

communications market. Investment in the transport infrastructure, most of it initiated by the private sector, continued to rise, however, continuing its steep increase in the previous two years.

The contraction of domestic demand in 2002 led to stagnation in the nontradable services industries (hotels and catering, business and financial services, education and health businesses, etc.), and the industry's product contracted by 2.8 percent, after remaining stable in 2001. The impact of the Intifada was evident in the catering services industry, and the contraction of the computer industry and start-ups—due to the global slump in general, and in the high-tech industry in particular—was also notable, as expressed in the 45 percent

drop in investment by venture capital funds. The number of persons employed in the commerce and services industry remained stable, after rising continuously in the previous eleven years. The exports of the industry, which account for about one third of all nondiamond exports, fell by 16.7 percent in volume terms.

Agricultural product rose moderately in 2002, with a decline in the extent of exports. The industry accounted for 3.5 percent of business-sector product in 2002, and the number of persons employed in it was unchanged.

2. Manufacturing

Manufacturing product, which accounts for about one quarter of business-sector product, declined by 2.5 percent in 2002, further to its unprecedented 5.4 percent fall in 2001. The reduction in manufacturing product in the last two years has almost completely wiped out its impressive 10 percent increase in 2000. Most of the decline in product occurred between October 2000 and June 2001, since when it has stabilized, its level in 2002 being only slightly below that of the second half of 2001 (0.6 percent).

The decline in manufacturing sales to the domestic market moderated in 2002, in spite of the exacerbation of the slump in domestic uses because of the real depreciation. The growth rate of domestic uses (consisting of private consumption, general government consumption, and investment, serving as an indication of domestic demand) plunged, impacting on manufacturing as 64 percent of its output is intended for the domestic market. The real depreciation operated to offset the recession's moderating effect on demand, lowering the price of manufacturing output relative to imports, and thereby serving to increase domestic manufacturers' market share at the expense of

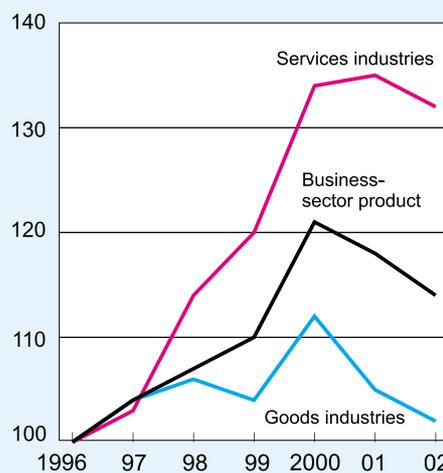
The contraction of domestic demand in 2002 led to stagnation in the nontradable segments of commerce and services. The number of persons employed remained stable, after rising steadily in the previous 11 years.

The product of agriculture rose moderately in 2002, with a decline in the extent of agricultural exports.

Manufacturing product was down by 0.6 percent in 2002 from its level in the second half of 2001.

The decline in manufacturing sales to the domestic market moderated in 2002—despite the exacerbation of the slump in domestic uses—due to real local-currency depreciation.

Figure 1.8
Development of Product of Industry Groups, 1996–2002
(1996=100)



SOURCE: Based on Central Bureau of Statistics data.

importers.¹⁵ The contribution made by real depreciation to increasing sales to the domestic market can be seen in Figure 1.9; first, the decline in domestic sales in 2002 is similar to that in 1997–2000, even though in 2002 domestic uses dipped while in 1997–2000 they increased at a handsome pace. Second, domestic sales plummeted in 2001 in spite of the rise in domestic uses, so that the moderation in the decline in 2002, just when the slump in domestic uses exacerbated, is the result of the real depreciation.¹⁶

The market share of Israeli exports in the US declined in 2002 in spite of the real local-currency depreciation and slump in domestic demand.

Table 1.9
Manufacturing Industry, Main Indicators, 1990–2002

	(rate of change, percent)				
	1990–1996	1997–1999	2000	2001	2002
Manufacturing product	7.2	2.0	10.0	–5.4	–2.5
Manufacturing exports (volume)	9.5	10.5	30.3	–4.2	–4.5
Domestic sales (volume)	6.3	–2.0	–1.6	–6.1	–1.5
Return on capital (gross, percent)	13.0	17.5	14.7	10.3	10.1
Total factor productivity	1.8	–0.1	5.8	–4.4	–2.1
Input/output price ratio	0.2	1.0	–2.8	–0.8	1.7
Costs per hour worked (real, output prices)	2.5	2.6	3.7	7.5	–3.1
Labor productivity	2.8	3.2	7.7	–0.6	0.6
Labor input (hours)	4.2	–1.2	2.2	–4.9	–3.2
Gross (real) capital stock ^a	6.8	7.1	6.9	4.6	3.6
Investment	4.5	0.4	4.7	–16.5	–8.9

^a At beginning of year.

SOURCE: Based on Central Bureau of Statistics data.

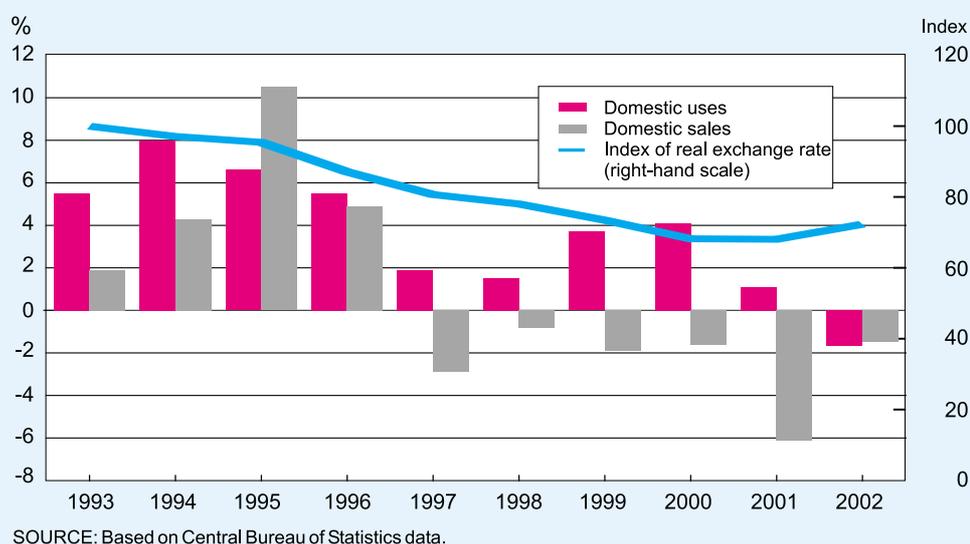
An examination of the statistical link between manufacturing sales to the domestic market, domestic uses, and real depreciation during the 1990s shows that a 1 percent rise in domestic uses increases domestic sales by slightly less than 1 percent (elasticity of 0.78 percent), and that real depreciation—in this case, a steeper decline in the price of manufacturing output than in import prices—increases these sales by less than 0.5 percent (elasticity of 0.38 percent, with a one-quarter lag). Hence, the 7 percent steeper decline in the price of manufacturing output than in that of competing imports in the last two years has increased domestic sales by 2.5 percent. As stated, this goes against the trend of its increasing price in the 1990s which, if it had continued in the last two years, would have brought domestic sales 4.5 percent below their actual level.

Manufacturing exports declined by 5.6 percent (in dollar terms) in 2002, despite the real depreciation and slump in domestic demand. The fall in manufacturing exports comprises a steep 19.2 percent drop in electronics exports and a 3.7 percent rise in other manufacturing exports. As is known, exports are affected first and foremost by global demand, and only to a lesser extent by domestic factors. Since Israel's exports are concentrated in a relatively narrow range of industries (electronics, pharmaceuticals, and chemicals), global demand for their products should be examined, as their

¹⁵ Real depreciation has an additional effect, reducing national income and hence domestic demand.

¹⁶ The real depreciation is measured in Figure 9 by means of the ratio of the price of manufacturing output in the domestic market to that of imports in the economy as a whole.

Figure 1.9
Effect of Domestic Uses and the Real Exchange Rate
on Domestic Sales, 1993–2002



development cannot be understood from analyzing global demand in general. We therefore compared Israel's exports to the US with US imports of the product of those industries. For this purpose we constructed an index of US imports from all over the world in accordance with the weights of Israel's exports. For example, the rise in imports of electronics goods has a considerable effect on this index, while the increase in vehicle imports does not affect it at all. It transpires that whereas Israel's exports to the US declined by 2.9 percent in 2002, the index of US imports rose (by 1.7 percent), indicating that the US market share of Israel's exports has contracted. This decline stemmed largely from electronics, but also encompassed other export industries, such as chemicals, textiles and rubber, and plastics, and even pharmaceuticals, whose exports to the rest of the world soared in 2002. Israel's total manufacturing exports to the US excluding electronics rose by 0.3 percent, while the index of US imports (US imports weighted in accordance with Israel's exports) excluding electronics rose by 2 percent. As stated, the contraction of Israel's market share in the US during a period of recession, real depreciation, and the erosion of the real wage is surprising, and it appears that the response of exports to the depreciation has not yet been concluded. Note that in 2002:IV manufacturing exports were up by 5.1 percent over 2002:III, and by 3.6 percent over the average of the three previous quarters (in nominal terms, seasonally adjusted), and this may indicate the beginning of a belated response to real depreciation.

It was more worthwhile to increase labor input in 2002 as costs per hour worked fell by 2.2 percent (in real GDP terms) while product per hour worked rose by 0.6 percent. The improvement in profitability in 2002 served to correct its steep decline in 2001, when costs per hour worked rose by 5.3 percent and product per hour worked fell by

Unit labor costs dipped in 2002, but were still 7 percent above their long-term average.

Table 1.10
Israel's Total Exports, Exports to the US, and Total Imports into the US, 2002

	Share in manufacturing exports in 2001	Change in Israel's total exports	Israel's exports to the US	Total US imports
				(percent change)
Total manufactured exports	100.0	-5.7	-2.9	1.7
Electronics	42.6	-18.7	-9.9	-0.6
Total excl. electronics	57.4	2.5	0.3	2.0
Chemicals, fertilizers and pesticides	6.6	4.2	-8.4	-2.4
Textiles	5.6	1.4	-2.9	6.6
Rubber and plastic	5.1	1.1	0.8	9.5
Pharmaceuticals	2.6	36.9	7.7	31.1

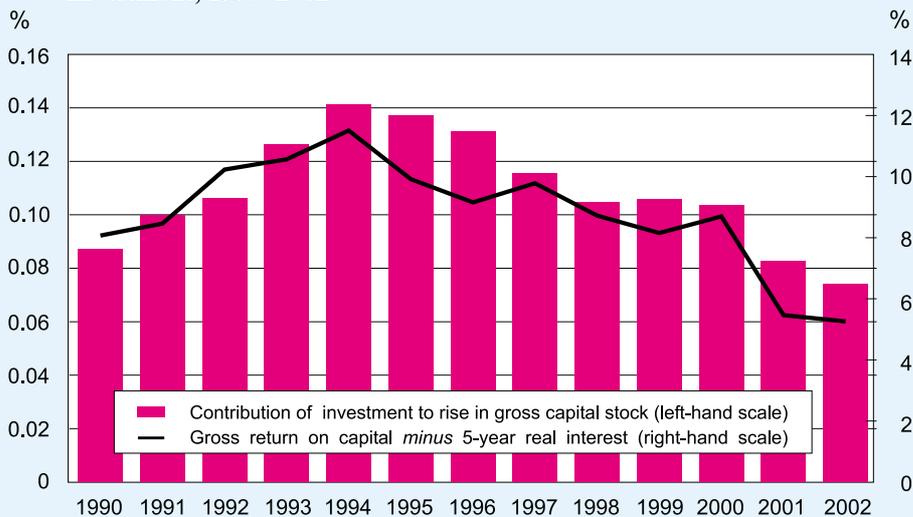
SOURCE: Based on Central Bureau of Statistics and US foreign trade data.

