INDUSTRY PROTECTION PLANS: AUSTRALIAN FOOTWEAR MANUFACTURERS' REACTIONS

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Australian footwear manufacturers were surveyed in late 1986 in order to identify actions undertaken since 1981 in response to the anticipated or actual increase in import competition as a result of the first seven year protection plan. A wide range of actions were undertaken, with capital investment in new production technology the most frequent and 'most important' action. This research indicates that the plan created organisational change which in turn promoted more efficient and effective business practices.

Keywords: protection, industry plans, organisational change, technological change, capital investment

INTRODUCTION

In August 1980, a seven year planned programme of reduction in protection due to commence in January 1982, was announced, covering the textiles, clothing and footwear industries group. In the footwear industry the plan was designed to increase the market share of imports by one per cent per year. Apart from this quantitative aspect of the plan, other objectives were specified. The Department of Trade and Resources expected that the new programme would ". . .encourage further improvements in the efficiency of the industries, reductions in costs and responsiveness to changing consumer needs".[1] This was tacit acknowledgement of the footwear industry torpor which was the result of sustained high levels of protection, albeit tempered with uncertainty regarding year-to-year protection levels.

A questionnaire was designed with the primary aim of identifying actions taken by footwear manufacturers since 1981 in response to anticipated or actual increase in import competition. Respondents were asked which of these actions was the most important. The questionnaire also addressed the number of employees, the market segments in which the firm operated, and actions taken since 1981 other than in response to anticipated or actual increase in import competition. This last question was included because during an earlier stage of the research, i.e., in-depth case studies, some firms identified only an indirect relationship between their organisational changes and the protection plan. This occurred because of the contagion effect,

TABLE 1
Geographical Origin of Responses

Melbourne	28
Sydney	18
Brisbane	6
Adelaide	6
Perth	2
Non-metropolitan	4
	64

where firms who considered that they were not competing with imports, realised that changes were being undertaken by other firms and were stimulated to react similarly. The survey results contribute toward making a judgement whether the plan did act as a catalyst and stimulate interest in a more aggressive style of management characterised by increased emphasis on efficient production, effective marketing and a generally more efficient and effective use of resources.

After pilot testing, the postal questionnaire was distributed to all footwear manufacturers listed in the yellow pages of the telephone books in Australia in September 1986, who had not assisted in the

TABLE 2
Distribution of Actions taken since 1981 in Response to Anticipated or Actual Increase in Import Competition

	Actions	No. of Responses[a]
A.	WORK FLOWS — changed	24
B.	MATERIALS — reduced cost	16
C.	LABOUR — reduced cost	21
D.	MARKETING METHODS — changed	25
E.	COSTING SYSTEM — changed	10
F.	NEW PRODUCTION TECHNOLOGY — investment	44
G.	OVERSEAS TRAVEL	21
H.	OTHER — please specify	19[b]
		180

a. Number of respondents, 58;
average actions per firm, 3.1;
proportion of respondent firms taking action in response to import competition 91 per cent.

b. The 19 responses included as 'other' can be classified into: changes in product line and/or increase in quality — 8; reduction in profit margin, production or staff — 3; import of components — 2; increase in cost of labour and materials — 2; increase in management involvement — 1; increase in productivity — 1; and capital investment in new technology (distribution, robotics, etc.) — 1.

development of the questionnaire in the form of in-depth interviews or pilot testing.[2] The response rate was residually determined as 37 per cent of the firms in the industry which represented 85 per cent of employees in the industry. The questionnaires were reproduced on different colours of paper so as to identify geographical origin of responses. Accordingly Table 1 identifies the responses in this manner. The results will initially be tabled in terms of actions taken since 1981 in response to anticipated or actual increase in import competition. These results will then be examined in detail (see Tables 3 to 11). Actions taken for other reasons will then be reported.

ACTIONS UNDERTAKEN IN RESPONSE TO ANTICIPATED OR ACTUAL INCREASE IN IMPORT COMPETITION

Table 2 reports the distribution of actions undertaken since 1981 in response to anticipated or actual increase in import competition: 58 firms undertook a total of 180 actions since 1981 in response to anticipated or actual increase in import competition. These firms did react to improve the efficient and effective operation of their business. The most frequently cited action was investment in new production technology: 44 of the 58 firms (76 per cent).

