REPORT

German FDI in Latin America and Caribbean in the Wake of the Crisis

Rolf Jungnickel

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V O R W O R T

Eine Reihe lateinamerikanischer Länder hat in den vergangenen Jahren ernste politische und wirtschaftliche Krisen durchlaufen. Damit ist einerseits die Attraktivität lateinamerikanischer Standorte für ausländische Investoren gesunken. Andererseits kann die Krise eine gute Gelegenheit bieten, kostengünstig in den Markt einzutreten. Die Inter-American Development Bank (IADB) hat zur Reaktion ausländischer Direktinvestoren auf die verbreitete krisenhafte Entwicklung eine vergleichende Untersuchung für europäische Herkunftsländer durchgeführt. Der vorliegende Report ist eine leicht überarbeitete Fassung des deutschen Beitrags zu diesem Projekt. Er lässt eine deutlich rückläufige Rentabilität deutscher Engagements in der Region erkennen, allerdings keinen massiven Rückzug deutscher Investoren. Die Strukturuntersuchung zeigt eine bemerkenswert stabile Konzentration auf die großen Länder mit besonders großem Zuwachs in Mexiko und auf wenige Sektoren bei anhaltender Dominanz der Automobilindustrie.

Der Autor dankt der Deutschen Bundesbank für die Bereitstellung detaillierter Direktinvestitionsdaten und der IADB für die Genehmigung zur Veröffentlichung als HWWA-Report.

Hamburg, im Dezember 2004 — Konrad Lammers

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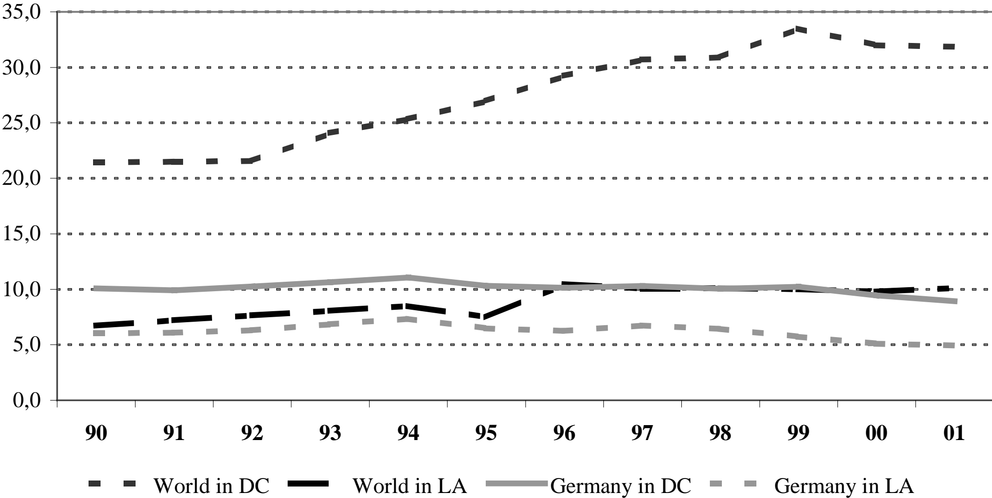
1 REGIONAL TRENDS IN GERMAN FOREIGN DIRECT INVESTMENT

The internationalization of German firms has progressed rapidly in recent years. Since 1998, the last year covered by the previous Inter-American Development Bank study (*Jungnickel* and *Shams* 2001), total German outward FDI stock has more than doubled and the number of foreign affiliates has increased by more than 15 percent to 33,600 in 2001, while the number of German investors (8,900) has not changed significantly. At the end of 2001, German firms employed roughly 4.6 million employees abroad.[1]

The development of foreign operations of German firms has been roughly in line with the internationalization process of firms from other high-income countries (UNCTAD 2003a). However, the regional structure of German FDI has continued to differ substantially from the international average. While developing countries (including China) have attracted a large share of worldwide FDI since the late 1990s (roughly one-third), the traditionally much lower share of German FDI in these countries further decreased, from about 10 percent to a 8 percent (Figure 1). This was largely caused by a further decline in the already low share of Latin

Figure 1: Worldwide and German FDI in Latin America and other Developing Countries, 1990-2001, Percentage of total FDI



Source: UNCTAD (2003 b); Deutsche Bundesbank (2003 a); author's calculations.

1 This figure excludes persons employed with subcontractors and small affiliates below the threshold qualifying for inclusion in the FDI statistics as well as affiliates with less than 10 percent of German capital.

America, which stands at 5 percent of all German FDI, compared with 10 percent of world FDI. German firms thus continue, within their limited operations in developing countries, to put relatively much more weight on Latin American locations, but this weight is decreasing. In the following, we first ask in which respect investment conditions in Latin America have changed in recent years (part 2) and which adjustment options and strategies are available to foreign investors (part 3). The following parts 4 and 5 analyze profitability of German affiliates and the actual reaction in terms of regional operations in Latin America in general (part 5) and with respect to individual sectors (part 6). In part 7, the new trend towards networking Latin American operations is investigated. Part 8 concludes.

2 CHANGED INVESTMENT CONDITIONS IN LATIN AMERICA ?

In the discussion on recent foreign direct investment (FDI) in Latin America, it is important to take into account the nature and extent of the economic crisis in the region in the 1990s. Were the elements that made up the crisis important factors in foreign investors' decisions about where to locate? Did the crisis affect all Latin American countries in the same way? Political uncertainty and unrest mean higher risk for potential and established investors, property rights, and returns to the home country. These factors affect investment in general and in particular discourage foreign investors that are less familiar with local circumstances. However, if the crisis manifests itself largely in domestic financial disturbances, foreign investment might do well as long as products are sold abroad and the investment does not depend on local finance. If the crisis affects only a few countries, investment perspectives might even improve in other Latin American countries. Countries compete with each other for FDI, which is needed for upgrading their domestic economies.

FDI locations in Latin America compete with other locations both within the region and elsewhere. If other locations around the world manage to improve investment conditions substantially, Latin America's relative position could worsen, regardless of whether the economic crisis affected FDI in the region. Thus, Latin America's receding share of total FDI cannot (fully) be assigned to the crisis.

Indeed, the earlier drying up of capital flows to emerging economies in the aftermath of the crises in Asia and Russia, and the more recent global slowdown seem to have triggered the crisis in Latin America. However, the characteristics of the crisis varied across countries, and some, such as Chile, Ecuador, and Peru, were affected only temporarily. At the other extreme,

Argentina in particular was severely hit by both internal and external factors, including the country's long overvalued peso and the devaluation in neighboring Brazil. After the Argentine peso was devalued in early 2002, it soon became clear that other severe internal problems had to be tackled as well: state bankruptcy and an insolvent financial system, and modernization of the political and social systems. The long-lasting recession with a two-digit downturn in 2002 also dragged neighboring Uruguay and Paraguay into deep recession.

The overall picture of the Latin American economies clearly mirrors the crisis: countries in the region did not achieve growth rates in domestic production comparable to those of the early and mid 1990s or the average for developing and transition countries (UNCTAD 2003). With the exception of the year 2000, there has been widespread stagnation. In this regard, on average, locations in Latin America have fallen behind in attracting FDI.

