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MEANS OF PAYMENT IN TAKEOVERS: RESULTS FOR THE U.K. AND U.S.

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ABSTRACT

This paper examines means of payment in over 2,500 acquisitions in the UK and US over the period 1955 to 1985. Data on financing proportions, bid premia and postmerger performance are used to test the validity of tax and information hypotheses. It is difficult to explain many of the results in terms of tax effects. Capital gains tax does not appear to be a primary determinant of financing patterns in the UK in a period in which there were substantial variations in the tax rate. As well the tax motivated "trapped equity" model is inconsistent with several observations on financing patterns.

In both countries much larger acquiree bid premia are associated with cash than equity bids, consistent with information models suggesting that high valuing bidders make cash offers and low valuing bidders make securities offers. Even after controlling for the form of takeover (tender versus merger) and whether the bid is contested, cash offers provide substantially higher wealth gains to target shareholders. In the US bidders using all equity suffer significant abnormal losses at the time of the bid announcement consistent with the findings on the wealth effects of seasoned new equity offerings in the US. In the UK, however, no such losses are evident, perhaps reflecting the fact that in the UK equity bids are typically underwritten. Finally, we find that acquirors making cash offers have better postmerger shareprice performance than do those using equity. These results are consistent with the hypothesis that bidders are motivated to use overvalued equity to acquire other firms.

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1. INTRODUCTION

While many aspects of acquisitions have received extensive investigation, there has been little analysis of their means of financing. This is a notable omission in view of the substantial expenditures involved in takeovers. Franks and Harris (1986b) record that acquisitions in the UK represented 6 percent of the extant capital stock in 1985. By any account these are substantial investments whose method of financing warrants careful scrutiny. This paper provides a detailed empirical assessment of acquisition finance.

Although a descriptive analysis of acquisitions is interesting in itself, there are more fundamental reasons for pursuing the subject. Over the past few years several theories of acquisition finance have appeared. As in other areas of corporate finance, these theories have emphasized the influence of taxation and information asymmetries. To date, however, there is little empirical work examining their validity. An examination of these theories may be of value not only for understanding the acquisition process but also for assessing the relevance of information and tax considerations to more general corporate capital structure issues.

Following a summary of the paper's results in Section 2, Section 3 surveys theories of acquisition financing, and Section 4 summarizes existing empirical studies. The data set and methodology are described in Section 5. Spanning the period 1955 to 1985, the data include over 2,500 acquisitions in the UK and the US. This is probably one of the

largest firm data sets employed in an analysis of acquisitions. Interest in the results is further enhanced by international comparisons, since there are some well documented differences between the UK and US in the response of share prices to announcement of new issues of equity. One interesting question is whether similar differences are observed in equity financed acquisitions. In addition, there are significant institutional differences between the countries in regulations relating to corporate financing activities and taxation that should affect the preferred means of payment for acquisitions. For example, there has been a much more liberal attitude to share repurchases in the US than in the UK over most of the period of the study. As a consequence, at least one set of theories would anticipate different financing patterns between the two countries.

Section 6 examines the forms of finance that have been used in acquisitions over the 30 years of the study. These financing patterns are related to salient tax and institutional considerations. Section 7 describes share price responses around the announcement date of the acquisition and reports the wealth gains to bidders and targets in cash and equity financed acquisitions. Previous studies have recorded performance variations by class of acquisition. For example, bid premia in tender offers have been observed to be greater than those in mergers. Section 7 assesses whether these differences can be attributed to the forms of financing or the type of acquisition. Section 8 reports post-merger performance for up to two years after the acquisition. Finally, Section 9 summaries the results and discusses how the deficiencies of the current methodology could be avoided in a broader cross-sectional study.

2. SUMMARY OF RESULTS

2.1 Means of Payment

(i) Just over half of the sample of acquisitions in the UK were either "all equity" or "all cash" bids, with an approximately equal distribution between the two. Almost two-thirds of US acquisitions were either all equity or all cash.

(ii) The higher proportion of "mixed bids" in the UK is in part accounted for by the provision of cash alternatives to equity offers. These cash alternatives are frequently underwritten.

(iii) In the latter half of the 1960's approximately half of US acquisitions were effected by an offer of convertibles, although their use dropped significantly by the 1970's.

(iv) Cash acquisitions in the US increased from a negligible proportion during the 1950's to just under 60 percent by number during the 1980's.

(v) There has not been a similar discernible upward trend in the use of cash in the UK.

2.2 Returns Around the Announcement of a Merger

(i) Returns to bidder shareholders are similar in cash and equity financed acquisitions in the UK during the six months prior to (but not including) the announcement month. In the US, acquirors offering equity slightly outperform those offering cash in the pre-bid period.

(ii) Bid premia to target shareholders in cash acquisitions are significantly in excess of those accruing to shareholders in equity acquisitions in both the UK and the US.(iii) In the UK, neither cash nor equity acquisitions display significant abnormal returns to bidder

shareholders in the month of an acquisition. Gains to acquisitions thus accrue to target shareholders.

(iv) In the US, there are significant positive gains to bidder shareholders in cash acquisitions and significant losses in equity acquisitions.

2.3 Post Merger Returns

(i) Post merger returns (measured two years after the merger is finalized) are not significantly different from zero in cash acquisitions in either the UK or US.

(ii) There is evidence of abnormal losses sustained by shareholders in the US in the two years after an equity acquisition.

2.4 Results Relating to Theories of Acquisition Finance

Capital Gains Tax Theories

(i) The larger gains to target shareholders in cash compared with equity acquisitions may be consistent with the theory that target shareholders have to be compensated for capital gains taxes levied on cash but not on equity acquisitions.

(ii) However, differences in bid premia in cash and equity financed acquisitions in the UK were observed before 1965, prior to the introduction of capital gains tax. Bid premia can therefore at best only be partially explained by capital gains tax.

(iii) Furthermore, this proposition is not supported by other evidence, where the means of payment is shown to be unresponsive to appreciable changes in capital gains tax rates in the UK.

"Trapped Equity" Theories

(iv) Theories (King (1986)) which treat acquisitions as a tax efficient method of making distributions to shareholders predict a reduction in cash acquisitions when the costs of alternative forms of distributions (such as dividends) fall. The proportion of acquisitions financed with cash is not affected by the introduction of the imputation tax system in the UK in 1973 which reduced the costs of dividend payments.

(v) Despite the fact that repurchases of shares were not feasible in the UK over the period of the study, the proportion of acquisitions financed with cash in the UK was less than in the US in recent years. Since repurchases are as tax efficient as cash acquisitions, trapped equity theories would predict a larger use of cash in the UK. The availability of a stepped up basis on depreciable assets may have provided a tax incentive for the higher use of cash in the US.

Information/Agency Theories

(vi) The proposition (Fishman (1986)) that cash is used in high valued acquisitions to preempt competing bids is consistent with larger bid premia paid in cash than in equity acquisitions.

(vii) However, the evidence that cash is more commonly employed in contested bids is not consistent with the view that cash is preemptive.

(viii) The abnormal losses incurred by shareholders of bidding companies (in the US, at least) upon announcements of equity acquisitions, and the post-merger abnormal losses associated with equity acquisitions, are consistent with asymmetries in information encouraging the issue of overvalued equity by acquirors.

2.5 Explaining Previous Results

(i) A significant proportion of the difference in bid premia between tender and non-tender offers is attributable to a greater use of cash in tender offers.

(ii) Negative post-merger performance, which has been observed in some previous studies, appears to be closely associated with the use of equity.

2.6 International Comparisons

(i) In the US, acquirors using equity incur abnormal losses on the bid announcement, whereas those using cash make abnormal gains. In the UK, in contrast, no significant gains or losses are incurred by bidders using cash or equity. These results are similar to those found in event studies of new (seasoned) equity issues in the UK and US respectively.

ii) Underwriters in the UK play a much more important role in acquisition finance than in the US. They may not only play a role in financing acquisitions where the bidder lacks cash but also where the bidder requires external validation of the valuation of its offer.

3. THEORIES OF MEANS OF PAYMENT IN ACQUISITIONS

In complete markets with symmetric information and in the absence of taxes, shareholders should be indifferent to the means of payment used in acquisitions: share price responses should reflect only changes in fundamental values induced by the merger. However, the tax system and specific features of the capital market encourage the use of particular forms of finance. This section surveys theories of choice of finance in acquisitions. Section 3.1 discusses tax based models, and Section 3.2 agency and information theories.

3.1 The Influence of Taxation on the Medium of Exchange

Choice of means of exchange affects the tax liabilities of the acquired firm's shareholders. In an equity acquisition, the investor's acceptance of the stock of the acquiring company avoids the realization of any capital gain and does not therefore impose an immediate capital gains tax liability on the acquired company's shareholders. Such taxes are deferred until the shares are ultimately sold. In a cash purchase, any gain must be realized immediately for tax purposes thus creating a tax liability at the capital gains tax rate. In the absence of other considerations, we would not expect to observe cash acquisitions. However, the payment of capital gains taxes is dependent on the tax status of investors, and the full capital gains tax rate may be mitigated by exemptions and allowances. The rate will be smallest for targets with

"marginal" investors that are tax exempt or have unutilized allowances. For these investors, personal tax considerations will bear little relation to the desired means of payment.

Where a capital gains tax liability is created, additional considerations must justify the use of cash. For example, in the US a cash acquisition permits the acquiring company to "write up" certain assets of the acquired firm to their fair market values. Such a "write up" produces higher tax deductible depreciation allowances not available in all equity bids. This corporate tax advantage of cash bids is somewhat tempered by recapture taxes due on written-up values of tangible assets when the acquisition is consolidated by the acquiror. Thus the US tax laws can provide an incentive for cash bids in cases in which market values exceed book values of acquired firms' assets. Such a "stepped up" basis is not available in the UK. For target shareholders to be indifferent to the use of cash and non-taxable forms of payment, cash purchases must create pre-tax gains, as measured by bid premia, which are in excess of those associated with equity purchases. The net gain to the bidder is then the value of the "write up," less the increment to the bid premium.