0.6 percent. The damage to profitability in 2001 led to the erosion of wages and a 4.9 percent reduction in labor input during 2001. The improvement in profitability in 2001 was only partial, as unit labor costs were still 6.9 percent higher than their long-term average (1987–1999).

Return on capital declined in 2002 because of the fall in total factor productivity (TFP, the ratio between actual product and productive capacity). The estimation of productive capacity is based on an estimate of capital stock, which rose in 2002, and the number of hours actually worked, which fell, indicating that productive capacity declined in 2002. The dip in productive capacity was relatively small and was exceeded by the fall in actual product, so that TFP contracted in 2002, and with it the return on

Return on capital declined in 2002, because of the fall in TFP.

Figure 1.10
Effect of Return on Capital *Minus* Interest on the Rise in Investment, 1990–2002



SOURCE: Based on Central Bureau of Statistics data.

capital. Prices—which also affect return on capital—were affected by two opposing factors in 2002: labor cost, which fell relative to output prices, on the one hand, and the price of imported raw materials, which rose beyond that of output, on the other. Thus, the overall cost of inputs (raw materials and labor) fell slightly relative to output prices, so that the price effect slightly offset the effect of the dip in TFP. Figure 1.10 shows the difference between the return on gross capital in manufacturing and real 5-year interest, which serves as an indication of the alternative yield to investors. As the figure shows, the difference between the return on capital in manufacturing and the interest rate has become smaller in the last two years, and is much less than it was in the 1990s. This has led to a decline in investment and marked deceleration of the growth rate of capital stock. After rising by an annual average of 7 percent in the 1990s, it grew by only 3.6 percent in 2002.

Electronics

The electronics industry, which accounts for about one quarter of manufacturing product, incorporates electronic and communications equipment, electronic components, monitoring and supervisory equipment, and medical and scientific equipment. In the last three years the industry has been badly shaken, in contrast to the 1990s, when it grew at a fairly steady pace. The annual growth rate of the electronics industry in 1990–99 ranged from 7 to 11 percent, hardly deviating from the long-term average of 8.5 percent. Between April 1999 and October 2000 the product of the industry soared by an astonishing 77 percent, but this was short-lived, and most of it was wiped out by July 2001. A comparison of manufacturing production today with that of the first half of 1998, just before the surge in production by the electronics industry, shows that the joint product of the communications and medical and scientific equipment industries today is similar to that of 1998. The 30 percent rise in electronics production (between April 1999 and July 2001) stems entirely from the increased activity of the electronics components industry, more specifically, the activity of the Intel plant in Kiryat Gat.

As stated, most of the product of the electronics industry is intended for export, and has fallen sharply in the last two years. Hence it is necessary to examine whether the decline in Israel's electronics exports reflects solely the decline in global demand, or whether it also expresses a reduction in the market share of Israel's electronics exports. In the absence of by-industry data on world trade, US imports constitute an indication of the development of global demand for the product of the electronics industry. US imports account for about one quarter of total world trade in electronic products, and its share of global trade in the products in which Israel specializes is greater still. US imports are particularly important for examining the demand for Israel's electronics products, about one third of which are intended for the US market.

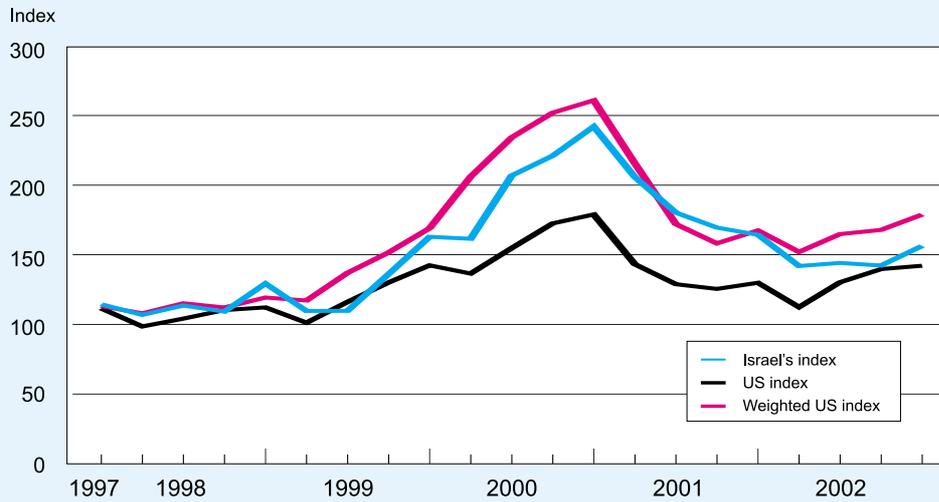
Figure 1.11 shows the development of Israel's electronics exports alongside that of US electronics imports in 1997–2002. The boom and bust cycle of Israeli exports parallels that of US imports, so that Israel's exports in that period reflect trends in global demand. The figure also shows that the market share of Israel's exports rose in the boom years and contracted during the slump. This indicates that Israel's exports

The increase in production by the electronics industry in the last four years stemmed entirely from the expansion of activity by the Intel plant in Kiryat Gat.

The exports of the electronics industry have plummeted in the last two years.

Electronics exporters specialized in products whose business cycle was sharper than that of the electronics industry as a whole.

Figure 1.11
The Electronics Industry: Exports From Israel and Imports From the US,
December 1997 to 2002



SOURCE: Based on Central Bureau of Statistics data.

were concentrated in products for which demand rose and fell in line with the business cycle, such as capital and intermediate goods, rather than in consumer goods, demand for which was relatively stable across the cycle. In order to verify this hypothesis, we constructed a new index of US imports, based on the weighted shares of some 200 products which together represent total US electronics imports, but the weights reflect their share of Israel's exports, rather than of US imports. This index supports the assumption that Israel has specialized in products whose business cycle is more extreme than that of the electronics industry as a whole.

Table 1.11
Factor Inputs, Productivity, and Cost Per Hour Worked
in Electronics, 1990–2002

	(rate of change, percent)				
	1990–1996	1997–1999	2000	2001	2002
Production	8.8	7.9	32.2	-11.9	-10.8
Exports	18.4	18.8	69.1	-12.8	-18.4
Cost per hour worked	4.3	5.4	7.8	5.5	-6.3
Labor productivity	2.9	3.6	18.5	-7.2	-6.2
Hours worked	5.6	4.2	11.6	-5.1	-4.8
Capital stock	9.6	16.5	16.9	10.4	7.1
Total factor productivity	1.6	-0.6	16.5	-12.2	-10.2
Investment	12.0	16.7	-1.3	-23.5	-19.0
Shares of production (%)	19.9	23.7	30.1	28.1	25.8
Shares of exports (%)	24.7	34.3	46.6	42.6	36.7

SOURCE: Based on Central Bureau of Statistics data.

In 2002:II and 2002:III US imports remained at their level in 2001:IV, but Israel's electronics exports fell sharply.

US imports from the whole world in a group of products fell by 5.2 percent, but its imports of those products from Israel plunged by 21.4 percent.

The decline in the market share of Israel's exports encompassed the three industries comprising the electronics industry, even though the fall in unit costs of Israeli firms made them more competitive.

The ratio between total Israeli exports and total US imports, weighted in accordance with the share of Israeli exports between 1997 and 2001, was 7 percent lower at its peak in 2000:III than in 1996:IV, but in 2001:IV it reverted to its 1996 level. In 2002 the ratio between Israeli exports and US imports declined, indicating that Israel's market share of electronics exports had contracted. As the figure shows, the fall in Israel's exports in 2002 was not a by-product of the decline in US imports, as these remained stable in 2002:II and 2002:III (weighted according to Israeli exports), at their level in 2001:IV, while Israel's electronics exports plummeted. Table 1.12 shows the reduction of Israel's market share in those products in which it had specialized. Initially, 200 groups of products included in Israel's electronics industry were classified by the extent of exports to the US. We focus on seven groups of products, accounting for the greatest extent of exports to the US and representing 58 percent of Israel's total electronics exports there, but Israel accounted for only 35 percent of total US electronics imports (attesting to the Israeli electronics industry's specialization in a relatively small group of products). The decline in US imports of this group of products was significant, amounting to 5.2 percent, but US imports from Israel of that group of products fell by far more—21.4 percent.

The decline in the market share of Israel's exports encompassed the three component industries of the electronics industry. As Table 1.13 shows, the level of Israeli exports fell by 10 percentage points beyond the decline in US imports of those products—in a year when the deep recession in the labor market and marked depreciation reduced costs per hour worked. The price of an hour worked in the electronics industry declined by 12 percent in dollar terms, and by even more in currency-basket terms. The equivalent indices in the US economy show that there was a 4 percent rise in labor costs in communications and a 6.7 percent increase in semiconductors (electronic components). Hence, the decline in unit labor costs to an Israeli firm relative to its American competitors made it more competitive, which should have served to increase its market share.

It is difficult to explain the contraction of the Israeli electronics industry's market share just when its terms of competition improved. Since the decline in Israel's market share also encompassed other industries, such as chemicals, plastics, and textiles, it

Table 1.12
Israel's Exports to the US, and Total Imports into the US,
by Main Product Groups, 2001 and 2002

	(percent change)			
	2001		2002	
	Share in Israel's electronics exports to US	Share in all US electronics imports	Change in Israel's exports to US	Change in all US imports
Total of 7 largest product groups	57.7	34.8	-21.4	-5.2
Total of 14 largest product groups	80.4	40.6	-11.4	-2.6
Total electronic goods	100.0	100.0	-9.9	-0.6

SOURCE: US foreign trade data.