Latin American countries rely on FDI to help modernize their economies and earn foreign exchange. However, conditions for FDI have deteriorated compared with conditions in the region before 1998 and in locations in other parts of the world (UNCTAD 2003). Foreign investors must adjust to the changed circumstances in order to face the risks associated with the profitability of investment and transfer of profits.

Although all the countries affected by the crisis must adjust to new conditions, there appear differences in the attractiveness of locations in the region. FDI in Argentina, Colombia, and Venezuela seems to encounter the largest obstacles, while FDI locations in Mexico still rank high. Given its large domestic market, Brazil could continue to attract export-oriented FDI by following the devaluation and successful reform measures.

3 ADJUSTMENT OPTIONS AND STRATEGIES

In response to the deterioration in investment conditions in Latin America compared with other locations, foreign investors might manifest a distinct reaction, depending on their perceptions of operations in the region. The main elements of a pessimistic or resigned strategy would be scaling down, selling, or repatriating capital and investing in other regions.

However, an optimistic variant seems to be more interesting and more relevant in practice. In general, experience has shown that FDI firms, unlike portfolio investors, prefer to take a long-term view in their engagements (*Mallampally* and *Sauvant*, 1999; *Nunnenkamp*, 2001). The

question then is how to keep existing operations going, adjust to changed investment conditions, and exploit new opportunities that might be opened up by or during a crisis. The various elements of adjustment include the following:

- Firms could seek to stabilize value added and employment by reducing imports of components and increasing the local content of production;

- Firms could concentrate or relocate production to more stable or promising locations in Latin America, and thereby benefit from trade liberalization, for example, in Mercosur;

- Firms could transfer fresh capital to Latin America in order to help their subsidiaries ride out hard times, through intra-company loans;

- Foreign investors with access to capital could exploit new investment opportunities in the crisis and acquire local firms, taking advantage of their low valuation and need for capital;

- In order to maintain social stability, which is an important location factor, subsidiaries could extend their social activities.

Realization of these (and other) options would show up in FDI statistics only to a limited extent. While their relevance can best be assessed at the company level, indications of some aspects can be seen from the structural development of German FDI in Latin America. In this analysis, we first review recent developments in the pattern of German FDI in Latin America against the economic and political background in the region, and then discuss firms' adjustment strategies.

4 PROFITABILITY AND CAPITAL ADJUSTMENTS

It can be assumed that profits of affiliates go down when host countries enter into economic or financial crisis. Then the affiliates might need to receive support from rather than pay dividends to the parent company. Evidence on the profitability of German affiliates in individual countries is scarce, and the profit statements of important firms provide mixed information. For example, according to its Brazilian CEO, Siemens has never had a loss in Brazil (FAZ, 6.3.2003), while Volkswagen has incurred heavy losses there, over the past five years, not least because of currency turbulence and over-investment in previous years (FAZ 22.7.2003).

At a recent high-level Brazilian-German conference of government officials and firms engaged in Latin American investment and trade, a skeptical view concerning the past seemed to prevail, but there seemed to be confidence that reforms would be successful and lead to a better future (FAZ 31.10.2003).

Balance of payments data on income from FDI in Latin America seem to reflect financial difficulties in the affiliates. The figures - which are volatile over time - plunged into the red for the first time in 2002 (Deutsche Bundesbank 2003c). Instead of receiving FDI income from Latin America, there was an outflow of €1 billion in 2002, a trend that continued in the recent months covered by the statistics. In line with the expectations mentioned above, German parent companies on balance compensated their affiliates in the region for losses incurred.

A compilation of Bundesbank FDI data on German affiliates in Latin American countries helps in assessing their performance and the strategy of investors (Table 1). While profit data may be to some extent arbitrarily set for strategic and tax reasons, they should mirror the general trend, which is clearly evident.

Table 1: Profitability of German Affiliates in Latin America, 1996 and 2001, in mill. €

Sector/Region	Sales		Profits		Profitability [a]	
	1996	2001	1996	2001	1996	2001
Manufacturing						
Latin America	28,614	52,322	405	-138	1.4	-0.3
Argentina	3,195	3,426	36	-274	1.1	-8.0
Chile	278	354	17	12	6.1	3.4
Brazil	17,901	19,967	82	-275	0.5	-1.4
Mexico	5,724	25,297	224	322	3.9	1.3
World	297,438	589,153	5,013	-1,249	1.7	-0.2
Non-manufacturing						
Latin America	4,402	12,934	935	133	21.2	1.0
Argentina	570	1,630	25	-407	4.4	-25.0
Chile	282	708	18	-6	6.4	-0.8
Brazil	1,793	3,518	83	65	4.6	1.8
Mexico	482	2,542	18	137	3.7	5.4
World	308,901	757,963	6,600	5,976	2.1	0.8

a Profits in percentage of sales. Negative values are losses.
Source: Deutsche Bundesbank; author’s calculations.

Profits of *manufacturing* affiliates in the Latin American countries fell across the board from 1996 to 2001. There is a clear distinction between crisis-struck Argentina and Brazil, where the affiliates on balance produced losses in 2001, and Chile and Mexico, where the setback was rather mild. It is interesting to note, however, that losses did not occur only in Latin America. On a worldwide scale, €5 billion in profits in 1996 turned into €1.2 billion in losses in 2001.

Profits in *non-manufacturing* outnumber by far those in manufacturing, both in Latin America and worldwide. However, profitability in services cannot readily be compared with that in manufacturing affiliates because in a number of service industries (such as banking and insurance) sales values cannot be calculated meaningfully or have little explanatory power. Even so, the trend in Latin American countries is clearly negative, with particularly high losses in Argentina. The seemingly better performance of Mexican affiliates has to be seen against the background of the particularly high growth rate of operations.

The four countries in Table 1 - Argentina, Brazil, Chile, and Mexico - account for roughly 75 percent of Latin American GDP, but only one-sixth of the profits of non-manufacturing affiliates in the region. Even allowing for the accrual of additional profits in smaller Latin American countries other than the offshore centers, it seems that the bulk of additional profits can be allocated to the latter group. Offshore holding companies obviously serve as profit-allocating institutions. The informational value of the profit figures for other Latin American countries then depends on whether offshore FDI is finally channeled to North America or Latin America. If it were directed to Latin America, the data for individual countries would grossly underestimate real profits, but it would be practically impossible to determine the extent of distortion in the individual country data.

To analyze this, we look at the capital structure of German FDI in Latin America. If a substantial part of FDI in the four above-mentioned Latin American countries consisted of intra-group loans from non-German sources, there would be a high probability that affiliated holdings in the Caribbean supplied this capital. Seen from the side of Latin American affiliates, this would result in a substitution of interest payments for profits. If instead loans were largely granted from companies in Germany, profits in Latin American offshore centers could not be expected to accrue from loans to Latin American affiliates.

The data in Table 2 present a clear picture regarding profits in Latin American affiliates, capital adjustment strategies, and the function of holding companies. First, the share of intra-group loans in FDI stock has increased in all countries except Mexico since 1996. This is not

only contrary to our expectation,[2] it also contradicts statements from business representatives. For example, according to consultant firms, parent companies often have substituted loans to affiliates in Latin America for capital (FAZ 31.10.2003). This would enable the affiliates to keep their revenues in the host country instead of being obliged to regularly transfer interest abroad. However, this does not seem to have been a dominant trend. Instead, they increased loans, thereby probably profiting from better possibilities to transfer interest payments as opposed to profits. However, loans have not dominated in FDI or determined the slump in profits (Argentina is an exception).

