

Firm Growth and Supply Chain Partnerships: An Empirical Analysis of U.K. SME Subcontractors

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ABSTRACT. This paper examines the performance of a sample of 211 U.K. subcontractors to evaluate whether differences in how they manage their supply chain relationships are associated with differences in (sales and employment) growth rates over two consecutive 3 year periods from 1993 to 1999. We identified 34 firms that had close partnership relationships with members of their supply chain. Our empirical findings indicate that firms with inter-firm partnership arrangements with members of their supply chain experienced significantly higher growth rates. These results suggest that inter-firm partnerships may facilitate more rapid and sustained SME growth, though further research is required to determine the role played by partnerships and the extent to which this may vary to reflect differing owner-manager motivations and growth opportunities.

1. Introduction

This paper examines the performance of a sample of 211 U.K. subcontractors over the period 1993 to 1999. For subcontractors, developing and managing mutually beneficial exchange relationships with other supply chain members are central to corporate survival and growth. The diversity in corporate forms and business relationships suggests, however, that firms have a wide choice of viable strategies for handling inter-firm relationships. Academic studies that have focused on

the relationships between corporate strategy, inter-firm relationships and performance have suggested that a wide variety of factors and environmental circumstances can be expected to impact on the relative performance and desirability of any particular corporate configuration. Though theoretical perspectives have differed, most analyses of organisational strategies for managing supply chain relationships have suggested that “appropriate” choices are strategies that maximise the net benefits to stakeholders. The transaction cost (Williamson, 1985) and financial economics (see Jensen and Meckling, 1976; Fama and Jensen, 1983; Hart, 1995) literatures have both focused on the governance and performance implications arising from incomplete and costly contracting and other market imperfections and organisational characteristics. The desirability of different forms of governance, inter-firm relationships and acquisition/alliance decisions, have typically been evaluated in terms of the financial incentives and contracting costs arising from differing degrees of asset specificity, information asymmetries and the allocation of decision making and ownership rights. Both frameworks suggest that appropriately designed strategies that minimize transactions/agency costs can be expected to provide adopting enterprises with a competitive edge.

Empirically many SMEs appear to display a marked preference for conducting business via informal networks consisting of a limited number of close inter-firm and inter-personal relationships. Indeed, this is frequently cited as one of the unique characteristics of SMEs (Ang, 1991; Storey, 1994). Within the transactions costs/agency costs frameworks, a strategy based upon close ties with a limited number of business partners creates a potential for small numbers bargaining situations

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and opportunism. The widespread adoption of this method of conducting business within the SME sector suggests, however, that opportunism is less of a problem than the high costs, constraints and contractual incompleteness associated with the alternative, i.e., relying on formal contracting and market mechanisms (Keasey and Watson, 1993). For example, as emphasised by the “resource-based” and sociological literatures (BarNir and Smith, 2002; Hamel, 1991; Jack, 2002; Jack and Anderson, 2002; Uzzi, 1996), developing “trust” through socially “embedded” supply chain relationships and other forms of inter-firm alliances and partnerships may significantly reduce opportunism. Such relationships may also enhance value creation by facilitating greater co-operation, sharing, linking and transferring of knowledge and other resources between firms. Resource-constrained SMEs in this view adopt partnership-type relationships with suppliers and customers to obtain a comparative advantage through their favourable access to partnership resources. Even so, many SMEs may have other, non-growth oriented, motivations for developing close inter-firm partnerships, whilst non-partnership firms may have access to alternative forms of competitive advantage and growth opportunities denied to the partnership firms, e.g., lower contracting costs and/or superior access to formal capital, product and labour markets. Thus, whether inter-firm partnerships give adopting firms a significant competitive advantage, that is then reflected in superior firm performance, is essentially an empirical issue.

In this paper we examine the performance of a sample of 211 SME subcontractors, all of whom were known from previous research to obtain the majority (by value) of their business from other members of their supply chain network. Financial information was also available for computing their growth in turnover and employment over two 3 year periods (1993 to 1996 and 1996 to 1999). Information regarding the nature and variety of these inter-firm supply chain alliances had previously been obtained from a postal questionnaire administered in 1996. This information enabled the identification of a subset of 34 firms (henceforth, partnership firms) that claimed to have particularly close, long-standing and strategically important ties with supply chain members. The

empirical analysis focuses on whether this difference in inter-firm supply chain relationships confers a competitive advantage that results in significant differences in (sales and employment) growth rates.