Table 1.13
Electronics: Israel's Exports and US Imports, 2002

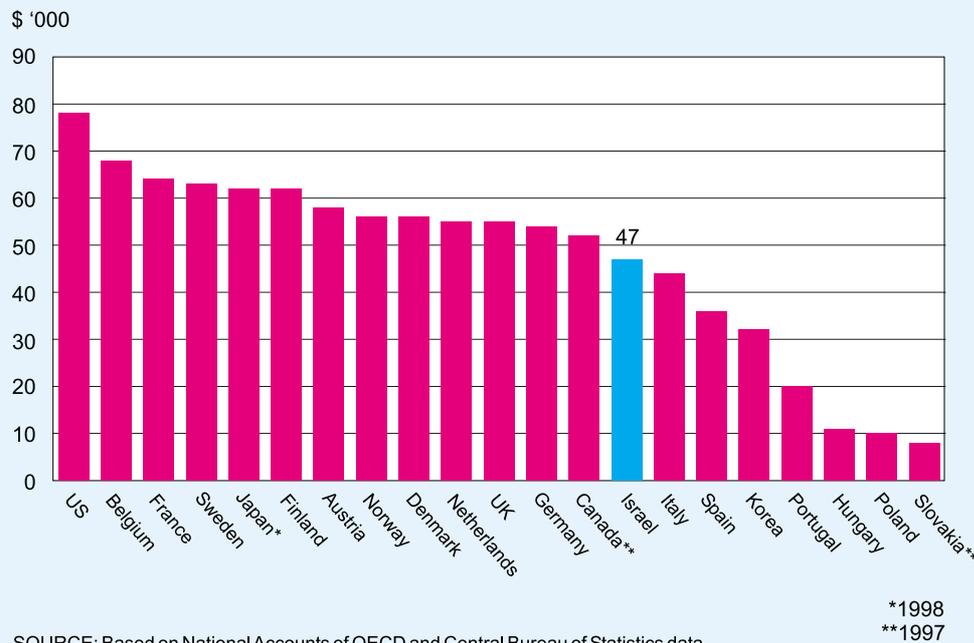
	Share in Israel's electronics exports	Change in Israel's exports	(percent change) Change in US imports based on Israel's share
Electronic communications equipment	44.0	-25.6	-14.5
Electronic components	30.9	-19.7	-8.3
Control equipment for medical and scientific equipment	25.1	-5.5	6.8

SOURCE: Based on Central Bureau of Statistics and US foreign trade data.

can be assumed that the conflict with the Palestinians was the cause of the decline, as potential customers preferred to reduce their dependence on Israel and diverted trade to markets with less uncertainty. There is no direct way of examining the effect of the conflict with the Palestinians on electronics exports, but it is possible to assess the effect of the rise in Israel's credit risk on the value of Israeli technology firms traded on the Nasdaq, i.e., exporting companies (with the exception of Cellcom). We found that between March 2000 and December 2002 (the period for which there are data on Israel's credit risk) the rise in the risk premium reduced the value of Israeli companies.¹⁷ This

The ongoing conflict with the Palestinians and the consequent rise in the risk premium appear to have had an adverse effect on exporting firms, as the real depreciation which accompanied the increase in the risk premium did not help to increase their market share.

Figure 1.12
Product per Worker in Manufacturing; International Comparison, 1999



¹⁷ The risk premium is calculated as the difference between the yield on Israel government dollar-indexed bonds and that on US government bonds.

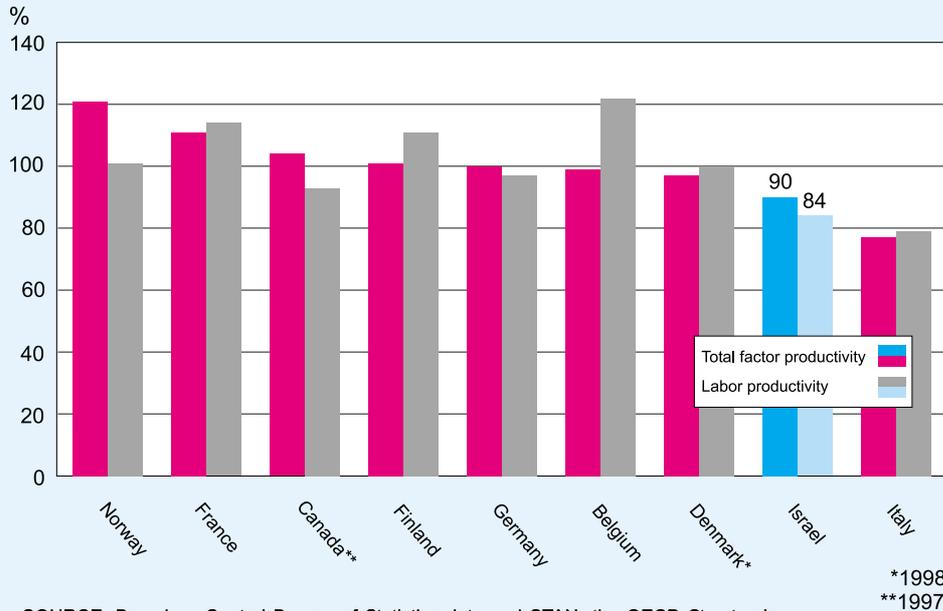
does not prove that the conflict with the Palestinians lay behind the reduction of Israel's exports in 2002, however, as the decline in the value of firms could have reflected expectations of a future fall in exports or a rise in the tax rate in order to finance the continuation of the Intifada. In addition, the risk premium reflects the extent of confidence in fiscal policy as well as the intensification of the conflict with the Palestinians. In spite of these reservations, the ongoing conflict with the Palestinians and the consequent rise in the risk premium appears to have had a negative effect on exporting firms, as the real depreciation which accompanied the rise in the risk premium has not increased their market share. It is also reasonable to assume that increased uncertainty makes it less worthwhile to invest, and also reduces foreign customers' readiness to rely on Israeli producers.

Part of the explanation of the fall in the electronics industry's market share stems from microeconomic reasons: most of Israel's electronics exports are concentrated in a few firms, and the loss of these firms' competitiveness is not necessarily macroeconomic. One example of this is the decline in the market share of the electronic components industry, which mainly reflects the lower market share of the Intel plant in Kiryat Gat. Whereas global production of semiconductors began to recover in mid-2001, Israeli exports of them continued to plummet. The erosion of Israel's market share is also evident in the figures for Intel globally, as it is the world's—and Israel's—largest producer of semiconductors. The parent company reported a 5 percent increase in total semiconductor sales in 2002 (the first three quarters vis-à-vis the equivalent period in 2001), while sales by Intel-Israel declined by 27 percent that year. The dip in Intel-Israel's exports of electronic components derived mainly from the fall in prices, but also from a volume decline: the reduction in the price of exports from the Kiryat Gat plant stems from its need to compete with new, more modern plants producing more advanced semiconductors (0.11 micron, compared with Intel-Kiryat Gat's 0.18 micron). The plant is continuing to produce less advanced semiconductors, prices of which are plummeting every year. Thus, for example, prices of lap-top computers in the US have declined by an annual average of 27.6 percent, and by a cumulative 50 percent, in the last two years. In addition, in the last two years there has been excess capacity in the industry, which served to reduce both prices and volume produced in established plants. Utilization by the US semiconductor industry fell from 96 percent in 2000 to 64 percent in 2002, because production capacity rose by 87 percent in that period, while production rose by only 24 percent. The decline in utilization impacted on Israel's electronic components industry as it consists of established plants, as is indicated by the 6.2 percent decline in hourly labor input in the industry in 2002.

Exports of electronic communications equipment were down by 28 percent in the first three quarters of 2002 from the equivalent period in 2001. This industry is also characterized by a high level of concentration: most of its exports are by only four firms—E.C.I. and Telrad, which manufacture mainly telephone exchanges, Comverse, which produces primarily voice messaging systems, and Gilat Satellite Systems, which makes communications systems for developing regions. These four companies, most of whose revenues are from exports, suffered from plunging sales in 2002. Prominent

The decline in capacity utilization of the electronic components industry in the US, and competition with new, more modern firms, impacted on the exports of the Intel plant in Kiryat Gat.

Figure 1.13
Ratios of Total Factor Productivity, and Labor Productivity to their Average
in Selected Countries, All Industries, 1999



among them was Comverse, whose sales fell by 44 percent; these were mostly of one product—voice messaging. Comverse’s business results are given in Table 1.14, which shows that Israel’s exports to the US of electronic components for phones plummeted by 40.6 percent in 2002, in line with the 47.9 percent decline in US imports of these products. The table also shows that most of the exports to the US of the communications industry were of telephone exchanges, in which sphere US imports declined by only 3.6 percent, compared with the 43.7 drop in Israel’s exports. The erosion of market share of telephone exchanges, amounting to 26 percent in the last two years, apparently reflects a microeconomic problem of the major producers in the industry, rather than a macroeconomic one. The crisis in Israel’s electronic communications industry is evident in the investments of the industry itself: investment in imported equipment fell by 41 percent in 2002, compared with more moderate declines in the electronic components (26 percent) and medical and scientific equipment (7 percent) industries.

The medical and scientific equipment industry differs from the communications industry as regards the development of exports and demand: whereas the communications industry was affected to a great extent by the rise and fall of global demand, this had less impact on the medical and scientific equipment industry. Apart from the difference in demand, there is considerable similarity in the composition of their employees: in both industries there is a high proportion (65 percent) of skilled workers (engineers, graduates of various kinds, technical engineers, and technicians),

In the last two years Israel’s market share of the US telephone exchange market has fallen by 26 percent.

In 2002 skilled workers tended to move from the communications and software industry to medical and scientific equipment, albeit to a limited extent.

Table 1.14
Electronic Communications Equipment: Israel's Exports to the US,
and Total US Imports, 2001 and 2002

	Share in Israel's communications exports to US	2001		(percent change) 2002	
		Israel's exports to US	Total US imports	Israel's exports to US	Total US imports
Parts of electrical apparatus for line telephony or line telegraphy	63.0	-15.0	-33.0	-43.7	-3.6
Telephony or telegraphy	14.5	14.0	-3.0	-40.6	-47.9
Transmission apparatus for radio telephony, radio telegraphy, radio broadcasting or television, incorporating reception apparatus	13.5	60.0	28.0	-23.4	11.7

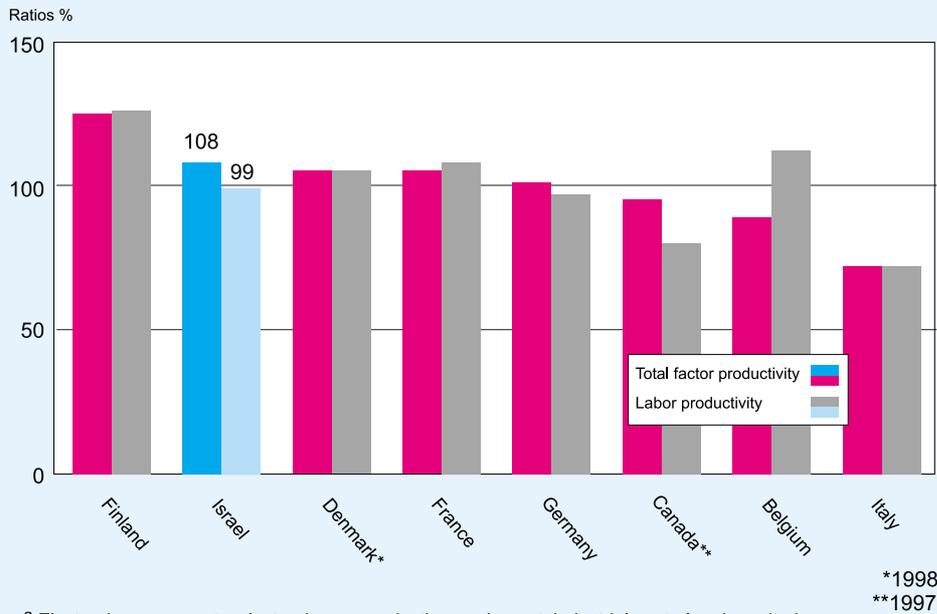
SOURCE: US foreign trade data.

far above the average in manufacturing (22 percent). The similarity in the composition of their employees is also expressed in a similar annual wage per employee post (which was identical in 1999). The question then arises whether there is any diversion of employees from communications to the medical and scientific equipment industry, making it possible to limit the damage due to the crisis in the communications industry. During the boom period both industries suffered from a shortage of skilled workers, as is indicated by the fact that even though labor costs soared in both of them labor input rose only moderately (by 1 percent in 1999 and 3 percent in 2000 in each of them). In the last two years the demand for employees in the communications industry has fallen, the number of employees has plunged (by 14 percent in 2002 and 4 percent in 2001), and costs per hour worked have not risen at all. Concurrently, the medical and scientific equipment industry has recruited additional employees, increasing labor input by 3 percent in those two years, even though its output fell by 5.4 percent in that period. It seems, therefore, that there is some movement of skilled workers from communications and software to allied industries, albeit to a limited extent.