An analysis was undertaken to identify the number of actions per firm and results are shown in Figure 1.

FIGURE 1

Actions undertaken in response to increased import competition

Distribution of number of actions per firm.

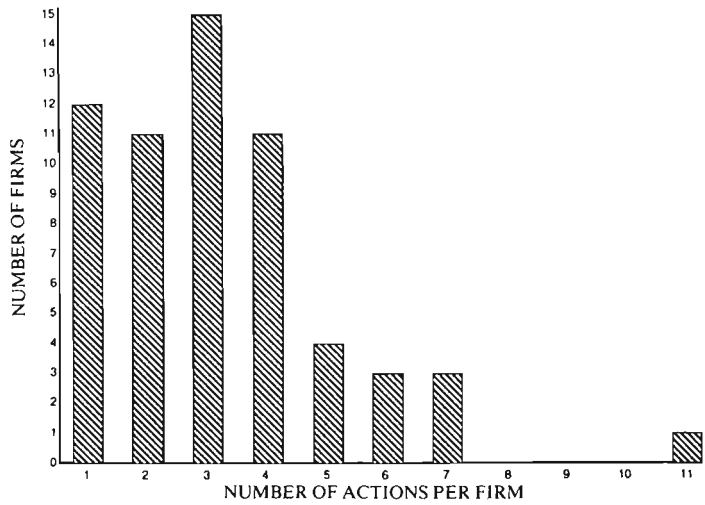

TABLE 3

'Most Important Action' since 1981 in response to anticipated or actual increase in import competition

	Actions	No. of Responses
A.	WORK FLOWS — changed	6
B.	MATERIALS — reduced cost	4
C.	LABOUR — reduced cost	4
D.	MARKETING METHODS — changed	8
E.	COSTING SYSTEM — changed	0
F.	NEW PRODUCTION TECHNOLOGY — investment	22
G.	OVERSEAS TRAVEL	1
H.	OTHER	5
		50

Respondents were requested to identify the most important action when more than one action was undertaken, with the results shown in Table 3. By far the most frequently cited "most important action" was investment in new production technology — 22 firms out of 50 (44 per cent).

TABLE 4

Responses: Distribution of Actions and Size

Actions	Size ≤ 50 Employees	Size ≥ 51 Employees	Total
A. WORK FLOWS — changed	12	12	24
B. MATERIALS — reduced cost	7	9	16
C. LABOUR — reduced cost	9	12	21
D. MARKETING METHODS — changed	10	15	25
E. COSTING SYSTEM — changed	3	7	10
F. NEW PRODUCTION TECHNOLOGY — investment	18	26	44
G. OVERSEAS TRAVEL	9	12	21
H. OTHER	8	11	19
	76	104	180
Number of firms	27	31	58
Average number of responses	2.8	3.3	3.1

ANALYSIS OF RESPONSES BY SIZE OF FIRM:

This initial analysis undertaken related to the size of the respondent firms based on the number of employees. The responses were divided by size into a two-way classification which divided the firms responding into fifty or less employees, and fifty-one or more employees. It can be seen from Table 4 that the larger firms, on the average, undertook more actions than the smaller. A hypothesis that: the distribuiton of actions taken in response to anticipated or actual increase in competition from imports was independent of the size of the firm (when classified as employing 50 or less, or more than 51 employees), was therefore accepted. A further analysis was undertaken of the number of actions taken per firm using the same size classification. Table 5 illustrates the results which indicate that the number of actions per firm is dependent on size.

TABLE 5
Distributions of Actions per Firm and Size

No. of Actions per Firm	Number of Firms with Employees $\leq$ 50	Number of Firms with employees $\geq$ 51
1	6	6
2.	9	2
3	4	11
4	4	7
5	1	3
6	2	0
7	1	1
11	0	1
	27	31

χ^2: Significant value = 7.815 (.05 confidence level)
Calculated value = 8.2

Further analyses was undertaken to identify significant relationships between the size and individual actions. With a minor exception (the 'other' category) there were no significant relationships.

