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# Flights of fancy: Corporate jets, CEO perquisites, and inferior shareholder returns ☆

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**Abstract**

This paper studies perquisites of CEOs, focusing on personal use of company planes. For firms that have disclosed this managerial benefit, average shareholder returns underperform market benchmarks by more than 4% annually, a severe gap far exceeding the costs of resources consumed. Around the date of the initial disclosure, firms' stock prices drop by an average of 1.1%. Regression analysis finds no significant associations between CEOs' perquisites and their compensation or percentage ownership, but variables related to personal CEO characteristics, especially long-distance golf club memberships, have significant explanatory power for personal aircraft use.


*JEL Classification:* G30; J33

*Keywords:* Executive compensation; Perquisites; Corporate jets

## 1. Introduction

This paper studies perquisite consumption by executives of major corporations, with a focus on the personal use of company aircraft by CEOs.

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Perquisites may arise in optimal employment contracts (Fama, 1980), but they may also exist because a firm's governance or incentives are too weak to limit the use of company assets by managers (Jensen and Meckling, 1976). According to the former story, perks may motivate executives to work hard, and they create economic surplus if the company can acquire assets more cheaply than the manager due to purchasing power or tax status. According to the latter view, however, perks reduce firm value directly if managers consume more than desired by shareholders, and indirectly if workers observe managers' perquisites and react adversely. In this case, perks can catalyze shirking, unethical behavior, or low morale throughout a company.

These competing perspectives motivate empirical questions about whether perks lead to increases in company value because they represent an efficient way to pay managers, or alternatively, whether firm performance suffers in the presence of perks because their consumption is symptomatic of waste, poor corporate governance, or unethical management behavior. Until now, no empirical study has tested the association between perks and company performance.

This paper conducts a range of tests based upon CEOs' personal use of company aircraft, as disclosed in annual proxy statements filed pursuant to Securities and Exchange Commission (SEC) regulations. In principle, the paper could examine a wider range of perks such as automobiles, country club memberships, catered lunches, plush office furnishings, and the like, but I focus upon aircraft use for several reasons. First and most importantly, the SEC's reporting rules make data for aircraft use much more reliable than data for other, less expensive perks. The SEC requires perk disclosure only above certain fixed dollar thresholds, and these cutoff levels are generally too high to be triggered by perks other than aircraft. Therefore, empirical tests related to plane use are likely to have higher statistical power than tests related to other perks such as catered lunches or country club memberships, which often remain both undisclosed to shareholders and unobserved by other workers. Second, data presented below indicate that unlike other perks, disclosed CEO personal aircraft use grew explosively in recent years, more than tripling during the 1993 to 2002 sample period. Third, academic and shareholder commentators cite corporate jets far more often than any other perquisites as representative symbols of agency problems within firms. See, for example, Persons (1994, p. 437), Borokhovich et al. (1997, p. 1444), Hall and Liebman (1998, p. 658), and Core and Guay (1999, p. 155). Rajan and Wulf (2005) characterize company planes as "the canonical example of an excessive perk." A representative example of a shareholder activist's critique of CEOs' corporate jet use appears in Minow (2001). Finally, company planes have played a central role in some of the most notorious corporate disclosures involving managerial excess, whether prompted by disciplinary hostile takeovers (such as RJR-Nabisco[1]) or prosecutions for fraud (such as Adelphia Communications[2]).

[1]Burrough and Helyar (1990) provide an account of managers' aircraft use at RJR-Nabisco, which before its 1991 leveraged buyout maintained an "RJR Air Force" of ten aircraft. The planes were flown by a squad of 36 company pilots, housed in "the Taj Mahal of corporate hangars," and made available for use by CEO F. Ross Johnson to a range of friends, celebrities, golf instructors, and family pets (one of whom was listed on a passenger manifest as "G. Shepherd"). The authors write that "the jets were a symbol of the increasingly fuzzy line between what constituted proper use of a corporate asset and what constituted abuse" (1990, pp. 93–94).

[2]In the 2004 Adelphia securities fraud trial, prosecutors alleged that founding CEO John Rigas twice requisitioned company aircraft to deliver a Christmas tree to his daughter (the second flight became necessary after the first tree was rejected as unsuitable), while Rigas's son Timothy, the company's chief financial officer, repeatedly made company planes available to Australian actress-model Peta Wilson in a futile attempt to "impress" her.

To understand more clearly the role of perquisites in managerial compensation, the paper's analysis begins with regression models of associations between CEO aircraft use and a range of variables measuring corporate attributes and personal CEO characteristics. The results fail to support the leading financial theories of management perquisites, which appear in classic studies of organizational structure by Jensen and Meckling (1976) and Fama (1980). Jensen and Meckling view perks as appropriations of shareholder wealth by managers, and they conjecture that perk consumption should decline as a manager's fractional ownership of the company's stock increases. Fama treats perks more benignly, as a form of compensation that boards offset through "ex post settling up" reductions in salaries and other pay. To test these theories, I regress the cost of the personal aircraft use by CEOs against their fractional stock ownership and their level of abnormal compensation, measured as the residual from a typical compensation regression model. I do not obtain significant coefficient estimates for either variable. Further regression results indicate that CEOs' personal characteristics, especially their golfing habits, exhibit especially strong associations with personal aircraft use; if the CEO belongs to a golf club that is located a long distance from headquarters, his personal use of company aircraft increases markedly.

In event study analysis, I find that shareholders react negatively when firms first disclose that their CEO has been awarded the aircraft perk, as stock prices fall by an unexpected 1.1% around the time of the relevant SEC filings. While this reduction in market value is significant, it does not appear to anticipate the full extent to which such companies' stocks underperform the market, on average, in the future.

The central result of this study is that the disclosed personal use of company aircraft by CEOs is associated with severe and significant underperformance of their employers' stocks. Firms that disclose personal aircraft use by the CEO underperform market benchmarks by about 4% or 400 basis points per year, after controlling for a standard range of risk, size, and other factors. This result proves robust to a wide range of alternative performance measures and additional controls.

I study firms' accounting results over time to gain further insight into the inverse relation between CEO aircraft use and company stock performance. This relation suffers much more than can be explained by the direct cost of the aircraft perquisite. After the CEO aircraft perk is first disclosed, the operating performance of firms does not change significantly. However, disclosing companies are more likely to take extraordinary accounting writeoffs and are also more likely to report quarterly earnings per share significantly below analyst estimates.

While the findings here about writeoffs, reduced quarterly earnings, and decreasing stock performance are consistent with various theories of managerial shirking in the presence of lavish perks, they may result from a disclosure strategy whereby managers conceal bad news from shareholders until they have acquired access to lucrative fringe benefits. This conjecture represents only one of several disclosure theories that provide intriguing alternate explanations for the findings in the paper. For instance, the growth in CEO aircraft use reported between 1993 and 2002 may be a result not only of greater use of planes by managers, but also of firms' increasing compliance with SEC disclosure rules in a legal environment that increasingly punishes firms for opaque disclosure.

The remainder of the paper is organized as follows. Section 2 presents a brief overview of theories of perquisites developed in finance, economics, and other fields. Section 3 presents a description of the data. Section 4 contains a regression analysis of patterns of

CEO's personal aircraft use. Section 5 analyzes the stock market performance of firms that do and do not permit personal use of company planes by their managers, presenting both event study and long-run portfolio evidence. Section 6 concludes.

## 2. Theories of perquisites

Many authors in finance, economics, management, psychology, and other areas have developed theories about the role of perquisites in business organizations. As such, subtle differences exist in how different authorities define perquisites. Compare Webster's Dictionary ("something gained from a place of employment over and above the ordinary salary") and the Oxford English Dictionary ("a special right or privilege enjoyed as a result of one's position"). The Securities and Exchange Commission definition, which is the basis for the data tabulated in this study, designates a perquisite as "other annual compensation not properly classified as salary or bonus." Rajan and Wulf (2005), who consider a perk to be "non-monetary compensation … not strictly necessary for the accomplishment of the employee's duties," provide a survey of this literature.

In corporate finance, Jensen and Meckling (1976) use perquisite consumption by managers as the basis for their seminal model of the agency costs of outside equity in a public corporation.[3] They observe that when an owner-manager sells stock to the public and reduces his ownership below 100%, incentives increase for the manager to consume corporate resources for personal benefit: "As the owner-manager's fraction of the equity falls, his fractional claim on the outcomes falls and this will tend to encourage him to appropriate larger amounts of corporate resources in the form of perquisites" (p. 313). This diversion of resources from the company to the manager is viewed by the authors as a pure reduction in the value of the firm. A clear prediction of Jensen and Meckling's model is that perk consumption by a CEO should vary inversely with his fractional ownership. Two further variables that should affect perk consumption, the authors continue, are a manager's personal tastes and the difficulty of monitoring the manager's actions.

Fama (1980) views perquisites more benignly, essentially arguing that "consumption on the job" by managers amounts to a form of compensation that can be offset through adjustments in salary or other forms of pay. Fama describes the interaction between managers and their boards of directors in terms of an "ex post settling up" dynamic, in which the manager's wage is regularly revised to account for his performance and personal consumption of company resources. Fama's model implies that perk consumption represents an agency cost only to the extent that its value exceeds the subsequent penalties to the manager from ex post settling up wage discounts. Fama's theory, therefore, appears to predict an inverse association between perk consumption and compensation, controlling for other attributes that affect compensation such as industry, performance, and experience. Like Jensen and Meckling, Fama also suggests that managerial tastes and the difficulty of monitoring affect managers' perquisites.

An alternate way perquisites might represent efficient compensation arises from the ability of companies to provide certain assets to employees more cheaply than the workers could acquire them on their own. Bulk purchasing power and tax shields represent two

[3]Jensen and Meckling state that in their analysis, perk consumption can be viewed as a representative example of the numerous ways in which agency problems can arise between a manager and shareholders, such as shirking or risk avoidance on the part of the manager.

mechanisms through which this may occur. For example, an aircraft that is owned by a firm but made available to the manager could create depreciation tax shields that would be unavailable to the manager if he bought the plane personally. A net savings might arise between the manager and company even if the manager has to pay personal income tax on the value of the aircraft use. Similarly, a fleet of automobiles might be acquired by a firm at a volume discount and then made available to executives at a lower cost per vehicle than if each manager purchased a car individually.

Theorists in the fields of management and psychology view perks in a variety of ways. Perks may be used as rewards that provide psychic value to the recipient that exceeds their direct cost to the company. For instance, perks can indicate high status, thereby clarifying and reinforcing the chain of command in an organization. Additionally, the perks obtained by top managers may serve as inducements to lower-ranking employees, motivating them to exert effort in hopes of being promoted. Rajan and Wulf (2005) provide a colorful discussion of these aspects of perks, drawing parallels between military medals and company cars and citing sources as diverse as Graef Crystal and Napoleon.

In addition, Rajan and Wulf present a theory of "perks as productivity," arguing that private planes and catered lunches may represent rational expenditures by firms if their consumption renders top executives more productive, and much of their paper provides an empirical analysis of this theory. This view of corporate amenities characterizes them as value-increasing business expenses rather than a form of private consumption.

## 3. Data description

Data for this study comes from a panel of 237 large companies over the ten-year period 1993 to 2002. To qualify for inclusion in the sample, a firm must be listed in the 2002 *Fortune 500* ranking of largest U.S. companies and also be covered by the ExecuComp database for at least the seven-year period 1996 to 2002. This selection rule attempts to strike a balance between survivorship bias and the need for sufficient observations for each firm to permit panel data analysis, while keeping the costs of data collection reasonable. Note, however, that I collect data back to 1993 when available for each firm. Additionally, I delete observations for years in which a firm was not publicly traded for the entire fiscal year. The final sample has 2340 observations, with 222 of the 237 firms appearing in the sample for ten full years. These observations cover 485 individual CEOs, a small handful of whom serve more than one tour of duty with the same company, i.e., they are recalled to office from retirement after the forced removal of their original successor.

