# Flights of Fancy:

# Corporate Jets, CEO Perquisites, and Inferior Shareholder Returns

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September 2004

**Abstract**

This paper studies perquisites of major company 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 percent 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 percent. 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.

I thank Yakov Amihud, Eliezer Fich, Stuart Gillan, William Greene, Andrew Karolyi, Eli Ofek, Darius Palia, Charu Raheja, Robert Whitelaw, Julie Wulf, Jeffrey Wurgler, and seminar participants at the Duke-North Carolina Corporate Finance conference, the Federal Reserve Bank of New York, the NBER Summer Institute Corporate Governance meeting, New York University, and Vanderbilt University for helpful comments and data assistance.

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## I. Introduction

This paper studies perquisite consumption by executives of major corporations, with a focus on CEOs' personal use of company aircraft. Perks have long been identified as a source of agency costs between shareholders and managers (Jensen and Meckling, 1976), and corporate jets regularly inspire criticisms of managerial excess by journalists and shareholder activists.[1] Data presented below indicate that personal aircraft use represents by far the most costly fringe benefit enjoyed by major company CEOs.

The central result of this study is that CEOs' personal use of company aircraft is associated with severe and significant under-performance of their employers' stocks. Firms that

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[1] The classic example is Burrough and Helyar's (1990) account of management perks at RJR-Nabisco, which before its 1991 leveraged buyout maintained an "RJR Air Force" of 10 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).

Former Occidental Petroleum CEO Armand Hammer attracted attention for his frequent personal use of the company's *Oxy One* aircraft, flying the plane in and out of the former Soviet Union on numerous personal, charitable and political trips.

In the 2004 Adelphia Communications 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 planes available to Australian actress-model Peta Wilson in a futile attempt to "impress" her. Wilson, who played a *femme fatale* assassin in a popular TV series, testified at the trial that she traveled approximately nine times on Adelphia aircraft to destinations such as Jamaica but did not have a romantic relationship with the younger Rigas.

A representative example of a shareholder activist's critique of CEOs' corporate jet use appears in Minow (2001).

permit personal aircraft use by the CEO under-perform market benchmarks by about 4 percent 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 find that shareholders react negatively when firms first disclose that their CEO has been awarded the aircraft perk, as stock prices fall by an abnormal 1.1 percent 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 by which such companies' stocks will on average under-perform the market in the future.

The inverse relation between CEO aircraft use and company performance appears much larger than could be explained by the direct cost of the resources consumed. One might conjecture that CEOs who consume excessive perks may be less likely to work hard, less protective of the company's assets, or more likely to tolerate bloated or inefficient cost structures. Some regression evidence, presented at the end of the paper, supports this last possibility. High executive perks might also represent a symptom of weak corporate governance, which in turn could cause firms to perform poorly over time.

To understand more clearly the role of perquisites in managerial compensation, the paper presents regression models that show associations between CEO aircraft use and a range of variables measuring corporate attributes and personal CEO characteristics. The results exhibit only weak consistency with the leading financial theories of management perquisites, which appear in classic studies of organizational structure by Jensen and Meckling (1976) and Fama

(1980).[2]

Jensen and Meckling (1976) use perquisite consumption by managers as the basis for their formal 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 expend 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," the authors write (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 a dynamic of "ex post settling up," in which the manager's wage is regularly revised to account for his performance and his personal consumption of company resources. Fama's model implies that perk consumption represents an agency cost only to the

[2] A branch of the Management literature also analyzes perquisites as motivational tools, based upon their function as indicators of status within a firm. Rajan and Wulf (2004) test several empirical implications of this theory, using data that measures the depth and breadth of a firm's organizational structure.

[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.

extent that its value exceeds the subsequent penalties to the manager from ex post settling up wage discounts. Fama's theory, then, 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 will affect managers' perquisites.

My regression analysis provides only modest support for either the Jensen-Meckling or Fama theories of perk consumption. In certain regression models, I find a negative association between CEOs' personal aircraft use and their level of abnormal compensation, measured as the residual from a typical compensation regression model. While this finding is consistent with Fama's ex post settling up perspective, its magnitude is quite small and it does not have statistical significance. A CEO who consumes an extra $1,000 in perks, according to the model's estimates, will see his other compensation fall by about 8 cents. For the CEO's fractional stock ownership, I find a positive association with personal aircraft use. This result is inconsistent with the predictions of the Jensen-Meckling model, but it is not significant and its magnitude is again small. A test of the joint importance of both the compensation and ownership variables also indicates no statistical significance. I obtain virtually identical results for a regression analysis that uses all other perk consumption as the dependent variable.

Further regression results indicate that CEOs' personal characteristics such as age, education and political affiliation have significant explanatory power for patterns of personal corporate jet use and other perk consumption. The CEO's golfing habits have 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 significantly.

The remainder of the paper is organized as follows. Section II presents a description of the data. Section III contains a regression analysis of patterns of CEO's personal aircraft use. Section IV 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 V briefly compares the study's results for aircraft use and other perquisites. Section VI concludes.

## II. **Data description**

Data for this study is drawn from a panel of 237 large companies over the ten-year period 1993-2002. To qualify for the sample, a firm must be included 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 1996-2002. 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. I collect data back to 1993 when available for each firm. I delete observations for years in which a firm was not publicly traded for the entire fiscal year. The final sample has 2,340 observations, with most firms appearing in the sample for ten full years. Those observations cover 485 individual CEOs, a small handful of whom serve more than one term with the same company.

