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EXCESS CAPACITY - MEASUREMENT, CAUSES AND USES: A CASE STUDY OF SELECTED INDUSTRIES IN ISRAEL 1/

by

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1/ The views and opinions expressed in this paper are those of the consultant and do not necessarily reflect the views of the secretariat of UNIDO.

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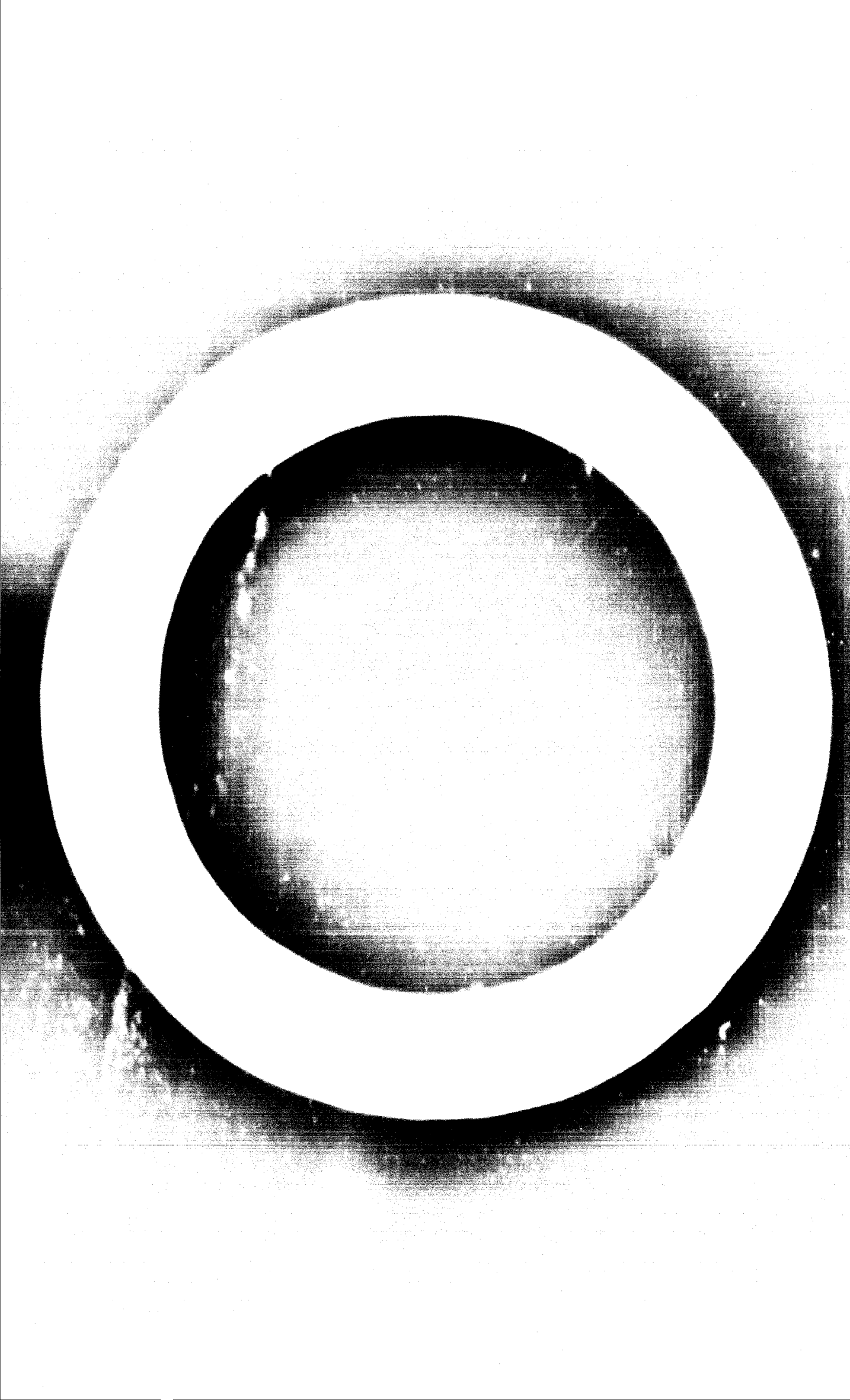

I [redacted] CAPACITY - MEASUREMENT, CAUSES AND USES

Wastes of excess capacity

1. "Paucity of capital" is probably as good a definition of economic underdevelopment as any other. The amount of capital at the disposal of an economy is not only the main determinant of its current capacity to produce goods and services, but also of its capacity to grow over a period of time. The growth capability of an economy is primarily a function of its ability to accumulate and of its technical progress, and both of these depend on the intensity of the use of capital.

2. The waste of resources implicit in a less than full utilization of productive capacity - full utilization being defined as the output at which average costs are at their minimum - is obvious and has long been of major concern to those dealing with economic theory and policy. It is equally obvious that the waste of resources is worse, the greater the scarcity of capital. Lack of capital and inadequate capital formation, together with unemployment and underemployment of the available labour force, are typical characteristics of most developing countries, which can least of all afford the underutilization of their productive capacity.

3. In the developing countries, the problem of underutilization of capacity is further aggravated by the effects it has on the external position and technical progress of the country. Investment in the developing countries is highly import-dependent, for one of the hallmarks of a developing economy is its inability to produce domestically the capital goods required for the introduction of modern industrial methods of production. These capital goods, which embody much of the modern technology the developing countries must adopt if they wish to accelerate their economic development, must be imported from the more advanced countries. The scarcity of capital is thus compounded by the scarcity of foreign exchange, and both are made scarcer by underutilization of capacity. Even more serious is the fact that where domestic market conditions prevent the full utilization of capital and capacity, the capital could often be diverted, partly or wholly, to production for exportables. Thus, not only does the developing economy incur the waste of part of its capital goods that have to be imported for scarce foreign exchange, but possible earnings of foreign currency are forgone.

Retardation of technical progress

4. The effect of underutilization of capacity on technical progress is equally detrimental, and possibly worse in the long run. Capital goods are durable and their lifetime is primarily a function of the intensity of their use and of obsolescence. Underutilization prolongs the physical lifetime of installed capacity, and hinders the renewal of obsolete equipment and the introduction of more advanced production methods. It is not only that the continued existence of technically efficient equipment retards renewal as such, but it also slows down the entire process of technical progress. The renewal of productive facilities and the technical progress that goes with it is generally a gradual process, in which parts of a productive set-up are replaced as they wear out or become obsolete. The new components of the productive set-up are generally selected so as to fit in with the old, still serviceable parts, and only rarely is an entire plant scrapped to make way for a completely new system. The closer together the actual or anticipated wear-out of the different parts of a productive set-up, and the greater the coincidence between physical wear-out and obsolescence, the more rapid will be the rate of renewal of the complete productive system.

5. Technical progress tends to change the different processes and the types of equipment that go into them, which together simultaneously constitute an integrated productive system. A rate of renewal which, because of underutilization, is largely paced by the physical wear-and-tear of capital goods, will therefore not only be slower, but will also tend to lead to inefficiencies in the use of the new and better capital goods. The output of which these may be capable, in terms of quantity and/or quality, may not be fully realizable because the complementary facilities are incapable of the same standards of performance. Underutilization will thus lead to further underutilization.

6. This extension of the rate of renewal, which is one result of the underutilization of capital equipment, has the additional effect that it tends to reduce the flexibility of an economy's productive system, and to prevent further expansion into processes and products related to those initially established. Where renewal is gradual and piecemeal, and capital goods are specific to certain processes and products, the possibilities of switching to new products are reduced in comparison with a more rapid and more system-wide rate of renewal. Competitive power is to a large extent the ability to progress from traditional

processes and goods to newer methods and, particularly, to newer products. The retardation of the rate of renewal inhibits these changes, so that even if production catches up with capacity, the opportunities for rapid change are often missed.

7. These implications of underutilization of capacity for the developing countries are obvious. They are all the more serious because the wastes of excess capacity in terms of the current use of resources are much better known than their bad effects on growth and technical progress. It is, however, the latter aspects that are probably most important for the developing countries. The technical gap from which these countries suffer [illegible], compared with the industrially advanced countries, is relatively substantial, and is being continually increased, because an inadequate utilization of their equipment prevents them from availing themselves fully of the opportunities for accelerated growth presented by the technical progress generated in the industrially advanced economies. The technological gap in the developing countries tends to increase, for this as well as for other reasons, and their competitive power vis-à-vis the developed countries is impaired, a factor which in turn influences their growth capability.

8. It is therefore surprising that despite all the preoccupation of development literature with the need of the developing countries for capital, and consequently with the necessity of husbanding it and allocating it so as to promote growth, the problem of excess capacity has received so little attention. With the sole exception of India, no developing country has made a systematic attempt to deal with this problem and to compile statistics of the rate of capacity utilization as a tool for economic policy in general and for investment decisions in particular. The data that do exist are fragmentary and unreliable, and are generally the by-product of specific industry studies where the existence of excess capacity may, in acute cases, come to the forefront.

9. Part of the explanation for this neglect is probably to be sought in the predilection of most of the current economic literature for a static approach, and its disregard of the structural aspects of the growth process, some of which will be discussed later. Another part of the explanation lies no doubt in the conceptual difficulties encountered in defining capacity and, given an adequate definition, in the practical problems of measurement.

[illegible]

[illegible] The concept of capacity is a highly elusive one. It is basically a technical concept, and [illegible] unambiguous only for completely homogeneous products made by identical equipment [illegible]. The engineer's notion of capacity is highly different from the economist's. The [illegible] definition, again, changes with the length of time [illegible] and with the assumptions made about [illegible] and about the [illegible] conditions [illegible] capacity in [illegible] of equipment, however these may be defined, cannot be added up to yield the capacity of a plant, and the capacities of individual plants cannot be summed to give an estimate of capacity [illegible], or one cannot total the capacities of firms [illegible] industry as a whole, or the capacities of industries [illegible] the economy as a whole.