H1: Bid premia are higher in cash than equity financed acquisitions. Ceteris paribus, the use of cash in acquisitions is inversely related to the capital gains tax rate of acquired firms' shareholders and directly related to the potential for writing up depreciable assets.

The above disincentives to use cash in acquisitions may be offset by considerations of the tax position of the acquiring firm's shareholders. Cash acquisitions may afford tax savings because dividend payments are

taxed at shareholders' personal income tax rates. Thus, cash acquisitions may be more tax efficient than dividend payments if capital gains taxes are smaller than personal income taxes on dividend income. According to the models of Auerbach (1979) and King (1977), under conditions in which a firm's marginal valuation ratio (referred to below as q) is less than unity, but in excess of the value of a unit dividend distribution to shareholders, there are disincentives to paying cash dividends. Distributions to shareholders could be achieved at a lower tax cost by share repurchases or voluntary liquidation (see Edwards and Keen (1985)). In the UK, share repurchases have only been permitted since 1985. In the US, share repurchases have been permitted for the period of our study and have now become widespread (see Shoven and Simon (1987)). However, it is possible that even in the US restrictions on the tax status of repurchases may favor alternative routes of distributing cash-- through, for example, acquisitions.

H2: <u>The incentives to use cash in acquisitions are greater in circumstances where share repurchases are prohibited or costly</u>.

In King (1986) the tax incentive to make cash acquisitions has been made more precise. He argues that, in the absence of share repurchases, cash acquisitions are a tax efficient way of distributing trapped equity to stockholders. Companies make cash acquisitions because the cost of purchasing assets traded in the corporate sector is less than purchasing (equivalent) assets in the unincorporated sector. The difference in cost is accounted for by the tax wedge between income taxed in the corporate and personal sectors. More formally, let C_a and C_i be the costs of adjustment associated with a unit purchase of capital through acquisition

and capital investment respectively. Equality at the margin of the cost of purchases through cash acquisition and investment requires that:

$$q + C_a = 1 + C_i \tag{1}$$

assuming that financial markets place a value of q on an additional unit of capital (which costs \$1 to purchase in the absence of adjustment costs) once it is in the corporate sector. King's model focuses on the implications of having \$1 in the corporate sector (generated from, say, previously profitable investments) which is worth q^* in financial markets; q^* may be less than unity due to the double layers of corporate and personal taxes. As these dollars are used to purchase capital (at a cost of $1 + C_i$) equality at the margin requires that

$$q = q^* (1 + C_i) \tag{2}$$

Substituting (2) into (1) and simplifying yields,

$$C_a = q\left(\frac{1}{q^*} - 1\right) \tag{3}.$$

If profits in the corporate sector are taxed more heavily than those in the personal sector, q^* is less than unity, and the expression on the right hand side of (3) is increasing in q. Thus under reasonable descriptions of the cost of adjustment function, C_a, acquisitions are increasing in q. For example, letting A represent dollars spent on acquisitions and K the capital stock, quadratic costs of adjustment are described as $C_a = \beta_0 + \beta_1(A/qK)$. Substituting into (3) yields equation (4).

$$A/K = -(\beta_0 q/\beta_1) + (1/\beta_1)q^2((1 - q^*)/q^*) \tag{4}$$

The driving force behind King's description of acquisitions is the undervaluation at the margin of \$1 in the corporate sector -- the so-called "trapped equity" model of acquisitions. For example, if the

corporate tax rate is t and the personal tax rate is m, then under a classical system of taxation $q^* = q(1 - t)$, and, under an imputation system with imputation rate of m, $q^* = (1 - t)/(1 - m)$, which creates an incentive to acquire so long as $t > m$.[1]

H3: The tax incentive to make cash acquisitions is increasing in the value of the tax wedge $(1 - q^*)$ and the square of the marginal valuation of capital ratio, q.

3.2 Information and Agency Models

If all parties to an acquisition are not equally well informed about future prospects, then the choice of finance may be influenced by considerations other than taxation. In particular, asymmetries in information encourage the pursuit of opportunistic gains. In acquisitions, two types of asymmetries in information might be anticipated: either the acquiror or the acquiree could have superior information about valuations of their own respective assets. In the former case, there is an incentive for the acquiror to undertake equity acquisitions during periods in which its shares are overvalued--or at least not undervalued. In the latter case, there is an incentive for the acquiree to accept offers during periods in which its equity is perceived to be overvalued.

Myers and Majluf (1984) have examined the influence of misvaluations on the incentives for firms to make new equity issues. They argue that there is a disincentive for firms to use new equity as a means of funding new investments. If managers have superior information about the value of existing assets and investment opportunities, then they will wish to

restrict sales of shares to periods when current and prospective investments are not undervalued by new investors. New shareholders in turn appreciate this incentive to sell overvalued equity and as a result downgrade their valuation of firms that make new equity announcements. Furthermore, since firms have an alternative form of finance available (say, cash or debt) that avoids the adverse selection problem, any new issues of equity must be prompted by overvaluation.[2] Riskless securities will be issued in preference to equity, thereby creating the "pecking order" hypothesis of Myers (1984) in which retentions are used in preference to debt, which is in turn issued in preference to equity. Smith (1986) reviews studies demonstrating negative average price impacts when a new stock issue is announced.

In the context of acquisitions there are two implications of the Myers and Majluf model. The first is that the use of equity will be discouraged in circumstances in which bidders are better informed about their own asset valuation. The second is that bidders will be discouraged from buying shares in target companies if the targets are better informed about their own valuations than are bidders. In this case, the target is the issuer of equity facing the adverse selection problem. In sum, asymmetries in information about the value of targets discourage acquisitions, and asymmetries in information about the value of the bidder discourage the use of equity finance. These information asymmetries give rise to the following share price response.

H4: The announcement of equity as the medium of exchange in acquisition leads to a fall in the share price of the bidder (i.e., the issuer) while the use of cash leads to an increase in share price.

Changing assumptions about the information structure leads to rather different predictions. If information about the quality of the acquiror or acquiree only becomes evident after the bid announcement, then subsequent revaluations will occur and there will be incentives to use particular types of finance. There are three possibilities discussed in the literature:

(i) If the acquiror is better informed about the value of its own equity, and misvaluations are only revealed after the acquisition, then there is an incentive for the acquiror to use equity during periods of overvaluation. When equity is undervalued, acquirors will offer cash (Myers and Majluf (1984)).

(ii) If the acquiree is better informed about its own value and its true valuation is only revealed after the acquisition, then equity offers will be preferred to cash when equity is believed to be undervalued (Hansen (1984,1987)). Acquirees prefer to retain an equity participation in the merged firm in order to capture some of the subsequent gains when the undervaluation is revealed.

(iii) If pre-merger appraisals make the acquiror well informed about the high value of the acquiree, then it will offer cash in the acquisition. This follows from the desire of the acquiror to capture the benefits of high value acquisitions and to avoid sharing these gains with the acquiree. Conversely, when it is uncertain about acquiree valuations, it will wish the acquiree to retain an equity holding. This diminishes the

adverse selection problems associated with better informed acquirees (Fishman (1986)).

Fishman also argues that cash will be associated with high offers and high bid premia provided by the acquiror. He assumes some fixed costs for collecting information about the value of the prospective target which encourages acquirors who establish high value acquisitions to make preemptive bids.[3] These preemptive bids deter other companies from paying for information and initiating competing offers. Cash offers should therefore be associated with high bid premia for the target, low levels of competition, and positive abnormal performance for the bidder after the bid announcement.

In sum, theories of acquisition finance have some clear implications for (i) means of payment, (ii) bid premia and (iii) share price movements after bid announcement. In the remainder of the paper, we examine how well each of the theories explains the empirical results.

4. PREVIOUS EMPIRICAL WORK

4.1 Means of Payment

Two US studies have examined the choice of finance used in acquisitions, incorporating, at least to some extent, personal tax considerations. Applying a conditional logit model, Carleton et al (1983) examine the financial accounts of acquired firms to study the probability of three events: 1) being acquired in a cash offer, 2) being acquired in a securities exchange or 3) not being acquired. Using a sample of companies from 1976-77, they find that "lower dividend payout ratios and lower market-to-book ratios increase the probability of being acquired in a cash takeover relative to being acquired in an exchange of

securities" (p. 825). The authors conclude that on the assumption that book values measure the basis on which capital gains liabilities are calculated, the finding on market-to-book ratios is consistent with a personal tax disadvantage to cash offers. They also discuss the possibility that a market-to-book ratio may proxy for other effects such as inefficient management of the target. The authors find no satisfactory explanation for their findings on dividend payout.

Niden (1986) provides an extensive discussion of tax issues in US takeovers and examines the choice between taxable (essentially all cash) and nontaxable (forms of equity) consideration based on variables proxying for the tax position of each of the combining firms. While her logit models have small explanatory power, no relationship is found between the tax paying circumstances of target shareowners and the form of consideration.

4.2 Bid Premia

A recent (unpublished) study by Asquith, Bruner and Mullins (1986) has focused directly on the impact of form of financing on merger returns. Using a sample of 343 US mergers over the period 1975-83, they find that equity offers are associated with significantly smaller returns to both bidders and targets than are cash offers. For targets, they report bid premia of 27.5 percent and 13.9 percent for cash and equity bids respectively. For bidders, those using cash earned 0.2 percent and those using equity earned -2.4 percent, although for relatively large targets the figures are 0.95 percent and -5.39 percent respectively. They find that abnormal losses are positively related to the relative size of the acquisition. They also suggest that differences in merger

returns between alternative forms of financing can completely explain the differences recorded between returns in mergers and tender offers.

