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The Longer-Term Effects of Management-Led Buy-Outs

Mike Wright
Nick Wilson
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There is now extensive evidence on short-term performance improvements in buy-outs, but little relating to the longer-term. This paper examines the relatively neglected area of the longevity and longer-term effects of smaller buy-outs. In terms of longevity, the evidence presented shows that the majority remain as independent buy-outs for at least eight years after the transaction, and that entrepreneurial actions concerning both restructuring and product innovation are important parts of entrepreneurs' strategies over a ten year period or more. For the first time, the paper also provides an analysis of the financial performance and productivity of a large sample of buy-outs and non-buy-outs. It shows that on a variety of financial ratios buy-outs significantly outperform a matched sample of non-buy-outs, especially from year 3 onwards. Analysis of post buy-out efficiency of survivor buy-outs, using regression analysis to estimate augmented Cobb-Douglas production functions, shows that buy-outs are superior to matched non-buy-outs with a productivity differential of the order of 9% on average from year t+2 onwards. The evidence of superior longer term performance suggests that venture capitalists may need to consider their investment perspectives carefully, particularly in respect of exit versus second round investment. For financiers it is clear that the buy-out concept can be successfully applied to growth as well as restructuring cases.

I. INTRODUCTION

Management buy-outs have emerged as a significant organizational form over the last decade and a half. It is well-known that the structuring of a buy-out involves the introduction of significant equity incentives for the entrepreneurs involved, together with monitoring systems by venture capitalists and other funds providers (Jensen, 1993; Wright, Robbie, Thompson, & Starkey, 1994). Examination of the characteristics of the leading individuals in buy-outs and buy-ins shows that they

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display similar characteristics to those of entrepreneurs generally (Robbie & Wright, 1996) and that they undertake significant entrepreneurial actions in terms of both restructuring and innovation (Wright,Thompson, & Robbie, 1992; Zahra, 1995).

Buy-outs play a significant role in the activities of venture capitalists, especially in mature markets (Ooghe, et al., 1991). In the UK, for example, buy-outs accounted for 18 percent of the number of investments by the industry in 1994 and 67 percent of total value (BVCA, 1995). This importance raises issues concerning whether the gains which may accrue are sustainable. Dutch analysis shows that early stage finance was on average loss-making (-3 percent annual return) compared with the much less riskier management buy-outs which earned a high positive return of 25 percent per year. Analysis of returns in the UK for a sample of funds launched between 1980 and 1990 show that large MBO funds produced the highest internal rates of return at 23.1 percent and early stage 4 percent (BVCA, 1996). It is not clear from these studies, however, whether high internal rates of return are earned from a series of short-term investments or are the result of long-term performance.

The expectation of longer term benefits from buy-outs is the subject of some debate. Jensen (1993) argues that buy-outs represent a new long term form of organization whose incentive and monitoring properties may be expected to produce superior performance in enterprises having undertaken such a transaction than prior to the buy-out. Moreover, benefits may also accrue where entrepreneurs with majority stakes have a longer-term commitment to the enterprise. However, in contrast, it may be the case that the major benefits to be derived from restructuring and cost reduction are short-lived and that venture capitalists seeking to earn high internal rates of return on their investments place pressure on management to exit in a relatively short period.

The aims of this study are to examine the longevity of venture-backed versus non-venture-backed smaller buy-outs, strategic reorganization following buy-out and whether buy-outs display superior longer term financial performance and efficiency to non-buy-outs. The particular emphasis is upon smaller management-led buy-outs where incumbents typically hold a majority or a significant share of the equity. The evidence presented in the results section of this article shows that even ten years after the transaction approaching half of companies remain as buy-outs, although venture-backed buy-outs exit at a considerably greater rate than non-venture backed deals. Over this ten year period, buy-outs which remain as such are found to experience extensive changes to their senior management teams and to engage in extensive strategic entrepreneurial actions (such as new product development) as well as cost restructuring. The results of the analysis of longer term performance using financial data show that on a variety of financial ratios (such as return on assets and return on equity) buy-outs significantly outperform a matched

sample of non-buy-outs, especially from year 3 onwards. In addition, analysis of post buy-out efficiency shows that buy-outs are superior to matched non-buy-outs with a productivity differential of the order of 9% on average from the second year after buy-out onwards.

The article is structured as follows. The next section reviews existing literature and suggests a number of expectations about the longer term performance effects of buy-outs. The subsequent section outlines the data and methodology used and is followed by four sections detailing the results of the study. First, we trace the longevity of venture backed and non-venture backed buy-outs. Second, we identify the strategic actions taken in buy-outs which last for ten years or more. Third we compare buy-outs and non-buy-outs in terms of their long term financial performance. Finally, we examine labor and capital productivity gains. In the final section, conclusions and implications are drawn.

