LEVERAGE AND FINANCING CHOICES: LONGITUDINAL EVIDENCE

Seth Armitage and Angelica Gonzalez*

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Abstract

We examine the financing decisions over time of companies with initial high profitability and low leverage, and we infer their policies regarding leverage.The behavior of the majority is consistent with the pecking order, modified by constraint in the use of debt. Constraint explains up to half of the share issues, andthe usual constraint in our sample is avoidance of excessive leverage, rather than early-stage vulnerability or financial distress. Some companies follow distinct financing policies that do not fit the majority pattern: some use share issues to avoid ever levering up; others lever up without having alarge outflow to fund.

*seth.armitage@ed.ac.uk; angelica.gonzalez@ed.ac.uk

University of Edinburgh Business School, 29 Buccleuch Place, Edinburgh EH8 9JS

1. Introduction

Understanding companies' leverage behavior continues to prove challenging. No existing theory seems to offer a satisfactory explanation. We seek to learn about leverage by identifying the major financing decisions of individual companies over time, and inferring their policies from their behavior. Our primary evidence is what each company does during the sample period, rather than what companies do on average, or what the cross-sectional differences are at a given time. We identify decisions which actively change leverage, or prevent it changing. Decisions which increase or sustain debt are the funding of large outflows with debt rather than equity, share repurchases, and special dividends. Decisions which reduce or avoid debt are share issues, disposals of large subsidiary companies, and dividend cuts. We infer each company's financing policy over time from such decisions, and identify a number of distinct policies. This heuristic approach enables a rich set of information to be drawn upon: we go some way to examining leverage in the context of the firm's 'financing ecosystem'. The motivation for the research design is a better understanding of firm-specific variation in leverage over time.

The sample consists of companies which initially were both highly profitable, and had low leverage. The low leverage of many profitable companies is considered puzzling, because they appear to forgo substantial tax savings (Graham, 2000; Strebulaev and Yang, 2013). The sample does not include early-stage companies; they are also known to have low leverage, but for reasons which are better understood. We follow each company for a period of up to 21 years, identifying years with large cash flows, major changes in debt, and large share issues, repurchases and special dividends. Since all the companies start with low leverage, the sample lends itself to studying why companies do or do not lever up, and their choices after levering up.

Our evidence should be seen in the context of certain previous findings. Frank and Goyal (2003) find that cash flows are accommodated more by changes in equity than changes in debt, contradicting the predictions of the pecking-order theory that cash flows are accommodated by debt and that share issues are rare. DeJong, Verbeek and Verwijmeren (2010) and Lemmon and Zender (2010) present evidence, based on augmented versions of the Frank and Goyal test, that supports a pecking ordersubstantially modified by assuming that firms have debt capacities that are limited by concern about creditworthiness. They find that issuers are constrained at times when they raise equity. Leary and Roberts (2010) are more skeptical about the modified pecking order, arguing that equity issues are often made for reasons other than concern about creditworthiness.Lemmon, Roberts and Zender (2008)

documentthat lasting adjustments to leverage are infrequent – several years apart, on average. This helps explain the slow adjustment to estimated target leverage found in several papers. Denis and McKeon (2012) study large increases in debt in a given year, that result in leverage at least ten percentage points above the company's estimated target leverage. They find that the usual reason is to fund large capital expenditures, including acquisitions. After the jump, leverage on average drifts back downwards. They observe that most changes in leverage are driven by cash flows. Strebulaev and Yang (2013) study zero- and near zero-leverage (ZL) firms. They suggest that dividend-paying ZL firms substitute the discipline of regular dividends for interest payments. They also find that a relatively high proportion of ZL firms have substantial ownership (≥ 5% of equity) by the CEO or a family. Finally, DeAngelo and Roll (2015) study leverage over long periods of up to several decades. They conclude that leverage at most firms displays 'short-term stickiness' over periods of a few years, but not long-term persistence, except at low leverage.The leverage cross-section changes substantially over periods of several years, and firm-specific changes are neither random, nor well explained by changes over time in firms' estimated target leverage.

The current paper is closest to Denis and McKeon (2012), but we include a wider range of financing events, and the sample is not selected on the basis that the company levers up.The policies of most companies are roughly consistent with the modified pecking order.[1]Large changes in leverageare usually occasioned by large cash flows. We find that the majority of sample firms prefer low leverage. Most lever up only when they need to fund a large expenditure. Forty-one per cent of the sample never lever up while they are in the sample, and the lack of any need to borrow is an immediate explanation for low leverage, that emerges very clearly in our evidence. Most firms that face a large expenditure, and currently have low leverage, will raise debt, or debt combined with equity.Higher leverage tends to be temporary for firms with occasional large outlays;of the sample firms that lever up only once, a large majority allows or encourages leverage to fall after levering up. In addition, our evidence supports the idea that firms are constrained in their use of debt, as in the modified pecking order. This means that outflows which breach the constraint are funded or part-funded by share issues. Firms with recurrent large outlays tend to sustain moderate-to-high leverage (*Debt*/*Assets* usually above 20%) by funding their expenditures partly with debt and partly with equity. Their policy is consistent with the modified pecking order, but it could

[1] We say roughly because not all the decisions of the majority group are consistent with the modified pecking order. Inconsistent decisions include share issues that appear not to be to avoid excessive leverage, and special payouts when the company has still has debt.

alternatively be a deliberate target-seeking policy to maintain moderate-to-high leverage, especially when accompanied by high regular dividends or by special payouts.

However, the findings indicate that two important qualifications should be made. First, a minority of firms do not behave as just described. Eight per cent lever up pro-actively, by means of levered special payouts – repurchases and special dividends funded by debt – without the prompting of having to fund a cash outflow. Ten percent actively avoid levering up: despite having low leverage and a large expenditure to fund,these firmsraise equity rather than debt. Firms of these minority types are not merely noise in the data. They follow financing policies which areclear and distinct from each other, and from the majority policy of operating with low leverage except when funding alarge expenditure. We find some evidence that market timing is a motive for equity issues among firms that actively avoid levering up. Firms that lever up and sustain their leverage might place a low value on financial flexibility, as suggested by DeAngelo and DeAngelo (2007), though we do not test for this.

Second, several papers argue that the debt constraint is due to concern about creditworthiness: they show low profitability, or otherwise enhanced risk of financial distress. We find that few of our sample firms are constrained in this sense when they conduct share issues.However, nearly all avoid ever having a debt/assets ratio in excess of 50%, and ratios of over 40% are uncommon. Our inference is that there is an upper limit on how much any company can or will borrow, even temporarily. Companies with healthy profits and ready access to debt still avoid very high leverage, presumably due to concern over creditworthiness or lack of flexibility which *would* arise, were their leverage to be very high. Avoidance of leverage that is excessive in this senseappears to be the explanation for up to half of the share issues we observe, and for the resulting choice of leverage – and this explanation applies to most of the largest share issues in relation to company size. But we agree with Leary and Roberts (2010) that decisions to raise equity, and observed choices of maximum leverage, are often not explained by concern about creditworthinesswere debt to be raised instead of equity. At least half of the share issues in our sample are for reasons other than would-be concern about creditworthiness.

Summarizing, debt and cash holdings are used much more frequently than equity to accommodate small cash flows; borrowing is usually driven by requirements to fund outflows; and a majority of companies appear not to have a target leverage, except for a preference for low leverage. Share issues are crucial in funding large expenditures, thereby avoiding high leverage, though there is also a large proportion of share issues that are smaller

and are conducted for other reasons. Aminority of companies exhibit distinct patterns of behavior that do not fit the pattern just described.

Other findings we highlight are as follows. (i) Acquisitions are by far the most important reason for large expenditures in the sample, and are an especially common reason for share issues.Included in the share issues to fund acquisitions are 'vendor issues' of shares direct to the owners of companies acquired. (ii) Firms experiencing poor performance tend to take measures to reduce their debt, especially dividend cuts and the sale of large subsidiaries. The actual change in leverage is not always a reliable indicator of a firm's policy, because a firm trying to boost cash flow can still see its leverage increase. (iii) Of the companies that stay at a low leverage, a higher proportion have a large family or individual shareholder, with at least 20% of the shares, than do the companies that lever up. This is consistent with Strebulaev and Yang (2013). (iv) The explanatory power of estimated target leverage is weakin our sample. There is no difference between the average estimated target of those firms that lever up and those that do not lever up, and the firms that do not lever up remain well below target. Firms that lever up apparently move towards their target, but the higher leverage is temporary for the majority, and is usually prompted by the need to fund a large outflow, in the absence of which most firms do not adjust towards their estimated target.A minority of those that lever up sustain their leverage afterwards. Their behavior is consistent with genuine adjustment to target, though for some the needto fund recurrent large outlays is an important explanation for sustained leverage, without which their leverage might have fallen. The firms which avoid levering up by issuing shares appear deliberately to pursue a target, but one which is well below their estimated target.

The paper proceeds as follows. The next section describes the data and research method. Section 3 presents the main results. Section 4 presents our inferences from the evidence, supported by some further results. Section 5 concludes.

2. Data and research design

Our initial sample consists of 200 companies registered in the UK and listed on the London Stock Exchange in 1993. We exclude investment companies and companies in the financial sector, but utilities are included (UK regulators do not control utilities' financing decisions). The reason for the startyear is that we wish to avoid possible selection bias from availability of data, and 1993 is the first year in which Worldscope data are available for most UK companies. There were 1,350 non-financial companies listed in 1993, of which data are

available for 1,274.[2] The sample is selected by ranking the companies by return on assets (operating income minus income tax, divided by total assets) and selecting the most profitable 400. We then rank the 400 by book leverage (total debt/total assets) and selectthe 200 with the lowest leverage. This results in a sample of high-profitability, low-leverage companies as at 1993. Two of the 200 are subsequently excluded because each is 70% owned by another company, so in effect it is a subsidiary.[3,4]

We follow the 198 companies through until their financial year ending in 2013 (21 years), or whenever they cease to be listed or to be operating companies. We are interested in a company's broad-brush leverage policy over time, not minor year-by-year fluctuations in leverage. We focus on how and why companies make, or prevent, major changes in leverage. Previous research, and inspection of our data, indicate that major changes in leverage tend to be infrequent and abrupt, i.e. they take place over one or two years. For most firms, there are many years in which debt and cash fluctuate to accommodate cash flows, without showing a major change in any year or a sustained trend over several years. During such periods the firm is making little effort to change its leverage. We therefore distinguish between years of passive and active financial management. Passive management prevails when the firm's cash flow net of dividends is not large, and when the firm makes no material share issue or special payout to shareholders. In such years cash flowsare accommodated by changes in cash or debt, and because the cash flows are not large, the firm makes no major financing decision during passive periods. We take 15% of assets as the cut-off for a 'large' cash flow.

Active financial management is when the firm does something to effect a large change in leverage, or to prevent a large change which would otherwise occur given the firm's cash flows. Active management arises when there is a large cash outflow, because the firm has to make a major financing decision about how to fund the outflow. Active management also includes material payments to shareholders – repurchases and special dividends – and material share issues. We classify these as active financing events because they are discrete actions that most companies undertake either occasionally or not at all. Active management does not include the changes in debt or cash holdings that happen to

[2] The proportion of listed companies with missing data increases rapidly before 1993. One third of UK companies listed in 1988 have no Worldscope data.

[3]One of the two has extremely high leverage for several years, of up to 120%. Presumably the debt is guaranteed by the parent.

[4] Listed companies with a shareholder who owns or controls at least 50% of the shares are rare in the UK. Samples from most other countries would probably contain a higher proportion of such companies.

accommodate 'small' cash flows.[5]It is possible in principle for there to be a large change in leverage during a passive period of several years, as a result of persistent 'small' inflows or outflows that are always accommodated by changes in debt. But gradual yet large changes in leverage, without any large cash flows to accommodate, are rare in our sample (in fact there are no clear-cut cases of gradual levering up). This is an important reason for our research design. It means that a fruitful approach to understanding leverage is to concentrate on major financing decisions.