Controlling for whether a merger was horizontal or conglomerate in nature, Wansley, Lane and Yang (1983) find acquiree bid premia of 31.5 percent in 102 cash bids and 16.8 percent in 87 "securities" offers. They conclude that higher bid premia in cash acquisitions are required to compensate for capital gains tax liabilities. Niden (1986) also finds higher bid premia to acquirees in taxable acquisitions. Dividing US acquisitions over the period 1963-1977 into 230 taxable (largely all cash) and 318 tax-free (mainly all equity) acquisitions, she reports bid premia of 25.4 percent and 11.9 percent respectively.

There are no existing UK studies of the relationship between medium of exchange and shareholder wealth effects. However, Eckbo and Langohr (1986) have examined bid premia in French takeovers during the period 1966 to 1980. They report that in 50 cash offers, there are significantly higher average offer premia (53 percent) than in 49 exchanges of securities (20 percent).

The most consistent result to emerge from previous studies is therefore that bid premia in cash acquisitions are significantly in excess of those in equity offers. We provide further evidence on this below.

5. DATA AND METHODOLOGY

5.1 Sample

Our sample contains data from both the UK and US, constructed in parallel fashion. In the UK we start with an exhaustive set of almost 1900 acquisitions as recorded in the London Share Price Database (LSPD)

for the period January 1955 to June 1985 (see Franks and Harris, 1986a). LSPD includes all UK companies quoted in London since 1975. Prior to 1975, approximately two thirds of UK quoted companies are recorded, with a bias in favor of larger companies. For each acquisition we then gather data on the means of payment from the Stock Exchange Year Book which reports information from offer documents only where the acquiror is quoted. Financing data exist for 954 acquisitions.

In the US, we extract data on all firms on the Chicago Research in Security Prices (CRSP) files where the firm disappeared through acquisition during the period January 1955 to December 1984. CRSP covers all companies on the New York and American Stock Exchanges since 1962 and all NYSE firms since 1926. We obtain means of payment from the Capital Changes Reporter. Our final US sample contains 1555 acquired firms with financing data and 850 bidders.

In cases where several acquisitions were made by the same bidder, the bidder is counted separately by each acquisition made.

5.2 Merger Dates

For each UK acquisition, we have up to four key dates. The first approach date is the date when the Stock Exchange is first informed that merger talks are underway. The first bid date gives the date of the first formal merger offer. This is followed by an unconditional date when a sufficient proportion of shares has been pledged to the acquiring company to guarantee legal control. Finally, the LSPD date shows the last date for which stock returns data are available for the target, usually the delisting date. The first three dates are taken from records of the EXTEL Company, which collects and records data. There may not be four distinct dates for all acquisitions. For example, the first bid date may not be preceded by a formal announcement of talks. For each US acquisition we obtained three key dates. The first mention of an acquisition in The Wall Street Journal Index was taken to be the announcement date. This date is often the actual bid date but may also be a positive indication of a forthcoming bid. We record dates of bid revisions, as well as the final bid date, the date of the bid that was ultimately successful. Finally, we record the delisting date for the acquiree's stock.

5.3 Share Price Data

Monthly rates of return are taken from LSPD and CRSP. In the UK, these are calculated using jobbers' (i.e., market makers) price quotes (average of bid and ask) at the end of the final trading day of the month. While traded prices are available, the order of prices during a day is not, thereby prohibiting identification of end-of-day traded prices. Jobbers' quotes may not be available on the last day of the

month, either because the company's stock has been suspended or because the shares were not traded that day. If there are no jobbers' quotes on the end day of the month, returns are calculated using a randomly selected traded price on the day of the month when the stock was last traded. The results were not appreciably affected when we used traded prices only, instead of the average of the jobbers' bid and ask price.

5.4 Abnormal Returns and Tests

To assess the effects of mergers on share prices, we use variations of event study methodology. Specifically, for any company j we define an abnormal return (ar_{jt}) as

$$ar_{jt} = r_{jt} - c_{jt} \tag{5}$$

where r_{jt} is the continuously compounded realized return (log form) in month t (dividends plus capital gains) and c_{jt} is a control return which calculates an estimate of shareholder returns in the absence of a merger. Time, t, is defined relative to an event date. For UK mergers we use the first available of either the first approach, first bid, unconditional or LSPD dates. In the US we use the announcement date. Since specification of the control returns is controversial, we define control return in three alternate ways as described later in this section.

Company abnormal returns are then aggregated to form a portfolio abnormal monthly return (AR_t) defined as,

$$AR_t = \frac{1}{N} \sum_{j=1}^{N} ar_{jt} \tag{6}$$

where N is the number of companies in a particular portfolio, e.g., the portfolio of acquirees. The statistical significance of AR_t is assessed with the statistic $TAR_t = AR_t/\sigma$ where σ is the standard deviation of the

AR_t's (assumed to be normally distributed) for a time period assumed to be unaffected by the merger. In results reported σ is calculated for the period t = -71 to t = -12. Given these procedures, TAR_t is distributed according to student's t distribution with 59 degrees of freedom. This procedure provides crude adjustment for cross sectional dependence as discussed by Brown and Warner (1980). Alternatively, the statistical significance of AR_t is tested non-parametrically using the percentage of the ar_{jt} that are positive. This is accomplished by comparing the positive percentage to a binomial distribution when the probability of a positive return is 0.50.

To measure returns over a number of months a cumulative abnormal return (CAR_t) is calculated as

$$CAR_t = \sum_{i=t_b}^{t} AR_i \qquad (7)$$

where t_b is the month at which the cumulation begins. Under the assumption that the AR_t's are independent, the significance of CAR_t can be assessed using the statistic $TCAR_t = CAR_t/\sigma_{CAR}$ where $\sigma_{CAR} = \sigma\sqrt{t-t_b+1}$ and σ is estimated as described above. $TCAR_t$ is approximately a standard normal variate under the null hypothesis that CAR_t has a zero mean.

Though CAR is frequently used for assessing multi-period returns, it can be unsatisfactory when companies disappear from the analysis due to nontrading or because companies are delisted or suspended close to the bid date. As an alternative to CAR we construct company-specific

multi-period returns. These company "bid premia" (bp_{jt}) are aggregated into portfolio bid premia (BP_t) defined as

$$BP_t = \frac{1}{N} \sum_{j=1}^{N} bp_{jt} = \frac{1}{N} \sum_{j=1}^{N} \sum_{i=t_b}^{t} ar_{ji} \qquad (8)$$

where the cumulation process begins at time t_b and includes those monthly abnormal returns which are observed up to and including month t. For example, if in month +1 two companies obtain an average residual of 10% and in month +2 only one survives (or is traded) and obtains a residual of 5 percent, the CAR for the 2 months according to equation (7) is 15 percent, compared with 12 1/2 percent using equation (8). We assess the statistical significance of BP using the statistic TBP = BP/σ_{BP} where $\sigma_{BP} = \sigma\sqrt{T}$ and T is the average (across companies) number of months for which return data are available to form BP. TBP is the analogue of $TCAR_t$ shown above.

The calculation of TBP and TCAR both use σ calculated as the standard deviation of abnormal returns for some time period removed from the merger. It can be argued that there are transitory (or permanent) risk shifts associated with mergers that might not be captured by our calculation of σ. As an alternative procedure, we calculated statistics based on the cross-sectional standard error of company-specific bid premia (bp_{jt}). This "cross-sectional" t is calculated as BP/SE where SE = $SD/\sqrt{N}$ and SD is the cross-sectional standard deviation of the bid premia for the N companies averaged to get BP. In general, the results using these cross-sectional t statistics are quite comparable to those using TBP and TCAR discussed above.

5.5 Control Returns

Brown and Warner's simulation results (1980, 1985) on both monthly and daily data suggest that relatively straightforward procedures are as powerful as more elaborate tests in detecting abnormal returns (see, also, Brown and Weinstein (1985)). To see whether the specification of control returns affects our results, we use three alternate models to determine c_{jt} using the following equation:

$$c_{jt} = \alpha_j + \beta_j rm_t$$

In the first model, the market model, values for α and β are estimated by regressing of r_{jt} on rm_t for the sixty month period beginning at t = -71 in the US. Due to documented effects of infrequent trading in the UK on estimated parameters (Dimson and Marsh (1983)), α and β for UK companies are adjusted for thin trading using Dimson's method (1979) for the same sixty month period.[4] In the second model we set $\alpha = 0$ and $\beta = 1$ for all firms. The third model is based on the CAPM and sets $c_{jt} = rf_t + \beta_j(r_{mt} - r_{ft})$ where β is from the market model and rf_t is the yield on a government obligation. For the UK we use the yield on three month Treasury obligations converted to a one month yield basis. For the US we use yields on one month Treasury bills.

6. FORMS OF FINANCING IN ACQUISITIONS IN THE US AND UK

Section 6.1 describes the different forms of financing used in our samples of US and UK acquisitions, the importance of each form, and the trends over the thirty year period. Section 6.2 assesses whether these patterns of financing are consistent with the predictions of the theories in Section 3.

6.1 Means of Payment

Table 1 shows that all cash offers and all equity offers have been the two most widely used means of payment in both countries. Together,

(Insert Table 1 about here)

these two types of offers constitute almost one half of successful takeovers in the UK and in excess of two-thirds of US offers. In the UK an additional one in five acquisitions has involved either a combination of cash and equity or the seller's option to receive either all cash or all equity. In the "all cash or all equity" case, each shareholder of the target may elect to receive all cash or all equity. The bidder will provide the cash from its own resources, or the cash will be provided by an underwriter. In the latter case, shareholders of the target tender their shares to the bidder, which issues new shares to the underwriter (on the basis of the bid terms), which then remits the amount prescribed by the cash alternative to the tendering stockholders.