Despite the difficulties of definition and measurement, the [illegible] evidence that the productive capacity of [illegible] is [illegible] larger than its [illegible] capacity are employed, [illegible] that the existing [illegible] considerable proportions. In recognizing that [illegible] although it is hard to define [illegible] with precision, various attempts have been made to provide [illegible] supply policy with a firmer [illegible]. The [illegible] is probably the definition of capacity based on the highest output achieved in some past period, measured in value terms at constant prices, [illegible] definition, the use of which is described in [illegible], and the number of additional workers employable with the existing capital stock as an estimate of excess capacity in terms of employment. [illegible] method is firmly grounded in empirical [illegible], but it takes the existing productive structure for granted and tends to underestimate capacity on that account alone. Moreover, as the rate of growth is rapid compared with the degree of underutilization, the use of some past peak output as the measure of full capacity is not always valid. Most other methods necessarily rely on replies to

[illegible] crude and imprecise nature of [illegible] their preparation and prevent their [illegible] of any estimates, the tendency to [illegible] is strengthened, and the better under- standing [illegible]

[illegible] capacity

1[illegible]. [illegible] to analyse the diverse causes of [illegible] own context. The short- [illegible] integrated explanation of the [illegible] from the theory of economic [illegible] excess capacity – in the [illegible] more of its present [illegible] proportionate increase of [illegible] plant and equipment, which imply that [illegible] demand, thus incurring a temporary [illegible] shortages of [illegible] of labour; and [illegible] that lead to the setting of output [illegible] for each of the participant firms separately and for all firms considered together.

11. [illegible] can be regarded as specific [illegible] from unbalanced growth of different [illegible] difficulties leading to shortages of [illegible] of this kind are often [illegible] on the supply as well as on the demand side. An industry may find [illegible] of the supplies it would need for the full [illegible] of its capacity, because the quantity of supplies needed for this additional [illegible] for the establishment of an additional productive unit, just as the [illegible] of its own plant and equipment may dictate the [illegible] demand for its output. [illegible] of these causes of excess capacity may be regarded as the necessary [illegible] of growth, and although they may be persistent, they can [illegible] be viewed, at any given point of time, as temporary in nature. Continued growth tends to absorb such excess capa- city, although new surplus capacity may always appear as industry expands.

14. Of far greater importance in the final analysis is the third cause of capacity underutilization. Not only is the existence of monopolistic and oligopolistic output restrictions a structural characteristic which, far from being temporary, tends to perpetuate itself, but in the conditions of a developing economy, it may have particularly harmful consequences for the process of growth. Although there is a vast body of literature dealing with the problem of imperfect competition in its various ramifications, hardly any of it relates to the process of growth, and even less to the problems of industrial development in the less developed countries. In view of this lack of attention to what seems to be a major problem, a brief discussion here is justified, particularly by way of introduction to the description and analysis of excess capacity in Israel, in which oligopolistic market structures are the dominant feature of manufacturing industry.

15. A developing country typically introduces modern industrial methods through the implantation of imported technologies. In fact, "technological dependence" is a valid definition of industrial underdevelopment, for a developing economy is characterized, among other things, by its comparative inability to produce the capital goods it needs for its economic growth. The process of capital formation has not only the quantitative and aggregative aspect of the over-all allocation of income between savings and consumption, but also a physical-technical aspect: the capacity to produce capital goods. The importance of real capital formation, in the technical-physical sense, becomes evident as soon as one considers the widely observed phenomenon that the savings ratio as such is often quite substantial in the developing economies. It is therefore not the lack of savings that is the chief impediment to growth, but the structural incapacity of the developing economy to form real capital, as a result of which savings are often diverted to unproductive uses.

16. This deficient capacity to produce capital goods makes the developing economy dependent upon the technologies developed in the industrially advanced economies. Thus modern technology is to a large extent embodied in plant and equipment which, being produced primarily for the markets of the advanced economies, is adapted to their scale of production and to their factor proportions. In the advanced economies, the scale of production has been continuously rising, and the design of the capital goods currently produced not only reflects this steady increase, but promotes it through technical progress in the capital-goods sector itself. In the process of competition, the latter constantly and successfully strives to

offer to its customers - the users of equipment - greater efficiency and lower costs, generally at the price of a larger scale of output.

17. In the advanced countries, with their vast markets, this rise in the scale of production does not necessarily lead to an increase in the degree of concentration, although in practice this is often the by-product of technical progress. Where individual plants are but a small fraction of the market, and the market keeps expanding, the growth of the average size of plant may not exceed the overall expansion of the market, and the competitive structure may remain unaffected. Not so, however, in the developing economies. Their domestic markets are, even in the larger developing countries, no more than a fraction of the internal markets of the developed countries.

18. This small size of the market has the result that the introduction of modern production methods - often even where the smaller among the feasible plant sizes is chosen - immediately creates a highly concentrated market structure. A situation thus arises where monopoly and oligopoly - particularly the latter market structure - emerge from the very beginning of the process of growth and not, as in the industrially advanced countries, as the end result of a long process of competition in which a high level of technical efficiency is achieved.

19. Even where the sheer size of the initial market permits a scale of operation comparable with those common in the industrially more advanced countries, the industrialization of the less developed countries typically proceeds by adopting the smaller among the feasible plant sizes. The reasons for this are numerous and diverse, chief among them being a high degree of uncertainty, lack of organizational and technical capability on the part of entrepreneurs, and small size of individual capital accumulation. A discussion of such problems is beyond the scope of the present paper.[2/] The small size of plants that nevertheless are parts of highly concentrated market structures usually subjects the markets to diseconomies of scale which are often so great that even considerable cost differentials are inadequate to offset them and to allow the achievement of a competitive cost level. The small enterprises' low level of efficiency, and resultant high costs, thus often excludes them from access to the foreign market, which might have removed the limitation of market size that determined the low level of efficiency in the first place.

2/ For a detailed analysis of the effects of concentrated market structures on economic growth see M. Merhav (1968) Technological Dependence, Monopoly and Growth, Pergamon Press, Oxford.

20. Enterprises established on this pattern thus find themselves in a vicious circle. Having initially oriented themselves towards the small domestic market, they adopted a small scale of operations, thereby foregoing possible economies of scale. Because of their high level of costs, they are in turn barred from access to the foreign market on that account alone, and thus prevented from attaining a larger scale and more efficient lines and methods of operation. At the same time, they find themselves sooner or later, as the domestic market expands gradually, in an oligopolistic market structure as other entrepreneurs [illegible] enter the expanding market. [illegible]

[illegible]

[illegible]

industry descriptions which follow. To anticipate a later argument, it may be said here that the history of different industries in Israel seems to indicate that the expansion of capacity has often been instigated by the desire of firms to maintain their relative shares in the domestic market, with the result that excess capacity, [illegible]

[illegible]

[illegible]

[illegible] economy. The cost of the foreign exchange so earned will often be high, and the benefits of maintaining a high rate of capacity utilisation may in the long run be more apparent than real. This will be particularly true if, as is so often the case, the simultaneous expansion of capacity by all or most of the [illegible] in an industry does not lead any of them over the [illegible] of size necessary for attaining a competitive cost level, but merely increases their scale marginally — enough to create substantial excess capacity in relation to the domestic market, which must then be exported even if the economy as a whole incurs a real loss, but not enough to attain optimum size.

[illegible] of excess capacity

[illegible] The foregoing discussion already indicates how excess capacity might be used for exports, and [illegible] must be sought for the struc- [illegible] the first place. A distinction [illegible] aspect of the matter. It is [illegible] any existing capacity that [illegible] same market, in order [illegible] at least marginal [illegible] different matter whether excess capacity [illegible] attain optimum scales [illegible]

[illegible] for export production is [illegible] Where excess capacity arises from [illegible] demand, there may in- [illegible] particularly appli- [illegible] reasons, must be pro- [illegible] necessarily incur- [illegible] Such [illegible] include chemi- [illegible]

[illegible] where excess capacity is distri- [illegible] although pro- [illegible] their products from [illegible] products to the [illegible] be more [illegible] products to [illegible] The foreign market is far

more discriminating than the domestic market with respect to quality standards. It also requires fairly high threshold quantities of goods of uniform quality if access to the market is to be gained at all. The experience in Israel shows that in a wide range of industries foreign buyers are not normally willing to place orders unless certain minimum quantities can be supplied continuously, and these minima are often far in excess of the total capacity of any individual enterprise. The initial investment in the sales effort for a certain product line in the chief marketing outlets of the developed countries is simply so high that only large sales volumes can justify it.

27. The same is true for the domestic producer-exporter, perhaps even to a relatively greater extent. In order for him to gain access to the foreign market, particularly if he has to diversify his sales in terms of countries, he must incur large investments in marketing. The excess capacity at his disposal only rarely permits such outlays. Production for export, even if the initial cost level and quality standards are competitive and the enterprise is willing to embark upon exports as a permanent and substantial part of its business activity, will therefore usually involve expansion of capacity. This leads us back to the market structure and the restraints this places on capacity expansion by individual enterprises in an oligopolistic structure. If the rivals of an oligopolist can erect barriers to his expansion of capacity, out of their fear of his possible encroachment on their market shares, they will effectively prevent him also from going into exports. They may, for instance, embark upon a price war, thereby threatening to deprive him of part of his share in the local market, or, if entry into the foreign market requires that the prospective exporter improve his quality standards, they may also counter this by lowering prices in the less discriminating domestic market, thus upsetting the established market shares.

28. Where government policy promotes investment through liberal investment loans and grants, as in Israel, investment by one enterprise will more often than not lead to investment by all, with doubtful results with regard to exports. Quantitatively these may indeed increase, but the terms of trade may worsen, and in not a few instances the government may have to back up a liberal investment policy with an equally liberal policy of subsidizing the exports that do not pay for themselves.

