

9 The key arrangement, competitiveness and firm performance

This chapter analyses the impact of business cooperation on a range of performance indicators. The most common benefits of cooperation include increased profits/sales, market knowledge and new suppliers/customers (see Chapter 6). Benefits are not, however, limited to the ‘market’ interests of the firm. Large numbers of firms record benefits in the areas of improved production processes, access to technology and improvements in quality.

All of these benefits affect a firm’s ‘bottom line’. This chapter explores how the benefits of cooperation translate into ‘real’ measurable impacts – the ultimate test of how cooperation benefits a firm.

But, why is this important?

Clearly, firms as profit seekers are interested in what difference cooperative arrangements can make to their profit and loss sheets. But business today is concerned with a wider range of issues. Increasing competitive pressures are ensuring firms seek out competitive advantages wherever they can. For example, quality standards and accreditation are becoming the norm rather than the exception¹ and the drive towards innovation is widespread.

Those firms seeking to improve their competitive edge may well find cooperative arrangements are an important tool that can be used to achieve both competitiveness and performance.

Moreover, industry policy is focussed on improving the competitiveness of Australian firms (see Chapter 13). There are many government policies and programs relating to exporting, innovation, and quality. As will be seen, inter-firm cooperation can play an important role in these and other areas. Although policy makers have identified networking and similar activities as potentially useful, their impacts on performance and competitiveness are largely undocumented.

Recent studies of inter-firm linkages and cooperation have only assessed the impact of these business strategies in broad, general terms. This report is the first to undertake a detailed and rigorous examination of how inter-firm arrangements impact on performance and competitiveness.

In the BIE survey, respondents were asked to provide a range of information about their ‘key’ arrangement² and this forms the basis for the analysis in this chapter. The key arrangement is the one they considered to be their most important. It need not be the one that provides the biggest impact on profits, although in many cases this certainly may be the case.

¹ This is reflected in survey responses on competitive advantages. Two-thirds of respondents to the survey believe that quality is one of their central competitive advantages.

² See BIE survey questions 13 to 24 (Appendix A).

Firms were asked to indicate how this single arrangement had directly affected³ a range of performance and competitive measures over the past three years. The performance measures included:

- employment levels
- turnover
- profits
- productivity and
- exports.

and the competitive measures were:

- technology
- quality
- price competitiveness and
- customer service.

Firms were asked if their key cooperative arrangement had increased, decreased or not changed each measure. In addition, they were asked to estimate the magnitude of the impact of the key arrangement for each performance measure (but not for competitiveness measures).

The pursuit of profit or turnover increases is apparently one of the major reasons firms enter cooperative arrangements (see Chapter 6). It would therefore not be surprising to find that most ‘key’ arrangements provide increases in profits or turnover, regardless of their nature (for example formal or informal), although the size of the changes may vary well differ.

On the other hand, particular arrangements may provide important improvements in areas such as technology or quality that are not common to other types of arrangements. Where this is true, impacts on competitiveness or performance would be expected to vary between types of arrangements.

Moreover, firms with different characteristics may enter cooperative arrangements for varying reasons. For example, the focus for young firms tends to be on the cost or efficiency side more so than older firms. The differences in focus may lead to different effects of cooperation on performance and competitiveness.

It is important to remember that the impact measures do not relate to cooperation as a whole. The key arrangement is a specific case, the most strategically important cooperative relationship a firm has established, and is only one of a range of arrangements for the bulk of firms⁴. The results in this chapter may therefore not match those found in Chapters 6, 7 and 8 which examine benefits across all arrangements held by firms. Nevertheless, given the wide variety of arrangements that have been identified by respondents as ‘key’, the analysis in this chapter does provide an indication of the impacts of cooperation more broadly⁵.

The first section of the chapter presents an overview of the impacts of key arrangements and examines industry and state outcomes. Section 9.2 explores how impacts vary with the nature and characteristics of arrangements while Section 9.3 analyses impacts by characteristics of the firm. The results of modelling analysis are discussed in Section 9.4 and the chapter is summarised in Section 9.5.

³ Firms were asked if their key arrangement had increased, decreased or not changed each measure (see Question 24 of survey).

⁴ Almost three-quarters of cooperating firms have more than one arrangement (Chapter 4).

⁵ In piloting the survey, the Bureau found that respondents were more easily and accurately able to assess the impact of a single arrangement rather than cooperation as a whole.

9.1 A snap shot of the impacts of cooperation

9.1.1 Overview

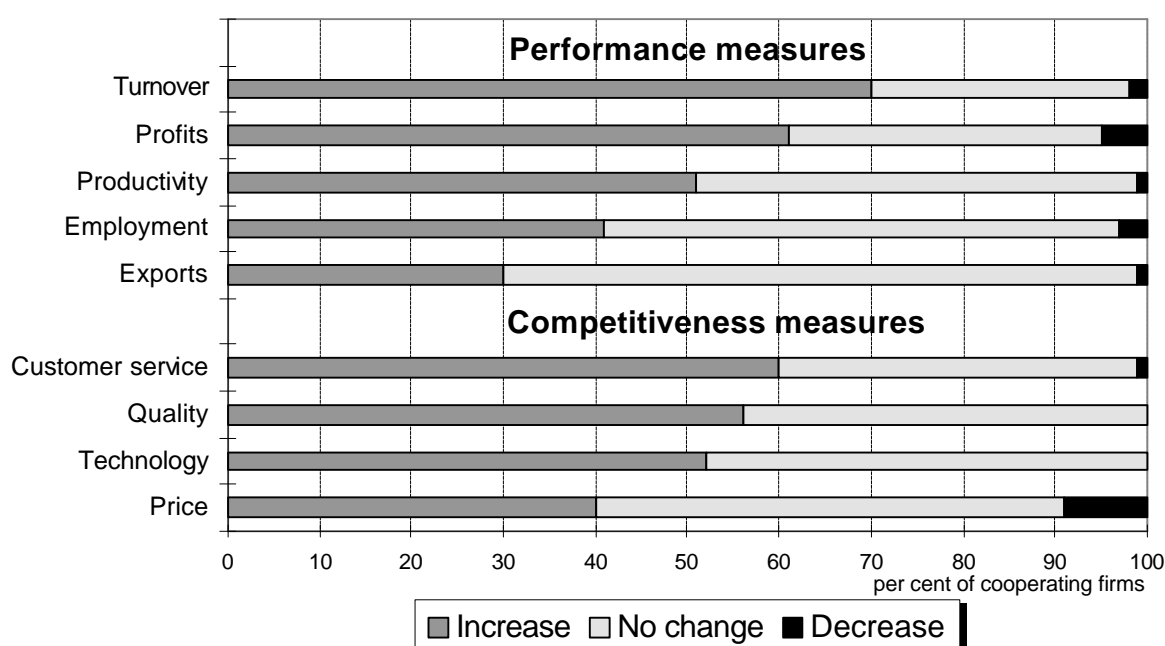
Figure 9.1 summarises the performance and competitiveness impacts of key cooperative arrangements. It shows that almost three-quarters of cooperating firms experience increases in turnover as a direct result of their key arrangement and well over half post higher profits.

Cooperation also improves a firm's competitive position. The majority of firms experience improving customer service and quality through their key arrangement.

Only 30 per cent of firms indicated that their key arrangement has a positive impact on exports. This reflects the fact that only 38 per cent of cooperating firms were known exporters⁶. When exporters are considered in isolation, 54 per cent indicated that their key arrangement increased exports.

Interestingly, five per cent of respondents indicated that their key arrangement has resulted in lower profits for the businesses over the past three years. Only 40 per cent of these arrangements were formal, and so it is unlikely that the majority of these firms are contractually 'locked-in' to poor performing arrangements. Perhaps this small number of firms fulfilled their commitment (albeit informal) for the sake of the relationship or reputation. More positively, it may also reflect those firms who have suffered some short term 'pain' (such as a large investment) in the pursuit of longer term gains from cooperation.

Figure 9.1 Impacts of key arrangements



Source: BIE survey

⁶ 52 per cent of linked firms did not export, and 10 per cent did not provide data on exports.

The relatively high proportion of firms noting a decrease in price competitiveness is likely to reflect some confusion in answering the question, misinterpreting price competitiveness for price levels. Accordingly, we ignore these data.

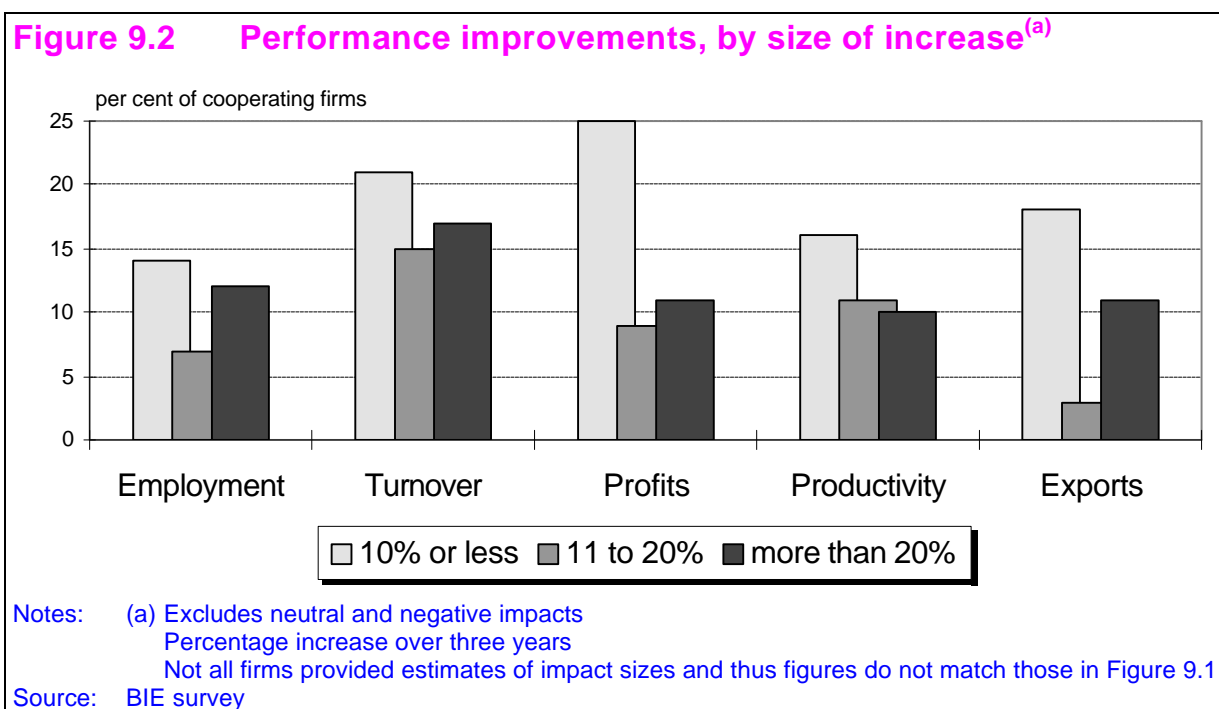
While the data in Figure 9.1 do not show which impacts are valued more highly by firms, some insights are available by examining how the results compare with the ‘benefits’ of the key arrangement⁷.