The cash flow to be financed for financial year *t*, $Cashflow_t$, is measured net of regular dividends but gross of repurchases and special dividends, and gross of the change in cash holdings. Dividends are one of at least three gray areas on the boundary between a cash flow arising from the business, which is treated as exogenous to the financing decision, and a flow arising from a financing decision. We treat regular dividends as exogenous outflows to be financed, in common with most research on leverage. However, dividend policy can have a large impact on leverage. In particular, cuts in dividends can be motivatedin part to reduce or avoid borrowing.We therefore record cuts in dividends. Larger repurchases and special dividends are not treated like regular dividends. We view them as discretionary payments that are financingdecisions, not outflows to be financed.Their purpose is often to pay out surplus cash or cash flow, which implies lower leverage in the future, or to lever up immediately.The second gray area is changes in cash holdings. We treat changes in cash as a result of financing decisions, as do DeAngelo, DeAngelo and Stulz (2010) and Denis and McKeon (2012). Consider a firm that conducts an SEO, its cash holdings increase during the year by the amount of the proceeds, and its debt outstanding does not change. In our analysis the firm's cash flow to be financed for the year is zero, rather than an outflow, caused by a need for larger cash holdings, which the firm fundsby means of the SEO.The third gray area is disposals of subsidiary companies. Disposals can have both strategic and debt-reduction motives. We include inflows from disposals in cash flows to be financed, as is normal practice, but we take note of large disposals and view them as potentially motivated to reduce debt.

Our analysis of *Cashflow* is explained further in Appendix A.We note here that *Cashflow* includes the cost of an acquired company which is paid for by issuing securities to the owners, or by taking on the acquired company's debt. Transactions of these typesare not cash payments, but they are certainly methods of payment, and for large acquisitions they are

[5] We do not examine the extent to which companies follow the pecking order in their choice between changes in cash holdings and changes in debt, to accommodate cash flows.

correspondingly large financing decisions. The terms ‘outflow’ and ‘expenditure’ should be taken to include non-cash payments for acquired companies.

The active financing decisions we examine are identified by a financial year which has one or more of the following events (they are not mutually exclusive).

(i) There is a cash flow-induced levering-up event, defined as a year in which the outflow is at least 15% of existing assets, and the increase in leverage is at least ten per cent: $Cashflow_t/Assets_{t-1} \leq -15\%$, and $Debt_t/Assets_t - Debt_{t-1}/Assets_{t-1} \geq 10\%$. Previous studies view a change in leverage of ten per cent or more of assets as ‘large’, and we follow this convention. Our definition of cash flow-induced levering-up includes both large outflows primarily funded by debt, and outflows primarily funded by a share issueor cash, but where leverage nevertheless increases by at least ten percentage points.

(ii)There is a large share issue, defined as $Issue_t/Assets_{t-1} \geq 3\%$, where $Issue_t$ is the proceeds net of issue costs from share issues during year *t*. We adopt a three per cent cut-off to screen out the numerous issues of shares to company staff, which we regard as made primarily to remunerate staff, rather than to raise capital. Also, such issues have little impact on leverage. The cut-off has the effect that almost all the years with a large share issue are years with a seasoned equity offeror an issue to the owners of an acquired company (both identified from annual reports). The very few issues to staff of more than three per cent are not included as active financing events.

(iii) There is a large special payout, defined as $Payout_t/Assets_{t-1} \geq 3\%$, where $Payout_t$ is the sum of the value of share repurchases and special dividends during the year. Small repurchases, below three per cent of assets, are quite common, but they probably have non-financing motives, and they have little impact on leverage. If the payout is at least 50% funded by debt, we classify it separately as a levered payout, implemented in order to lever up.

In addition, we note every instance of a cut in regular dividends of at least 10% of the previous year’s regular dividends. We also note disposals of at least 15% of assets. The above criteria for active financing mean that some annual changes in leverage exceeding three per cent of assets are not included, whereas all share issues and special payouts exceeding three per cent are included. The reason for this asymmetry is that changes in debt to accommodate small cash flows are usually of minor importance for understanding large changes in a firm’s leverage. Also, we do not examine separately decisions to fund large outflows from cash holdings, and decisions to use large inflows to increase cash, or to repay debt. We do identify

companies which lever down after having levered up, and which repay debt from the proceeds of large disposals.

The next stage is to infer the company's financing policy from its cash flows and the financing decisions identified. We also consider several specific reasons,other than the accommodation of cash flows, that might affect a company's policy. Adjustment to target leverage, and market timing of share issues, are discussed separately below. We note two further reasons, as follows.

Family firm. If a firm is under the control of a family, and the family is not efficiently diversified, low leverage is desirable to reduce idiosyncratic risk, and the risk of loss of control. Strebulaev and Yang (2013) find that a larger proportion of low-leverage firms are potentially controlled by their managers and by a family or CEO than is the case for firms in general. We record all firm-years where there is a single shareholder who owns 20% or more of the shares. In almost all cases the owner of the stake is an individual, usually a director, or a family. We choose a cut-off of 20% to ensure that the stake is large enough to confer some influence.

Poor performance. If a firm's business is performing poorly, the firm might seek to reduce leverage in order to reduce the expected costs of financial distress. We identify poor performance as arising in the second year when there are (i) two or more consecutive years in which return on assets (RoA) net of taxis below five per cent, and (ii) there is at least one cut in annual dividends of at least ten per cent during the first two low-RoA years, or no dividend. This definition is meant to include periods of low profitability, as well as periods of actual financial distress.

3. Results

3.1 Descriptive data

Table 1 around here

Table 1 shows features of the sample. By design, the sample consists of profitable companies with low leverage at the start of the sample period. The mean (median) leverage in 1993 is 6.7% (6.1%) and the mean return on assets net of tax (RoA) is 12.2% (11.2%). The mean market capitalization is £436m (£73m).For the sample of all other non-financial UK listed companies during 1993-2013, excluding sample companies, the comparable figures are

25.5% (16.2%) for leverage, 0.2% (5.6%) for RoA, and £1,902 (£67m) for market capitalization.

Most of the companies pay regular dividends. In 1993, 188 of the 198 are dividend payers, and eight more start paying after 1993. Of the payers in 1993, 12 stop paying before they disappear from the sample, and 24 stop and then start again (sometimes more than once). Only two sample companies never pay a dividend. Thus, there is little tendency over time in this sample for companies not to pay dividends. A consequence of the profitability and dividend-paying status of the sample is that the companies are not at an early stage in their lifecycle. Hence, early stage is not one of the explanations for low leverage in our sample. Strebulaev and Yang (2013) note that low leverage is more puzzling in a dividend-paying company than in a non-payer.[6]

Only 53 of the companies survive in the sample until the end year of 2013. Ninety-five are acquired by other operating companies, and a further 31 are taken private by being bought out (including one conversion to a not-for-profit corporation).[7]Nineteen become insolvent, or their businesses are all sold off, and usually they are wound up.[8]We shall see that 79 of the sample companies never lever up (Table 3); almost all have low leverage (*Debt*/*Assets*< 20%) when they leave the sample, if they leave. But this is partly because so many companies are taken over or taken private. It would be unwarranted to infer that companies which still have low leverage when they leave the sample would have remained so had they survived longer.[9]Also, many of the low-leverage companies that disappear, lever up in the process, either directly in the case of buyouts, which are normally levered transactions, or by becoming part of a group which is levered.

Table 2 around here

[6]Dang (2013), using UK data, documents very substantial differences between zero-leverage firms that are, and are not, paying a dividend at the time. The non-payers show all the signs of early-stage companies; most strikingly, the non-payers are loss-making, whereas the payers have healthy profitability on average. Strebulaev and Yang (2013) report less pronounced differences between ZL payers and non-payers in the USA, possibly because of the much higher proportion of non-payers among US listed companies.

[7]When a company ceases to be listed, we consult media reports to establish why.Worldscope does not distinguish a buyout from a takeover by another company.

[8]In four cases the original business fails and is sold off or closed down, but the company is not wound up. It survives as a listed shell without any operations, continues to produce accounts, and raises new equity after a few years, to buy new businesses. We include these companies up to and including the year the original business ceases, and we exclude the subsequent years.

[9] This echoes the comment in DeAngelo and Roll (2015, p. 382) that over half of firms have fewer than ten years of data, which causes the explanatory power of time-invariant firm fixed effects to be overstated in regressions to explain leverage.

Table 2 provides information about the active financing events discussed in Section 2.In this table all the events are measured over one financial year. Several points are of interest. There are 265cash-flow induced financing events, that is, years in which *Cashflow*≤−15%, and: debt increases by at least 10%; or there is a share issue of at least three per cent of$Assets_{t-1}$; or there are both a debt increase and a share issue, each of at least three per cent of $Assets_{t-1}$. Of these outflows, 119 are funded by debt only, with no share issue, 94by both debt and equity, and 52by a share issue only (any borrowing in the year is below three per cent). When debt only is used to fund a large outflow, the median funds raised are less than half as much, in relation to assets, as when equity only is used, and less than one third as much as when debt and equity are used. So share issues tend to be used to fund or part-fund larger outflows, and the largest outflows on average are funded by both debt and equity. There are 69 share issues that are made in years without a large outflow (the outflow could still be negative, but is closer to zero than −15% of $Assets_{t-1}$). These issues are less than one third the size of issues used to fund outflows. Thus, share issues to fund large outflows are twice as frequent (146 cases) as other issues (69 cases), and are much larger.

Panel B of Table 2 shows a breakdown of the reasons for the large outflows, split according to the three means of funding them, namely debt only, equity only, and debt and equity combined. For all means of funding, by far the most important reason for the outflow is acquisitions made during the relevant year. On average acquisitions account for 87% of the outflow, compared with 21% for capital expenditure. The sum exceeds 100% because funds from operations are positive on average in years with outflows, so they are a negative contributor to outflows (−19%). The other constituents of *Cashflow* are ‘other cash flows’(Appendix A) and regular dividends (contributions to outflows of −4% and 11% respectively, not shown in the table). Acquisitions are the primary reason for the outflow in 209 cases, followed by 33 for capex and 22 for outflows from operations. These findings are consistent with Denis and McKeon (2012), who report for a US sample that the main reason for large increases in leverage (≥10%) is investment, including acquisitions.

For the 69 share issues which are not made in a year with a large outflow, Panel B shows the cash flow to be financed, change in cash holdings, and change in debt for the relevant year.The primary use is to fund an outflow (including some small acquisitions) in 21 cases, to increase cash in 24, and to repay debt in 24. Thus, only 24 of the 215 share issues are directly to repay debt.

The importance of acquisitions as the explanation for large share issues is striking, and somewhat unexpected. Panel C of Table 2 shows thatthree quarters of the 135share issues primarily to fund large acquisitions involve normal SEOs; there are 62 cases where there is an SEO and no issue to the owners of acquired companies ('vendor issues'), and a further 39 cases with both an SEO and a vendor issue.The other 34 share issues to fund large acquisitions are entirely vendor issues. The vendor issues and SEOs are mostly similar in size, in relation to the issuer's assets, but there are a few extremely large vendor issues.Fama and French (2005) report that vendor issues are the largest source of equity raised by large firms in the 1990s, but they do not mention the importance of acquisitions as a reason for normal SEOs. McLean (2011) finds that the main use of proceeds from share issues is to increase cash holdings, which is definitely not the case in our sample of SEOs above the three-per-cent cut-off. But McLean includes small share issues, to staff. DeAngelo, DeAngelo and Stulz (2010) study SEOs that raise cash, and they do not include issues to staff. Theyfindthat most issuers use the proceeds to fund cash outflows, as we find, though they do not mention acquisitions.