29. The solution to the utilisation of existing excess capacity would seem to be in joint export marketing of the industries concerned. Where this is possible, the industry is brought closer to attaining the minimum volumes of exports in any given line needed to break into the foreign market. This solution involves external economies in marketing, and quality improvements which no individual enterprise would be able to undertake on its own. At the same time, such arrangements usually involve the conversion of oligopolies into cartels, with price fixing, establishment of market quotas, and all the other concomitant results, in the domestic market. Cartels, although not always an unmitigated evil, nevertheless tend to throw the burden of diseconomies of scale and excessive fragmentation on the domestic consumer, and tend to perpetuate themselves, preventing the kind of structural change that a developing country needs in order to become competitive abroad.

30. In a dynamic context, a different approach would seem to be much more fruitful, particularly if industry can rely on a forceful industrialization policy by a government which is aware of these problems, and has at its disposal a system of planning and an adequate arsenal of policy tools with which it can back up such a policy. As the main barrier to successful entry into the foreign market seems to be diseconomies of scale, both internal and external, and at the same time since small scale of production that is mainly oriented towards the domestic market tends to create oligopolies, the main direction of government policy should be the encouragement of a higher degree of concentration in industry. Given the fact that, for reasons of technology and market size, a high degree of concentration is inevitable in a developing country, the fragmentation of the emerging industries in the form of oligopolies is the worst of the unavoidable evils. Oligopolies generally possess all the negative characteristics of monopolies, and have few of their saving virtues, particularly as far as their capacity for further technical progress and ability to go into exports are concerned. A vigorous policy should therefore be adopted to encourage mergers in industry or, alternatively, to promote selectively the growth of the more efficient enterprises so as to increase the scale of operation and to permit the attainment of economies of scale. In Israel, the policy of the Government has recently shifted more and more in this direction, and a variety of legal and economic measures are now under active discussion with a view to encouraging and promoting mergers in industry. Equally, there have been more and more misgivings about the benefits of cartels and the benefits they have

produced in the field of exports, and there is now a greater reluctance to approve the applications for authorized cartel arrangements under the prevailing Restrictive Trade Practices Law.

II [illegible]

[illegible]

11. Although the existence of some [illegible] excess capacity in Israeli manu-facturing industry has always been known, it has always been tacitly assumed that, except for certain [illegible] industries, excess capacity is one of the growing pains of a rapidly expanding economy. It is thought that such excess capacity as exists will be absorbed in time by the increasing domestic market and, to an even greater extent, by entry into the foreign market. [illegible] recently there has therefore been no [illegible] the extent of capacity [illegible]

[illegible]

12. [illegible]

ten to twelve years in Israel show that industrial output tends to rise approximately twice as fast as employment, and an excess capacity of employment of approximately 20 per cent may reflect an excess capacity in terms of attainable output of well over one third. Even this is in all likelihood an understatement, because it does not take account of two factors: (a) the possibility of increasing the number of shifts worked, which in 1960 for all manufacturing industry averaged no more than 1.14, and (b) the possibility of structural changes in the various industries, where a greater degree of specialization could no doubt lead to considerably greater output.

13. It is impossible to put a precise figure against these factors, but there can be little doubt that the degree of excess capacity, even narrowly defined, in the manufacturing industry in Israel in 1960 was approximately [illegible] per cent in terms of output. Some support for this can be found in the fact that alth- [illegible]

[illegible]

output, and in 27 other sub-branches, for 41-60 per cent of output. In total, therefore, there were 67 sub-branches in which the first three enterprises produced more than two fifths of the output. It is plausible to assume that although other factors mentioned also were causes, the main reason for the persistent existence of excess capacity in Israel must be sought in the predominantly oligopolistic market structure, which is itself determined by technology and market size.

Table 1

Combined share of the three largest enterprises in output, by subsectors of industry in Israel, 1965
(per cent)

Code No.	Subsector of industry	Share of three largest enterprises 0-20%	21-40%	41-60%	61-80%	80-100%
101	Metal mining[a]					
110	Quarrying, crushing and grinding of stone		27.9			
111	Dune sand pits			55.9		
120	Salt [illegible]					100.0
130	[illegible] and gas					100.0
131	[illegible] crude oil and gas					100.0
140	[illegible] non-metallic minerals					
199	[illegible] minerals					96.1
[illegible]	[illegible] processing of [illegible]		26.3			
[illegible]	[illegible]				71.7	
[illegible]	[illegible]			56.6		
[illegible]	[illegible]		28.1			
[illegible]	[illegible]					93.5
[illegible]	[illegible]		22.4			
[illegible]	[illegible]	9.3				
[illegible]	[illegible]		20.6			
[illegible]	[illegible]				77.8	
[illegible]	[illegible]					
[illegible]	[illegible]					93.7
[illegible]	[illegible]					100.0
[illegible]	[illegible]				78.3	
[illegible]	[illegible]			66.8		
[illegible]	[illegible]					79.0
[illegible]	[illegible]			60.3		
[illegible]	[illegible]			64.4		
[illegible]	[illegible]					99.4
[illegible]	[illegible]				64.3	
[illegible]	[illegible]		27.3			
[illegible]	[illegible]					
[illegible]	[illegible]					
[illegible]	[illegible]		20.3			

Table 1 (continued)

Code No.	Subsector of industry	Share of three largest enterprises				
		0-20%	21-40%	41-60%	61-80%	80-100%
221	Spinning of woollen yarns			44.2		
222	Synthetic yarns and fabrics				63.3	
223	Weaving of fabrics		28.9			
224	Dyeing and finishing of yarn and fabric			46.5		
225	Knitted fabrics and manufacturing of knitted articles, woollen	20.0				
227	Cordage, rope and twine					96.9
228	Knitted articles, except wool[a/]					
229	Textile products, n.e.s.		27.5			
230	Outerwear		24.0			
231	Underwear		36.3			
232	Made-up textile products, excluding clothing		25.9			
239	Clothing, n.e.s.		34.6			
240	Basic manufacture of wood				64.5	
241	Wood and cork products		38.6			
242	Carpentry and building construction		21.7			
243	Furniture, excluding metal	7.6				
244	Carpentry, n.e.s.			46.2		
245	Metal furniture		35.9			
246	Upholstery and mattresses		24.0			
250	Basic manufacturing of paper and cardboard					89.6
251	Paper and cardboard products			43.2		
260	Publishing of papers and journals			55.1		
261	Publishing of books		39.5			
262	Printing presses		28.7			
263	Zincography, lithography and other printing industries		31.0			
264	Bookbinding	13.9				
270	Tanneries		28.9			
271	Footwear, soles and heels	10.9				
272	Repair of footwear	15.2				
279	Leather products, n.e.s.	19.7				
280	Rubber products, excluding tires and tubes			54.5		
281	Tires and tubes					100.0
282	Retreading of tires					84.6
283	Plastic products		22.9			
290	Basic chemical industry			59.8		
291	Fertilizers			49.4		
292	Basic chemicals			52.4		
293	Gases			47.3		
294	Paints, varnishes and lacquers				78.4	
295	Insecticides, fungicides etc.				69.1	

Table 1 (continued)

Code No.	Subsector of industry	Share of three largest enterprises				
		0-20%	21-40%	41-60%	61-80%	80-100%
296	Explosives					100.0
297	Crude petroleum refining					100.0
299	Chemical products, n.e.s.			51.9		
300	Clay and lime products				71.4	
301	Glass and glass products				71.9	
302	Ceramics for sanitary and electrical uses			54.6		
303	Household ceramics and artistic ceramics				75.2	
304	Cement					100.0
305	Cement products	17.8				
309	Non-metallic mineral products, n.e.s.			54.4		
310	Diamond industry	14.9				
320	Iron and steel				78.7	
321	Iron and steel foundries					81.2
322	Non-ferrous basic metal industries				65.3	
323	Metal pipes					84.7
330	Plumbing fixtures		37.7			
331	Tinware and other sheet-metal products			45.6		
332	Wire and wire products		31.8			
333	Heating and cooking equipment, non-electrical			47.2		
334	Cutlery, tools and accessories		34.3			
335	Metal constructions	14.3				
336	Cooking utensils			42.6		
337	Galvanizing and other metal finishing and coating		34.7			
339	Metal products, n.e.s.		31.8			
340	Industrial and building machinery		23.0			
341	Agricultural machinery		26.3			
342	Commercial and domestic machinery			53.6		
343	Pumps and pumping equipment			51.0		
344	Mechanical workshops	16.1				
350	Electric motors, transformers			40.9		
351	Electrical supplies		21.7			
352	Batteries and accumulators					83.9
353	Domestic electrical appliances		35.4			
354	Radios and gramophones		36.2			
355	Communication equipment				79.7	
356	Electronic equipment for laboratories					85.8
360	Assembly and manufacture of motor vehicles				72.3	
361	Repair of motor vehicles	14.1				

Table 1 (continued)

Code No.	Subsector of industry	Share of three largest enterprises 0–20%	21–40%	41–60%	61–80%	80–100%
362	Manufacture and repair of railroad equipment					88.7
363	Manufacture and repair of ships and boats					96.5
364	Manufacture and repair of aircraft					100.0
369	Transport equipment, n.e.s.		26.8			
390	Precision instruments			47.7		
391	Optical and photographic instruments			44.8		
392	Manufacture of watches					98.9
393	Jewellery, religious and artistic articles and watch repair	10.4				
394	Office and school supplies, n.e.s.				60.4	
395	Basketwork, straw and raffia			51.2		
399	Miscellaneous manufacturing	—	22.1	—	—	—
	No. times listed in each group	13	34	27	16	24

Source: Data compiled from the 1965 Census of Industry in Israel.

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a/ Data not available

b/ n.e.s. = not elsewhere specified

Employment utilization

35. The 1966 Survey of Employment Utilization shows clearly that the degree of utilization increases with the size of enterprise. In the enterprises with 30–49 employees, the rate of utilization was 66 per cent; in the next higher size class of 50–99 employees, it was 69 per cent; in the enterprises with 100–299 workers, utilization was 76 per cent; and in the largest-sized enterprises, 300 employees and over, it stood at 79 per cent. If these findings are valid, as the author believes they are, and if size of enterprise and degree of concentration are positively correlated, as has been found in many empirical studies of industrial concentration, then the higher the degree of concentration the higher also the rate of utilization. If it is correct to assume that the rate of employment utilization, at least in a growing economy, is below the rate of utilization in terms of output, and that the latter tends to rise, if

output rises, faster than the former, then a high degree of concentration will lead to a high rate of capacity utilization in the usual sense of the term.