The most frequently cited benefit from the key arrangement is increased profit/sales (56 per cent of firms). Improved quality is ranked fifth (26 per cent) and access to technology seventh (24 per cent).

Around 60 per cent of those firms reporting a positive *impact* on turnover or profits ranked an increase in profit/sales in the top three *benefits* of their key arrangement. In contrast, 40 per cent of those recording positive impacts on quality ranked quality improvements in the top three benefits. These results suggest that firms generally consider increases in profits and turnover to be amongst the most important impacts of cooperation.

In the technology area, over a third of those firms recording positive impacts on technology ranked access to technology in the top three benefits. Taking a broader definition of technology benefits⁸, the figure rises to almost two-thirds. Improvements in technology would therefore seem quite important for the approximately 50 per cent of cooperating firms which reported positive impacts in this area.

Figure 9.2 examines the positive impacts of the key arrangements in more detail. It shows the share of cooperating firms that recorded positive performance impacts by the size of the impact⁹.



⁷ Firms were asked to indicate the top three benefits flowing from their key arrangement.

⁸ Including access to technology, improved production processes, improved work practices/productivity, and access to production facilities.

⁹ Not all firms provided estimates of the magnitude of changes. Therefore, figures shown in Figure 9.2 will not necessarily match those in Table 9.1.

Improvements in turnover are fairly evenly spread across the size groups. One in six firms experience an increase in turnover of more than 20 per cent as a direct result of their key arrangement. Across all cooperating firms the median impact in turnover from the key arrangement is a growth of 5 per cent. If only those who experience positive impacts are considered (that is 70 per cent of linked firms) the figure rises to 16 per cent.

A lot of firms got profit increases – but most of these were small. Just under 40 per cent of those firms that took on additional staff as a result of their key arrangement expanded their workforce by 20 per cent or more.

Improvements in export performance were noticeably either small (10 per cent or less) or large (more than 20 per cent). Almost 40 per cent of exporters that experienced export increases reported export growths of more than 20 per cent over three years.

Around one in six firms recorded improvements in productivity of 10 per cent or less over three years. For 10 per cent of firms, the key arrangement provided opportunities to make substantial progress on the productivity front (increases of more than 20 per cent), while a similar number achieved moderate improvements (11 to 20 per cent).

9.1.2 Impacts by Industry

The performance and competitiveness impacts by industry mirror the results for benefits by industry discussed in Chapter 7. Firms in the IT&T and the Scientific and medical equipment industries tend to get more from cooperation than those in the Clothing and footwear and Food industries.

Table 9.1 shows the distribution of positive impacts by industry. Firms in IT&T record the highest proportions of positive impacts in five of the nine measures (including the three most variable measures), while those in the Clothing and footwear industry recorded the lowest in five.

Table 9.1 Positive impacts of key arrangements, by industry (per cent)

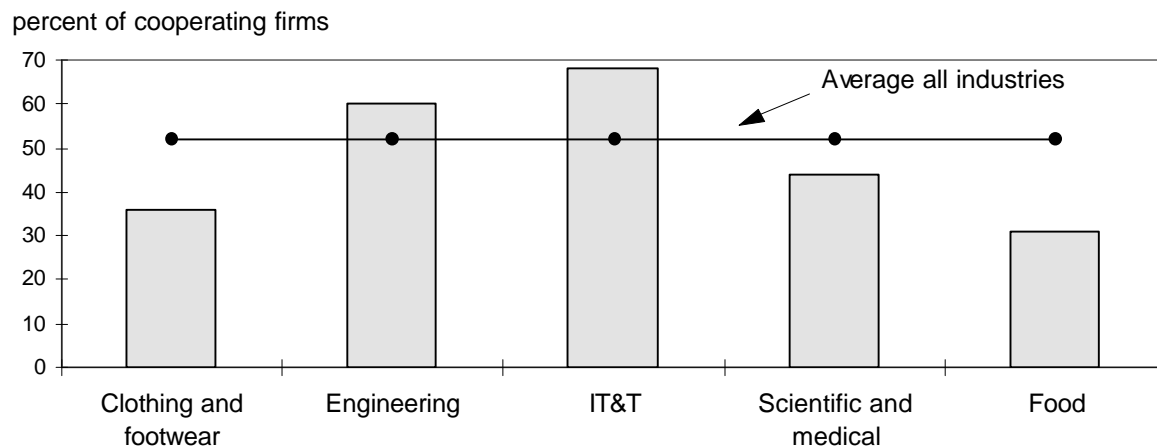
	<i>Clothing and footwear</i>	<i>Engineering</i>	<i>IT&T</i>	<i>Scientific and medical</i>	<i>Food</i>	<i>All industries</i>
<i>Performance indicators</i>						
Turnover	61	71	69	79	71	70
Profits	53	61	63	67	67	61
Productivity	58	50	43	55	48	51
Employment	29	41	53	48	36	41
Exports	17	25	44	42	41	30
<i>Competitiveness measures</i>						
Customer service	61	62	62	65	47	60
Quality	57	55	58	47	57	56
Technology	36	60	68	44	31	52
Price	36	40	43	40	37	40

Source: BIE survey

In some measures there is relatively little difference in impacts across industries (for example productivity and quality). However, there are significant differences in the areas of technology, exports and employment.

Compared to the average of 52 per cent, the IT&T and Engineering industries recorded above average impacts (68 per cent and 61 per cent of firms respectively), while the Food and Clothing and footwear industries reported well below average impacts (31 per cent and 36 per cent respectively) (Figure 9.3). These results can largely be explained by the relatively high proportion of low-tech firms in the latter two industries (around 40 and 30 per cent respectively). Low-tech firms least commonly experience improvements in technology from their key arrangement (see Section 9.3.6).

Figure 9.3 Positive impacts on technology, by industry



Source: BIE survey

Interestingly, access to technology ranks in the top seven major/critical benefits of cooperation¹⁰ for the Engineering, IT&T and Sci/med industries (see Chapter 7). This suggests that technology improvement is an important aspect of cooperation and is not only limited to the key arrangement.

Impacts on exports also vary widely between industries. The proportion of firms in the Clothing and footwear industry recording positive impacts on exports is only half that of the average across all industries. The IT&T and Food industries reported positive impacts nearly 50 per cent higher than the average. However, exporting activity also varies across industries and this distorts these results. When only known exporters are considered, inter-industry differences largely disappear. However, two-thirds of exporters in the IT&T industry reported increases in exports (compared to an average of 54 per cent for all industries). It was shown in Chapter 7 that just under a half of IT&T firms consider access to new customer or suppliers overseas as a major/critical benefit of cooperation (a result not matched in any other industry).

These findings suggest that one of the principal reasons firms in the IT&T industry enter cooperative arrangements is for access to overseas markets, in what is a global industry. The Federal Government's Partnerships for Development and Fixed Term Arrangement programs are based on this principle. The programs are discussed in Appendix D and their impacts on participating firms are summarised in Box 9.1.

Overall, the above examination of impacts by industry suggests that business cooperation is a valuable tool for improving a firm's competitiveness and performance, regardless of the industry.

¹⁰ All arrangements, not just the key arrangement.

Box 9.1 Impacts of the PfD and FTA programs

The Commonwealth Government's Partnerships for Development and Fixed Term Arrangement programs are aimed at developing Australia's IT&T industries. The strategy for achieving this is to forge linkages between Australian IT&T firms and large, multinational IT&T companies (the partner firms).

The BIE recently undertook an evaluation of the programs and as part of the study examined the impacts of the program on partner firms. It credited the program with the following impacts across all partner firms:

- *increased annual sales by 5.8 per cent*
- *increased employment by 4.2 per cent*
- *increased R&D expenditure by 32.1 per cent*
- *increased annual exports by 26.8 per cent*
- *decreased annual imports by 0.4 per cent.*

The BIE also investigated the impacts of the program on local IT&T firms and found that the program had the following impacts:

- *increased sales by 2.8 per cent*
- *increased exports by 12.9 per cent*
- *increased R&D by 9 per cent.*

Source: BIE (1995)

9.1.3 Impacts by state

Table 9.2 shows the distribution of impacts by state. Differences need to be interpreted with care due to the relatively small sample sizes in Queensland, South Australia and Western Australia. Generally, firms in all states recorded similar improvements in their performance and competitiveness from cooperation.

Firms located in South Australia tend to improve their competitiveness through their key arrangement more commonly than firms in other states. Some 70 per cent of South Australian firms experience improvements in quality from their key arrangement (compared to an average of 56 per cent). In contrast, only 44 per cent of Queensland firms reported a similar outcome. Proportionately more South Australian firms are able to improve their customer service and technology via their key arrangement. These findings are in line with those of Chapter 6, which found that South Australian firms are more likely to achieve major/critical benefits from cooperation than those in other states.

