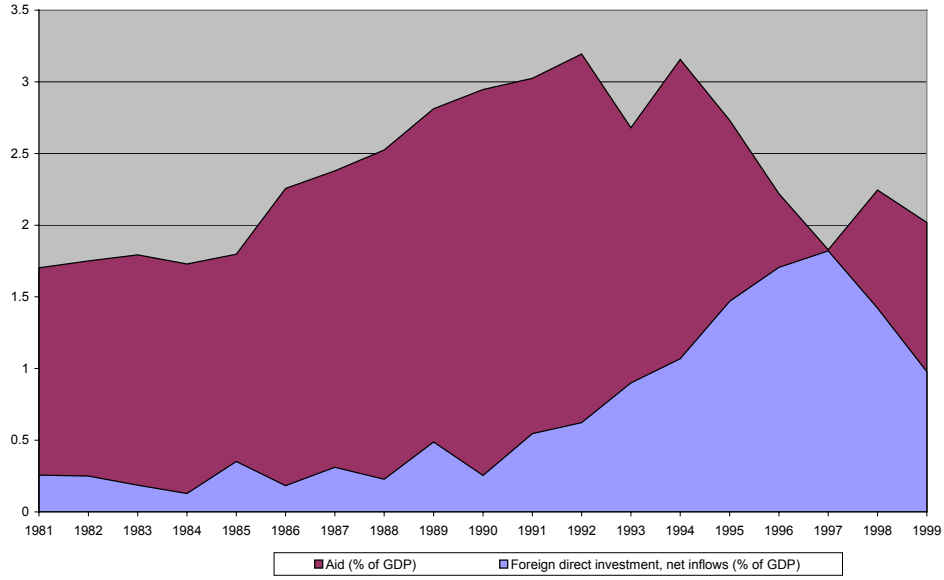
Source of Data:

U.S. Department of Commerce, Bureau of Economic Analysis (BEA), International Investment Division.
COMEXT database (EUROSTAT)

The role of FDI versus aid

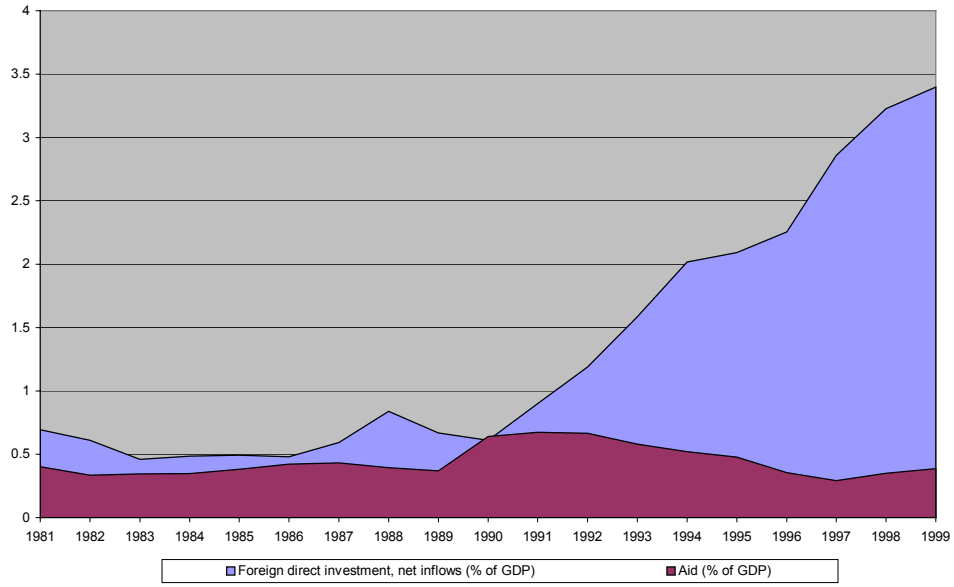
In order to add to the picture of the increasing role played by FDI in linking developed and developing countries, it is useful to look at the aid and FDI inflows (measured as shares of GDP) for middle and low income countries. Figures 10a and 10b report this for the last two decades, and illustrate that in general FDI is rising in importance relative to aid. While this observation applies for both groups of countries, as for the Middle income countries we see that FDI has way surpassed aid, and did in 1999 amount to more than 7 times the received aid.

Figure 10a: FDI and Aid in Low income countries, percent of GDP



Source: World Development Indicators 2001 (The World Bank)

Figure 10b: FDI and Aid in Middle income countries, percent of GDP



Source: World Development Indicators 2001 (The World Bank)

2.3. International spill-overs in the case of the latest US recession

At the current stage the most significant spill-over effects in the global economy are related to the recent fairly dramatic business cycle developments in the US. It is therefore useful to take a closer look at the characteristics of the US cycle and to assess how spill-overs from the US influenced other economies in various ways. Our assessment illustrates three general points:

i) The exposure of different countries to a given economic shock (in the US in this context) varies widely.