Turning to special payouts, there are 124 repurchases of at least three per cent of assets, and 40 special dividends.The special dividends are about 50% larger on average than repurchases. Special dividends receive much less attention than repurchases, but they are quite important in the UK. Many of the companies that pay a special dividend also carry out repurchases, though not usually in the same year. Most of the special payouts are funded from cash holdings and/or cash inflows during the year. But there are 27 years in which debt increases by at least 50% of the value of the payout in the same year. These thereby qualify as levered payouts, where the main reason for the payout is presumably to lever-up. The special payouts are implemented overwhelmingly by companies paying regular dividends. There are only four instances, three by the same company, of a special payout in a year in which no dividend is paid (not tabulated).

Finally, there are 180dividend cuts in total (not tabulated). The reason why a company cuts its dividends is usually lower profit. In 154 cases the company either reports a loss in the year of the cut, or its profit is lower than the profit two years earlier. In 88 cases the company also has a cash outflow, or a lower cash flow than two years earlier. In seven cases there is negative or lower cash flow without negative or lower profit. Thus, dividends respond more to lowerprofit than to lower cash flow. Only 12 of the dividend cutsare accompanied by a special payout in the same or the following year. In seven of these the special payout is associated with a large inflow from disposals in the same year. In the other five cases it is

possible that the company decides to pay a special payout instead of maintaining its dividend. We infer that special payouts in the sample supplement regular dividends. They rarely replace regular dividends that were already being paid.

3.2 Company behavior over time

Table 3 around here

We examine in turn each company's financing behavior for as long as it is in the sample. We then categorizeeach company according to its behavior. The categories are shown in Table 3. They serve in part to reflect the heterogeneous nature of firm behavior, and in part to ease exposition.Five companies are in the sample for one year only, and we ignore these henceforth.

Companies that never have a share issue, and never lever up

The simplest of the remaining 193 companies are 42 that do not have a share issue or a special payout during the sample period, and do not lever up. These companies follow a passive financing policy, in that cash flows net of regular dividends are accommodated by changes in cash or debt only. We add to this group 19 companies which have at least one special payout, but do not fund the payout using debt. They show the same passive approach, except that they are willing to pay out surplus cash at least once.

Table 4 around here

Table 4 shows information on this sample of 61 companies, split into those that have *Debt*/*Assets*<10% throughout, and those with at least one year with leverage ≥10%.None of these companies levers up gradually during their time in the sample, and there is no trend of increasing leverage across the sample. The companies show fluctuations in leverage, unless they are zero-debt throughout, but the changes are small and not persistent; the average of the maximum minus minimum leverage across the sample is only 7.5%. Possible exceptions are six companies with persistent though small cash outflows. They all pay dividends, and the dividends exceed their cash flows before dividends. The resulting outflows cause them to lever-up gradually for a few years, but they disappear from the sample while this behavior is

still ongoing and leverage is still modest (below 20%). It is possible that one reason reason why these companies pay regular dividends that exceed their cash flows is in order to lever up.

On average the companies in both groups have positive cash flows. The leverage <10% group has cash flows which are larger, and it also has a much higher average cash/assets ratio. The cash ratios for <10% companies vary within a wider average range than does leverage, whereas the ranges of variation for the cash ratio and leverage are more equal for the leverage≥10% group. This is because the lower-leverage companies accommodate their cash flows primarily via changes in cash rather than changes in debt, whereas the others accommodate using both cash and debt.

We turn now to actions by the companies which potentially affect leverage, other than the choice between cash and debt to accommodate cash flows. Thirty-three of the 61 companies take no action, 17 cut their dividends at least once, eight have large disposals (at least 15% of $Assets_{t-1}$), and 19 have at least one special payout. Companies cut dividends if profits fall, even if they have zero or low leverage. The source of funds for the special payouts in this sample is cash flow or cash holdings, not debt.But five of the companies that make special payouts are recently privatized utilities which only survive three or four years in the sample. They were floated in the late 1980sand early 1990s with little debt. Had they survived longer as independent listed companies, they might have sought more actively to lever up, as did many of the other utilities privatized in the 1980s.Seven companies have an episode of poor performance. The seven all cut their dividends during the episode (a cut is one of the criteria of poor performance), and three make large disposals.

The histories of the above ‘no share issue, never lever-up’ group establish an immediate explanation for their low leverage: in every case their cash flows, plus the cash holdings they start with in 1993, are sufficient for them not to need to lever up (or to raise equity). They would have had to *intervene* to lever up, by means of special payouts funded by debt, given their cash flows and their policies regarding regular dividends and disposals. These companies could count as evidence in favor of the pecking order, in that they use little external capital. However, they are not deliberately eschewing equity issues. In addition, half (32) of them have other possible reasons for low leverage. Twenty-nine have a large individual or family shareholder, owning at least 20% of the shares, and seven have poor performance some of the time (four of which have a large shareholder).Including the companies that avoid leverage through share issues (below), the proportion of 46% (= 36/79)

with a large shareholder among the companies that do not lever up is higher than the proportion of 25% (= 28/114) with a large shareholder among the companies that do lever up (*z*-score for difference = 3.05).

Our evidence is consistent with Strebulaev and Yang (2013), who find that zero- and low-leverage companies use less external financethan other companies, and are more likely to be controlled by their CEO and/or a family.Minton and Wruck (2001) also find that low-leverage firms have cash inflows and high cash ratios on average. We can add that a key difference between the low-leverage companies without a share issue, and the companies which do lever up, is the scarcity of large outlays. There are only four large outflows (<–15% of $Assets_{t-1}$) ever among the 61 companies in the current sample, the largest of which is –27%.The high proportion of companies with possible family control, in this sample with very few large outflows and no share issues, suggests that the impact of family control on leverage is sometimes through avoidance of large acquisitions or capital expenditures – strategic choices that avoid large outflows – rather than through use of share issues to fund outflows.

Companies that never have a share issue, and lever up

Table 5 around here

There are 29companies with no shares issues, but which have a cash flow-induced levering-up episode.Table 5 shows information on these29 companies. The table shows the average and median cash flow, leverage and cash ratio for the years before the episode, the episode year, and the years afterwards. The averages before and after are calculated from different numbers of years across the companies, depending on when the levering-up occurs in their histories, and when they leave the sample or lever up again.Two companies in thissample lever up twice, and both episodes are included, so there are 31 episodes in the table.

The large outlays that prompt the borrowing have a major impact. The average cash outflow during an episode is 35% of $Assets_{t-1}$ and the increase in average leverage is from seven per cent to 26%.The average cash ratio falls from 14% to eight per cent, sothe companies tend to use much of their cash, as well as newdebt, to fund their large outlays. In nearly all cases there is insufficient cash to fund the outflow, so the company has to raise external funds. The companies are *not* levering up before the episode; on average the pre-episode cash flow is positive, and there are only two pre-episode special payouts (not shown

in the table), neither funded by debt. The same comment applies to all the other companies that lever up: there is no major change in leverage before the levering-up episode.

Three companies disappear the year after levering up, so there is no chance for their leverage to change subsequently. Table 5 splits the remaining sample into 11 episodes after which the company's average leverage is higher, and 17after which it is lower. Of the 11 where leverage is sustained, three companies take no action, and two make special payouts, though not funded by debt. These five therefore encourage or tolerate their higher leverage. The remaining six cut their dividends. But one is a striking case with very stable cash flows, where during all 21 sample years the company pays out approximately all its cash flows via regular dividends. The company levers up once (to fund an acquisition), and the dividend cut afterwards is clearly intended to prevent leverage rising, not to reduce leverage. Four companies experience poor performance, two of which make a large disposal. In three of the cases with a dividend cut, including two of the poor-performance cases, post-episode leverage rises entirely because of a large writedown in asset value which reduces the denominator of the leverage ratio. Their debt actually falls. Overall, we conclude that six of the 11 companies which sustain their post-episode leverage actually seek, or might seek, to do so. The other five are trying to reduce their leverage, but do not succeed because of negative cash flows and/or asset writedowns.

In the 17cases where leverage falls, six take no action and de-lever 'naturally' by repaying debt from cash inflows. The three companies that make special payouts all have strong cash flows after levering up, and the special payouts do not prevent their leverage falling. Two of the special payouts are funded by the proceeds of disposals.Two companies with strong cash flows go on to lever up again, after which their leverage again declines. Eight companies make dividend cuts, of which five experience poor performance, four of which de-lever with the help of disposals.

All the 29companies show a sudden and large jump in leverage, which might suggest, on the face of it, an intention to lever up. Theirbehavior in most cases suggests that they merely tolerate temporary higher leverage arising to fund expenditure, not that they make an active choice to lever up, after which they take steps to maintain their leverage.Only two of the 29 make a special payout when leverage is not falling. A third maintains its higher leverage for many years via high regular dividends.

Why do the companies choose to fund with debt rather than equity? It appears thatthe 'no share issue, lever up' companies follow the pecking order, despite the presence of nine (31%) which have a large family shareholder who might be averse to leverage. We note, in

addition, that the outlays faced by this group are not so large that funding by debtresults in very high leverage. The average end-of-episode leverage of 26%is quite moderate.

Overall, most of the 90companies we have considered so far appear content for changes in their debt and cash to be driven by cash flows net of regular dividends. Six arguably intervene by making large debt-reducing disposals during periods of poor performance. Twenty-nine lever up to fund a large outlay, but few take steps thereafter to sustain their higher leverage.

Companies that lever up via a special payout

Table 6 around here

The way for a company to increase its leverage pro-actively, without having a large outflow to fund, is for it to borrow and pay out the proceeds. There are 27 years with a special payout at least 50% funded by debt, implemented by 16companies. So the proportion of companies that lever up pro-actively is small (8.3%). Two have complex histories, which include several levered payouts and other events, and are considered below. Information on the other 14 is shown in Table 6. Fourteen have one episode, and one has two, so there are 15 levering-up episodes in Table 6.

The table shows that the payout-induced jumps in leverage are similar in scale to the cash flow-induced jumps in Tables 5 and 8. Average leverage increases from 12% to 29%; cash decreases a little, from 12% to 9%. In tencases the levered payout is the first financing event for the company. In three cases the levered payout comes after an earlier cash flow-induced levering-up, followed by a decline in leverage, and in one case it comes after a share issue.The average cash flow in years with levered payouts is almost zero. This is because most of the levered payouts are in years without large cash inflows or outflows. But the companies on average have strong positive cash flows net of dividends both before and after the levered payout.Their sustained positive cash flows are a probable factor in their decision to lever up via paying out borrowed money. The three companies which earlier lever up to fund a large expenditure all have strong cash flows and reduce debt subsequently, until the year of the levered payout.

Leverage on average declines after the levered payout, but this is misleading.Two companies make further special payouts to maintain or increase leverage, including the company with a second large levered payout (in the last year of the sample). Its leverage

increases from an average of 35% before the second payout, to 65%, which is exceptionally high in the sample as a whole. Two more companies have acquisitions which, though part-funded by equity, increase their leverage further, and two others have slightly lower, but steady, leverage after the levered payout. The five companies that disappear the year after the payout include four privatized utilities, which almost certainly would have sought to stay levered. The decline in the average is due to three companiesthat makelarge disposals and repay all their debt; one of these experiences poor performance.These companies appear to change their mind about leverage, as a result of major changes in their business.Overall, up to 11 of the 14 companies sustain their leverage. The two 'complex' companies not in Table 6also actively maintain their leverage after their levered payout.