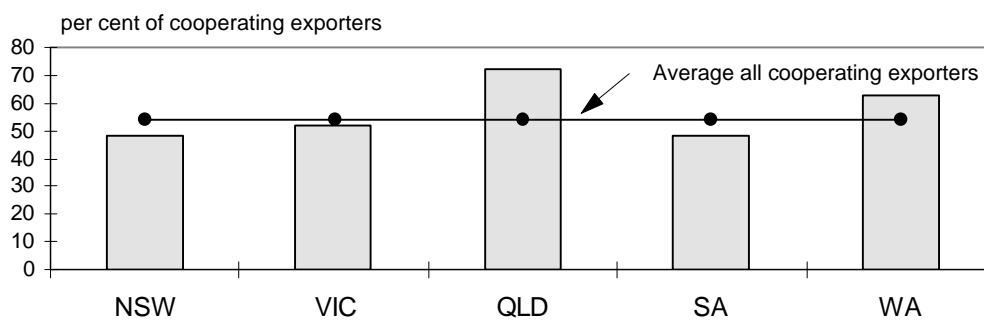
The data in Table 9.2 suggests a large variation in impacts on exports. However, when only exporters are considered, the results change somewhat (see Figure 9.4). Over 70 per cent of Queensland's cooperating firms which export reported increased exports as a direct result of their key arrangement (compared to an average of 54 per cent). The above average result for Western Australia is not statistically significant due to the small number of firms in the sample.

Table 9.2 Positive impacts of key arrangements, by state (per cent)

	NSW	VIC	QLD	SA	WA	All states
<i>Performance indicators</i>						
Turnover	69	67	75	71	77	70
Profits	60	56	69	63	68	61
Productivity	50	49	57	55	45	51
Employment	40	37	36	52	46	41
Exports	25	31	45	34	19	30
<i>Broader competitiveness measures</i>						
Customer service	59	61	49	72	63	60
Quality	54	57	44	70	46	56
Technology	55	50	48	58	44	52
Price	41	35	36	42	54	40

Source: BIE survey

Figure 9.4 Positive impacts on exporters, by State



Source: BIE survey

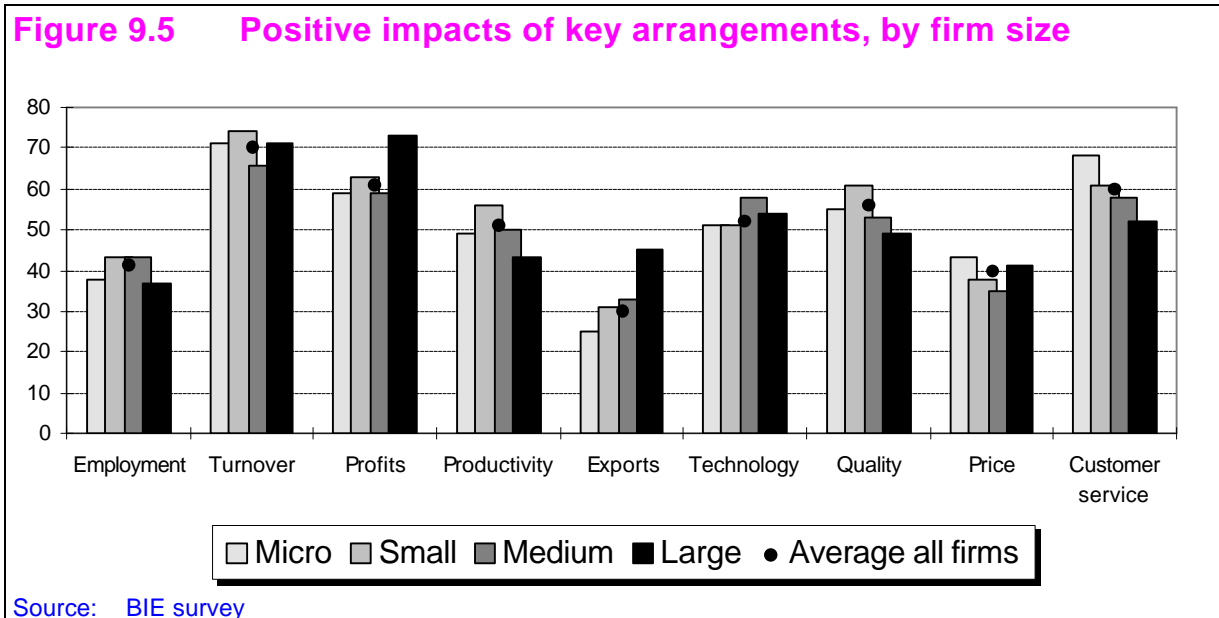
9.2 Impacts and the characteristics of the firm

Chapter 7 showed that the benefits of cooperation vary with the characteristics of the firm. For example large firms are far more likely to derive major benefits in terms of product development and technology than small firms, while access to new overseas customers/suppliers is very important for exporters.

This section develops this theme by examining how the performance and competitiveness of different firms are affected by their key arrangements. The structure follows that of Chapter 7, examining impacts by size, age, exporting activity, growth performance, product and technology types and a range of other characteristics.

9.2.1 Impacts and the size of firms

As shown in Chapter 7, firms of different sizes report different benefits flowing from cooperation. One might also expect that the impact of cooperation on firm performance and competitiveness varies with firm size. Figure 9.5 shows the proportion of firms recording positive impacts from cooperation by firm size.



The chart shows a relatively large variation in impacts on exports, with larger firms recording well above average impacts, and micro firms (10 or less employees) recording below average impacts. These results are somewhat distorted in that the proportion of firms which export varies with firm size. When only exporting firms are considered, there is essentially no variation in impacts on exports by employment size.

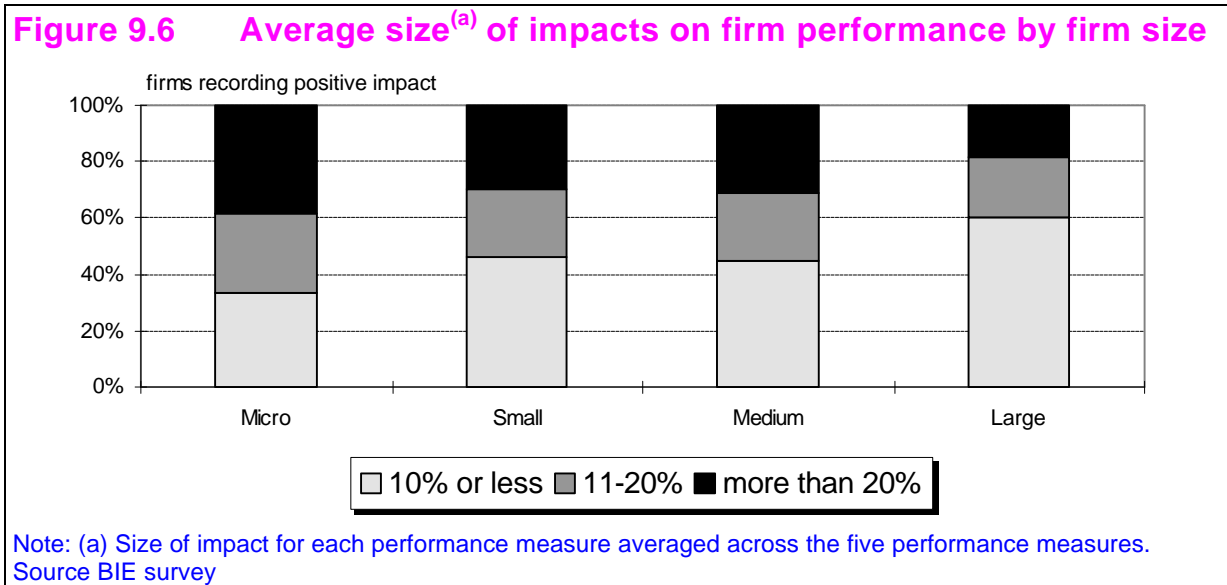
One of the two areas where there is a significant divergence from average results is in profits, where large firms are more likely to experience increases from their key arrangement than other firms. The other is in customer service, where more micro firms than average experience improved customer service via their key arrangement.

These results contrast sharply to those of Section 7.1.2 which found that the probability of receiving major/critical benefits from cooperation in general rises substantially with firm size. Figure 9.5 indicates that firms of all sizes have generally the same chance of recording improvements in competitiveness and performance. Once again, this is likely to be a reflection of the fact that the data relates to only the key arrangement – that key arrangements are similar between sizes of firms. This suggests that for any given arrangement, firm size, *per se*, does not provide any inherent advantage (or disadvantage) in reaping the benefits of that arrangement. The results in Section 7.1.2 are likely to reflect other factors, such as the number of strategically important arrangements held by large firms relative to that of smaller firms.

While the data in Figure 9.5 show that similar numbers of firms in each size categories experience improvements in performance and competitiveness, it does not provide any information on the relative sizes of the impacts. Does the magnitude of impacts vary with firm size?

An examination of the size of performance changes reveals that smaller firms typically experience greater improvements than larger firms. In each of the performance measures, apart from exports, smaller firms

record higher impacts than larger firms. Figure 9.6 shows the average size of impacts (across the five performance measures) by firm size. On average, around 20 per cent of large firms recorded impacts of greater than 20 per cent, compared to a figure of almost 40 per cent for micro firms. Of course, it is easier to grow from a relatively small base. However, these results are particularly important to those small firms who are seeking to improve their performance.

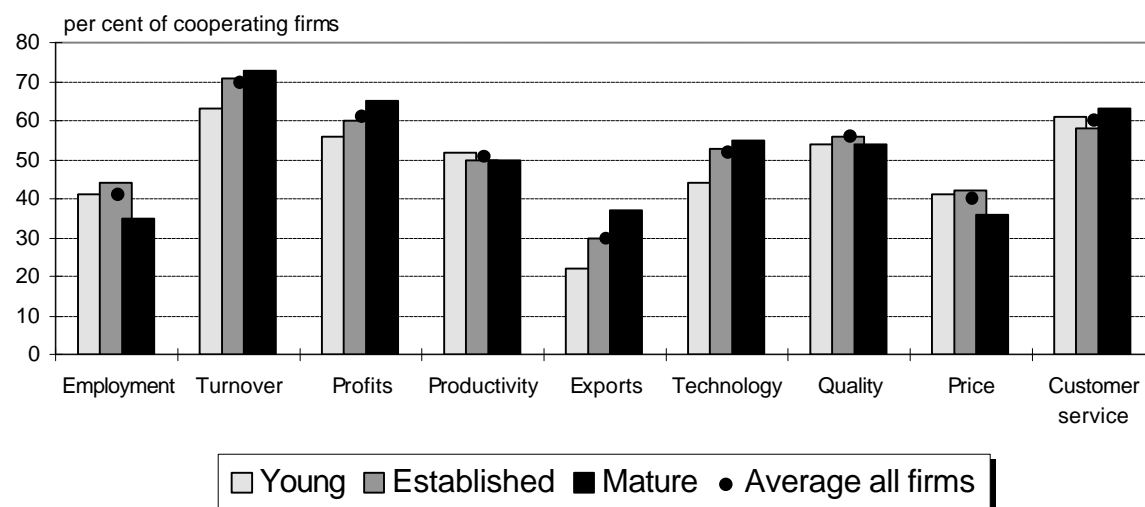


In sum, these results suggest that cooperation can provide substantial benefits to all firms regardless of size. The fact that a firm is large or small generally has little impact on the likelihood that its performance and competitiveness will be improved by any particular arrangement. However, where improvements in performance do arise, they tend to be proportionately bigger for smaller firms.