The paper is organised as follows. We begin by examining the research literature concerned with SME supply chain relationships and inter-firm alliances and the characteristics of SMEs that tend to reduce their ability to access resources via formal market exchange relationships. We then examine the strategic management literature on alternative inter-firm relationships that may reduce contracting costs by creating trust, reducing opportunism and enhancing the firm’s access to resources. The following section presents our main empirical hypotheses and research methods and this is followed by a section detailing our sample, data and variables to be used in the empirical testing. Our main empirical analyses and a discussion of the results are contained in the penultimate section which is then followed by a summary of the main points raised by the paper, some implications of our results and a discussion of where further research is required.

2. SME objectives and inter-firm relationships

There is great variety in the corporate strategies and governance systems adopted by SMEs in regard to managing their relationships with external stakeholders, i.e., customers and suppliers (Hoffmann and Schlosser, 2001; Huggins, 2000; Huse, 2000). In the academic literature, there have been three, largely complementary, frames of reference that have provided explanations for the existence of firms, their boundaries and inter-firm linkages. First, transaction cost theory, associated with Coase (1937) and Williamson (1985, 1991), which views corporate strategy choices and inter-firm alliance formations in terms of minimising transaction costs. Second, is agency theory (Jensen and Meckling, 1976; Fama and Jensen, 1983a, b; Hart, 1995) which evaluates intra-organisational arrangements (risk sharing and decision rights) and inter-firm governance strategies in terms of their agency-cost implications for stakeholders in the face of uncertainty, asymmetric information and incomplete contracting. Finally, there is the resource-based strategy framework associated

with Penrose (1959), Barney (1991) and Gulati (1995), in which the firm is viewed as a bundle of resources and where the best mode of organisation is deemed to be that which provides the best opportunities for sharing and transferring resources. Within this framework, resource constraints and the possibility of access to inter-firm resources are the main motivations driving alliance formations. Successful access to these resources is assumed to involve substantial and extended co-operation and knowledge transfer between the parties. However, as emphasised by recent knowledge-based (Eisenhardt and Schoonhoven, 1996) and sociological (Gulati, 1995; Jack, 2002; Uzzi, 1996) extensions of the model, this type of collaboration requires high levels of mutual "trust" and interpersonal and interorganisational relationships based at least as much upon notions of "reciprocity" and "fairness" as upon profit maximisation.

These theoretical frameworks suggest that alliances and other inter-firm co-operative relationships can be viewed as rational strategies in the face of particular contractual and managerial resource constraints. The type of conditions that can be expected to generate significant contractual and other resource constraints are fairly widespread across the SME sector. These include the highly illiquid and closely-held ownership structures and incomplete management teams characteristic of SMEs (Ang, 1991), information asymmetries between capital suppliers and the entrepreneur (Stiglitz and Weiss, 1981, 1987; De Meza and Webb, 1987, 1990), and high levels of business uncertainty and failure rates (Keasey and Watson, 1995). These and other market imperfections typically create disproportionate costs for small players (Storey, 1994; Jones et al., 1994) and/or make accurate risk assessment by outsiders excessively costly, which thereby limits many SME's access to formal product, capital and credit markets (Mason and Harrison, 1997).

The resource-based view of inter-firm alliances suggests that the best strategy in these circumstances is usually to concentrate scarce managerial resources into developing relatively few, but concentrated, inter-firm relationships which embeds the firm in an informal network that relies largely upon mutual trust and notions of reciprocity and fairness. For example, Uzzi (1996),

described trust as "a unique governance mechanism in that it promotes voluntary, non-obligating exchanges of assets and services between actors", which is of economic importance "because it increases an organisation's access to resources and strengthens its ability to adapt to unforeseen problems" (p. 678).

Business relationships that rely to some extent upon inter-personal trust are in fact quite common in the SME sector. Such relationships are often based upon some shared non-economic characteristics such as locality (Bagnasco and Sabel, 1995; Freel, 2000; Collinson, 2000), schooling, ethnicity (see for example, Light and Bhachu, 1993; Portes and Senenbrenner, 1993; Sanders and Nee, 1996), etc. Owner-managers are also often motivated by a greater range of objectives than is typically assumed by many economic models. Indeed, if the business has no outside shareholders then the entrepreneur has both the right and opportunity to trade-off economic gains with a variety of "lifestyle" and other personal objectives (Storey, 1994). Provided that owner-managers are willing to tolerate the costs associated with non-value maximising behaviour, and a return which may often dip below economically viable levels for significant periods (Watson, 1990), there is no reason to suppose that economically inefficient businesses cannot survive indefinitely if they also deliver important lifestyle benefits to the owner-managers. Thus, whilst access to the resources of a "supply chain" may have a positive effect upon the performance of some firms, it is also recognised that some enterprises can become too "embedded" in comfortable and trusting inter-firm relationships that effectively cuts the firm off from external market conditions such that its economic potential is stunted (Johnnison, 1995; Uzzi, 1996). Also, as stressed by the economics-based literature, small firms may become too closely tied to a single large contractor which can lead to information impactedness and "small numbers bargaining" situations (Williamson, 1985; Keasey and Watson, 1993) that tip the balance of power strongly towards the large contractor and encourages opportunism. In practice then many SME supply chain relationships are likely to reflect a complex mix of economic and non-economic motivations, some of which may result in limiting rather than enhancing firm growth.