Second, more than 90 percent of intra-company loans came from German sources. This share did not substantially change during the period of observation, which leads to the conclusion that offshore centers do not play an important role in the supply of loans.[3]

Table 2: German FDI Stock and Intra-company Loans in Latin America, 1996 and 2001, in mill. €

	1		2		3		4		5	
	FDI stock		Intra-company loans							
Sector/Region			Total		From Germany		2 in % of 1		3 in % of 2	
	1996	2001	1996	2001	1996	2001	1996	2001	1996	2001
Manufacturing										
Latin America	9,433	14,766	1,267	3,020	1,224	2,851	13	20	97	94
Argentina	983	1,576	166	576	155	573	17	37	93	99
Chile	128	224	12	59	12	59	9	26	100	100
Brazil	5,900	6,311	687	1,516	670	1,362	12	24	98	90
Mexico	1,826	5,499	349	643	334	640	19	12	96	100
World	89,573	175,995	20,189	45,026	17,255	32,297	23	26	85	72
Non-manufacturing										
Latin America	4,453	16,524	687	2,395	661	2,206	15	14	96	92
Argentina	326	880	63	642	63	641	19	73	100	100
Chile	323	637	27	56	24	56	8	9	89	100
Brazil	1,184	1,938	230	330	223	319	19	17	97	97
Mexico	170	1,229	43	125	43	121	25	10	100	97
World	141,630	523,040	36,219	89,438	24,865	70,801	26	17	69	79

Source: Deutsche Bundesbank; author's computations.

2 However, it seems to represent a policy generally followed by foreign investors in Brazil and other Latin American countries, as UNCTAD (2003, p. 143) concludes from various studies (see IEDI 2003, p. 22).

3 This is in line with *Rösler* (2003), who points out the distorting effects of Caribbean holdings and German firms' U.S. affiliates investing in Latin America.

We can therefore conclude that the profit data of Latin American affiliates are not significantly distorted by offshore holdings (which are obviously directed more toward North America). It seems safe to conclude that profitability in fact deteriorated fundamentally. This might have led to a scaling down of German engagement in Latin America, which should be visible in the statistics. If instead German investors took advantage of the possibility to acquire firms at favorable prices, due to poor profitability and devaluation, FDI might have increased during the crisis.

5 DECREASING WEIGHT, BUT NO MASSIVE RETREAT FROM LATIN AMERICA

In view of the above-mentioned decreasing weight of Latin American locations (including the Caribbean, which is not dealt with separately here), it would seem that German investors have pulled out of Latin America. However, this conclusion would be premature. It is not supported by the following developments in the pattern of FDI:

- German FDI outflows to the region virtually collapsed (Table 2).[4] In 2002, German investors have, on balance, returned capital to Germany from Latin America. However, even this return flow can hardly be interpreted as a retreat from Latin America. The return of capital was largely due to short-term credit transactions with affiliates (holdings) in the Bermuda Islands, which has little to do with FDI in Latin America. Moreover, FDI stocks in Latin America continued to grow until 2001, the last year covered by statistics on stocks;

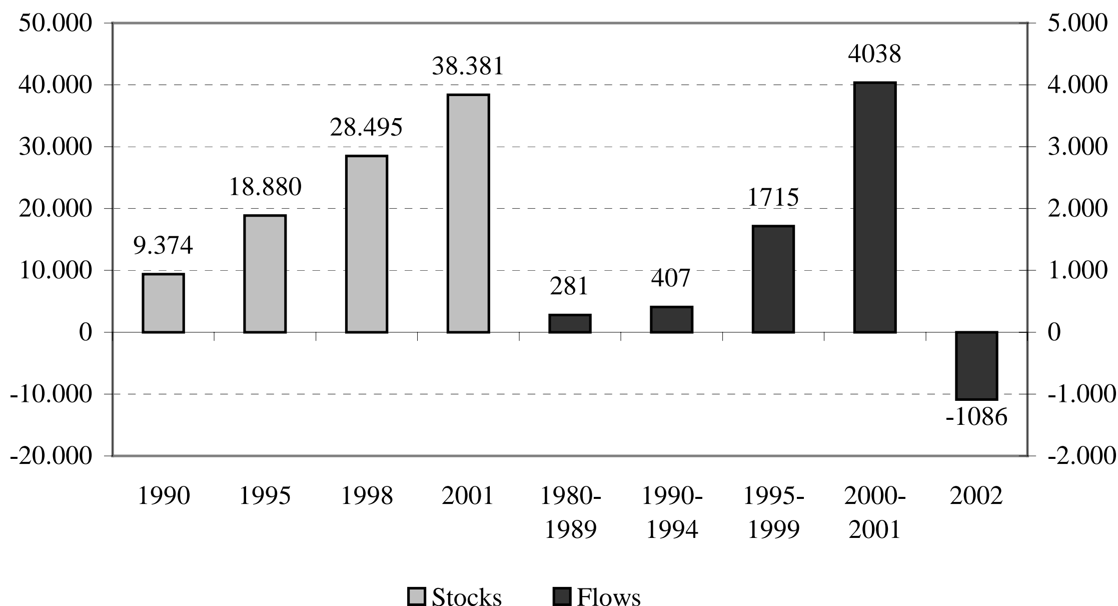
- Although the number of employees[5] working directly with German-owned firms in Latin America is about 20 percent less than in 1990, there are still more than 300,000 employees. More importantly, the reduction took place largely in the early 1990s, and the numbers

4 Flow data are extremely uncertain for two reasons. First, they often are subject to substantial revision. Within half a year, the Bundesbank revised German FDI flows to Latin America (and the Caribbean) in 2001 by over 20 percent downward (Deutsche Bundesbank, 2003c). Second, there is volatility due to the inclusion of short-term loans. Nevertheless, flow data, if interpreted carefully, can provide information on most recent developments.

5 Employment figures seem to be more reliable than FDI flow data, which can be strongly influenced by strategic financing behavior.

have not changed very much since 1998, as shown in Figure 3.[6] This does not support the pulling-out thesis.