9.2.2 Age of firms

As shown in Chapter 4, the extent of cooperation does not vary greatly between firms of different ages. Figure 9.7 shows that impacts also exhibit little variation with the age of firms.

Figure 9.7 Positive impacts of key arrangements, by age of firm



Source: BIE survey

The relatively small proportion of young firms experiencing increases in exports as a result of their key arrangement mainly reflects a difference in export activity. The proportion of young exporters which recorded increasing exports was 45 per cent (compared to an average of 54 for all exporters).

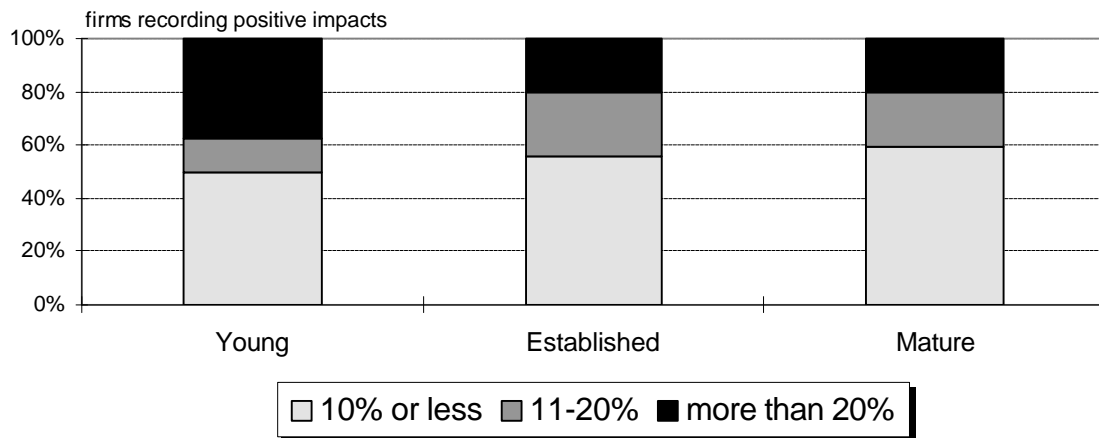
Young firms are also less likely than more mature firms to receive improvements in technology as a direct result of their key arrangement. The proportion of younger firms which classified themselves as “low-tech” is significantly higher than in other age groups. Low-tech firms also experience well below average levels of technology improvement (see Section 9.3.6).

Figure 9.7 suggests that there might be a positive relationship between age and improving turnover and profit levels. This is in line with the findings in Section 7.1.7 which showed that proportionately more mature firms reported increased profit/sales as a major/critical benefit of cooperation than did young firms. Moreover, it found that mature firms were more likely to receive major/critical benefits generally than younger firms. The same could not be said of impacts and the key arrangement. The data in Figure 9.7 indicate that firms of all ages are equally likely to improve their performance and competitiveness via their key arrangement.

Younger firms typically experience greater impacts than more mature firms. This is illustrated by Figure 9.8 which shows the magnitude of positive impacts on turnover by the age of firms.

While more mature firms experience increasing turnover from their key arrangement than young firms, younger firms, on average, experience a greater impact than do mature firms. Such a conclusion is not overly surprising given that young firms are typically smaller than mature firms, and therefore any given increase is likely to be proportionately larger for younger firms.

Figure 9.8 Turnover increases, by age of firm



Source: BIE survey

In sum, the impact of the key arrangement does not vary greatly with the age of firms, although younger firms generally experience larger impacts than mature firms.

9.2.3 Exporters and non-exporters

Section 7.1.4 examined the benefits of cooperation accruing to exporters and non-exporters and found that benefits tend to favour exporters, most notably increased profits/sales, market knowledge and new overseas customers/suppliers. Are these differences reflected in the impact of the key arrangement?

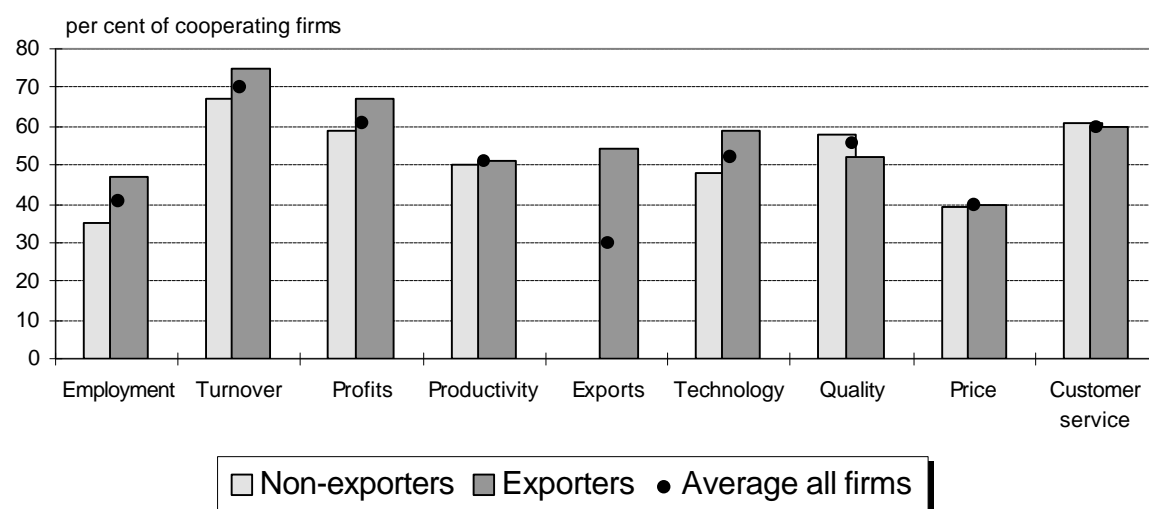
Figure 9.9 shows the changes in performance and competitiveness for exporters and non-exporters. Once again, proportionately more exporters experience increases in turnover and profits directly from their key arrangement than do non-exporters.

Just under half of exporters took on more employees to exploit the enhanced business opportunities resulting from the key arrangement. The comparable figure for non-exporters was 35 per cent.

These results suggest that, on average, key arrangements for exporting firms improve performance more so than those of non-exporting firms.

The picture for competitiveness is not quite as clear. Improvements in technology are more common for exporting firms and this is likely to reflect the importance of overseas links to exporting firms. One-third of exporters' key arrangements are exclusively with firms located offshore – the very arrangements that are most likely to lead to technology improvements (see Section 9.3.4). Nevertheless, non-exporters still record close to average impacts, with almost half experiencing technology improvements.

Figure 9.9 Positive impacts of key arrangements, exporters and non-exporters



Source: BIE survey

Proportionately more non-exporters have improved their quality performance via their key arrangement than exporters. An examination of the top three benefits of the key arrangement also reveals that quality improvements are considered somewhat more important to non-exporters than exporters. In the case of the former, 43 per cent of those which have experienced quality improvements ranked it in the top three benefits of the key arrangement. For exporters, the result was 38 per cent.

To an extent this reflects a difference in focus in the key arrangement for the two groups of firms. The most important arrangement for exporters tended to focus on demand side issues, particularly in overseas markets. Non-exporters tend to place a priority on productive efficiency.

9.2.4 Impacts and firm performance

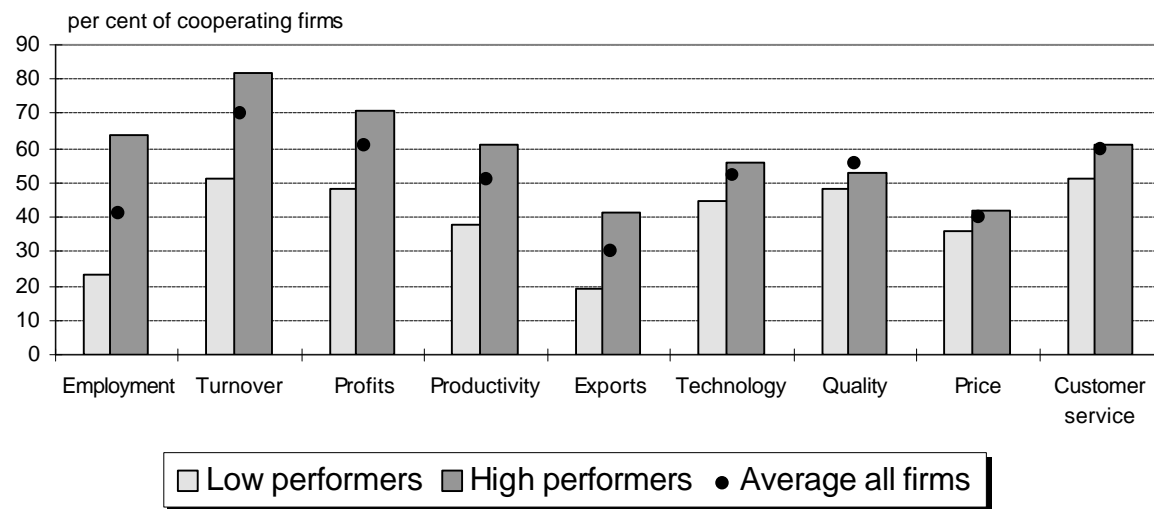
Just under 20 per cent of firms which are involved in cooperation experienced declining turnover in the preceding three years. Figure 9.10 shows the impacts of cooperation on these ‘low performers’ and that for ‘high performers’ – those in the top 20 per cent of growth¹¹.