I merge financial, stock market, governance, and compensation data from a variety of on-line databases to create the paper's data set. Financial statement data comes from Standard & Poor's Compustat, stock market data from the Center for Research in Securities Prices (CRSP), institutional ownership data from Thomson Financial's CDA/Spectrum, governance data from the Investor Responsibility Research Center (IRRC), analyst data from the Institutional Brokers Estimate System (I/B/E/S), board of directors data from Standard & Poor's Compact Disclosure, and compensation data from Standard & Poor's ExecuComp. When necessary, I fill in missing data by using proxy statements.

Table 1 presents descriptive statistics about the sample. The sample firms have median annual sales of close to $7 billion, median total assets above $10 billion, and median

Table 1
Descriptive statistics

Descriptive statistics for a data set of 237 large firms during the 1993–2002 period. The sample includes companies in the 2002 *Fortune 500* that are also covered by ExecuComp for at least the years 1996 to 2002. If available, data is tabulated from 1993 forward. Data is obtained from the Compustat, CRSP, IRRC, Compact Disclosure, FAA, and CDA/Spectrum databases, as well as company proxy statements. Leverage equals long-term debt over total assets. Return on assets is based upon operating income before interest, depreciation, and amortization. Both ROA and the annual stock return are compounded continuously. Market-to-book ratio equals market value of equity plus book value of debt, divided by total assets. The number of analysts equals the annual earnings estimates listed by the I/B/E/S database at the start of each year. Governance index is a count variable measuring takeover defenses and other anti-shareholder provisions. CEO ownership equals common stock plus vested options over shares outstanding. Stock option award values are based upon ExecuComp's Black and Scholes (1973) methodology. Golf club membership data are obtained from the handicap database of the U.S. Golf Association and from news reports. The right columns show the mean values for each variable in the subsamples of observations for which CEO personal use of corporate aircraft is and is not disclosed.

| Variables | Percentiles | | | | | | | CEO personal aircraft use | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | 10th | 25th | 50th | 75th | 90th | Yes | No |
| Sales (bn.) | $10.98 | $13.09 | $2.21 | $3.73 | $6.75 | $13.22 | $24.01 | $16.93 | $9.86*** |
| Total assets (bn.) | $30.98 | $77.29 | $2.05 | $4.09 | $10.40 | $24.90 | $67.54 | $51.88 | $27.06*** |
| Market capitalization (bn.) | $20.06 | $40.23 | $2.09 | $3.79 | $7.70 | $17.83 | $45.58 | $29.69 | $18.26*** |
| Leverage | 0.40 | 0.25 | 0.09 | 0.22 | 0.38 | 0.54 | 0.68 | 0.41 | 0.39 |
| Return on assets, annual | 13.0% | 7.1% | 3.3% | 8.2% | 13.0% | 17.7% | 21.8% | 12.3% | 13.2%** |
| Stock return, annual | 16.9% | 41.2% | −24.2% | −7.1% | 11.8% | 36.1% | 60.7% | 9.7% | 18.2%*** |
| Market-to-book ratio | 2.05 | 1.61 | 1.05 | 1.16 | 1.51 | 2.31 | 3.47 | 1.98 | 2.06 |
| Board size | 12.1 | 3.6 | 8 | 10 | 12 | 14 | 16 | 12.3 | 12.1 |
| Fraction of outside directors | 0.79 | 0.11 | 0.64 | 0.73 | 0.82 | 0.88 | 0.92 | 0.80 | 0.79*** |
| Institutional ownership | 0.589 | 0.155 | 0.381 | 0.487 | 0.604 | 0.697 | 0.779 | 0.634 | 0.581*** |
| Number of analysts | 19.0 | 8.1 | 9 | 13 | 18 | 24 | 30 | 19.4 | 19.0 |
| Governance index | 9.7 | 2.7 | 6 | 8 | 10 | 12 | 13 | 9.3 | 9.8*** |
| Tier I hub airport within 1 hour | 0.662 | | | | | | | 0.669 | 0.661 |
| Tier II mid-sized airport | 0.138 | | | | | | | 0.196 | 0.127*** |
| Coastal location | 0.567 | | | | | | | 0.599 | 0.561 |
| Firm owns or leases aircraft | 0.777 | | | | | | | 1.000 | 0.756*** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CEO age | 57.4 | 6.3 | 49 | 53 | 58 | 62 | 64 | 57.3 | 57.4 |
| Years as CEO | 6.9 | 7.1 | 0 | 2 | 5 | 9 | 16 | 6.5 | 6.9 |
| Ownership fraction | 0.0148 | 0.0361 | 0.0007 | 0.0016 | 0.0039 | 0.0087 | 0.0323 | 0.0117 | 0.0154** |
| Founding family member | 0.146 | | | | | | | 0.113 | 0.156** |
| Salary (mm) | $0.87 | $0.38 | $0.48 | $0.67 | $0.84 | $1.00 | $1.20 | $1.03 | $0.83*** |
| Annual bonus (mm) | $1.24 | $1.85 | 0 | $0.37 | $0.80 | $1.45 | $2.50 | $1.63 | $1.17*** |
| Stock option award (mm) | $4.48 | $16.71 | 0 | $0.34 | $1.59 | $4.03 | $9.28 | $7.59 | $3.90*** |
| Restricted stock award (mm) | $0.71 | $2.74 | 0 | 0 | 0 | $0.16 | $1.77 | $1.04 | $0.65** |
| Golf club—local | 0.360 | | | | | | | 0.40 | 0.35 |
| Golf club—long distance | 0.172 | | | | | | | 0.29 | 0.15*** |
| Golf club—Augusta National | 0.089 | | | | | | | 0.17 | 0.08*** |

| | Obs. |
|---|---|
| Individual firms | 237 |
| Individual CEOs | 485 |
| CEO-firm-year observations | 2,340 |
| Number with disclosed personal aircraft use | 372 |

Difference is significant at 1% (***), 5% (**), and 10% (*) levels according to *t*-tests.

market capitalization close to $8 billion. Governance parameters for sample firms are similar to those found in other studies, with boards of about 12 directors having majorities of outside directors. Institutional investors own about 60% of the stock of a typical firm. The IRRC database's governance index counts the number of takeover defenses and other anti-shareholder provisions in a firm's charter and bylaws, following Gompers et al. (2003) who find that this index has negative associations with a company's stock market performance.

I tabulate data for aircraft ownership and proximity to airports from databases maintained by the U.S. Federal Aviation Administration (FAA). For each company I record whether headquarters lies within one hour's drive of a Tier I, Tier II, or Tier III airport, according to FAA classifications of commercial airport use based on traffic for 2001. Tier I airports, the largest "hub" facilities, are within an hour's drive of nearly two-thirds of sample companies. In a study of corporate aircraft fleets, Hersch and McDougall (1992) find that companies are less likely to own or lease their own planes if their headquarters is near a major commercial airport. I also tabulate a dummy variable for coastal location, which equals one if the firm is near the east or west coast of the continental U.S., because of Hersch and McDougall's results that find that firms with geographically interior locations are more likely to acquire private aircraft.

Table 1 reports that a large majority (77.7%) of the sample firms have their own planes, according to a 2004 search of the FAA's civil aircraft registry. Note that this figure is based solely on 2004 data, as similar data unfortunately are not available for prior years. I code this variable one if a firm appears in the FAA registry or if it reports personal use of company aircraft by at least one of its executives at some point in the 1993 to 2002 sample period. This aircraft ownership variable likely understates the incidence of corporate plane possession, since some companies may register their aircraft under the name of a subsidiary that is different from the name of the corporate parent. Nevertheless, the 77.7% frequency suggests that corporate jet ownership has risen slightly over time, as it is higher than the 64% frequency reported by Hersch and McDougall (1992) for a 1984 sample of 516 large companies, as well as the 66% frequency reported by Rajan and Wulf (2005) for a 1986–1999 sample of 300 large companies (the 66% figure in Rajan and Wulf may also be an underestimate, since it includes only companies that permit the CEO to "schedule use of company aircraft").

The lower part of Table 1 presents information about individual CEOs, who appear very similar to those studied in other large-sample empirical work. All descriptive statistics are reported on the basis of CEO-years. The typical CEO is about 58 years old. The mean (median) number of years' service is seven (five) and mean (median) ownership of the firm's shares is about 1.5% (0.4%), where ownership equals shares owned plus vested options all divided by shares outstanding plus the CEO's vested options. CEOs receive mean (median) cash salary and bonus compensation of about $2.1 million ($1.6 million) and additional annual income from stock option and restricted stock awards. Stock options, valued by ExecuComp's modified Black and Scholes (1973) methodology, deliver a large, skewed distribution of compensation, with a mean of $4.5 million, median of $1.6 million, and 75th and 90th percentile values of $4.0 and $9.3 million, respectively.

Theories of perquisite consumption stress the crucial role of tastes and preferences particular to individual CEOs. As a proxy for tastes and preferences, I tabulate publicly

available data about CEOs' golfing activities, if any, because of the popularity of golf as a recreational activity for affluent Americans, especially business executives. The U.S. Golf Association maintains an Internet database of the playing records of millions of golfers who choose to register with the association in order to establish a sanctioned handicap. The database also identifies an individual's golf and/or country club memberships. In my sample, 42.8% of the CEOs appear in the USGA database, and a significant number – 17.2% of the overall sample—have country club memberships in locales very far from their headquarters, mainly in the states of Florida, California, Colorado, or Massachusetts. I define a "long-distance golf" dummy variable and set it equal to one if the CEO is a member of a club that is located outside his home state or a contiguous state (many Connecticut CEOs play locally in Westchester County, New York, for instance), or if the CEO is a member of the Augusta (Georgia) National Golf Club, the country's most famous and exclusive, which is not located near any major corporations.[4] The long-distance golf dummy has a mean of 0.232.

The right columns of Table 1 report mean values of each variable for the subsamples of CEO-years in which the CEO does and does not have access to corporate aircraft for personal use, according to proxy statement disclosures described more fully below. Several differences between the two subsamples are evident. First, firms that disclose the aircraft perk tend to be larger, pay their CEOs more, and have CEOs with lower ownership who are less likely to belong to the company's founding family. Also, these CEOs are about twice as likely to belong to long-distance golf clubs, which would require air travel to reach. A variety of corporate governance variables also exhibit significant differences between the two subsamples, but not in a clear pro- or anti-shareholder pattern. Finally, annual stock returns are dramatically different across the two subsamples, with firms that disclose the CEO aircraft perk underperforming their counterparts by more than eight full percentage points per year. This disparity in stock returns, which is explored at length in Section 5, appears quite large but conceivably could be due to differences in timing, risk, or other elements across the two subsamples.

Data on disclosed CEO perks is not available from any on-line source; thus, for this study I obtain annual proxy statements for each of the observations in the sample to generate the required information. Perk data has been disclosed in proxy statements since 1993, generally in a footnote to column (e) of the Summary Compensation Table, headed "Other Annual Compensation." Following the SEC's proxy disclosure regulations, this column includes "the dollar value of other annual compensation not properly classified as salary or bonus," with "perquisites and other personal benefits" as one of several mandatory items that are combined into an aggregate total. These regulations became effective at the end of 1992, and most companies began applying them to their proxy filings in 1993. Coverage in the SEC's EDGAR database, the central source for electronically filed proxies, begins one year later, and thus contains proxies filed in 1994 and thereafter, which accounts for the cutoff date for the sample in this study.

[4]The nearest city to Augusta is Columbia, South Carolina, which is 70 miles away, and Atlanta is more than three hours' drive. Augusta membership data is posted at www.usatoday.com/sports/golf/masters/2002-09-27-augusta-list.htm. The USGA handicap database can be accessed at www.ghin.com/lookup/index.html.