II. LITERATURE REVIEW

Jensen (1993) provides a framework for the analysis of the expected longevity and performance effects in buy-outs. According to Jensen, the classic buy-out structure with increased managerial equity holding, providing an incentive to perform, and increased monitoring through the commitment to service debt and the direct role of active investors, provides the mechanisms for reducing agency problems associated with diffuse ownership in large quoted companies. The Jensen argument suggests that particular types of firms may be especially suited to this classic form of buy-out structure, notably those quoted firms in stable and mature markets with relatively low investment needs which have been under-performing and wasting free cash flow. Such firms may be expected in the Jensen view to continue to operate as long-term forms of organization. Rappaport (1990) contests the Jensen view suggesting that they are likely to be short-lived as investors seek returns on their investment by selling or floating the company. It is becoming clear, however, that Jensen's argument rests on a highly restricted sub-set of what is a more generic concept. While buy-outs which meet Jensen's criteria may indeed last a long time, the wider applicability of the buy-out concept due to the use of varying financial instruments, funding structures and managerial involvement suggests that the longevity of buy-outs is likely to be heterogeneous (Wright, et al., 1994). While extensive evidence is now available relating to larger buy-outs, especially those which involve highly leveraged going-privates of listed companies, little is available on their longer-term effects in terms of strategies, performance, control systems, etc. Moreover, smaller transactions where management have substantial equity stakes and which form the majority of buy-out transactions in most markets have received little attention. These cases may be wholly funded by clearing bank debt or with a mixture of debt and equity provided by venture capitalists. This

important role of venture capitalists has tended to be underplayed because of the general focus upon highly leveraged transactions and because, especially in the US, venture capital firms are not typically associated with buy-outs.

Longevity

Existing evidence suggests that although some buy-outs may float on a stock market or be sold within a very short period of time, the majority may remain as buy-outs for well in excess of seven years (see e.g., Kaplan, 1991 for the US; Wright, Thompson, Robbie, & Wong, 1995 for the UK; Wright, Robbie, Romanet, Thompson, Joachimsson, Bruining, & Herst, 1993 for France, Sweden and Holland), with smaller buy-outs being significantly more likely than large ones to remain as buy-outs for long periods. This heterogeneity may be expected to be influenced by the objectives of the main parties to the transaction-funding institutions (especially venture capitalists and banks and incumbent management (Wright, et al., 1994).

Both venture capitalists and clearing banks play a significant role in the funding of buy-outs (see Table 2 below). Venture capitalists' and other funding institutions' perspectives will be important because of their need to earn sufficiently high rates of return to satisfy their funds' providers. There is evidence that investment horizons vary between types of venture capitalist (Wright & Robbie, 1996), with independent venture capitalists typically being more constrained to exit sooner than are those captive firms funded by parent banks or pension funds. Venture capitalists' desires for exit are also more clearly specified than is the case for banks where long-term relationships may be important (Holland, 1994).

Hence it is expected that venture-backed buy-outs are more likely to exit sooner and at a greater rate than non-venture backed buy-outs, but also that the majority of buy-outs and especially those where management have majority control will continue to exist as such for long periods. Where exit does not take place through flotation or trade sale, financiers may seek to obtain a return through the liquidation of at least some of their investment through redemption or repurchase by the investee company. Hence, it may be expected that buy-outs which remain as independent private (unlisted) firms for long periods will demonstrate extensive buying back of preference stock and/or the buy-back of ordinary stock.

The influence of managers may be particularly important where the initiative for a buy-out is taken by management who perceive an entrepreneurial opportunity (Wright, et al., 1992). The extent to which managers may wish to continue to pursue an entrepreneurial career rather than exiting through becoming managerial employees again or through retirement, also impacts on longevity. Differences in the motivations of buy-out managers may be an important element in this decision. Over a long period of time, it may be expected that retirement and other factors

will lead to extensive changes in the executive and non-executive board members in bought-out companies.

There is evidence that managers engage in extensive changes to control systems after buy-out as well as organizational restructuring and various efforts to enhance their trading activity (Jones, 1992; Wright, et al., 1992). Buy-outs where management fail to make adequate restructuring close to buy-out to create a viable entity at the time of the buy-out appear more likely to fail. An analysis of financial and non-financial variables (Wright, Wilson, Robbie, & Ennew, 1996) shows that initial and start-up characteristics of MBOs, reflected in a number of key non-financial variables demonstrate a strong ability to explain failure up to five years later. Greater levels of restructuring undertaken expeditiously at buy-out are associated with survival while the need to deal with problems some time after buy-out are associated with failure. Factors measuring the initial motivations for management undertaking the buy-out relating to desires to control one's own business, develop one's own talents, long term faith in the company and to achieve financial rewards (positive motives) were found to have a significant and negative sign indicating that such motivations reduce the probability of subsequent failure. Buy-outs which raise funds from the wider body of employees have a lower probability of failure which supports the strength of the incentive-motivation hypothesis over the pure risk spreading hypothesis. Liquidity has a significant and negative impact on the probability of failure and is consistent with highly leveraged firms facing difficulty in servicing debt commitments. Small and large buy-outs were also found to be more prone to failure with the medium-sized exhibiting a lower failure probability. High gearing was found to be associated with a higher probability of failure. Turnover per employee, an activity/efficiency ratio, was negatively associated with the profitability of failure. In an agency theory context, these findings are consistent with the control function of high levels of debt which place pressure on management to restructure. There has, however, been little attention to the strategic actions taken by management over the longer-term in terms of comparisons of perceptions of the relative importance of factors at the time of the buy-out and in the long-term (in excess of ten years), or of the relative importance of differing kinds of external and internal influences on profitability which may be within the control of management.