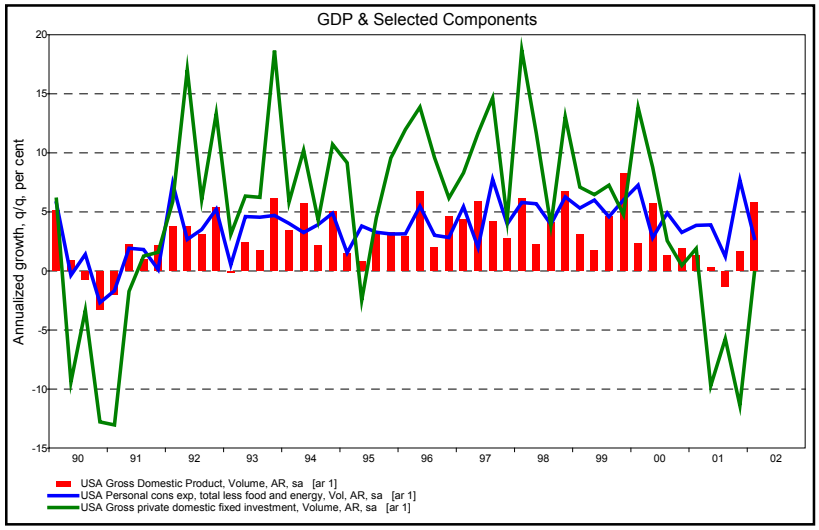
ii) The importance of different spill-over mechanisms varies as well.

iii) Emerging markets tend to be more exposed to international spill-over effects than OECD economies. In large economies like Japan and Euroland, the importance of international spill-overs may in fact be exaggerated compared to the importance of domestic shocks and policies.

The recent US cycle

The longest US expansion ever recorded lasted for 10 years and ended in March 2001 according to the official "Business Cycle Committee" of the National Bureau of Economic Research (NBER). US GDP growth rates dropped from very high annual levels around 5 per cent in 1999 and the first part of 2000, and down to –1.3 per cent in the third quarter of 2001 (see Figure 11).

Figure 11: The recent US business cycle developments



Source: Ecowin

During the last couple of years we have witnessed the dynamics of an old fashioned "investment boom and bust cycle" with different characteristics compared with most regular US business cycles after 1945. The long expansion had been triggered by widespread optimism related to the "new-economy" idea, and in turn the publication of very strong productivity figures during the last part of the 1990s.[6] This led to expansion of both supply and demand. Gradually, the result was debt-financed over-investments, and perhaps even over-consumption. Inflation, as measured by CPI, remained fairly low due to increased production capacity, and interest rates were consequently maintained at low levels. However, we obtained asset price inflation (the Nasdaq bubble) and accumulation of imbalances like production over-capacity, accumulation of much debt in the private sector and large current account deficits.

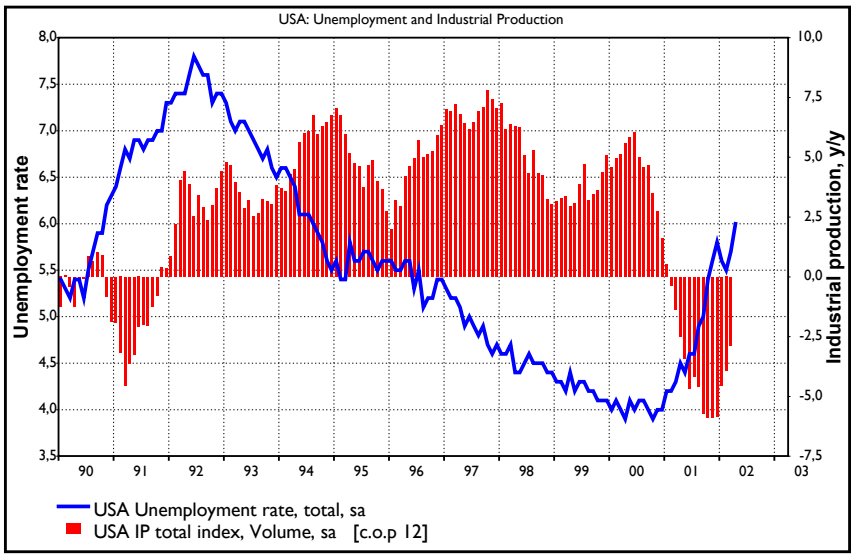
Starting in the year 2000, boom gradually turned to bust in the US economy. The Nasdaq bubble burst, and the stock market in general performed badly. Corporate USA realized that far too much optimism and in turn accumulation of production over-capacity, large inventories and too high real capital stocks had paved the way for a substantial adjustment process. This process clearly started late in 2000 and accelerated throughout 2001. Thus, industrial production, inventories and real capital investments were sharply declining in the first part of 2001. This also applies to both consumer confidence and business sentiments (as measured by for example the ISM/NAPM indicator). Unemployment was increasing as well (see Figure 12). Still, private consumption growth remained solid (see Figure 11 above).