SEC regulations specify minimum thresholds for perk disclosure. These thresholds complicate data collection. The total value of perks must be disclosed based upon their "aggregate incremental cost" to the company, but only if the total exceeds the lesser of $50,000 or 10% of the executive's salary plus bonus (for 98% of the observations in my sample, the CEO earns $500,000 or more in salary plus bonus). In such cases, the total cost of perks may not be observed directly, because some companies disclose the perk total only after aggregating it with other data items reportable in the same column of the table, such as above-market interest on deferred compensation and income tax reimbursements. A further requirement is that the company itemize the cost of any individual perk, such as personal aircraft use, if it exceeds 25% of the overall perk total, assuming that the total exceeds the $50,000 threshold.[5] Firms' compliance with this itemization requirement provides the data used in this study.

The structure of the SEC's disclosure rules is such that the data for CEO personal aircraft use is censored. Assuming the CEO earns at least $500,000 salary plus bonus, firms never have to disclose aircraft use if its cost lies below $12,500 (equal to 25% of the $50,000 overall threshold). Firms are required to disclose values above $12,500, but only to the extent that other perk consumption is not large enough to reduce aircraft use to below 25% of the overall perk total. Inspection of the data indicates that other categories of perks rarely exceed aircraft use, so one can conclude that in the large majority of cases, values above $50,000 are disclosed. For values between $12,500 and $50,000, disclosures can be expected to occur to the extent that the CEO receives enough other perks to surpass the $50,000 overall threshold. Note, however, that some firms may also disclose perk data voluntarily, even if it falls below the mandatory thresholds.

Several disclosure loopholes may limit the transparency of perk consumption data under one or more of the following scenarios:

- The company may incur less than $50,000 incremental cost for aircraft use by the CEO and make no other perks available to the CEO, meaning that no disclosure is required.
- The CEO may receive perks in five or more categories in roughly equal proportions, so that none accounts for 25% of the overall total. In this case, only the total value of all perks must be disclosed but no itemization of categories is required.
- The CEO may receive very large perks in one category other than aircraft use, so that only that category is disclosed. This is common when new CEOs receive relocation expense reimbursements, which can be large.
- The company may aggressively classify certain types of income as "perquisites" and count it toward the overall threshold, thereby allowing it to itemize only those categories and in turn obscure the consumption of other perks. Some companies appear to have adopted this practice with such financial items as retirement contributions and split-dollar life insurance policy payments, which are more properly viewed as tax and income deferral strategies rather than perquisites.

[5]Disclosure regulations appear in 17 CFR 229.402, "Executive Compensation," and the regulations for perk disclosure are in Section 229.402(b)(2)(iii)(C). The original draft of the disclosure regulations set the overall threshold at the lesser of $25,000 or 10% of total cash compensation, and required itemization of every perk received, regardless of amount, if the overall threshold were exceeded. See SEC Release No. 33-6940, 34-30851 (June 23, 1992). After the public comment period on the proposed regulations, the minimum overall disclosure threshold was raised to $50,000 "to reflect inflation," while the requirement to itemize each category was narrowed, without any explanation. See SEC Release 33-6962, 34-31327 (October 16, 1992).

Table 2
Perquisites reported for CEOs

Perquisite consumption data for CEOs in a sample 2340 observations for 237 large companies between 1993 and 2002. Data is obtained from annual company proxy statements. According to SEC rules, companies must report perquisites for individual categories if the CEO's total benefits exceed $50,000 and an individual category represents more than 25% of the total. A small number of companies elect to report lesser-valued perquisites whose disclosure is not mandatory, and their data is included in the table. Perquisite values are reported according to incremental cost to the company. The table includes only nonfinancial perquisites involving tangible items or personal services and excludes deferred compensation, life insurance, and other financial arrangements whose principal motive is income tax reduction. Tabulations below exclude three observations dropped from the analysis due to missing values. All dollar values are in thousands.

| | Statistics for observations with perquisite value disclosed | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Number of Disclosures | Freq. (%) | Obs. | Mean | Std. Dev. | Min. | Med. | Max. |
| Personal use of company aircraft | 372 | 15.9 | 361 | $65.2 | $48.1 | $0.5 | $52.8 | $360.0 |
| Financial counseling | 215 | 9.2 | 175 | $38.3 | $45.4 | $1.0 | $25.0 | $330.5 |
| Company car and local transportation | 150 | 6.4 | 108 | $24.4 | $26.7 | $3.0 | $16.0 | $139.8 |
| Country club dues | 51 | 2.2 | 50 | $32.6 | $30.1 | $0.1 | $24.7 | $130.5 |
| Medical care exceeding co. plans | 37 | 1.6 | 28 | $15.1 | $14.3 | $0.8 | $9.5 | $73.2 |
| Personal or home security | 7 | 0.3 | 6 | $40.4 | $29.5 | $1.0 | $37.7 | $94.0 |

- The company may choose not to classify personal aircraft use as a perquisite if at least some part of a plane trip involves business.

Table 2 presents data about disclosures of CEO perquisites, with perks rank-ordered according to the frequency of their disclosure in the sample. The minimum values for items listed in each row of Table 2 indicate that some firms voluntarily disclose perk costs even when they fall below the SEC's thresholds, but these disclosures represent only a small part of the sample. The reader is reminded again that the data are subject to censoring due to the SEC's regulations. The SEC provides no guidance about how companies should calculate the "aggregate incremental cost" of benefits such as aircraft use, meaning that different firms likely use different methods to produce the data that are disclosed to shareholders.[6] Since the disclosures are limited to incremental cost, they would not capture the full cost of providing certain services to CEOs, as items such as amortization of an aircraft's acquisition cost would not properly be viewed as incremental. A few companies in the sample, apparently at a loss regarding how to measure the incremental cost of aircraft use, instead report the value of each executive's plane use according to Internal Revenue Service (IRS) guidelines for imputing taxable personal income to an employee who travels for personal reasons on corporate aircraft.[7] In October 2004, a widely noticed speech by the chief of the SEC's Corporate Finance Division criticized the tendencies of companies to make "opaque or unhelpful" disclosures about executive perks and directed

[6]Only one company in the sample (MBNA Corp.) describes its method for calculating "aggregate incremental cost" of personal aircraft use. MBNA's March 15, 2004, proxy statement states that "incremental cost includes fuel, landing fees, airport taxes and fees, customs fees, and in-flight food."

[7]These complex regulations, known as the Standard Industry Fare Level or SIFL rules, appear in IRS Regulation section 1.61-21(g) and are based upon certain multiples of estimated cost per mile flown. They generally lead to lower reported perk values than the SEC's aggregate incremental cost standard.

firms to adhere to the SEC's incremental cost standard rather than using the IRS's calculations for imputed income.[8] Beginning in 2005, beyond the sample period for this study, many companies began making more detailed and transparent disclosures of the value of executives' aircraft and other perquisites. See Maremont (2005).

In their disclosures, some companies use certain euphemisms to describe personal aircraft use, such as "travel expense" and "corporate transportation." I generally assume that such language refers to airplane or helicopter travel rather than limousines, trains, or boats, unless disclosures indicate otherwise. Of the 372 observations that I tabulate as CEO personal aircraft use, 289, or 77%, are unambiguously disclosed as air travel. The remaining 83 observations include 76 "corporate transportation" or "corporate travel" disclosures, three "personal use of company assets," and four "spousal travel." These 83 observations have very nearly the same mean and variance as the other 289, and the paper's main results presented in Tables 4, 5, and 6 below are insensitive to their inclusion or omission. In some cases the company lists travel expenses for the CEO's spouse or tax reimbursements for income imputed to the CEO related to corporate aircraft use; I tabulate these as part of the CEO's overall aircraft use totals.

Data in Table 2 indicate that of the disclosed CEO perks, aircraft use is the most frequent and most costly, appearing far more often than the next most popular item, financial counseling, which includes tax preparation, estate planning, and the cost of representation in contract negotiations. Company cars, country club memberships, medical reimbursements (above the firm's regular health insurance), and personal security also appear on the list of perks in Table 2. I do not tabulate moving and relocation expenses, which can be very large and exceed aircraft use for some firms. Inspection of the data indicate that moving expenses are overwhelmingly concentrated among executives who are posted overseas for temporary assignments or who relocate after being recruited from outside the firm (some also relocate if the headquarters moves due to a merger or other event), and characterizing them as "perquisites" under these circumstances seems dubious. I also do not tabulate data for perks that are strictly financial and appear to represent tax deferral strategies, such as split-dollar life insurance or pension plan contributions.

Due to the SEC's $50,000 minimum threshold for perquisite disclosure, it is very likely that Table 2's data do not reflect the true incidence of lower-valued perks such as cars and country club dues, since these cost far less than $50,000 annually. Shareholders generally learn of these items only if the CEO has other, more lucrative perks such as aircraft use in the same year. Some idea of the scale of censoring of the perquisite data in Table 2 can be inferred by comparing the table with survey data from large companies compiled by two different consulting firms around the same time period as this study. These surveys, summarized by Rajan and Wulf (2005) and Lublin (2005), indicate frequencies of company car perks near 40% and country club memberships between 24% and 47%, while in my sample only 6% of CEOs disclose company cars and just 2% disclose club dues. However,

[8]In a handful of past cases the SEC has sought sanctions against companies for failing to comply with perquisite and other compensation disclosure requirements. In a prominent recent case, the Commission's staff in August 2004 recommended sanctioning Tyson Foods Inc. for not disclosing a wide range of perks, including air travel, obtained between 1997 and 2001 by former CEO Don Tyson. The company in 2005 settled the case without admitting or denying guilt by agreeing to pay $1.5 million and implement controls to ensure more accurate disclosure. See Solomon (2005). Even if Tyson Foods did not completely disclose perquisites, its executives still ranked among the most prolific personal aircraft users during this period in the sample for this paper.

my sample's data for personal aircraft use are much more in line with the frequency of 19% reported by Lublin (2005) for the year 2002. Data from Rajan and Wulf (2005) cannot be used to ascertain the frequency of the aircraft perk, because their study's survey source reports a combined measure of business plus personal plane use by executives.

Fig. 1 shows a sharp increase in the frequency of disclosed personal aircraft use for CEOs between 1992 and 2003; the figure extends one year before and one year after the ten-year sample period of 1993 to 2002 that is used in most of this paper. The incidence of this perk increases almost monotonically from 8.1% in 1992 to 35.3% in 2003. While Fig. 1 provides prima facie evidence of rising preferences for perk consumption by CEOs, several other factors probably also influence the data:

- *Time-sharing.* The rise of fractional aircraft ownership on a time-sharing basis occurred during the sample period, reducing dramatically the up-front costs of access to corporate jets. The lower cost for firms to provide the aircraft perk may have led to greater CEO consumption, even if underlying preferences did not change.
- *Better disclosure*. Pressures for more complete corporate disclosure increased during the sample period due to a high frequency of shareholder lawsuits, enactment of the Sarbanes-Oxley Act, the prosecution of Arthur Andersen, and related fallout from a

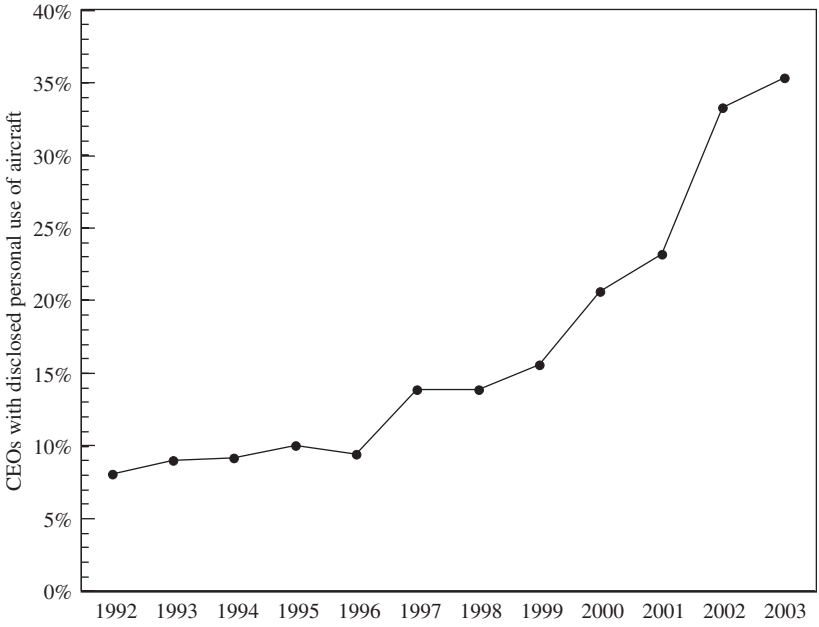


Fig. 1. Firms with personal use of corporate aircraft by CEOs: 1992–2003. Annual frequency of personal use of corporate aircraft use disclosed for CEOs in 237 *Fortune 500* companies between 1992 and 2003. Data comes from annual company proxy statements and is tabulated only for years in which companies were publicly traded. According to SEC rules, companies must report personal aircraft use if the company's incremental cost of an executive's total perquisites exceeds $50,000 and personal aircraft use represents more than 25% of the total. A small number of companies elect to report lesser-valued personal aircraft use whose disclosure is not mandatory, and their data is included in the figure. If the variable's definition were expanded to cover personal aircraft use by any company executive, it would be about three percentage points higher per year.

series of prominent corporate scandals beginning in 2000. Thus, greater compliance with disclosure rules, a possibility explored in some detail below, could explain the rising pattern of Fig. 1 even without an underlying change in CEO perk consumption.