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 Compustat, stock market data from CRSP, institutional ownership data from Thomson Financial's CDA/Spectrum, governance data from IRRC, analyst data from I/B/E/S, board of directors data

from Standard & Poor's Compact Disclosure, and compensation data from ExecuComp. When necessary, I fill in missing data by using proxy statements.

Table I 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 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 percent of the stock of a typical firm. Institutional ownership concentration is measured as the ratio of the five largest institutional positions divided by total institutional ownership, a statistic found by Hartzell and Starks (2003) to have positive associations with various measures of management incentives. 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, Ishii, and Metrick (2003), who find this index to have negative associations with a company's stock market performance.

I tabulate data for aircraft ownership and companies' proximity to airports from databases maintained by the U.S. Federal Aviation Administration. 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. Hersch and McDougall (1992), in a study of corporate aircraft fleets, find that companies are less likely to own or lease their own planes if headquarters is near a major commercial airport. The dummy variable for coastal location, which equals one if the firm is near the east or west coast of the continental U.S., is also tabulated because of results from that study, which found that firms

with geographically interior locations were more likely to acquire private aircraft.

A large majority of my sample firms have their own planes, according to a 2004 search of the FAA's civil aircraft registry. The frequency of 78.1% percent reported in Table I is based upon this 2004 data, which unfortunately is not available for prior years. I code this variable 1 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 1993-2002 sample period. This variable likely under-states the incidence of corporate plane possession, since some companies might register their aircraft under the name of a subsidiary different from the name of the corporate parent. Nevertheless the 78.1 percent frequency suggests that corporate jet ownership has risen slightly over time, as it is higher than the 64 percent frequency reported by Hersch and McDougall (1992) for a 1984 sample of 516 large companies, as well as the 66 percent frequency reported by Rajan and Wulf (2004) for a 1986-1999 sample of 300 large companies (the 66 percent figure in Rajan and Wulf may also be un under-estimate, since it includes only companies that permit the CEO to schedule use of company aircraft, although it's not clear how any other company officer could have the authority to overrule a CEO on such a decision).

The lower half of Table I presents information about individual company CEOs, who appear very similar to those studied in other large-sample empirical work. The typical CEO is about 58 years old, with a mean of seven years service (median of five) and mean ownership of about 1.5% of the firm's shares (median of 0.4%). I calculate ownership by adding shares owned plus vested options and dividing the total by shares outstanding plus vested options. CEOs receive mean cash salary and bonus compensation of about $2.1 million (median $1.6 million) and additional annual income from stock option and restricted stock awards. Stock

options, valued by ExecuComp's modified Black-Scholes methodology, deliver a large, skewed distribution of compensation, with a mean of $4.5 million, median of $1.6 million, and 75$^{th}$ and 90$^{th}$ percentile values of $4.0 and $9.3 million, respectively.

Theories of perquisite consumption stress the crucial role of tastes and preferences of individual CEOs. It is impossible to measure such variables directly, but I am able to collect several variables about the backgrounds of my sample's 485 CEOs that one might expect to exhibit correlations with their perk preferences. CEOs' political affiliations can be observed from databases of donations maintained by the U.S. Federal Election Commission and state voter registration authorities. I classify CEOs as either Republicans or Democrats if a clear majority of their donations are directed to one party's candidates or organizations. If a CEO's donations are either ambiguous or zero, I consult voter registration data that is available on Lexis/Nexis for a majority of U.S. states. Sixty-two percent of the CEOs appear to be Republicans and 21 percent Democrats, with the remainder either Independent or unknown.

CEOs' educational backgrounds are provided by *Forbes* magazine's annual executive compensation surveys, supplemented when necessary by on-line news searches. Six percent of the sample CEOs have no college degree, but a majority have attained a graduate degree of some type, including 38 percent MBAs, 10 percent JD or LLB law degrees, and 5 percent PhD's.

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 golf clubs or country clubs where each individual is a

member. In my sample, 42.8 percent of the CEOs appear in the USGA database, and a significant number – 17.2 percent of the overall sample -- have country club memberships in locales very far from headquarters, mainly in the states of Florida, California, Colorado, or Massachusetts. I define a "long-distance golf" dummy variable and set it equal to 1 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 variable has a mean of 0.232.

Data on CEO perk consumption has not been tabulated by any on-line source, and for this study I obtain it by reading annual proxy statements for each of the observations in the sample. 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. The SEC's EDGAR database, the central source for electronically filed proxies, has coverage that begins one year later, for proxies filed in 1994 and after, which accounts for the cutoff date for the sample in this study.

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[4] The nearest city to Augusta is Columbia, South Carolina, 70 miles away, and Atlanta is more than three hours' drive. Augusta membership data 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, and 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 percent of the executive's salary plus bonus (for all but 63 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 directly observed, because many 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 must itemize the cost of any individual perk, such as personal aircraft use, if it exceeds 25 percent 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 cause data for CEOs' personal aircraft use to be 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 percent of the $50,000 overall threshold), and will have to disclose values above $12,500 only to the extent that other perk consumption is not large enough to reduce aircraft use to below 25 percent 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 will be disclosed. Values between $12,500 and $50,000 will be disclosed to the extent that the CEO receives

[5] Disclosure regulations appear in 17 CFR 228.402, "Executive Compensation," and the regulations for perk disclosure are in §228.402(b)(2)(iii)(C). The original draft of the disclosure regulations set the overall threshold at the lesser of $25,000 or 10 percent 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). The overall limit was raised to $50,000 "to reflect inflation," while the requirement to itemize each category was dropped without explanation. See SEC Release 33-6962, 34-31327 (October 16, 1992).

enough other perks to surpass the $50,000 overall threshold.