Empirical evidence from a variety of industries, firm size categories and national contexts, regarding the beneficial consequences associated with closer, long-term, embedded supply chain relationships appears to be plentiful, see for example, Davidsson et al., 2002; George et al., 2001; Hoffmann and Schösser, 2001; Kalwani and Narayandas (1995), Uzzi (1996), Park and Krishnan (2001), Petersen and Ragan (1994), Premaratne, 2001; Wynarczyk (2000). As much of this published work has focused only on relatively short-term performance measures and limited time periods, it is unclear whether inter-firm relationships simply create a temporary (one-off) improvement in performance or whether any improvements are typically sustained and measurable over an extended period of time (Wynarczyk and Thwaites, 1997). Kalwani and Narayandas's (1995) analysis, for example, though examining a longer time period than the majority of papers, still only covered a 3-year period and focused on accounting performance measures even though their hypotheses and literature review emphasised the long-term aspects of inter-firm alliances. Further evidence as to the long-term sustainability of any improved performance arising from close inter-firm alliances and partnerships in the SME sector is clearly required in this area.

3. Firm performance: empirical hypotheses and tests

The preceding discussion indicated that SME inter-firm relationships may not be wholly motivated by economic considerations, but that high levels of uncertainty and resource constraints, particularly in relation to managerial resources, may create barriers to firms that want to pursue growth opportunities from accessing external capital and product markets. Partnerships and other forms of inter-firm relationships, may provide an alternative strategy by which growth oriented firms can access inter-firm resources low cost. Equally, for "lifestyle" SMEs, the creation of a business based upon "trusting" inter-firm partnerships may be the primary objective itself rather than being simply a means by which to increase internal efficiency, profitability or growth.

In this paper, we evaluate three main

hypotheses. Hypothesis 1 examines if growth is significantly influenced by the firm's initial size, age, ownership and supply chain characteristics. Hypothesis 1 is evaluated by empirically estimating a relative growth benchmark model using the above characteristics as independent variables. Hypothesis 2 evaluates whether, after controlling for performance benchmark factors (i.e., hypothesis 1), there are any incremental performance differences associated with the firms that conduct their inter-firm relationships on a partnership basis, i.e., relationships that involve a high degree of mutual trust and resource sharing between firms. Hypothesis 3 determines whether there is evidence that any performance benefits associated with inter-firm partnership relationships are sustained, increased or reduced over the two adjacent three year time periods, 1993 to 1996 and 1996 to 1999. That is, we seek to determine if long-term, partnership arrangements between supply chain members results in long-term performance differences or whether any benefits are more transitory in nature.

To empirically evaluate the above hypotheses we first need to isolate any differences in the performance of our cross-section of subcontractors that can be attributed to factors that have nothing to do, but may be correlated, with differences in inter-firm relationships. The sample of subcontractors used in the analysis are not homogenous since they operate in a variety of industrial sectors, employ different technologies, are of different initial sizes and ages and have different ownership (and hence different motivations) and growth opportunities, all of which have been found to be significant determinants of relative growth rates and other performance outcomes. For example, firm size and age are usually negatively related to growth rates because it is relatively easier for young and/or smaller firms than for older and/or large firms to achieve proportionate increases in scale (see Storey et al., 1987, for a review of the issues). The existence of these potentially confounding factors requires us to first estimate a benchmark (or "expected") level of performance for all firms in the sample irrespective of their partnership status. We achieve this by basing our analysis upon the standardised, sector-relative (turnover and employment) growth rates for each time period. The dependent variable

for evaluating the 3 hypotheses has been constructed as follows:

$$\text{Standardised Growth}_{ist} = (\text{Log}\Delta(\text{size})_{ist} - \text{Mean}(\text{Log}\Delta(\text{size})_{st}) / \text{standard deviation}_{st} \quad (1)$$

where,

$\text{Log}\Delta(\text{size})_{ist}$ = the natural log of the growth of firm i in sector s for time period t ,

$\text{Mean}(\text{Log}\Delta(\text{size})_{st})$ = sector s average growth for time period t ,

$\text{standard deviation}_{st}$ = standard deviation of growth in sector s for time period t .