ANALYSIS OF RESPONSES BY MARKET SEGMENTS

The second group of analyses involved the classification of responses according to market segment. The broader classes of mens, womens and childrens segments were analysed first. At this level, a classification problem existed with only eleven firms. These were usually large firms operating in many segments of the market. Of the

TABLE 6
Distribution of Responses with Mens & Womens Market Segments

Actions	Mens	Womens	Total
A. WORK FLOWS — changed	5	13	18
B. MATERIALS — reduced cost	5	9	14
C. LABOUR — reduced cost	6	9	15
D. MARKETING METHODS — changed	7	16	23
E. COSTING SYSTEM — changed	2	8	10
F. NEW PRODUCTION TECHNOLOGY — investment	12	22	34
G. OVERSEAS TRAVEL	7	12	19
H. OTHER	4	12	16
	48	101	149
Number of firms	16	26	42
Average number of responses	3	3.8	3.5

χ^2: Significant value = 12.592
Calculated value = 1.66

remaining 47 firms, 16, 26 and 5 were classified as operating in mens, womens and childrens segments respectively. Only the mens and womens segments provided usable groups. It can be seen from Table 6 that, on the average, firms operating in the womens segment undertook more actions than those operating in the mens segment, even though the distribution was not significantly different. A further analyses was undertaken (Table 7) regarding the number of actions per firm and the market segments (after rearranging the data to satisfy statistical requirements). However the number of actions per firm was independent of market segment. Individual actions were compared

TABLE 7
Responses: Number of Actions per Firm and Market Segment

Number of Actions per Firm	Mens	Womens
1 & 2	7	6
3 to 11	9	20
	16	26

χ^2 Significant value = 3.841
Calculated value = 1.8

between segments to identify statistically significant relationships. All individual actions were tested, and they did not display different response patterns. The next group of analyses involved the various segments of the market, i.e., high and medium fashion, and the other categories. No significant relationships in the distributions of actions were identified. Individual actions and the number of responses per firm were analysed between various segments but again without identifying any significant relationships.

TABLE 8

Distributions of Actions By Geographical Location

	Brisbane, Perth, Adelaide, & Non-Metrop.	Melbourne & Sydney
A. WORK FLOWS — changed	9	15
B. MATERIALS — reduced cost)		
C. LABOUR — reduced cost)	10	27
D. MARKETING METHODS — changed	7	18
F. NEW PRODUCTION TECHNOLOGY — investment	10	34
G. OVERSEAS TRAVEL	6	15
H. OTHER)		
E. COSTING SYSTEM — changed)	5	24
	47	133
Number of firms	14	44
Average number of responses	3.3	3.0

χ^2: Significant value = 11.070
Calculated value = 4.15

TABLE 9

Numbers of Actions per Geographical Location

	Firms	Actions
Melbourne	27	83
Sydney	17	50
Brisbane, Adelaide Perth & Non-metropolitan	14	47
	58	180

TABLE 10

Number of Actions per Firm and Geographical Location

Number of Actions per Firm	Melbourne, Groups and Sydney	Brisbane, Adelaide, Perth & Non-Metropolitan
1 & 2	20	3
3 to 11	24	11
	44	14

χ^2: Significant value = 3.841
Calculated value = 3.5

respectively. An analysis was undertaken of the number of actions per firm and geographical location (Table 10). Similar analyses were undertaken with different groupings of geographical location, and individual responses, with only one significant relationship being identified (Table 11). In summary, with minor exceptions, statistical analyses indicated independence between actions undertaken and size of firm, market segment and geographical location.

ANALYSIS OF RESPONSES BY GEOGRAPHICAL LOCATION

Analysis by geographical location yielded the results in Table 8. It will be noted that the responses for 14 firms was 47 actions, whereas for the remaining 44 firms the actions were 133. Table 9 identifies the number of actions per classification. The average number of actions undertaken per firm by geographical classification is 3.0, 2.9 and 3.3

TABLE 11

Action: 'Changed Work Flows' and Geographical Location

	Situation	
Action Changed Work Flows	Melbourne	Brisbane, Perth, Adelaide and Non-Metropolitan
Yes	8	9
No	19	5
Total	27	14

χ^2: Significant value = 3.84
Calculated value = 3.99

TABLE 12

Distribution of Actions Undertaken 'For Other Reasons'

Actions	No. of Responses
A. WORK FLOWS — changed	11
B. MATERIALS — reduced cost	3
C. LABOUR — reduced cost	6
D. MARKETING METHODS — changed	7
E. COSTING SYSTEM — changed	7
F. NEW PRODUCTION TECHNOLOGY — investment	9
G. OVERSEAS TRAVEL	9
H. OTHER — please specify	4
	*56
No. of respondents	22

* Most firms identified more than one action.