Figure 2: German FDI in Latin America and the Caribbean, 1990-2002[a], in mill. €

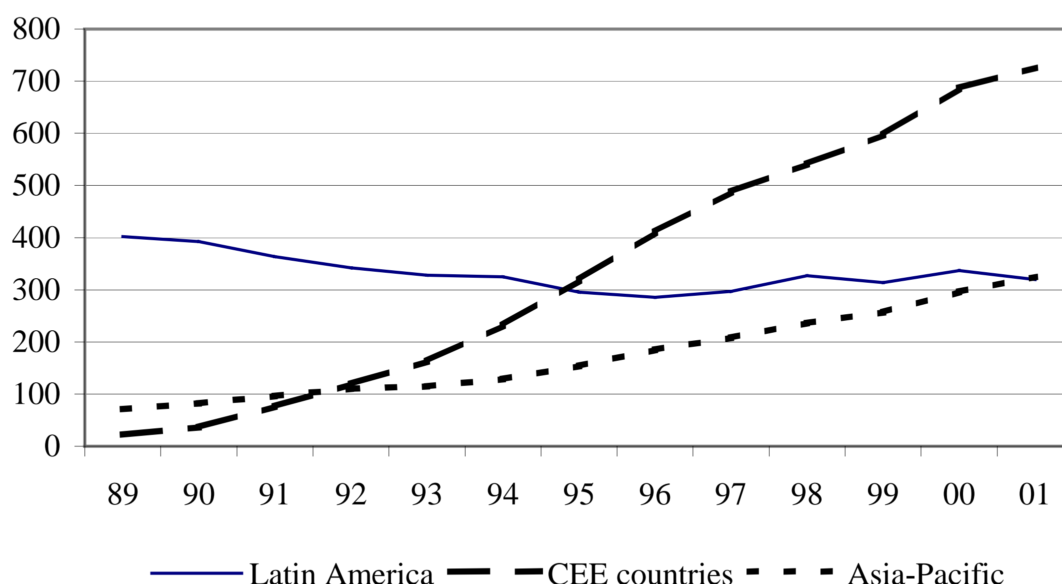


a The left scale represents stocks, and the right scale flows in annual averages.
Source: Deutsche Bundesbank (2003 a); Bundesministerium für Wirtschaft und Arbeit (2003).

Thus, it seems that there has not been a general retreat of German investors from Latin America after the crisis and stagnation that emerged around 1999. Reductions in employment took place earlier, namely in the early 1990s when Latin American countries were in the process of restructuring their economies. German firms were less engaged in the region from the beginning, for example compared with U.S. or Spanish firms (*Vodusek* 2001). Instead, German firms put strong emphasis on their engagement in Central and Eastern Europe and in Asia and the Pacific, as can be seen in Figure 3.

6 Of course, one has to take into account that employment in "German" affiliates received a push by the merger of Daimler and Chrysler; see *Jungnickel* and *Shams* (2001).

Figure 3: Employment in German Affiliates in Latin America, Central and Eastern Europe and Asia and the Pacific, 1989-2001, number of employees, in thousands



Note: Includes China, Hong Kong (China), Indonesia, Malaysia, Singapore, Republic of Korea, Taiwan (China), Thailand and Vietnam.
Source: Deutsche Bundesbank (2003a).

The view that the importance of Latin America as an investment location was not fundamentally affected by crisis and stagnation, at least not by 2001, is largely supported by the *regional distribution* of German affiliates (Table 3). In general, operations in Latin America are over-proportionately concentrated in the "big three" countries: Brazil, Mexico, and Argentina.

Table 3: Latin America as an Investment Location for German Firms, 1990, 1998, and 2001

	FDI stock (US$ billion)			**Employees** (thousands)			**Sales** (US$ billion)		
	1990	1998	2001	1990	1998	2001	1990	1998	2001
World	135	390	764	2,337	3,732	4558	461	970	1,193
Developing countries (and China)	16	43	68	655	789	926	51	100	136
Latin America and the Caribbean	10	25	38	402	326	320	30	53	57

Source: Deutsche Bundesbank (2003a).

Affiliates in the three countries employ about 87 percent of the workforce in Latin American affiliates, a share that has not changed substantially since 1999 (Table 4). This compares with the share of these countries in Latin American GDP (including the Caribbean), which is about

70 percent. German investors have a clear large-country bias and there has been only limited broadening of German operations in the region recently.

Table 4: Employment in German affiliates in Latin America by Host Country Group, 1996-2001

Host region	Employment					
	1996		1999		2001	
	Thousands	Percent	Thousands	Percent	Thousands	Percent
Latin America	286	100	314	100	320	100
Big three (Argentina, Brazil, Mexico)	253	88	275	88	278	87
Others (including the Caribbean)	33	12	39	12	42	13
Crisis-struck (Argentina, Uruguay, Brazil, Venezuela and Columbia)	214	75	209	67	208	65
Less affected (Chile, Mexico, Ecuador)	62	22	93	30	100	31

Source: Deutsche Bundesbank (2003a).

The reactions of German investors to the crisis should become visible in the development of operations in the most affected countries - Argentina, Venezuela, Colombia, Uruguay, and Brazil - compared with affiliates in relatively better-off countries, such as Chile, Ecuador, and Mexico. In the former group, aggregate employment was stable in the years until 2001.[7] In Argentina, employment fell by about 3 percent a year, which can be considered modest given the gravity of the crisis.[8] Employment in Brazil shrank between 1996 and 1999 and was almost stable thereafter.

Affiliates in the relatively less or not affected countries showed a significantly better employment record than the aggregate of crisis countries. This was largely due to the surge in FDI in Mexico after the North American Free Trade Agreement (NAFTA) came into operation. In addition, Daimler's acquisition of Chrysler, including its Latin American activities, resulted in a leap in German FDI in Mexico.[9]

7 More recent statements of important investors seem to indicate that the level of employment has gone down. VW is to dismiss 4,000 out of 25,000 employees after long-lasting labor disputes and reduced working hours. To a certain degree, these employment cuts are compensated by job creation resulting from qualification programs and joint efforts of VW and private and public partners to increase the attractiveness of the locations for suppliers and other investors and to promote new business ideas (SZ of 22.7.2003).

8 However, the domestic labor force in Argentina increased by about 5 percent in the same period, despite the crisis (World Bank, 2003).

9 A counterweight to this leap later resulted from the sale of some Latin American plants when sales dropped in the United States.

Further indication of the FDI strategies of German investors can be obtained by breaking up net FDI flows into new investment and disinvestment (liquidation). Annexed Table A.1 presents the data, up to 2002, excluding offshore centers. Although there were significant disinvestments in most of the countries, reaching a peak in 2001, these were more than compensated by new investments in 30 out of 36 cases (country/year combination). There is thus no trend toward more disinvestments in the crisis countries, with the exception of Colombia. Substantial backflows occurred only from Argentina, reaching a little more than 10 percent of the total stock of FDI.

At the same time, there were substantial new investments even in crisis countries and in the most recent years. It remains unclear whether these capital flows were meant to assist existing affiliates in hard times or to acquire new affiliates at a low price.

Altogether, it seems there were few relocations in Latin America from the most affected countries to the least affected as a result of the crisis, compared with long-term changes brought about by the more FDI-attractive Eastern European countries and the Asia and Pacific region.

6 LIMITED SECTOR DIVERSITY - LACK OF NEW INVESTORS

German FDI in Latin America has traditionally been dominated by manufacturing. With 85 percent of all persons employed by German firms in the region, this dominance is clearly stronger than in total German FDI (Table 5). In European Union host countries, where services are in the lead in terms of employment, 47 percent of workers employed by German firms are in manufacturing.[10] In German FDI in developing countries other than Latin America, 68 percent is in manufacturing.

Table 5: Share of Manufacturing in German FDI, 1998 and 2001, percentage of total

	FDI stock		**Affiliate employment**		**Affiliate sales**	
	1998	2001	1998	2001	1998	2001
FDI in Latin America	63	47	87	85	84	80
Total FDI	39	25	64	59	51	43

Source: Deutsche Bundesbank; author’s calculations.