It follows from the description above that the US economy was very fragile when the terror attack struck on September 11. The effects of this attack were crucial for the NBER's recession verdict – even if the recession started in March 2001 according to the official chronology. The reason is that the recorded decline in the US economy before the attacks may potentially have been too mild to qualify as a recession; "The attacks clearly deepened on the contraction and may have been an important factor in turning the episode into a recession" according to the NBER's Business Cycle Dating Committee.[7] Still, it is fair to say that the incremental business cycle effects of the terror attack on the US economy were fairly small

[6] Later data revisions showed that these recorded productivity gains were not particularly extreme after all. However, the figures still indicate that average productivity growth has increased after 1995, compared with the period 1974-1995.
[7] See the web site of the NBER's Business Cycle Dating Committee, www.nber.org/cycles/recession.

and temporary compared to the effects of the more general business cycle developments described above.

Figure 12: Unemployment and industrial production in the US



Source: Ecowin

Spill-over effects from the US

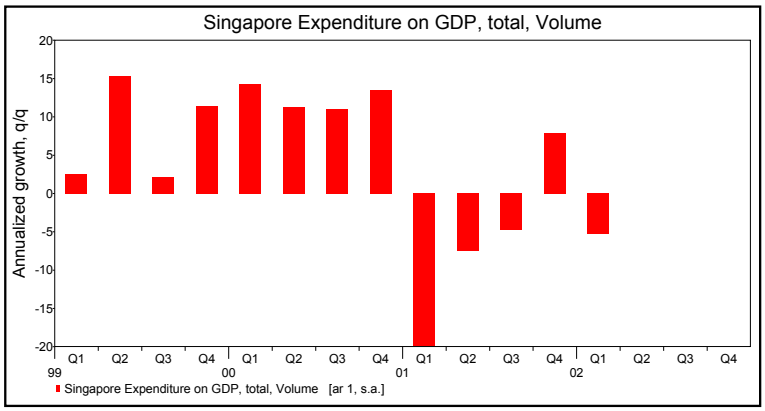
Turning to the spill-over effects of the US recession, we consider four different cases which serve to illustrate the high diversity in magnitudes and mechanisms involved.

Various emerging economies: Several emerging market economies suffered through the direct trade channel. Important examples include Mexico and Singapore, which both ran into recessions (see Figures 13a and 13b). The close trade link between Mexico and the U.S. is obviously due to their common border. Singapore has close ties to the U.S. due to large exports of electronic products. In fact, U.S. exports amount to 20 per cent of GDP in Singapore. Other Asian countries like for example Taiwan were also hit severely by low U.S. demand for their electronic products.

Other emerging market economies – such as Argentina and perhaps Brazil – suffered more through the capital flow channel. Argentina in particular experienced huge capital outflows due to perceived risks for debt default. The case of Argentina (as well as the case of other emerging markets, which to some extent were hit by financial contagion from Argentina) was triggered by a combination of two developments. First, Argentina had accumulated a large

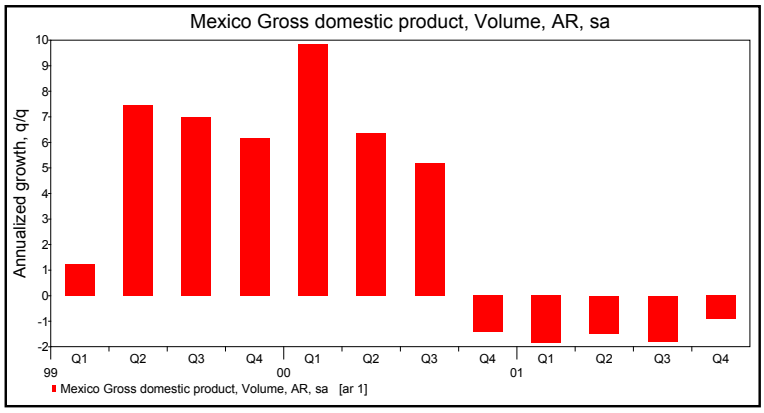
government debt over a long period of time and was therefore vulnerable to all types of macroeconomic instability. Secondly, the U.S. slowdown and the associated poor performance of global stock markets had altered investors' and borrowers' perception of global risks. In combination this lead to significant capital outflows from Argentina.