The electronics industry, and the electronic components industry in particular, benefits from grants extended in the framework of the Encouragement of Capital Investments Law. Tower Conductors, which is currently being built at a total cost of \$ 1.25 billion, received a grant of 20 percent of this, and a \$ 600 million grant was given to the Intel plant in Kiryat Gat, which was built at a cost of \$ 1.8 billion and caused the product and exports of the electronic components industry to soar. It is difficult to assess how worthwhile these grants are for the economy, and the conclusion depends to a great extent on the underlying assumptions. First, it is not clear what the lifetime of these plants is, and what the extent of their future activity will be; both of them produce using 0.18 micron technology, and the introduction of technology using 0.11 and 0.9 micron technology may make them obsolete in a relatively short time. Second, it is not clear how to relate to their direct wage payments: not all of them can be regarded as a contribution to the economy, as the personnel these plants employ have alternative employment options. Reference to wage payments depends on the business cycle and

The electronics
components industry
benefits from grants
given under the
Encouragement of
Capital Investments
Law.

Figure 1.14
Ratios of Total Factor Productivity and Labor Productivity to their Average in Selected Countries, Tradable Industries,^a 1999



^a Electronic components, electronic communication equipment, industrial control and monitoring equipment, medical and scientific equipment, textiles, clothing and footwear, leather and its products, plastic and rubber products, basic metals and metal products.

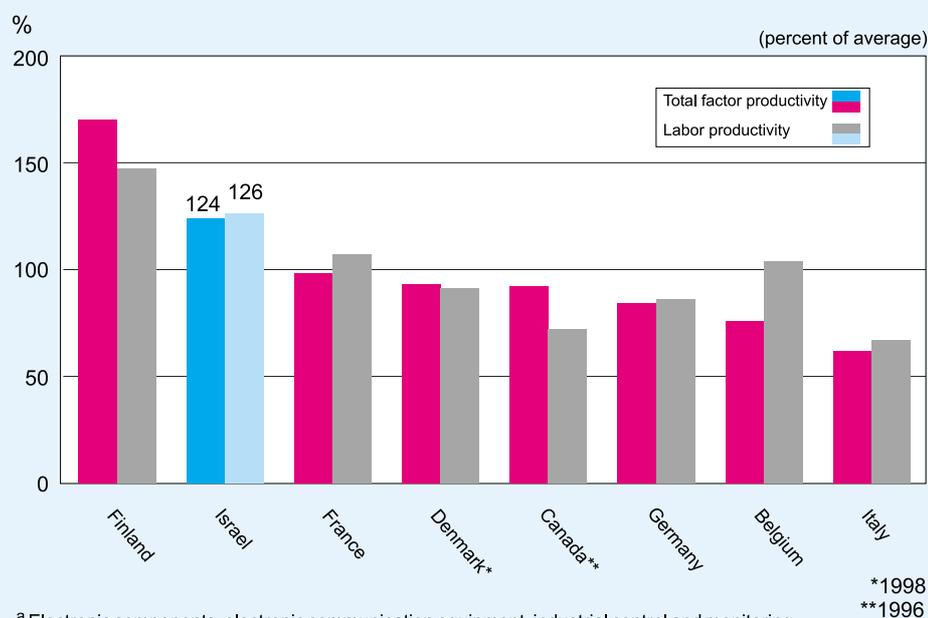
SOURCE: Based on Central Bureau of Statistics data and STAN—the OECD Structural Analysis Industrial Database.

the plant's geographical location. The establishment of a plant during a boom period will not increase employment of workers with a technological background, as unemployment is anyway low at such times. While a rise in demand does increase the return on labor, this comes at the expense of the return on capital (so that if the investors are residents, there is no increase in product). The establishment of a plant in a pocket of unemployment increases the probability that it will employ workers who would otherwise be unemployed, thereby making it more worthwhile to the economy. In addition to the direct wage payments, the plant buys goods and services from domestic suppliers; this constitutes a component of GDP but also of imported intermediates, and hence does not contribute to the economy.

In order to obtain a rough estimate of the contribution of the Intel plant in Kiryat Gat to the economy, we make the following assumptions: the share of the industry's domestic purchases is 21 percent of output (this estimate is based on the input-output schedule for 1995 for the electronic components and communications equipment industry); the domestic product component of these purchases is 50 percent (based on the share of GDP in total output in 1995); the growth in the number of employees in the industry in 1999–2001 stemmed entirely from the establishment of the plant (an additional 2,000 employees in 1999, 4,000 in 2000 and 2001, and 3,600 in 2002), and

A rough estimate of the contribution of the Intel plant in Kiryat Gat to the economy shows that the continuation of its activities at their present level until 2009 will make the government's investment worthwhile.

Figure 1.15
Ratios of Total Factor Productivity and Labor Productivity to their Average
in Selected Countries, Tradable Industries: Electronics,^a 1999



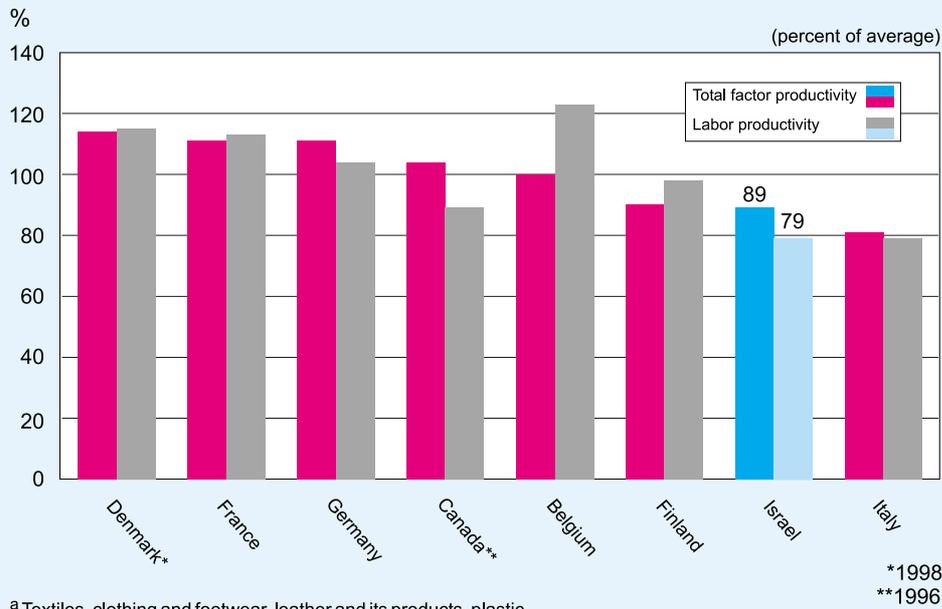
^a Electronic components, electronic communication equipment, industrial control and monitoring equipment, medical and scientific equipment.

SOURCE: Based on Central Bureau of Statistics data and STAN—the OECD Structural Analysis Industrial Database.

their wage was similar to the industry average. Given these assumptions, the total value added of the industry due to direct wage payments and domestic purchases amounts to an annual average of \$ 200 million in 1999–2002. As stated, the entire amount should not be imputed to value added due to the establishment of the plant. If we assume that the amount imputed is one-third of the total, this means that had it not been for the establishment of the plant the entire workforce currently employed there would be employed at a wage that is one-third less than its current wage, or that one-third of that workforce would be unemployed and the remaining two-thirds would be employed at the same wage. Under these assumptions, we find that the continued operation of the plant at its present level until 2009 will make Israel's investment in it worthwhile. If we impute only one quarter of the value added to the plant instead of the one-third assumed above, we find that the plant will be worthwhile to the economy only if it continues functioning at its present level until 2014 (assuming that the interest on the dollar is 4 percent). These estimates do not allow for corporate tax payments of 10 percent of profits paid by Intel-Kiryat Gat, which are not published and should be offset from the grant.¹⁸ Furthermore, we have not taken into account the fact that the establishment of the plant, training of workers, and development of associated industries in the area increases the chances of establishing another such plant in the future.

¹⁸ In addition, \$ 140 million was imputed on a one-off basis to the purchases item against the establishment of the plant, in accordance with investment in buildings in the industry in 1999.

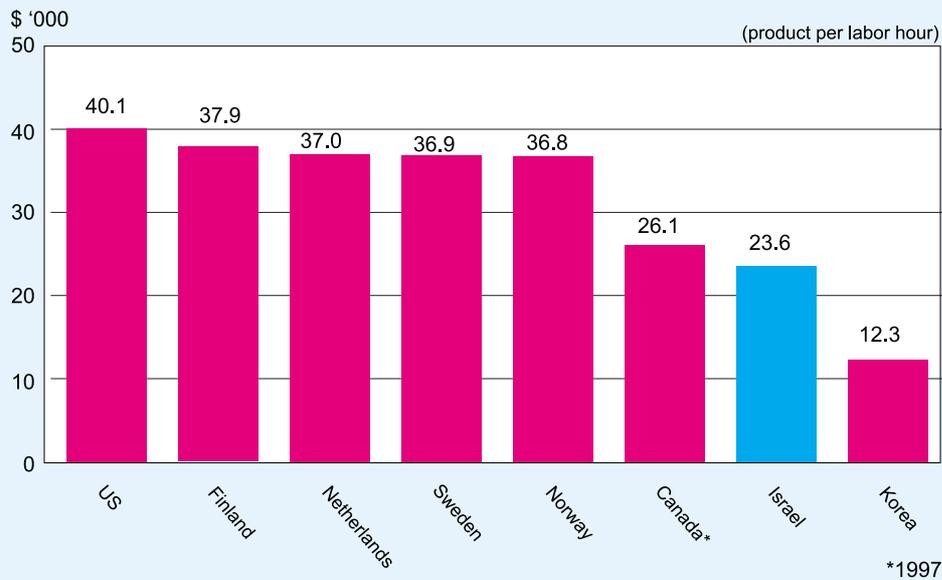
Figure 1.16
Ratios of Total Factor Productivity and Labor Productivity to their Average in Selected Countries, Tradable Industries: Traditional,^a 1999



^a Textiles, clothing and footwear, leather and its products, plastic and rubber products, basic metals and metal products.