Strategic Reorganization

An examination of large US buy-outs provides evidence of post-buy-out restoration of strategic focus, with almost half of buy-outs engaging in significant refocusing including divestment of assets (Seth and Easterwood, 1993), although it is not clear to what extent these changes occur over the long-or short-term. US evidence also generally shows buy-out firms fail to expand their employment in

line with industry averages and that capital investment falls following the buy-out (see Palepu, 1990 and Thompson & Wright, 1995, for reviews). Long and Ravenscraft (1993), however, show that those buy-outs which are R&D intensive are not disadvantaged. The evidence on UK MBOs is rather different. For the UK, Wright, et al. (1992) report that asset sales are offset by new capital investment, particularly in plant and equipment.

Much of the work relating to buy-outs has focused on the benefits from restructuring, with there being a view that such benefits are effectively once-for-all. After these cost reductions have been obtained, classic highly leveraged buy-outs in mature sectors with low investment opportunities may have little prospect of further significant performance improvement. However, it is clear that the buy-out concept is not confined to such tightly restricted circumstances.

In two of the few studies to cover short term changes in smaller buy-outs, Malone (1989) in a US study and Wright and Coyne (1985) and Wright, et.al. (1992) for the UK show significant increases in new product development occur post buy-out which the entrepreneurs concerned consider would not otherwise have happened. (See also Bull, 1989 for the US). Zahra (1995) shows for a sample of 47 US buy-outs where management had contributed a significant share of the purchase price, substantial increases in product development, technological alliances, R&D staff size and capabilities and new business creation activities. These corporate entrepreneurship factors were significantly and positively associated with changes in company performance. Little is known, however, about the extent and nature of strategic actions in buy-outs which last for periods of ten years or more and in particular the relative importance attached to product innovation, market-related factors and cost reductions.

If cost reductions are once-for-all, extensive product and market-related innovation may be expected if the company is to succeed over a long period. Alternatively, long-lasting buy-outs may undertake initial restructuring actions and actions to enhance control systems which enables them to maintain a stable position over a long period. *A priori*, it is not clear which case will prevail since both may be consistent with the enhanced incentive and control mechanisms found in buy-outs. In order to obtain insights on these aspects we surveyed the strategic actions of a sample of long lasting buy-outs as well as longer term financial performance (see below).

Financial Performance

Most available studies concerning post buy-out financial performance changes have concerned the first two to three years after the transaction. Research on US LBOs indicates substantial mean improvements in profitability, cash flow and productivity measures over the interval between one year prior to the transaction and

two or three years subsequent to it. A series of studies of early 1980s LBOs (see Palepu, 1990; Jensen, 1993; Thompson & Wright, 1995 for reviews) reports mean gains in the operating cash flow/sales ratio of between 11.9 and 55% and also major increases in productivity. A subsequent study (Opler, 1992) using deals completed in the later 1980s reports a 16.5% gain in that ratio over a similar three year period. A survey of 182 mid-1980s MBOs in the UK indicated that 68% showed clear improvements in profitability, compared with 17% that showed a clear profitability fall (Wright, et al., 1992). In this study and the American work cited above, improvements in working capital management, particularly credit management, and productivity, appear to be an important identified source of improved performance.

Performance improvements are reported to be more significant in divisional buy-outs which subsequently come to market as opposed to buyouts of firms which were previously quoted (Muscarella & Vetsuypens, 1990; Singh, 1990). Muscarella and Vetsuypens show that the gains in performance are mainly the result of cost reductions rather than revenue generation or improved asset turnover. In contrast, Singh finds that buy-outs coming to market had revenue growth, as well as accounts receivable and stock control, above their industry averages. However, it is possible that such comparisons are biased upwards because only the more successful buy-outs are compared to industry averages. In the UK, studies have found superior company performance relative to the market in buy-outs which come to market both before and after the IPO (Wright & Robbie, 1995).

In an attempt to isolate the factors influencing changes in post buy-out performance, Thompson, Wright and Robbie (1992) find using UK data that the size of entrepreneurs' equity stakes is strongly significant, whereas investor control variables have relatively little influence. Green (1992) reports that over and above any (financial) incentive on the buy-out team to become better managers, ownership was interpreted as allowing them to perform their tasks more effectively. Ownership was perceived more as an outcome than as a cause of innovative behavior and was also associated with owner-managers becoming more careful and critical in their analysis of innovative projects. Debt-control was reported to restrict certain diversifying and acquisition strategies, at least until leverage was reduced, and to encourage cost reduction.

Phan and Hill (1995) in a study of large US going-private buy-outs, show that management equity holdings as well as debt are positively associated with improved performance post buy-out, but that the former has a greater impact than the latter. In one of the few studies to examine performance changes over differing periods, they find a positive association between managerial equity and performance over one, three and five year periods after buy-out but that this relationship in respect of debt and performance does not hold for the longer period.

Efficiency Changes

Lichtenberg and Siegel (1990) use a Cobb-Douglas analysis to examine productivity changes in buy-outs for a period of eight years prior to the transaction and for up to five years afterwards. Using plant level data they find that productivity is significantly greater for the first three years post buy-out than for any of the years pre-buy-out, though buy-out plants were already more efficient than non-buy-out ones. For years four and five, the differences are not significant, which is found to be due to differences in the productivity effects of early and late buy-outs rather than the transitory nature of any gains.