36. Furthermore, if large size goes together with greater capacity for exports, both in terms of attainable cost levels and in terms of ability to engage in the marketing effort needed, and if high industrial concentration exempts individual firms less to the strains of oligopoly, then the higher rate of utilization results at least in part from the fact that a greater share of output can be channelled into the foreign market. This is indirectly supported by the fact that in Israel approximately 90 per cent of all industrial exports, accounting for 17-18 per cent of total output, are produced by 200 enterprises, most of which are the largest in their industries.

37. The more detailed findings of the Survey of Employment Utilization, the definitions used, and a description of the sample and method of the survey will be presented below. As stated before, the average rate of employment utilization was 73 per cent, and the enterprises surveyed could thus have employed 52,000 workers in addition to the 114,000 employed by them in the last quarter of 1966, when the utilization rate had fallen to 69 per cent. Most enterprises stated, in reply to a question to that effect, that the main reason for their less than full rate of utilization was a lack of sufficient market outlets. As already discussed, the recession had caused markets to shrink by far less than the excess of capacity indicated by enterprises. This was particularly true in 1966, when the average output was still only slightly below the 1965 level, and fell towards the end of the year. The causes of excess capacity, although represented by the enterprises as inadequate markets, must therefore be a combination of excessive initial market estimates, building ahead of demand, monopolistic market restrictions etc.

38. The increase of utilization rates with size of enterprises has already been noted. Similarly correlated with size was the extent of overtime employment. In the smallest-sized enterprise, overtime accounted for 1.2 per cent of total work time, rising to 2.4 per cent in enterprises with 50-99 employees, 3.8 per cent in the enterprises with 100-299 employees and to 4.5 per cent in enterprises with 300 or more workers. These findings indicate that there was greater pressure on the existing labour force in the larger enterprises, probably as a result of greater efforts to utilize capacity more fully. At the same time, the fact that 90 per cent of all the overtime worked was concentrated

[illegible]

[illegible] The [illegible] of the survey [illegible] "[illegible]" and "[illegible] industry" [illegible]. The sample [illegible] of 1966 [illegible]. The sample [illegible] per cent of [illegible]. The response to the [illegible], and the survey [illegible] only on replies actually received. [illegible] were made.

[illegible]. The definitions used in the survey were: [illegible] directly in production, the physical handling of [illegible] or maintenance. Actual workdays [illegible] overtime hours translated into ordinary workdays by dividing the total number of hours by the number of hours [illegible], and referred only to the overtime of workers as defined above. [illegible] were total number of days in the year less [illegible] in 1966 these amounted to [illegible]. The [illegible] of workers [illegible] the largest number which the enterprise [illegible] month, if it had worked at full employment capacity [illegible] in the number of actual shifts, as stated by the enterprise. The [illegible] number of workdays was calculated by multiplying the number of [illegible] workdays in the year by the maximum number of workers as defined above. [illegible] prises producing seasonally, only the relevant [illegible]. The rate of utilization of employment capacity was calculated as the percentage of actual workdays out of the possible number of workdays. The shift coefficient was calculated as the ratio of actual workdays performed in all shifts, excluding overtime hours, to workdays of the first shift, again less overtime. The ratio of overtime was computed as the ratio of overtime hours, translated into ordinary workdays, to actual workdays of regular hours. The results of the survey are presented in the tables below.

[redacted]

Table 3

Workshift coefficients and overtime ratios, distributed by major branch of industry, 1966[a]

Branch of industry	Workshift coefficient	Overtime ratio
Total	1.14	3.1
Mining and quarrying	1.20	6.5
Manufacturing	1.14	3.0
Food, beverages and tobacco	1.15	4.0
Textiles	1.33	1.4
Clothing	1.05	0.1
Wood, wood products and furniture	1.10	2.4
Paper and paper products	1.22	5.4
Printing and publishing	1.14	5.3
Leather and leather products	1.00	2.7
Rubber and plastic products	1.25	1.4
Chemicals	1.09	2.3
Non-metallic mineral products	1.11	4.5
Basic metal industries	1.15	2.3
Metal products	1.09	2.5
Machinery	1.01	3.2
Electrical and electronic equipment	1.02	1.0
Transport equipment	1.01	7.3
Miscellaneous manufacturing	1.01	0.9

Source: The 1966 Survey of Employment Utilization, Israel.

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a/ See annex II for definitions of terms.

Table 4

Overtime as percentage of ordinary work hours, distributed by size of enterprise and shift[a/]

	Average overtime percentage
Size of enterprise (no. of workers)	
1-29	0.7
30-49	1.2
50-99	2.4
100-299	3.8
300+	4.5
Shift	
First	3.2
Second	2.3
Third	2.8
Total	3.1

Source: Central Bureau of Statistics and Statistical Bulletin of Israel, Supplements 18(9), September 1967.

a/ See para. 40 for definitions of terms.

41. This description and analysis of the only systematic and comprehensive attempt to estimate the extent of excess capacity in Israeli industry may be supplemented by more fragmentary data collected in 1962, within the framework of individual industry surveys carried out as a basis for the 1965-1970 development plan. The estimates presented in table 5 are based on the knowledge of experts in the Ministry of Commerce and Industry and on information supplied by the enterprises, but the definitions used were neither uniform nor unambiguous. In spite of the qualifications as to the reliability of the figures, the data all point to substantial and persistent excess capacity in a wide range of industries. Moreover, in contrast to 1966, in which the low rate of utilization is at least in part attributable to the then prevailing recession, 1962 and 1963 were years of a high level of industrial activity and of rapid growth. Industrial output in 1962 rose by 14 per cent, in real terms, and continued to rise

in 1963 by another 14.6 per cent. Nevertheless, despite the fact that industrial exports were rising at even higher rates, excess capacity of [illegible] per cent, even in one shift, was widespread.

Table [illegible]

Estimated rate of capacity utilization in selected industries, 1962-[illegible]

Industry or product	Estimated rate of capacity utilization (per cent)	Remarks
Formaldehyde	50	size of plant small by comparison with European plants
Oxygen	80-90	
Pharmaceuticals:		
synthesis	70-75	on the basis of three shifts
formulation	60-70	on the basis of one shift
animal feed additives	40-50	on the basis of one shift
Paints	60	on the basis of two shifts
Pigments	70	on the basis of one shift
Asphalt and turpentine	70	on the basis of one shift
Electrical appliances	partial	only one shift is worked, although the next three shifts are [illegible] other operations
Glues and adhesives	50	on the basis of one shift
Candles	50	on the basis of one shift
Plastic products:		
Coating	60-70	on the basis of one shift
Calendering	70	on the basis of one shift
Injection and spray moulding	100	on the basis of two shifts
Other processes	80	on the basis of two shifts
Dairies	85-90	on the basis of one or two shifts according to season
Citrus products	33	in [illegible] season, although two shifts were worked in the season, due [illegible] to inadequate supplies of fruit

[redacted]

[redacted]

Table [illegible] (continued)

Year	Product	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Total
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Total	[illegible]	[illegible]	[illegible]	[illegible]	7.0	114.6

Table 7

[illegible]

Year	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Total
[illegible]	[illegible]	[illegible]	[illegible]	-	-	-	54.9
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	50.3
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	54.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	54.4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	58.4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	52.8

14. As can be seen from table 6, the output of the industry has grown by [illegible] per cent within a period of five years, for a compound annual increase of nearly [illegible] per cent. This increment to output has been divided almost equally between the domestic market and exports, and as indicated in table 7, the

distribution of output between the domestic and the foreign markets has also been in the same ratio, apart from relatively minor fluctuations from year to year. The obverse of this constancy of the share of exports in each plant's output is the constancy of their shares in the domestic market which, for the four leading enterprises, was upset only slightly in 1962/1963, when the fifth, much smaller enterprise forced its way into the cartel. As it must be assumed that the foreign market presented no obstacles to the expansion of any one of the firms belonging to the industry - at least within the limits of the exports attained by all firms together - it may be deduced that the parallel expansion of all the enterprises was dictated by their desire to maintain their respective shares in the domestic market. Stated differently, the argument runs: assuming that exports could equally well have been expanded as they were between 1960 and 1965 (by [illegible] cubic metres) by any single firm as by all firms (particularly since the cartel sells its output through a joint marketing firm and under a common brand name, "Israel Plywoods"), the maintenance of constant shares in the domestic market must have been the main motive for expansion. The respective shares of the five enterprises in total output between 1960 and 1965 were as shown in table 7, calculated from table 6.

Table 7

Respective shares of enterprises in the plywood industry, 1960-1965
(per cent of total plywood industry output)

Year	Plant A	Plant B	Plant C	Plant D	Plant E	Total a/
1960	36.8	29.5	33.1	0.6	-	100.0
1961	31.3	24.3	32.9	10.7	-	100.0
1962	29.7	24.5	31.6	14.3	-	100.0
1963	26.6	24.5	24.5	18.7	5.9	100.0
1964	27.6	23.6	20.4	20.8	7.6	100.0
1965	28.8	23.4	19.4	22.5	6.1	100.0

a/ Percentages do not add up to stated totals because figures have been rounded.

45. Although these data trace back the development of the industry only for a short period, it can easily be seen how enterprises A and B, at least, endeavoured to maintain their market shares in the face of the entry of first plant D and then plant E. The third of the three leading enterprises, which in 1960 had held a third of total output, failed to expand at the same pace as the other two, and consequently lost a substantial part of its share in the

market. For reasons which will become clear later, the entry of new enterprises into the industry, rather than the expansion of the existing firms, was to a great extent facilitated by the prevailing policy of Government.