This specification of the performance variable measures relative performance in terms of the number of standard deviations each firm's growth rate deviates from the sector average growth rate in time period t . A total of five industrial sectors were identified and after standardisation this specification allows our analysis to proceed using "pooled" data for all firms in both time periods. Hypothesis 1 is evaluated by our most restricted empirical model (Model 1 in Table III), which consists of a regression of the standardised firm growth variable on a set of control variables that proxy for growth-relevant firm characteristics, motivations and supply chain opportunities as follows:

$$\text{Standardised Growth}_{it} = \alpha + \beta \text{Log}(\text{Size})_{it-1} + \beta \text{Log}(\text{Age})_{it-1} + \beta (\text{Closely-held})_{it} + \beta (\text{Outsiders})_{it} + \beta (\text{Local Market})_{it} + u_{it} \quad (2)$$

In common with prior studies the estimated coefficients on the base period size and age variables are expected to be significantly negative. The Closely-held variable, which is a dummy variable coded 1 if the firm has a closely-held (i.e., owner-manager controlled) ownership and management structure, is expected to have a negative coefficient. This variable is included to control for the possible negative consequences for growth arising from the non-economic "lifestyle" motivations and opportunities these firms are able to pursue. The ability of firms to pursue such non-economic objectives are likely to be constrained if the firm has outside shareholders, such as venture capital and unrelated investors to satisfy. Hence, the coefficient on the variable Outsiders (a dummy variable that equals 1 if the firm has significant outside investors and zero otherwise) is expected

to be positive to reflect the anticipated greater emphasise upon growth motivations associated with these firms. Opportunities for profitable growth are also likely to be constrained by the nature of the supply chain network within which the firm operates. The variable Local Market is a dummy variable that is coded 1 if the firm's supply chain network consists solely of other small businesses that serve a local market. The coefficient on this variable is expected to be negative to reflect the anticipated lower growth opportunities associated with such local small firm networks.

Hypothesis 2, concerning the incremental relative growth associated with inter-firm partnerships is evaluated by Model 2 in Table III. It will be noted that this is simply Model 1 augmented with an inter-firm partnership variable as follows:

$$\text{Standardised Growth}_{it} = \alpha + \beta \text{Log}(\text{size})_{it-1} + \beta \text{Log}(\text{Age})_{it-1} + \beta (\text{Closely-held})_{it} + \beta (\text{Outsiders})_{it} + \beta (\text{Local Market})_{it} + \beta (\text{Partnership})_{it} + u_{it} \quad (3)$$

The estimated coefficient on the Partnership variable is expected to be significantly positive if, as suggested by hypothesis two, partnership firms obtain benefits from their close inter-firm supply chain relationships.

In order to evaluate hypothesis three, i.e., the presumed long-term performance consequences of partnerships, we augment equation (3) above with an interaction term (partnership $\times$ Time) that separately identifies the differential performance of the partnership firms during the later (1996 to 1999) time period. This model is labelled Model 3 in Table III and the estimated coefficient on the new variable, the interaction term, will be significantly positive if any performance differential associated with partnership firms in the earlier time period (1993 to 1996) increases during the subsequent three year period (1996 to 1999). If the coefficient is negative then this will imply that, relative to the earlier time period, the performance of partnership firms in the later time period has declined. This might also suggest that partnership effects are largely transitory and that partnership firm's growth rates tend to mean-revert towards that achieved by the non-partnership firms over time. If the estimated coefficient is statistically

insignificant then this will suggest that any performance differential between the two types of firms is fairly stable over the full six year period studied.

4. Sample, data and variables

This article builds upon a recently completed action research and training programme, funded by the European Social Fund (ESF) Objective 4¹ National and Regional Initiatives, administrated in the U.K. by the Department for Education and Employment (DfEE, now DfES), and in the North East of England by the Government Office for the North East, entitled 'Supply Chain Management Skills Needs Analysis'. The programme was developed and co-ordinated at the Small Enterprise Research Unit (SERU)² at Newcastle University/U.K. and was carried out in partnership with the North East of England Business of Innovation Centre (NEBIC), Partnership Sourcing/CBI, Glasgow University, One NorthEast (RDA) and ISCAN/Sheffield Hallam University.

In short, the project aimed to undertake a highly focused research and analysis of Supply Chain Management 'Best Practice' in terms of IT-based training and skill needs in the U.K. with a particular emphasis on sub-contracting SMEs. The project team researched, identified and delivered support within control groups of companies (supply chains and SME clusters) engaged in the manufacturing sector – and situated throughout the U.K. the skills required to:

- effectively manage a supply chain;
- manage work sub-contracted to other organisations;
- manage quality (e.g. ISO9000, ENV 14000), ICT (e.g. EDI, Intranet, Extranet, E-commerce), cost, information and knowledge flows;
- build mutually sustainable co-operative relationships or partnerships with customers and/or sub-contractor-base;
- prioritise and address business development needs, with a view to tendering successfully for sub-contract work;
- prepare tendering documents and draw up formal contracts with customers;
- enable local SMEs to acquire a specific body of knowledge, management techniques and

practices to keep pace with industrial change and the globalisation of markets; and

- encourage local SMEs to take a more sophisticated approach to the management of supply / buyer relationships – an avenue through which SMEs in the U.K. economy can still achieve a competitive advantage over their international competitors.