Parallel to efficiency studies of buy-outs is a growing body of evidence relating to wider employee ownership (see e.g. Wilson, 1992 for a review). Conte and Svejnar (1987) and Jones and Kato (1995) examine factor productivity using Cobb-Douglas production function analysis in US and Japanese firms, respectively, by comparing firms which have extensive employee ownership and those where it is absent. Both studies find significant and positive effects on a value added measure of productivity from wider share ownership whether it is in the form of a co-operative (Conte & Svejnar) or an ESOP (Jones & Kato), although the effect declines over time. However, neither of these studies examined cases where employee ownership was introduced through a form of buy-out.

Given that buy-outs involve not only direct equity ownership by incumbents but also monitoring by active investors and commitments to servicing external funding, it may be expected that they will display superior financial performance, especially profitability and labor and capital productivity than non-buy-outs, after controlling for firm and industry characteristics. The remaining sections of this paper provide evidence relating to these issues.

III. DATA AND METHODOLOGY

The primary data source for the detailed analysis presented in this article is the database of UK buy-outs compiled by the authors. This Centre for Management Buy-Out Research (CMBOR) dataset has been compiled on a continuing basis since 1980. Data are collected from several sources. The primary source is a twice-yearly survey of all known venture capitalists, banks and intermediaries involved in the negotiation and completion of buy-out transactions. The respondents receive in return a free copy of a definitive quarterly review of the buy-out market, which contributes to the survey yielding a near 100 percent response rate. The survey of institutions is supplemented by Textline searches of national, local and regional press, searches of company accounts and Extel cards for announcements of divestments to management, and searches of the specialist business press. This process produces what is effectively a listing of the population of UK buy-outs. The

Table 1
Development of Buy-outs and Buy-ins in the UK
(Values and Numbers of Deals)

Year	*Values (£m)*	*Numbers*
1980-86	4,359	1,580
1987	3,521	434
1988	4,931	489
1989	7,506	523
1990	3,108	597
1991	2,838	567
1992	3,261	586
1993	2,860	485
1994	3,675	548
1995	5,006	542

Source: CMBOR

dataset reveals that the UK buyout market is one of the largest in the world with around 500 deals per year completed over the past decade (Table 1).

Two samples were generated from the overall CMBOR database. The first involved a representative sample of 158 buyouts completed in 1983-85 and surveyed in mid-1986 and which had been tracked up to end 1995 or receivership. This data set was used to monitor in detail the timing and nature of exit from a buyout (trade sale/flotation or receivership) for both buy-outs which were venture-backed and those which were not. The second sample had considerable overlap with the timing of the first and was used to analyze the longer term performance of buy-outs. This sample involved 251 buy-outs contained on the CMBOR database completed in the period 1982-84, essentially the beginning of the UK buy-out market, for which accounting and financial data could be obtained and is used to analyze the longer term performance and efficiency of buy-outs.

The questionnaire to be administered to the first sample was developed following a survey of the literature and discussions with practitioners and was piloted with practitioners and a small number of buy-outs. A copy of the full data-capture instrument is available on request from the authors. This sample was obtained by mailing questionnaires to all buy-outs identified by the authors as having been completed in this period. A response rate of 35 percent was achieved to produce the 158 companies in the final sample. On the basis of demographic data (source of buy-out, geographical region, etc.) chi-squared tests revealed no significant differences between the distributions of these variables in the sample and in the buyout population generally as kept on the main CMBOR database. The buy-outs in this sample which had not exited by mid-1996, were surveyed again ten years after the initial survey, using a mail questionnaire developed and piloted as for the previous one and with a reminder questionnaire also being sent. This survey yielded

35 complete responses of buy-outs out of the 71 of the original sample which had not exited by the time of the survey in June 1996 (see Tables 3 and 4 plus those buy-outs which the authors were able to identify as having exited after ten years). This represents a positive response rate of 49.3 percent, which may be considered quite high for a mail questionnaire survey and very encouraging indeed for a sample revisited ten years on. The results from this second survey enabled questions relating to longer term strategic factors and changes in management to be examined.

For the companies in the second sample, accounting data relating to financial performance, such as profitability, liquidity, leverage and employee productivity were collected. These variables constitute the prime indicators of the main dimensions of the financial performance of a company. In the UK, publicly available databases enable such data to be obtained quite readily since companies which are not listed on a stock market are required by law to file publicly available accounts. The balance sheets and profit and loss accounts were obtained for all years since buy-out to 1991 or up to receivership and yielded 251 buy-outs. A matched sample of 446 non-buy-outs was also drawn from publicly available databases to enable performance comparisons to be made. The data for non-buy-outs were selected on the basis of matching criteria relating to size and industry from a publicly available database of privately-held companies (FAME). Drawing on previous studies of the financial performance of buy-outs and on standard ratios typically used to assess the profitability, labor productivity and liquidity of firms variables were selected relating to return on equity, return on assets, profits per employee, two measures of short term liquidity (current and quick asset ratios) and a measure of long term liquidity (net worth/total assets). As an alternative to the net worth/total assets ratio, the standard gearing ratio was used (borrowings plus preference stock/ equity) but this was found to perform less well, being distorted in some years by the effects of negative reserves arising from post-tax losses being transferred to profit and loss account reserves. A similar problem also arose with the use of the income gearing ratio, EBIT/interest, and which was therefore dropped from the reported results. The analysis of efficiency presented below utilized added value, gross fixed assets and employment as variables measuring output, capital stock and labor inputs.