46. As stated above, the plywood industry in Israel is organized in a tight-knit cartel which was first formed in 195[illegible]. Until 1961 the cartel agreement covered only sales to the United Kingdom, which were carried out jointly. From 1961/1962 the cartel's sphere of activity was expanded to cover all sales, abroad and in the home market. All products are marketed under the brand name of "Israel Plywoods", and only the veneers produced exclusively by the oldest enterprise are exempt from the cartel arrangement. In addition to the sale of products, the cartel also jointly buys its raw material - mainly okoumé and mahogany from West Africa. The sale of the timber is concentrated in the hands of the Office des Bois in Paris, which sets annual quotas for producers of plywood. The shortage of supplies that began to be felt as the industry expanded - consumption of timber rose between [illegible] and [illegible] from [illegible] tons to [illegible] tons - made joint purchasing arrangements almost imperative. Attempts were also made to purchase timber from other sources, with partial success, and a peeling plant was established jointly in West Africa to ease the materials supply situation.

47. The over-all rate of utilization of capacity in 1964, for the industry as a whole, and on the basis of two shifts per day, was approximately [illegible] per cent, as shown in table 3. Capacity of a third shift is estimated at another 15 per cent.

Table 3

[illegible]

Product	Capacity	Output	Unused capacity
Plywood	[illegible]	[illegible]	[illegible]
Panels and other products	[illegible]	[illegible]	[illegible]
Chipboard	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]

48. The apparent high rate of utilization that is reflected in these figures, however, is misleading because it is influenced by the temporary full utilization of chipboard-producing capacity. Chipboard is a rapidly expanding product, the output of which has grown between 1960 and 1965 from 9.3 to 23.6 thousand cubic metres, and for which additional capacity of substantial dimensions has been installed since 1966. The leading enterprise alone has recently installed a new line for the production of chipboard with an annual capacity of 12,500 cubic metres, and the smallest firm has added capacity of similar dimensions. A third enterprise is also expanding its chipboard capacity. Although the market for this product is growing rapidly, even the optimistic forecasts of the expanding enterprises foresee a substantial building ahead of demand. The leading firm expects to reach full capacity utilization within three years, but this goal must be regarded as excessively optimistic.

49. In the industry's main product, plywood and panels, the rate of utilization is [illegible] per cent on the basis of two shifts, and [illegible] per cent on the basis of three shifts. In contrast to plywood, the export of chipboard is likely to be more difficult, so that considerable excess capacity in this item is to be expected for some time. Furthermore, chipboard increasingly competes against the traditional products of the industry, plywood, especially in the furniture industry, so that the expansion of this item is likely to lower the rate of utilization in the plywood [illegible]

industry. A major form of diversification and upgrading of the industry's standard product is prefinishing by laminating formica to the plywood, thereby not only producing a semi-fabricate, but also making it possible to use lower grades of plywood as a base and thus to reduce costs. This decorative and protective lamination is traditionally carried out in the local market by the individual cabinet maker, who buys formica sheets of the standard heavy quality and laminates them to the parts of the individual sets of furniture he produces to order. A few larger furniture makers use essentially the same method of production even for larger runs; prefinished chipboard, plywood, or panels, covered with a thinner formica sheet, are not available and therefore not used.

51. Several years ago the production of standard formica was begun in Israel by two enterprises. One firm is a leading producer of plywood, the other is in a closely affiliated line of production - manufacturing packing crates, Celotex and Masonite. The formica industry has so far been highly successful and has many characteristics in common with the plywood industry, to which it is closely related. It is similar to the plywood industry in that it has exported well over half it's output and is at present expanding capacity, although the rate of utilization of the existing plants is far from complete. At the same time, enterprises in the plywood industry are also actively considering entry into this line of production. The stated reason for this, as given in the interviews conducted for the present survey, is that the established plants do not produce the light-weight formica that is adequate for the mass production of prefinished plywood, chipboard and furniture parts, so this material must [illegible]. There is, however, no obvious reason why the existing formica producers should not be able to produce the required grades. It is [illegible] to assume that the real reason for these attempts at [illegible] is that they are reluctant to become dependent upon the formica producers, a typical situation of monopoly versus [illegible] the conflict [illegible] producers is also a [illegible] by the [illegible] intermediate product. [illegible] the purposes of this paper the net [illegible] of these efforts with respect to the rate of utilization is of [illegible].

52. In this regard there can be little doubt that, by taking away from the established formica producers the better part of their margin of growth, excess capacity will be generated in that industry both directly and indirectly: directly, because without in-house production of formica within the plywood industry the latter would have bought its requirements from the former industry, and indirectly, because the sale of ref[illegible] by the plywood industry will cut into the traditional markets of the formica producers, namely the furniture industry, and displace the heavier grades of formica there. At the same time, the plywood industry will have to share the total market with the established producers, so that diseconomies of scale will be inevitable; the indivisibilities of plant will make it necessary again to build ahead of demand, so that the plywood industry itself will in all likelihood create new excess capacity in the production of formica. Once again, we see the vicious circle of excess capacity leading to further excess capacity. The example given here points clearly to the powerful influence of market structure.

53. We have so far discussed the rate of utilization of the industry as a whole, but a closer examination reveals that this still tends to overstate the degree of capacity utilization. The measurement of excess capacity under conditions different from the existing industry structure is obviously a difficult matter, and no precise figures could be obtained from the industry. Two main sources of excess capacity were, nevertheless, clearly recognizable. The first is the existence of imbalances in the equipment which itself is the result of indivisibilities in some parts of the equipment, and the former expansion of some of the facilities, while others were gradually being utilized more intensively. This situation is at present very marked in two of the enterprises and has in part become apparent for the accidental reason that the leading enterprise was severely damaged by fire in July. Since then the remaining enterprises have been operating closer to capacity than at any previous time. The bottle-neck in two of the plants turned out to be the drying kiln, which is now operated on three shifts while the rest of the plant works only two shifts. The larger of these two enterprises is now in the process of installing a new kiln, and is simultaneously switching to continuous production instead of the existing batch process. As the kiln is the largest indivisible piece of equipment, it will again restore the pre-existing state of excess capacity. The older kiln is being dismantled and sold to the smaller enterprise, where a similar situation prevails on a smaller scale: the

[illegible]

[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	100.0	100.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	86.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	84.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	90.2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	84.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	86.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	81.1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	85.5
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	92.3
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	92.4

[illegible]

[illegible] based on the size of sheet, [illegible] sheet size for different [illegible] are even more marked [illegible] factors are [illegible] as shown in table 12.

[illegible] market [illegible] in Japan, [illegible] degree [illegible] of [illegible] and substantial [illegible]

Table 11

Costs of production per m^3 of plywood of different thicknesses for a given sheet size, based on 3-mm plywood
(per cent)

Thickness (mm) / Size (cm)	3	4	6	12	18	21
193 x 76	100.0	87.3		75.6	72.0	62.0
205 x 125	100.0	90.6		79.5	76.5	67.0
244 x 125	100.0	91.0	85.0	80.6	76.9	68.5
244 x 160	100.0	90.1		81.0	77.5	68.5

Source: The Israel Productivity Institute.

Table 12

Costs of production per m^3 of plywood of different sizes and thicknesses, based on 193 x 77 x 0.3-cm plywood
(per cent)

Thickness (mm) / Size (cm)	3	4	6	12	18	21
193 x 76	100.0	87.3		75.6	71.9	61.7
205 x 125	81.5	73.8		64.3	61.3	54.6
244 x 125	76.6	70.0	65.2	61.7	59.3	52.6
244 x 160	73.6	66.2		59.4	57.0	51.0

Source: The Israel Productivity Institute.

53. In considering the above estimates it must be remembered that they are based on actual time measurements in the plant investigated. This means that no account was taken of the possibilities of reducing the time spent on the different operations by producing longer runs of a standard dimension. The main way by which the industry's capacity could be expanded and costs reduced would be if each enterprise were to specialize in a certain number of dimensions.

59. Taking into account all the various factors mentioned, it is reasonable to assume that with greater specialisation and a three-shift operation, the industry could produce as much as twice its present output without incurring more than marginal expenditures for the proper balancing of its equipment. The obvious question that arises is why, given that the advantages of greater specialization and rationalization of production and sales are so marked, the industry does not carry out such a plan. From the answers given to such questions, it can only be surmised that the main reason is once again the oligopolistic structure of the industry. The cartel agreement, although one of the most stable known in the Israel manufacturing industry, does not seem to be regarded by its participants as a permanent arrangement. The individual firms are apparently hedging against the possibility of a breakdown of the agreement, either from within by one of its present participants, or from without by entry of a new firm. The entry of an additional enterprise in 1962, against strong opposition from the established plants, is still fresh in the memory of all enterprises. They are therefore reluctant to give up a share in the whole range of products made by the industry and demanded by the market. The industry's monopolistic position in the domestic market, in which higher prices compensate them for lower export prices, makes it less sensitive to the loss incurred by lack of specialization, particularly as there are technical difficulties involved in rationalization which, although not insurmountable, are yet not costless.

60. The sensitivity of the industry to underutilization of capacity is likely to increase as it gradually shifts from the production of the labour- and materials-intensive plywood, with its relatively low fixed costs, to the production of chipboard. The capacity of chipboard production, which according to table 9 stood at 25,000 cubic metres in 1966, increased in 1967 to 41,000 cubic metres, over 10,000 more than consumption, and is still in process of being expanded. A comparison of the breakdown of costs for plywood and chipboard clearly reveals not only the lesser dependence of chipboard on costly imported timber, but also the much higher fixed costs for the more mechanized, continuous-flow production of chipboard.