These "all cash or all equity " offers have become increasingly prevalent since 1979. One reason is that they provide shareholders who are liable to pay capital gains taxes on realized gains (if they receive cash) with an equity alternative, and others, who do not want the bidder's paper in their portfolio, with cash. The offer is tax and transaction cost efficient. The role of the underwriter may be two-fold: 1) it simply provides a source of cash for a cash-hungry bidder; and 2) it provides a signal to the market of the value of the bidder's equity from an informed (or partially informed) trader. This informed trader must agree to purchase any shares at a predetermined price whenever a target shareholder elects to take the cash alternative. This role may be

especially important where the acquisition is relatively large and where there is great uncertainty as to the value of the offer to the bidder.

Unlike the UK, the cash alternative and cash-equity combinations have not been significant in the US. All debt offers are rare in both countries, and combination offers involving debt are infrequent, though more common in the UK. A striking contrast between the two countries is in the use of convertibles securities. In the US, 11.8 percent of takeovers have involved full payment with convertibles (e.g. convertible preferred stock), and an additional 7.3 percent have been combinations of equity and convertibles. In the UK the use of convertibles has been negligible.

Panel B shows that, compared with the US, a larger proportion of UK takeovers have involved at least some cash or some debt. Also, a slightly larger proportion of UK offers have involved at least some equity. These figures reflect the greater use of combination offers in the UK.

Table 2 divides the entire thirty year period into five-year blocks, and Figure 1 displays the results by year. In the US all-cash takeovers were not

[INSERT TABLE 2 ABOUT HERE]

observed in our sample until 1965, but since then have become increasingly important.[5] At the same time, all equity offers fall from three quarters of US takeovers in the late 1950's to less than one quarter in the 1980's. This striking increase in the use of cash occurred over a period in which the Williams Act (1968) and its extension (1970) imposed more stringent requirements on cash offers. In contrast,

in the UK financing proportions have fluctuated considerably over the thirty years of the study.

[INSERT FIGURE 1 ABOUT HERE]

Table 2 also demonstrates that the heavy use of convertibles in the US is largely a phenomenon of the 1960's. During the period 1965-69, fully one half of US bids involved convertible securities. By the 1980's, the proportion had fallen to only 5.4 percent. The downturn in takeover financing with convertibles is probably due to changes in US tax law and accounting standards. Enactment of Section 279 of the tax code in 1969, eliminated the tax deductibility of interest payments on convertible debt expressly issued for acquisitions. In addition, Accounting Principles Board Opinion Number 15 required the reporting of earnings per share on a fully diluted basis. Such a change may have reduced the incentive to issue convertibles because of the impact of earnings dilution on contractual arrangements, for example, in bond covenants. Also, managers and investment bankers may have been apprehensive about investor reaction to even cosmetic reductions in EPS.

The proportions in both Tables 1 and 2 have been calculated on an equally weighted basis. Table 3 provides the proportions of all cash and all equity offers based on the market value of the acquisitions.

[INSERT TABLE 3 ABOUT HERE]

For the US, the proportion of bids that are all cash on a value weighted basis is almost identical to the equally weighted proportion for the period 1955 to 1974. After 1974, cash offers constitute a smaller proportion on a value weighted basis than on an equal weighted basis,

suggesting that cash offers are used more frequently in smaller acquisitions. For all equity offers, equal and value weighted results are very close, except for the period 1980-84.

In the UK, the proportion of all cash offers on a value weighted basis is appreciably lower than on an equally weighted over the period 1955 to 1969. The converse is true for the period 1970 to 1984. Over the entire thirty year period, the proportion of bids that are all cash is 0.25 on both an equally weighted basis and a value weighted basis. For the all equity figures, there is no consistent relationship between the value and equal weightings. In aggregate, the all equity proportion on a value weighted basis is 0.20 compared with 0.25 on an equally weighted basis.

6.2 Theoretical Predictions and Evidence

Some support is provided for the prediction of hypothesis 1 that the use of cash in acquisitions should be inversely related to the capital gains tax rate. In the UK the introduction of capital gains in 1965 coincided with a decline in the proportion of cash financed acquisitions from an average of 29.2 percent in 1960-64 to 18.6 percent in 1965-69. However, this decrease was short-lived, and by 1975-79 the proportion had returned to 33.6 percent.

The proposition that cash acquisitions are more prevalent in an environment such as the UK where share repurchases are prohibited (hypothesis 2) is contradicted by the finding that the proportion of all cash bids has been greater in the US than in the UK. But in large part, cash acquisitions in the US are a phenomenon beginning in the 1970's. Their marked growth may reflect more widespread election of stepped-up

basis. Rising inflation in the 1970's increased the benefits of raising the basis for determining depreciation allowances from historic to current prices. Since the stepped-up basis is not available in the UK, an equivalent trend did not occur.

UK financing proportions are most informative about the trapped equity hypotheses. Since the trapped equity model is a description of the incentives to make cash distributions through acquisitions, it is worth recalling that a high proportion of acquisitions use "all equity"--as large as the proportion of "all cash". The theory cannot explain the "all equity" class of acquisitions. More strikingly, the cycles of merger activity that have been widely observed, and which are an important component of the empirical relationship that King (1986) estimates between the value of acquisitions and stock market prices, do not appear to coincide with peaks in cash financed acquisitions. According to Figure 1, the particularly large merger booms in the UK in 1968 and 1972 have not coincided with large upswings in the proportion of cash financed acquisitions.

Still more worrying for the trapped equity hypothesis is the poor association of the tax disincentive for dividend distributions and the level of acquisitions using cash. Recall from hypothesis 3 that the incentive for cash acquisitions is increasing in the tax wedge. Over the period of the study a number of important tax changes in the UK should have affected this wedge. Most obviously, the introduction of corporation tax in 1965 is associated with an increase in the tax price of retaining assets in the corporate sector. The incentive to distribute cash thus rose appreciably in 1965. However, from Figure 1, it can be

seen that this coincided with a period during which the proportion of cash financed acquisitions declined. Also, the introduction of imputation tax in the UK in 1973 would be expected to lessen the tax price of retaining assets in the corporate sector. Imputation is a tax credit attributed to shareholders for the payment of corporation tax on the profits underlying a distribution. In 1973, 35 percent of the 52 percent corporation tax was imputed to investors' personal income tax. The corporate tax wedge was therefore only 17 percent, compared with 40 percent prior to 1973. However, Figure 1 records that the introduction of imputation is associated with a period in which there was a sharp increase in the proportion of cash acquisitions, peaking in 1976.[6]

To summarize, financing proportions provide little support for the trapped equity model, and some tentative support for an influence from capital gains tax. The appreciable rise in cash financed acquisitions in the US can be attributed, at least in part, to tax benefits from stepped-up basis.

7. WEALTH EFFECTS FOR BIDDER AND TARGET AROUND THE ANNOUNCEMENT DATE

In this section we examine bid premia associated with different means of payment. In Section 7.1 we focus on bid premia around the announcement date in "all cash" and "all equity" offers. In Section 7.2 we examine share price changes prior to the announcement. In 7.3 we report results for "mixed bids," such as equity with cash alternatives and convertibles. Since the means of payment may be associated with other characteristics of takeover, in Section 7.4 our sample is partitioned by whether the bids are revised or contested and whether the bids are tender offers. Section 7.5 reports a cross-sectional regression controlling for these bid characteristics.

7.1 Bid Premiums In All Cash and All Equity Offers

Table 4 presents bid premia for all cash and all equity offers for both countries. Since results are essentially the same using all three models of control returns, only those for the market model are reported. Panel B shows that in the US, acquiring companies are 7 times as large as targets in all cash and 9 times as large in all equity offers. In the UK, the relative size of the bidder to the target is 12 in all cash offers and 6 in all equity offers.

[INSERT TABLE 4 ABOUT HERE]

Target Shareholders

Panel A shows that for both countries all cash offers have markedly higher bid premia for target shareholders than do all equity bids. For example, using month 0 results for the UK, targets with cash offers earn a 30.2 percent bid premium which is significantly higher than the 15.1 percent premium in equity offers. The t-statistic[7] comparing the two figures is 9.49. In the US, the differences are even more dramatic, with the month 0 premium of 11.1 percent in all equity offers being less than half the all cash figure of 25.4 percent. We thus find strong evidence that target shareholders receive larger wealth gains in all cash takeovers than those involving all equity. This observation is consistent with (a) the capital gain tax thesis that higher bid premia are required in cash offers to compensate for the capital gains tax liability (hypothesis 1); (b) the Myers and Majluf argument that there are negative signals associated with equity offers (hypothesis 4); and (c) the Fishman argument that cash offers coincide with high value acquisitions.

Comparing results in the two countries, all cash bids appear to coincide with slightly higher bid premia in the US than in the UK over the 6 month period (.363 versus .305), and the differences are statistically significant at better than the .10 level ($t = 1.92$). Comparing the month 0 and month -4 to +1 figure a greater proportion of the US bid premium in cash offers appears to come prior to month 0. Turning to all equity bids, the UK bid premia are somewhat higher than those in the US (.182 versus .156), though not statistically so when measured over the six month period ($t = 0.85$).

Acquiror Shareholders

For UK offers, acquiror shareholders appear to earn negligible returns in the bid month for both cash and equity offers. Over a 6 month period, however, small (statistically significant) gains accrue for all cash offers. Whether this gain is a result of the bid, or whether the bidder times the offer to correspond to favorable developments in its stock price is uncertain. However, there is no evidence of significant losses to bidders in UK takeovers around the merger announcement date. The results for equity offers are similar to those found by Marsh (1979) in the month following the rights issue announcement (where he finds small abnormal losses at the time of the announcement).