The standard way to test for productivity effects is to estimate a multivariate equation which includes a variable controlling for firm type (i.e., buy-out or non-buy-out) in an appropriately specified production function. The productivity augmentation is hypothesized to be disembodied in the inputs. If we denote real output by X, then this will be affected by the levels and quality of capital stock (K), labor input (L) and may vary by industry (IND). The inclusion of a dummy variable representing the existence or not of a buy-out (MBO) gives an augmented production function of the general form:

$$X = X(L,K,IND,MBO) \quad (1)$$

The productivity effects of the buy-out can be tested via the sign, significance and size of the coefficients on the MBO variable. In contrast to univariate ratio analysis this approach models productivity in the context of labor and capital inputs and controls for industry specific differences in productive efficiency. The buy-out dummy tests for broad differences in efficiency that are due to the change in ownership. Thus a production function provides a way to describe the relationship between inputs and outputs, but is not behavioral. Theory therefore offers us few insights into the appropriate specification and functional form. However, misspecification can be a serious issue since the methodology involves relating the existence of a buy-out to the residual of output *not* explained by factor inputs. The early literature addressed this problem by testing between a wide variety of alternative production function forms, including Cobb-Douglas, Constant Elasticity of Substitution and Translog functions. In general Cobb-Douglas forms tended to predominate, though often with both embodied and disembodied varieties of productivity enhancement (see Jones & Kato 1995 for a study which investigates the productivity impact of ESOPs).

In order to explore this issue regression analysis was used to examine the following relationship between capital stock, total labor input and output, measured as value added, for each year post-buy-out for a period of six years:

$$VA = aK^{b}.L^{b1}.e^{mbo} \quad (2)$$

which in log-linear form becomes:

$$LVA = a + b(LK) + b1\ (LL) + b2\ (MBO) + b3 \ldots bn\ (IND) + u \quad (3)$$

where: LVA is the log of value added, LK is the log of capital resource defined as gross fixed assets, LL is the log of employment, MBO is a dummy taking the value 1 if the enterprise is a buy-out, IND is a set of industry dummies, and u is the error term.

In line with expectations noted earlier, management owned a majority of the equity in the majority of buy-outs surveyed. In 77.3 percent of cases incumbent management held more than half of the equity and in 16 percent of cases they held all of it. The buy-outs were overwhelmingly modest in size, with 95 percent having a transaction value of £5 million (approx. $10 million) or less. Almost three quarters were divisional buy-outs, a further 11 percent involved succession in privately-owned firms and the balance were buyouts from receivership or from the public sector. There were no going private buy-outs in this period in the UK.

Table 2
Share of UK Management Buy-outs Funded by Venture Capitalists Based on Data Relating to All Buy-outs Completed in a Particular Year 1989-1994

Size Range (Transaction Value, £m)	*1989 (%)*	*1990 (%)*	*1991 (%)*	*1992 (%)*	*1993 (%)*	*1994 (%)*
Less than 1	61.3	41.2	38.8	46.2	20.2	40.4
1-5	48.0	38.8	40.6	32.0	28.9	35.5
5-10	74.4	75.6	56.0	59.1	88.9	83.9
Over 10	84.2	77.1	77.8	93.3	85.4	87.5

Source: CMBOR

IV. RESULTS

Longevity

The authors' monitoring through the CMBOR database shows that venture capitalists play an important role in buy-out markets (Table 2). However, not all buy-outs are funded with the aid of venture capitalists. Rather, many, especially smaller ones, are funded by straightforward bank debt. As seen in the earlier literature review, this raises issues concerning the relative longevity of buy-outs funded from these two sources. The first sample of 158 buy-outs identified in the previous section are used in this section to compare the longevity of venture backed and non-venture backed buy-outs. The authors' monitoring of buy-out exits shows marked differences in the longevity of the buy-outs financed from these different sources. The overall sample of buy-outs completed in 1983-85 as described in the methodology section were divided into 111 which had originally received venture backing (Table 3) and 45 which had not, being primarily funded by bank debt (Table 4).

In line with expectations, venture backed buy-outs tend to exit sooner and to a greater extent than those which have not received support from venture capitalists. After three years, 18 percent of venture-backed cases had exited by trade sale or IPO compared with only 2 percent of other buy-outs. By year five after buy-out, the comparable figures were 30.6 percent and 13.3 percent, respectively. There are indications that those venture backed deals which will fail do so sooner than is the case for non-venture backed cases, but that the latter's failure rate overtakes that of the former by year 8. By year 10 after buy-out, 46 percent of venture backed buy-outs had exited through trade sale or IPO and a further tenth had entered receivership. In contrast, only a tenth of non-venture backed deals had exited by trade sale or IPO and almost a sixth had failed.

There appears to be a significant minority of buy-out entrepreneurs who see their firms as becoming privately-held businesses for an indefinite period of time.