61. Before concluding this discussion of the plywood industry, it remains to explain how the continuous expansion of capacity which never reached full utilization was made possible, and how, on the other hand, a major part of the excess capacity was diverted into exports. Although the analysis of the cost

[redacted]

[redacted]

[redacted]	[redacted]		[redacted]	
[redacted]	[redacted]		[redacted]	
[redacted]	[redacted]		[redacted]	
[redacted]	[redacted]		[redacted]	

60. These high costs of earning the export dollar - nearly two and a half times the official exchange rate - indicate the loss to the economy of creating capacity which can only be utilized by a high proportion of exports. For the requirements of the domestic market alone, i.e. import substitution, an industry comprising two or three plants of the same size would have been sufficient and with full utilization they would have been more than adequate. Taking into account only the savings in transport costs, approximately [illegible] per cent of the f.o.b. value, the cost of the dollar saved would be:

[illegible]

This is still a relatively high cost, but nevertheless much lower than that obtained in exports.

61. These figures imply that the foreign consumer was, in fact, subsidised by the domestic consumer of pipes. There was no situation of excess capacity in the industry which had developed through unforeseen changes in circumstances, e.g. an unexpected shrinkage of the domestic market, or competition from another product, but capacity was constantly expanded with the [illegible] purpose of diverting at least half of the increment to exports. The explanation for this development must be sought in the interaction between the industry's market structure and the development policy of the Government. Without the latter, it is plausible to assume that established firms in a highly concentrated industry structure would have prevented the entry of new firms. With a cost of [illegible] per dollar earned from exports, compared with a cost of [illegible] in the domestic market, entry into the industry was always conditional upon obtaining a share in the domestic market. Although fixed costs in the industry are not high, skilful planning with respect to price and output aimed at preventing the entry of new firms could still have been effective, particularly if one takes into account the fact that labour costs are conventionally considered as variable costs. The governmental development policy, however, which was often guided by the need to provide employment as much as by the objective of improving the trade balance, effectively prevented such [illegible]. New enterprises, which would be established in locations where the employment problem was pressing, were given considerable encouragement through loans, grants and other means, and the established enterprises could maintain the domestic price level for their products only with the tacit or overt approval of the government, which was officially embodied in the legal [illegible] of the cartel agreement.

64. The result of this combination of the industrialization policy of the Government, which on the one hand was determined by employment considerations and on the other hand gave insufficient attention to the real cost of the exports attained, and the behavioural forces inherent in an oligopolistic market structure was not only the establishment of an excessively large number of enterprises. As was noted earlier, the establishment of additional capacity by one enterprise usually served as a warning signal to the others that a threat to the established market structure had arisen. The only practical way to counter this was to increase capacity so as to keep in step and maintain the previous market shares. It could always be claimed, in an endeavour to enlist government support, that exports would be expanded, or that marginal investments were needed in order to raise efficiency and reduce costs. In this way most enterprises in the past could count on obtaining government support for their expansion plans.

65. In recent years, the policy with respect to this industry has changed, and no further expansion of plywood production is presently being envisaged. However, this does not prevent the industry from expanding in other directions, along lines which are essentially not much different from those that have characterized its past development.

66. Although it looks on the surface as if the Israeli plywood industry is a case in which excess capacity has been successfully diverted to exports, the success of the endeavour is more apparent than real and has been achieved at a relatively high real cost to the economy. A further conclusion is that where technology and market size together make a high degree of industrial concentration unavoidable, the best solution is to encourage a higher rather than a lower degree of concentration. This is not only in order to attain economies of scale where they exist, but also in order to increase the rate of utilization and prevent the expansion of capacity, which is primarily dictated by the desire of oligopolistic rivals to safeguard their established market shares. Any expansion of capacity and output that a government may want to achieve or encourage can nearly always be equally well achieved by promoting the growth of existing firms rather than by adding new ones, except where specific location objectives conflict with such a course.

Citrus products industry

67. The citrus products industry is one of the oldest manufacturing industries in Israel and represents a natural outgrowth of the country's unique citrus plantations. Citrus fruit still holds first place among the export commodities of Israel, at least in terms of domestic added value. The processing industry that grew out of this important agricultural sector has its raw material base in the excess fresh fruit that can neither be exported nor consumed domestically. The output of the citrus plantations has expanded continuously, as has the supply of fruit to the processing industry, as can be seen from table 14 below.

Table 14

Distribution of citrus fruit industry output, 1954/1955-1963/1964
(thousand tons)

Year[a]	Total output[b]	Exports	Domestic consumption	Industrial processing
1954/1955	364	262	55	47
1955/1956	422	292	59	72
1956/1957	410	302	61	47
1957/1958	405	308	68	29
1958/1959	557	377	72	108
1959/1960[c]				
1960/1961[c]				
1961/1962	493	343	67	83
1962/1963	704	505	80	119
1963/1964	805	454	79	243

a/ The citrus fruit season begins in October and ends in April.

b/ Exclusing country's own consumption of agriculture and unorganised sales.

c/ Data not available.

68. The citrus processing industry is similar to the plywood industry in that the process used tends to recreate excess capacity. At the same time, there are important differences between the two industries: (a) the citrus processing industry is less highly concentrated, and (b) whereas the plywood industry expanded its capacity with a view to maintaining stable market shares for its output, the citrus processing industry increased its capacity in order to lay claim to a share of a scarce raw material, namely fresh fruit. Both industries can be defined as export industries, but while the

plywood industry is essentially devoting part of its surplus capacity to the foreign market, the citrus processing industry depends almost wholly on the export market which absorbs about 80 per cent of its output.

43. The narrow domestic base of this industry makes it highly sensitive to the influence of a low rate of utilization on the level of costs, because it is unable to compensate itself by charging higher prices in the domestic market. Also, the share of fixed costs is higher in the citrus processing industry (approximately 25 per cent of total costs) than in the plywood industry (approximately 15 per cent), and thus aggravates the problem of underutilization of capacity. The main capacity-determining factor is the number of juice extractors. As these are installed in a central waste, capacity can be easily expanded. On the other hand, the costs for extractors is tied up to a certain minimum quantity of output and based on a per cent minimization only across that quantity, so underutilization of capacity again affects costs to a considerable extent. In view of these factors, it is of particular interest to analyse how the continuous expansion of capacity beyond the volume warranted by the availability of fruit came about.

44. The industry comprises 25 enterprises which receive supplies of fruit from the Citrus Marketing Board.[b] Nineteen of these enterprises are engaged in the full processing of the fruit, including juice extraction, while the remaining six processes primarily citrus fruit segments, as well as many other kinds of fruit. [illegible] per cent of the juice-extracting capacity is concentrated in the six largest enterprises (table 11). The same table shows that even during the peak of the last season, in which the supply of fruit to industry was [illegible] favourable climatic conditions, and 7% per cent higher than originally forecast by the Citrus Marketing Board, the rate of utilization averaged approximately [illegible] per cent.

45. Most of the enterprises in the industry engage in the processing of other fruits and vegetables in addition to the highly seasonal processing of citrus fruit. The newer enterprises specialize in the processing of citrus fruit.

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b/ The Citrus Marketing Board is a statutory organization, on which producers and processors are represented, and which regulates the sale of citrus fruit.

Table [illegible]

[illegible]

[illegible]	Theoretical processing capacity (tons per day)	[illegible]		
		Week of [illegible] March [illegible]	Week of [illegible] March [illegible]	Week of [illegible] March [illegible]
A	[illegible]	[illegible]	85	106
B	[illegible]	36	85	[illegible]
C	27[illegible]	84	119	97
D	2350	51	75	74
E	[illegible]	60	52	61
F	2050	65	75	36
G	1600	99	120	115
H	1600	102	[illegible]	73
I	1600	95	61	[illegible]
J	1530	84	87	[illegible]
K	1480	32	[illegible]	[illegible]
L	1220	74	[illegible]	[illegible]
M	1150	53	[illegible]	[illegible]
N	960	74	[illegible]	[illegible]
O	960	74	[illegible]	[illegible]
P	820	36	[illegible]	[illegible]
Q	790	40	[illegible]	[illegible]
R	740	57	72	[illegible]
S	530	46	45	[illegible]

a/ Actual processing is measured in this table by the quantity of fruit received during the week in question; therefore, the rate of processing in any one week may exceed 100 per cent.

the equipment for which cannot be used in other lines of production except for the processing of tomatoes. The tomato season follows the citrus season, and makes possible a more intensive use of equipment and a longer season of full operation for these specialized plants. Neither the processing of tomatoes nor the production of other fruit and vegetable preserves [illegible] for the domestic market [illegible] is sufficient to sustain full year-round production so long as the present number of enterprises is retained.

72. The main determinant of the rate of utilization in the citrus processing industry is the supply of fruit available for industry. A brief survey of the factors affecting the supply will clarify some of the underlying causes of

[illegible] capacity in the industry, and thus it possible to better explain the [illegible] [illegible] from the plants. Compared with the optimum capacity, [illegible] [illegible]

[illegible] [illegible] of raw materials cannot be [illegible] [illegible] the industry in a particularly [illegible] [illegible]

[illegible] larger capacity, and therefore [illegible] larger [illegible] [illegible] advantage in this respect.

[illegible] The citrus fruit season extends from the end of October to the middle of [illegible] [illegible] the middle of January the supply of fruit is still small and often does not justify the opening of the plants. Most of the fruit available in this period are grapefruits and lemons, while the quality of the oranges

operating during this period is still low. The main season is from the middle of January to the middle of April, and the plants operate two to three shifts per day during this [illegible] period. In recent years the expansion of citrus plantations into new areas and the growing proportion of later-ripening kinds of fruit have extended the season somewhat.

75. The estimates of capacity, in addition to being based only on extraction capacity and ignoring other processing stages, also take into account the seasonal characteristics of the fruit supply. Table 18 shows the number of possible work hours for the year 1965/1966. The figures may be taken as fairly constant, although they vary somewhat from year to year according to climatic conditions and the number of holidays and days of rest falling in the season. Multiplying the number of possible work hours by the hourly capacity of the juice extractors of the different models yields the total extraction capacity of the industry for the season.