Figure 13a: The recent growth performance of Singapore



Source: Ecowin

Figure 13b: The recent growth performance of Mexico



Source: Ecowin

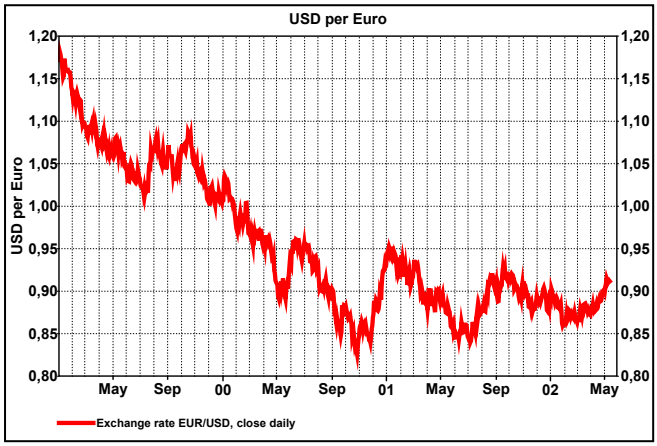
Euroland: Because total Euroland may (almost) be characterized as a closed economy in terms of trade flows, the U.S. slowdown did not trigger very strong contractionary spill-over effects through the trade channel. In fact, Euroland's export share to the U.S. only amounts to 2.5 per cent of GDP. It is probably the limited importance of this trade channel that early in 2001 lead Mr. Duisenberg, the governor of the European Central Bank (ECB), to claim that Euroland would not be significantly influenced by the US slowdown.

As it turned out, the negative effect caused by Euroland firms' lowered profits from their direct investments in the U.S. was more important. The cash flows between Euroland firms and their US subsidiaries exceed the value of the corresponding trade flow (see section 2.2). Still, we believe that the impact of the negative spill-over effects from the U.S. on Euroland has been somewhat exaggerated by many observers. First, important sectors of Euroland faced problems already before the US slowdown (i.e. the German construction sector for instance had been stagnant for a long period of time). Secondly, the monetary policy of the ECB had been anything but pre-emptive and growth oriented. Thirdly, the structural rigidities of the Euroland economies (caused by large deadweight losses related to the tax-transfer systems and extensive labor market regulations) have depressed the growth potential at the outset.

We should also expect that the negative US shock would have reduced the expected return on portfolio investments in the American financial markets and also discouraged foreigners' direct investments in the US. This should in principle have lead to a reallocation of capital from the US and into other economies, most notably into Euroland. In turn, this should have implied a boost in Euroland stock and bond prices (relative to the corresponding US prices) as well as a depreciation of the USD versus the Euro. These effects seemed, however, to be almost completely offset by a "safe haven" mechanism (see above), which implied that much capital was still allocated to the US in response to investors' perception of higher global economic risks (even if these risks to a large extent in a sense were created by the events in the US). The USD remained strong versus the Euro throughout 2001 and into 2002, see Figure 14. At the current stage (Mai 2002) the "Euro-sentiment" has improved significantly in response to expectations of a major redirection of capital flows in favour of Euroland. Whether or not this tendency will last, remains to be seen.

Japan: The direct trade channel mattered for Japan. Japanese exports to the US are significant. In addition, the indirect negative effect caused by significant Japanese trade links with other Asian economies, which in turn had close trade links with the U.S., was even more important. Still, it is clear that the depressed Japanese situation is mainly due to domestic problems. An unsuccessful policy-mix over many years, deep structural problems in the finance- and banking sector as well as consumers without confidence in the future, were the main reasons for the Japanese recession in 2001.

Figure 14: The Euro per USD exchange rate



Source: Ecowin

Norway: Norway is something of an exceptional case compared to all other OECD economies when it comes to exposure to the US slowdown. As we know, the financial position of the Norwegian public sector is excellent. The potential private demand growth is also strong due to a very sound financial position of the household sector, satisfactory wage growth and a very high degree of job market security. Actual private demand growth is curbed deliberately by high interest rates. Thus, the negative international impulses to the traditional mainland export industry did not matter very much for total aggregate demand and "real" economic activity in Norway.