Companies that have a share issue, and never lever up

Table 7 around here

Eighty-ninecompanies have at least one share issue during the sample period (plus three included in the levered-payout subsample). We consider first a group of 18companies that have share issuesand do not lever up (Table 7). The companies mostly have some debt; the average leverage is 9%. But none of them has a levering-up episode, and none has a sustained increase in leverage. Most of the group have negative cash flows on average, including some very large outflows; the group average cash flow is –15% per year.The negative flows arise because of acquisitions funded by share issuesor, in two cases, because of regular dividends which exceed cash flows before dividends. None of the companies is highly levered at the time of its share issue. They could choose to borrow to fund or part-fund their acquisitions, but they actively avoid doing so. Seven (39%) have a large shareholder, who is presumably willing to participate in, or a least agree to, the share issue(s), and who might wish leverage to be kept low.Four have episodes of poor performance, one of which also has a large shareholder. So ten have an identifiable possible reason for avoiding levering-up, at least for some of the sample period.There is also evidence of market timing of share issues in this group (Section 3.4).

Table 8 around here

Companies that have a share issue, and lever up once

A policy to fund outflows primarily from external equity is unusual in the sample. Most companies that issue shares also have substantial leverage at times. We start with companies that have a single discrete cash flow-induced levering-up episode (Table 8). The episodecan include funding by a mixture of debt and equity, so long as leverage increases by at least ten percentage points as a result.Also, for the purpose of summarizing firm behavior over time, it helps to allow a cash flow-induced levering-up episode to last up to three consecutive years. A levering-up episode of more than one year is defined as two or three consecutive years with large outflows, or two outflows with one year in between without a large outflow, with leverage at least ten percentage points higher at the end of the episode. The episode ends when the company stops having to fund large outflows. The leverage and cash ratios recorded for the episode are those for the final year, and the cash flow is the sum of the flows during the constituent years.[10]

There are 42companies with share issues and one levering-up episode.Only two of the companies have conducted a share issue before levering up. The average outflow during the episodeis much larger than for the 'no share issue, lever up' sample, but the average leverage by the end of the episode is almost identical. This is because the larger outflows in this sample are part-funded by equity.

Leverage remains higher in 17 cases. We count nine of these companies as taking clear steps to reduce leverage, although leverage does not fall (a dividend cut on its own does not count). Seven make large disposals, one of which also has a share issue, and one of the othersconducts a share issue. Four of these eight are among the five that experience poor performance, with dividend cuts in all cases, disposals in three, and share issues in two. Leverage does not fall because of underlying negative cash flows and, in four cases, large asset writedowns. The remaining eight companies we count as sustaining their higher leverage.One makes three special payouts (partly from disposals), which help to sustain leverage.Three go on to make a major acquisition partly funded by a share issue. Their leverage is little changed after these acquisitions, and this is consistent with active maintenance of leverage at the approximate level reached after levering up. Given their major outlays, these companies could instead have adjusted their leverage down, by choosing a

[10]For example, consider a company that has a large outflow in year *t* funded by debt, followed by another large outflow in year *t*+1 funded by debt, followed by no large outflow in year *t*+2 but a share issue and a reduction in debt of at least 50% of the share issue. When summarizing the firm's behavior for Table 8, we treat years *t* and *t*+1 as a single cash flow-induced levering-up episode, rather than two separate financing events. The share issue in year *t*+2 is *not* to fund an outflow, and is not part of the cash flow-induced funding exercise. The share issue forms part of what the company does after having levered up.

different debt-equity mix of funding. Four companies allow leverage to remain higher without taking any steps.

Leverage falls after the levering-up episode in 22 cases. At least 15 of this group take active steps to reduce debt: 13make disposals, of which three also have share issues, and two others have share issues which reduce debt.Nine of the disposals and three of the share issues are linked with poor performance. Fifteen of the 22make dividend cuts. Three make special payouts, without which their leverage might have reduced faster. However, these are payouts of surplus cash, not funded by debt.

Regarding cash holdings, the size of the cash outflow that prompts the levering up is usually much larger than the cash available, so the companies have no choice but to raise external funds. They tend to use much of their cash: across the sample, the average cash ratio falls from 12% to 6% at the end of the episode.

Overall, the behavior after levering up is similar in these companies as in the group in Table 5, which have no share issues. Few of the companies take definite steps to sustain their higher leverage; more actively reduce their leverage or attempt to do so, at least if disposals are viewed as motivated in part to repay debt.

Companies with complex financing histories

We come now to the final 29, 'complex', companies. They are the most active in terms of acquisitions, disposals, and financing. We do not attempt to summarize the activity of this group in a table. Thirteen have two clear levering-up episodes. The second results in slightly higher leverage on average (31%) than the first (26%).Despite levering up twice, nine companies take no steps to maintain their leverage in between the episodes, and in some cases they actively seek to reduce debt. Three have strong cash flows which they use to reduce debt after each episode. Two make disposals, and five have a share issue,where the proceeds are used to reduce debt. Five experience poor performance after the first or second episode. The other four of the 13 appear to seek higher leverage. Their second episode in each case is a very large acquisition that involves raising both equity and debt. They choose a substantially higher leverage second time. One of these companies mentions a definite change in policy:the finance director writes that the new policy will reduce the weighted average cost of capital; a rare reference to academic finance in an annual report.[11]

[11] Alumasc plc, *Annual Report 2007*, p. 20.

The remaining 16 companies have three or more levering-up events, or more complex histories with multiple large outlays and disposals, because the companies are very active in buying and selling other companies. Several also make a number of special payouts, including the two 'complex' companies already mentioned with special payouts funded by debt. A distinguishing feature of this group of 16is that, once they have first levered up,they actively maintain leverage within a certain range. Most of the companies maintain their leverage by using both equity and debt to fund their acquisitions, often at the same time as disposals, or followed by disposals and special payouts. A few of the group mainly use debt to fund their acquisitions, followed by disposals, and in these cases the leverage graph is a series of peaks with no trend. Three companies have episodes of very high leverage, 70% or above, and then take steps quickly to reduce debt and bring leverage below 50%. Two companies have episodes of poor performance, both accompanied by large disposals and temporary debt reduction. We believe that above patterns of behavior constitute clear evidence of active management to maintain a certain approximate level of leverage. In all cases the range is wide within which leverage varies. But no company maintains leverage below 20% or above 50% for more than a few years.

Our evidence, across all the companies with at least one levering-up episode, is broadly consistent with Denis and McKeon (2012).They find that cash flows mainly drive both decisions to lever up and changes in leverage after firms lever up, and that most firms do not use shares issues to reduce debt. Minton and Wruck (2001), Marchica and Mura (2010, with UK data), and Devos et al. (2012),also find a link between cash flows and shifts out of or into low leverage.[12]We agree with these authors that large expenditures, and the firm's response to them, are of first-order importance in understanding the evolution of a firm's leverage. We also uncover evidence of 'active' decisions by companies, that either seek to reduce leverage, or, less frequently, to sustain it, and more use of share issues to fund expenditures.Ahigh proportion of the companies that lever up once take steps to increase cash flows after levering up, by cutting dividends and making large disposals. These actionsare more common than are share issues to repay debt. In some cases the dividend cuts, disposals, or share issues are a response to poor performance. However, a minority of firms act to sustain their higher leverage, by paying out spare cash via special payouts, and, more frequently, by funding further large expenditures partly by debt, in such a way that leverage

[12] Devos et al. argue that firms remain unlevered because they are financially constrained, in the sense that debt is expensive compared with internal funds. However, their results show clearly that debt initiation is prompted by large expenditures (p. 672).

is sustained. Denis and McKeon find that most outflows, following levering up, are funded by debt, and that there are few share issues to repay debt.Similarly, de Jong, Verbeek and Verwijmeren (2011) find that, even when firms are above their estimated target leverage, about 80% of fund-raising events of at least five per cent of $Assets_{t-1}$ are to raise debt. We agree that, after firms lever up, few share issues are to repay debt, and that debt increases are more frequent than share issues.[13]But still, share issues are quite often used by companies to fund large outflows both during and after levering up.Thirty-nine of the 114 companies that lever up (34%) have at least one share issue after levering up.

Comments in annual reports

We read many annual reports, including all the reports around the time of the first levering-up episode, looking for comments on financing.A levering-up episode potentially reflects a major change in policy, especially if leverage has previously been low, or when the levering up is via a special payout. The financial reviews in annual reports become more informative in the 2000s and can be quite detailed, but many reports in the 1990s do not even include a financial review.

Unfortunately annual reports are largely silent about financing policy. The comments regarding financing tend to focus on what has happened during the financial year, and on sources of funds and loan facilities.Equity issues, large increases and repayments of debt, and large repurchases, are usually mentioned, but without any insight into why, say, debt was raised rather than equity. The 'culture' of reporting about debt is that low debt is a virtue;there are numerous comments that draw attention in a positive way to low or diminishing debt. If debt has increased, the comments (if any) seek to reassure the reader that the higher debt does not pose a problem. Thus, a number of companies with increased debt state that they expect it to fall, or that it has already fallen since the year end.Some companies discuss loan covenants, or mention a policy for debt not to exceed a certain limit, usually expressed as an interest cover or debt/EBITDA multiple. Such comments imply that some leverage is expected in the future. But few companies (we only found five) say explicitly that they are intentionally levering up. Only two of the companies which conduct a levered payout say that a reason for their levered payout is to increase debt, though one of these, Next plc, dwells at length on the subject.

[13] The greater frequency of borrowing is not fully apparent in Table 2 because we record all share issues of at least three per cent of $Assets_{t-1}$, whereas a debt increase in a year is only recorded if leverage is at least ten percentage points higher.

3.3 Company behavior in relation to estimated target leverage

We now consider the extent to which target leverage explains the companies' financing decisions. The trade-off theory predicts that a firm has an approximate target leverage at which its enterprise value is maximized. Several papers document a tendency for firms to move towards estimates of their target leverage over periods of several years. We estimate a target leverage for each firm-year, using the variables in Rajan and Zingales (1995) and in several subsequent papers.The method is explained in Appendix 2.

Table 9 around here

The results for the estimated targets are shown for the various subsamples in Tables 4 to 8, alongside the results for actual leverage. We first consider whether the targets predict which companies lever up. To help see the key information, Table 9 shows the average target and actual leverage for subsamples of companies for the years up to (and not including) the year in which they first lever up, if they ever do so. For all the subsamples, the mean target is much larger (at least 21%) than the mean actual leverage (at most 12%) before the companies lever up. This is not too surprising, as the full sample was selected to contain low-leverage companies as at the start of the sample period, though the selection was without reference to targets. The finding that low-leverage firms are below their target leverage is consistent with Dang (2013), Devos et al. (2012) and Strebulaev and Yang (2013). The key point from Table 9is that there is no difference between the mean targets for the two samples that never lever up, and the two samples that do lever up. For example, the results are the same for the two samples with the most contrasting policies, namely the companies with large outflows that avoid leverage by means of share issues (target 22%), and the companies that lever up pro-actively by means of a special payout (target 22%). Target leverage is clearly not a determinant of which companies decide to lever up.

Targets on the face of it perform better when we consider levering-up episodes themselves, and when we compare companies' actual and target leverage in the years after they lever up (Tables 5, 7and 8). In each of the samples, companies on average lever up to slightly more than the level which is predicted by the targets. In addition, the mean targetsat the end of levering-up episodes are a little higher, one or two percentage points, for the samples where leverage rises than the mean targets where leverage falls. After levering up, the mean targets for the groups that stay levered are higher than the targets for the groups

whose leverage falls, though again the differences are small. However, estimated targets change little around the times that companies lever up: they are only slightly higher on average at the end of levering-up episodes than they are before the episodes start. This is consistent with DeAngelo and Roll (2015), who find that targets do not change when leverage departs from a stable leverage regime, i.e. leverage within a bandwidth of ten percentage points for at least ten years. The reason for this, as our evidence makes clear, is that a major change in leverage is usually occasioned by a large cash flow. There is no variable in a standard model of target leverage through which a large cash flow affects the estimated target.