High growth firms are far more likely to receive positive impacts than those with falling turnover – there was an average 20 percentage point difference across the nine measures.

High performing firms recorded above average impacts in all the performance indicators – the area where poor performers recorded well below average impacts. There was an average 28 percentage point difference between the two groups for these five impact measures.

¹¹ High performers had an average annual growth rate of greater than 25 per cent in turnover over the last three years.

Figure 9.10 Positive impacts of key arrangement, by turnover performance



Source: BIE survey

The results for poor performers are particularly important. They demonstrate that business cooperation is still very effective, even for firms experiencing declining sales. Half the cooperating firms with falling turnover experience increased turnover as a direct result of their key arrangements, and almost as many achieve higher profits. While the impacts of the key arrangements for these firms is not great enough to overcome the other influences leading to falling turnover, they nevertheless result in smaller falls than otherwise would be the case.

Moreover, firms in decline are still achieving average positive impacts in the broader competitiveness measures. Improvements in technology, quality, price and customer service can be expected to improve firm performance over time with the consequence perhaps that cooperation might assist in reversing declining turnover.

For the bulk of high growth firms, the key arrangement assisted in achieving high levels of turnover growth¹².

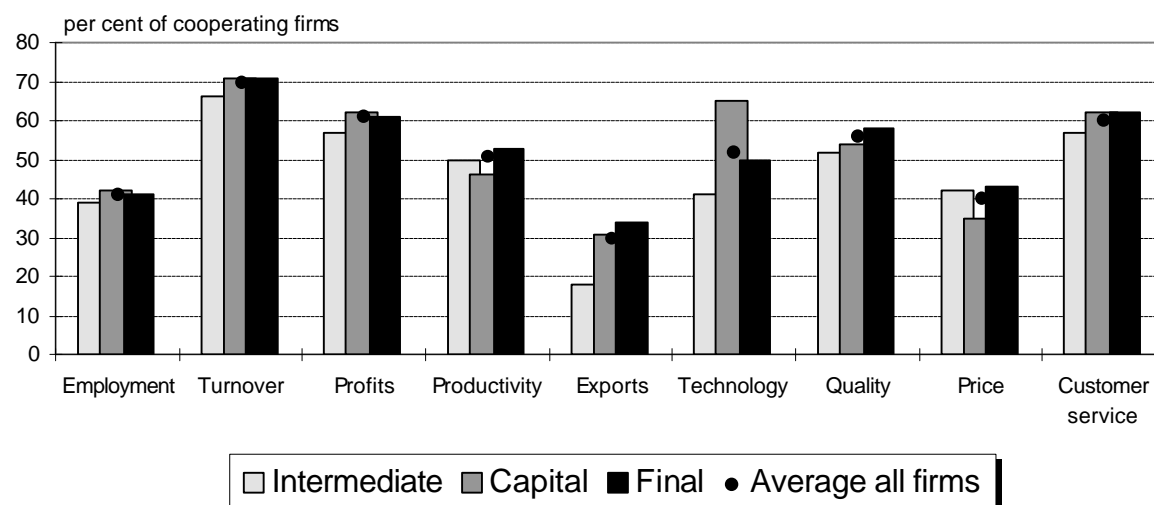
9.2.5 Product types

Section 7.1.6 found that intermediate goods producers, like young firms, tend to focus on efficiency or cost issues in their cooperative arrangements. This was more pronounced than capital and final goods producers. Is this difference in focus reflected in the impact of the key arrangement?

Figure 9.11 shows that there is little variation in impacts across firms producing different types of goods. The major areas where differences arise are exports and technology.

¹² Less than 20 per cent of high growth firms report that their key arrangement played no role in increasing turnover.

Figure 9.11 Positive impacts of key arrangements, by product type



Source: BIE survey

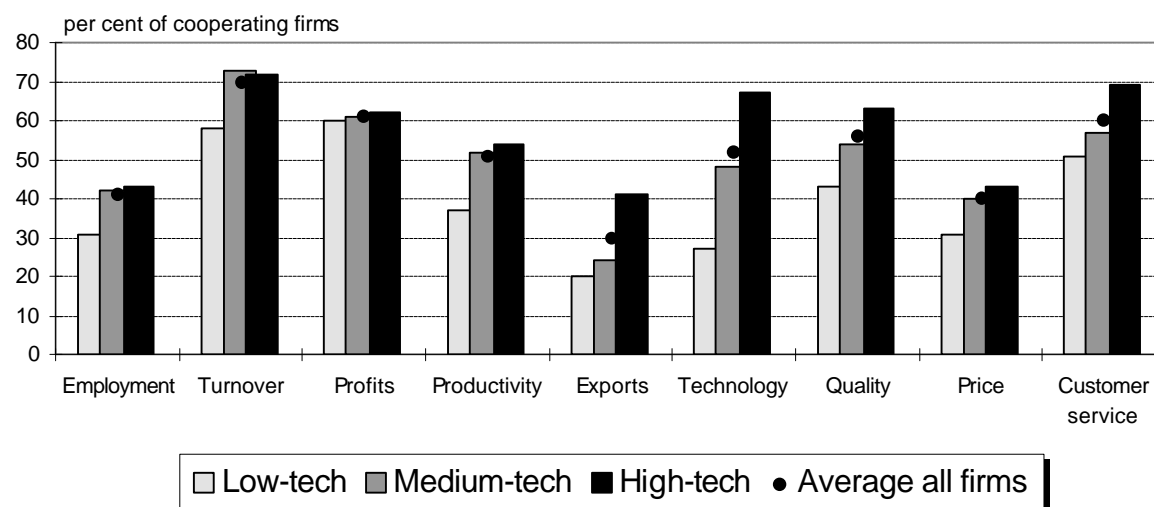
Some 65 per cent of capital good producers reported that their key arrangement has led to improvements in technology competitiveness (compared to an average of 52 per cent). In contrast, only 41 per cent of intermediate product firms recorded likewise. This largely reflects that capital goods tend to be more technology intensive than either intermediate goods or final goods. Over half of the firms which produce capital goods recorded their level of technology as high. The comparative figure for intermediate good and final good producers is only 25 per cent. This finding is consistent with that in Section 7.1.6 which showed that access to technology was the equal second ranked major/critical benefit of cooperation (access to technology was not included in the top seven major critical benefits for either of the other two groups).

Figure 9.11 shows an apparently small impact on exports for intermediate good producers and an average result for the other two groups. This result is merely due to the very small number of intermediate good producers who are actually involved in exporting.

Overall, the impact of the key arrangement on performance and competitiveness does not vary to any great extent with the type of product a firm produces. Even the magnitudes of the changes in performance are quite similar. These findings suggest that wherever a firm is in the value chain, cooperative arrangements can be a valuable tool in the pursuit of enhanced competitiveness and performance.

9.2.6 Low, medium and high-tech firms

Low-tech firms are likely to get less from their key arrangement than other firms (see Figure 9.12). Across the nine measures, there was a 17 percentage point difference in positive impacts between high and low-tech firms.

Figure 9.12 Positive impacts of key arrangements, by technology level

Source: BIE survey

Low-tech firms recorded below average impacts in employment, turnover, productivity, technology, quality and customer service. High-tech firms were particularly able to improve their competitive position on a number of fronts, recording above average impacts in technology, customer service and quality.

Not surprisingly, the proportion of high-tech firms experiencing improvements in technology is well above average (67 per cent compared to 52 per cent). In contrast, low-tech firms are only half as likely to record positive technology impacts than average.

These results support findings on the benefits of the key linkage. One third of high-tech firms ranked access to technology in the top three benefits of their key arrangement (it was ranked 6th out of 15 benefits). Nearly half of the high-tech firms which reported positive impacts on technology ranked access to technology in the top three benefits. In comparison, only 8 per cent of low-tech firms ranked access to technology in the top three (it was ranked 14th out of 15). It was revealed in Section 7.1.3 that access to technology is the equal fourth ranked major/critical benefit of cooperation for high-tech firms (it was not ranked in the top seven by either low or medium-tech firms). All in all, cooperative arrangements appear to be important conduits in the flow of technology between high-tech firms, but far less so for other firms.

The apparent differences in impacts on exporters merely reflect differences in exporting activity between the technology groups. When only exporters are considered, impacts are close to the average of 54 per cent for each group.

An interesting aspect of Figure 9.12 is that low-tech firms are as likely as any other to experience increases in profits as a result of their key arrangement, a result not matched in any of the other nine measures. As noted earlier, one of the central reasons firms enter cooperative arrangements is to pursue profit increases. Viewed in this light, the lack of variation in impacts on profits is perhaps not surprising.

9.2.7 Other firm characteristics

Analysis of impacts by competition levels found that a change in competition from medium to high had little impact on the effectiveness of the key arrangement. However, in areas other than productivity, exports and technology, firms facing little competition tended to record far fewer improvements¹³.

Sections 7.2 and 7.3 examined the benefits of cooperation by firms' competitive advantages and growth constraints. Broadly speaking, it found that firms tend to enter arrangements to consolidate and enhance existing competitive advantages and to help overcome specific constraints.

Generally, there is little variation in key arrangement impacts by competitive advantages. Most firms, regardless of their individual strengths, recorded average or close to average impacts.

One interesting exception are those firms with a competitive advantage in technology. Proportionately more of these firms reported growing employment (51 per cent compared to the average of 41 per cent), higher exports (45 per cent compared to the average of 30 per cent) and, not surprisingly, improvements in technology (71 per cent compared to an average of 52 per cent). The latter result suggests that the most important relationship for firms with advantages in technology tend to have technology as a major focus.

The other notable case are firms which considered that the low cost of the products gives them a competitive edge. Such firms recorded average impacts in all areas except technology, where only 40 per cent recorded a positive impact compared to the average result of 52 per cent. This is likely to reflect that for these firms, new and advanced technology is less likely to be seen as an issue of central importance than for other firms.

Finally, there are some significant differences in impacts of the key arrangement for firms which considered access to technology as a major *constraint* on their performance. The proportion of these firms recording improvements in competitiveness tended to be lower than average. For example, only 45 per cent indicated that their key arrangement had enabled them to improve the quality of their products compared to an average of 56 per cent. A similar proportion were able to deliver improved customer service, compared to an average result of 60 per cent. Interestingly, the proportion of firms reporting improved technology was on par with all other firms, indicating that perhaps such firms are pursuing cooperative agreements in part to overcome their technology constraint.