From reading a large number of proxy statements, it is evident that several disclosure loopholes limit the transparency of perk consumption data. A CEO who makes significant use of a corporate plane for personal travel may nevertheless avoid disclosure under one or more of the following scenarios:

- The company may incur slightly 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 at all is required.
- The CEO may receive perks in five or more categories in roughly equal proportions, so that none accounts for 25 percent of the overall total. In this case only the total value of all perks must be disclosed.
- 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, allowing it to itemize only those categories if they are large enough and thereby obscure the consumption of other perks. Some companies appear to have adopted this practice with such financial items as retirement contributions and insurance policy payments, which are more properly viewed as tax and income deferral strategies rather than perquisites.
- 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 II presents data about disclosures of CEO perquisites, and 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 "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. Perks are rank-ordered in Table II according to the frequency of their disclosure in the sample. 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. 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. The minimum values for items listed in each row of Table II 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. Since the disclosures are based upon the incremental cost of perks, they would not capture the full cost of providing certain services to CEOs, as items such as amortization of an aircraft's acquisition cost wouldn't properly be viewed as incremental.[6]

Data in Table II indicate that aircraft use is by far the largest disclosed CEO perk, appearing more than twice as often as 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 II.[7] I do not

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[6] A few companies in the sample, apparently at a loss for how to measure the incremental cost of aircraft use, instead report the value of each executive's plane use according to Internal Revenue Service guidelines for imputing taxable personal income to an employee who travels for personal reasons on corporate aircraft. These complex regulations, known as the Standard Industry Fare Level or SIFL rules, appear in IRS Regulation §1.61-21(g) and are based upon certain multiples of estimated cost per mile flown. The SEC rarely acts against companies for failing to comply with perquisite and other compensation disclosure requirements. In probably the only such case to date, 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 2003 by founder and former CEO Don Tyson. Even if Tyson did not completely disclose perquisites, its executives still ranked among the most prolific personal aircraft users in the sample for this paper.

[7] Some idea of the scale of censoring of the perquisite data in Table II can be inferred by a comparison of the table with confidential survey data summarized in Rajan and Wulf (2004, p. 13, footnote 15). Those authors study a comparable sample of 300 large firms that have mean annual sales of $7.8 billion. A consulting firm's survey of CEO perks in those companies found that 38 percent of CEOs had access to company cars while 47 percent had club memberships paid for by the firm. In my sample only 6 perecent of CEOs have disclosed company cars while 2 percent

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 headquarters is shifted due to a merger or other event). 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.

Figure 1 shows a sharp increase in the frequency of disclosed personal aircraft use over the ten-year sample period, with the annual rate having risen from 9 percent in 1993 to above 30 percent in 2002. The rise of fractional aircraft ownership occurred during the sample period, reducing dramatically the up-front costs of access to corporate jets and probably contributing importantly to the increasing use shown in Figure 1. The sample selection design may also affect this pattern, as membership in the 2002 *Fortune 500* is one criteria for inclusion, and firms on the 2002 *Fortune* list probably performed well in the years 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. The terrorist attacks of September 11, 2001, also appear to 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

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have disclosed club memberships. The median value of these perks was $17.6 and $3.7 thousand, repsectively, in the Rajan and Wulf sample, compared to median values of $16.0 and $24.7 in my sample. One could therefore infer that country club dues are almost always too small to trigger disclosure in proxy statements (most disclosures appear to be for initiation fees and not annual dues), while company cars are generally disclosed only if another, larger perk such as aircraft use is also reported. Unfortunately the Rajan and Wulf data for CEO aircraft use reflects a combined value for business and personal use and not personal use by itself, so it cannot be compared with the data in this paper.

CEOs or their boards may perceive corporate jets as safer than commercial ones.[8] A handful of proxy statement disclosures, even some before the terrorist attacks, indicate that for security reasons, the board requires the CEO to use corporate aircraft for personal travel (this "requirement" is sometimes negotiated as part of a CEO's employment contract).

Table II indicates that the mean (median) cost to the company of CEO's personal aircraft use, when disclosed, is a little above $65,000 ($52,000). Costs of operating different aircraft vary greatly. Maynard (2001) uses data from Executive Jet Inc., the leading time-share company, to estimate the hourly cost of leasing an eight-person Cessna Citation V aircraft as $10,000, or $2,500 per person if the CEO on average 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.

## III Determinants of CEOs' personal use of aircraft

Data for CEOs' personal aircraft use has many zero-valued observations, since not every firm has a corporate jet or permits its executives to use it as a perk. Additionally, the previous section describes how the SEC's proxy regulations lead to censoring of the data for actual aircraft use when it falls below the threshold required for disclosure. Given these properties of the data, I rely on a Tobit regression model to analyze how the cost of CEO aircraft use in each firm-year is related to a range of explanatory variables. The main purpose of this analysis is to

[8] Such a perception would probably be misplaced. 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).

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, and I therefore use percent ownership of the firm's equity (including vested options) as an explanatory variable. 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 regression model of expected compensation for each CEO-year observation. The regression has total compensation as the dependent variable, equal to the sum of salary, bonus, restricted stock awards, and stock option awards. Option awards are valued using ExecuComp's Black-Scholes 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 Tobit perk regression 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 amount of 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 concentration of institutional ownership. As discussed above, this last variable follows the definition of Hartzell and Starks (2003) as the

ratio of the five largest institutional owners' positions over total institutional ownership.