The strongest evidence in favor of adjustment to target is that themajority offirms do lever up, after which they are much closer to their target than they had been. Almost all the companies are below target to start with, and 114 out of 193 lever up at some point. But our evidence supports a different interpretation for most firms, as will be explained in Section 4.[14]

3.4 Market timing

The market-timing theory predicts that firms issue equity when their shares are overvalued, in relation to the managers' assessment of value based on private information. Firms refrain from issuing, and possibly borrow instead, when their shares are undervalued. The timing context for equity could help explain the choice between equity and debt, when a company has a large outlay to fund. To measure the timing opportunity in fiscal year *t*, we use the market-adjusted return on the shares for the 12 months up to and 12 months after the date half way through year *t*, for example 31 March for a year end of 31 September.DeAngelo et al. (2010) find that the 12-month interval has most power for explaining when SEOs arise.[15] We use the date half way through the fiscal year to minimize the gap between the assumed event date and the actual date(s) when the debt or equity was raised. Most debt in the sample is bank borrowing, for which there is no announcement date.

Table 10 around here

[14] Also, the frequency of movement to target via levering up is doubtless a bias of the sample, because it is selected for initial low leverage. Hovakimian (2004) finds that debt increases tend to move firms *away* from their targets.

[15] The other measure of misvaluation commonly used is the market/book ratio. We prefer abnormal returns because market/book also measures investment opportunities.

Table 10 shows the results for share issues and borrowing. The evidence for market timing of borrowing is ambiguous. The timing hypothesis predicts that the abnormal return (AR) on the shares should be negative before a debt increase, and positive afterwards. The mean and median AR are slightly negative before debt increases, but also negative afterwards, which is the wrong sign. The evidence is stronger for market timing of shares issues, including mixed funding by equity and debt. The average (median) AR before all share issues is 21.4% (6.1%), as expected, and 4.8% (–5.2%) after.The proportion of ARs with the correct sign for market timing is 57% positive before the issue and 55% negative after. The evidence for timing isweaker among the share issues which are not to fund a large outflow. This is a little surprising, as we might expect the timing motive to be more prevalent among issues that are not driven by a funding requirement. Against this, some of the share issues to fund acquisitions are likely to have a timing motive, because there is evidence of market timing of acquisitions funded by shares (for example, Savor and Lu, 2009). In the sample of companies that raise equity and never lever-up, evidence for timing turns out to be relatively strong, with a mean (median) pre-issue AR of 51.7% (10.9%). Our findings on market timing are similar to Hovakimian, Hovakimian and Tehranian (2004) and DeAngelo et al. (2010). Both papers find some evidence for timing of equity issues, but argue that timing does not explain most financing decisions. Hovakimian et al. find no evidence for timing of debt issues.

4. Inferences and further analysis

Table 11 around here

Leveragedriven by cash flows versus target-seeking behavior

We now make some general points about company behavior, on the basis of the above evidence. Table 11 summarizes the behavior of the 193 companies we can analyze, with respect to target-seeking behavior. Note that this table is based on whether the company's actions indicate that it does something to keep leverage within a certain (undefined) range, not on whether the company moves towards its estimated target. Twelve cases are ambiguous: the company might have been in the process of levering up, but it disappears from the sample before we can observe whether it would have sustained the higher leverage. The 12 consist of six with gradually rising leverage, and six with a cash flow-induced levering-up which then disappear the following year.

In 73 cases leverage stays at zero or a low level, usually less than 10%. This might be interpreted as pursuitof a low-leverage target. However, only 18 of the companies have a share issue, so only these 18 make an active choice to raise equity rather than debt, because they need external funds. Their behavior is consistent with a wish to avoid borrowing, and pursuit of favorable timing opportunities to raise equity. The other 55 might remain low leverage merely because they have little need of external funds during their years in the sample. Their low leverage could be the result of adequate cash flows and cash holdings, combined with a passive policy of not raising external capital unless it is needed. If they had to raise funds, it seems likely that most would borrow, judging from the choices of companies that do face large outflows, unless the amount required is very large (see below).

One hundred and eight companies lever up at least once, and survive in the sample for at least one year afterwards. Up to 48(44%) of these companies seek to sustain their higher leverage, as identified in Section 3.2. This number includes companies where leverage does not fall, but they merely take no steps to reduce debt after levering up, apart from dividend cuts in some cases. It also includes the five companies with a levered payout that disappear the following year.The other 60(56%) of companies that lever up, repay debt from cash flows after levering up, or take more active measures to reduce debt. In these cases the decision to borrow is either a temporary measure, or perhaps originally a decision to lever up on a sustained basis, but the company's circumstances subsequently make debt reduction advisable.

The upshot is that the majority of companies do not display target-seeking behavior, but a large minority do. Of the 181 companies with enough evidence (193 minus the 12 which disappear with rising leverage), up to 66 (36%) take actions consistent with pursuit of an approximate target leverage, which is not necessarily similar to the target leverage we estimate for them.Eighteen (10%) sustain low leverage via share issues, and 14 (8%) actively lever up via levered payouts, though only 11 (6%)subsequently sustain their leverage. Another 34 (19%)lever up to fund a large outflow, and subsequently sustain their higher leverage. However, many of this group, including most of the 'complex' companies, have recurrent large outlays, because they are growing quickly. They sustain their leverage mainly by using mixed funding, or by raising one type of capital one year followed by the other type in a later year. The evidence suggests that sustained moderate-to-high leverage is often conditional on the presence of repeated large outflows. In other words, profitable companies, that are growing quickly but are not early-stage, are willing to fund their expansion partly with debt. It is uncertain whether these companies would sustain their leverage in the absence

of recurrent outflows. Most companies withoccasional, rather than persistent, large outflows allow or encourage leverage to fall after the outlay.

The remaining 115sample companies (64%) either stay low-leverage because they have little need of external funds, or they lever up but only on a temporary basis, to fund a large outlay.These companies do not appear to be seeking a target leverage, or if they are, it is a low target. We would expect to see much more use of levered payouts, if companies with low leverage were concerned about their low leverage.

Very large expenditures are funded primarily by share issues

Table 12 around here

Judging by theirbehavior, few companies in the sample are willing and able to increase leverage to above 50%, even temporarily. Aclear reason for some share issues, especially the largest in relation to the issuer's size, is to help fund acquisitions that are too large to be funded entirely by debt. Table 12 shows summary data on levering-up episodes, split between those funded by debt and those funded by a mixture of debt and equity.The key point from Table 12 is that the average leverage outcomes in the debt-only and mixed-funding cases are almost identical, but the outlays to be funded are much larger in the mixed-funding cases. The table does not include the 16 most complex companies with too much financing activity to be simplified into episodes, but their data support the same point.In addition, there are some very large acquisitions funded entirely by equity, as is evident from Table 2. Hovakimian, et al. (2004) report similar findings; in particular, they report almost identical post-event mean leverage after mixed-funding and debt-only funding events.

Our evidence is consistent in broad terms with the finding in de Jong et al. (2010) and others that the pecking order fails for firms with large cash flow deficits. De Jong et al. argue that their finding is mainly attributable to the deficits of small and financially constrained firms.Similarly, Lemmon and Zender (2010) find that the regression model

$$\Delta Debt_{jt} = \alpha + \beta_1 Def_{jt} + \beta_2 (Def_{jt})^2 + e_{jt} \quad (1)$$

where Def_{jt} is the financing deficit scaled by assets, has better explanatory power than does the model without the deficit-squared term. They find that the coefficient on deficit squared is

large and negative for firms identified as constrained, and much smaller and barely significant for unconstrained firms, based on the probability of having a bond rating. They argue that the negative coefficient for constrained firms indicates that constrained firms tend to fund or part-fund large deficits with equity (the estimated function relating deficit to change in debt is concave), whereas unconstrained firms tend to fund large deficits with debt. DeAngelo et al. (2010)find that 'mature firms that conduct SEOs tend to have Altman *Z*-scores indicative of a serious risk of financial distress' (p. 292), which suggests that constraint due to poor performance is an important reason for SEOs by mature dividend-paying firms.

Table 13 around here

Our evidencepoints towards a different understanding of debt constraint. First, we find that healthyfirms with ready access to debt do issue equity, that funding of a large deficit is the usual motive, and indeed that share issues are a common source of funds for large deficits. Of the 265 large expenditures made primarily from external funds, 146 are part- or wholly funded by equity (Table 2). Most of the equity issuers in our sample are not in or close to financial distress, and most are unlikely to be categorized as constrainedin the sense of lacking access to debt because of low profitability. Table 13 presents evidence regarding constraint for the 215 equity issues in the sample.The issuers are split into four groups by average RoA net of taxover the year of issue and the year before. For each group the table shows the median RoA, median EBITDA/interest multiple, the proportion of issuers that we classify as poor performers as at the year of issue, the proportion that are not paying a dividend, and the median *z*-score.[16]We calculate the UK version of the *z*-score (Taffler, 1983) where a score below zero is the start of the 'risk of failure' zone, though only three per cent of firms with a negative *z*-score actually become insolvent (Agarwal and Taffler, 2007).The table shows that a large majority of the issuers are not in or close to financial distress. Those with low RoA are mostly those which are in difficulty according to the other measures as well. Sixty-three per cent have RoA above 10%, and 87% have RoA above 5%. In contrast, the issuers categorized as constrained in Lemmon and Zender (2010) have an average RoA of –2.4% (p. 1181).Only 14% of issuers are not paying a dividend in the year of the issue. The *z*-

[16] Lemmon and Zender's main measure of constraint is a statistical model which predicts whether or not a company has a bond rating. Such a measure will not work well for the UK because a much smaller proportion of UK than US companies issue bonds and have a rating. The KZ index of constraint, used by some papers, is found to be a poor measure by Farre-Mensa and Ljunqvist (2016).

score is below zero for39.3% of issuers (not tabulated).This looks high a high proportion, but we calculate that the proportion of firm-yearswith a negative *z*-score for all listed firms during the sample period is 41.3%.Thus, the issuers in our sample are no closer to financial distress than are firms in general, on this measure. Even if we assume that all the issuers with RoA below 10% for the year of issue face a debt constraint because of concern about profitability, which seems an excessively broad measure, we still conclude that more than 60% of issuers are not constrained in a profitability sense.

Second, a critical factor in deciding whether to fund an outflow with equity is the size of the outflow in relation to the size of the company. We have seen that when companies lever up, the resulting leverage is less than 30% on average. Further inspection shows that sustained leverage above 40% is uncommon. To measure leverage in cases of sustained high leverage, we use the subsample of companies that lever up at least once, where their average leverage after the levering-up episodedoes not fall, and we calculate the average leverage for the period after the episode (minimum three years). If a company levers up twice, we choose the higher of its post-episode averages. To this group we add the average leverage values for the 16 most complex companies, measured from the year a company's leverage first exceeds 20%, to the year before its leverage drops below 20% for two or more consecutive years. If there is more than one above-20% period, separated by at least two years below 20%, we choose the period with the higher average. The sample size is 50.

The mean (median) for the sample of periods of sustained leverage is 32% (32%) (not tabulated). Only three companies have sustained leverage that exceeds 50%, and six have sustained leverage between 40% and 50%. Sixteen companies record leverage above 50% for at least one year. But leverage falls back below 50% within one or two years, except for the three with a sustained period of above-50% leverage.We infer that most companies avoid, or are forced by their lenders to avoid, sustained leverage above 40%, and that leverage above 50% is rare and transitory.[17]

Table 14 around here

To assess the importance of share issues to avoid increases in leverage, we calculate the pro-forma leverage which would have arisen had funds raisedfrom the share issues been raised by borrowing. Note that pro-forma leverage is calculated using the assets at the end of

[17]Similarly, DeAngelo and Roll (2015) find that only 0.2% of US companies listed for at least 20 years maintain leverage of 50% or more.

the year of the share issue, which includes the increase in assets arising from any expenditure funded.[18]The results are shown in Table 14. The average (median) pro-forma leverage would have been 48% (42%). In 75 of the 215 cases the company would have had a leverage of at least 50%, and 112would have had a leverage of at least 40%. If leverage above 50% (40%) is considered infeasible or problematic for any company, then 35% (52%) of the share issues were unavoidable.[19]In these cases it is plausible that the issue is motivated by concern about creditworthiness arising from high leverage, had debt been raised instead.