10 In terms of FDI stock, services by far outnumber manufacturing in the European Union (70 percent). In non-Latin American developing regions, they account for about 40 percent.

Employment in Latin American *manufacturing* affiliates was stable until 2001 despite the crisis, whereas in other regions numbers went down. Within German manufacturing in Latin America, the major four industries (automobiles, chemicals, electrical engineering, and mechanical engineering) account for more than 80 percent of all employees, compared with 54 percent in other developing countries. Due to above-average capital intensity in Latin America, its share measured in production values is even higher (90 percent). The weight of the major four industries has been almost stable since the late 1990s, with the dominating automobile industry gaining what was lost in the chemicals industry.

The industry focus of German FDI varies across the host countries. Brazil has received the largest share of almost every sector's FDI in Latin America. In relative terms, there is a strong concentration of mechanical engineering and jewelry, toys, and furniture, while for example business services, trade, metal products, and chemicals are below average.

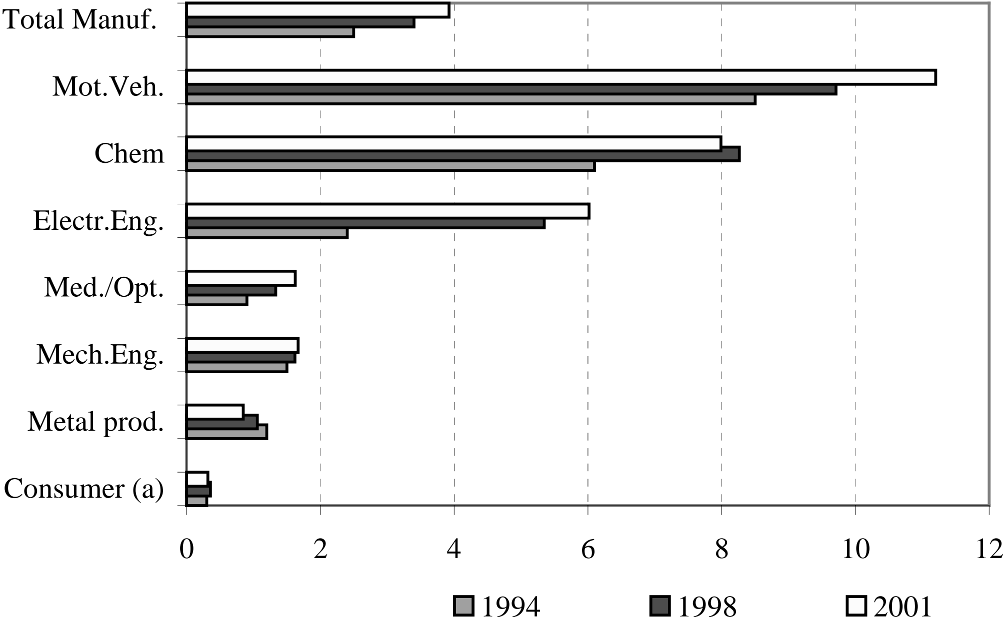
Argentina is a focus of the food and tobacco industry but has received little in mechanical engineering. Trade and communications FDI has above-average weight while the prior focus on the finance sector has vanished in recent years.

Mexico is lacking FDI in mechanical engineering, banking, and communications, but the country has received above-average investment in the automobile industry as well as some other industries (printing and publishing, metal products, medical and optical instruments, and business services).

In the smaller Latin American countries, German firms have invested mostly in chemical products (although with little vertical integration) and some service industries (such as trade, communications, and business services).

The dominance of the four large industries has to be seen against the background of their weight in Germany, and their FDI potential. Nevertheless, Figure 4 shows that even when normalized by sector size, automobiles and chemicals as well as electrical engineering are by far the industries most oriented toward production in Latin America. Moreover, automobiles and electrical engineering report particularly strong increases in the Latin America-Germany relation, while traditional consumer goods hardly expanded.

Figure 4: German Manufacturing in Latin America, 1994, 1998 and 2001, percentage of production in Germany

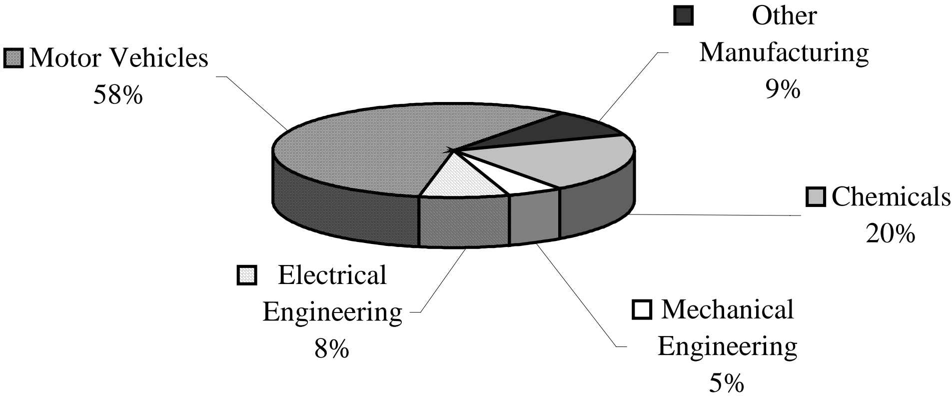


a Traditional consumer goods, including textiles, clothing, leather goods, food, glass/ceramics.
Note: The ratio for 1994 is not fully comparable with later years because of statistical reclassification, especially in electrical engineering.
Source: Deutsche Bundesbank (2003a); Statistisches Bundesamt; author's calculations.

Both the high share of manufacturing in German FDI in Latin America (with only a few industries clearly dominating) and the stability of this pattern over time are in clear contrast to the industry structure of German production in Central and Eastern European countries. In the latter, the four industries with the largest shares account for only 54 percent of all German production. After motor vehicles, the food industry (8 percent) is number two in terms of production, ahead of engineering and chemicals (Figure 5). Furthermore, services have much greater representation in Central and Eastern European countries than in Latin America, thereby clearly demonstrating the advantages of these locations in terms of proximity to Germany.

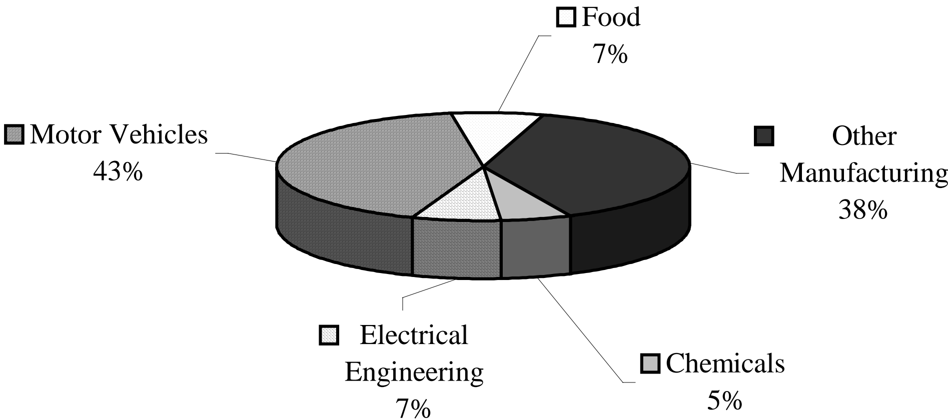
Figure 5: Sales of German Manufacturing Affiliates in Latin America Compared with Affiliates in Central and Eastern Europe, by sector, 2001

a) Latin America



.

b) Central and Eastern European countries



Source: Deutsche Bundesbank; author's calculations.