CEO tastes and preferences also should affect perk consumption. I include in regressions CEO age and a dummy variable for membership in the company's founding family, both standard variables that have been found by many authors to have associations with patterns of ownership and compensation. In addition, I tabulate information about CEOs' education, relying mostly on data published in *Forbes* magazine's annual compensation surveys. The model includes dummy variables for CEOs with no college degree, and for a range of graduate degrees including MBAs, JD or LLB law degrees, PhDs, and all other. Finally, I use information about CEOs' political donations and voter registrations to construct dummy variables for Republican and Democrat CEOs. Executive compensation has become a political issue in the U.S. over the past decade, and it is plausible that Republican and Democrat CEOs have different attitudes about perk consumption.

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; and a time trend, measured as the difference between the year and 1993. Company size is used by Rajan and Wulf (2004) 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.

Table III presents estimates for Tobit models of the cost of CEOs' perquisites. The left column shows estimates with CEO personal aircraft use as the dependent variable, while the right column has estimates based upon the value of all other disclosed CEO perks. Both models include firm fixed effects, equivalent to assigning a separate intercept term to each firm that has

at least one nonzero observation.

Estimates for the excess compensation residual are negative for both dependent variables but without statistical significance. The negative signs provide some support for Fama's (1980) theory about perk consumption, since they imply that a CEO's compensation is adjusted downward when his perk consumption increases. However, the marginal effect of the estimated coefficient is small. Based upon the partial derivative of the likelihood function, the marginal effect is very close to
-0.00008, implying that an additional $1,000 in personal aircraft use by the CEO leads to a reduction in compensation of 8 cents, an economically negligible amount; the estimate for all other types of perk consumption has even lower magnitude. These estimates are far too small to support explanations for perk consumption that rely on marginal tax differentials between the firm and CEO (a theory also rejected by Rajan and Wulf (2004)) or the CEO placing a personal value on perks that exceeds the firm's cost of providing them.

The CEO ownership variable has positive rather than negative estimates in both models, providing no evidence of the predicted negative association with perk consumption. As a sensitivity check of the results I use an alternative piecewise ownership specification with two breakpoints, following Mørck, Shleifer and Vishny (1988) and other studies. I find insignificant ownership estimates over different ranges with no consistent pattern of sign switches. I conclude that, as is the case with compensation, no clear association exists between CEO ownership and perquisites. A likelihood ratio test of the joint significance of compensation and ownership yields low values with no statistical significance, as shown by the chi-squared statistic at the bottom of Table III.

Variables measuring monitoring difficulty also have little success in explaining CEOs' patterns of aircraft use. For the five monitoring variables tabulated in the two models of Table III, only one coefficient estimate among the ten has statistical significance. A likelihood ratio test for each model indicates that collectively these variables have no significant association with perquisite consumption.

In contrast to the results for incentive and monitoring variables, CEO tastes and preferences have clear impacts upon patterns of corporate aircraft use, as shown by the many statistically significant estimates in the left column of Table III. Older CEOs are more likely than younger ones to make personal use of company aircraft. This pattern may arise due to 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; the latter possibility is not supported in the right column, in which the estimate for this variable is positive but not significant for non-aircraft perk consumption. Political affiliation has some association with personal aircraft use, but in a non-partisan way. Both Democrat and Republican CEOs are heavier users of corporate aircraft than unaligned CEOs, and the difference is statistically greater than zero for Republicans. Finally, a striking pattern of CEOs' personal aircraft use and their education is suggested by Table III. Those CEOs with the least education (no college degree) are the heaviest aircraft users., while those with the highest advanced degrees (Ph.D.s) are the lightest. CEOs who hold MBAs or other masters degrees are somewhere in between, and CEO-lawyers have significantly higher aircraft use than normal, though not as high as non-college graduates. As is the case with CEO age, neither the political nor education patterns of CEO aircraft use are

duplicated in the model for all other perks. However, a likelihood ratio test for the collective importance of all CEO characteristics is significant in both models, below the 1 percent level for aircraft use and below the 10 percent level for other perks.

Perhaps the strongest result in either model is the impact of the long-distance golf indicator variable in the model for personal aircraft use. This variable, which equals 1 if the CEO belongs either to Augusta National or to a golf club not near headquarters, has a significant estimate with a t-statistic exceeding 4. Other travel-related variables do not exhibit statistical significance, but a likelihood test for the collective significance of all such variables is highly significant. I do not include the travel variables in the model for all other perk consumption, as no a priori reason suggests that other perks should be associated with air travel variables.

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 in line with firm size.

I check the importance of the choice of estimation framework by fitting a variety of alternative regression models. These include ordinary least squares, OLS with both fixed effects and random effects, and a probit-Tobit two stage sample selection model. Apart from minor differences in the sign and significance of certain control variables, the basic results are unchanged from those shown in Table III. 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, education, and golfing persists across all models.

## IV CEO aircraft use and company stock returns

This section studies the association between CEOs' personal use of company aircraft and firms' stock returns. Section A presents event study evidence of how stock prices react when a CEO's aircraft use is first disclosed. Section B presents long-term stock return evidence about the performance of firms that permit personal CEO aircraft use. Section C contains sensitivity tests of the results in Section B. .Section D presents evidence about the operating performance of these firms.

### *A. Event study evidence*

To evaluate shareholder reactions to CEOs' personal use of corporate aircraft, I study abnormal stock price changes when proxy statements are published disclosing that companies have begun granting this fringe benefit. Abnormal stock returns 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 website, where corporate filings are available for public inspection. A few firms file preliminary proxy statements several weeks in advance of their final filings, and I use the posting dates for these preliminary documents if they occur. In my 1993-2002 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 website (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.