3. International linkages: The pro and cons

The empirical material leaves no room for doubt about the increasing magnitude and extent of international linkages. But what do these important features of the globalization process imply with respect to growth and vulnerability, i.e. benefits and costs of international interdependencies?

3.1 Openness and growth

There is strong evidence that openness to international trade is a key ingredient of more rapid growth. This argument is supported by a set of studies. The World Bank has classified countries on the basis of the extent to which they have increased trade relative to income (measured by GDP) in the post-1980 period. They report that the top third of the developing countries classified on this basis – i.e. the most "open" developing countries – lowered average import tariffs by 34 percentage points and increased trade relative to income by 104

percent. In contrast, the remaining developing countries lowered tariffs only by 11 percentage points. Striking is the fact that the former group of countries experienced a 3.5 percent growth per annum in GDP per capita in the 1980s and 5 percent in the 1990s, while the latter group experienced little or no growth in GDP per capita (see Masson, 2001). More details of the World Bank studies are reported in text box 1.

Textbox 1: Trade policy orientation and growth rates in the third world, 1963-1992

	Average annual rates growth of GDP per capita		
Trade policy orientation	1963-1973	1973-1985	1980-1992
Strongly open to trade	6.9%	5.9%	6.4%
Moderately open	4.9%	1.6%	2.3%
Moderately anti-trade	4.0%	1.7%	- 0.2%
Strongly anti-trade	1.6%	- 0.1%	- 0.4%

Sources and notes: World Bank (1987, pp. 78-94), with further growth data from World Bank 1994. In all periods the three strongly open economies were Hong Kong, South Korea, and Singapore. The identities of the strongly anti-trade countries changed over time. In 1963-1973, it consisted of Argentina, Bangladesh, Burundi, Chile, Dominican Republic, Ethiopia, Ghana, India, Pakistan, Peru, Sri Lanka, Sudan, Tanzania, Turkey, Uruguay, and Zambia. For the two overlapping later periods the strongly anti-trade group consisted of the previous sixteen plus Bolivia, Madagascar, and Nigeria, but minus Chile, Pakistan, Sri Lanka, Turkey, and Uruguay. For the identities of the moderate-policy groups, see the World Bank (1987, pp. 78-94).

Source: Lindert and Williamson (2001

Both Krueger (1978) and more recently Lindert and Williamson (2001) stress that the import substitution strategy, which implies limiting the linkages to other economies, has been conclusively shown to have failed. They base this on the observation that there are *no* successful cases of fast-growing countries that have followed this strategy over the recent period. Lindert and Williamson further argue that the countries that have gained the most during the last wave of globalization are the poor ones that changed their policies to exploit it by opening up their product and factor markets. The ones that gained the least – fell further behind – were the non-participants in the globalization process.

International capital flows may also contribute to growth by stimulating investment and promoting financial development. From a theoretical point of view, Obstfeld (1994) provides a fairly convincing explanation of this view. Obstfeld assumes that investors in various countries at the outset have the opportunity to choose between a risk-free alternative (say government bonds) and a country-specific risky alternative (the domestic stock market or more generally the domestic industry). The latter yields a higher expected return but is more risky. The simple idea is that the option for a given country to join the international capital

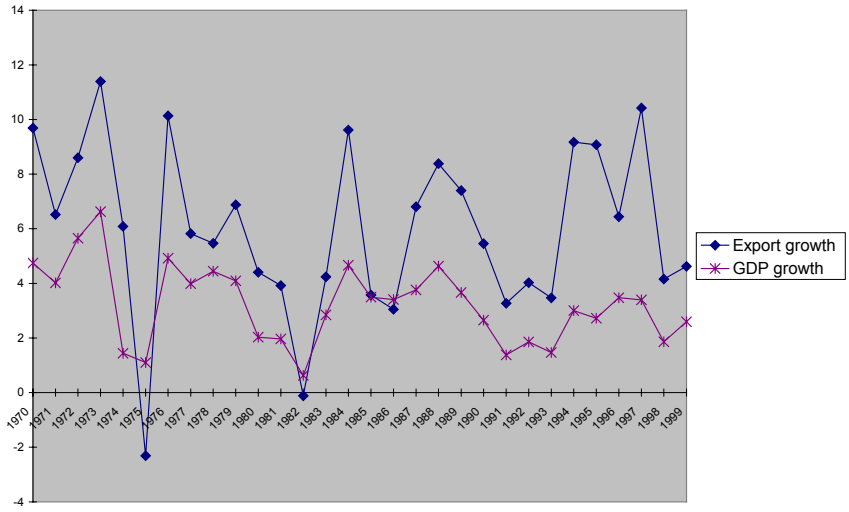
market implies an opportunity to better diversification of domestic risks. In turn, this leads to more risk-taking and higher growth and welfare over time. Turning to empirical evidence, Edwards (2001) shows that developing countries with a more open capital account have outperformed countries that have restricted capital mobility. But as we shall return to in section 3.3, there is, however, a distinct difference between foreign direct investment and other types of capital flows in terms of behaviour and volatility.