- *Security.* The terrorist attacks of September 11, 2001, may have played a role in increased corporate aircraft use, at least at the tail-end of the sample period. Since that time commercial air travel has become more costly and less convenient, and some CEOs or their boards may perceive corporate jets as safer than commercial aircraft.[9] A handful of proxy statement disclosures, even some before the terrorist attacks, indicate that for security reasons, boards require their CEOs to use corporate aircraft for personal travel (these "requirements" are sometimes negotiated as part of CEOs' employment contracts). The sharp acceleration of CEO personal aircraft use from 2001 to 2002, and continuing growth between 2002 and 2003, seems consistent with the importance of the September 11, 2001 attacks in the overall growth of the aircraft perk.
- *CEO turnover.* Patterns of CEO turnover may help explain rising personal aircraft use, if newly hired CEOs negotiate contracts with lucrative fringe benefits and the rate of CEO replacements has increased in recent years. I conduct several tests to evaluate the importance of CEO turnover. If perk initiations are associated with CEO transitions, then a CEO's tenure in office when a firm awards personal aircraft use for the first time should be significantly lower than the tenure for CEOs overall. However, CEO tenure is virtually identical across these two groups. Further analysis indicates that personal aircraft use by new CEOs is highly correlated with whether the predecessor CEO had access to the same perk.
- *Sample selection.* Sample design may have some influence on the data. Membership in the 2002 *Fortune 500* is one criteria for inclusion, and the sample may reflect a "success bias" if firms on the 2002 *Fortune* list performed well prior to 2002. However, aircraft use data look extremely similar for the subset of firms that were listed in the *Fortune 500* at the beginning of the sample period and those that were not.

My data for CEO personal aircraft use differs greatly from the findings in a contemporaneous academic study of CEO perquisites by Rajan and Wulf (2005). Using a professional consulting firm's annual survey, these authors report an overall rate of CEO aircraft use of 66% in their 1987 to 1999 sample period, and they find a slight decline over time in the yearly frequency. While censoring of my data due to the SEC's disclosure limits may explain part of the disparity between my 16% sample frequency and their rate of 66%, the main difference appears to be consolidation of business and personal aircraft use into a single variable by Rajan and Wulf's data source (I do not tabulate business use of aircraft by CEOs because no public disclosures are made).[10] I cannot easily reconcile the rising annual frequencies in my Fig. 1 with Rajan and Wulf's data, which show a gradual decline in aircraft use during the 1990s. Some of the explanations above, such as sample selection bias or a tendency toward more transparent disclosure, could conceivably influence my data to trend upward even if actual perk consumption were declining.

[9]Such a perception would probably be misguided. Data tabulated by the National Business Aviation Association indicate that while the total accident rate per flight hour is comparable for corporate and commercial flights, corporate aviation has a much higher fatal accident rate. If the data were recalculated per passenger mile flown, they would skew more dramatically in favor of commercial aviation, since commercial aircraft carry more passengers and travel at greater speeds. See www.nbaa.org/basics/safety/background.htm and Carley (1997).

[10]Julie Wulf kindly investigated and discussed these data differences with me on several occasions.

Similarly, Rajan and Wulf may show a decline over time in total aircraft use simply due to falling business travel, even if personal travel is increasing. The termination of Rajan and Wulf's study before 2001 is clearly significant, since their data does not include the 2001–2003 period of rapidly increasing personal CEO aircraft use that I find in the aftermath of the September 11, 2001, terrorist attacks.

Table 2 indicates that the mean (median) cost to the company of CEO personal aircraft use, when disclosed, is slightly above $65,000 ($52,000). Each of these values is quite close to the SEC's $50,000 overall threshold for perk disclosure. The data provide some circumstantial evidence that CEOs may choose levels of personal aircraft use that enable them to remain slightly below the limit for disclosure in some years. To translate sample values into estimates of hours or distance flown, I rely on Maynard's (2001) data from Executive Jet Inc., the leading time-share company, which reports the hourly cost of leasing an eight-person Cessna Citation V aircraft as $10,000, or $2,500 per person if on average the CEO travels with three other passengers. A CEO with $65,000 in reportable aircraft use would therefore spend about 26 hours per year in the sky, enough for perhaps four round-trips between New York and Florida, for example.

While the rate of CEOs' disclosed personal aircraft use has approximately tripled over the past decade, it remains far below the level of corporate aircraft leasing and ownership indicated in Table 1 and related studies. The most straightforward explanation for this disparity would be that most firms restrict aircraft use to corporate business purposes and do not make planes available for personal travel. An alternate possibility would be that most corporate planes are partly used for personal travel, but executives have either ignored the SEC's reporting requirements or used aircraft infrequently enough to avoid the SEC's disclosure thresholds.

To evaluate whether firms have complied uniformly with the SEC's perk disclosure regulations, I study whether perk reporting patterns are associated with (i) the identity of companies' auditors, and/or (ii) shareholder litigation for securities fraud. If perks have been reported accurately, one would not expect associations between their disclosure and either of these variables. Alternatively, some accounting firms may measure perquisites more strictly than others, and lawsuits for securities fraud, which are based upon the veracity of a firm's SEC filings, may cause firms to take greater care in transparently reporting compensation, perks, and other data. Evidence tends to support the latter hypothesis and not the former.

Auditors do not appear to have any association with patterns of perk disclosure. Cross-sectionally, certain accounting firms' clients (especially those of KPMG) report perks with unusually high frequency. However, these differences appear to occur due to correlations of certain auditors' clients with industry and firm size variables; when auditor dummies are included alongside other explanatory variables in regressions for perk disclosure and perk cost in Section 4 below, their estimated coefficients are not significant and have very low $t$-statistics. There are 60 cases of auditor changes in the sample, according to Compustat data, 38 of which involve former Arthur Andersen clients finding new auditors in 2002 after the firm's Enron-related prosecution. Of these 60 cases, only three resulted in new perk disclosures, a pattern not out of line with the underlying time trend toward more reporting.

Shareholder litigation appears to have a more interesting connection with perk disclosures. I obtain data on class action lawsuits for securities fraud from the Stanford Law School database maintained by Prof. Joseph Grundfest. The database covers cases

filed since 1996, so I restrict my analysis to the final seven years of my sample, 1996 to 2002. During this period, 65 of my sample companies disclosed personal aircraft use by the CEO for the first time. Of these 65 firms, 10 (or 15.4%) were sued for securities fraud in the fiscal year just prior to the initial perk disclosure, and another four were sued in the year before that. In years subsequent to the first aircraft perk disclosure, the rate of litigation remains high: 9.8% are sued in the first year following disclosure, and an average of 7.6% per year in years two and beyond. In contrast, the annual rate of such litigation for sample companies that never report the CEO aircraft perk is 1.8% per year, significantly different than all of the above percentages at very low confidence levels. About 40% of the firms that disclose personal aircraft use by the CEO were sued for securities fraud at some point between 1996 and 2002, whether before or after the original perk report, at a rate about three times higher than the baseline lawsuit frequency of 1.8% per year multiplied by seven years. From these patterns, one could infer that some firms may award perks to their managers but not report them in the absence of outside pressure for full disclosure. The data are also consistent with agency-based theories of perquisites if one assumes that anti-shareholder behavior by top management might manifest itself both in high consumption of corporate resources and in misleading disclosures that are serious enough to provide a basis for litigation.

## 4. Determinants of CEOs' personal use of aircraft

This section presents regression analysis of the cost of CEOs' disclosed personal use of company aircraft. The main purpose of this analysis is to evaluate whether perquisite data conform to the Jensen and Meckling (1976) and Fama (1980) theories of perk consumption.

The Jensen-Meckling model predicts an inverse association between CEOs' perks and their fractional ownership. I therefore use percent ownership of the firm's equity (including vested options) as an explanatory variable in the regressions. Fama's theory of perk consumption implies a downward adjustment in compensation when perks are high. To evaluate this possibility, I first fit an ordinary least squares (OLS) regression model of expected compensation for each CEO-year observation. The regression's dependent variable is total compensation, which is equal to the sum of salary, bonus, restricted stock awards, and stock option awards. Option awards are valued using ExecuComp's Black and Scholes (1973) approach. Explanatory variables in the compensation regression include industry dummy variables, year dummy variables, firm size (the log of sales), the CEO's years of service, and abnormal stock performance (the firm's annual stock return minus the return on the relevant CRSP beta decile, both compounded continuously). I save the residuals from the estimation and include them in the perquisite regressions as a measure of abnormal or excess compensation. If the CEO's pay is adjusted downward when perk consumption is high, this variable should exhibit a negative coefficient estimate.

A range of variables might represent proxies for the strength of governance and shareholder monitoring that constrains CEO perk consumption. The regression models include five different measures of potential monitoring strength: the log of board size, the percentage of outside directors, the log of the number of analysts following the company (according to I/B/E/S earnings surveys), total ownership by institutional investors, and the IRRC governance index of takeover defenses.

CEO tastes and preferences should also affect perk consumption. I include in the regressions CEO age, tenure in office, and a dummy variable for membership in the company's founding family. These are all standard variables that many authors find have associations with patterns of ownership and compensation. I also include the long-distance golf dummy variable, which equals one if the CEO belongs to a golf club located in another state that would only be reasonably reachable by air travel.

Finally, the regression models include control variables for: company size, measured as the log of sales; leverage, measured as long-term debt over total assets; profitability, measured as return on assets (ROA) before interest, depreciation, and amortization; the market-to-book ratio, a measure of growth opportunities; and, a time trend, measured as the difference between the given year and 1992. Company size is used by Rajan and Wulf (2005) as one proxy for the extent to which perks might be used as indicators of status within an organization. Leverage might be important if it creates performance pressure that leads to agency cost reduction such as lower perk consumption by managers. Profitability or ROA could capture the extent to which perks are awarded under conditions of large free cash flow, as discussed in Jensen (1986).

Because many of the variables used in the regressions are somewhat co-linear, Table 3 presents a matrix of partial correlation coefficients to assist in interpreting the regression estimates presented below.

The CEO's use of company aircraft for personal travel arises as the result of two distinct decisions: (1) The board's choice to acquire an aircraft and make it available to the CEO, and (2) the CEO's decision about how much to use the plane, once it is made available. Without the board first leasing or buying a plane, naturally the CEO cannot use it for personal travel. I therefore estimate a two-step sample selection model. The first stage of the model is a binary probit estimation of whether the firm discloses any personal aircraft use for the CEO. The second stage, fit only over the subset of observations for which disclosure is made, is a least squares regression with the disclosed cost of aircraft use as the dependent variable.

Table 4 presents the regression coefficient estimates, with both steps of the estimation including all control variables discussed above as well as dummy variables for industries. Industry assignments follow Fama and French's (1993) grouping of SIC codes into 48 industry portfolios, returns for which are posted on Kenneth French's web site. The left column shows probit estimates for the first stage of the model, while the right column provides least squares estimates based upon the cost of personal air travel for those CEOs for whom it is disclosed.