9.3 Impacts and the characteristics of arrangements

This section examines how the impact of cooperation varies with the characteristics of arrangements and partner firms. In Chapter 8 we examined how the benefits of cooperation varied with the type of arrangement. For example, it was found that the chance of obtaining major/critical benefits from informal arrangements was significantly smaller than for formal arrangements.

Information on the differing impacts of arrangement types is important to both firms and policy makers. For the former, an indication of how different arrangements affect their 'bottom line' may prove useful in examining cooperative strategies. It also allows firms to target their cooperative activities more closely. For example, if a firm is looking to improve its exporting position, it is very useful to know which arrangements are most likely to achieve such a result. Managers of government programs would also find it useful to know how impacts vary with different types of arrangements. Many government policies are aimed at

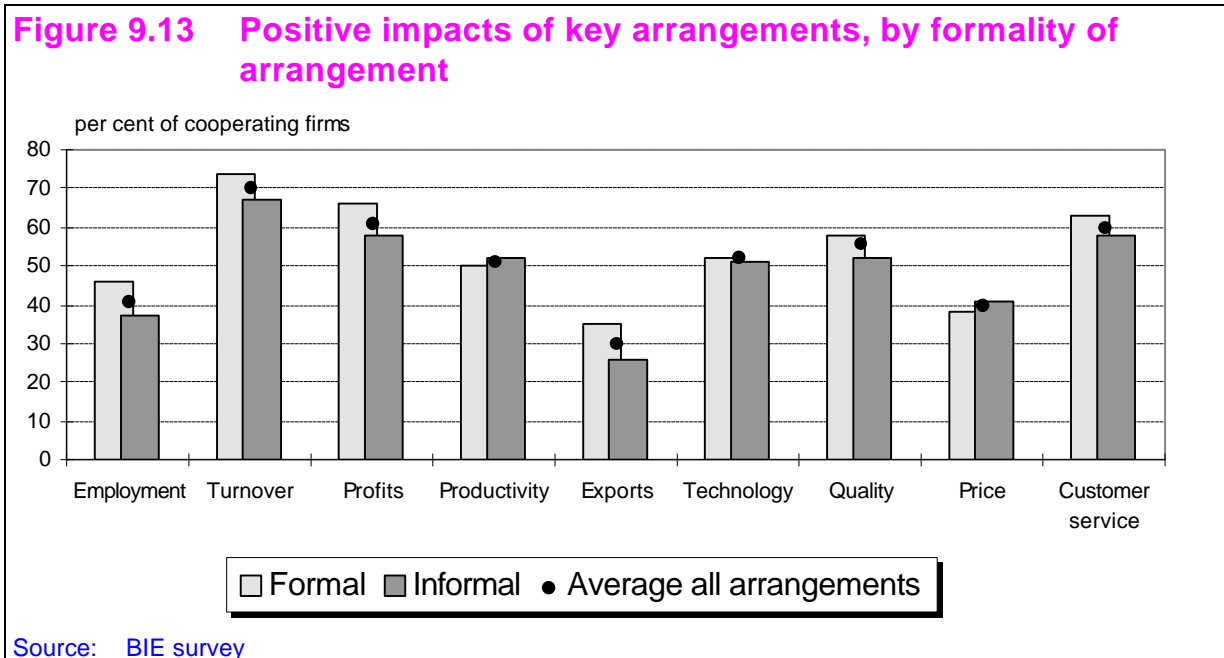
¹³ Given the sample of firms facing little competition was less than 5 per cent (or about 20 firms), none of these differences were statistically significant.

improving the competitive position of firms, and information about how cooperative arrangements help in this aim will be valuable.

9.3.1 Formal and informal arrangements

There were slightly more informal key arrangements than there were formal ones (53 per cent were informal)¹⁴. However, formal arrangements tend to have slightly greater impacts than informal ones (see Figure 9.13). Across the nine measures, there is an average difference of almost 5 percentage points in favour of formal arrangements.

Firms with formal key arrangements more commonly have impacts in four of the five performance indicators, although once non-exporters are excluded, there is no difference in the impacts on exports. They are more likely to become bigger (in both turnover and employment) and more profitable as a result of that arrangement than those with informal key arrangements. In contrast, there are no significant differences in the broader competitive measures or in productivity.



The results here are weaker than those in Chapter 8 where we found that formal arrangements clearly lead to greater benefits than informal ones (see Section 8.1.3)¹⁵. For example, Figure 9.13 shows little difference in the impact of the key arrangement in the areas of quality and technology. However, when cooperation is considered more broadly, there are significant differences in major/critical benefits in these two areas. For quality, 35 per cent of firms with only formal arrangements obtained major/critical benefits compared to 18

¹⁴ This is an interesting result. Interviews with cooperating firms suggested that the more important the relationship to the firm, the more likely it is to be formalised. One might therefore expect the majority of key arrangements - the most important arrangements - to be formal.

¹⁵ Although the results for turnover/profits are consistent with those in Chapter 8 – formal arrangements more commonly lead to increases in turnover/profits than do informal ones.

per cent for those with informal arrangements. For access to technology the proportions were 32 per cent and 14 per cent respectively.

These data illustrate the point that the key arrangement is a *special* case of cooperation. The differences between formal and informal arrangements are greatly reduced when it comes to the most important arrangement.

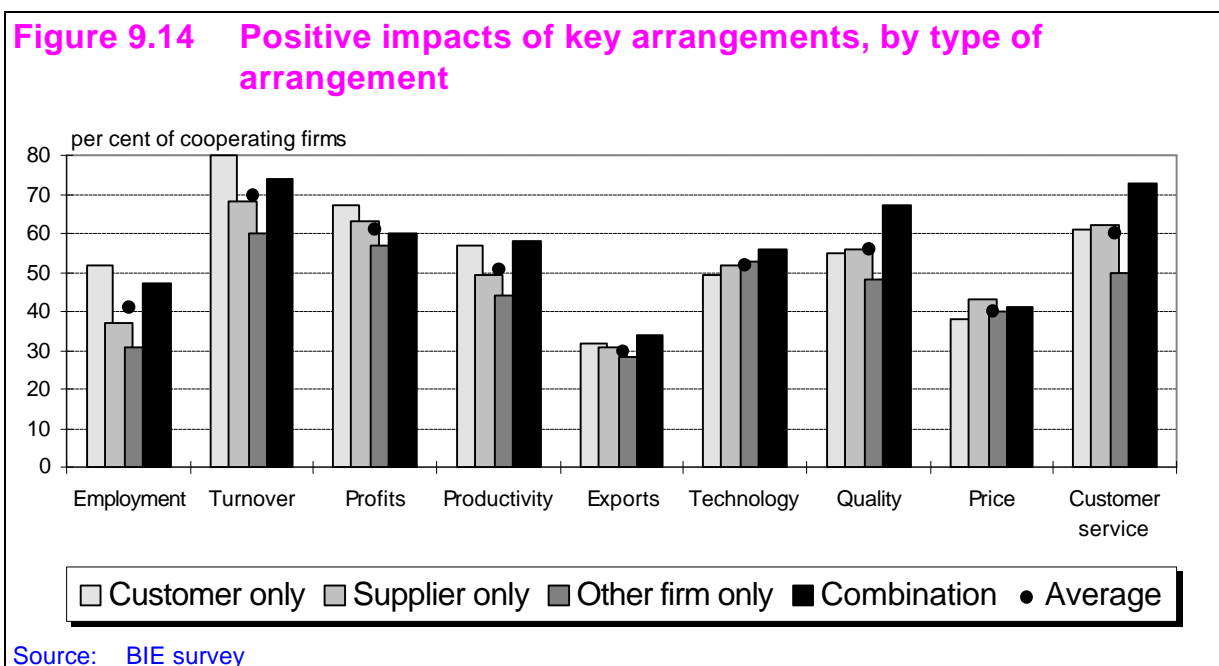
As noted in Section 8.1.3, differences in benefits between formal and informal arrangements may reflect varying levels of effort and commitment made by parties to the arrangement. However, it might be expected that similar levels of effort and commitment would be invested in the key arrangement given that it is the most important arrangement to the firm. To this extent, it would not be surprising to find smaller differences between formal and informal arrangements.

One particularly interesting result is that the impact of informal and formal arrangements on technology is the same (51 and 52 per cent respectively). While this result does not show the quality and types of improvements in technology to be the same, it does suggest that informal arrangements are useful conduits in the transfer and exchange of know-how, technology and so on. Moreover, given the informal nature of these arrangements, the extent of such transfers are likely to be less well documented and this is perhaps an area for further research.

9.3.2 Customers, suppliers and other firms

We now see if impacts differ depending on whether key arrangements are customers, suppliers or other firms. Figure 9.14 shows the impacts of these plus a combination category that includes those arrangements that had a mixture of partners. The total number of key arrangements were roughly equally split between the four categories.

The strongest performers were customer arrangements and mixed arrangements, while other firm arrangements recorded the lowest level of impacts in seven of nine measures.



One of the largest variations was in employment. Just over half of the firms whose key arrangements were with customers recorded an increase in employment as a result of that arrangement, followed closely by those with mixed arrangements at 47 per cent. In contrast, 37 per cent of firms with key supplier arrangements recorded increased employment levels and only 31 per cent of firms whose key arrangements with other firms recorded an increase in employment.

There were also substantial differences in impacts on turnover. Those with customer arrangements are more likely to achieve higher turnover as a result of their arrangements (80 per cent) than average, while those with other firm arrangements are significantly less likely (60 per cent). Supplier arrangements and mixed arrangements recorded roughly average levels (around 70 per cent). It is interesting to compare these results to those for profits where variations are much lower (a spread of 10 percentage points compared with 20 percentage points for turnover).

Because of their demand-side nature, customer arrangements might be expected to lead to higher turnover than, say, supplier arrangements. The latter are perhaps more likely to focus on inputs and the production process. In the short-run, lower costs can directly lead to increases in profits, as can higher turnover and it is therefore not surprising to find similar results for profits. However, cost reductions may also provide scope for firms to reduce prices, leading to increases in turnover over time.