The actual leverage figures for the year of the issue are much lower than the pro-forma leverage. Many of the share issues do imply that a large increase in leverage is avoided. But there is a positive relation between pro-forma and actual leverage after the expenditure. Most firms with low leveragegiven the issue, say below 20%, could have raised debt instead of equity, and leverage would still have been well below 40%. This suggests that many share issues are not to prevent excessive leverage.

It appears that almost all the sample companies face, or choose, a debt limit in the sense that, for whatever reasons, they will not fund an expenditure with debt if the resulting leverage would exceed around 50% at most. The constraint at work here does not arise because the company has low profitability. Rather, there appears to be an upper limit to leverage for any company. Companies sometimes undertake expenditures that are larger than the amount that can be borrowed within the company's limit. In these cases the company must issue equity.In our sample the reason for very large share issues, the issues that de Jong et al. (2010) identify as the primary reason for the failure of the pecking order, is simply that the funds needed are very large in relation to the company, not that the company is constrained in some other way.At the same time, many of the share issues are not to prevent excessive leverage, especially smaller issues (22% of the issues are below 10% of $Assets_{t-1}$).[20] Different share issues in this category are likely to have different explanations.

Our evidence is consistent with Leary and Roberts (2010). Theyinvestigate the extent to which equity issues (of at least 5% of $Assets_{t-1}$) are explained by a debt constraint. They

[18] In many acquisitions the increase in assets is well below what might be expected given the value of the acquired company. This is because goodwill, the difference between the amount paid for the equity and its book value, is often written off. This means that *Assets* after the acquisition does not reflect the value of the goodwill, and book leverage is higher as a result.

[19] Our results are consistent with Harford, Klasa and Walcott (2009) and Uysel (2011), who document a relation between deviation of the acquirer's actual leverage from its estimated target, and the funding mix for an acquisition. However, their interpretation emphasizes adjustment to target.

[20]We do not try to estimate company-specific debt capacities. It is possible that such an exercise would produce a higher proportion of issues motivated to avoid excessive leverage than our upper estimate of 52%. We note that early-stage companies, which are not in the sample, are likely to face more severe debt constraints than the sample companies.

find that a model which uses a large number of firm- and time-specific characteristics to predict the choice of equity issue is much more accurate than more parsimonious alternatives focused on constraint. The variable with the most explanatory power is the financing deficit for the relevant year.However, fundingentirely by debt would often not threaten an investment-grade credit rating:it would not result in leverage above the 90th percentile of leverage for firms in the same industry with an investment-grade credit rating. On this measure, only 40% of their equity issues are motivated by concern about excessive leverage.We draw a similar inference from our evidence.

Companies in difficulty actively seek to reduce debt

This regularity emerges clearly from our evidence, and it explains changes or attempted changes in leverage under particular circumstances. Forty-two companies experience an episode of poor performance after levering up (not tabulated). All cut their dividends and, in addition, 31 sell substantial subsidiary companies and use the proceeds to repay debt, of which five also have a share issue to reduce debt. A further three have a share issue to reduce debt, but no disposals. Thus, 34 (81%) of the companies with poor performance take identifiable steps, a large disposal or a share issue, to reduce debt, in addition to cutting dividends.

5. Conclusion

We examine financing decisions over time and in detail for a sample of companies that have high profitability and low leverage at the outset. Our evidence throws light on a category of company whose leverage is viewed as hard to understand. Our inferences are as follows. Companies tend to lever up only when they need to fund a large expenditure. Most – possibly all – the sample companies, which start in the sample with low leverage, do not lever up in the absence of any large outflows. There is an upper limit to leverage which rarely exceeds 50% in the sample, depending on the company (the upper limit could be much smaller for early-stage firms, which are absent from the sample). An upper limit is a different concept from a target, but its existence combined with a need to fund large outflows can produce behavior which looks like adjustment to target. If the outflow implies leverage above the limit, the company will fund partly or entirely with equity. The limits inferred in our sample mostly do not arise because the company has poor profitability or is close to financial distress before raising equity.

Once levered up, a company will tend to remain levered if it has outflows, and reduce debt if it has inflows, with active measures to reduce debt observed more frequently than measures to sustain debt. The majority of companies seek or allow leverage reduction after levering up, unless they have recurrent outflows, which suggests that they do not have a target leverage, or if they do, their target is low. Avoidance of debt-induced risk appears to be crucial in many decisions. This can be seen in avoidance of high leverage to fund large outflows, by means of raising equity, and in efforts to reduce debt during periods of poor performance. The majority preference for low leverage, except when there is a large outflow to fund, supports the pecking-order idea that firms borrow only when they need external funds. One third to one half of share issues are to avoid excessive leverage had debt been used, consistent with the pecking order modified by constraint on use of debt, though the remaining share issues call for other explanations. Preference for low leverage also supports the idea that the value of financial flexibility exceeds the value of expected tax savings from higher debt.

There are exceptions to the above inferred summary of leverage behavior, and they are important both numerically and in terms of how different their behavior is. The exceptions show target-seeking behavior, though the company's own apparent leverage target is not always close to the target estimated by a standard model. The exceptions are companies that lever up pro-actively, without a large expenditure, via a levered payout. Conversely, some low-leverage companies have large outflows, but avoid levering up by raising equity. These companies appear actively to maintain a low level of leverage which is well below their estimated target. A further group of companies shows sustained leverage that can be explained by recurrent expenditures that are funded or part-funded by debt. These companies could either be seeking moderate-to-high leverage with or without outlays to fund, or they could revert to low leverage once their high-growth phase ends. Thus, there is fundamental heterogeneity in company behavior which should be recognized. The heterogeneity implies that different motivations for financing decisions take precedence at different companies. Also, some companies appear to change their leverage policy substantially over time, moving from low leverage to sustained high leverage, and vice versa. An important reason for a change to low leverage is an episode of poor performance.

The findings suggest questions for further research.There is more to learn about what determines the choice of a distinct financing policy. Why do some companies actively sustain their leverage after having levered up, some lever up pro-actively through levered payouts, while others choose to avoid leverage by means of share issues?To what extent is

maintenance of moderate-to-high leverage associated with recurrent large outflows caused by rapid growth, rather than poor performance? A further question is what determines the limit on how much a company chooses to borrow temporarily, to fund expenditure. Finally, our sample is not representative, because of the way it was selected.Firms in general might display other types of financing behavior from those we identify, and the proportions in a representative sample of firms of the types we identify are likely to be different from the proportions in our sample.

Appendix 1: analysis of cash flows

Each year a company has a *Cashflow* that must be accommodated through some combination of a change in cash holdingsΔC (C = Worldscope item 02001),a change in debt outstanding, ΔD, including short-term and convertible debt, and capitalized lease obligations (D = items 03051 + 03251 + 18282), and a cash flow to or from shareholders, ΔE:

$$Cashflow = \Delta C - (\Delta D + \Delta E) \quad \text{(A1)}$$

where ΔE is the proceeds from issue of common and preferred stock net of costs of issue (04251), minus stock purchased or redeemed (04751), minus the value of special dividends, identified separately from annual reports. Both preferred stock and convertible debt are rare in the sample. A positive value for ΔD or ΔE means cash is raised from lenders or investors. For some acquisitions, *Cashflow*and $\Delta E$are adjusted to include certain non-cash transactions, as explained below.These important transactions aside, we focus on the annual cash flow rather than the annual change in assets because it is cash flow that needs to be accommodated by financing.

Cashflow is measured after payment of regular dividends (the cash dividends actually paid out in the financial year) and before changes in cash holdings, repurchases of shares, and special dividends:

$$Cashflow = OpY - Capex - Acq - Div + OtherCF \quad \text{(A2)}$$

where operating income *OpY* is funds from operations (Worldscope item 04201) plus funds from/for other operating activities (04831, i.e. the change in working capital excluding cash), *Capex* is capital expenditure (04601 plus 04651), *Acq* is the cash cost of acquisitions net of cash balances acquired (04355)plus some adjustments to be explained, *Div* is cash dividends paid, including dividends on preferred stock (04551, but with special dividends subtracted manually), and *OtherCF* is other cash flows.

OtherCF is constructed so that the values of *Cashflow* in equations (A1) and (A2) are equal:

$$OtherCF = \Delta C - (\Delta D + \Delta E) - (OpY + Capex + Acq + Div) \quad \text{(A3)}$$

The inflows captured in *OtherCF*, and not included in *OpY*, include proceeds from sale of group companies, proceeds from sale of non-liquid investments, and income from deposits and investments. The outflowsinclude tax payments, interest payments, and purchase of non-liquid investments.Much the most important component of *OtherCF* for our purposes is disposals of group companies, which can be large compared with the remaining cash flow

items in equation (A2). A positive value of *OtherCF* of more than a few per cent of assets is almost always due to disposals.

We manually adjust the cost of acquisitions in order that *Acq* reflects the full cost, and not only the cash cost. If a company issues sharesto the owners of a company to be acquired (the 'vendors'), this is a financing choice to issue equity which it would be incorrect to ignore. Likewise, if the company issues loan notes to the vendors, or assumes liability for debt of the acquired company, these decisions increase debt, and the debt acquired is part of the cost of the acquisition. Therefore, we add to *Acq*before adjustment the estimated fair value of any equity or debt issued to the vendors, plus the value of any debt assumed of the acquired company, as shown in the notes to the acquiring company's accounts. These additions mean that, where *Acq* is adjusted, *Cashflow*measures the cash outflow that would have arisen had the acquired company been bought entirely by means of a cash payment, with its debt repaid by the acquiring company. We only make these adjustments if the amounts involved are at least three per cent of existing assets.

Δ*D*in equation (A1) is calculated from the change in debt outstanding in the acquiring company's accounts. The change automatically includes any debt issued to the vendors, and debt taken on of the acquired company, so no adjustment is needed to Δ*D* in these cases. However, Δ*E*before adjustment is the proceeds of share issues minus repurchases and special dividends. It does not include shares issued to vendors. So we add to Δ*E* before adjustment the same value for these shares as we add to *Acq* before adjustment. Many of the largest acquisitions are financed by the issue of securities to the vendors, and in these cases *Acq*before adjustment – the Worldscope figure for the cost of acquisitions –greatly understates the actual cost.For the same reason, studies about financing which include only share issues for cash understate the use of equity to fund major expenditures.

Adding share issues to vendors reduces *Cashflow* in equation (A2), which now includes the cost of acquisitions funded or part-funded by such share issues, and increases Δ*E* by the same amount, so equation (A1) still balances.But adding share issues to vendors does not affect assets or leverage. This is because the increase in the book value of assets resulting from an acquisition is already included in full in *Assets*.

Our figure for Δ*E* includes cash paid by staff when they buy shares from the company. This understates the market value of shares issued to staff, as Fama and French (2005) note. However, we leave *Cashflow* andΔ*E*unadjusted for the market value of shares

issued to staff. We are concerned with large-scale financingdecisions rather than equity issuance*per se*. The adjustments would make little difference to the big picture for financing.