One result of the project is the creation of a unique database of over 400 enterprises selected on the basis that at least 50 per cent of their output was related to sub-contracting activities. In the process of identifying these firms various company directories and data sources were consulted, including for example, BSI, DTI SMART AWARD winners, FAME, Queens Award to Industry and the DTI Supply Chain Networks members. The value of this database lies in the range, quality and details of variables collected through a postal survey undertaken in 1996 and which resulted in 211 usable responses for which we also had financial and employment data.

The empirical results have been based on the above 211 sub-contracting³ SMEs on the database that returned usable replies to the postal questionnaire. The sampled firms were engaged in a wide range of manufacturing activities – e.g., fabrication, welding, production of parts and components (mainly to customers specification), product design, and technical input to specific projects- and their supply chain networks included companies involved in local, national and international markets. For the purpose of this article, the sample has been divided into two groups, one comprising 34 firms which claimed to have developed long-term (i.e., in place for at least 4 years) inter-firm partnership relationships with their main customers (hereafter referred to as partner firms) and other firms (hereafter referred to as non-partner firms). The classification of firms into the partnership category was based on positive responses to the following three information items:

1. The firm claimed that this was their primary type of inter-firm relationship with their supply chain members.
2. That these partnerships were governed by mutual trust and interpersonal relationships as much as formal contracts.

3. That these partnerships involved a high degree of co-operation, knowledge transfer and the sharing of resources between supply chain members.

As the partnership variable was obtained from the postal questionnaire administered in 1996, we are unable to determine whether during the 3 years from 1996 to 1999 any of the partnership firms ceased being so or whether any of the non-partnership firms subsequently became partnership firms. Another difficulty with interpreting the results of analyses using this dataset concerns the non-random selection criteria and, due to the requirement for turnover and employment data from 1993 to 1999, the inherent survivorship bias in respect of the firms included.

5. Empirical results

In Table I we present descriptive statistics relating to the full sample, and the two sub-samples of partnership and other subcontracting firms. As can be seen from the table, the two sub-samples do not appear to differ significantly in terms of company age, employment size or turnover – although it is also clear that the size variables are highly “right-skewed” in respect of the partnership firms. This implies that the sample means and standard deviations of the 1993 size measures for the partnership firms are likely to be unduly influenced by a few large outliers.

Though a smaller proportion of the partnership firms were closely-held or were dependent upon a small and local market supply chain network, than the other firms, the differences are not statistically significant at conventional levels of confidence. However, as can be seen from Table

TABLE I
Descriptive statistics of the sample and sub-samples

Variable Name	All firms	Partnership firms	Other non-partnership firms
Firm employment 1993	178.16 (440.1)	277.7 (550.8)	153.7 (407.1)
Firm sales (£'m) 1993	1.74 (6.745)	4.24 (13.55)	1.00 (1.94)
Firm age (years) 1993	10.30 (6.23)	10.71 (5.98)	10.19 (6.31)
Log Δ (employment)1993 to 1996	16.39 (42.27)	23.02 (37.43)	14.74 (43.37)
Log Δ (sales)1993 to 1996	38.74 (46.64)	52.57 (63.56)	34.72** (39.88)
Log Δ (employment)1996 to 1999	4.76 (42.19)	13.72 (32.95)	2.09** (44.35)
Log Δ (sales)1996 to 1999	17.03 (86.16)	13.70 (50.80)	17.98 (93.96)
Closely-held (%)	44.80 (49.78)	37.78 (48.75)	46.59 (49.95)
Outsiders (%)	17.65 (38.17)	33.33 (47.40)	13.64** (34.37)
Local market (%)	61.54 (48.71)	57.78 (49.67)	62.50 (48.48)
Number	211	34	177

Notes: 1-tail *t*-test significance level for differences in means:

** $\Leftarrow$ 0.05 confidence level.

I, the proportion of partnership firms with large outside ownership stakes is statistically significantly (at 5% confidence levels) larger than is the case for the non-partnership firms.

The correlation matrices shown in Table II use natural log transformations of the size variables and these results confirm that the partnership firms were significantly larger than non-partnership firms in 1993, the base year. Note also that, as expected from previous research, company age is statistically significantly positively associated with (both measures of) the relative initial size of the sample firms and that both company age and size are negatively associated with both performance measures over both three year periods.