In the US, there is a striking difference in performance for bidders between cash and equity acquisitions. In all cash offers, bidders earn significantly positive gains of 2 percent in month 0. In contrast, in all equity offers, acquiror shareholders experience a significant loss of 0.9 percent. These wealth effects are also significantly different from one another ($t = 4.19$).[8]

In summary, our US results suggest that equity in acquisitions conveys bad news while cash is interpreted as good news. This role for the medium of exchange is consistent with theoretical predictions (eg. Miller and Rock (1985)) and empirical evidence on new equity issue announcements. Smith (1986),surveying an extensive literature on new equity issues, reports a weighted average loss of 1.6 percent. The results strongly support Myers and Majluf's predictions described in H4.

In UK equity offers, the returns to bidders in the bid month are negative but not statistically different from zero. It is interesting to consider the institutional differences between the two countries. In the UK underwriters play a much more important role in equity issues in the UK than in the US. For example, in the UK virtually all new equity issues have taken the form of rights issues and virtually all have been underwritten (see Marsh (1979)). According to Heinkel and Schwartz (1985) the underwriter may avoid some of the information problems that would otherwise be associated with equity issues.

Table 5 compares bid premia around the announcement date of acquisitions in the UK for the periods 1955 to 1964 and 1965 to 1985. The significance of 1965 is that this is the year in which a capital gain tax was introduced in the UK. According to capital gain tax hypothesis (H1), bid premia in cash acquisitions should have differed from those in equity acquisitions only for the period after 1965. Table 5 reveals that while the difference is larger for the latter period, bid premia in cash offers are significantly higher than those in equity offers ($t = 2.26$ in announcement month) before the introduction of capital gain tax.

The hypothesis that capital gain taxes can entirely explain differences in bid premia is therefore rejected.

[INSERT TABLE 5 ABOUT HERE]

7.2 A Comparison of Pre Merger Performance of Bidders Using All Cash and All Equity

Anecdotal evidence from investment bankers both in the UK and US strongly suggests that they believe the choice of equity or cash is influenced by perceptions of over or under valuation of the bidder's shares. Some evidence that the pre-merger valuation of the acquiror may have influenced the choice of financing may be sought in the pre-merger share price performance of bidders. If overvalued acquirors choose equity, then the pre-merger performance of acquirors offering equity might be expected to be superior to that of acquirors offering cash.

The table below reports acquiror abnormal returns for the six month period beginning six months prior to the bid and ending one month before the bid. It records a small difference in performance over the pre-bid period between acquirors offering equity and cash in the US with equity outperforming cash offers. The pre-bid performance of the two types of bidders is reversed in the UK. Only very limited support is thereby provided for the hypothesis that overvaluation can be established from pre-merger data.

Acquirors

UK	BP -6 to -1	N
All Cash	.050 (t=2.31)	198
All Equity	.034 (t=1.28)	150
US		
All Cash	-.006 (t=-.45)	201
All Equity	.024 (t=2.50)	442

7.3 Other Types of Bids

In preceding sections the focus was on all cash and all equity bids since they comprise the two main types of bids in both the UK and US (see Table 1). Table 6 presents additional estimates of wealth effects in other types of bids.

Cash or Equity Offers

Combination offers provide the seller with the opportunity to accept either cash or stock. Such an option should reduce any detrimental personal tax effects associated with an all cash offer. As shown in Table 1, these offers have been used frequently in the UK but less in the US. In the UK, target bid premia in these offers are quite similar to the patterns found in all cash offers (Table 4). For example, the 28.4 percent target bid premium (-4 to +1) in cash or equity offers is very close to the 30.5 percent figure shown in Table 4 for all cash bids. The small sample size for US results (N = 20) prevents any definitive statements, though target bid premia appear to be between those for all cash and all equity offers (Table 4). In neither country do these "cash

or equity" offers coincide with significant bidder share price performance.

[INSERT TABLE 6 ABOUT HERE]

These results are further evidence that personal tax considerations do not provide a satisfactory explanation of higher target bid premia in cash offers since the equity or cash option, although tax efficient, leads to bid premia comparable to those in all cash offers. Thus, the evidence contradicts H1.

Cash and Equity

These bids provide the seller with a combination of cash and equity and have been used frequently in the UK. They appear to offer smaller bid premia to targets than do "cash or equity" or all cash bids, but higher gains than in all equity bids. Furthermore, there are no significant wealth effects to bidders in acquisitions involving a combination of cash and equity. The pattern in these bids thus appears to be an average of results for the all cash and all equity offers discussed earlier.

Convertibles

Convertibles have been extensively used in the US in the 1960's (see Table 2). As shown in Table 5, bids involving convertibles (either alone or in combination with equity) coincide with target bid premia very close to those found in all equity bids. For example, in the US, the month 0 target bid premium is 11.1 percent in all equity bids (Table 4), 11.7 percent in all convertible bids and 10.1 percent in bids involving equity and convertibles. A major difference relates to bidders. While, as noted earlier, in the US all equity bids are associated with a negative

wealth effect in month 0 for acquirors, bids involving solely convertibles appear to be associated with significant positive acquiror gains (1.8 percent) in the bid month.

7.4 Bid Premia: Further Analysis

Time Variations

Differences in bid premiums between all cash and all equity offers in Table 4 may be attributable to variations over calendar time in the performance of acquisitions. This issue is less important in the UK data since all cash and all equity offers occur over the entire 30 year period.

In Panel A of Table 6, we break our US data into three five-year periods beginning with 1970, the onset of significant use of all cash offers. As the figures show, the month 0 bid premium estimates for targets are higher in cash offers in each of the five year periods. The same patterns hold for six month bid premia though the results are not shown. In addition, in all equity offers, acquiror wealth effects are consistently lower and are negative in both the 1975-79 and 1980-84 periods, though significantly so only in the latter period. Table 7 shows that the differences between wealth effects of all equity and all cash bids in the US cannot be attributed to a particular time period.

[INSERT TABLE 7 ABOUT HERE]

Tender and Non Tender Offers

Earlier work in the US indicates that shareholder wealth effects may be different in tender offers and mergers. For example, surveying a number of studies, Jensen and Ruback (1983) report acquiree bid premiums of 30 percent in tenders but only 20 percent in mergers; for acquirors

the figures are 4 percent and 0 percent respectively. In Panel B of Table 7 we use US data to investigate whether the disparity between wealth effects in all cash and all equity can be attributed to a greater use of cash in tenders. Panel B shows that cash bids result in higher acquiree bid premia, whether the takeover is a tender or not. Furthermore, Panel B suggests that after having controlled for the medium of exchange, a difference in bid premia remains between mergers and tenders. For example, the 28.3 percent premia in cash tenders (month 0) is significantly higher than the 24.3 percent figure in all cash offers that are not tenders ($t = 3.60$). Panel B also shows that a high proportion of tenders use cash as the form of finance.

Turning to the results for acquirors in Panel B, the announcement month wealth effect to acquirors making all equity bids is negative in both tender and nontenders, though the sample size is small for all equity tenders. In contrast, announcement month wealth effects are positive in all cash offers whether the bid is a tender or not. Panel B therefore suggests that the medium of exchange and the response of acquirors' share prices are related. [9]

Revised and Unrevised Bids

In Table 8 we use US data to test whether the differences in all cash and all equity bid premiums (partitioned by tender and merger) are due to the contested nature of the bids. We have evidence from Franks and Harris (1986a) that bid revisions, even when unaccompanied by contestants, show similar wealth effects to contested bids. As a result we partition offers into those that are 1) unrevised and uncontested and 2) revised or contested.

[INSERT TABLE 8 ABOUT HERE]

In Panel A, for unrevised bids, target bid premia in all cash tenders are slightly higher than in all cash mergers (six month bid premia of .384 and .345 respectively). Acquiree bid premia are significantly higher in all equity tenders (.258) than in all equity mergers (.154). For bids that are revised or contested a similar pattern emerges, although the difference between tenders and mergers is larger. We can conclude (a) all cash bids still provide much larger bid premia than all equity bids, even after controlling for the form and contested nature of the merger; (b) tenders still provide larger bid premia than mergers.

Table 8 records that a larger proportion of all cash than all equity bids are revised. Using the medium of exchange in the final bid, 28.4% of cash bids were contested or revised compared with only 16.5% for all equity. From Fishman's model we might have expected the converse result: his model predicts that contested bids will occur more frequently in low value equity bids than in high value cash bids. In the latter case, the bidder has a high value for the target and uses a cash offer to preempt competing bids. In fact, competition appears to be more closely associated with cash than equity offers. It should be noted, however, that a final cash bid may have evolved from an initial equity bid.

In Panel B of Table 8 we show wealth gains for bidders. Gains to bidders appear small and if anything they are larger in all cash takeovers than in all equity bids.

7.5 Cross-Sectional Analysis

To investigate further the patterns in acquiree bid premia, we estimate the following cross-sectional regression

$$BP = a_o + a_1D_1 + a_2D_2 + a_3D_3 + a_4D_4 + \epsilon$$

where BP is the estimated bid premium
D_1 = 1 if all cash offer, 0 otherwise
D_2 = 1 if tender offer, 0 otherwise
D_3 = 1 if contested bid, 0 otherwise
D_4 = 1 if revised bid, 0 otherwise
ϵ = a random error term with zero mean.

Only all cash and all equity offers in the US are included in the regression. Furthermore, since regression results are qualitatively similar for all three models of forming control returns, we report only results using the market model and bid premiums over the period -4 to +1. Figures in parentheses are t-values.

$$\underset{}{BP} = \underset{(14.94)}{.163} + \underset{(6.43)}{.148D_1} + \underset{(3.15)}{.081D_2} + \underset{(1.66)}{.038D_3} + \underset{(.98)}{.025_{D4}}$$

$$R^2 = .08, \; F = 20.8$$

Though the regression has a low R^2, in part due to the measurement error for individual company bid premia, the F value of 20.8 is statistically significant at better than the .001 level. The results show that acquiree bid premiums are larger in contested or revised bids and are significantly larger in tender offers (coefficient of .081). Even having controlled for these effects, however, cash offers appear to coincide with larger acquiree bid premia. The coefficient of .148 (14.8 percent) is significantly different from zero at better than the .001 level. In fact, the medium of exchange has a larger impact than any of the other three effects. The regression results thus suggest that in the US the medium of exchange is significantly related to bid premia and that this result is not an artifact of other commonly studied characteristics of the data.