Differences in sector structure can lead to various conclusions. On the one hand, it seems that Latin American locations were not able to participate in and profit from the rapidly expanding internationalization of German service firms, and did not profit from the diversification in German manufacturing FDI that took place in worldwide operations.[11] On the other hand, the data seem to indicate that German firms were not able to fully take advantage of Latin Ameri-

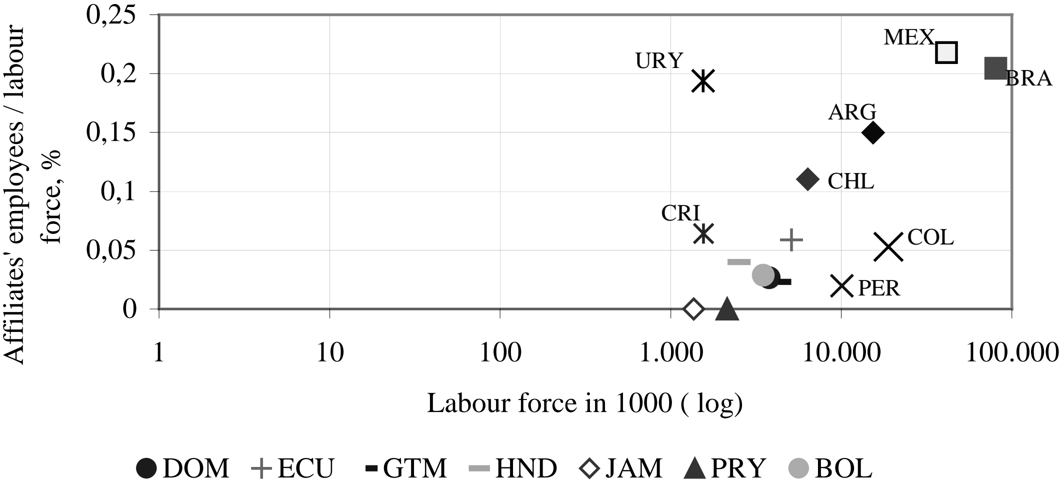
11 One of the few examples of sector diversification in Latin America is the rapidly increasing production in the field of medical and optical instruments.

can opportunities, and only to a limited extent participated in privatization programs, for example in public utilities. However, if rapidly expanding worldwide German FDI is taken into account, the former view seems to be more realistic. That is, potential German investors were not outcompeted in Latin America; they rather favored locations in other parts of the world.[12] This holds to a lesser degree for traditional investors from the automobile, chemical, and engineering industries. Hence, the main conclusion seems to be that the lack of new investors in services and other manufacturing industries in Latin America was due to their forms on operations in other parts of the world.

7 ADJUSTING PRODUCTION NETWORKS: FROM MARKET ORIENTATION TO NETWORK STRATEGIES

Latin American affiliates of German firms traditionally are considered to be largely market-oriented and not actors in cross-border production networks based on division of labor. This is mostly shown by structural indicators, such as a bias of FDI toward large and high-income markets as well as by the correlation of foreign production and foreign trade. The rest of this section describes examples of adjustments in production networks.

Figure 6: Share of German Affiliates in Host Country Labor Force and Size of Host Country, 2001

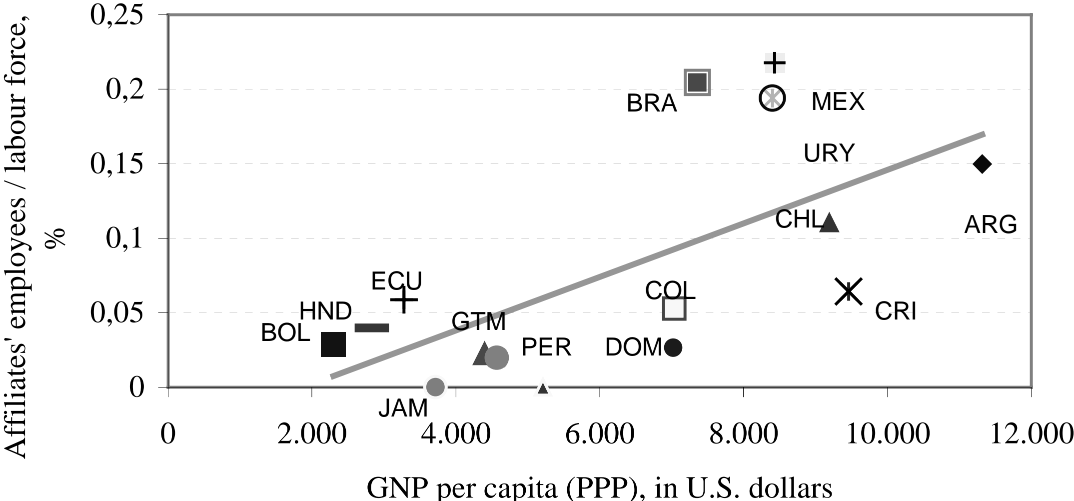


Source: World Bank (2003); Deutsche Bundesbank (2003a); author’s calculations.

12 It should be stressed, however, that a changed focus of FDI does not mean disinterest in Latin America. German investors there put much emphasis on increasing productivity. Compared with the situation in 1998, they could maintain their productivity advantage versus other developing regions and narrow the difference to highly developed countries (see *Jungnickel* and *Shams* 2001 and Annex Table A.1).

Figure 6 clearly shows the large-country bias of German production in Latin America. The figure shows a positive correlation between German employment and the size of the host country, which is not surprising since large countries should normally have greater potential to receive FDI. The figure also demonstrates that even the share of FDI in the host economy, as measured by the share of the workforce, is positively related to the size of the host country (as measured by the workforce). This result is largely in line with the analyses of *Nunnenkamp* (2003) and *Wezel* (2003), although there are differences in details.[13] Similarly, in Figure 7, there is a highly significant positive correlation between the employment share of German investors and the income level in the host country. This could indicate that market and not cost considerations are the main motive for FDI.