Table III presents the standardised relative growth rate regression estimates used to evaluate our three main hypotheses. These results have been based on the "pooled" (i.e., both the 1993 to 1996 and 1996 to 1999) time periods. For each of the dependent variables (turnover and employment growth) we have estimated three models. Model 1, the most restricted of the models, constitutes our benchmark model and is used to evaluate hypothesis 1. It includes only control variables, firm age, size, ownership, stakeholder and supply chain characteristics that can be expected to influence relative growth rates irrespective of the firm's partnership status. Model 2, which includes the partnership variable, allows us to test hypothesis 2, i.e., that the performance of the partnership firms is superior to that of the other subcontracting firms. The final model, Model 3 includes the interaction term and this allows us to evaluate hypothesis 3, namely whether any superior performance by the partnership firms is sustained, increased or reduced over the two adjacent 3-year time periods (1993 to 1996 and 1996 to 1999).

As can be seen from Table III, for both employment and turnover growth, the benchmark models (Model 1) appear to be well specified and the large negative and highly statistically significant coefficients on the size and age variables are consistent with prior research which shows that growth rates tend to decline with increased company size and longevity. Though for the change in employment estimates the 3 other variables, Closely-held, Outsiders and Local Market, each have their anticipated signs, none of these coefficients are individually statistically significant at conven-

tional levels of confidence. The coefficient on the Outsider variable in the change in sales estimates is, however, statistically significant at 10% confidence levels.

The second set of estimates (Model 2), which include the partnership variable, indicate strong support for hypothesis two. The coefficient on the partnership variable is statistically significant at 5% or better confidence levels in both firm growth estimates, which indicates that the partnership firms appear to have achieved significantly higher growth rates than other subcontracting firms. As can be seen from the F-ratio statistics for the new variables in the equation, the addition of the partnership variable also significantly improves the overall explanatory power of the model.

Finally, the third set of estimates, which are designed to test hypothesis three, indicate that in both the employment and turnover growth cases the estimated coefficients on the new interaction term are statistically indistinguishable from zero. This, and the insignificance of the F-ratio statistic for the new variables, suggests that there is little evidence that the beneficial consequences of close relationships with external supply chain partners changes (i.e., either improves or declines) significantly over time. For example, though the coefficient on the interaction term for the turnover growth estimates is negative, it is nowhere near to statistical significance (t -value < 0.5). Hence, these results provide little empirical evidence to suggest that the beneficial effects of partnership arrangements are transitory in nature or show any marked tendency to decline or increase over time.

6. Concluding remarks

In this paper we developed and empirically tested a number of hypotheses relating to the economic consequences of two types of alternative relationship to arms-length market contracting relationships in which only information relating to price and quality need be exchanged in order for trade to take place. We examined the effects upon turnover and employment growth of firms that had adopted an explicit strategy of developing close partnerships with other supply chain members and showed that, even after allowing for sector, size, age and owner-manager motivations and supply chain opportunities and constraints, partnership

TABLE II
Correlation MatricesUpper-Half: $t - 1 = 1993$ & growth variables = 1993 to 1996

	Partnership	Log(Age _{<i>t-1</i>})	Log(employment _{<i>t-1</i>})	Log(sales _{<i>t-1</i>})	Closely-held	Outsiders	Local market	Standardised LogΔ(employment _{<i>t</i>})	Standardised LogΔ(sales _{<i>t</i>})
Partnership	–	0.032	0.169**	0.152**	0.015	0.197***	0.005	0.062	0.132**
Log(Age _{<i>t-1</i>})	0.046	–	0.420***	0.300***	–0.001	0.020	–0.052	–0.533***	–0.351***
Log(employment _{<i>t-1</i>})	0.223***	0.379***	–	0.880***	–0.118*	0.058	–0.230***	–0.328***	–0.246***
Log(sales _{<i>t-1</i>})	0.207***	0.311***	0.776***	–	–0.170**	–0.036	–0.168**	–0.226***	–0.213***
Closely-held	–0.092	0.042	–0.121*	–0.138**	–	0.023	0.087	–0.019	–0.021
Outsiders	0.155**	0.091	0.157**	0.069	–0.012	–	0.056	0.058	–0.036
Local market	–0.071	0.080	–0.243***	–0.229***	0.076	–0.023	–	0.046	0.069
Standardised LogΔ(employment _{<i>t</i>})	0.131**	–0.167**	–0.181***	0.043	–0.016	–0.028	–0.242***	–	0.625***
Standardised LogΔ(sales _{<i>t</i>})	0.024	–0.190***	0.021	–0.337***	–0.036	0.046	–0.229***	0.181**	–
Partnership	Log(Age _{<i>t-1</i>})	Log(employment _{<i>t-1</i>})	Log(sales _{<i>t-1</i>})	Closely-held	Outsiders	Local market	Standardised LogΔ(employment _{<i>t</i>})	Standardised LogΔ(sales _{<i>t</i>})	

Lower-Half: $t - 1 = 1996$ & growth variables = 1996 to 1999.