ACTIONS UNDERTAKEN 'FOR OTHER REASONS'

The distribution of responses undertaken 'for other reasons' was as shown in Table 12. It will be recalled that respondents were requested to identify the most important reason for taking these actions and 14 of the 22 respondent firms identified the reasons (Table 13). This table includes respondent firms where only one action was undertaken. The reasons can be summarised as: the increase in efficiency and effectiveness in operations.

Obviously a relationship may exist between some of the actions undertaken in response to anticipated or actual increased competition from imports, and for other reasons. Ten of the firms which identified 'work flows — changed' under other reasons also had identified 'new production technology — investment' as an action undertaken in response to import competition. Thus the work flows may have changed, indirectly, as a result of anticipated or actual increased competition from imports. There were six firms who had identified actions for other reasons, but no actions in response to import competition. Three of the firms wrote that they were not competing with imports. The small number of responses created limitations with respect to analysis; however no statistically significant relationships were found.

Tests for non-responsive bias were made by comparing the results of early and late responses. An analysis of the distributions of actions, using the chi-square test for independence, did not identify any significant difference in the early, compared to the late, responses.

TABLE 13

Most Important Reason for Actions Undertaken for Other Reasons

1. Maintain present market share.
2. Introduce new machinery.
3. New production technology.
4. Interest charges and incentives for modernising plant.
5. To stay competitive, to maintain profit, machine replacement.
6. Necessary and continual improvement to productivity measures.
7. Increased cost efficiency.
8. To standardize and simplify production and productivity.
9. Essential progression from an inefficient system.
10. Substantially reduced work in process to speed delivery and service.
11. To become competitive and retain market share.
12. Increasing awareness of the importance of footwear in a more lasting material.
13. Domestic competition, flexibility, workers compensation costs.
14. Australian competition as well as overseas.

The follow-up letter could have assisted in the responses with 13 usable returns being received after the mailing of the follow-up letter. However no significant difference in the distributions of these responses, as compared to all others, was identified. On the basis of the above, it is believed that the results can be generalized.

DISCUSSION OF THE IMPACT OF THE SEVEN YEAR PLAN

The most interesting item of information gained from the survey is that so many actions, 180, were undertaken in response to the anticipated or actual increase in competition from imports, Further, the number of actions undertaken for this reason was considerably higher than the number undertaken for other reasons (56). The extent of the number of actions undertaken provided substantial evidence that the firms were involved in a wide range of organisational changes as a result of the seven year plan. This was an indication of at least two factors: first, an interest and/or commitment to remaining in the industry; and, second, recognition of deficiencies in the operations of the firms' business, particularly in connection with competition from imports. By far the most common response in terms of both frequency and importance was investment in new production technology.

All of the 44 firms who invested in new production technology presumably knew that the intent of the current seven year plan was to reduce protection. This had a positive effect in the sense that it stimulated capital investment. It can be argued that this capital investment, stimulated by a reduction in protection, probably arose from a recognition that it was time to act to achieve efficiency and effectiveness of operations. This change in the attitude of significant decision-makers promoted organisational change to more efficient and effective operations.

The relative importance of the actions undertaken can be gauged from the results of the 50 firms who identified a 'most important' action. Of these, 22 identified capital investment in new production technology. Again this supported the argument that the reduction of protection, part of the external environment of the firm, stimulated capital investment. One of the larger firms included capital investment in new technology in areas other than production, e.g., in distribution.

In an interview with a representative of a major machinery supplier to the industry in 1984, it was disclosed that the extent of interest in new production equipment was unexpected, leading at times to a delay in supply. It was stated that prior to the seven year plan, little interest was paid to new processes specifically, and generally, there was little emphasis on cost savings. Some actions taken by footwear manufacturers as a result of the seven year plan were identified by the equipment supplier:

1. review of work flows — most factories had some degree of double-handling;
2. more notice was taken of retailers' suggestions in terms of market potential; and
3. more travel overseas was undertaken, particularly to Europe, to identify changes in high fashion shoes.