We found qualitatively similar regression results for UK data after controlling for schemes of arrangement, contested or revised bids, and time period (a series of dummy variables). The coefficient on D_1 was .104 with a t statistic of 2.74.

8. POSTMERGER PERFORMANCE

Jensen and Ruback (1983) report a number of US studies finding negative returns subsequent to merger, and suggest possible reasons for such results, concluding that "explanation of the post-event negative abnormal returns is currently an unsettled issue" (p. 22). Table 9 reports estimates of postmerger performance in all cash and all equity bids. The results are calculated as the average cumulative return (BP from equation (8)) over the two year period covering months +1 to +24. For the purposes of measuring postmerger performance in the UK, month zero is the date when the merger was unconditionally accepted, and for the US, month zero is the date of the final bid. Four methods of forming control returns are used to test the robustness of the results.

[INSERT TABLE 9 ABOUT HERE]

United States

Panel A Table 9 shows that in the US there is a marked difference between postmerger performance in all cash and all equity bids. Acquirors using all cash do better postmerger than all equity bidders, no matter what control return is used. The control returns (benchmarks) do, however, give rise to quite different figures for whether postmerger performance is positive, zero or negative. These results highlight the importance of forming an efficient benchmark (see Grinblatt and Titman (1986)).

Using either a market model with "premerger" estimated parameters (calculated from 6 years to 1 year prior to the bid) or a simple $\alpha = 0$, $\beta = 1.0$ model, postmerger abnormal returns are essentially zero in all cash offers but significantly negative in all equity acquisitions. It can be argued, however, that such results reflect use of an inappropriate benchmark since there may be shifts in a firm's expected returns and risks associated with acquisitions.[10] Therefore, we estimated α and β values in the market model from a postmerger period producing essentially zero postmerger returns for all equity offers and positive (though not statistically significant) postmerger returns in all cash offers. These changes stem from the noticeable reductions in estimated α values when going from the premerger (6 to 1 year prior to the bid) to the postmerger period (3 to 5 years after the bid). The average postmerger α values are negative for both all cash and all equity offers.

In summary, in all cash bids, acquirors on average do not suffer postmerger losses and do better than bidders making all equity offers. Whether all equity bidders have postmerger losses depends on the benchmark employed. Compared with their premerger performance, postmerger returns are negative. However, using a benchmark based on postmerger parameters acquirors using all equity do not experience abnormal losses in the two years subsequent to an acquisition, but they do record negative α's 3 to 5 years after the acquisition.

Given the heavy use of equity in the 1960's, a possible explanation of these differences between cash and equity offers is that they are due to the date of the takeover rather than the medium of exchange.[11] However, qualitatively similar results (using premerger parameters) were

found when the sample was divided into five year subperiods (post 1970). The results suggest that in the US the medium of exchange plays an important role in understanding postmerger performance of acquiring firms. We can speculate that such a role may be related to information asymmetries which may motivate equity rather than cash bids in situations in which the acquiror's equity is overvalued by the market.

United Kingdom

Panel B of Table 9 shows that postmerger performance results in the UK are highly dependent upon the formation of control returns. As in the US, all equity offers have significantly worse postmerger performance than do all cash offers. The difference appears to be in the 11 to 15 percent range. For example, using the market model, postmerger performance in all equity offers is -9.4 percent which is 11.1 percent points less than the 1.7 percent return in all cash offers.

The issue which is not settled fully, however, is whether postmerger performance in all equity takeovers is less than zero. The significant negative figures resulting from use of the market model are essentially the result of the very high pre-merger α values for acquirors in all equity deals (α = 0.011 per month or over 12 percent per year). If one applies the CAPM, all equity takeovers appear to have small positive bidder returns postmerger, and in all cash offers bidders have large positive returns of 17.5 percent. As is the case in the US, further exploration of these results is required.[12]

9. CONCLUSION

This paper examines means of payment of a large set of acquisitions in the UK and US over the period 1955 to 1985. Data on financing

proportions, bid premia and postmerger performance are used to test the validity of tax and information hypotheses. One finding is that it is difficult to explain many of the results in terms of tax effects. Capital gains tax does not appear to be a primary determinant of financing patterns in the UK in a period in which there were substantial variations in the tax rate. The "trapped equity" model is inconsistent with several empirical observations on financing patterns. Stepped-up basis could not be rejected as an explanation of the substantial increase in cash financing proportions in the US, but insufficient data were available to provide a convincing test.

The second set of empirical results examine wealth gains around the announcement of mergers. In both countries we observed that much larger bid premia are associated with cash than equity bids. This is consistent with Fishman's model that high valuing bidders make cash offers, and low valuing bidders make securities offers. After controlling for the form of finance, much of the difference in bid premia between tenders and mergers disappeared. We examined whether the effects of revised or contested bids could explain the higher bid premia to targets in cash offers. Results indicate that after controlling for the form of takeover (tender versus merger) and the contested nature of the bid, cash offers still provide substantially higher wealth gains to shareholders. Additionally, bidders in the US which used all equity suffered significant abnormal losses at the time of the bid announcement consistent with the findings on the wealth effects of seasoned new equity offerings in the US. Finally, we found that acquirors making cash offers

had better postmerger performance than did those using all equity. These results support an over-valuation hypothesis, but are inconsistent with efficient capital market theories.

Several directions for future work are suggested by these findings. First, given that our results on postmerger performance are sensitive to the benchmark used, further investigation is warranted (see Loderer and Mauer, 1986). Second, our work has focused on the means of payment in takeover. Further insights into the relationships between financing decisions and acquisition performance could be obtained by incorporating detailed information on the capital structures of the merging firms.

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Table 1: PROPORTION OF US AND UK ACQUISITIONS FINANCED WITH A PARTICULAR MEDIUM OF EXCHANGE

A. Method of Payment	UK	US
All Cash	.253	.306
Cash or Debt	.016	.003
All Debt	.014	.014
All Cash or (Cash Plus Equity)	.035	.001
Cash Plus Equity	.101	.009
Cash or Equity[a]	.100	.013
Convertibles	-	.118
Equity plus Debt	.048	.003
Equity plus Convertibles	-	.073
All equity	.246	.371
Other	.189	.090
Total	1.00	1.00
B. Use of Cash, Equity and Debt[b]		
At least some equity[c]	.660	.601
At least some cash or some debt	.633	.404
At least some cash	.538	.356

[a] "or" denotes that the seller has the option to receive either form of payment. The option to receive "cash or equity" has become increasingly popular since 1978. Pre-1978 the ratio of "all equity" to "all cash or all equity" was 3.27, but during 1978-84 it fell to 1.17. The "other" category includes various mixtures of cash, equity and/or debt. In addition, it includes cases where other types of payment are used (e.g. preference stock). In the UK, the largest single category involves mixtures subsequent to recapitalizations (.083).

[b] Categories are not mutually exclusive so that proportions sum to more than unity. Data includes mixture offers after recapitalizations.

[c] For purposes of this tabulation, securities convertible into common equity are treated as equity.

Table 2: TIME SERIES OF THE MEANS OF PAYMENT IN UK AND US TAKEOVERS[a]: EQUALLY WEIGHTED BASIS (Entry is proportion of total).

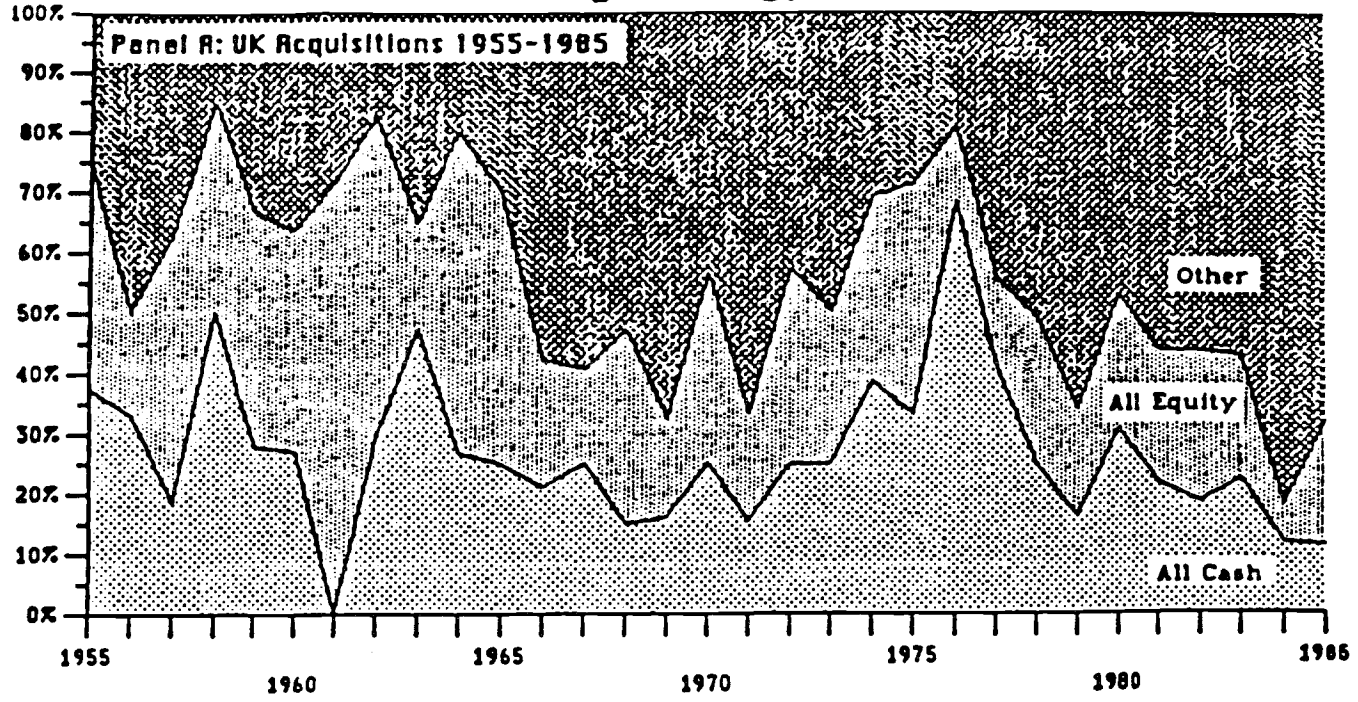
	UK			US			
Period	N	All Cash	All Equity	N	All Cash	All Equity	Some Use of Convertibles[b]
1955-59	65	.354	.354	69	.000	.768	.072
1960-64	89	.292	.404	121	.008	.669	.248
1965-69	156	.186	.244	386	.013	.381	.500
1970-74	139	.230	.237	177	.192	.599	.107
1975-79	247	.336	.231	373	.491	.247	.070
1980-84	205	.205	.190	429	.585	.228	.054
1985	53	.094	.170	-	-	-	-
AVERAGE[c]	954	.253	.246	1555	.306	.371	.191