TABLE III
Standardised, sector-relative, performance regression models pooled period estimates ($n = 422$, i.e., 2×211)

	Log Δ Employment _{<i>t</i>}			Log Δ Turnover _{<i>t</i>}		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Constant	1.431 (4.46)***	1.419 (4.44)***	1.421 (4.44)***	1.554 (3.42)***	1.573 (3.46)***	1.568 (3.47)***
Log(Size _{<i>t-1</i>})	-0.103 (2.47)***	-0.119 (2.77)***	-0.119 (2.75)***	-0.106 (2.00)**	-0.117 (2.18)**	-0.116 (2.16)**
Log(Age _{<i>t-1</i>})	-0.409 (3.14)***	-0.401 (3.12)***	-0.403 (3.12)***	-0.298 (2.37)**	-0.291 (2.34)**	-0.290 (2.34)**
Closely-held	-0.097 (0.97)	-0.098 (0.99)	-0.096 (0.97)	-0.135 (1.18)	-0.130 (1.14)	-0.131 (1.15)
Outsiders	0.203 (1.43)	0.134 (0.97)	0.136 (0.98)	0.251 (1.66)*	0.202 (1.35)	0.200 (1.33)
Local market	-0.085 (0.75)	-0.089 (0.75)	-0.085 (0.75)	0.046 (0.43)	0.046 (0.44)	0.045 (0.42)
Partnership		0.313 (2.88)***	0.218 (1.64)*		0.254 (1.98)**	0.300 (1.52)
Partnership*Time			0.180 (1.12)			-0.99 (0.45)
Adjusted R ²	13.6%	14.9%	14.8%	10.8%	11.6%	11.3%
Equation F-ratio	11.20***	10.47***	9.07***	7.93***	7.25***	6.22***
F-ratio for new variables	5.89***	0.68			3.50**	0.18

Notes:

White (1980) Heteroskedastic-consistent *t*-values in parenthesis.

Dependent variables: Standardised, sector-relative log change in employment and turnover over the time period $t - 1$ to t , where $t - 1$ to $t = 1993$ to 1996 and 1996 to 1999.

Log(Size_{*t-1*}) = natural log of firm size (employment or turnover) at time $t - 1$, where $t - 1 = 1993$ or 1996.

Log(Age_{*t-1*}) = natural log of firm age at time $t - 1$, where $t - 1 = 1993$ or 1996.

Closely-held = Is the firm Closely-held? (1 = yes).

Outsiders = Do any outsiders hold shares? (1 = yes).

Local market = Does the supply chain consist solely of small and local firms? (1 = yes).

Partnership = dummy variable denoting partnership firms (1 = partnership firm)

Partnership*Time = interaction term, where Time is a dummy variable that = 1 for observations relating to the later time period 1996 to 1999.

firms achieved significantly higher rates of growth. The analysis of the longer-term (i.e., 6-years) effects also indicated that these benefits were sustained, though the growth differential did not increase significantly during the later time period. As the empirical model controlled for age differences between firms, these results tend to imply that the main gains associated with investments in supply chain partnerships tend to become established early in the relationship and appear to provide superior opportunities for the firm to grow

more quickly to a steady state level of operations. Hence, it would appear that these benefits of close partnership arrangements are not transitory. This is an important finding since, apart from in those cases where the development of inter-firm partnerships is pursued by owner-managers as a desirable objective in itself, developing close partnership arrangements are not cost-free. Typically, sustaining close partnership arrangements take up a great deal of scarce management time and energy and, therefore, the longer the payoff period

involved, the more beneficial these investments in social capital are likely to prove for the firms involved.

These and other findings relating to SME inter-firm relationships appear to conflict with the economics, i.e., transactions cost and agency theory-based, literature which focuses largely on formal contractual relationships rather than trust and the social basis of business relationships. However, it is clear from recent work focusing on the economics of co-operation that even large, publicly-listed, enterprises rely to some extent upon their business relationships being predicated upon reciprocity and trust (for a review, see Fehr and Fischbacher, 2002). Moreover, market imperfections, such as costly-to-remedy information asymmetries, difficulties in assessing risks and personal wealth constraints, are characteristics that lead to contracting difficulties for many SMEs. These constraints are particularly important in the case of firms that require formal capital market finance to launch and/or expand their enterprises (Mason and Harrison, 1997). As Casson (1981) argues, however, a large element of what constitutes entrepreneurship does in fact consist of creating opportunities and finding creative ways of overcoming market imperfections of one sort or another. Thus, many new firms can be expected to experience difficulties in obtaining financial capital from the formal capital markets simply because the legally enforceable contracting (governance) mechanisms available are often inadequate to protect the financial interests of these institutions due to the high and difficult to quantify risks involved.