3.2 Openness and synchronisation

What do increased magnitude and extent of international linkages imply in terms of synchronisation of business cycles? There appears to be a widespread belief that the rising importance of international trade and capital mobility implies increased synchronisation of i) world trade and world income, and of ii) national business cycles.

In a globalized world, trade plays a more significant role than it did 30 years ago. But this does not entail that trade developments have become more sensitive to the business cycle. As for world export growth and world GDP growth, the former is more sensitive to the economic developments than the latter. In other words, there are stronger fluctuations in export growth than there are in GDP growth (see Figure 15). It is further a well-known fact that world export growth and world GDP growth are strongly correlated. But the rising importance of international trade in the world economy does not necessarily imply that these two figures have become more synchronised – which appears to be a rather widespread belief. Figure 11 gives the development in world export growth and world GDP growth for the last three decades. While it illustrates the correlation between the two, simple eyeballing indicates what statistical analysis confirms, namely that this correlation has not increased in magnitude over time: it rose between the 70s and the 80s, but then declined again in the 90s. The correlation between world export growth and world GDP growth was around 0.80 in the 90s, which is in fact lower than it was in the 70s.

Figure 15: Growth in world export and world GDP



Source: World Development Indicators 2001 (The World Bank)

As for national business cycles, the empirical evidence here is to some extent mixed. Heathcote and Perri (2002) have examined business cycle frequency correlations of GDP (*Y*), employment (*L*), and investment (*X*) for the U.S. and an aggregate of Europe, Canada, and Japan (*RW*) over the time span 1972 to 2000. Comparing the two time periods 1972-1986 and 1986-2000, they report significant decline in correlation for all three measures (see Table 6 and Figure 16).[8]

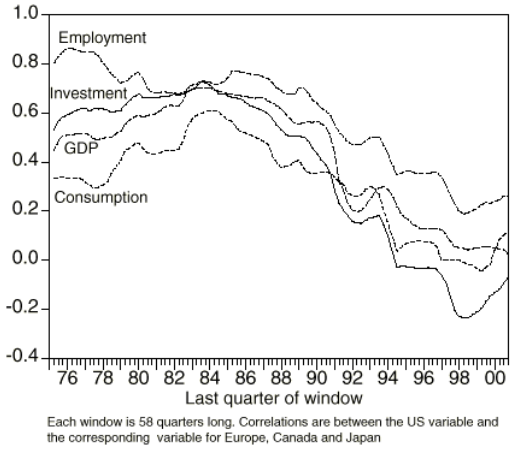
Table 6: International correlations

	Y_{US},Y_{RW}	C_{US},C_{RW}	X_{US},X_{RW}	L_{US},L_{RW}
Period I, 72.1-86.2	0.76	0.51	0.63	0.66
	(0.07)	(0.12)	(0.12)	(0.08)
Period II, 86.3-00.4	0.26	0.13	-0.07	0.03
	(0.26)	(0.27)	(0.28)	(0.25)
Entire Sample, 72.1-00.4	0.63	0.42	0.43	0.37
	(0.10)	(0.13)	(0.15)	(0.15)

Source: Heathcote and Perri (2002)

[8] Note, however, that when splitting the aggregate referred to as Rest of the world, into Europe, Canada and Japan, the comovement between the U.S. on the one hand and either Japan or Europe on the other hand is still found to be declining, while that of the U.S. and Canada has actually increased.

Figure 16: International correlations

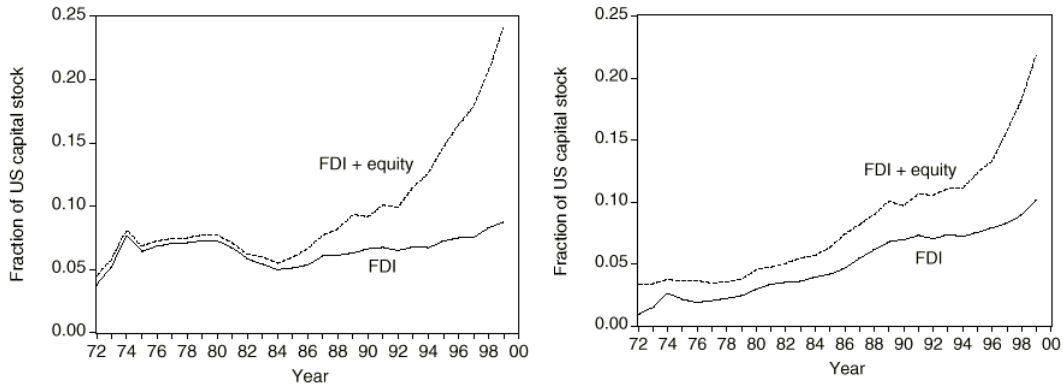


Source: Heathcote and Perri (2002)