Figure 2 illustrates mean cumulative abnormal stock returns for the sample of 85 firms beginning two weeks or 10 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 documents after the market closes. For comparison purposes, the graph also includes a plot of the cumulative abnormal returns for all 2,217 other observations, which are weakly positive over the same interval, consistent with Brickley's (1986) study of a randomly chosen sample of proxy statement release dates. 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 IV, the mean CAR over the event window $[t_{-4}, t_{+1}]$ is -1.13 percent, with a t-statistic of 1.90, significant below the 6 percent level.

A loss of 1.1 percent 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, 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 an aircraft and making it 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 IV includes two decompositions of the results. In Panel A, the result for the overall sample of 85 firms is divided into two pieces: 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 have much greater magnitude for the sub-sample that had not previously disclosed any perks, consistent with an interpretation that earlier perk disclosures by a company signal some probability of future personal aircraft use. Abnormal returns for the earlier, initial disclosures of other types of perks by the 31 firms were not significantly different from zero, however.

Panel B in the lower half of Table IV 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 III, and the CEO's percentage stock ownership. A significantly negative estimate emerges for the compensation variable, indicating that shareholder reactions to CEOs' 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.

*B. Long-term stock performance: Basic result*

I use the standard Fama-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 V, 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 executives to use corporate aircraft for personal travel. Companies disclose personal CEO aircraft use for 15.4 percent of the sample observations. In another 3.6 percent of cases, a different top 5 executive has disclosed aircraft use while the CEO does not. I assume that the board is unlikely to make a perk available to other managers without also awarding it to the CEO, so I also code those observations as 1, raising the sample mean to 19.0 percent. In these cases, I reason that the CEO is likely using the aircraft as well but at a level that falls below the SEC's disclosure thresholds. 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 Ken French's web site. The risk-free rate is subtracted from both the dependent variable and the market index.

Table V reports Beck and Katz (1995) panel corrected standard errors which take account of heteroskedasticity and cross-correlations between firms. Because the standard error calculations require a balanced panel, I base the calculations on the 220 firms (out of 237 in the sample) than have ten full years of trading data available. This sub-sampling requires me to discard 136 observations, about 6 percent 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 V, the aircraft dummy variable has a coefficient of -4.54 percentage points with a t-statistic significant at levels below 1 percent. This result indicates that firms with CEO aircraft use under-perform 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.

Figure 3 shows abnormal stock returns for companies before and after the first year in which personal CEO aircraft use is disclosed. The figure shows that firms adopting a policy that permits CEO aircraft use perform well prior to awarding this perk, and exceptionally well in the year just before the perk is granted, with abnormal stock performance of almost +5 percent. 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, company performance plummets, to an abnormal return of -8 percent. It improves somewhat but remains poor in all subsequent years.

### *C. Long-term stock performance: Sensitivity tests*

#### (i) Additional controls

In the other columns of Table V, I add to the model explanatory variables that might have correlations 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-Ishii-Metrick (2003) governance index. 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 2002. This variable represents a control for sample selection bias; 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 under-performance 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 0.132 to 0.146. 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 is also negative as expected, indicating that other sample firms that rose up to join the *Fortune 500* after 1996 were superior market performers compared to firms that remained in the index for the entire period.

(ii) Alternate variable definitions and estimation methods

Table VI presents results from robustness tests to verify the persistence of the negative estimates for the CEO aircraft use variable across a wide range of alternative 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 used in place of the value-weighted market return with the remaining Fama-French controls retained as in the left column of Table V. In the third and fourth rows, value-weighted and equal-weighted industry-specific indexes are used in place of market-wide indexes. Industry assignments follow Fama and French's grouping of SIC codes into 48 industry portfolios, returns for which are posted on French's web site.

The table has into four vertical sections based upon different definitions of the personal aircraft use variable. The first three columns of the table use an indicator variable that is coded 1 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 account of possible censoring of perquisite data below certain monetary thresholds. In these columns, I code as 1 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 15.4 percent to 21.4 percent. The right half of the table is based upon similar definitions of the aircraft use variable, except that perk data is tabulated with respect to disclosures for any top 5 executive instead of the CEO only.

Three different estimation procedures are used for each of the 16 unique combinations of the various aircraft and market return variables. Columns labeled "Panel" contain estimates produced by the same methods used in Table V. Columns labeled "F-M" are Fama-MacBeth estimates, based upon summary statistics for annual estimations of the regressions for each of the ten years in the sample. Columns labeled "Diff." represent the difference in intercept terms estimated by regressions in the sub-samples for which the aircraft variable takes the values 0 and

1 (this approach is used by Gompers, Ishii and Metrick (2003) in their study of the effect of anti-takeover provisions upon firms' stock performances).

The main conclusions of the paper are little affected by this range of alternative models. Estimated coefficients for the aircraft variable in Table VI are uniformly negative, ranging from -0.0215 to -0.0607, with most of the estimates clustered near 400 basis points (the mean value of the 48 estimates is -0.0368). Thirty-seven of the 48 estimates are statistically significant at the 10 percent level or better, and nearly all of the remaining 11 estimates have significance levels in the neighborhood of 15 percent. Fama-MacBeth estimates are slightly closer to zero than estimates from the other two methods.

In further analysis that is untabulated, I estimate weighted least squares regressions of the same models in Table V, using market capitalization at the start of the year as the weight. Coefficient estimates are even more negative than 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 CEOs' 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 instead of 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).

(iii) Corporate aircraft not available for perquisite use

It is possible that the results in Tables V and VI 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 78.1 percent mean in Table I).