Table 3
Cumulative Exit Status By Year Post-Buy-out and Type of Exit of 111 Venture-Backed Management Buy-outs Completed in the Period 1983-85 up to December 1995

	Total sample		*No exit*		*Exit*[1]		*Receivership*	
Age of MBO	*No*	*%*	*No*	*%*	*No*	*%*	*No*	*%*
Year 1	111	100.0	110	99.1	1	0.9	0	0
Year 2	111	100.0	103	92.8	7	7.2	0	0
Year 3	111	100.0	90	81.1	20	18.0	1	0.9
Year 4	111	100.0	83	74.8	27	24.3	2	1.8
Year 5	111	100.0	72	64.9	34	30.6	5	4.5
Year 6	111	100.0	62	55.9	41	36.9	8	7.2
Year 7	111	100.0	57	51.4	44	39.6	10	9.0
Year 8	111	100.0	54	48.6	46	41.5	11	9.9
Year 9	111	100.0	49	44.7	50	45.0	12	10.8
Year 10	111	100.0	48	43.2	51	46.0	12	10.8

Note: 1. By way of IPO, trade sale or management buy-out/buy-in

Table 4
Cumulative Exit Status By Year Post-Buy-out and Type of Exit of 45 Management Buy-outs Completed in the Period 1983-85 up to December 1995

	Total sample		*No exit*		*Exit*[1]		*Receivership*	
Age of MBO	*No*	*%*	*No*	*%*	*No*	*%*	*No*	*%*
Year 1	45	100.0	45	100.	0	0.0	0	0
Year 2	45	100.0	45	100.	0	0.0	0	0
Year 3	45	100.0	44	97.8	1	2.2	0	0
Year 4	45	100.0	41	91.1	4	8.9	0	0
Year 5	45	100.0	39	86.7	6	13.3	0	0
Year 6	45	100.0	35	77.8	7	15.6	3	6.7
Year 7	45	100.0	34	75.6	7	15.6	4	8.9
Year 8	45	100.0	31	68.9	8	17.8	6	13.3
Year 9	45	100.0	30	66.7	9	20.0	6	13.3
Year 10	45	100.0	29	64.4	9	20.0	7	15.6

Note: 1. By way of IPO, trade sale or management buy-out/buy-in

Of the 35 non-exited buy-outs re-surveyed in 1996, 17 (48.6 per cent) had originally identified no specific method of exit. Ten years later, seven firms still had no specific exit method in mind, though a further nine were considering exit through retirement with a retained equity participation, seven expected to exit through family succession and six through a secondary buy-out by other managers. It should be noted, however, that only 20 percent of this sample of 35 companies had bought back any ordinary stock but that almost all (96.2 percent) of those with preference stock in the initial financial structure had redeemed either all (11 firms) or some

(14 firms) of them, thus enabling non-bank financiers to achieve some form of exit.

Strategic Reorganization

As noted above, the results in this section are drawn from the authors' follow-up survey of 35 buy-outs which had been surveyed 10 years previously. Three principal issues were examined, the factors influencing strategic direction, the direction of influence of external and internal factors on profitability and changes in insider and outsider directors.

Managers in these buy-outs were first asked to score the importance of a range of sources of growth identified at the time of the buy-out and also to score their actual importance in retrospect (Table 5). There was little change in the ranking of the factors between the time of the buy-out and the time of the second survey, though in general most elements received greater scores in retrospect. In contrast to the view sometimes expressed that buy-outs are principally about cost rationalization in mature markets, the three most important influences related to market factors, especially increases in the customer base, new markets and product development. The importance of product development over this longer period is consistent with findings in other studies (Wright, et al., 1992; Zahra, 1995) of product innovation in buy-outs in the short term. Introduction of new product technology did, however, receive a relatively low score, although in retrospect there were some indications that it had been more influential than originally anticipated.

Over one-half (51.4 per cent) of the sample had made at least one acquisition in the ten years or more since the buy-out. Strategic fit was generally considered to

Table 5
Managements' Perceptions of Strategic Influence on Performance at Time of Buy-out and Over Ten Year Period Post Buy-out (Mean Score)

Strategic Influence	*On Buy-out*	*Ten Years On*
Increased customer base	3.80	3.97
New Markets	3.79	3.97
Product Development	3.36	3.50
Rationalization of Operating Costs	3.31	3.31
Rationalization of Fixed Costs	3.12	3.26
New Capital Investment	2.83	2.82
Rationalization of Products	2.37	2.82
Introduction of New Product Technology	2.17	2.41
Acquisitions	1.85	2.21
Strategic Alliances	1.70	2.03

Note: Results based on scores for each item ranging from 1=highly unimportant to 5=highly important.

Table 6
External Influences on Operating Profitability in the Long Term

Influence	*Mean Score*
Customer relations	4.06
Pricing	3.69
Competitors	3.55
Marketing	3.47
Product considerations	3.24
Product market	3.12
Economic climate	3.11
Interest rates	2.97
Location	2.97
Exchange rates	2.94
Financial markets	2.63

Note: Scores based on range 1=highly negative effect on operating profitability through 5=highly positive.

be good (mean score of 4 on a range from 1 to 5 where 5=strongly agree with the statement) and there was some evidence of good knowledge of the target (mean score 3.38). However, in about two-fifths of cases there was evidence of problems with respect to the amount of management time consumed on the acquisition and its drain on cash.

The outcomes of strategic actions were examined by asking questions concerning the external and internal influences on operating profitability. The strategic importance attached to extending the customer base is reflected in the emphasis placed on customer relations as an external influence on profitability (Table 6). Other market factors such as pricing, competitors and marketing all received strong scores. General financial conditions were of lesser importance, with product related issues being scored somewhat more positively.