At the same time, i.e. between 1972 and 1999, US Gross holdings of foreign direct investment and equity in the same group of countries rose from 4 to 23 percent of the U.S. capital stock. The increase in financial globalization was underscored by a similar rise in US stock assets held in the EU. The dramatic growth in international diversification is well illustrated in Figure 17.[9] It is argued, that it is in fact the fall in correlation of shocks that may be responsible for the observed increase in financial integration – financial globalization – since the decline in correlation of business cycles increases international diversification by increasing the potential gains from international asset trade.

[9] Worth noting is the asymmetry in inward and outward acquisitions of capital: almost all the increase in U.S. owned capital abroad reflects an increase in the stock of equity portfolio investment, while most of the increase in foreign ownership of the U.S. capital stock is due to rising foreign direct investment.

Figure 17: US stock asset in Europe, Canada and Japan (left) &
Stock of US asset held by Europe, Canada and Japan (right)



Source: Heathcote and Perri (2002)

Well-developed international financial markets also allow the representative individual in each country to diversify idiosyncratic country-specific consumption risks (which increases welfare). This should lead to a synchronization of consumption growth in various countries according to standard theoretical models for financial markets integration, see for example Tesar (1995). In fact, the synchronization of consumption growth rates should be perfect (correlation equal to 1) under a set of restrictive – but still standard - assumptions. Looking at empirical evidence for the major OECD economies, the consumption correlations have increased over time for most combinations of countries, but they are still well below unity. This finding is consistent with gradually higher international financial integration and less risk exposure to domestic consumption risk. It is hard to evaluate whether consumption correlations below unity really imply that financial integration and "real" capital mobility still are far from perfect even in the OECD area, see Obstfeld (1995). This reflects that most tests of financial market integration (including the test of whether consumption growth correlations have reached unity) rely on strong auxiliary assumptions like for example the hypothesis that private consumers are fully rational and very forward-looking.

3.3 Openness and vulnerability

There are two major areas of concern with respect to globalization and vulnerability: (i) How does globalization – increased openness – affect a country's vulnerability to crises originated elsewhere in the world? (ii) How does openness to global capital markets affect the volatility of financial markets and economic activity?

(i) How does globalization – increased openness – affect a country's vulnerability to crises originated elsewhere in the world?

As for the first of these questions, there has been a significant number of empirical papers aiming at measuring the importance of trade for the international transmission of crises. A review of the evidence reveals that the results are very mixed: Some authors find that trade linkages are important for how crises spread, some find that they are not. A final group of authors argue that trade linkages have been important for the spread of recent crises, but overshadowed by other transmission mechanisms (see Forbes, 2001). It is moreover pointed out that a number of studies suffer from the weakness that the data material implies that it may often be very difficult to disentangle trade and financial linkages, and thus to assess the importance of the respective linkage, as these appear to be highly correlated.

A recent contribution, which also deals with a number of what may be regarded as weaknesses of previous work, is Forbes (2001), who uses detailed industry information. She decomposes trade linkages into three channels by which a country may be affected by a crisis elsewhere in the world:

- a competitiveness effect (when changes in relative prices affect a country's ability to compete abroad),
- an income effect (when a crisis affects incomes and the demand for imports),
- a cheap import effect (when a crisis reduces import prices for a trading partner).

While the two former effects are negative in nature, the latter acts as a positive supply shock. Forbes finds that the competitiveness and income effects are important, in the sense that a country competing in the same industries as a crisis country, or exports directly to such, will have significantly lower stock returns during the crisis. With respect to the positive effect stemming from cheap imports from the crisis country, this appears to be much weaker. She concludes that trade linkages are important for the transmission of crises, still they only explain about one-quarter of the variation in stock market returns during recent crises. This points to the need for investigating other cross-country linkages such as financial channels and investor behaviour.