Table 18

[illegible] - possible number of work hours during the 1965/1966 season

Period	Number of working days	Number of shifts	Total number of shifts	Total number of possible hours
[illegible] Dec. 1965 - [illegible] Jan. 1966	[illegible]	1	16	284
9 Jan. 1966 - [illegible] Jan. 1966	[illegible]	2	20	160
23 Jan. 1966 - 19 March 1966	7	1	7	14
	60	3	120	800
20 March 1966 - 1 April 1966	4	1	8	56
	10	2	20	160
1 April 1966 - 13 May 1966	2	1	8	14
	16	1	16	2[illegible]
Total	144		244	1760

✓ On the sixth day of the week, seven hours are calculated, and only one shift is worked.

76. Table 19 shows the inventory of juice extractors installed in 1964/1965, 1965/1966, and 1966/1967 and 1968/1969 (est.), and the total hourly extraction capacity. The four types of extractors in the industry have the following

[illegible]
[illegible]

[illegible]

[illegible] : [illegible] kg/hour
[illegible] : [illegible] kg/hour
[illegible] : [illegible] kg/hour
[illegible] : [illegible] kg/hour

As can be seen from table [illegible], the addition of capacity in [illegible] years has [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. The [illegible] capacity of the industry [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] per cent, and [illegible] of these processing stages are [illegible].

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] (est.)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Assuming that the average number of possible work hours per season is [illegible], the capacity of the industry for [illegible], in terms of [illegible] extraction capability, is estimated at [illegible] tons of, deducting the [illegible] [illegible] per cent representing the difference between theoretical and practical capacity, no less than some [illegible] tons of fruit. The corresponding figure for [illegible] was [illegible] tons. The actual quantity of fruit processed in the [illegible] season was very close to that figure [illegible] of fruit [illegible] tons [illegible] as a result of the [illegible] [illegible] the season was [illegible] [illegible] beyond the [illegible] estimate of [illegible]. Although the industry operated closer to its capacity in [illegible] than at any previous time, there can be little doubt that it still had as much as [illegible] per cent excess capacity. As already stated, this greatly understates the amount of excess capacity, since the utilization in other stages of the processing is still lower.

[illegible]. In the past, the steady expansion of capacity in the citrus processing industry, Israel's government subsidization and inadequate supplies of fruit, due in part to [illegible] by [illegible] the same factors which brought about excess [illegible] in the [illegible] industry. The role of the government's [illegible] policy [illegible], especially with respect to the establishment of new enterprises and [illegible] expansion of the existing ones. The present policy is to [illegible] neither the establishment of new enterprises nor any [illegible] of plant and equipment in the existing plants. However, [illegible] from [illegible] of fruit capacity can easily be expanded by [illegible] equipment with a higher hourly output. This is, in fact, what has happened in recent years. It must therefore be expected that the past trends will continue, and that while the proportion of [illegible] will [illegible], the long-term supplies of fruit to the industry will remain constant. Excess capacity will thus persist for the foreseeable future.

[illegible]. The citrus processing industry, although concentrated in the statistical sense, has few of the attributes characteristic of an oligopoly. In view of the great dependence on the highly competitive foreign market, the areas in which oligopolistic behaviour are possible are naturally limited, and in the past the enterprises have indeed competed against each other in the foreign market, with the result that they have driven the prices of the products down. Recently, a Citrus Products Marketing Board has been established, and producers will be allowed to export their product only through that organization. The only area in which one might have expected oligopolistic behaviour is with regard to the supplies of fruit, but here the industry is confronted by the powerful Citrus Marketing Board which has a legal monopoly position.

[illegible]. Because the main cause of excess capacity in this industry is a supply bottle-neck which cannot be overcome, as it may in other industries, by imports of raw materials, the remedy for the situation lies in two main directions: (a) the prevention of further expansion of capacity, and (b) the utilization of existing capacity for the processing of other agricultural produce. The freezing of existing capacity will in time allow raw material supplies to catch up with the industry's processing capability, and the processing of other products during the off-season will raise the annual rate of utilization and permit overheads to be spread over a considerably larger output.

The latter solution depends to no small degree on the extent to which the agricultural sector will be able to produce fruit and vegetables of the appropriate varieties and at price levels which are acceptable to export industries. Efforts are constantly being made in this direction and have already achieved some success, particularly in the growing and processing of tomatoes.

The extension of the season in this industry is of particular importance from the viewpoint of the utilization of manpower. The common practice of dismissing most of the workers at the end of the season involves a high cost which does not appear in the financial accounts, namely that workers have to be trained anew every season, and thus productivity is kept low. According to information received from the enterprises, the industry estimates that it [illegible] about one [illegible] season for [illegible] operative to learn his task properly and attain an acceptable level of productivity. The high turnover of the labour force involves constant training and re-training. With a longer season, a larger fraction of the labour force could be employed for the entire year.

The influence of a low rate of utilization on unit costs can be seen from Table [illegible], which gives the cost breakdown for a selected number of products. The data shown are for the [illegible] season, but the proportion of fixed to variable costs has not changed considerably, and the influence of the rate of utilization has remained essentially the same.

The data shown in Table [illegible] indicate that a cost saving of over [illegible] per cent could be realized by increasing the rate of utilization to 100 per cent (remembering that according to our definition of capacity, 100 per cent rate of utilization refers to practical, not theoretical, capacity). In an industry as competitive in the foreign market as the citrus processing industry, a [illegible] per cent cost saving may be decisive for the success of any individual firm. In actual fact, the savings from a higher rate of utilization are likely to be even greater. The cost involved in the re-training of seasonal workers has already been mentioned, but in view of the low [illegible] of direct [illegible], this factor may perhaps be neglected. Of far greater importance is the [illegible] attainable by a better distribution of shipments of fresh [illegible] according to variety and size among the [illegible] enterprises. This [illegible] larger shipments to individual enterprises, and the lengthening of production runs made possible by less dispersal of the available supplies among numerous plants. One way of achieving greater concentration is the

Table 14

Average costs of production of selected citrus products, 1969/1970
(in I£ per unit)

Cost item	Orange juice 3+1	Orange juice [illegible]	Orange juice [illegible]	Grapefruit juice 3+1
Total costs including	8.40	9.75	9.57	8.51
Fixed costs, actual	1.91	2.31	2.08	1.93
Variable costs - total including	6.49	7.52	7.50	6.60
Fruit	1.76	2.22	1.97	1.49
Auxiliary materials and packing	3.56	3.68	3.77	3.73
Direct labour	0.60	0.64	0.65	0.57
Oil, fuel and water	0.15	0.16	0.16	0.11
Storage (cooling)	0.25	0.31	0.28	0.27
Maintenance	0.24	0.32	0.29	0.25
Transportation	0.15	0.25	0.20	0.20
Product losses (1%)	0.10	0.11	0.11	0.10
Fixed costs as percentage of total costs	22.8%	23.7%	21.4%	22.7%
Fixed costs at 70% utilization	1.65	1.54	1.54	1.47
" " " 80% "	1.27	1.34	1.34	1.28
" " " 90% "	1.13	1.19	1.19	1.14
" " " 100% "	1.01	1.07	1.07	1.03

industry is through mergers of existing enterprises, and signs of such a trend have recently become discernible in Israel and are being encouraged by the Government.

34. Although this industry is still characterized by a substantial degree of excess capacity, the situation has improved considerably in comparison with past years, and the rate of utilization is now much closer to the optimum - taking into account that reserve capacity must always be provided to take care of unforeseen fluctuations in the supply of fruit - than it was three or four years ago.

[redacted]

to the anticipated consumption of edible oil, and oilcake requirements exceeding the quantities obtained as a by-product were met by separate imports of that commodity. As long as edible oil was rationed, the industry had no need to make any marketing efforts, and except for the largest and oldest firm, maintained no sales agencies of their own.

87. With the abolition of consumer rationing in early 1953, a period of sharp competition set in, mainly through expensive advertising and extension of liberal credit to wholesalers and retail outlets. This sharply reduced the profitability of the enterprises and led to the first attempts to establish a cartel which, however, was not legally set up until 1964. There were, of course, informal and temporary, tacit and overt arrangements among the producers before that, which were encouraged by the fact that the government continued to allot raw materials according to quotas agreed upon with the industry, and also maintained price control for oilcake. Indeed, in recent years the import of raw material has been determined by the requirements for oilcake in agriculture, and not by the demand for edible oil, so that the surpluses of oil are exported. The cost to the economy of these exports is high, and despite the fact that the industry is subsidized through low-cost sales of raw materials by the government and, like the plywood industry, practises price discrimination between the domestic and the foreign market, the profitability of these exports to the individual enterprises is low. Table 13 shows the development of capacity, in terms of raw material, compared with actual output from 1961 to 1964. Earlier data, which are on a different basis for the estimate of capacity, show that in the late 1950's the rate of utilization of the industry was about 50 per cent in oil extraction and pressing; in the other processes involved, such as refining, solidification, bottling etc., the rate of utilization was even lower.

88. The edible oil industry reveals again the feature already discussed in the other two industries considered: despite the existence of substantial excess capacity, expansion continues for the industry as a whole and for each individual enterprise, securing the maintenance of each one's share of the market. Table 14 presents the figures in actual production and the rate of utilization of the individual enterprises, excluding the two smallest, between 1961 and 1965, the last year for which individual data could be obtained.