Figure 7: Share of German Affiliates in Host Country Labor Force by Income Level of Host Country, 2001



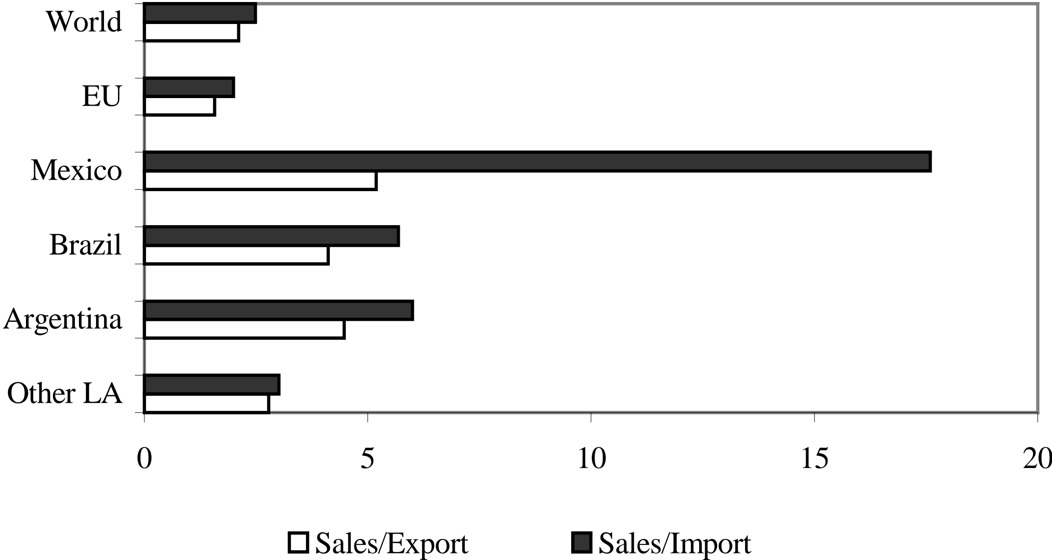
Source: World Bank (2003); Deutsche Bundesbank (2003a); author's calculations.

Comparing the foreign production of German firms in 2001 with trade flows between Germany and the respective host regions reveals that there has been little change in the dominance of local production over trade since the late 1990s (*Jungnickel* and *Shams* 2001). Particularly in the sectors dominating German production in the region, production values are manifold trade values, although German imports from the main production countries in-

13 *Nunnenkamp* (2003) finds no large-country bias of (worldwide) FDI in Latin America if the analysis controls for the size of host economies. This difference compared with my findings could result from two factors: dominance of U.S. FDI in the region and use of FDI data that could be substantially distorted by the financing strategies of the investors. *Wezel* (2003) studies the determinants of German FDI (as opposed to sales values of the affiliates) in the 10 largest Latin American countries. He finds that FDI normalized by size of the host country is significantly determined by the aim to overcome tariff barriers, and is rather negatively related to the income level of the host economy.

creased faster than local production. In the other Latin American countries (excluding Argentina, Brazil, or Mexico), production has also become more important compared with trade (Figure 8). This leads to the presumption that German production in Latin America is a substitute rather than a complement to trade, although this might depend on the sector.

Figure 8: German Production in, and Trade with, Latin America, 2001



Source: Deutsche Bundesbank (2003a); Statistisches Bundesamt; author's calculations.

The below-average relative weight of trading companies also indicates a weak relationship between foreign production and trade with Germany. Often the trading companies are distribution outlets of manufacturing firms. In developing countries other than Latin America, sales of German-owned trading companies are close to 60 percent of German-owned production. In Latin America sales reach a mere 13 percent. In Latin America, Brazil and Mexico are special cases, where sales of manufacturing affiliates are 10 (Brazil) and even 17 (Mexico) times the sales of trading companies. The employees of manufacturing affiliates outnumber those working with German trading affiliates by a factor of 24. This indicates that German firms, which in an international comparison have above-average export orientation, engage in Brazil by way of local production rather than by trade.

However, neither the large-country bias of production nor the missing complementarity of trade with Germany reveals anything about the (possible) specialization and division of labor in Latin America or between Latin America and North America. For example, it may be that FDI in large countries at the same time serves domestic and neighboring markets. Although there is no comprehensive information available on this issue, the evidence from individual

firms clearly points to a trend toward cross-border production networking, which was already observable in the late 1990s (*Jungnickel* and *Shams* 2001).

Mexican plants have progressed furthest in this respect. Production of automobiles is largely directed to the North American market. Volkswagen's export quota is in the area of 80 percent. VW of Mexico had sales of US$ 7 billion in 2000 (FTD 30.08.2001). The Daimler-Chrysler plant won the location decision for production of the PT Cruiser with a cost advantage of US$ 2,000 versus Austria (FAZ 13.12.2001). Following currency devaluation, the Brazilian and Argentine plants have also increased their position in international production networks.

VW of Brazil, in competition with Spanish, Portuguese, and Slovakian plants, was awarded the contract to manufacture the Tupi (FAZ 12.05.2003). Relocations from Europe to Latin America are promoted by the strong Euro and the weak real (FTD 20.08.2001), as well as by the general trend toward platform strategies. And the best-selling model Gol is especially manufactured for the Latin American market. The Resende plant for the manufacture of light trucks is considered one of the most efficient on a worldwide scale, with the most important subcontractors integrated into the production process.

Latin American VW plants (including a minor South African plant) lost €600 million in business to third parties in 2001, but were able to increase sales to affiliated companies in other regions by €360 million. Exports were and still are the main, sometimes the only, stabilization factor. The export quota of the Resende light truck plant is planned to more than double within three years from 10 percent to 25 percent by 2005 (FTD 20.08.2001). With exports of 160,000 cars from Brazil, VW achieved a new export record. Most of these cars go to Mexico. The Siemens plants in Brazil have been given responsibility for the entire Mercosur area.

Daimler-Chrysler partly likewise compensated for weak domestic demand in crisis countries by increasing exports. Had there not been the export option, the Argentine plant would have had to close (HB 13.2.2003). Similarly, the newly erected Brazilian plant was given assembly of the C-class model for the U.S. market because the plant had been used at less than half capacity due to disappointing production of the A-class for the domestic market (FR 14.8.2001). Daimler is working on "global modularization" of production.

ZF Friedrichshafen, an automobile supplier with 13 production locations in Latin America (in Mexico, Brazil, and Argentina) and 119 worldwide, has established a network based on specialization in Mercosur and NAFTA. The Mexican plants not only supply shock absorbers

and clutches to the United States, they are also engaged in the reciprocal exchange of clutches, shock absorbers, and torque converters with the Brazilian and Argentine plants. Part of the Argentine production was relocated to Brazil.

Beiersdorf AG, which specializes in cosmetics, health care, and adhesives (strong international brands are, among others, Nivea, Atrix, Juvena, TESA, and Hansaplast), has 1,400 of its 18,000 employees in Latin America. Production units in Mexico, Colombia, Chile, and Brazil are increasingly specialized. A division of labor in Latin America and NAFTA has been established. This drive for efficiency (which is a worldwide policy of the company) makes the individual subsidiaries less dependent on their home market, although location decisions are largely determined by long-term local market perspectives. Temporary crises and exchange rate changes are less relevant.

8 CONCLUSIONS

In view of the economic and political crises in certain Latin American countries, changes in the volume of German FDI in the region have been surprisingly small. Although the profitability of subsidiaries in crisis countries decreased rapidly, with losses recorded in the most recent year for which data are available, German firms neither retreated from Latin America on a massive scale nor seized the opportunity to buy local firms at a low price, following devaluation. The share of Latin American locations in total German FDI decreased slightly only in the most recent years, and this was essentially a result of expansion elsewhere. Substantial reductions in employment in Latin American subsidiaries took place before the crises became evident. This indicates that German investors take a rather long-term view in the region.

The structure of German involvement in Latin America has remained fairly stable, with clear dominance by the four core manufacturing industries - automobiles, chemicals, mechanical engineering, and electrical engineering - and the large host countries - Brazil, Mexico, and Argentina. Mexican locations gained what was lost in Brazil and Argentina. The greatest increase in German FDI took place in Uruguay.