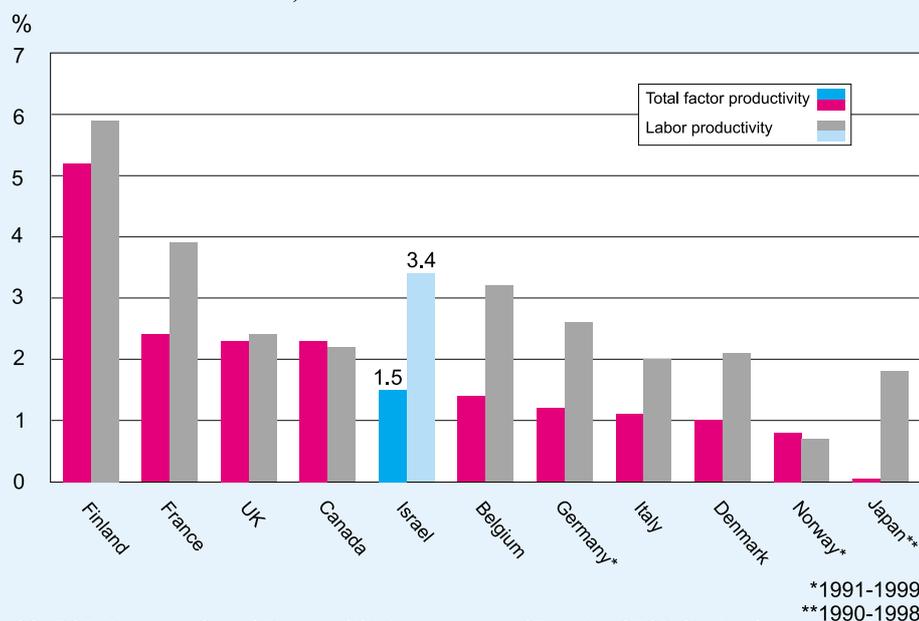
SOURCE: Based on Central Bureau of Statistics data and STAN—the OECD Structural Analysis Industrial Database.

Figure 1.17
Labor Productivity in Manufacturing in Selected Countries, 1999



SOURCE: Based on Central Bureau of Statistics data and STAN—the OECD Structural Analysis Industrial Database.

Figure 1.18
Annual Rate of Change in Total Factor Productivity and Labor Productivity
in Selected Countries, 1990–99



SOURCE: Based on Central Bureau of Statistics data and STAN—the OECD Structural Analysis Industrial Database.

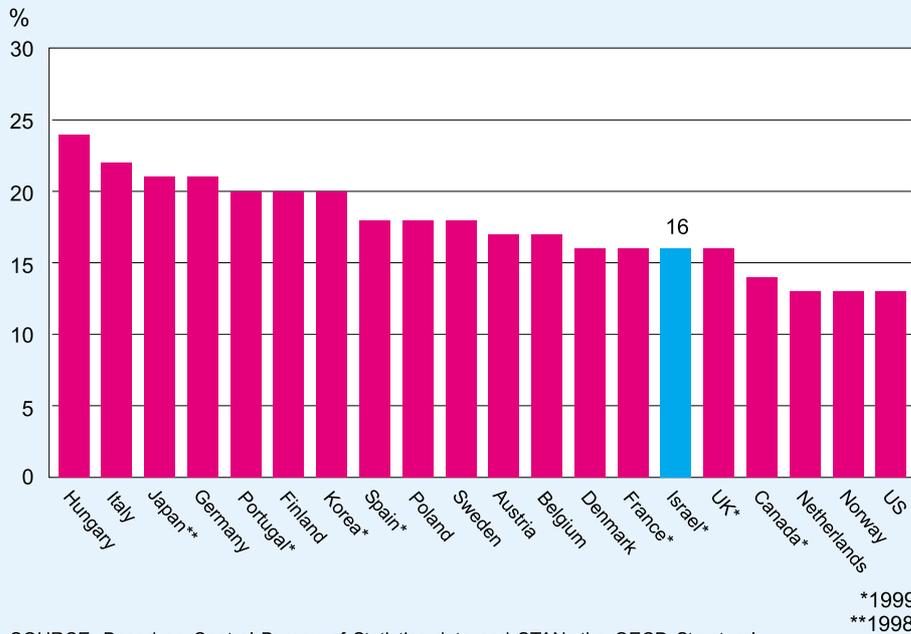
An international comparison of the main variables in manufacturing

Below we make an international comparison of product per employee, product per hour worked, and labor productivity in manufacturing.¹⁹ This makes it possible to assess the size of the gap in product per worker between Israel and the developed countries, as well as to examine the extent to which it derives from Israel's relatively low level of capital per worker. Note that the differences in TFP between countries stems from various factors, chief among them the quality of the human and physical capital available to the industry. Thus, for example, the high productivity in manufacturing is also influenced by the quality of the infrastructure; a lag in the extent and quality of the transport, electricity, and communications infrastructures holds manufacturing productivity back. Manufacturing productivity is also affected by government policy, so that if an industry is protected by subsidization or the prevention of competing imports productivity will decline, because the factor inputs available to manufacturing will not utilize their comparative advantage.

- Labor productivity in Israeli manufacturing amounted to \$ 47,000 in 1999—lower than in most developed countries, and in Israel it is 18 percent less than in Belgium, France, Finland, Denmark, Norway, Germany, Canada and Italy.
- An international comparison of TFP, i.e., product per unit of labor and capital, shows that it is only 11 percent lower in Israel than in the countries listed above.

¹⁹ Based on OECD, Structural Analysis Industrial Database (STAN), 2002.

Figure 1.19
Share of Employees in Manufacturing; an International Comparison, 2000

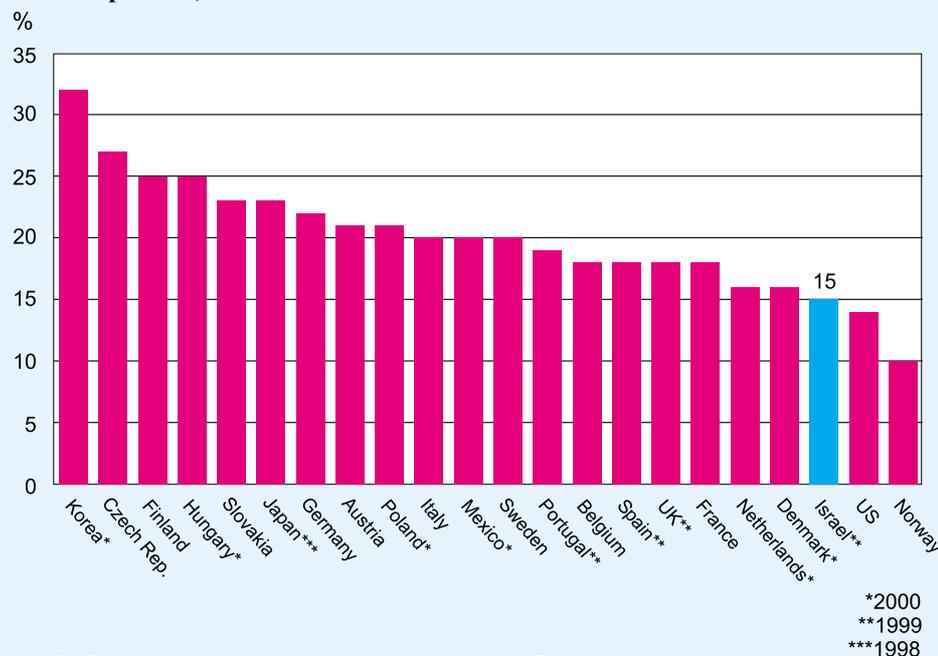


SOURCE: Based on Central Bureau of Statistics data and STAN—the OECD Structural Analysis Industrial Database.

Hence, capital stock per worker in Israel is relatively low, and this is one of the main reasons for the low level of labor productivity. Capital stock is measured by adding up all past investments; the problem with this measurement is that different countries attribute different lifespans to investments, so that differences in capital stock derive partly from differences in measurement. The number of years attributed to investment in equipment for the purpose of calculating capital stock is 14 in Israel, 15 in Belgium and Germany, 17 in Italy and Finland, 18 in France, 22 in Canada, and 25 in Denmark. If a longer lifespan were attributed to equipment in Israel, capital per worker would be higher and TFP lower.

- A comparison of labor productivity in selected manufacturing industries shows that its level in Israel is similar to the average in the countries mentioned. The comparison was made for advanced and traditional industries which have a relatively high level of tradability—electronics, textiles, clothing, footwear, leather, rubber and plastics, metals and metal products. Price differences between tradables are relatively small (according to PPP), while in less tradable sectors, such as mining and quarrying, food, beverages, printing and publishing, and oil refining, prices may vary for similar products. Tradables enable a more reliable comparison of labor productivity to be made, whereas for the less tradable sectors the comparison is biased because of price differences.
- A comparison of TFP shows that it is 9 percent higher in Israel's tradable industries than the average of the countries listed.

Figure 1.20
Share of Manufacturing Product in GDP; an International Comparison, 2001

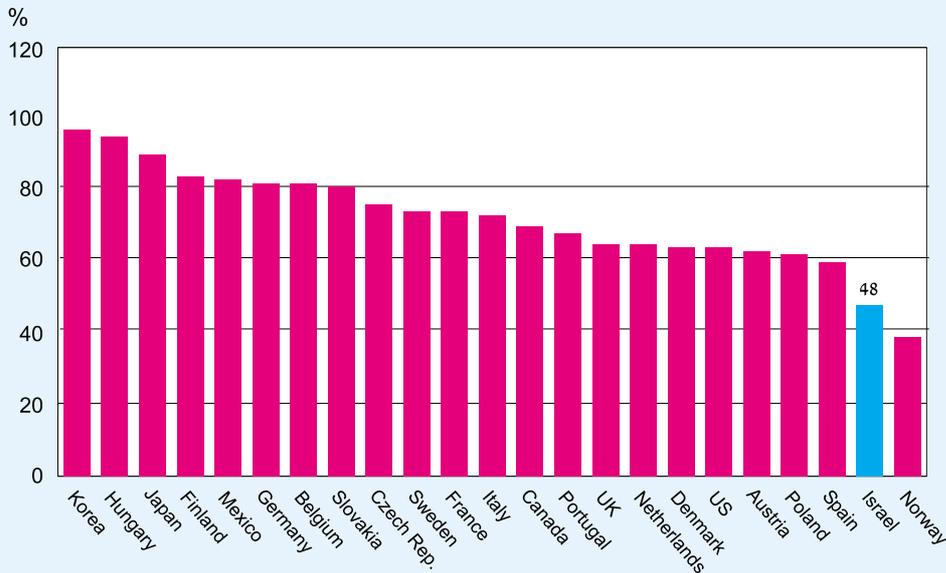


SOURCE: Based on Central Bureau of Statistics data and STAN—the OECD Structural Analysis Industrial Database.