Appendix 2: estimation of target leverage

Each year *t* we estimate, for the full sample of UK listed non-financial firms available on Worldscope, a double-sided Tobit regression model censored at 0 and 1 using the following specification:

$$L^*_{jt} = \alpha_t + \beta_{1t}Profitability_{jt-1} + \beta_{2t}\ln(Sales_{jt-1}) + \beta_{3t}PPE_{jt-1} + \beta_{4t}M/B_{jt-1} + \beta_{5t}Indmed_{jt-1} + e_{jt} \quad \text{(A4)}$$

where leverage$L^*_{jt} = L_{jt}$ if $0 \leq L_{jt} \leq 1$, 0 if $L_{jt} < 0$, and 1 if $L_{jt} > 1$;$Profitability_{jt}$ is$EBITDA_{jt}$ (Worldscope item 18198)/$Assets_{jt}$, *Sales* is item 01001, PPE_{jt} is property, plant and equipment (02501) plus tangible other assets (02648) as at the end of year *t*/$Assets_{jt}$, M/B_{jt} is the market value of the equity (08001)/shareholders' equity (03451 plus 03501), and $Indmed_{jt}$ is the median $Debt_t/Assets_t$ ratio of firms in the industry of firm *j*, excluding *j*. Most of the industries are classified at SIC level 3, but if there are fewer than two non-sample firms in the industry, we use level 2. A problem with the SIC codes is that there is no archive in Worldscope. The codes given for all past years never change; they are presumably the codes applicable at the time the data is downloaded. If a firm changes industry classification during the sample period, the codes for the years before the most recent change of classification will be inaccurate.

When estimating equation (A4), the values of all the variables except leverage are winsorized at the 99th percentile. Leverage is not winsorized as Tobit is used to mitigate outliers. We estimate separate annual regressions. The average sample size per year is 1,266 firms, which includes firms in the main sample.

The estimated target leverage for each sample firm in year *t* is given using the actual values for the firm of the explanatory variables in regression (A4) for year *t*–1, and the estimated coefficients from the Tobit regression. Because Tobit is used to estimate the coefficients, the relation between the predicted targets and the firm-specific values of the explanatory variables is also estimated via Tobit, and is non-linear. We obtain fitted values, restricted between 0 and 1, using the Tobit post-estimation STATA command *e(0,1)*.

We also calculate targets using OLS. The results regarding our sample are qualitatively similar, but there are severe problems with OLS estimation of targets. Many of the estimated targets are too low (negative) or too high (above 90%), and there are wild

jumps in the targets of individual firms from one year to the next, which are unrelated to actual changes in leverage. There is much less instability over time in the Tobit than in the OLS estimates of the coefficients in equation (A4).

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Table 1
Descriptive statistics: companies

The sample is 198 UK listed companies with high profitability and low leverage as at 1993. The sample period is 1993-2013. The number of firm-years is 2,294. 'Other listed companies' excludes investment and financial companies, and those in the sample. Data for other listed companies are winsorized at the 1% level, except for market capitalization. *Debt*is short-term, long-term and convertible debt (Worldscope items 03051 + 03251 + 18282), *Assets* is total assets (02999), *Cash* is holdings of cash and short-term investments (02005), return on assets is operating income (01250) net of tax (01451) divided by $(Assets_t + Assets_{t-1})/2$, and market capitalization is as at the end of the company's financial year in 1993. *t* refers throughout to the company's financial year. Sources for all tables: Worldscope and annual reports.

	Mean	Median	Maximum	Minimum
Leverage ($Debt_t/Assets_t$)				
Sample 1993	6.7%	6.2%	18.8%	0.0%
Other listed companies 1993-13	25.5%	16.2%	8,120.0%	0.0%
Cash ratio ($Cash_t/Assets_t$)				
Sample 1993	15.1%	12.1%	80.3%	0.0%
Other listed companies 1993-13	15.2%	8.7%	100.0%	0.0%
Return on assets				
Sample 1993	12.1%	11.2%	39.3%	7.2%
Other listed companies 1993-13	0.2%	5.6%	234.1%	–828.0%
Market capitalization				
Sample 1993	£439m	£73m	£23bn	£2m
Other listed companies 1993-13	£1,902m	£67m	£233bn	£0.04m
Number of years company survived in the sample	11.6	10.0	21.0	1.0

Payment of regular dividends	In 1993 and all years	In 1993, stopped later	In 1993, stopped, re-started	Started after 1993	Never
	152	12	24	8	2

Survival in sample	
Still listed in 2013	53
Delisted or insolvent before 2013, of which	145
acquired	*95*
taken private	*31*
*insolvent**	*19*

* Includesfour companies which first became shells without operations, and then raised funds and bought new businesses. Three were still listed in 2013; the fourth was taken private.

Table 2
Descriptive statistics: financing events

Panel A shows the number and value of financing events by 198companies during 1993-2013.'Cash flow' is $Cashflow_t$ to be financed (see Appendix A)/$Assets_{t-1}$ (Worldscope item 02999) in the year of a financing event. A large outflow = $Cashflow_t \leq -15\%$ of $Assets_{t-1}$. For years with a large outflow, a'debt increase only'means $Debt_t$(03051 + 03251 + 18282) increases by at least 10 percentage points of $Assets_{t-1}$, and any share issue (04251) is below 3%; 'mixed funding' means a year with a share issue of at least 3% and an increase in debt of at least 3%; 'equity only' means a share issue of at least 3%, and any increase in debt is below 3%. 'Other share issue' means a year with a share issue of at least 3%, and no large outflow during the year. Share issues are measured net of expenses. The preceding five types of event are mutually exclusive. 'Repurchase' means a year in which equity worth at least 3% of $Assets_{t-1}$is repurchased (04751),'special dividend' means an extra payout of at least 3% of $Assets_{t-1}$, beyond regular dividends, identified from annual reports.A special payout funded by debtis a repurchase or special dividend in the same year as an increase in debt worth at least 50% of the payout. 'Value' is the amount of the increase in debt, share issue etc., expressed as a percentage of $Assets_{t-1}$.Panel B shows the proportion of large outflowsarising from the cost of acquisitions in the year (04355 plus adjustments described in Appendix A), capital expenditure (04601 + 04651), and the cash flow from operations (04201 + 04831;the proportion of outflow is negative because flows from operations are positive on average). 'Primary reason' means the largest contributor to the outflow. Not shown is one case where regular dividendsare the primary reason. For 'other share issues' Panel B shows $Cashflow_t$, change in *Cash* (02005, and change in *Debt* for the relevant year, as a proportion of the proceeds. 'Primary reason' means the number of issues for which the relevant use of the funds is the largest use. In Panel C, a 'vendor issue' is an issue of shares to the owners (vendors) of a company being acquired. The numbers in this table relate to events measured over a single financial year.

Panel A: events	Financing events associated with a large outflow					Other		Special payouts	*Of which, funded*
	Debt increase only	Mixed funding Debt	Mixed funding Equity	Share issue only	All outflow events	share issue	Repurchase	Special dividend	*by debt*
Number	119	94		52	265	69	124	40	*27*
Value: average	26.1%	43.7%	115.1%	69.4%	81.7%	17.3%	10.9%	15.8%	*18.6%*
median	21.8%	27.3%	47.5%	46.3%	33.3%	10.3%	7.6%	12.6%	*17.1%*
Cashflow: average	–28.9%	–107.1%		–62.5%	–63.2%	0.8%			
median	–23.1%	–73.5%		–36.4%	–32.7%	–1.6%			

Panel B: uses of funds	Acquisition		Capex		Operations	
Fundingof large outflows	Share of outflow	Primary reason	Share of outflow	Primary reason	Share of outflow	Primary reason
Debt only: average	71.8%	74	23.9%	30	–13.3%	14
median	77.2%		25.8%		–37.2%	
Mixed funding: average	98.7%	90	14.8%	2	–20.5%	2
median	101.4%		10.0%		–16.5%	
Equity only: average	102.3%	45	25.2%	1	–30.0%	6
median	102.7%		15.5%		–31.4%	
All outflow events: average	87.3%	209	20.9%	33	–19.1%	22
median	96.5%		16.7%		–25.1%	

	Acquisition		Capex		Operations	
Other share issues	Cash flow	Primary reason	Change in cash	Primary reason	Change in debt	Primary reason
Average	0.8%	21	8.1%	24	–8.9%	24
Median	–1.6%		3.7%		–1.6%	

Panel C: acquisitions funded or part-funded by share issues		Joint SEO-vendor issue		
	SEO for cash	SEO shares	Vendor shares	Vendor issue
Number	62		39	34
Value: average	58.3%	54.1%	145.5%	82.4%
median	42.5%	42.8%	23.7%	42.2%

Table 3
Categorization of the sample

The table shows our classification of sample companies by categories of financing behavior during the sample period, as explained in Section 3.2. 'Never levers up' means that the company never has a levering-up episode while it is in the sample.

Company behavior	Never has a share issue	Has at least one share issue
Never levers up	61	18
Levers up:		
via special payout	11	3
once	29	42
more complex history		29
Total available for analysis	193	
One year in sample	5	
Total	198	

Table 4
Companies with no share issue, and no levering-up episode

The sample consists of 61 companieswhich never have a share issue or a levering-up episode during their years in the sample. 'Leverage<10%' means the company has no year during the sample period in which leverage exceeds 10%; 'other leverage' means leverage of≥10% at least once. 'Poor performance' means the companyhas at least one episode with at least two consecutive years in which return on assets is less than 5% and the company cuts its dividend by at least 10% during the two years. Target leverage is explained in Appendix B.Max–min leverage (cash ratio) = the maximum minus the minimum leverage (cash ratio) during the company's years in the sample. The average value of 'cash flow, leverage', etc., is calculated for each company for its years in the sample, and the table shows the averageand median (below) of these averages. 'Dividend cut' means the company makes at least one cut in regular dividends of at least 10%; 'disposal' means at least one year in which proceeds from sales of assets are at least 15% of $Assets_{t-1}$; 'special payout' means a year in which the value of repurchases or special dividends is at least 3% of $Assets_{t-1}$; 'no action' means the company never takes any of the preceding actions. 'Large shareholder' means the company has a shareholder who owns at least 20% of the shares in 1993 and for more than half the years the company is in the sample.

	N companies	Poor performance		Cashflow	Leverage	*Target leverage*	Max–min leverage	Cash ratio	Max – min cash ratio
Leverage<10%	35	3	average	2.8%	2.0%	*21.1%*	3.7%	22.1%	18.9%
No action	*20*		median	2.2%	1.5%	*21.1%*	2.7%	22.1%	17.3%
Dividend cut	*8*	*3*							
Disposal	*3*	*2*							
Special payout	*12*								
Other leverage	26	4	average	1.9%	9.6%	*22.7%*	12.7%	11.4%	16.7%
No action	*12*		median	0.3%	9.0%	*21.7%*	12.4%	9.7%	11.2%
Dividend cut	*9*	*4*							
Disposal	*5*	*1*							
Special payout	*7*								
All	61	7	average	2.4%	5.4%	*21.8%*	7.5%	17.5%	18.0%
Large shareholder	29		median	1.6%	3.5%	*21.5%*	6.2%	14.3%	13.2%

Table 5
Companies with no share issue, and a levering-up episode

The sample consists of 29 companies which never have a share issue during the sample period, but have a cash flow-induced levering-up episode, defined as a year or more with a large outflow, and leverage is at least ten percentage points higher at the end of the episode. A large outflow = $Cashflow_t/Assets_{t-1} \leq -15\%$. In this sample all the episodes last one year only. Two companies have two episodes, so the number of episodes is 31. The average values of the cash flow, leverage and cash ratio for the years before the episode, the year of the episode, and the years after, are calculated for each company. The table shows the average and median (below) of these averages, split between episodes by whether leverage falls afterwards. The numbers of years before and after vary across the companies. If there are two episodes, the years in between count as the years after the firstepisode. The actions in italics refer to what the company does after levering up.