However, most manufacturers were still risk-averse in relation to technological advances. In fact, the equipment supplier in recognising this last point had adopted a policy of setting up new technologically-advanced machinery in selected factories on a trial basis. The representative gave an example of pre- and post-1981 questions asked by potential customers about new machinery:

> pre 1981 — how much does it cost?
> post 1981 — how much can it do, and how much can it save?

This change of attitude is again evidence of the catalytic nature of the seven year plan.

CONCLUSION

The analysis relating to the size of the firm, in terms of the number of employees, was related to the distribution of types of actions and no dependence was identified. Thus it can be argued that the non-respondent firms, most of which must be quite small in terms of employees may have similar distributions of responses. It is arguable that the smaller non-respondent firms (probably having less than 20 employees) may have undertaken three actions. On the basis of the results it would appear that firms which have between 50 and 100 employees have undertaken slightly more actions per firm.

The market segment analysis was interesting, in that the expected variations did not occur. It was expected that overseas travel would be linked to the fashion market segment, but that was not found to be so. With hindsight it could have been informative if the question on overseas travel had separated such reasons for overseas travel as observation of changes in fashion styles and colours, inspection of new production technology, and inspection of overseas materials or components with a view to import.

The geographical location of respondent firms was the final aspect analysed. The interpretation of the significant results as outlined in Table 11, is as follows. The action 'work flows changed' was undertaken by 9 of the total 14 (64 per cent) 'Brisbane, Perth, Adelaide and Non-metropolitan firms' as opposed to 8 of the 27 (30 per cent) 'Melbourne firms'. It may be argued that changing work flows was a consequence of investment in new production technology. However, four out of the 9 'Brisbane, Perth, Adelaide and Non-metropolitan firms' who changed work flows did not invest, whereas only 1 out of the 8 in 'Melbourne firms' did not. It may, therefore, be assumed that the changes were made to promote efficiency and remove double-handling and bottlenecks. This may be an indication that the Melbourne firms devised efficient work flows prior to 1981, whereas the other group had not. Alternatively, it may be that Melbourne firms have yet to devise efficient work flows, perhaps after capital investment in new equipment.

Although the response format limited the statistical analysis that could be applied, it is apparent that firms did respond in a positive way. It will be recalled that the government's explicit objectives of the current seven year plan were to: increase efficiency, reduce costs, and increase responsiveness to consumer demand. Although no methods of measurement were outlined by the government, the survey responses appear to indicate that the plan's objectives were met to some extent.

The second section of the results was important in that it identified actions undertaken, for reasons other than in response to anticipated

or actual increase in competition from imports. The reasons as outlined previously can be reduced to one phrase: "to increase efficiency and effectiveness of operations". In the main the pattern of responses was not influenced by size or market segment. Furthermore, responses in relation to imports were greater than for other reasons.

It was suggested in 1985 that "We will need to wait a few years before the effect of these institutional initiatives can be evaluated".[3] The survey results provide some evidence of the effect in the form of the reactions by the footwear manufacturers to the current seven year plan. The number and variety of actions indicates wide ranging commitment to increased efficient and effective use of resources. Thus to some extent the objectives of the plan have been met. The frequency and relative importance of capital investment in new production technology is an indication of a change in attitude by the manufacturers. There is evidence not only of increased awareness of technological advances but an erosion of the previously recognised aversion to capital investment in new technology. Because complete quantitative data on capital investment are unavailable,[4] the results provide unique up-to-date information on capital investment in new technology in the footwear industry.

REFERENCES

1. *New Assistance Program, Australian Textiles, Clothing and Footwear Industries,* Department of Trade and Resources, 1982 p. 1. An implication of the efficiency objective is the expectation of a reduction in the number of firms operating in the industry. Some evidence of this reduction was the substantial number (43) of undeliverable questionnaires returned. (While it is impossible to identify whether these firms were manufacturers or wholesalers, this number represented 14.3 per cent of the questionnaires mailed.)
2. Details of questionnaire construction and pre-testing are available from the author.
3. R.G. Gregory, "Industry protection and adjustment: The Australian experience", *Prometheus,* 3, 1, June 1985, p. 47.
4. This is due to the preclusion from ABS figures of leased capital assets and the lack of distinction in the figures of replacement equipment of the same technology and investment in new technology.