It seems that integration of Latin American operations has gained momentum more recently, although there is no comprehensive information on that process. The available evidence leads to the conclusion that it was not only NAFTA (especially Mexico) that attracted more German FDI (as well as FDI from other sources). Latin American integration has affected specializa-

tion and the division of labor of the subsidiaries, enabling them to profit from scale economies and balance national fluctuations in demand.

It can be expected that free trade agreements with the European Union will significantly improve the potential for specialization and result in more FDI. Latin American subsidiaries are becoming more integrated through cross-border division of labor in automobile manufacturing, with its specialization and platform strategies, and in suppliers and firms from other sectors. However, it is unlikely that Latin America will be the main focus for German FDI in the short term. Locations in Central and Eastern European countries and China seem to be more attractive in the foreseeable future. The key to an increase in (German) FDI in Latin America is to overcome the debt problems and achieve sustainable growth in the region.

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APPENDIX

Table A.1: New Investment, Disinvestment and Short-term Credit Financing of German FDI in Latin America, 1999-2002 [a], in Mill. €

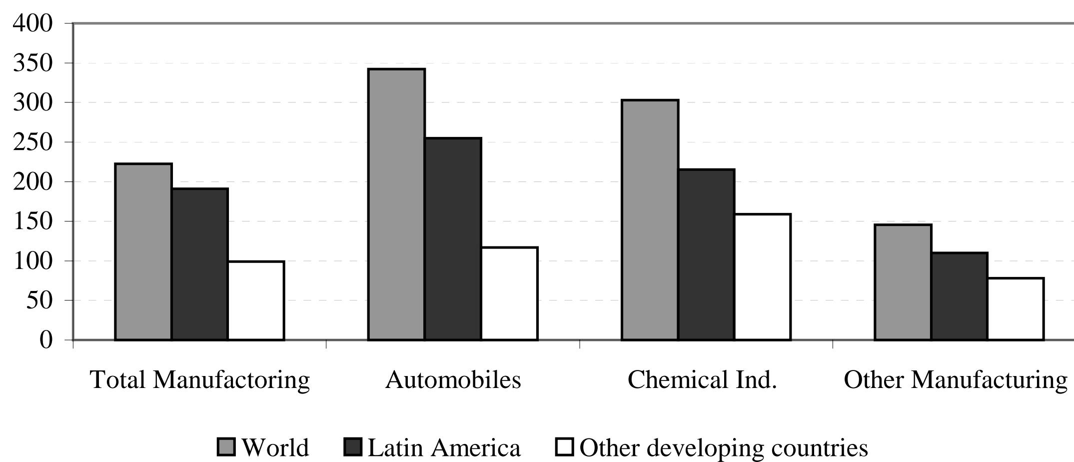
Category	Host country / Year	Mexico	Brazil	Argentina	Venezuela	Ecuador	Colombia	Uruguay	Chile	Peru	Latin America	Off-shore*	Crisis-struck**	Less af-fected***
1. New investments	1999	172	937	278	233	69	-	8	-	12	1,919	2	519	253
	2000	172	905	132	307	16	64	69	-	60	2,095	0	572	248
	2001	182	2,184	270	178	25	57	11	27	103	4,985	163	516	337
	2002	155	661	378	154	23	6	2	17	13	1,822	286	540	208
2. Disinvestment	1999	110	174	85	0	0	-	0	-	0	811	3	85	110
	2000	518	214	177	0	0	0	0	-	0	1,043	0	177	518
	2001	166	1,539	341	5	0	30	8	18	126	2,716	0	384	310
	2002	34	219	55	7	1	39	0	10	18	647	236	101	63
3. Balance	1999	-62	-763	-193	-233	-69	-65	-8	68	-12	-1,108	239	-434	-143
	2000	346	-691	45	-307	-16	-64	-69	-103	-60	-1,052	-25	-395	270
	2001	-16	-645	71	-173	-25	-27	-3	-9	23	-2,269	-1,388	-132	-27
	2002	-121	-442	-323	-147	-22	33	-2	-7	5	-1,175	-67	-439	-145
4. Short-term loans	1999	156	-339	-88	-18	0	56	-18	7	-12	-684	-434	-68	151
	2000	-54	-161	-295	-13	-11	-22	0	-38	6	-5,553	-4,935	-330	-97
	2001	94	173	-316	28	8	16	4	-18	-22	-1,461	-1,443	-268	62
	2002	-22	126	649	51	-22	-57	-7	41	-5	2,668	1,821	636	-8

Table A.1: New Investment, Disinvestment and Short-term Credit Financing of German FDI in Latin America, 1999-2002 [a] (Continued), in Mill. €

Category	Host country / Year	Mexico	Brazil	Argentina	Venezuela	Ecuador	Colombia	Uruguay	Chile	Peru	Latin America	Off-shore*	Crisis-struck**	Less effected***
5. Total FDI flow (=3+4)	1999	94	-1,102	-281	-251	-69	-9	-26	75	-24	-1,792	-195	-502	8
	2000	292	-852	-250	-320	-27	-86	-69	-141	-54	-6,605	-4,960	-725	173
	2001	78	-472	-245	-145	-17	-11	1	-27	1	-3,730	-2,831	-400	35
	2002	-143	-316	326	-96	-44	-24	-9	34	0	1,493	1,754	197	-153
6. Disinv./new inv. (=2/1)	1999	0.64	0.19	0.31	-	-	-	-	-	-	0.42	1.50	0.16	0.43
	2000	3.01	0.24	1.34	-	-	-	-	-	-	0.50	-	0.31	2.09
	2001	0.91	0.70	1.26	0.03	-	0.53	0.73	0.67	1.22	0.54	-	0.74	0.92
	2002	0.22	0.33	0.15	0.05	0.04	6.50	0.00	0.59	1.38	0.36	0.83	0.19	0.30
7. Short-term loans/FDI (=4/5)	1999	1.66	0.31	0.31	0.07	-	-6.22	0.69	0.09	0.50	0.38	2.23	0.14	18.88
	2000	-0.18	0.19	1.18	0.04	0.41	0.26	-	0.27	-0.11	0.84	0.99	0.46	-0.56
	2001	1.21	-0.37	1.29	-0.19	-0.47	-1.45	4.00	0.67	-22.00	0.39	0.51	0.67	1.77
	2002	0.15	-0.40	1.99	-0.53	0.50	2.38	0.78	1.21	-	1.79	1.04	3.23	0.05

a minus sign (-) indicates export of capital from Germany.
* Virgin Islands, Bahamas, Bermudas, Cayman Islands, Netherlands Antilles, Panama; ** Argentina, Venezuela, Colombia, Uruguay; *** Chile, Peru, Ecuador, Mexico.
"-" Data unavailable.
Source: Bundesministerium für Wirtschaft und Arbeit (2003); author's calculations.

Figure A.1: The Productivity of German Affiliates in Latin America Compared with Affiliates in Other Regions, 2001, in 1000 €



Note: Productivity is measured as sales per employee in manufacturing affiliates in 1000 Euro.
Source: Deutsche Bundesbank; author's calculations.