- Labor productivity and TFP in Israel's electronics industry are 30 percent higher than the average of the countries listed, but the labor productivity and TFP of the other tradable industries—textiles, clothing, footwear, leather, rubber and plastics, metals and metal products—is 24 percent below the average of those countries. This is partly due to the low capital/labor ratio. When the amount of capital per worker is taken into account, TFP in these industries is only 13 percent below the level of the other countries. As stated, productivity in Israel's traditional industries is lower than in other countries, whereas in the electronics industry it is higher. Thus, when the nontradable industries, which are traditional, are excluded the relative position of Israel's manufacturing improves.
- The high level of labor productivity in Israel's electronics industry stems from the high level of its human capital: the proportion of graduates and professional and technical workers in it was 39 percent in 2000, compared with only 21.6 percent in the electronics industry in the US.²⁰ Output per worker in Israel's electronics industry was \$ 101,400 in 2000, compared with \$ 96,500 in the US.
- The number of hours worked per employee in Israel is high compared with other countries, so that Israel's position as regards product per worker ranking is higher than it is for product per hour worked; product per worker in Israel is 17.6 percent

²⁰ Data for Israel, CBS, *Labor Force Survey*, 2001; data for the US, Bureau of Labor Statistics.

Figure 1.21
Share of Manufactured Goods Exports (Excluding Diamonds)
in Selected Countries, 1999

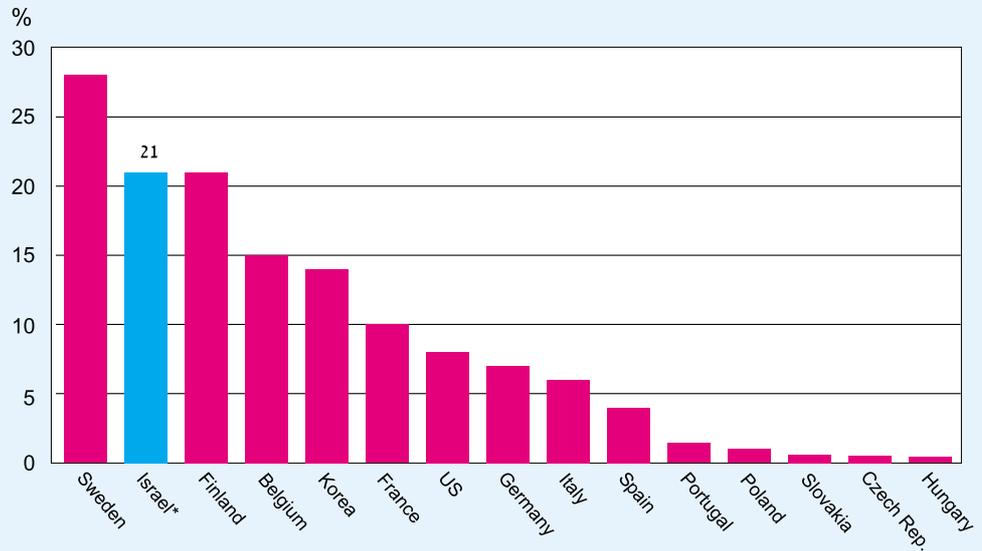


SOURCE: Based on Central Bureau of Statistics data and STAN—the OECD Structural Analysis Industrial Database.

lower in Israel than the average in the US, Finland, the Netherlands, Sweden, Norway, Canada, and South Korea, while product per worker (labor productivity) is 27.2 percent lower in Israel than in those countries.

- Labor productivity in Israeli manufacturing rose by 3.4 percent in 1990–99—more than in all the other countries except Finland (where there is also a large electronics industry) and France. The increase in labor productivity in Israel was partly due to the accelerated rise in the capital/labor ratio, as TFP increased by only 1.5 percent—slightly more than in Belgium, Germany, Italy, and Denmark, but significantly lower than in Canada, the UK, France, and Finland.
- A comparison of the proportion of persons employed in manufacturing and the share of manufacturing product in GDP shows that in Israel the share of persons employed in manufacturing is relatively low, as is the share of manufacturing product in GDP. In general, manufacturing product declines as per capita GDP rises, so that the low share of manufacturing product in Israel is surprising in view of its relatively low per capita GDP. The share of manufacturing exports in Israel's total exports is low in comparison with other countries. Israel's relatively high revenue from services exports (mainly software services) constitutes a substitute for manufacturing exports, making it possible to finance imports of manufactured goods—which is not the case in other countries, most of whose exports are of goods.

Figure 1.22
Share of R&D in Product of the Electronics Industry
in Selected Countries, 1999



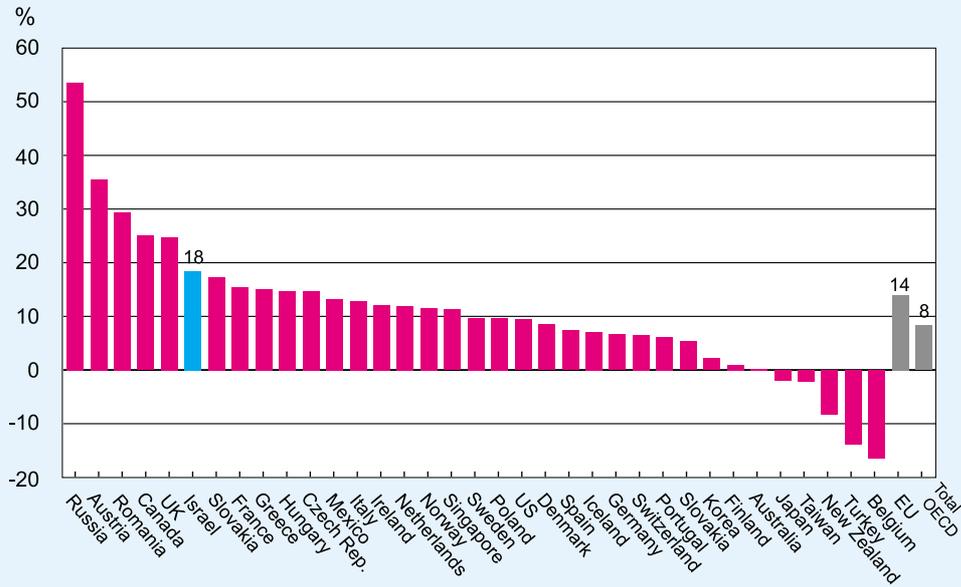
SOURCE: Based on Central Bureau of Statistics data and STAN—the OECD Structural Analysis Industrial Database.

*1998

- A comparison of the composition of the labor force in manufacturing between Israel and the US in 2001 shows that the proportion of graduates and professional and technical workers was 17 percent in Israel and 13.3 percent in the US.
- An international comparison of the share of R&D in GDP shows that Israel's electronics industry is characterized by a higher level of investment than most countries, and far higher than in France, the US, Germany, or Italy.²¹ The communications and medical and scientific equipment industries in Israel are particularly R&D-intensive: in 1997 and 1998 the share of R&D investment amounted to 30 percent of the product of the communications industry, and 20 percent in the medical and scientific equipment industry. Since R&D investment in Israel benefits from a considerable degree of subsidization under the Research and Development Law, its magnitude may serve to indicate that this is over-generous. In order to review the rate of R&D subsidization in Israel by international standards, we examined the extent of R&D not financed by the industry itself in total R&D, and found that the rate of subsidization in Israel is high, but not unusual for developed countries.

²¹ Data from OECD, *Main Science and Technology Indicators*, Vol. 1, 2002.

Figure 1.23
Rate of Subsidy on R&D in Manufacturing Industries, ^a an International Comparison, 2000



^a Ratio of R&D financed by the industry to R&D implemented by the industry.

SOURCE: Based on Central Bureau of Statistics data and STAN—the OECD Structural Analysis Industrial Database.

Box 1.3

The Encouragement of Capital Investments Law: the Disbursement of the Grant

The purpose of the Encouragement of Capital Investments Law is to encourage investment in the economy in general, and at the periphery in particular. The law offers entrepreneurs two alternative paths: grants or tax benefits. The total amount of benefits extended under the law (in both categories) is estimated by the Ministry of Finance at over NIS 2 billion a year.

The law, especially the grants path, creates several distortions:

- There is discrimination in favor of investment in manufacturing, agriculture, and tourism rather than in commerce and services.
- There is discrimination in favor of large businesses rather than of workshops and small businesses.
- Since only capital is subsidized, capital intensity is encouraged at the expense of labor (especially in the grants path).

- Studies have shown that the law leads to the rapid turnover of plants, which close down once their period of eligibility for benefits ends, and hence to instability of employment.

In addition to the above distortions, both the State Comptroller and the Investment Center found that many plants which received investment grants do not meet the program's employment terms. In the framework of the Arrangements Law, the Ministry of Finance proposed spreading the grant payments out over seven years and making the grant contingent on the recipient meeting his declared employment targets, but this has been rejected for the time being. The Ministry claims that setting conditions will provide a genuine incentive for entrepreneurs to employ workers in accordance with their commitment, as otherwise they will not receive the remaining 70 percent of the grant. The conditions could create other problems, however, forcing the Investment Center to be involved in firms' considerations regarding hiring and firing. For example, what should the policy of a firm be if demand for its product has contracted and it seeks to become more efficient by laying off workers? Or what should a firm do if demand for its product has fallen as a result of government policy, such as exposure to competing imports or a reduction in purchases by the Ministry of Defense? What penalty should be imposed on someone who employs 1—or 100—workers less than originally planned? This policy could oblige firms to act in an inefficient way simply because several years earlier—before demand for their products, the exact state of the industry, the economy, global demand, etc. had become clear—they had undertaken to employ a certain number of workers.

A simpler way of spreading grant payments out is to pay 30 percent of it at the initial stage, as the Ministry of Finance suggested, and at the second stage to disburse the grant as a percentage of the annual wage payments made by the entrepreneur to his employees. The extent to which wages were subsidized and the time-frame for disbursement could be determined in such a way that the change in the budget would be more balanced. Wages could be subsidized by granting indemnity for approved investments against tax payments to the National Insurance Institute—a negative payroll tax, as it were (payroll taxes are imposed on all labor payments made by employers). The proposed change would reduce the discrimination between capital and labor, as 30 percent of the grant would be extended for capital investment and 70 percent for wage payments, in line with the average capital/labor ratio of manufacturing product.

The traditional industries

The traditional industries, which account for 42 percent of manufacturing product, include food, beverages, tobacco, textiles, clothing, leather, paper, printing, non-metallic minerals, metals, basic metals, and engines and electricity distributors.²² The product of these industries was down by 2.6 percent in 2002, continuing the 4.8 percent decline in 2001. The contraction of product relative to 2001 reflects mainly the fall in 2001, as the drop in manufacturing production, which began in October 2000, was checked at the end of 2001, since when activity in these industries has stabilized. Most of the output of the traditional industries (87 percent) is intended for the domestic market, so that the recession and decline in demand of the last two years has had a marked impact on their product. The slump in domestic demand intensified in 2002, domestic uses (excluding defense imports, ships and aircraft) declined by 0.8 percent, after rising by 0.1 percent in 2001. The slowing of demand in 2002 was offset by real depreciation, which increased the price of competing imports, thereby halting the decline in the product of these industries.