Another interesting result is the above average impacts on quality and customer service for mixed arrangements. In these two areas, the effect of having a combination of partners is greater than the effect of having any separately.

Two-thirds of firms with mixed arrangements were able to improve their quality as a direct result of their key arrangement. Around 55 per cent of firms with either customer or supplier arrangements were able to do likewise and only 48 per cent of firms with other-firm arrangements reported a similar result. This probably reflect the advantage of working towards quality improvements from both ends of the value chain.

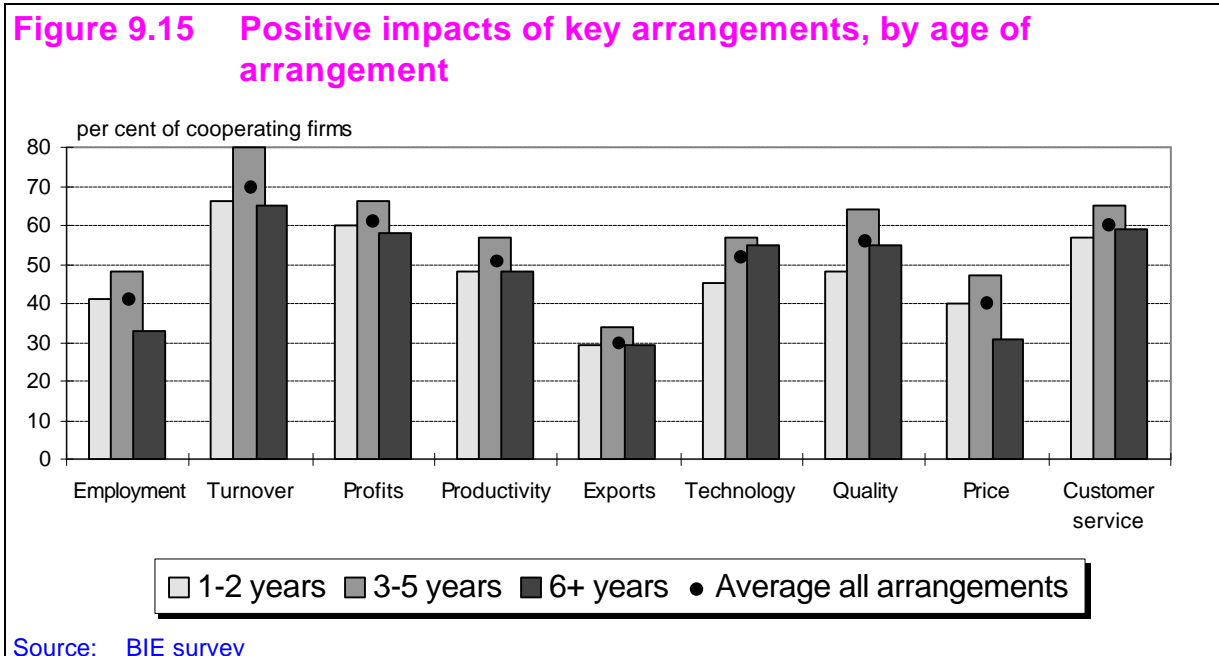
Working closely with customers provides firms with the opportunity to improve the quality of their product – indeed ‘leading-edge’ customers are seen as requiring such improvements according to the AMC (1994). In an analogous way, a firm can improve the quality of its inputs by working with its own suppliers, and in turn, this can lead to improvements in the quality of its own output. When both forces are at work, the likelihood of quality improvements being made is increased.

Figure 9.14 also shows some variation in impacts on productivity. Key arrangements with other firms were found to be less likely than average to lead to increases in productivity. One-fifth of firms with these arrangements reported increases in both productivity and employment numbers, a result similar to those with supplier arrangements. In contrast, over one-third of those with key customer arrangements experienced improvements in productivity and increasing employment. Across all arrangements, just over 70 per cent of firms recording increases in employment also experienced rising productivity. It would seem that cooperation can directly lead to larger, more productive and more successful firms.

9.3.3 Impacts and the age of key arrangements

The key arrangements were grouped by age to assess whether impacts varied with the time they had been operating. Young arrangements (that is those 1-2 years old) accounted for 37 per cent of all key arrangements. Those that were between three and five years old made up 34 per cent. The remaining 29 per cent had existed for 6 or more years.

Figure 9.15 shows how impacts vary with the age of the arrangement. The average age of key arrangements was close to six years, while the median age was three years. Arrangements of 3-5 years recorded the highest proportion of impacts in all of the nine measures.



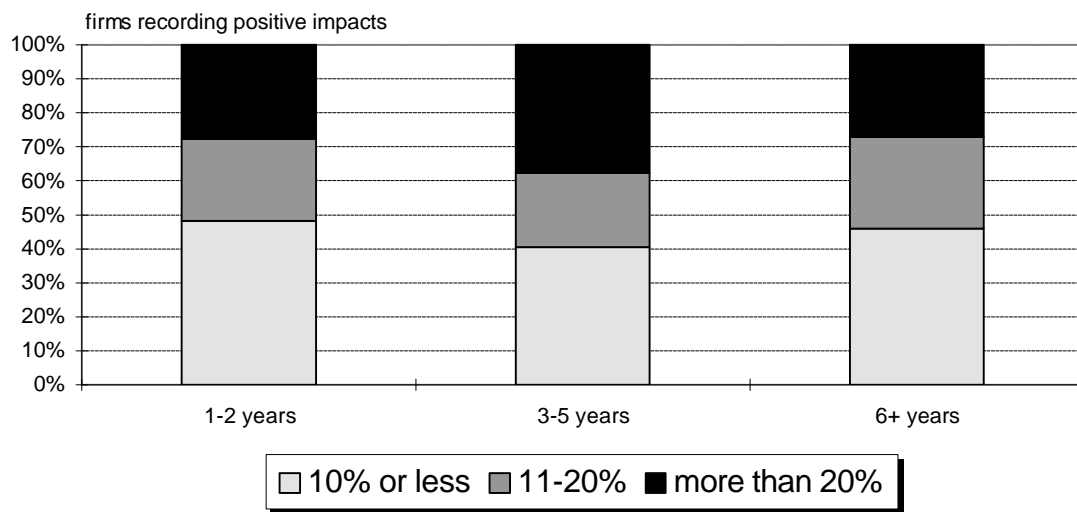
The greatest variation between the age classifications occurred in turnover where 80 per cent of firms with arrangements 3-5 years old recorded a positive impact. It is interesting to note the small difference between young arrangements (1-2 years) and older arrangements (6+ years).

Figure 9.16 provides an indication of the size of impacts by age of arrangement. It shows that relatively new and relatively long standing arrangements are distributed similarly.

In both cases, just under half of those reporting positive impacts on the performance indicators received impacts of 10 or less per cent. In the 3-5 year age group, almost as many firms recorded impacts of greater than 20 per cent as did impacts of 10 per cent or less, a result not matched in the other two size groups. Arrangements of 3-5 years therefore not only provide positive impacts more commonly (Figure 9.15), they also tend to be bigger impacts also (Figure 9.16).

These results suggest that cooperation tends to have its greatest impact in the medium term, although substantial benefits still flow from cooperation in the short and long run. Discussions with cooperating firms support this finding. For example, firms indicated that it can take up to a year before any substantial benefits start flowing from cooperative activities. It often takes considerable time to build the trust between parties that some arrangements require. In the longer term, markets and products change and the original impetus for establishing a cooperative arrangement may diminish or even disappear.

Figure 9.16 Average size^(a) of impacts on firm performance by age of arrangement



Note: (a) Size of impact for each performance measure averaged across the five performance measures.
Source BIE survey

9.3.4 Impacts and the characteristics of partner firms

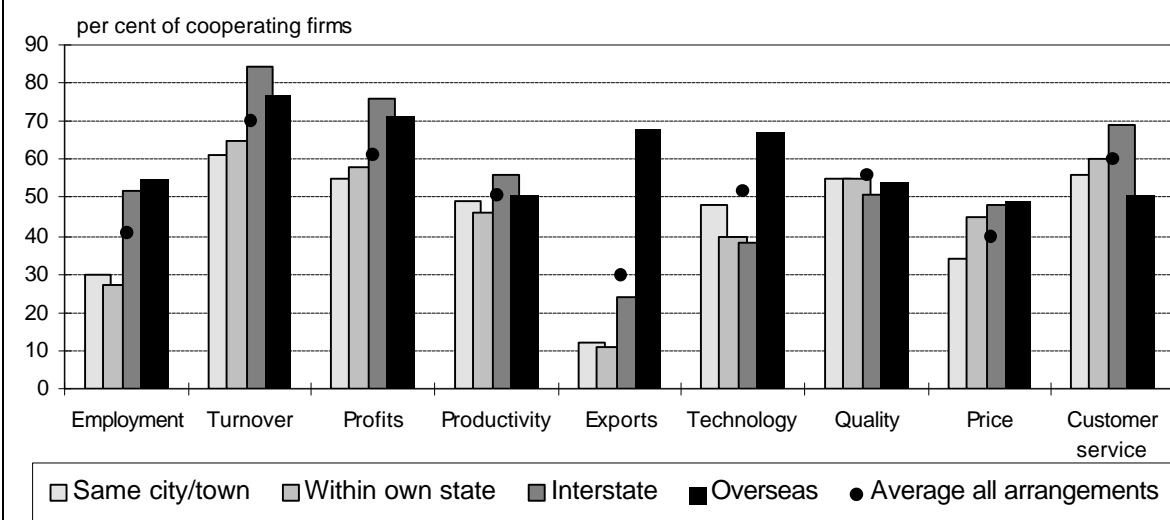
Does the location of partners make any difference when it comes to improving the performance and competitiveness of firms via the key arrangement? The distribution of arrangements by partner location is as follows:

- 40 per cent had all partners within the same city/town;
- 10 per cent had all partners within same state (but none in same city/town);
- 10 per cent had partners exclusively interstate;
- 20 per cent had partners exclusively overseas; and
- 20 per cent had partners in a combination of the above groups.

Figure 9.17 shows that impacts vary substantially with the location of partner firms. Arrangements within town/city and state boundaries tend to have average or below average impacts, whereas arrangements involving firms in other states or countries tended to have average to above average impacts. This is consistent with the findings of Section 8.3.3.