[a] Entries are proportions of the sample (N) with a type of offer.

[b] These are offers that are equity plus securities convertible into equity or which are solely convertible.

[c] Averages are weighted by number of mergers.

Figure 1: Time Series of Acquisition Payment Type



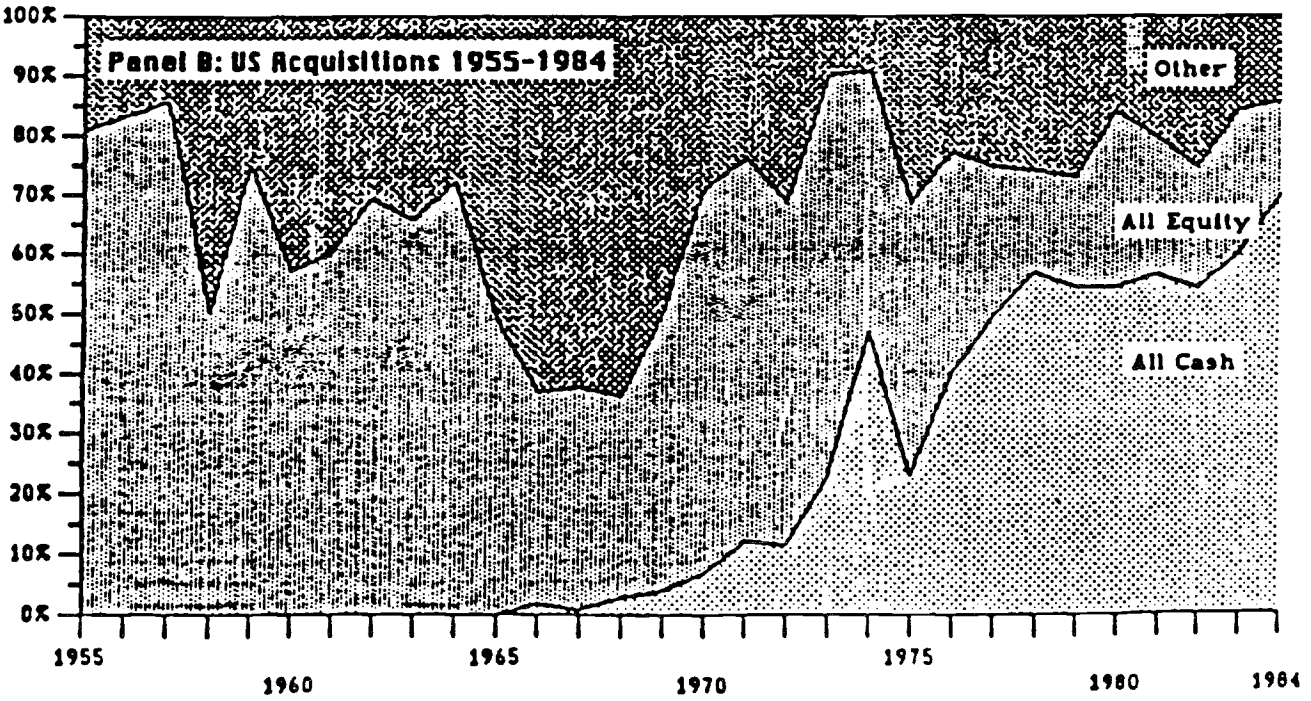


TABLE 3: MEANS OF PAYMENT IN UK AND US TAKEOVERS ON A VALUE WEIGHTED BASIS[a]
(Entry is proportion of total)

	UK		US	
	All Cash	All Equity	All Cash	All Equity
1955-59	0.23	0.67	0.0	0.84
1960-64	0.08	0.67	0.0	0.61
1965-69	0.08	0.26	0.01	0.37
1970-74	0.28	0.12	0.21	0.60
1974-79	0.38	0.30	0.38	0.28
1980-84	0.35	0.14	0.39	0.38

[a] Weights are based on market value of the shares of the acquired company.

Table 4: BID PREMIA AND MARKET CAPITALIZATION IN ALL CASH AND ALL EQUITY OFFERS Entries are Bid Premium (t-statistic)

A. Bid Premia[a]

	Month 0		Months -4 to +1	
Acquirees	U.K.	U.S	U.K.	U.S.
All Cash	.302	.254	.305	.363
	(28.07)	(42.29)	(11.56)	(24.67)
All Equity	.151	.111	.182	.156
	(12.88)	(25.90)	(6.34)	(14.86)
Acquirors	U.K.	U.S.	U.K.	U.S.
All Cash	.007	.020	.043	.026
	(.75)	(3.56)	(1.98)	(1.89)
All Equity	-.011	-.009	.018	.006
	(-.95)	(-2.23)	(.63)	(.61)

B. Market Value[b] (millions of units)

	U.K. (pounds)		U.S. (dollars)	
	All Cash	All Equity	All Cash	All Equity
Acquirees	11.1	10.6	144.4	134.8
Acquiror	136.1	64.3	1019.0	1177.0

[a] Bid premia are calculated using the market model. In the UK month 0 is the earliest available of the first approach, first bid, unconditional or LSPD date. In the US, month 0 is the announcement date as defined in the text.

[b] These are market value of equity prior to takeover (in millions of pounds in the U.K. and millions of dollars in U.S.).

[c] Cross sectional t values for bidder wealth gains are:

	Month 0		Months -4 to +1	
	UK	US	UK	US
All Cash	.95	2.99	3.05	2.05
All Equity	-1.27	-2.14	.97	.67

where the t-value is calculated as BP/SE and where SE = SD/$\sqrt{N}$ and SD is the cross-sectional standard deviation.

[d] For US acquirors with all equity offers, where the BP's are -0.009 for month zero, only 45.7% of the 443 acquisitions are positive. The results using a model with $\alpha = 0$ and $\beta = 1$ are virtually identical.

Table 5: COMPARISON OF BID PREMIA IN THE UK PRE-AND POST 1965
Entries are Bid Premium[a] (t-statistic)

	Month 0		Month -4 to +1	
	1955-64	1965-85	1955-64	1965-85
Acquirees				
All Cash	.185 (6.28)	.327 (29.26)	.260 (3.60)	.317 (11.60)
All Equity	.108 (6.39)	.166 (11.17)	.194 (4.67)	.177 (4.86)
Acquirors				
All Cash	.032 (1.80)	.001 (0.09)	.072 (1.66)	.037 (1.59)
All Equity	.005 (0.30)	-.017 (1.22)	.058 (1.32)	.002 (0.07)

[a] Bid premia are calculated using the market model. In the UK month 0 is the earliest available of the first approach, first bid, unconditional or LSPD date. In the US, month 0 is the announcement date as defined in the text.

Table 6: WEALTH EFFECTS IN OTHER TYPES OF OFFERS
Bid Premium[a] (t - statistic)

Type of Offer	Acquirees		Acquirors	
1. Cash or Equity	0	-4 to +1	0	4 ± 1
U.K. (N = 95)	.276 (14.79)	.284 (6.21)	.007 (.49)	.075 (2.26)
U.S. (N = 20)	.180 (8.41)	.266 (5.07)	-.002 (-.09)	-0.010 (-.18)
2. Cash and Equity U.K. (N = 100)	.238 (18.70)	.271 (8.71)	.003 (.23)	.054 (1.63)
U.S. (N = 15)	.099 (3.24)	.212 (2.83)	.057 (1.88)	.015 (.20)
3. All Convertible U.S. only (N = 184)	.117 (21.34)	.176 (13.11)	.018 (2.80)	.031 (1.97)
4. Equity plus convertible U.S. only (N = 115)	.101 (12.50)	.143 (7.23)	-.004 (-.42)	.009 (.39)

[a] Bid premia are calculated using the market model. In the UK month 0 is the earliest available of the first approach, first bid, unconditional or LSPD date. In the US, month 0 is the announcement date as defined in the text.