In Table VII I re-estimate the regressions from Table V and include an indicator variable for firms that are aircraft operators but have never disclosed personal use by the CEO or another executive. Results are shown in the second column; for comparison purposes, the first column shows the model estimated with a dummy variable that equals 1 for years in which personal aircraft use is disclosed for an executive. In contrast to the negative and significant estimate in the left column, the estimate the second column is positive though not significant. The difference between the estimates for the dummy variables in columns 1 and 2 is significant below the 1 percent level.

(iv) Other perquisite categories

The third column of Table VII includes regression estimates that investigate the relation between company performance and other executive perks. The indicator variable in the third column is set equal to 1 for years in which at least one executive has other disclosed perks, such as a company car or country club membership, but no disclosed aircraft use. The estimate for

this variable is negative but not significant. I also estimate separate regressions using dummy variables for each of the five perquisites listed in Table II. Four of the five dummy variables have negative estimates, with country club memberships the most negative.

*D. Operating performance*

Results above highlight the under-performance in the stock market of firms that permit 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.

Although many explanations could account for the poor performance of firms with CEOs who exhibit high perk consumption, one clear possibility is that these managers run their firms inefficiently, tolerating waste, excess overhead, or uncompetitive cost structures. Table VIII presents regression estimates that provide some evidence consistent with this possibility. I regress firms' sales per employee against the aircraft dummy variable from Table V, as well as dummy variables for industries and years. Both random effects and fixed effects estimates are reported. The results show a strong, significant negative association between the aircraft variable and sales per employee, indicating that firms with high CEO perquisites tend to be over-staffed relative to the competition, achieving about $25,000 less in sales per employee. However, similar regressions using return on assets as the dependent variable do not yield significant results.

## V Personal aircraft use compared to other perquisites

Table 9 presents a summary of evidence about the personal aircraft perquisite, in the left column, compared to all other types of perks, which are analyzed as a group in the right column. Together, the evidence suggests that the incidence and stock price associations of other perks occur in patterns reasonably similar, albeit not as dramatic, as the effects associated with personal aircraft use.

The top rows of the table indicate that other perquisites rose in frequency at a fast rate, just slightly below the growth rate of personal aircraft use between 1993 and 2002. The second section summarizes the regression results from Table III. It shows that certain explanatory variables or groups of variables have statistically significant associations with perk values in similar patterns for aircraft use and all other perks. The third section of the table tabulates stock market reactions to all proxy statement filings in which perks are disclosed, whether or not for the first time, and compares the reactions with those for which proxy statement filings indicate no perk consumption (the same one-week event window analyzed in Table IV is used). Abnormal stock price reactions are lower in each column when perks are disclosed, though the differences with non-disclosures are not statistically significant. Finally, the bottom row of the table reproduces the regression coefficient estimates and t-statistics from the first and third columns of Table VII. These indicate negative stock performance in years in which executives receive either type of perk, though the estimate for aircraft use is larger in magnitude than for all other perks.

Two possible explanations might account for the disparities in stock price associations for aircraft use compared to other perks. First, data for other perks is almost certainly censored

more heavily than for aircraft use, since cars, club memberships, and the like are not as expensive as jet airplanes. If so, the perk indicator variable in the annual stock performance regressions may be measured with greater error, leading to an estimate with a magnitude that is too low. Additionally, aircraft use may be associated with more serious management or governance problems than other perks, due to its sheer expense and degree of conspicuousness; an executive who has the company acquire an automobile for his use may not be shirking or sending adverse signals to other workers to quite the same degree as when has the company acquire an aircraft.

## VI Conclusions

This paper studies perquisite consumption by CEOs in major companies, focusing on personal use of company aircraft, the most costly and frequently disclosed managerial fringe benefit. Data indicate that more than 30 percent of *Fortune 500* CEOs in 2002 were permitted to use company planes for personal travel, up from a frequency below 10 percent 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 percent. However, this value loss does not fully anticipate the future poor performance of such companies. Regression analysis indicates that firms permitting CEO aircraft use under-perform market benchmarks by about 400 basis points per year, a severe shortfall that cannot be explained simply by the costs of the resources consumed. Further analysis indicates that firms in this category have excess staffing relative to their counterparts.

Regression models of CEO personal aircraft do not show significant associations with compensation, ownership, or monitoring variables as predicted by theory. However, variables measuring personal characteristics of CEOs, such as age, political affiliation, and education, 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 strong magnitude and significance.

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**Table I**
**Descriptive statistics**

Descriptive statistics for a data set of 237 large firms during the 1993-2002 period. The sample includes companies listed in the 2002 *Fortune 500* and also covered by ExecuComp for the period 1996-2002. 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. Institutional ownership concentration equals the ownership of the five largest institutions divided by total institutional ownership. 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. Abnormal stock return equals the raw return minus the return on the CRSP beta decile portfolio for each firm-year. CEO ownership equals common stock plus vested options over shares outstanding. Stock option award values are based upon ExecuComp's Black-Scholes methodology. Political affiliations for CEOs are obtained from databases of the Federal Election Commission and state voter registrations, and education backgrounds are obtained primarily from *Forbes* magazine compensation surveys. Golf club membership data are obtained from the handicap database of the U. S. Golf Association and from news reports.