The traditional industries employ 57 percent of manufacturing labor input. The number of hours worked was down by 4.7 percent in 2002, after falling by 6.6 percent in 2001. Here, too, the average decline reflects primarily the period from October 2000 to December 2001, when there was a 7.4 percent reduction in the number of hours worked; between January and September 2002 the number of hours worked dipped by only 1.2 percent. The number of hours worked in 2002 fell more steeply than product, so that labor productivity rose (by an average 1.4 percent over 2001), serving to increase profits in these industries. A further rise in profitability derived from the 1.8 percent decline in 2002 in real labor costs (to the employer). The increase in labor productivity, on the one hand, and the decline in real labor costs (to the employer), on the other, made it more worthwhile to employ additional labor input, thereby helping to check the decline in the number of hours worked and number of persons employed.

The traditional industries can be divided into two groups: those producing finished consumer goods and those producing intermediates. The industries most of whose output is of finished goods are food, beverages, tobacco, clothing, leather, and furniture. These industries are directly affected by the growth rate of private consumption. Table 1.15 gives the increase in production for the domestic market, current private consumption, and competing imports (every year is without its last quarter but with that of the preceding year). As the table shows, current consumption of the product of the clothing, footwear, and furniture industries rose notably in 2001, but plunged in 2002 due to the recession. Alongside the drop in demand, there was a significant

The decline in the production of the traditional industries, which began in 2000, was checked at the end of 2001, and since then their activity has stabilized.

The rise in labor productivity, offset by the decline in real labor costs, has helped to stop the reduction in the number of hours worked and of employees.

The real depreciation served to raise the price of imported consumer goods and caused a significant slowing in the growth rate of competing imports.

²² These industries were defined as traditional because the proportion of engineers, technical engineers, and other graduates employed in them is lower than the average in manufacturing, as is the case with their R&D investment.

Table 1.15
Rise in Production for the Domestic Market, in Current Private Consumption,
and in Competing Imports, 2000–2002

	(percent change)		
	Consumption	Imports	Production ^a
2000			
Total current domestic consumption ^b	3.3	11.7	0.8
Food, drink and tobacco	2.1	4.0	2.0
Clothing and footwear	8.4	20.0	-7.3
Furniture	2.4	23.0	6.6
2001			
Total current domestic consumption ^b	-0.1	14.3	-3.8
Food, drink and tobacco	0.4	9.2	-3.3
Clothing and footwear	9.3	30.9	-1.9
Furniture	13.3	14.4	-2.2
2002			
Total current domestic consumption ^b	-0.2	2.3	-1.8
Food, drink and tobacco	2.4	6.2	0.0
Clothing and footwear	-2.9	-1.6	-3.3
Furniture	-10.7	-6.6	-12.3

^a For domestic market only.

^b Changes in total current consumption, in the import of goods for current consumption, and in production for the domestic market of industries producing mainly for domestic consumption.

SOURCE: Domestic consumption: National Accounts. Imports: Foreign trade data. Production: Manufacturing indices. The data are not completely consistent.

deceleration of the growth rate of competing imports in 2002, which was 2.3 percent after reaching more than 10 percent in 2000 and 2001. The slowing of imports stemmed from real depreciation, which increased the price of imported consumer goods by 13.4 percent (January–September vis-à-vis the equivalent period in 2001), while prices of consumer goods produced domestically rose by only 3 percent in the same period. Despite the depreciation and the slower growth rate of competing imports, the long-term trend of an increase in the market share of competing imports at the expense of domestically manufactured goods, which continued to contract albeit moderately, persisted in 2002.

As stated, the deceleration in the growth rate of competing imports derived from the rise in their price relative to domestically produced goods and the slump in demand. Average nominal local-currency depreciation against the currency basket was 14.3 percent in 2002, whereas costs per hour worked rose by only 1 percent. Table 1.16 shows the reduction in the price of domestically-produced goods relative to those of imports. The price indices of the various industries do not correspond to the price indices of foreign trade, but their composition is similar in certain groups of goods. The table shows the cumulative increase in prices of domestic goods relative to imported ones. Between 1995 and 2000 the price of domestically-produced goods rose more steeply than that of imports, while in 2002 (until end-September) their relative price declined (except for cigarettes). The reduction in the relative price of domestic goods served to moderate the increase in imports in 2002, thereby preventing a steeper fall in manufacturing production.

The fall in the relative price of domestic products served to dampen the increase in imports in 2002, thereby preventing a sharper fall in manufacturing production.

Table 1.16
Index of the Ratio of Prices of Domestically Produced Goods
to Prices of Imports, 1995–2002

	(1995=100)		
	2000	2001	2002
Food	106.8	114.3	106.0
Tobacco and cigarettes	110.0	106.5	113.7
Clothing	118.7	112.1	95.3
Basic furniture	149.8	147.5	134.7
Books, newspapers and magazines	142.9	149.3	134.0
Perfumes	143.4	136.2	123.0

SOURCE: Based on Central Bureau of Statistics data.

Most notable among the traditional industries that manufacture intermediates are those producing raw materials for the construction industry—quarrying of stone and sand, wood and metal products, and mineral products such as glass, ceramics, cement and plaster—the revenues of which amounted to 7 percent of total manufacturing revenue. The output of these industries is closely connected with that of the construction industry, as their exports are negligible. Their output remained unchanged in 2002, although construction output fell by 3.6 percent. This contrasts with 2001, when the output of the industries producing for construction fell more steeply than that of the construction industry (11.9 percent vis-à-vis 9.2 percent). This development stemmed largely from the cement industry, which accounts for one third of the activity of the industries producing for construction: the market share of domestically-produced cement declined from 98 percent in 1999 to only 80 percent in 2001, and rose again to 85 percent in 2002. The increase in the market share of domestically-produced cement in 2002 could be due to the real depreciation, as its price hardly rose, though there may be other reasons, such as difficulties in importing cement from Jordan (because of the security situation), or the policy of the Ministry of Industry and Trade, which protects domestic producers. In mid-2002 the Ministry decreed that the import of cement from Turkey, Romania, and Jordan was tantamount to dumping, i.e., the price of the imported cement was lower than its price in its source country. In 2003 the Ministry of Industry

In 2003 the Ministry of Industry and Trade decided to ban imports of cement at below a minimum price determined in accordance with the production costs of the domestic monopoly, irrespective of the price of cement in the exporting countries.

Table 1.17
Factor Inputs, Productivity, and Cost Per Hour Worked
in Traditional Industries, 1990–2002

	(rate of change, percent)				
	1990–1996	1997–1999	2000	2001	2002
Production	6.5	−0.7	1.6	−4.8	−2.6
Real labor cost to employer	2.4	1.0	4.7	6.0	−1.9
Labor productivity	2.2	1.6	2.2	1.9	1.4
Hours worked	4.2	−2.2	−0.6	−6.6	−4.0
Capital stock	5.8	4.0	4.0	2.3	1.7
Total factor productivity	1.6	−1.0	0.4	−1.7	−0.9
Investment	−4.3	−3.0	12.9	−16.5	−8.9

SOURCE: Based on Central Bureau of Statistics data.

Table 1.18
Share of Imports in Selected Groups of Product, 1994–2001

	Share of imports in domestic uses		Price change relative to CPI (%)	Change in employment 1994–2001 (%)
	1995	2001		
Bedding and other textiles	31.0	93.0	–30.5	–27.9
Knitted fabric and clothing	10.0	58.0	–30.5	–41.9
Swimsuits and underwear	10.0	88.0	–30.5	–19.3
Shoes and leather goods	37.0	67.0	–32.2	–65.0
Sawmills and plywood production	39.0	67.0	–9.0	–65.0
Furniture	35.0	96.0	–10.8	–12.5
Games, toys and office equipment	10.0	46.0	–15.1	–50.3
Paper and carton	38.0	68.0	–	–1.8
Plastic pipes and panels	44.0	65.0	–32.2	0.6

SOURCE: Based on Central Bureau of Statistics data.

and Commerce decided to ban cement imports below a minimum price set in accordance with the production costs of the domestic monopoly and irrespective of the price of cement in Turkey, Romania, or Jordan.

Most of the product of the metals and basic metals industries is destined directly or indirectly for investments: a large part of the output of the industry serves construction, some is used in producing cutting tools which constitute firms' investment goods, and yet another part is used as raw material in industries producing investment goods (machinery and equipment, electric motors, and electric distribution apparatus). The 2.1 percent decline in the activity of the metals industry, and 8.6 drop in basic metals, as well as the 7.8 percent fall in machinery and equipment and 2.8 percent dip in electrical engines were affected by the 9.3 percent contraction of investment in equipment in the principal industries. Despite the steep drop in investment in machinery and equipment, investment in domestically-produced machinery and equipment went down by only 1.2 percent. Thus, the sharp fall in the growth rate of imports and stabilization of sales by domestic manufacturers encompassed both investment and private consumption.

In the framework of the process of exposure to competing imports, tariffs on cheap-labor-intensive products, such as clothing, furniture, and cosmetics, were lowered, as were those on raw materials such as wood, iron, steel, glass, and ceramics. Concurrently, free trade agreements were signed with cheap-labor-intensive countries, such as Mexico, Poland, Hungary, and Turkey. The reduction of the tariffs revealed how uncompetitive it is to produce such goods in Israel. The increase in real labor costs (to the employer), on the one hand, and the rise in competing imports, on the other, led to the reduction of domestic production and the dismissal of employees from the traditional industries. In general, the process of exposure improves welfare, provided the workers who are laid off move to other industries. In this instance, however, the process was accompanied by a rise in the unemployment rate of unskilled workers, so that their chances of finding work elsewhere were slight—this applied especially to older workers. Nonetheless,

Despite the sharp drop in investment in machinery and equipment, investment in domestically produced machinery and equipment declined by only 1.2 percent.

In the traditional industries, which were exposed to competing imports from countries with plentiful cheap labor, prices fell significantly, as did the number of employees.

Table 1.19
Share of Imports from Third Countries, 1995–2001

	Share of groups of products in imports (%)	Share of imports from third countries	
		1995	2001
Base metals and articles of base metal	6	29.3	40.2
Textiles and textile articles	5	25.4	57.0
Plastics, rubber and articles thereof	4	18.2	24.1
Wood pulp, waste and scrap paper, paper and paperboard and articles thereof	2	12.0	21.4
Miscellaneous manufactured goods	2	19.3	32.2
Articles of stone, plaster, cement, asbestos, ceramics, glass etc.	2	11.0	31.7
Wood, charcoal, cork; articles of straw and wickerwork	1	22.3	31.5
Footwear, headgear, umbrellas, artificial flowers etc.	1	23.5	48.2

SOURCE: Based on Central Bureau of Statistics data.

the exposure process was useful in that it prevented new workers being taken on and additional investment being made in industries where Israel does not have a comparative advantage. As Table 1.18 shows, there was a marked rise in the share of imports in the group of products in the clothing, textile, footwear, leather, and plastics industries; in those industries prices fell significantly, as did the number of persons employed. In the plastic boards and pipes industry, as well as in paper and cardboard, imports rose while employment remained stable.