Table 7: WEALTH EFFECTS IN U.S. ACQUISITIONS PARTITIONED BY TIME AND BY TENDER VERSUS NON TENDER

A. Time Period

		Target			Bidder		
		N	BP[a] Month 0	(t-stat)	N	BP Month 0	(t-stat)
1970-74	All Cash	34	.252	(12.35)	21	.066	(3.41)
	All Equity	107	.127	(10.88)	80	.006	(.57)
1975-79	All Cash	185	.304	(27.84)	85	.012	(1.31)
	All Equity	92	.169	(12.45)	75	-.014	(-1.46)
1980-84	All Cash	249	.220	(32.39)	90	.018	(1.73)
	All Equity	97	.145	(13.79)	64	-.039	(-3.99)

B. Tender versus Nontender

	Target			Bidder		
	N	Month 0	-4 to +1	N	Month 0	-4 to +1
Tenders All Cash	135	.283	.411	78	.014	.025
		(35.20)	(20.87)		(1.84)	(1.34)
Tenders All Equity	29	.201	.243	23	-.019	-.060
		(12.50)	(6.17)		(-1.13)	(-1.46)
Nontender All Cash	340	.243	.343	123	.024	.026
		(31.66)	(18.24)		(3.00)	(1.33)
Nontender All Equity	548	.106	.151	419	-.008	.009
		(22.75)	(13.23)		(-2.02)	(.93)

[a] Bid premiums (BP) are calculated using the market model.

TABLE 8: BID PREMIA FOR MULTIPLE BIDS (REVISED OR CONTESTED) VERSUS SINGLE BIDS (UNREVISED AND UNCONTESTED) PARTIONED BY TENDER AND MERGER - US DATA
Entries are Bid Premium[a] - (t-statistic)

		Month 0		Months -4 to +1	
A.	Targets	Unrevised and Uncontested	Revised or Contested	Unrevised and Uncontested	Revised or Contested
	Mergers				
	All Cash	.247 (29.80) N = 297	.240 (19.77) N = 85	.345 (21.62) N = 297	.328 (11.95) N = 85
	All Equity	.106 (19.49) N = 505	.116 (10.62) N = 89	.154 (11.93) N = 505	.136 (4.02) N = 89
	Tenders				
	All Cash	.267 (31.43) N = 103	.265 (23.88) N = 74	.384 (13.97) N = 103	.466 (14.52) N = 74
	All Equity	.242 (11.22) N = 18	.192 (9.52) N = 14	.258 (3.85) N = 18	.293 (.71) N = 14
B.	Bidders				
	Mergers				
	All Cash	.026 (3.13) N = 111	.016 (.93) N = 32	.029 (1.57) N = 111	.023 (.61) N = 32
	All Equity	-.005 (-1.12) N = 389	-.023 (-2.07) N = 68	.012 (1.20) N = 389	-.024 (.95) N = 68
	Tenders				
	All Cash	.016 (1.96) N = 67	.011 (.97) N = 38	.026 (1.48) N = 67	.045 (1.73) N = 38
	All Equity	-.031 (-1.19) N = 14	-.021 (-1.04) N = 12	-.076 (-1.26) N = 14	-.092 (-1.18) N = 12

[a] Bid premia are calculated using the market model. Month 0 is the announcement date as defined in the text.

Table 9: POSTMERGER PERFORMANCE IN ALL CASH AND ALL EQUITY ACQUISITIONS
Entries are BP for Months +1 to +24[a]
(t-statistic,[b] percent positive)

A. United States

	Pre-Merger α, β Market Model[c]	α=0 β=1.0	CAPM[d]	Post-Merger α, β Market Model
All Cash	.028 (.70,55)	-.036 (-1.03,52)	-.034 (-.95,51)	.094 (1.59,53)
All Equity	-.184 (-7.73,36)	-.179 (-9.31,34)	-.178 (-8.97,34)	-.018 (-.69,46)

	α	β	N
All Cash Premerger	-.003	.99	201
Postmerger	-.007	1.04	127
All Equity Premerger	.000	.99	442
Postmerger	-.006	.99	392

B. United Kingdom

	Pre-Merger α, β Market Model[c]	CAPM[d]
All Cash: N=221 α=.008, β=.1.07	.017 (.50, 53)	.175 (6.09, 65)
All Equity: N=207 α=.011, β=1.07	-0.094 (-2.31, 51)	.042 (1.23, 64)

[a] In the UK results month zero is the unconditional date of the merger. In the US month zero is the date of the final bid.

[b] For this table, the t statistic is calculated as BP/SE where SE is the standard error of the mean.

[c] A market value weighted average of ā and β values for the acquiree and acquiror are also used as parameters in the market model to determine control returns. They show very similar results as the unweighted parameters.

[d] When β is estimated as the market value weighted average of betas for the acquire and acquiror, the results are similar.

[e] Post merger α's and β's for US calculated over period t = +25 to +60 (with a minimum of 24 months of data).

FOOTNOTES

1. There is no feature in his model that distinguishes acquisitions from new investment.

2. It is crucial to Myers and Majluf's argument that all projects have a zero or positive NPV (see Pages 203-4). If projects could have a negative NPV,
giving up a new project and not issuing equity may not be good news.

3. Jensen's (1986) theory of Free Cash Flow could also be used to yield the same prediction since increasing the debt ratio of the bidder (via a cash offer) enables managers to bond their promise to pay future cashflows. See, also, Grossman and Hart (1982).

4. During the earliest calendar years of our UK analysis prior data were unavailable to calculate α and β. In these cases companies were assigned $\alpha = 0$, $\beta = 1.0$. Our adjustment for thin trading regresses company returns on the market return and one month leads and lags on the market. The three coefficients in the multiple regression were summed to obtain β.

5. Data from W.T. Grimm show the same upward trend in the use of cash in US acquisitions (and the same decline in the use of stock) beginning around 1970. However, Grimm data reveal that cash was used in the 1960's, (their series begins in 1964). Differences in samples probably account for variations in financing proportions. Grimm data include acquisitions and divestitures of both public and private companies whereas our data are limited to acquisitions of exchange listed companies. The latter are, on average, larger concerns.

6. An examination of the Department of Trade and Industry data on the financing of acquisitions reveals similar changes in financing proportions around the major tax changes discussed here. The two data banks differ primarily in the population from which their samples are drawn. Our data refer to acquisitions by companies that are quoted on the London Stock Exchange. The DTI data are obtained from reports in the British financial press about mergers and acquisitions. We would argue that there is some merit in using a quoted company data bank in a study of the financing of acquisitions, on the grounds that the impediments to choice of finance are less for quoted than unquoted companies. A comparison of the two samples is outlined below.

Proportion financed by cash:

	Our Sample (Value Weighted)	DTI
1970-74	0.28	0.32
1975-79	0.38	0.59
1980-84	0.47	0.54*

*Up to third quarter of 1983 only

7. Significance tests for differences in two cell means (M_1 - M_2) are based on a t-statistic calculated as $t = (M_1 - M_2)/SD$ where $SD = \sqrt{\sigma_1^2 + \sigma_2^2}$ and σ is the standard deviation used to calculate TBP for the cell mean, i.e. $\sigma_1 = \sigma_{BP}$ for cell 1.

8. As confirming statistical tests we examined the percentage of companies with positive returns and an alternate method of calculating of a t-statistic. For the 200 acquirors making all cash bids , 59 percent had positive abnormal returns in month zero whereas, while only 46 percent of the 442 acquirors in all equity bids had positive abnormal returns in that month. We also calculated a t-statistic defined as

the mean abnormal return divided by the standard error of the mean. For month 0, this produced t = 2.99 in all cash bids and t = -2.14 in all equity bids.

9.In our UK sample, over 90 percent of the acquisitions take a form similar to US tenders (see Franks and Harris 1986a), the remainder being schemes of arrangement which require a shareholders' meeting convened under a court's direction. In schemes of arrangement, the merger can be consummated if more than 75 percent of votes are cast in favor by those present and voting. Due to the relatively small number of schemes of arrangement, any differences in results for this type of merger are not likely to have a large effect on our UK results. Nonetheless, we partitioned our UK data into schemes of arrangement which were all cash bids and those that were all equity bids. In schemes of arrangement, target bid premiums were significantly lower in all equity bids than in all cash bids (results not reported due to small sample size.)

10. For example, the merger is combining two firms and hence may change the business mix of the acquiror (but see footnotes c and d of Table 9). In addition, a cash offer may be accompanied by an increase in financial leverage thus increasing risk. As some support for this, in all cash offers the postmerger beta (1.04) exceeds the premerger beta (.99).

11. We also examined use of a value weighted market index in measuring post-merger performance in the U.S. Using an $\alpha = 0$, $\beta = 1.0$ model with a value weighted index, all cash acquirors had positive (.06) abnormal returns over the 24 month period (t = 1.71), whereas all equity acquirors still displayed significant negative post-merger performance (PMP of -.111, t = -5.54). To further examine the role that firm size may play in the post-merger performance in the US, we subdivided the sample into quintiles and measured the post-merger performance of each portion. The smallest acquirors appear to be outperforming the largest acquirors,

using both a market model (with post-merger α 's and β's) and an $\alpha = 0$ and $\beta = 1$ model. The results are set out below.

Performance Based on Size (Total Sample)

Ranking by Market Capitalization		$\alpha = 0$ $\beta = 1$ N = 195	Postmerger Market Model	
1	Smallest	-.078	.009	N=153
2		-.102	.030	N=164
3		-.135	.063	N=169
4		-.194	-.104	N=165
5	Largest	-.174	-.098	N=145

12. One possible explanation of our postmerger performance results may be related to size effects not captured in our formation of control returns (see Dimson and Marsh, 1986). We have some evidence suggesting that such a size effect cannot fully explain our results. As shown in Table 4, in the US the average size of all equity and all cash acquirors is quite similar both before and after merger. In the UK, acquirors using cash are larger than all equity acquirors. As a result we cannot explain poorer postmerger performance of all equity acquirors on the basis of their being larger than all cash acquirors. Second, our use of postmerger parameters (α and β) should capture, at least in part, changes in a firm's return generating process due to an increase in size as of the merger date. See footnote 11.