| | |
|---|---|
| Individual firms | 237 |
| Individual CEOs | 485 |
| CEO-firm-year observations | 2,340 |

| | | | Percentiles | | | | |
|---|---|---|---|---|---|---|---|
| **Firm variables** | **Mean** | **Std. Dev.** | **10th** | **25th** | **50th** | **75th** | **90th** |
| Sales (bn) | $10.98 | $13.09 | $2.21 | $3.73 | $6.75 | $13.22 | $24.01 |
| Total assets (bn) | $30.98 | $77.29 | $2.05 | $4.09 | $10.40 | $24.90 | $67.54 |
| Market capitalization (bn) | $20.06 | $40.23 | $2.09 | $3.79 | $7.70 | $17.83 | $45.58 |
| Leverage | 0.40 | 0.25 | 0.09 | 0.22 | 0.38 | 0.54 | 0.68 |
| Board size | 12.1 | 3.6 | 8 | 10 | 12 | 14 | 16 |
| Fraction of outside directors | 0.79 | 0.11 | 0.64 | 0.73 | 0.82 | 0.88 | 0.92 |
| Institutional ownership | 0.589 | 0.155 | 0.381 | 0.487 | 0.604 | 0.697 | 0.779 |
| Institutional concentration | 0.35 | 0.10 | 0.23 | 0.28 | 0.34 | 0.41 | 0.48 |
| Number of analysts | 19.0 | 8.1 | 9 | 13 | 18 | 24 | 30 |
| Governance index | 9.7 | 2.7 | 6 | 8 | 10 | 12 | 13 |
| Stock return (raw, annual) | 0.169 | 0.412 | -0.242 | -0.071 | 0.118 | 0.361 | 0.607 |
| Stock return (abnormal) | 0.005 | 0.319 | -0.330 | -0.186 | -0.025 | 0.146 | 0.358 |
| Tier I hub airport within 1 hour | 0.662 | | | | | | |
| Tier II mid-sized airport | 0.138 | | | | | | |
| Coastal location | 0.567 | | | | | | |
| Firm owns or leases aircraft | 0.781 | | | | | | |

**Table I**
continued

| CEO variables | Mean | Std. Dev. | Percentiles 10th | 25th | 50th | 75th | 90th |
|---|---|---|---|---|---|---|---|
| Age | 57.4 | 6.3 | 49 | 53 | 58 | 62 | 64 |
| Years as CEO | 6.9 | 7.1 | 0 | 2 | 5 | 9 | 16 |
| Ownership fraction | 0.0148 | 0.0361 | 0.0007 | 0.0016 | 0.0039 | 0.0087 | 0.0323 |
| Founding family member | 0.146 | | | | | | |
| Salary (mm) | $0.87 | $0.38 | $0.48 | $0.67 | $0.84 | $1.00 | $1.20 |
| Annual bonus (mm) | $1.24 | $1.85 | 0 | $0.37 | $0.80 | $1.45 | $2.50 |
| Stock option award (mm) | $4.48 | $16.72 | 0 | $0.34 | $1.59 | $4.03 | $9.28 |
| Restricted stock award (mm) | $0.71 | $2.74 | 0 | 0 | 0 | $0.16 | $1.77 |
| Republican | 0.617 | | | | | | |
| Democrat | 0.206 | | | | | | |
| No college degree | 0.061 | | | | | | |
| College only | 0.314 | | | | | | |
| MBA graduate degree | 0.377 | | | | | | |
| JD or LLB graduate degree | 0.099 | | | | | | |
| PhD graduate degree | 0.048 | | | | | | |
| Other graduate degree | 0.100 | | | | | | |
| Golf club - local | 0.360 | | | | | | |
| Golf club - long distance | 0.172 | | | | | | |
| Golf club - Augusta National | 0.089 | | | | | | |

**Table II**
**Perquisites reported for CEOs**

Perquisite consumption data for CEOs in a sample 2,340 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 non-financial perquisites involving tangible items or personal services and excludes deferred compensation, life insurance, and other tax deferral arrangements. Tabulations below exclude four 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 | 357 | 14.6% | 345 | $65.2 | $48.1 | $0.5 | $52.8 | $360.0 |
| Financial counseling | 212 | 9.1% | 172 | $38.4 | $45.5 | $1.0 | $25.0 | $330.5 |
| Company car and local transportation | 137 | 5.9% | 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 |

## Table III
## Tobit fixed effect estimates for CEO's perquisite consumption

Tobit regression estimates for models of CEO perquisite consumption. The sample consists of 2,238 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 excess stock return, firm size, years as CEO, and industry and year dummy variables. Other variables are defined more completely in Table I. Both models include firm fixed effects.

| Dependent variable (000) | Personal aircraft use | | | All other CEO perquisites | | |
|---|---|---|---|---|---|---|
| **Incentive variables** | **Estimate** | **T-Stat** | | **Estimate** | **T-Stat** | |
| CEO excess compensation | -0.0002 | -1.30 | | -0.0001 | -0.50 | |
| CEO fractional ownership | 163.0 | 0.78 | | 320.1 | 1.37 | |
| **Monitoring variables** | | | | | | |
| Log (board size) | -4.5 | -0.28 | | -20.2 | -1.31 | |
| Fraction of outside directors | 24.0 | 0.73 | | -19.5 | -0.59 | |
| Institutional investor ownership (fraction) | 51.2 | 1.36 | | -3.5 | 0.11 | |
| Institutional ownership concentration | -17.4 | -0.43 | | 67.4 | 1.98 | * |
| Log (number of analysts) | -10.3 | -1.24 | | 8.4 | 0.89 | |
| **CEO characteristics variables** | | | | | | |
| Age | 2.1 | 2.40 | ** | 0.4 | 0.46 | |
| Years as CEO | -1.0 | 1.06 | | 1.6 | 2.08 | ** |
| Member of founding family | 17.3 | 0.86 | | -16.7 | 0.75 | |
| Democrat | 20.3 | 1.23 | | -11.8 | 0.77 | |
| Republican | 20.5 | 2.07 | ** | 0.02 | 0.00 | |
| No college degree | 106.9 | 3.90 | *** | -8.8 | 0.41 | |
| MBA degree | -2.8 | -0.26 | | 11.9 | 1.26 | |
| JD degree | 11.2 | 0.78 | | 5.7 | 0.45 | |
| Other graduate degree | -17.0 | 1.39 | | -20.6 | 1.31 | |
| PhD degree | -118.2 | -3.56 | *** | -1.8 | -0.08 | |
| **Travel related variables** | | | | | | |
| Long distance or Augusta National golf membership | 48.7 | 4.03 | *** | | | |
| Tier I airport | -38.6 | 1.29 | | | | |
| Tier II airport | -22.5 | 0.74 | | | | |
| Coastal location | 30.9 | 1.22 | | | | |
| **Other control variables** | | | | | | |
| Company size (log of sales) | 14.3 | 1.76 | * | 23.8 | 2.98 | *** |
| Leverage (long-term debt / total assets) | 13.2 | 0.79 | | 20.7 | 1.55 | |
| Time trend (year - 1993) | 10.9 | 7.74 | *** | 3.1 | 2.28 | ** |
| $\chi^2$ test statistic: 2 incentive variables | | 2.27 | | | 2.11 | |
| $\chi^2$ test statistic: 5 monitoring variables | | 4.72 | | | 7.06 | |
| $\chi^2$ test statistic: 10 CEO characteristics variables | | 49.15 | *** | | 16.83 | * |
| $\chi^2$ test statistic: 4 travel related variables | | 20.94 | *** | | | |