Nevertheless, despite such problems, entrepreneurs whether operating in new knowledge-based sectors (see Johannessen, 1998) or low technology activities that traditionally attract immigrant groups and others with relatively poor formal labour market opportunities (Watson et al., 1999) appear to be able to succeed in even highly volatile and competitive sectors. This suggests that these firms have been able to successfully establish themselves using less formal business contacts and methods, often through access to a network of embedded business relationships based upon developing reciprocity and trust despite the high degree of contractual incompleteness and potential for opportunism involved.

The development of embedded relationships between firms is clearly facilitated when the individuals involved perceive that they share a common economic situation, ethnic identity and/or value system (see Waldinger et al., 1990). By engendering mutual trust, resource sharing and innovation, such embedded ties have the potential to create a viable and less costly alternative to formal governance systems based upon contracts. Many researchers (see for example, Bagnasco and Sabel, 1995; Freel, 2000; Collinson, 2000) have addressed the possibility that firms that adopt an explicit strategy of relying upon such partnership arrangements are able to innovate, remain competitive and improve their business performance relative to other firms, though as we have seen, to date relatively little of this work has been able to convincingly demonstrate that this results in any long-term performance advantage. Moreover, as the contributions to Bagnasco and Sabel (1995) and Huggins (2000) have indicated, there is often an important role for public agencies as well as private initiatives in this process.

Indeed, the case studies detailed by Huggins (2000) suggest, that formal groups are frequently the most potent form of inter-firm network, but that "it is through an initially informal structure that they are best facilitated . . . both economic and social rationalities are at play in the motivation of firms to join networks, and that their success is closely connected to pre-existing commonality between members" (p. 111). Thus, provided that they can be made cost-effective, there appears to be a plausible rationale for public policies to facilitate and develop both new and existing local networking activities amongst firms. Further research is, however, required to determine the role played by partnerships and the extent to which this may vary to reflect differing owner-manager motivations and growth opportunities.

Notes

¹ What is Objective 4?

The European Social Fund (ESF), established under the Treaty of Rome, is one of the three Structural Funds designed to strengthen the economic and social cohesion of the European Union. The ESF aims to improve employment opportunities in the European Union by providing financial support towards the running costs for vocational training

schemes, guidance and counselling projects, job creation measures and other steps to improve the employability and skills of both employed and unemployed people. It also proved support for research and improving the capacity of organisations to better help their target communities. There are six objectives which cross all measures of the Structural Funds, including Objective 4. The purpose of the Objective 4 was to facilitate the adaptation of workers of either sex to industrial change, and especially those threatened with unemployment, or affected by industrial change or changes in production systems. Objective 4 focused, in particular, on employees in small and medium-sized enterprises (SMEs) with less than 250 employees (for more information see ESF Guidance, DfEE, 1999).

² SERU is an independent unit within the School of Geography, Politics and Sociology at the University of Newcastle/U.K. Since 1996 SERU has pursued an extensive programme of action research and training concerning the status and development of enterprises in the U.K. Working in partnership with the public and private sector, SERU also provides a wide range of bespoke support and training to pre-start ups, start ups and SMEs, as well as assisting policy makers in the development of new policies and measures for SMEs. For more information please see <http://www.ncl.ac.uk/SERU>.

³ The Commission of the European Communities (1993) has recommended the following definition of sub-contracting:

If sub-contracting can be considered as a specific type of relationship between enterprises, it may be assumed that a sub-contracting relationship exists wherever a business (frequently small and referred to as the "subcontractor") acts for the account of another business undertaking (frequently large and referred to as the "main contractor") in the process of working and making a specific product to plans and technical specifications supplied by the main contractor, who has final economic responsibility (section I p. 2 of COM [89] 402 final).

The commission has identified two broad types of sub-contracting, "capacity" and "specialised". "Capacity sub-contracting" is typically short term and refers to the situation where an enterprise equipped to produce a good contracted out a determined activity to another enterprise, in order to satisfy temporary fluctuations of the demand. The CEC DGXXIII Programme on sub-contracting (1993) refers to this type of sub-contracting as 'historical', characterising the European industries pre 1970s, where sub-contracting small firms were both economically and technically dependent or subservient to larger firms.

"Specialised sub-contracting" implies a more modern system of industrial relations. It is defined as a structural more than a short term relation and is related to the new trend of industrial specialisation, whereby the sub-contractor is no longer dependent on the main contractor and participants in the elaboration of the products and in its technical evolution (see Wynarczyk, 2000 for a fuller review of the definition of subcontracting).

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