The results in Table 4 provide no support for either the Jensen-Meckling or Fama theories of perquisite consumption. Estimates for the excess compensation residual are very close to zero for both dependent variables and have no statistical significance. The same is true if the raw value of CEO compensation is used instead. However, if the compensation variable is used alone in the regression with no other control variables except an intercept, its estimate is positive as expected, with a very high $t$-statistic in excess of 5.0. This suggests that while some empirical association does exist between high compensation and high perks, the association is influenced by interactions with other variables as well.

The CEO ownership variable's estimates in Table 4 are also insignificant. As a sensitivity check of these results I use an alternative piecewise ownership specification with two breakpoints, following Mørck et al. (1988) and other studies. I find insignificant ownership

Table 3
Correlation matrix of key variables

Partial correlations of key variables used in the analysis of CEO personal aircraft perquisites. Leverage equals long-term debt over total assets. Return on assets is based upon operating income before interest, depreciation, and amortization. Market-to-book ratio equals market value of equity plus book value of debt, divided by total assets. CEO compensation is the sum of salary, bonus, stock option awards, long-term incentive payouts, and restricted stock awards. The number of analysts equals the annual earnings estimates listed by the I/B/E/S database at the start of each year. Governance index is a count variable measuring takeover defenses and other anti-shareholder provisions. The long-distance CEO golf variable is an indicator that equals one if the CEO is a member of a golf club in another state that is not within driving distance of corporate headquarters, or is a member of Augusta National. All other variables are self-explanatory or defined more completely in Tables 1 and 2. The sample includes 2340 observations for 237 large firms between 1993 and 2002.

| | Return on assets | Leverage | Market-to-book | Outside directors (%) | Log of board size | CEO ownership (%) | Institutional ownership (%) | CEO compensation | CEO in founding family | CEO age | CEO tenure | Long-distance CEO golf | Coastal location | Tier I airport | Governance index | Log (analysts) | Time trend | CEO aircraft cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Firm size (log of sales) | −0.052** | 0.037* | −0.050** | 0.133*** | 0.332*** | −0.176*** | 0.004 | 0.218*** | −0.161*** | 0.069*** | −0.100*** | 0.225*** | 0.119*** | 0.068*** | −0.041** | 0.311*** | 0.314*** | 0.194*** |
| Return on assets | | −0.306*** | 0.591*** | −0.054*** | −0.153*** | −0.037* | 0.049** | −0.039* | −0.021 | −0.068** | −0.041** | −0.017 | −0.025 | 0.018 | 0.001 | 0.105*** | −0.090*** | −0.039* |
| Leverage | | | −0.303*** | 0.098*** | 0.149*** | −0.082*** | −0.042** | −0.020 | −0.115*** | 0.057*** | −0.045** | −0.005 | 0.028 | −0.001 | 0.097*** | −0.036* | 0.001 | 0.010 |
| Market-to-block | | | | −0.067** | −0.151*** | 0.023 | 0.012 | 0.094*** | 0.084*** | −0.129*** | 0.015 | −0.063*** | 0.089*** | 0.096*** | −0.097*** | 0.176*** | 0.037* | −0.030 |
| Outside directors (%) | | | | | 0.167** | −0.229*** | 0.127*** | 0.009 | −0.201*** | −0.051** | −0.118*** | 0.026 | −0.039** | −0.041** | 0.240*** | 0.151*** | 0.026 | 0.017 |
| Log of board size | | | | | | −0.289*** | −0.106*** | 0.050** | −0.252*** | 0.052** | −0.139*** | 0.114*** | −0.028 | 0.001 | 0.150*** | 0.285*** | -0.041** | 0.047** |
| CEO ownership (%) | | | | | | | −0.188*** | −0.024 | 0.553*** | 0.177*** | 0.413*** | 0.021 | 0.019 | 0.004 | −0.038* | −0.327*** | −0.061** | −0.006 |
| Institutional ownership (%) | | | | | | | | 0.011 | −0.114*** | −0.085*** | −0.002 | −0.064*** | −0.024 | 0.010 | −0.031 | −0.036* | 0.265*** | 0.062*** |
| CEO compensation | | | | | | | | | 0.005 | −0.024 | −0.015 | 0.059*** | 0.111*** | 0.085*** | −0.038* | 0.111*** | 0.179*** | 0.111*** |
| CEO in founding family | | | | | | | | | | 0.014 | 0.426*** | 0.063*** | 0.070*** | 0.071*** | −0.187*** | −0.161*** | −0.058*** | −0.020 |
| CEO age | | | | | | | | | | | 0.483*** | −0.018 | 0.003 | −0.012 | 0.006 | −0.071*** | −0.053*** | 0.044** |
| CEO tenure (years) | | | | | | | | | | | | 0.106*** | −0.042** | −0.026 | −0.107*** | −0.115*** | −0.087*** | 0.009 |
| Long-distance CEO golf | | | | | | | | | | | | | −0.065** | −0.068*** | 0.028 | 0.066*** | −0.047** | 0.187*** |
| Coastal location of headquarters | | | | | | | | | | | | | | 0.400*** | −0.149*** | 0.070*** | −0.008 | 0.038* |
| Tier I airport near headquarters | | | | | | | | | | | | | | | 0.050** | 0.154*** | 0.010 | −0.010 |
| Governance index | | | | | | | | | | | | | | | | 0.003 | 0.097*** | −0.096*** |
| Log (number of analysts) | | | | | | | | | | | | | | | | | −0.128*** | 0.024 |
| Time trend (year−1992) | | | | | | | | | | | | | | | | | | 0.155*** |

Significantly different from zero at 1% (***), 5% (**), and 10% (*) confidence levels.

Table 4
Sample selection estimates for CEO's personal aircraft use

Sample selection maximum likelihood estimates of the disclosed cost of CEO personal aircraft use. The sample consists of observations from a panel of 237 large firms between 1993 and 2002. Excess compensation is the residual from a regression of total CEO compensation (salary, bonus, option, and restricted stock awards) against abnormal stock return, firm size, years tenure in office, and industry and year dummy variables. Abnormal stock return equals the raw stock return minus the return on the relevant CRSP beta decile portfolio. Other variables are defined more completely in Table 1.

| | Probit estimates of indicator for disclosure | | Least squares estimates of disclosed cost ($000) | |
|---|---|---|---|---|
| | Estimate | *t*-Stat | Estimate | *t*-Stat |
| *Incentive variables* | | | | |
| CEO excess compensation $\times 10^{-3}$ | 0.018 | 0.92 | 0.2 | 0.97 |
| CEO fractional ownership | −0.931 | 0.46 | 234.3 | 1.20 |
| *Governance and monitoring variables* | | | | |
| IRRC governance index | −0.028 | −1.28 | −1.8 | −0.89 |
| Log (board size) | −0.328 | −1.46 | −23.2 | −1.31 |
| Fraction of outside directors | 0.218 | 0.44 | −8.6 | −0.22 |
| Institutional investor ownership (fraction) | 2.285 | 5.22*** | 178.3 | 3.94*** |
| Log (number of analysts) | 0.101 | 0.75 | 4.5 | 0.51 |
| *CEO characteristics variables* | | | | |
| Age | 0.024 | 2.34** | 2.0 | 2.22** |
| Years as CEO | −0.013 | −1.32 | −0.5 | 0.54 |
| Member of founding family | 0.189 | 0.90 | 2.8 | 0.14 |
| Long distance or Augusta National golf membership | 0.603 | 5.04*** | 43.4 | 3.52*** |
| *Travel related variables* | | | | |
| Tier I airport | 0.615 | 3.69*** | 55.9 | 3.73*** |
| Tier II airport | 0.955 | 4.73*** | 87.3 | 4.91*** |
| Coastal location | −0.135 | −1.10 | −14.4 | −1.37 |
| *Other control variables* | | | | |
| Company size (log of sales) | 0.329 | 4.61*** | 25.2 | 4.69*** |
| Leverage (long-term debt/total assets) | 0.210 | 0.90 | 27.0 | 0.99 |
| Return on assets | 0.281 | 0.25 | 134.9 | 1.43 |
| Market-to-book ratio | −0.010 | −0.23 | −5.4 | −2.17** |
| Time trend (year–1993) | 0.089 | 4.16*** | 6.4 | 3.76** |
| Industry dummy variables | Yes | | Yes | |
| Observations | 2,312 | | 354 | |
| Percent classified correctly | 86.2% | | | |
| Adjusted $R^2$ | | | 0.339 | |

Significant at 1% (***), 5% (**), and 10% (*) levels.

estimates over different ranges with no consistent pattern of sign reversals. However, the vast majority of CEOs in the sample have very low stock ownership, with 93% owning less than 5% of shares outstanding (including options) and 77% owning less than 1%. Any attempt to find an inverse association between ownership percentage and perk

consumption may have low power when nearly all of the ownership observations cluster just above zero. Probably the best evidence in support of the Jensen-Meckling view occurs in the top tail of the ownership distribution: among CEOs with greater than 15% ownership, accounting for 42 observations or 2% of the sample, only one CEO-year observation indicates personal use of a corporate aircraft. Below 15% ownership, the incidence of the aircraft perk is nearly uniform at different ownership levels.

Variables that measure governance and monitoring quality also have little success in explaining CEOs' patterns of aircraft use. For the five variables in this category tabulated in the two regressions of Table 4, only the institutional investor ownership variable has statistical significance. The positive estimates for this variable are somewhat surprising, since higher institutional ownership ordinarily would be interpreted as a pro-shareholder strengthening of a firm's ownership structure. The results may arise partly from the strong positive correlation between institutional ownership and the time trend variable, as shown in the correlation matrix in Table 3: as illustrated in Fig. 1 and confirmed by the regression estimates in the last row of Table 4, CEO personal aircraft use increased markedly over the sample period.

In contrast to the results for incentive and governance variables, CEO tastes and preferences have clear impacts upon patterns of corporate aircraft use, as shown by the statistically significant estimates for two of the four variables in this category. Older CEOs are more likely than younger CEOs to make personal use of company aircraft. This pattern may be due to the increasing frailty of CEOs as they age, or it may represent opportunism by CEOs who consume perks heavily near the end of their careers with reduced fears that ex post settling up wage revisions will permanently impact their compensation. Perhaps the strongest result in all of Table 4 is the impact of the long-distance golf indicator variable in the model for personal aircraft use. This variable, which equals one if the CEO belongs either to Augusta National or to a golf club not near headquarters, has significant estimates in both stages of the model, with large $t$-statistics. The incremental effect of the golf indicator variable as estimated in the right column, $43,400, is about two-thirds as large as the subsample average for all disclosed CEO aircraft use for nonzero observations, as shown in Table 2.

Finally, company size and the time trend variable each have positive and significant estimates for both models. The result for company size is consistent with the theory that large perks are used to indicate status in large organizations. It also may reflect the general tendency of all types of executive compensation to increase with firm size.

I verify that my main results are not sensitive to the estimation framework specification by fitting a variety of alternative regression models. These include ordinary least squares, OLS with both fixed effects and random effects, and Tobit models with and without fixed effects. Apart from minor differences in the sign and significance of certain control variables, the basic results are unchanged from those shown in Table 4. The estimates for the compensation and ownership variables are insignificant and close to zero in every model, and the significant association of aircraft use with CEO age and long-distance golfing persists across all models.

## 5. CEO aircraft use and company stock returns

This section studies the association between CEOs' personal use of company aircraft and firms' stock returns. Section 5.1 presents event study evidence of how stock prices react

when a CEO's aircraft use is first disclosed. Section 5.2 presents long-term stock return evidence about the performance of firms that permit personal CEO aircraft use. Section 5.3 contains sensitivity tests of the results in Section 5.2. Section 5.4 presents evidence about the accounting results of these firms.