Table 19

Edible oil extraction capacity, output, and rate of utilisation, 1961-1968

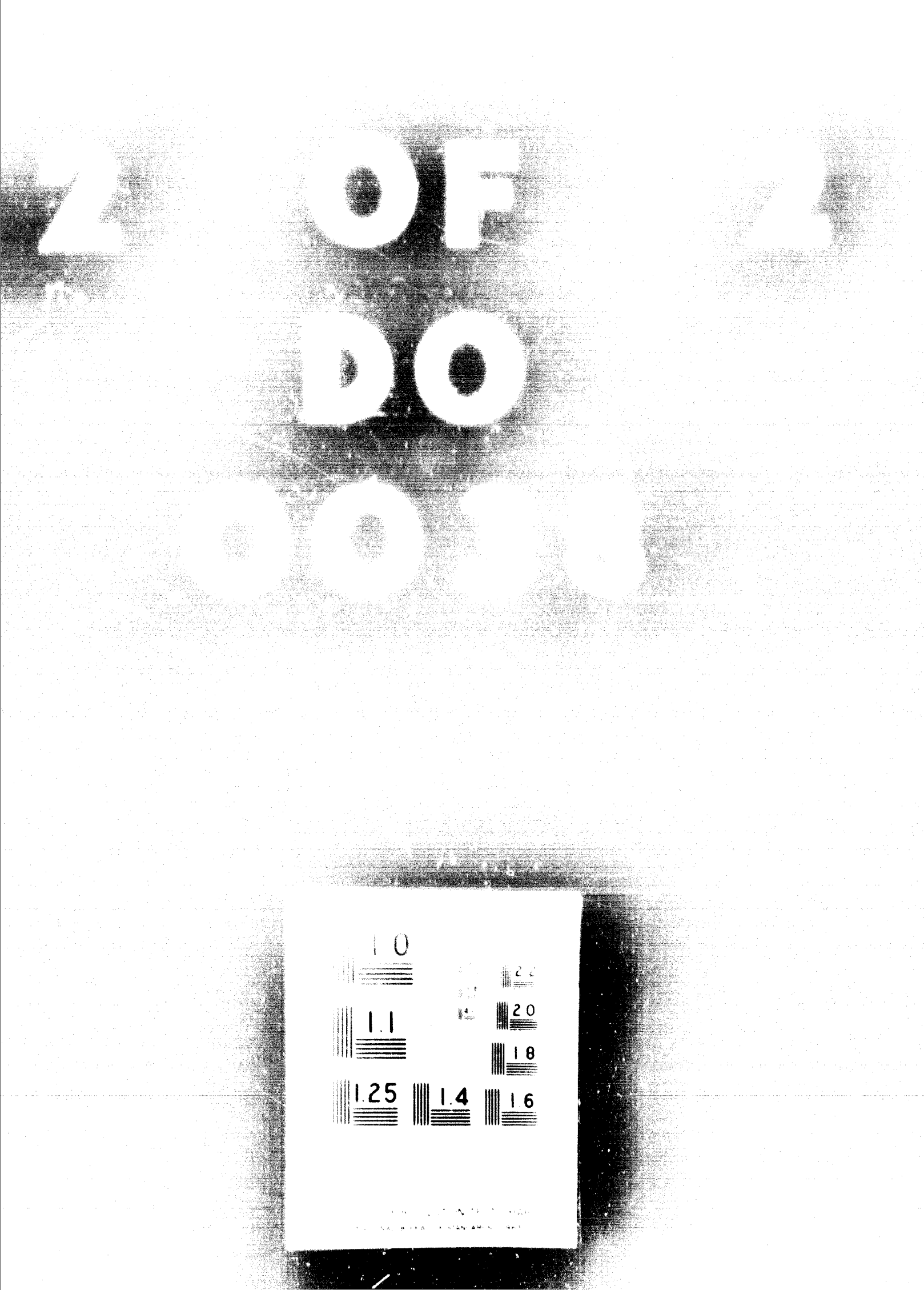
Year	Capacity (tons of raw material)	Output	Rate of utilisation (per cent)
1961	275,000	216,200	79
1962	320,000	219,600	68
1963	385,000	224,000	58
1964	395,000	267,600	68
1965	400,000	248,500	62
1966	410,000	263,000	64
1967	410,000	268,000	65
1968	420,000	284,000	67

Table 20

Respective shares of five major enterprises in output of edible oil industry (%) and rates of utilization of oil extraction capacity (%), 1961-1965

Year	Enterprise A (S)	(R)	Enterprise B (S)	(R)	Enterprise C (S)	(R)	Enterprise D (S)	(R)	Enterprise E (S)	(R)
1961	25	81	20	64	25	81	21	68		
1962	24	81	17	85	25	81	17	85	9	40
1963	24	83	15	78	23	81	15	80	11	56
1964	22	81	17	98	23	83	19	78	10	67
1965	21	82	17	93	22	82	18	68	12	64

4. As can be seen from table 20, the distribution of the market among the five leading firms, together accounting for 80 per cent of total production, has remained stable over the years. Indeed, given the low rate of utilization and the mode of quota distribution among the enterprises, the minor fluctuations in actual output shares are of little importance, since the marketing enterprises which have produced less than their quota. The only change in the structure of the industry, again in a manner very similar to that of the plywood industry, has been the entry of new firms into the industry and the market, with a consequent fall in the older firms' share of the market. The two oldest and largest enterprises in particular had to give up part of their share to the newer ones. This may be seen in table 21, which


OF
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1.1
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1.6
2.0
1.8

gives the quotas of the five enterprises in the cartel up to 1963, before it was officially approved under the Restrictive Trade Practices Law. Actual sales, however, deviate from the predetermined quotas, and despite the cartel agreement, which provides for compensation for output and sales that fall short of the quota, sales competition among the firms continues to exist, mainly in the form of publicity and credit facilities to customers.

Table 21

Actual production of edible oil in five major enterprises, in terms of percentage shares of crude oil and the 1963 cartel quota 1953-1963
(per cent)

Enterprise	1953	1959	1960	1961	1962	1963	Cartel quota 1963
A	38.9	30.9	28.5	29.8	25.9	25.8	25.1
B	24.3	22.5	21.9	20.8	17.6	18.3	19.4
C	22.0	29.7	29.9	26.4	28.5	27.2	25.0
D	14.8	16.6	17.4	21.9	19.6	16.3	19.3
E		0.3	2.3	1.1	8.4	12.3	11.2

91. Despite the apparent stability of the cartel, there are powerful disruptive forces within it. Most of the enterprises produce, in addition to edible oil, other products such as soap, detergents and cosmetics, which are not covered by the cartel agreement. In addition, the industry is subject to competition in its own line of production by margarine producers, who have entered into the refining of oil and therefore buy only crude oil from the oil industry.

92. The individual enterprises in this industry differ considerably in terms of efficiency. The existing cartel agreement protects the less efficient firms, and prevents the more efficient among them from capturing a larger share of the market and of the raw material supply. The share of fixed costs in total cost of production, excluding the cost of raw materials, is over 60 per cent even at full capacity operation. The industry is therefore highly sensitive to the degree of utilization, and it stands to reason that the dissolution of the cartel would have brought about a gradual concentration of the industry in the hands of the more efficient enterprises.

33. One of the main justifications for the establishment of the cartel and its official approval was that this would facilitate exports and thus increase the rate of capacity utilization. However, the fixed quotas of raw materials prevent the attainment of economies of scale and perpetuate the low utilization rate and inefficiency. The prospects for developing exports of edible oil are in any case not bright, since this is generally one of the first industries to be established anywhere. Also the sales of crude edible oil as an intermediate good are subject to great fluctuations and leave a narrow margin of added value. In this situation, exports can barely be profitable even under conditions of full capacity utilization and the exploitation of economies of scale.

34. Two other points of similarity with the plywood industry are worth mentioning. The establishment of the cartel was, among other reasons, originally justified by the prospect that this would lead to greater specialization in the industry some enterprises would concentrate on the processing of the older raw materials, such as cottonseeds, while others would concentrate on soya beans. This specialization, however, has not been realized, and all firms continue to maintain capacity for the processing of all the available raw materials. The reason is that, on the one hand, soya beans are the dominant raw material and require a different processing method, while at the same time, the inadequacy of supplies of that material compared with capacity in the processing stages subsequent to the extraction of crude oil prevents enterprises from abandoning their share in the traditional raw materials. The very existence of excess capacity and of a cartel agreement thus prevents specialization in this industry in terms of raw materials, just as similar factors prevent specialization in the plywood industry in terms of products. A second point of similarity is that the existence of a cartel is a barrier to mergers, a factor which could lead to the attainment of economies of scale and to a gradual absorption of the existing excess capacity. On the contrary, the inherent instability of a cartel provides a powerful stimulus for the constant expansion of capacity by its members, and thus for the perpetuation of excess capacity.

35. Given the existence of excess capacity, its utilization for exports could make for [illegible] structural changes in the industry, and this mainly in the direction of encouraging mergers and the gradual elimination of the less

efficient enterprises. Without this, the chances are that any combination of producers, such as exists now, will only maintain the high cost level of the industry as a whole, and exports will merely mean that the domestic consumer will have to bear the costs of continued inefficiency.

Conclusion

96. The survey of the three industries presented in this paper reveals not only the prevalence of excess capacity throughout much of manufacturing industry in Israel and, perhaps more importantly, the fact that it tends to perpetuate itself, but also that much of the basis of present manufacturing exports is the attempt to utilize this surplus capacity through sales abroad. With the exception of the industries that are primarily based on domestic raw materials and have no domestic market base, the majority of exports of manufactured goods is in one or the other respect similar to the cases discussed in this paper. The textile industry, which accounts for a quarter of Israel's exports of manufactured goods excluding diamonds, is a typical case of this kind, and so are many of the food industries not discussed here. The apparel industry, although more competitive than those analysed here or than the spinning and weaving industries, has many of the same characteristics. In most cases, the industries practise price discrimination against the domestic market so that the domestic consumer bears the cost of underutilization of capacity and of misinvestments.

97. Among the main factors contributing to the perpetuation of this situation there is one which must be pointed out in particular: like many governments in developing countries, the Government of Israel pursues a vigorous industrialization policy and gives high priority to the development and promotion of export industries. However, like the majority of theorists and practitioners of industrial development, it has overlooked the influence of market structure on the process of growth, and the effect of concentration on the creation of excess capacity, with its waste of scarce resources and retardation of technical progress, has been ignored. At any given point of time, the tendency has been to view industrial expansion and new investments as a good in itself, particularly if the rees of past development seemed to

show that much of the additional capacity was used for exports. The analysis presented here shows that the expansion of capacity, even if the share of exports remains constant - as has most typically been the case in the plywood industry - can be far from being a blessing to the economy, and the same objectives could be achieved, at less cost, through a policy designed to encourage greater concentration and the attainment of economies of scale.