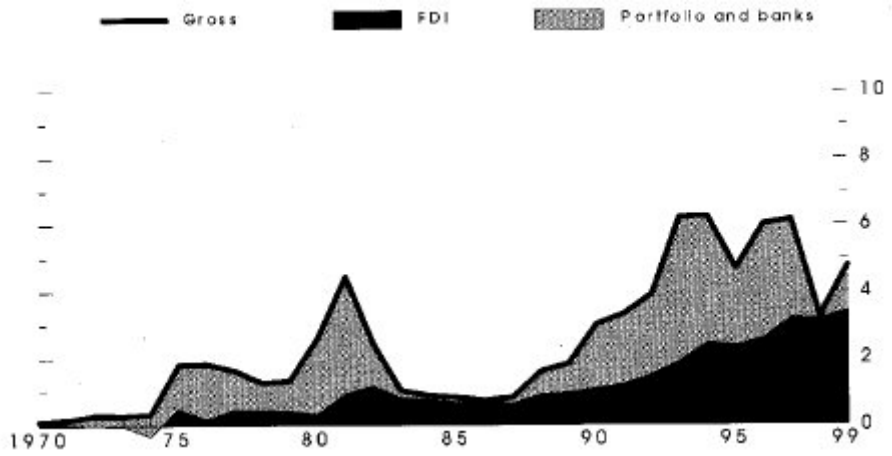
Especially relevant for policy is Forbes' finding that the importance of trade linkages for the transmission of crises is how a crisis country responds to the initial crisis. The competition

effect is only strong when a crisis country allows for substantial devaluation of its currency, while the income effect is only then strong when interest rates are raised substantially.

(ii) How does openness to global capital markets affect the volatility of financial markets and economic activity?

As discussed above (see section 2.2.1 and 2.3), capital market flows to developing countries have been subject to much more volatility than foreign direct investment. This is well illustrated in Figure 18.

Figure 18: Developing countries: Gross capital flows (percent of GDP)



Source: Masson (2001)

This picture is also very much in line with the evidence reported by Lipsey (2001) who have examined the behaviour of foreign direct investors in three financial crises: Latin America 1982, Mexico 1994, and East Asia 1997. He reports that inflows of direct investment into crises countries have been much more stable than inflows of other portfolio or other investments. Examination of the behaviour of US MNCs affiliates shows that these tended to sustain their capital expenditure levels during the crises.

4. Policy implications

The empirical evidence on international linkages, how these have evolved, and their impact on economic development, illustrates well that globalization has pros as well as cons. In sum, there is however little doubt that the globalization process – through the expanding and strengthening of international linkages – contributes to growth and economic development in the participating countries. The major downside of increased international interdependence

relates to the issues of vulnerability and instability. We shall therefore conclude with the discussion of two measures to reduce vulnerability:

- *The choice of currency regime*: For a long time the consensus view was that developing countries should adopt a fixed exchange rate regime, pegging their currency to, for example, the USD. Such a regime should in theory discipline domestic politicians and add credibility among international investors. Unfortunately, these potential benefits were rarely observed. The straightjacket of fixed exchange rates rather contributed to an interest rate setting which increased the business cycle fluctuations (in particular, negative business cycle shocks triggered higher interest rates – which in turn depressed the situation even more) and in the end resulted in currency devaluations despite the initial attempt to keep the rate fixed. Thus, we will rather highlight the risk-reducing effect of floating exchange rate regimes. As explained in more detail by for example Rødseth (2000), exchange rate flexibility implies that a country, which is hit by a negative business cycle shock, in effect "exports" parts of the burden to other countries due to deprecation of its currency and consequently higher exports. Moreover, interest rates may be "used" to stimulate private demand in recessions.

- *The banking sector*: As discussed above, a major source of vulnerability in developing countries is the high volatility in bank loans, which increases the exposure to currency crises as well as to banking crises. A "cheap" conclusion may obviously be to recommend some sort of capital controls. Empirical evidence suggests, however, that such controls may be useless, see Bordo et al. (2001). First of all, such controls may reduce the supply of international capital at the outset. Secondly, capital controls tend to increase the risk of currency crises due to the fact that capital controls encourage riskier economic policies When it comes to banking crises, this is partly related to expectations of ex-post bail-outs from the government, i.e. a "moral hazard" problem. Our conclusion is consequently that focus should be directed to the supervision and practice of the banking sectors in the developing economies. We believe that recent experience shows that the banking crises are to a large extent related to bad banking by inexperienced personnel. This may in turn reflect lack of knowledge, wrong incentives and a too quick liberalization process of the financial sectors of the respective developing economies.

Finally, it is important to keep in mind, however, that although international linkages imply an exposure to externally generated economic fluctuations and instability – this is just part of the story. International trade and international capital markets may in fact work as a means to dampen domestically generated fluctuations, and thus have a stabilizing impact.

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