### 5.1. Event study evidence

Proxy statements mailed to shareholders in advance of companies' annual meetings contain a wide range of information about compensation, voting rights, changes in boards of directors, shareholder resolutions, and other governance matters. Brickley (1986) finds that the typical proxy statement release leads to a mild positive rise in share prices, consistent with the hypothesis that managers strategically disclose favorable news in these documents.

I study whether stock prices react significantly when proxy statements report for the first time that a firm has awarded the corporate jet perk to its CEO. The motivation for the event study is threefold. First, a long line of executive compensation research studies proxy statement disclosures of changes in the details of managers' compensation, finding significant results for samples of new items including golden parachutes (Lambert and Larcker, 1985) management stock option plans (Brickley et al., 1985), and outside director stock option plans (Fich and Shivdasani, 2005). Second, the analysis above indicates that the CEO aircraft perk is unrelated to other aspects of compensation and ownership and therefore might represent pure waste. If shareholders adopt this view, they should rationally capitalize the net present value of the company's lifetime expected cost for owning and maintaining the CEO's plane and bid down stock prices accordingly. Third, evidence later in this paper shows that initiation of the corporate jet perk for a company's CEO foreshadows a decline in future stock performance as well as adverse accounting disclosures related to earnings and writeoffs. Whether this sequence of events represents a direct causation or is simply the outcome of a strategic pattern of disclosure remains an open question, however, the corporate jet variable appears to be a signal of future bad news and shareholders who understand this pattern should rationally react negatively to the disclosure of the jet perk.

Abnormal stock returns, presented in Table 5 and Fig. 2, are calculated using standard market-model methodology. The event date for the analysis is the day on which a proxy statement is posted on the SEC's EDGAR web site, where corporate filings are available for public inspection. A few firms file preliminary proxy statements several weeks in advance of their final filings; I use the posting dates for these preliminary documents if they occur. In my 1993 to 2002 sample of 237 firms, 104 companies disclose personal aircraft use at some point for either the CEO or another executive. Of this group, 19 made their first disclosure for the year 1992, which lies beyond my sample period because the relevant proxy statements are not available on the SEC's EDGAR web site (the proxies can be retrieved from Lexis/Nexis, but their date of posting on EDGAR is unclear). I focus on the remaining 85 companies and study the stock price reactions when the aircraft perk is first disclosed to shareholders.

Fig. 2 illustrates mean cumulative abnormal stock returns (CARs) for the sample of 85 firms beginning two weeks or ten trading days prior to the proxy statement posting date. I extend the graph until one week after the filing day because some firms may post their

Table 5
Abnormal stock returns for initial disclosures of managers' personal aircraft use

Mean cumulative abnormal stock returns for a sample of firms around the dates of proxy statement filings. The sample includes 85 firms that for the first time report personal use of company aircraft by the CEO or other executive. The observations are drawn from a data set of 237 large firms between 1993 and 2002. Abnormal stock returns are calculated using standard market model methodology. The event date, day 0, is the date on which the proxy statement is filed electronically with the SEC. Cumulative abnormal returns are calculated over the interval beginning four days prior to the event day and continuing until one day after. Panel A shows mean cumulative abnormal returns in this event window, for the entire sample and for subsamples based upon whether the aircraft disclosure represents the company's first reported executive perquisite. Panel B presents regression analysis of the CARs from Panel A, as a function of the CEO's excess compensation and fractional stock ownership. Excess compensation is the residual from a regression of total CEO compensation (salary, bonus, stock options, and restricted stock awards) against abnormal annual stock return, firm size, years tenure in office, and industry and year dummy variables.

*Panel A: mean cumulative abnormal returns*

| | Observations | Mean CAR | *t*-Statistic |
|---|---|---|---|
| All initial disclosures of personal aircraft use | 85 | −1.13% | −1.90* |
| Company's first disclosure of any perk | 54 | −1.65% | −2.55** |
| Preceded by disclosure of other perks | 31 | −0.23% | 0.22 |

*Panel B: OLS regression analysis of cumulative abnormal returns*

| | Estimate | *t*-Statistic |
|---|---|---|
| Intercept | −0.0091 | −1.36 |
| CEO excess compensation × $10^{-3}$ | −0.0010 | −2.40** |
| CEO fractional ownership | −0.2594 | −1.28 |
| Observations | 85 | |
| $R^2$ | 0.080 | |
| Adjusted $R^2$ | 0.058 | |

Significant at 1% (***), 5% (**), and 10% (*) levels.

documents after the market closes. For comparison purposes, the graph also includes a plot of the cumulative abnormal returns for all 2217 other observations for which I can identify proxy filing dates. The abnormal returns for this benchmark sample are weakly positive over the same interval, consistent with Brickley's (1986) study of a randomly chosen sample of proxy filings. In the aircraft subsample, stock prices exhibit essentially zero change until one week before the event day, at which point they begin to trend downward. It is possible that some firms begin printing and mailing hard copies of their proxies within the week prior to the document's posting at the SEC, accounting for the gradual one-week decline of the sample average CAR. As shown in Table 5, the mean CAR over the event window $[t_{-4}, t_{+1}]$ is −1.13 percent, with a *t*-statistic of 1.90, marginally significant at the 6% level.

A loss of 1.1% in market capitalization is worth about $75 million for the median firm in the sample, far in excess of the disclosed incremental cost to the company of a CEO's personal aircraft use. However, the incremental cost does not include amortization of the aircraft itself, and a top-of-the-line corporate jet can cost $35 million or more. If shareholders view the entire corporate aviation activity of a firm as a deadweight cost that yields no compensating benefits, and if one factors in additional costs for storage,

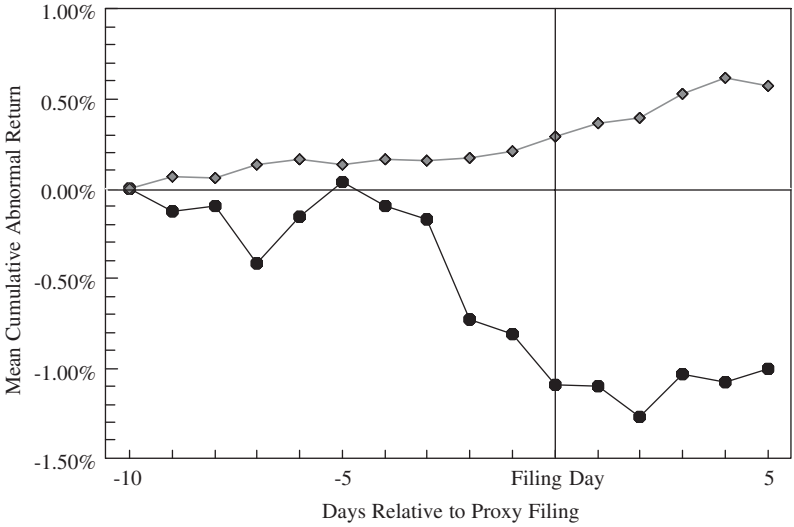


Fig. 2. Cumulative abnormal stock returns for initial disclosures of managers' personal aircraft use. Mean cumulative abnormal stock returns for a sample of firms around the dates of proxy statement filings. The darker line shows CARs for 85 firms that for the first time report personal use of company aircraft by the CEO or another company executive in proxy statements filed electronically with the SEC. The lighter line shows CARs for the remaining 2217 observations in the sample for which proxy statement filing dates could be identified. Observations are drawn from a data set of 237 large firms between 1993 and 2002. Abnormal stock returns are calculated using standard market model methodology.

maintenance, fuel, and operation of the plane, then the dollar loss in shareholder wealth could approximate the true present value cost to the firm of acquiring and making an aircraft available to the CEO for both business and personal travel.

The CAR results indicate that shareholders do not welcome the news that firms permit CEOs to use corporate aircraft for personal travel. Table 5 includes two decompositions of the results. In Panel A, the result for the overall sample of 85 firms is divided into two segments: 54 firms for which the aircraft disclosure was the first executive perk ever disclosed to shareholders, and the remaining 31 firms, all of which had previously disclosed other perks such as company cars or country club memberships. Though the difference is not statistically significant, the CARs are much greater in magnitude for the subsample that had not previously disclosed any perks, consistent with an interpretation that earlier perk disclosures by a company signal a probability of future personal aircraft use. Abnormal returns for the earlier, initial disclosures of other types of perks by the 31 firms are not significantly different from zero, however.

Panel B in the lower half of Table 5 presents a simple regression analysis that shows an association between stock price reactions and the compensation and ownership levels for each CEO. I regress the CAR for $[t_{-4}, t_{+1}]$ against an intercept, the excess compensation residual described above in Section 4, and the CEO's percentage stock ownership. A significantly negative estimate emerges for the compensation variable, indicating that shareholder reactions to CEO corporate jet use are mitigated if the CEO earns lower compensation. This pattern is consistent with the Fama (1980) perspective that perks are benign if offset by reductions in other forms of compensation.

### 5.2. Long-term stock performance: basic result

I use the standard Fama and French (1993) three-factor analysis of annual stock returns to assess the ongoing market performance of firms that permit their CEOs to have personal use of corporate aircraft. Results for the analysis appear in Table 6, with the basic Fama-French model in the left column.

Coefficient estimates for a dummy variable for personal aircraft use appear in the last row of the table. These coefficients represent the differential annual returns to stockholders of firms that permit CEOs to use corporate aircraft for personal travel. Other explanatory variables in the regression include an intercept, the return on the CRSP value-weighted market index, differential returns on portfolios of growth stocks compared to value stocks, and the differential returns on portfolios of small capitalization stocks compared to large cap stocks. Data for these market factors are obtained from Kenneth French's web site. The risk-free rate is subtracted from both the dependent variable and the market index.

Table 6 reports Beck and Katz (1995) panel corrected standard errors, which take into account heteroskedasticity and clustering, i.e. cross-correlations between firms. Because

Table 6
Regression estimates of stock performance as a function of executives' personal aircraft use

Ordinary least squares regressions of companies' annual stock returns. The sample includes 220 large firms between 1993 and 2002. The dependent variable is the raw stock return minus the risk-free rate. The principal explanatory variable is an indicator for whether the company makes aircraft available for personal use by the CEO and discloses this benefit in the proxy statement filed after the end of the fiscal year. Other explanatory variables include the Fama and French (1993) factors for the excess return on the stock market (value-weighted), the excess return for value stocks compared to growth stocks, and the excess return for small stocks compared to large stocks, the Carhart (1997) factor for the excess return of rising stocks compared to falling stocks, the Gompers et al. (2003) governance index, and a dummy variable for firms that were in the *Fortune 500* in both 1996 and 2002. All returns and factors are compounded continuously. *t*-statistics appear below each estimate in parentheses, based upon standard errors robust to heteroskedasticity and cross-firm correlations.

| | Estimate | Estimate | Estimate | Estimate | Estimate |
|---|---|---|---|---|---|
| Intercept | −0.0088 | 0.0242 | 0.0285 | 0.0320 | 0.0944* |
| | (0.39) | (0.94) | (0.84) | (1.28) | (1.93) |
| Market | 0.7990** | 0.8119** | 0.7947** | 0.8010** | 0.8104** |
| excess return | (6.45) | (7.22) | (6.45) | (6.47) | (7.25) |
| Value–growth | 0.5296** | 0.5539** | 0.5301** | 0.5328** | 0.5575** |
| excess return | (2.84) | (3.45) | (2.86) | (2.86) | (3.51) |
| Small–large | −0.0910 | −0.2018 | −0.0920 | −0.0922 | −0.2038 |
| excess return | (0.49) | (1.21) | (0.50) | (0.50) | (1.25) |
| Up–down | | −0.2945** | | | −0.2946** |
| excess return | | (2.27) | | | (2.29) |
| Governance index | | | −0.0038 | | −0.0031 |
| | | | (1.23) | | (1.05) |
| Indicator for 1996 *Fortune* 500 firms | | | | −0.0512* | −0.0501* |
| | | | | (1.89) | (1.93) |
| CEO personal use of | −0.0435** | −0.0378** | −0.0456** | −0.0400** | −0.0361** |
| company plane | (2.36) | (2.10) | (2.46) | (2.14) | (1.98) |
| Observations | 2220 | 2220 | 2220 | 2220 | 2220 |
| $R^2$ | 0.132 | 0.140 | 0.132 | 0.135 | 0.145 |
| Adjusted $R^2$ | 0.130 | 0.139 | 0.130 | 0.133 | 0.142 |

Significant at 1% (***), 5% (**), and 10% (*) levels.

the standard error calculations require a balanced panel, I base the calculations on the 220 firms (out of 237 sample firms) that have ten full years of trading data available. This subsampling entails that I discard 136 observations, about 6% of the total, but basic OLS regressions show that coefficient estimates and standard errors for the full unbalanced panel exhibit almost no difference compared to estimates for the balanced subsample.