Leverage after episode	*N* episodes	Poor perfor-mance	Cash flow before episode	Cash flow during episode	Cash flow after episode	Leverage before episode		Leverage end of episode		Leverage after episode		Cash ratio before episode	Cash ratio during episode	Cash ratio after episode
						leverage	*target*	leverage	*target*	leverage	*target*			
Rises	11	4	–0.1%	–31.6%	–0.9%	5.6%	*22.2%*	23.5%	*23.6%*	27.6%	*26.0%*	13.9%	7.3%	4.6%
No action	*3*		1.1%	–21.5%	–0.7%	3.7%	*22.4%*	21.4%	*24.3%*	23.3%	*25.8%*	11.7%	5.1%	3.7%
Dividend cut	*6*	*4*												
Disposal	*2*	*2*												
Special payout	*2*													
Falls	17	5	3.6%	–37.3%	7.7%	8.4%	*22.2%*	26.9%	*22.6%*	16.8%	*22.8%*	15.6%	8.3%	16.4%
No action	*6*		2.9%	–31.8%	3.4%	9.8%	*20.9%*	27.4%	*21.7%*	17.2%	*22.2%*	11.5%	3.7%	11.8%
Dividend cut	*8*	*5*												
Disposal	*6*	*4*												
Special payout	*3*													
All	31*	9	2.0%	–34.8%	4.3%	7.2%	*21.4%*	25.7%	*23.2%*	21.0%	*24.1%*	14.4%	7.7%	11.8%
N companies	29		1.3%	–26.4%	2.2%	4.4%	*22.2%*	25.1%	*23.0%*	21.4%	*23.7%*	10.2%	4.7%	7.0%
Large s'holder	9													

*Includes three companies that disappear the year after levering up.

Table 6
Companies that lever-up via a special payout

The sample consists of 14 companies which lever-up by means of a special payout which is at least 50% funded by debt. One company has two such episodes, so the number of episodes is 15.The average values of the cash flow, leverage and cash ratio for the years before the episode, the year of the episode, and the years after, are calculated for each company. The table shows the average and median (below) of these averages. If there are two episodes, the years in between count as the years after the first episode. The actions in italics refer to what the company does after levering up.The company disappearsor the sample period ends the year after six of the episodes.

			Cash flow			Leverage						Cash ratio		
	N episodes	Poor perfor-mance	before episode	during episode	after episode	before episode leverage	*target*	end of episode leverage	*target*	after episode leverage	*target*	before episode	during episode	after episode
	15	1	4.0%	0.7%	7.2%	12.3%	*21.8%*	28.7%	*23.3%*	20.2%	*25.9%*	12.0%	9.3%	11.8%
No action	*2*		4.7%	0.6%	3.0%	12.4%	*22.2%*	24.4%	*23.7%*	16.4%	*25.2%*	10.5%	8.3%	12.2%
Dividend cut	*3*	*1*												
Disposal	*3*	*1*												
Special payout	*3*													
N companies	14													
Large s'holder	2													

Table 7
Companies with a share issue,and no levering-up episode

The sample consists of 18 companies whichhave at least one share issue, and no levering-up episode. The average value of the four measures shown is calculated for each company for its years in the sample, and the table shows the average and median (below) of these averages.

	N companies	Poor performance		Cash flow	Leverage	*Target leverage*	Cash ratio
	18	*4*	average	–15.3%	8.9%	*21.1%*	12.8%
Dividend cut	*6*	*4*	median	–7.0%	7.5%	*21.5%*	10.5%
Disposal	*5*	*2*					
Special payout	*3*						
Large shareholder	*7*						

Table 8
Companies with a share issue, and one levering-up episode

The sample consists of 42 companies that have a share issue at least once, and that have a levering-up episode, defined as up to three consecutive years with large outflows, or two outflows with one year in between without a large outflow, where leverage is at least ten percentage points higher at the end of the episode. An episode can include a share issue as well as borrowing.The cash flow in a multi-year episode = sum($Cashflow_t$)/average($Assets_{t-1}$). The average values of the cash flow, leverage and cash ratio for the years before the episode, the year(s) of the episode, and the years after, are calculated for each company. The table shows the average and median (below) of these averages, split between episodes by whether leverage falls afterwards. The actions in italics refer to what the company does after levering up.

Leverage after episode	*N* episodes	Poor perfor-mance	Cash flow before episode	Cash flow during episode	Cash flow after episode	Leverage before episode	*target*	Leverage end of episode	*target*	Leverage after episode	*target*	Cash ratio before episode	Cash ratio during episode	Cash ratio after episode
Rises	17	5	–4.3%	–99.1%	–2.4%	8.2%	*22.1%*	26.5%	*24.1%*	31.9%	*26.0%*	9.2%	3.3%	5.2%
No action	*6*		–0.8%	–61.6%	–2.4%	7.6%	*22.0%*	27.5%	*22.8%*	32.1%	*25.0%*	6.9%	1.8%	3.8%
Dividend cut	*10*	*5*												
Disposal	*7*	*3*												
Share issue	*5*	*2*												
Special payout	*1*													
Falls	22	10	–2.3%	–130.4%	5.3%	7.6%	*20.5%*	25.5%	*22.0%*	13.7%	*23.3%*	14.5%	8.6%	10.2%
No action	*5*		–1.2%	–53.9%	3.5%	8.4%	*20.5%*	26.3%	*21.9%*	11.2%	*22.2%*	14.7%	3.5%	7.3%
Dividend cut	*15*	*10*												
Disposal	*13*	*9*												
Share issue	*5*	*3*												
Special payout	*3*													
All	42*	15	–3.4%	–116.0%	1.9%	7.7%	*21.4%*	25.9%	*23.0%*	21.6%	*24.5%*	11.9%	6.1%	8.0%
N companies	42		–1.3%	–61.7%	1.5%	7.5%	*21.1%*	26.3%	*22.3%*	20.0%	*23.3%*	9.7%	2.8%	4.2%
Large s'holder	13													

*Includes three companies that disappear the year after levering up.

Table 9
Target leveragebefore levering up

The table shows the average and median leverage for four samples classified by financing behavior. If the company has no levering-up episode, the numbers are calculated from the average leverage for each company for the years it is in the sample. If the company has at least one levering-up episode, the numbers are calculated from the average leverage for each company for the years before the first year of the episode. The *t*-statisticis for the difference between the averages for target and actual leverage.

Company behavior	Target leverage	Leverage	*t*-stat	Number
No levering-up episode,	21.6%	5.4%	*20.3*	61
no share issues	21.5%	3.5%		
No levering-up episode,	21.1%	8.9%	*6.1*	18
share issues	21.5%	7.5%		
Lever up via special payout	21.8%	12.3%	*3.8*	14
	22.2%	12.4%		
Cash flow-induced	21.2%	7.5%	*23.2*	100
levering up	21.2%	6.3%		

Table 10
Abnormal returns around debt and equity issues

The table shows abnormal returns (ARs) for 12 months before and 12 months after the midpoint of years in which there is a cash flow-induced levering up event, or a share issue. The midpoint is half way through the relevant financialyear.The AR is calculated as the buy-and-hold return on the share, minus the buy-and-hold return on the FT-SE All-Share Index. 'Timing proportion' is the proportion of years in which the AR has the sign predicted by the market-timing hypothesis. The numbers in the samples are smaller than in the full samples because the AR before or after could not always be calculated (egg for IPOs in 1993), and because of missing share price data for a few companies. Thez-statistic is for the difference between the timing proportion and 0.5; the *t*-statistic is for the difference between the mean AR and zero.

	Timing proportion (%)				Abnormal return before (%)			Abnormal return after (%)			
	before	*z*-stat	after	*z*-stat	mean	*t*-stat	median	mean	*z*-stat	median	N
Years with large outflows											
Debt only	57.4	*1.59*	38.3	*–2.52*	–4.4	*–1.27*	–4.6	–4.6	*–1.09*	–8.7	115
Debt and equity	54.9	*0.94*	58.2	*1.57*	12.5	*2.76*	6.1	–2.0	*–0.40*	–7.1	91
Equity only	66.7	*2.38*	54.9	*0.70*	40.6	*3.41*	13.3	1.7	*0.22*	–2.5	51
Other share issues	52.4	*0.38*	49.3	*–0.12*	18.7	*1.83*	3.4	16.3	*2.28*	1.5	67
All share issues	57.1	*2.03*	54.5	*1.31*	21.4	*4.46*	6.1	4.8	*–1.30*	–5.2	209
Share issues by firms that never lever up	63.6	*1.57*	69.7	*2.26*	51.7	*2.80*	10.9	4.1	*0.42*	–10.2	33

Table 11
Target-seeking behavior

The table shows a breakdown of the sample according to whether the company seeks to sustain leverage within a certain (undefined) range. See Section 4 for explanation.

Company behavior		Number	Target-seeking?
Leverage stays zero or low (no levering-up episode)		73	
No action apart from dividends and payouts	*55*		No
Share issue(s)	*18*		Yes: low target
Company levers up at least once		108	
Company seeks to sustain leverage	*48*		Yes: high target
Company does not seek to sustain leverage	*60*		No
Ambiguous		12	Don't know
Leverage low but increasing before co disappears	*6*		
Cash-induced levering-up episode is last year	*6*		

Table 12
Cash flow-induced levering-up episodes

The table shows the *Cashflow* during levering-up episodes and the leverage at the end of the episode, for cash-induced levering-up episodes. The sample excludes the 16 most 'complex' companies, for which discrete episodes are hard to identify, and levered payouts, which are not induced by a cash outflow.

Episode	Cashflow	Leverage	Number
Debt only			
Mean	–34.2%	26.5%	64
Median	–24.9%	26.5%	
Debt and equity			
Mean	–189.6%	26.0%	36
Median	–99.8%	23.5%	

Table 13
Profitability of companies at the time of share issues

The table shows four measures of profitability and financial health for companies that conduct a share issue. Return on assets is the average of (operating income (Worldscope item 01250) minus tax (01451))/($Assets_{t-1}$ + $Assets_t$)/2 for the issue year *t* and *t*–1. EBITDA/Interestis the average for years *t* and *t*–1 of earnings before interest, tax, depreciation and amortization (18198)/interest on debt (01251). 'Poor performance' means the issuer is in an episode with at least two consecutive years in which return on assets is less than 5% and the company cuts its dividend by at least 10% during the first two years. 'Not div payer' means the issuer is not paying a regular dividend in the year of the issue. The *z*-score of financial health is the UK version as calculated in Dang (2013), using accounting data from year *t*–1.

Category by *RoAt* to *t*–1	Number	Return on assets Median	EBITDA /Interest Median	Poor per-formance %	Not div payer %	*Z*-score median
10%+	135	13.8%	9.5×	0.0%	5.2%	2.02
5% to 10%	52	8.3%	4.8×	0.0%	11.5%	–0.26
0% to 5%	14	1.6%	3.8×	50.0%	42.9%	–0.60
<0%	14	–5.7%	–2.0×	85.7%	78.6%	–1.04
All	215	11.3%	7.3×	8.8%	14.0%	1.33

Table 14
Pro-forma leverage if share issues were funded by debt

The table shows the pro-formaleverage which would have arisen, had the amounts raised from share issues (of at least 3% of $Assets_{t-1}$), including issues to vendors of acquired companies, been entirely funded by debt:pro-forma leverage = ($Proceeds_t$ + $Debt_t$)/$Assets_t$, where $Proceeds_t$ is the amountnet of expenses raised from share issues in year *t*.The actual leverage is that recorded for the year of the issue.

		Pro-forma leverage		Actual leverage	
	Number	Average	Median	Average	Median
All	215	48.4%	41.5%	18.9%	15.2%
Pro-forma leverage:					
above 50%	75	81.4%	72.8%	27.9%	26.1%
40% to 50%	37	45.2%	46.1%	21.5%	20.7%
30% to 40%	42	34.5%	34.2%	16.9%	18.6%
below 30%	60	18.9%	19.0%	9.9%	9.9%