The most important internal influences on operating profitability over the long term related to control factors and human resource issues. Administrative cost control and accounting and other control systems were ranked first and third in importance (Table 7), while employee relations and management team relationships were ranked second and fourth, respectively. Although product development ranked highly as a strategic factor, as seen above, it ranked low as an internal influence on profitability, as did capital expenditure.

Over the long term it may be expected that extensive changes will occur in the board membership of bought out companies. In twenty three (almost two thirds) of the companies, there had been new appointments of executive directors to the board since the time of the first survey. There were multiple reasons for these appointments, but in twelve cases this was the result of the retirement of an incumbent, in eight cases it was in order to hire specialist skills and in only three cases

Table 7
Internal Influences on Operating Profitability in the Long Term

Influence	*Mean Score*
Employee Relations	3.86
Administrative Cost Control	3.80
Accounting and other control systems	3.74
Team relationships	3.68
Cash flow	3.50
Inventory control	3.44
Production efficiency	3.41
Facilities/equipment	3.29
Product development	3.18
Capital structure	3.06
Capital expenditure	3.06

Note: Scores based on range 1=highly negative effect on operating profitability through 5=highly positive.

Table 8
UK - Post Buy-out Performance Compared to Non Buy-outs: Comparison of Mean Performance Ratios and Statistically Significant Differences

	t + 6	*t + 5*	*t + 4*	*t + 3*	*t + 2*	*t + 1*
Return on Total Assets	0.039	0.033	00.051	0.051	0.044	0.005
	0.058	0.064**	0.086*	0.087*	0.052	0.015
Return on Equity	0.165	0.069	-1.02	-0.37	0.008	0.76
	0.120	0.305*	0.41*	-0.09	0.982	0.30
Profit/Employee	1327	1229	2804	997	1016	348
	2150*	2204*	4979	3127**	2704	81
Current Ratio	1.43	1.76	1.34	1.60	3.91	1.35
	1.56	1.35	1.59*	2.44	1.41	1.07
Quick Ratio	0.93	1.25	0.92	1.07	3.34	0.77
	1.08	0.87	1.01	1.78	0.97	0.73
Net Worth/Total Assets	0.299	0.298	0.345	0.39	0.39	0.338
	0.339	0.325	0.391	0.36	0.27*	0.076

Notes: Significance levels = * 5% **1%.
First figure in each row is mean for non-buy-outs, second figure is mean for buy-outs.

was it because of poor performance of an incumbent. Within a period of up to three years after buy-out, the first survey showed that there had been changes in the buy-out team in 19 per cent of cases (Wright, et al., 1992). In fourteen of the buy-outs there had been changes in the composition of the non-executive (outsider) director membership of the board, seven companies introducing a non-executive director for the first time.

Financial Performance Changes

The results in this section are based on the second sample of 251 buy-outs identified above, with data from 446 non-buy-outs being used for comparison purposes. Post buy-out performance was tracked for up to six years after the transaction. The results are shown in Table 8, where means of a range of performance variables for buy-outs and non-buy-outs are reported. Tests were carried out to identify those differences in the mean performance ratios for the buy-out and non-buy-out subsamples that could be deemed statistically significant. The test takes into account the variances associated with each mean value when evaluating the differences.

In the early years post buy-out, no significant differences in the return on total assets ratio are identified. This ratio is preferred as a measure of performance over the return on equity ratio as the latter may be distorted by the influence of negative reserves, especially in the short term. The return on total assets ratio is on average greater for buy-outs than non-buy-outs in the first two years, though not significantly so. These findings are consistent with the notion that buy-outs frequently involve underperforming businesses, both in relation to their potential and in relation to their industries. Although, as seen earlier, actions are taken on buy-out which lead to improved performance, it may take some time before this significantly exceeds the average for the sector. A similar pattern is observed in respect of labor productivity as measured by the profit to employee figures.

Over years 3 to 5 post buy-out, there are indications that buy-outs on average perform significantly better than comparable non-buy-outs on both the return on total assets and profit to employee measures. In our sample, this period relates to the late 1980s. In the sixth year after buy-out, the significantly greater performance of buy-outs begins to disappear.

Fewer significant differences are apparent in respect of the short term liquidity ratios and generally speaking both groups on average display acceptable levels of liquidity according to conventional levels. There are suggestions that buy-outs in their first two years have lower liquidity ratios than non-buy-outs, but that thereafter apart from year 5 they have superior ratios. This pattern may be consistent with the impact of tighter working capital control systems.

A similar pattern is observed in respect of net worth to total assets ratios as a measure of leverage. As expected, buy-outs initially have lower ratios than their non-buy-out matched counterparts, but over the longer period the relative positions are reversed.