In the left column of Table 6, the aircraft dummy variable has a coefficient of −4.35 percentage points with a $t$-statistic significant at levels below 5%. This result indicates that firms with CEO aircraft use underperform the market by more than 400 basis points per year, equal to a shortfall of about $300 million in market capitalization each year for the median sample firm.

Fig. 3 indicates abnormal stock returns for companies before and after the year for which personal CEO aircraft use is initially disclosed. The figure shows that firms adopting a policy that permits CEO aircraft use perform well prior to obtaining this perk, and exceptionally well in the year just before the perk is granted (year $t-1$ on the graph), with abnormal stock performance of almost +5%. These data suggest that perhaps the aircraft use is provided as a reward to the managers of strongly performing firms. In the first year in which CEOs are permitted to use aircraft for personal travel (year 0), company performance plummets to an abnormal return of nearly −9%. Performance improves somewhat but remains poor in all subsequent years, in the neighborhood of −3% to −4%.

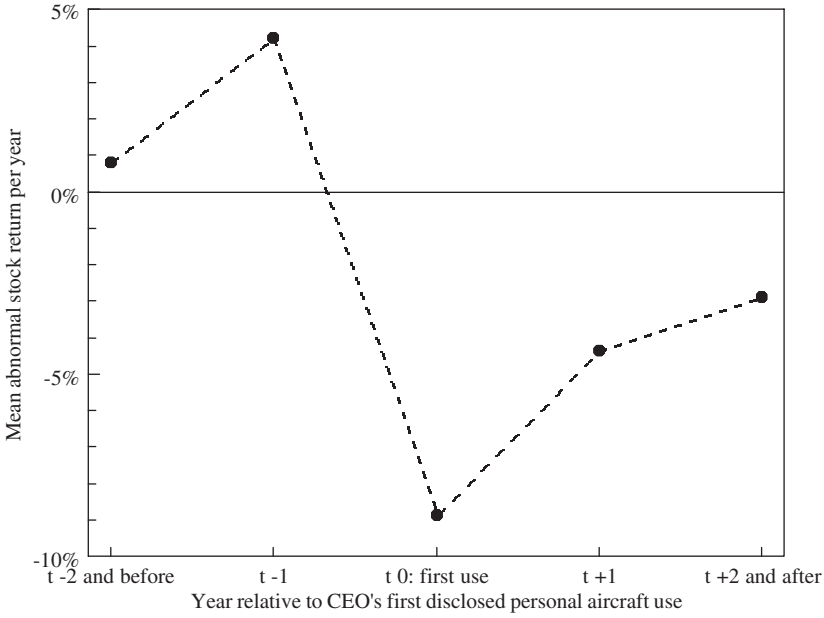


Fig. 3. Abnormal stock returns of companies and CEOs' personal aircraft use. Annual abnormal stock returns for firms that permit personal use of company aircraft by the CEO, in a sample of 237 large companies between 1993 and 2002. Abnormal stock returns are measured as coefficient estimates for dummy variables in Fama and French (1993) regressions identical to the left column of Table 6. The dotted line shows mean abnormal returns for 76 companies that begin permitting personal use of aircraft during the sample period, with data tabulated for different periods relative to the first year of disclosed use.

### 5.3. Long-term stock performance: sensitivity tests

#### 5.3.1. Additional controls

In the other columns of Table 6, I add to the model explanatory variables that might be correlated with the aircraft variable. In the second column, I introduce Carhart's (1997) momentum factor, representing the differential return on portfolios of rising stocks and falling stocks. In the third column, I add the Gompers et al. (2003) governance index, as reported by the IRRC. If CEO perk consumption arises as a consequence of weak corporate governance, the aircraft variable might merely be a proxy for broader governance problems in the firm. In the fourth column, I add a dummy variable for firms that were members of the *Fortune 500* in 1996 as well as in 2002. This variable represents a control for sample selection bias related to success; those firms that joined the *Fortune 500* at some point after 1996 must have performed well in the late 1990s in order to grow large enough to enter the index. In the final column, I include all three additional control variables at once.

The impact of the additional control variables, either individually or together, is negligible, as aircraft firms continue to exhibit underperformance on the order of 400 basis points with high levels of significance. Two of the three controls have statistical significance, though together they increase the model's adjusted $R^2$ only from 0.130 to 0.142. The governance index has a negative estimate, as expected, indicating lower returns for firms with takeover defenses and anti-shareholder bylaws or charter provisions in line with the findings of Gompers et al. (2003); however, its estimate is not significant. The dummy variable for older *Fortune 500* firms also has a negative estimate as expected, indicating that sample firms that joined the *Fortune 500* after 1996 were superior market performers compared to firms that remained in the index for the entire period.

#### 5.3.2. Alternate variable definitions and estimation methods

Table 7 presents results from robustness tests to verify the persistence of the negative estimates for the CEO aircraft use variable across a range of alternate specifications. Each additional cell of the table contains the coefficient estimate and $t$-statistic for the aircraft variable from a different estimation.

The four rows of the table provide estimates based upon different measures of the overall market return. Estimates in the second row use the equal-weighted market return in place of the value-weighted market return, with the remaining Fama-French controls retained as in the left column of Table 6. In the third and fourth rows, value-weighted and equal-weighted industry-specific indexes are used in place of market-wide indexes, with industry assignments and returns obtained from French's web site.

The table is divided into two vertical sections based upon different definitions of the CEO personal aircraft use variable. The first three columns of the table use an indicator variable that equals one if personal aircraft use is disclosed for the CEO for that year. In the second three columns, the definition of the aircraft indicator is expanded to take into account possible censoring of perquisite data below certain monetary thresholds. In these columns, I code as equal to one all observations for a company following the first annual disclosure of personal aircraft use by the CEO, thereby raising the sample average for the aircraft use variable from 15.9% to 21.4%.

Three different estimation procedures are used for each of the eight possible combinations of the various aircraft and market return variables. Columns labeled

Table 7
Coefficient estimates for aircraft use variable under alternative models

Alternate specifications of regression models of companies' annual stock returns as a function of executives' personal use of corporate aircraft. The table shows the estimated coefficient and *t*-statistic for the aircraft use indicator in 24 different models, with four different specifications of the market index variable, two different definitions of the CEO aircraft use variable, and three different estimation methods. The top rows of the table describe criteria for the aircraft use indicator variable, the mean value of which is shown in the bottom row. All regressions include the same Fama and French (1993) factors used in the left column of Table 6, except for the alternate definitions of the market index variable. Industry excess returns are based on industry portfolios tabulated by Fama and French. Columns labeled "Fama-French Panel" represent panel data estimates using the same approach as in Table 6. Columns labeled "Fama-French Annual" are estimates based on ten annual regressions for each model, with estimates and *t*-statistics calculated according to Fama and MacBeth (1973) methods. Columns labeled "Fama-French Alpha" show the difference in intercept estimates for regressions in subsamples partitioned according to the value of the aircraft use variable. The Fama-French panel estimates use the balanced panel of 2200 observations, while the other two models use the full sample of 2236 observations.

Dependent variable:
Disclosed personal use of corporate aircraft by CEO

| | Disclosed for current year | | | Disclosed for current or any prior year | | |
|---|---|---|---|---|---|---|
| | Fama-French Panel | Fama-French Annual | Fama-French Alpha | Fama-French Panel | Fama-French Annual | Fama-French Alpha |
| Market index: | | | | | | |
| Market return, value-weighted | −0.0435 (2.36) | −0.0275 (1.80) | −0.0424 (1.64) | −0.0327 (2.03) | −0.0278 (2.17) | −0.0435 (1.89) |
| Market return, equal-weighted | −0.0537 (2.75) | −0.0267 (1.77) | −0.0560 (1.97) | −0.0445 (2.44) | −0.0262 (2.13) | −0.0588 (2.32) |
| Industry return, value-weighted | −0.0360 (2.18) | −0.0290 (1.82) | −0.0399 (1.86) | −0.0240 (1.68) | −0.0251 (1.55) | −0.0335 (1.79) |
| Industry return, equal-weighted | −0.0548 (2.91) | −0.0317 (2.00) | −0.0700 (3.03) | −0.0410 (2.52) | −0.0267 (1.89) | −0.0631 (3.18) |
| Mean of aircraft variable | | 0.159 | | | 0.214 | |

"Fama-French panel" contain estimates produced by the same methods used in Table 6. Columns labeled "Fama-French Annual" use the same variables in annual regressions for each of the ten years of the sample period, with the coefficient estimates and *t*-statistics aggregated by the Fama-MacBeth approach. Columns labeled "Fama-French Alpha" represent the difference in intercept terms estimated by regressions in the subsamples for which the aircraft variable takes the values zero and one (this approach is used by Gompers et al. (2003) in their study of the effect of anti-takeover provisions upon a firm's stock performance).

The main conclusions of the paper are little affected by this range of alternative models. Estimated coefficients for the aircraft variable in Table 7 are uniformly negative, ranging from −0.0240 to −0.0700, with most of the estimates clustered near 400 basis points (the mean value of the 24 estimates is −0.0399). Twenty-three of the 24 estimates are statistically significant at the 10% level or better, and the other just misses. Annual year-by-year estimates are slightly lower in magnitude than estimates from the other two methods.

In further untabulated analysis, I estimate weighted least squares regressions of the same models in Table 6, using market capitalization at the start of the year as the weight. Coefficient estimates are even more negative for these weighted least squares estimates than for the equal-weighted OLS models. I also examine whether results are sensitive to replacing the dummy variable for CEO personal aircraft use with a continuous variable. If the natural log of the dollar value of aircraft use is substituted for the dummy variable (with zero-valued observations set equal to zero), it has a negative coefficient estimate that is statistically significant. Using a linear rather than a logged measure of personal aircraft use yields a negative but insignificant estimate, though a model with both linear and squared terms indicates a negative and significant relation between aircraft use and stock returns up to a level of about $200,000 annually, but a positive and significant relation thereafter (only a small handful of sample firms report values this high). Finally, I repeat many of these regressions with the aircraft variable defined somewhat more broadly, based upon both (i) personal use of company planes by any top-five officer listed in the proxy statement, i.e., not only the CEO, and (ii) personal use by the CEO or any officer in any prior year, even if zero use is disclosed for the current year. The rationale for either of these definitions would be rooted in the possibility of the CEO continuing to use corporate aircraft in these years but not exceeding the SEC's disclosure thresholds. Results change little when either alternate definition is used.

#### 5.3.3. *Corporate aircraft not available for perquisite use*

It is possible that the results in Tables 6 and 7 may not be due to management patterns associated with executives' perquisite consumption. Instead, factors associated with the possession of corporate aircraft (whether through lease or ownership), such as firm size or industry, may have had systematic associations with company performance during the sample period. This conjecture seems somewhat unlikely to affect the overall results, however, due to the very high propensity of the sample firms to operate their own aircraft (see the 77.7% mean in Table 1). To verify this possibility I reestimate the regression from the left column of Table 6 and include an indicator variable for firms that are aircraft operators but that have never disclosed personal use by the CEO or another executive. The coefficient estimate for this variable is positive and insignificant, while the dummy variable for companies permitting personal use of planes by CEOs becomes slightly more negative and remains statistically significant.