The most dramatic difference occurs with exports. Just over two-thirds of firms that have overseas partners (exclusively) in their key arrangement achieve higher export sales as a direct result of that arrangement. When non-exporters are excluded, the figure rises to over three-quarters. This is the highest result for any arrangement or firm characteristic. In contrast, arrangements that do not cross state boundaries are almost a third less likely to lead to increased exports.

Figure 9.17 Positive impacts of key arrangements, by partner location ^(a)



Note: (a) Locations are mutually exclusive (ie all partners are in one location)

Source: BIE survey

The importance of access to overseas markets is highlighted by responses relating to the top three benefits of the key arrangement. Across all key arrangements, around a quarter of firms rank access to new suppliers/customers overseas in the top three benefits. The figure for those whose key arrangement was with a firm located overseas was 50 per cent.

AMC and McKinsey(1994) noted the importance of overseas customers as “door openers”. It found:

Thirty per cent of our emerging exporters said customers were very important or critical for finding and developing new overseas customers, second only to their offshore sales organisation (40 per cent) (p. 11).

Establishing export markets can be expensive and time consuming. For example, exporters need to develop an understanding of market conditions, business regulations and develop distribution and other contacts in foreign countries. In many cases, managers also have to learn the customs and traditions of the countries they deal with before any trade can take place. These costs are largely sunk and act as a barrier for many (and particularly small) firms. Cooperative arrangements with overseas companies can reduce or even remove some of these barriers and therefore lead to increased exporting activities.

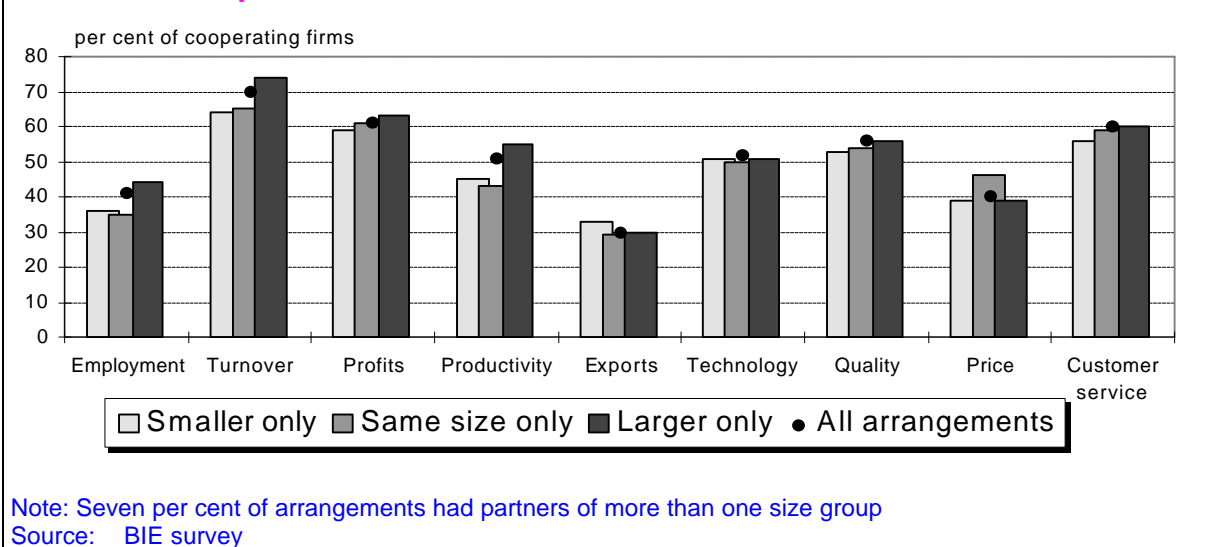
The other area in which arrangements with overseas-based firms seem to have a significant advantage is in the area of technology. Two-thirds of firms with overseas partners in their key arrangement experience improvements in technology as a direct result of that arrangement (compared to an average of 52 per cent). Of these firms, 45 per cent reported access to technology in the top three benefits of the key arrangement. Casting the net wider than the key arrangement, 36 per cent of firms which have overseas links ranked access to technology as a major/critical benefit of cooperation (see section 8.2.2).

A number of studies have examined technology transfers between Australian and overseas firms (for example BIE 1988, EPAC 1986, OECD 1986) and generally find that ‘imports’ of technology are a major source of technology and innovation for Australian firms. The fact that so many firms with overseas links are improving their technology via these cooperative arrangements supports these findings.

Not surprisingly, results similar to those for location are found when arrangements are analysed by the ownership (foreign or domestic) of partner firms. For example, arrangements with foreign-owned firms are far more likely to result in increased exports (52 per cent) than those with domestically-owned firms (18 per cent). However, differences in impacts by ownership are typically smaller than those by location.

Figure 9.18 shows that impacts generally do not vary greatly with partner size. Key arrangements with larger firms (over half of all key arrangements) tend to more commonly result in increases in turnover than do those with firms of a similar size (27 per cent of key arrangements). These results are in line with those of Section 8.3.3 which showed that arrangements with larger firms are more likely to provide major profit/sales benefits than other arrangements.

Figure 9.18 Positive impacts of key arrangements, by relative size of partner firms



Cooperation with larger firms was also found to lead to productivity improvements more often than that with firms of a similar size. Arrangements with smaller firms (only 14 per cent of key arrangements) tend to provide average or below average impacts.

It is often argued that small firms receive significant benefits from working with larger firms. Data collected in the survey allow such a claim to be tested by comparing the impacts of arrangements between small (less than 20 employees) and larger firms with all other arrangements.

The only significant difference is customer service. Seventy per cent of small firms whose key arrangement is with larger firms reported positive impacts (the corresponding figure for all other arrangements is 59 per cent). In the other seven impact measures there is no notable difference between the two groups.

A comparison of the size of impacts for the performance indicators was also undertaken, comparing small firms whose key arrangement was with larger firms to all other cooperating small firms¹⁶. It found that cooperation with larger firms tends to produce only slightly higher impacts than that with other firms.

¹⁶ Using other small firms rather than all other firms provides a better comparison for percentage impacts.

These results suggest that for the majority of small firms, performance and competitiveness can be improved through cooperation *in general* – linkages with larger firms do not tend to provide additional improvements per se.

9.4 Modelling analysis

The previous sections have examined the impacts of cooperative arrangements on performance and competitiveness in a partial manner. For example, we looked at how impacts vary between exporters and non-exporters. Separately we examined differences between young and mature firms, and between small and large firms. Such characteristics can be interrelated – exporters are more commonly larger and older for example. In such cases, a partial treatment is clouded by these interrelations. To what extent are the findings for exporters a reflection of other characteristics such as age and size?

To examine these issues we constructed a number of models¹⁷ to examine the relationships between firm and arrangement characteristics and the impacts of cooperative arrangements in four areas, namely, turnover, exports, productivity and technological competitiveness. In a nutshell, the models examined a range of firm and arrangement characteristics and whether or not a positive impact had occurred. The model then predicts the likelihood of a positive impact given a set of characteristics – it identifies the most significant explanators in determining impacts.

Generally, modelling supported the partial analysis of the previous sections. The bulk of the significant findings outlined above were supported, although in some cases, the significance of a particular firm or arrangement characteristic was somewhat lower.

There was, however, one notable exception. Figure 9.9 shows that exporters are far more likely to improve their technological competitiveness through their key arrangement than non-exporters. Modelling work, however, did not support this finding – in fact, the model predicted that if a firm exported, it was less likely to experience such an impact. It also predicted that having an overseas partner in the key arrangement substantially increased the chance of recording technology improvements. This suggests that the differences between exporters and non-exporters is largely a reflection of the importance of overseas linkages to exporters, and has little to do with the act of exporting per se.

9.5 Summary

Cooperative arrangements can and do play an important role in improving the performance and competitiveness of Australian manufacturers. In seven of the nine measures examined in this chapter, at least half of cooperating firms recorded positive impacts. While there are a few variations, generally speaking, the key cooperative arrangement provides improvements to the bulk of firms, regardless of industry, size, age, product type and so on. Impacts tend to vary more frequently with the characteristics of the arrangement than with characteristics of cooperating firms.

One of the things that matters most to a firm when it is examining cooperation as a strategic option is how it will affect its profit and loss sheet. In terms of improving turnover and profits, arrangements with firms based interstate and overseas recorded well above average impacts, as did arrangements established with customers and those that were 3-5 years old. Large firms and those experiencing high levels of growth more

¹⁷ See Appendix A.

commonly experienced improvements in these areas as well. In contrast, young arrangements and those with partners located in the same city were least likely to improve a firm's 'bottom line', but even in these cases, over half of the firms with such arrangements recorded positive impacts. Around half of those cooperating firms experiencing falling turnover (low performers) reported that their key arrangement made a positive contribution towards turnover and/or profits.

On the export front, arrangements with firms based or owned overseas offer a distinct advantage in improving the trading activities of Australian manufacturers. Firms with high turnover growth and those in the IT&T industry most commonly experience improving export sales as a result of their key arrangement. On the other hand, arrangements with firms in the same city or state are least helpful in boosting exports.

The pursuit of quality is a core focus for many firms, and cooperative arrangements of 3-5 years were found to be most likely to assist in this regard. Most arrangements provide close to average quality improvements and the only noticeably low performer is young arrangements. There is greater variation by firm characteristics however, and high-tech and small firms record well above average impacts on quality. Conversely, low-tech firms and low performers are least likely to experience improving quality, as are firms in the Sci/med industry.

The final area of particular interest is technology. Once again, arrangements with firms based or owned overseas record well above average levels of positive impacts. Not surprisingly, high tech firms, capital good producers, and those in the IT&T and Engineering industries are also more commonly able to improve their technology through their key arrangement. At the other end of the range, low tech firms, those in the Clothing and footwear industry and intermediate goods producers experience below average impacts. The only type of arrangement with noticeably lower technology impacts were those which were domestically based but with partners located some distance away.

The usefulness of business cooperation in improving performance and competitiveness varies with the age of arrangements. The data in this chapter suggests that it takes a number of years before cooperation yields its greatest returns. This is an important finding, particularly for administrators of government programs involving cooperation. Rushing the early stages of development may result in lower performance and competitiveness improvements than are possible. Cooperation is a medium to long run option if it is to be fully effective.