Efficiency Changes

As in the previous section, the results below are based on the second sample of buy-outs identified earlier. The sample of non-buy-outs is used in order to analyze

Table 9
Efficiency of Buy-outs and Non-Buy-outs: Cobb-Douglas Production Function Estimates

Variables	*t+6*	*t+5*	*t+4*	*t+3*	*t+2*	*t+1*
LogEmployment (LL)	0.69***	0.70***	0.74***	0.64***	0.68***	0.96***
LogCapital (LK)	0.26***	0.26***	0.21***	0.29***	0.13*	0.09
Buy-out (MBO)	0.002	0.21***	0.11*	0.16**	0.07*	0.05
Industry dummies (IND)	yes	yes	yes	yes	yes	yes
CONSTANT	7.56***	7.14***	7.83***	7.27***	8.56***	7.68***
R^2	0.81	0.85	0.86	0.96	0.94	0.92
F	133.1	154.4	140.9	18.1	17.1	7.4
Sig.	0.000	0.000	0.000	0.01	0.01	0.01

Note: Figures in brackets are *t* statistics

the effect of a buy-out *per se* on efficiency changes. The comparative productivity performance of buy-outs versus non-buy-outs was assessed in terms of the efficiency in which they combine factor inputs (labor and capital) to produce outputs using the methodology described earlier. The results of the analysis are shown in Table 9. The analysis is carried out on surviving buy-outs and non-buy-outs over the relevant post-buy-out period. Thus six separate equations are estimated. A positive and significant sign on the variable MBO in the equation would indicate superior productive efficiency in the buy-out sub-sample, *cet par*, in that year. Our earlier deliberations, however, suggest that the productivity effects of buy-outs may not be immediate. For instance, a buy-out may not result in an immediate alignment of the goals of various groups of employees party to the buy-out or result in increased co-operation and better working practices from day one.

The basic production function appears well specified, with more or less constant returns to scale (the coefficients on LL and LK, $b + b1$, approx. = 1), in all years with the exception of t+1 and t+2. Each of the equations is deemed statistically significant according to the R^2 and F-tests at 1% or better. The R^2 values indicate that the equations are explaining up to 96% of the total variations in output in the sample. The t+1, and to some extent t+2, results are likely to be affected by noise in the accounting data post buy-out or by the effects of immediate re-organisation of production and working practices. Thus, the coefficients for the first buy-out year are not significant suggesting that bought out companies undergo some initial period before the impact of the increased incentives and control mechanisms begin to be felt. This is consistent with the point made by Jones and Kato (1995) in respect of the timing of the initial benefits from ESOPs. A small but significant productivity effect of the buy-out is observed in year t+2 which increases

to approximately a 20% productivity differential by year t+5. On average for the six years of comparison the buy-out sub-sample is exhibiting a 9% productivity differential over the non-buy-out control sample.

V. CONCLUSIONS AND IMPLICATIONS

This study has examined the longer term effects of management buy-outs using two representative samples and a combination of financial and non-financial information.

Evidence relating to the longevity of buy-outs suggests that even ten years after the transaction approaching half remain as buy-outs. However, it is clear that buy-outs receiving support from venture capitalists exit at a considerably greater rate and sooner than non-venture backed deals. Reflecting expectations that venture capitalists are likely to invest in riskier ventures than providers of debt, venture backed exits are more likely to be both successful (i.e., stock market flotation) and unsuccessful (i.e., receivership). Indeed, returns on buy-out investments are the highest of any type of venture capital investment in the UK (BVCA, 1996).

Buy-outs which remain as such for periods of at least ten years were found to experience extensive changes in their senior management team. They are also found to engage in significant product development and market-based strategic actions, but the greatest positive impact on operating profitability is considered to derive from enhanced control of costs, enhanced control systems and from human resource management factors.

In support of earlier studies, there is evidence that buy-outs display raw short term improvements in financial performance. There are also indications that buy-outs on average significantly outperform their industrial sectors for around five years after the transaction. This period is longer than previously suggested by other studies. Analysis of changes in efficiency also provides evidence that buy-outs are significantly more successful than non-buy-outs over a similar period post-buy-out.

The above findings suggest a number of implications for practitioners. Successful buy-outs may require both innovations as well as restructuring of cost bases and control systems. Even apparently stable product sectors, the classic buy-out situation, may eventually have limited life-cycles and require new product development if the buy-out is to succeed in the longer term.

The evidence of the existence of superior longer term performance by buy-outs suggests that venture capitalists may need to consider their investment perspectives carefully, particularly in respect of exit versus second-round investment. For financiers it is clear that the buy-out concept can be successfully applied to growth as well as restructuring cases. This point raises the importance of appropriate financial structuring and entrepreneurial screening and matching to the circum-

stances of a particular transaction. Nevertheless, there are indications of a need to take a life-cycle perspective of buy-outs in order to meet the demands of entrepreneurs' career aspirations, market contingencies and investor requirements for realization of returns.

Further research may usefully be directed at a number of areas. First, the analysis has focused solely on management buy-outs, that is those transactions which involve incumbent managers. As is becoming recognized, the generic buy-out concept involves a variety of forms. The management buy-in, involving external managers raises adverse selection issues which may have important implications for entrepreneurs' ability to effect efficiency improvements. This also has implications for their longevity, with there already being evidence that they are subject to significantly higher failure rates (Robbie & Wright, 1996). There would appear to be scope for comparative studies of the longer term impact of management buy-ins and buy-outs.

In analyzing longer-term profitability and efficiency, there would appear to be scope for examination of differences in these aspects of firm behavior in respect to larger and small buy-outs, the influences of managerial equity stakes and other elements of corporate governance and the impact of the original source of the transaction. There is also scope for further exploration of the changes in efficiency post buy-out.

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