#### 5.3.4. *Possible reverse causation*

Table 6 indicates an association between disclosed CEO leisure travel on corporate jets and poor employer stock performance. While most of this paper focuses on hypotheses related to shirking, poor governance, or unethical conduct by the CEO, it is possible that the relation operates in the reverse direction. Specifically, CEOs who work extremely hard when trying to turn around poorly performing companies may be awarded extra perks by their boards in order to ease the burden of long hours, extra travel, separation from their families, and so forth. However, Fig. 3 suggests that this explanation does not hold for most companies since the initiation of the aircraft perquisite typically follows strong company performance. I find further evidence against this possibility by introducing into the basic regression of Table 6 the long-distance golf dummy variable introduced earlier in the paper: CEOs who travel great distances to play golf probably fall outside the group of those who work extra-long hours in a turnaround situation. When the long-distance golf

variable is interacted with the indicator for CEO personal aircraft use, the interaction term has an insignificant estimate close to zero while the other variables' estimates change little (the result is not tabulated in order to save space).

### 5.4. Operating performance

Results above highlight the underperformance in the stock market of firms that disclose permitting their CEOs to use company aircraft for personal travel. Given that these performance shortfalls equal hundreds of millions of dollars per company per year, it would be difficult to argue that the direct costs of perk consumption alone could explain the gap. Instead, one would expect to observe company operating performance deteriorating after the award of large perks, perhaps because of declines in managerial effort or worker morale.

I study firms' operating return on assets, measured as earnings before interest, depreciation, and amortization divided by total assets at the start of the year. The raw data indicate that firms' ROA declines after the CEO aircraft perk is first awarded. However, further study indicates that this pattern is related to a time trend of decreasing corporate profits as the U.S. slid into a recession in 2000. A regression of ROA against the aircraft perquisite dummy and dummy variables for industries and years indicates no significant association between perks and operating performance (results not tabulated to save space). I find that certain cost ratios do exhibit significant relations with the aircraft perk, but not in any consistent pattern.

Further analysis indicates that, notwithstanding the absence of a meaningful change in operating performance, firms more frequently report quarterly earnings per share below expectation after the first award of the CEO aircraft perk. Fig. 4, Panel A, illustrates the frequency of positive and negative quarterly earnings "surprises" in a time series centered around the first year for which the aircraft perk is disclosed. I define an earnings surprise based upon the I/B/E/S database of analyst EPS forecasts; if a firm's reported earnings are more than 25% above or below the I/B/E/S mean forecast immediately before the earnings are announced, I count the event as either a positive or negative surprise, respectively (I drop observations with I/B/E/S forecasts of zero or negative EPS). Data in Fig. 4 show that, according to this definition, firms report positive quarterly earnings surprises about 7% of the time, a frequency that appears completely unrelated to the aircraft perk. Negative surprises, however, exhibit a clear association with the disclosure of the aircraft perk. The rate of negative earnings surprises is about 3% in the year prior to the first personal aircraft use by the CEO, and the frequency approximately doubles to 6% in the first year (labeled $t0$ on the graph) and rises further to 9% in the following year (labeled $t1$) before stabilizing at about 6% for all subsequent years (labeled $t2+$). All of these post-aircraft frequencies are significantly higher than the pre-aircraft rate.

Panel B of Fig. 4 illustrates a similar pattern for extraordinary accounting items in year-end financial statements. Negative extraordinary items, or writeoffs, are much more common beginning with the year in which the aircraft perk is awarded to CEOs, and they trend still higher thereafter: the differences in frequencies before and after the aircraft perk is statistically significant. These writeoffs reflect greater incidences of events such as plant closures, divestitures, inventory writedowns, or acquisition revaluations.

Evidence in both panels of Fig. 4 is consistent with theories that firm performance deteriorates after a CEO receives lavish perks, but the data also seem to support theories of

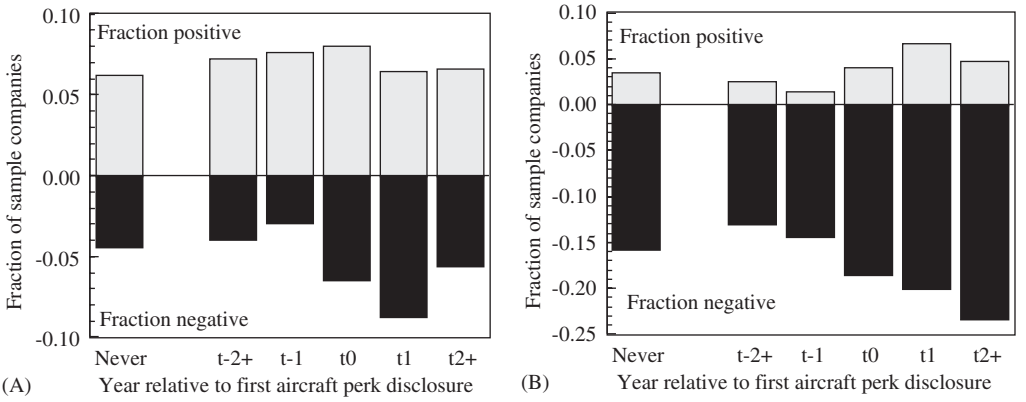


Fig. 4. Earnings announcements and accounting charges in years around aircraft perk disclosure. Panel A shows the frequency of positive and negative earnings per share "surprises" in relation to the year in which a CEO's personal aircraft use is first disclosed. Data are based upon quarterly EPS announcements compared to the mean analyst forecast in the I/B/E/S database for the final reporting period before each earnings announcement. A positive or negative surprise is defined as actual EPS that is 25% above or below the I/B/E/S forecast, respectively. Panel B shows the frequency of positive and negative extraordinary accounting items as reported by Compustat for annual financial results. In both panels, year $t0$ represents the year for which a company first discloses personal aircraft use by the CEO. Years $t-1$ and $t1$ are the years immediately before and after $t0$. Years $t-2+$ refer to the average for all other years before the perk is awarded, while years $t2+$ are all other years following the award. The bars labeled "Never" show mean values for all sample companies that never disclose the CEO aircraft perk.

strategic or preemptive disclosure by managers. Both panels seem to indicate that managers withhold bad news from the marketplace and create an illusion of stronger performance in the years before they receive personal access to company planes. After this perk is secured, the flow of news to shareholders and analysts becomes less favorable than before, even though underlying operating cash flows do not change. A related possibility is that managers are aware of future adverse disclosures to the marketplace, and they begin to make more complete disclosures of their personal benefits as a defensive move in contemplation of possible future litigation for securities fraud. Data reported above showing a rising incidence of these lawsuits around the time of initial aircraft disclosures is consistent with such an interpretation.

## 6. Conclusions

This paper studies perquisite consumption by CEOs in major companies, focusing on personal use of company aircraft, the most costly and most frequently disclosed managerial fringe benefit. The data indicate that more than 30% of *Fortune 500* CEOs in 2002 were permitted to use company planes for personal travel, up from a frequency below 10% a decade earlier.

The most striking results in the paper concern the association between CEO perk consumption and company performance. When personal aircraft use by CEOs is first disclosed to shareholders, company stock prices drop by about 1.1%. However, this value loss does not fully anticipate the future poor performance of such companies. Regression

analysis indicates that firms permitting CEO aircraft use underperform market benchmarks by about 400 basis points per year, a severe shortfall that cannot be explained simply by the costs of the resources consumed.

Regression models of CEO personal aircraft do not show significant associations with compensation, ownership, or monitoring variables as predicted by theory. However, variables that measure personal characteristics of CEOs have marked associations with perk consumption. Especially strong associations appear to exist between personal aircraft use and a CEO's golfing activity, as an indicator variable for long-distance golf club memberships has both strong magnitude and significance.

While all of the paper's analysis is based upon companies' disclosures of the CEO aircraft perk in annual proxy statements, vagueness and loopholes in the disclosure regulations mean that the data is not comprehensive; indeed, disclosure represents, to at least a certain extent, a choice variable for some firms. I find that disclosure is much higher for firms that are targets of shareholder lawsuits for securities fraud, and that disclosure increases in 2001 and 2002, around the time of the Sarbanes-Oxley Act and other regulatory measures that seek to increase the transparency of firms' SEC filings. These patterns suggest that the rising trend in aircraft perk disclosure over the sample period resulted at least partly from more accurate compliance with the SEC's reporting regulations. After the aircraft perk is first disclosed, firms release greater rates of bad news to shareholders in the form of writeoffs and negative earnings surprises. These patterns are consistent with a hypothesis of strategic disclosure behavior, whereby managers minimize the bad news flowing to the market until after they have secured access to desirable fringe benefits.

## References

Beck, N., Katz, J., 1995. What to do (and not to do) with time-series-cross-section data in comparative politics. American Political Science Review 89, 634–647.

Black, F., Scholes, M., 1973. The pricing of options and corporate liabilities. Journal of Political Economy 81, 637–654.

Borokhovich, K., Brunarski, K., Parrino, R., 1997. CEO contracting and antitakeover amendments. Journal of Finance 52, 1495–1517.

Brickley, J., 1986. Interpreting common stock returns around proxy statement disclosures and annual shareholder meetings. Journal of Financial and Quantitative Analysis 21, 343–349.

Brickley, J., Bhagat, S., Lease, R., 1985. The impact of long-range managerial compensation plans on shareholder wealth. Journal of Accounting and Economics 7, 115–129.

Burrough, B., Helyar, J., 1990. Barbarians at the Gate. Harper & Row, New York.

Carhart, M., 1997. On persistence in mutual fund performance. Journal of Finance 52, 57–82.

Carley, W., 1997. Despite a safe record, corporate jets have higher fatality rates. The Wall Street Journal, April 18, A1.

Core, J., Guay, W., 1999. The use of equity grants to manage optimal equity incentive levels. Journal of Accounting and Economics 28, 151–184.

Fama, E., 1980. Agency problems and the theory of the firm. Journal of Political Economy 88, 288–307.

Fama, E., French, K., 1993. Common risk factors in the returns on stocks and bonds. Journal of Financial Economics 33, 3–56.

Fama, E., MacBeth, J., 1973. Risk, return, and equilibrium: empirical tests. Journal of Political Economy 81, 607–636.

Fich, E., Shivdasani, A., 2005. The impact of stock-option compensation for outside directors on firm value. Journal of Business, forthcoming.

Gompers, P., Ishii, J., Metrick, A., 2003. Corporate governance and equity prices. Quarterly Journal of Economics 118, 107–155.

Hall, B., Liebman, J., 1998. Are CEOs really paid like bureaucrats? Quarterly Journal of Economics 93, 653–691.
Hersch, P., McDougall, G., 1992. Separation of ownership from control and the demand for corporate aircraft. Journal of Economics and Business 44, 223–236.
Jensen, M., 1986. Agency costs of free cash flow, corporate finance, and takeovers. American Economic Review 76, 323–329.
Jensen, M., Meckling, W., 1976. Theory of the firm: managerial behavior, agency costs, and ownership structure. Journal of Financial Economics 3, 360–395.
Lambert, R., Larcker, D., 1985. Golden parachutes, executive decision-making, and shareholder wealth. Journal of Accounting and Economics 7, 179–203.
Lublin, J., 2005. The view from the top. The Wall Street Journal, January 24, R6.
Maremont, M., 2005. Amid crackdown, the jet perk suddenly looks a lot pricier. The Wall Street Journal, May 25, A1.
Maynard, M., 2001. Corporate planes: Perks or necessities? The New York Times, September 23, 3:6.
Minow, N., 2001. The use of company aircraft, unpublished manuscript, www.thecorporatelibrary.com/special/misc/aircraft.html.
Mørck, R., Shleifer, A., Vishny, R., 1988. Management ownership and market valuation: an empirical analysis. Journal of Financial Economics 20, 293–315.
Persons, J., 1994. Renegotiation and the impossibility of optimal investment. Review of Financial Studies 7, 419–449.
Rajan, R., Wulf, J., 2005. Are perks purely managerial excess? Journal of Financial Economics, forthcoming.
Solomon, D., 2005. In SEC complaint, tale of chicken mogul feathering his nest. The Wall Street Journal, April 29, A1.