Since the beginning of the exposure process, the share of imports from third countries in Israel's total imports has risen, and the share of imports from countries other than the US, the EU, and Japan has grown from 25.9 percent in 1995 to 32.4 percent in 2001. Although the increase in imports from third countries crowds out domestic producers, it enables trade to be diverted from developing countries—whose imports are expensive—to cheaper ones, thereby increasing welfare without harming domestic manufacturers. Table 1.19 shows the rise in the share of imports from third countries in the groups of goods also produced in Israel.

The mixed industries

The mixed industries are chemicals, oil refining, transport vehicles, rubber and plastics, machinery and equipment, mining and quarrying, and *objets d'art*. These industries account for approximately one third of total manufacturing production, employing about a quarter of manufacturing labor inputs. In the last two years the situation of the mixed industries has been far better than that of both the traditional industries and the electronics industry. Whereas the product of the other industries has been falling, that of the mixed industries has grown consistently. In 2002 it rose by 4.4 percent, and domestic sales of these industries were up by even more—5 percent. Particularly impressive growth was evident in chemicals in 2002; production of industrial chemicals and fertilizers grew by 10.5 percent, paints and lacquers by 5.3 percent, and

The increase in imports from third countries crowded out domestic producers, but also enabled trade to be diverted from the developed countries, whose imports are expensive, to cheaper ones.

The product of the mixed industries rose by an impressive 4.4 percent in 2002, and their sales to the domestic market grew even faster, by almost 5 percent.

Table 1.20
Mixed Industries: Production, Exports, Domestic Sales and Labor Input, 2002

	Share in manufacturing output	Increase in production	Real increase in exports	Increase in production for domestic market	Increase in hours worked
Mixed manufacturing	32.1	4.4	6.4	3	-0.4
Chemicals and oil	11.6	9	12.2	7.1	1.8
Transport equipment	6.1	-0.1	12.4	-21.6	-3.7
Plastic and rubber	6.6	8.4	3.5	11.7	1.3
Machines and equipment	3.5	-7.8	-13.0	-5.7	-3
Mining and quarrying	2.9	7.6	0	15.8	7.9

SOURCE: Based on Central Bureau of Statistics data.

pharmaceuticals by 13.6 percent. Production for the domestic market expanded markedly in the rubber and plastics industry, and manufacture of plastic sleeves and sheets soared by 24 percent. In the transport vehicle industry manufacture of sailing vessels, aircraft, and other transport equipment was up by 1.8 percent, but this was completely offset by the 1.5 percent decline in production of motor vehicles, bodies for motor vehicles, trailers, and semi-trailers.

Alongside the impressive increase in the product of these industries in 2002, there was a notable decline in real labor costs (to the employer), so that it became more worthwhile to employ workers and offset the steep increase in this cost in 2001. This rise in product together with the more moderate expansion of capital stock and slight dip in labor inputs led to an increase in factor productivity (TFP). The rise in productivity in the short term should be regarded as better utilization of capacity, after this had declined in 2001, rather than as the expression of an improvement in technology and human and physical capital, as these would be reflected by a rise in productivity only in the long term. The marked increase in product alongside the moderate expansion of labor input in the chemicals and oil industry and the rubber and plastics industry could indicate that firms regard the marked rise in demand as a merely temporary improvement.

In the chemicals and oil industry, as well as in rubber and plastics, product rose steeply, while labor input increased only moderately.

Table 1.21
Factor Inputs, Productivity, and Cost Per Hour Worked
in Mixed Industries, 1990–2002

	(rate of change, percent)				
	1990–1996	1997–1999	2000	2001	2002
Production	7.0	1.9	4.2	0.5	4.4
Real labor cost to employer	2.0	0.1	-3.7	7.1	-2.9
Labor productivity	3.2	3.6	1.8	1.6	4.8
Hours worked	3.7	-1.6	2.4	-1.1	-0.4
Capital stock	7.2	6.8	4.8	3.9	3.4
Total factor productivity	1.8	0.1	0.8	-0.4	3.2
Investment	-7.1	5.6	2.9	-7.3	-3.4

SOURCE: Based on Central Bureau of Statistics data.

Box 1.4**The Defense Industry in Israel and Abroad in the 1990s**

The global arms industry is regarded as being of strategic importance over and beyond its economic significance. The conclusion of the Cold War has reduced the threat of a military conflagration and dampened the demand for weapons. The division between the arms market in the east and the west has also been canceled, and the strategic importance of the arms industry has lessened. The Warsaw Pact has vanished and arms purchases by the NATO countries plummeted by a real 40 percent between 1987 and 2001 (all the data in this box are taken from SIPRI.¹ The downward trend has undoubtedly changed since September 11, 2001, but we do not have recent figures). The defense industries in the west, which functioned under government supervision and control, have had to contend with the decline in their strategic importance, the fall in world demand, the growing emphasis on the privatization of government corporations, and the rapid development of the internet as a means of communication.

The contraction of both global demand and the strategic importance of weapons has obliged these industries to become more efficient, as a result of which they have become more concentrated, international cooperative ventures have developed, and privatization has begun. The increase in concentration in recent years stemmed to a great extent from the US Administration's strategic decision to focus on economies of scale and produce a single model (e.g., of fighter planes). The higher concentration was also expressed in a series of mergers and acquisitions on an international level, in consequence of which the market share of the five major arms manufacturers rose from 22 percent in 1990 to 42 percent in 2000.

Cooperation between the arms industries of Europe is increasing, as they endeavor to become a counterweight to US firms. The need for integration has superseded the desire to preserve proprietary technology, and in an attempt to increase efficiency and reduce costs the arms industries of the UK, Italy, Spain, and Australia have undergone a series of privatizations, while large segments of France's arms industry are still government-owned. The reduction of the market share of government firms in the arms industry was supported by the technological revolution, which has enabled private telecommunications firms to compete successfully with veteran companies for military contracts.

In view of the rise in efficiency and decline in demand in the global arms industry, Israel's arms industry appears to have succeeded in increasing its share of the world market, at least as regards the principal conventional weapons systems. Although Israel's exports of these systems dipped in the

¹ *Stockholm International Peace Research Institute Yearbooks*, 1985–2002.

late 1980s, this is consistent with the fall in the extent of global trade in general in that period. In the first half of the 1990s Israel's exports grew, while the extent of global trade remained unchanged; since 1997 global trade has contracted, also affecting Israel's exports. World weapons trade contracted by 60 percent between 1985 and 2001, whereas Israel's exports contracted by only 35 percent in that period.

Israel's military industry coped with the decline in demand primarily by reducing the number of its employees, shifting to production for the civilian market, and making structural changes—increasing the share of skilled-human-capital-intensive defense industries at the expense of the traditional defense industries, the underlying rationale being that the contraction of demand impacted more on conventional weapons systems than on high-tech ones. The Military Industry (Ta'as), which in the past had manufactured low-tech products, slashed its workforce by two thirds in the course of a decade—from 12,000 to 4,100 workers. It also began to develop high-tech products, such as missiles for tanks and airplanes. The workforce of Rafael (the Armaments Development Authority) was also reduced, albeit less steeply (by 28 percent), as was that of the Israel Aircraft Industry (IAI), by 13 percent, both of which manufacture high-tech products. IAI increased production for the civilian market from 20 percent at the beginning of the decade to 40 percent at the end, in response to the decline in demand from the military. The extent of the combined sales of the IAI and Ta'as, which are government corporations, and of Rafael, which is a support unit of the Ministry of Defense, fell from \$ 2.5 billion at the beginning of the 1990s to \$ 2.3 billion in the mid-1990s, then rose again to \$ 3.4 billion in 2000. In spite of the increased scope of sales (in current dollars) during the decade, the number of workers fell by 30 percent, so that sales per worker rose markedly. The share of sales to the civilian market also grew—from 10 percent at the beginning of the decade to 27 percent at its end. In the wake of these processes the IAI and Ta'as moved out of the red at the beginning of the 1990s to profitability at the end of the decade. In 2000 and 2001 new orders from the IAI soared, to \$ 3 billion, and sales amounted to \$ 2.1 billion a year. Hence, in the last two years the stock of orders has accumulated to a level of \$ 4.5 billion.

In addition to the defense industries which are closely connected with the government, large private firms, such as Elbit, which purchased El-Op, are also active in this market. The combined company employs 4,000 workers. This merger, which took place in 2000, as well as that between Elta, which belongs to the IAI, and Elisra in 2002, and the cooperation between the IAI and Elbit in tenders abroad, indicate that Israel's defense industry is following the global trend of cooperation and mergers. In contrast

with Europe, however, government corporations in Israel have not yet been privatized, and the government-owned IAI even purchased 30 percent of Elisra, which is a private company.

3. Agriculture

The product of agriculture rose by a moderate 0.9 percent in 2002 (Table 1.22), alongside a decline in exports. Agricultural output dipped by 0.3 percent, and inputs declined by 1.3 percent. The industry accounted for 2.7 percent of business-sector product in 2002, and the number of persons employed in it remained virtually unchanged.

In the last few years the growth rate of agricultural product (excluding afforestation) has been slightly higher than that of the population: in 1997–2002 agricultural product rose by an annual average of 3.7 percent, while the population grew by 2.3 percent. Domestic demand for agricultural product has risen in step with population growth, and the effect of the recession on it has been limited. Because of administrative restrictions, most imports of agricultural products are in categories not produced in sufficient amounts in Israel.²³

Production for export, which constituted 20 percent of agricultural output, similar to its rate in previous years, fell by 6.5 percent in volume terms. Most exports were of crops, which are subject to wide fluctuations, but most of the decline in 2002 was due to the long-term downward trend of citrus exports, which intensified this year because of accelerated uprooting of orchards. This development has expanded, for several reasons: the greater alternative return on land in the Sharon region, the higher price of water, and the erosion of prices. Despite the volume reduction, export revenues have risen as a result of the price rise due to local-currency depreciation.

The long-term trend of deterioration in the industry's 'terms of trade' and increase in productivity persisted in 2002. The price of agricultural input continued to rise more steeply than that of agricultural output, exceeding the rate at which the CPI rose, primarily because of the increased cost of water to agriculture, while prices of output fell more sharply than the CPI. Labor input in the industry declined by 0.8 percent in 2002, capital input rose by 0.4 percent, and total factor productivity (TFP) was up by 1.2 percent. Labor productivity in agriculture in the short run is subject to marked shifts due to inclement weather, although its long-term impact is small. In 1995–2001 labor productivity rose by an annual average of 4.1 percent—far beyond its increase in the business sector. This was due *inter alia* to the reform of the livestock industry—which is internalizing economies of scale—and the shift to larger farms in other industries; output has risen by 7 percent in the last three years, while the number of agricultural enterprises has fallen by 4.1 percent, with considerable substitution.

²³ Except for imports from the Territories, most of them vegetables, which account for a relatively small proportion of agricultural imports.

The product of agriculture rose by a moderate 0.9 percent in 2002, alongside a decline in exports. Agricultural output dipped by 0.3 percent, and input by 1.3 percent. The number of persons employed remained virtually unchanged.

Production for export, which constitutes some 20 percent of agricultural output, declined by 6.5 percent in volume terms.

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