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

**Table IV**
**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 excess stock return, firm size, years as CEO, 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 x $10^{-3}$ | -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.

**Table V**
**Regression estimates of stock performance as function of executives' personal aircraft use**

Ordinarily least squares regression 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 or another top 5 executive and discloses this benefit in the proxy statement filed at the end of the fiscal year. Other explanatory variables include the Fama-French (1993) factors for excess return on the stock market (value-weighted), excess return for value stocks compared to growth stocks, excess return for small stocks compared to large stocks; the Carhart (1997) factor for excess return of rising stocks compared to falling stocks; the Gompers-Ishii-Metrick (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 | -0.0074 | | 0.0259 | | 0.0301 | | 0.0334 | | 0.0964 | * |
| | (0.32) | | (1.01) | | (0.89) | | (1.34) | | (1.97) | |
| Market excess return | 0.8005 | *** | 0.8127 | *** | 0.7964 | *** | 0.8022 | *** | 0.8110 | *** |
| | (6.47) | | (7.24) | | (6.47) | | (6.49) | | (7.27) | |
| Value - growth excess return | 0.5309 | *** | 0.5552 | *** | 0.5315 | *** | 0.5340 | *** | 0.5587 | *** |
| | (2.85) | | (3.47) | | (2.87) | | (2.87) | | (3.53) | |
| Small - large excess return | -0.0929 | | -0.2039 | | -0.0939 | | -0.0940 | | -0.2058 | |
| | (0.50) | | (1.23) | | (0.51) | | (0.51) | | (1.25) | |
| Up - down excess return | | | -0.2953 | ** | | | | | -0.2953 | ** |
| | | | (2.28) | | | | | | (2.30) | |
| Governance index | | | | | -0.0038 | | | | -0.0031 | |
| | | | | | (1.23) | | | | (1.07) | |
| Indicator for 1996 *Fortune 500* firms | | | | | | | -0.0511 | * | -0.0499 | * |
| | | | | | | | (1.89) | | (1.92) | |
| CEO personal use of company plane | -0.0454 | *** | -0.0413 | ** | -0.0473 | *** | -0.0424 | ** | -0.0399 | ** |
| | (2.65) | | (2.46) | | (2.76) | | (2.43) | | (2.34) | |
| Observations | 2,220 | | 2,220 | | 2,220 | | 2,220 | | 2,220 | |
| $R^2$ | 0.132 | | 0.141 | | 0.133 | | 0.136 | | 0.146 | |
| Adjusted $R^2$ | 0.130 | | 0.139 | | 0.131 | | 0.134 | | 0.143 | |

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

**Table VI**
**Coefficient estimates for aircraft use variable under alternative models**

Alternative 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 48 different models, with four different specifications of the market index variable, four different definitions of the aircraft use variable, and three different estimation methods. The top lines 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-French factors used in the left column of Table V, 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 "Panel" represent panel data estimates using the same approach as in Table V. Columns labeled "F-M" are Fama-MacBeth estimates based on ten annual regressions for each model. Columns labeled "Diff."show the difference in intercept estimates for regressions in subsamples partitioned according to the value of the aircraft use variable. The Panel estimates used the balanced panel of 2,200 observations, while the other two models use the full sample of 2,236 observations.

| | Definition of aircraft indicator variable: | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Personal use by CEO | | | | | | Personal use by CEO or any top 5 executive | | | | | |
| | This year | | | This year or past years | | | This year | | | This year or past years | | |
| Measurement of market index: | **Panel** | **F-M** | **Diff.** | **Panel** | **F-M** | **Diff.** | **Panel** | **F-M** | **Diff.** | **Panel** | **F-M** | **Diff.** |
| Market return, value-weighted | -0.0361<br>(2.01) | -0.0224<br>(1.62) | -0.0305<br>(1.19) | -0.0305<br>(1.87) | -0.0265<br>(2.22) | -0.0391<br>(1.69) | -0.0454<br>(2.65) | -0.0359<br>(2.16) | -0.0401<br>(1.65) | -0.0295<br>(1.91) | -0.0217<br>(1.77) | -0.0337<br>(1.54) |
| Market return, equal-weighted | -0.0455<br>(2.40) | -0.0215<br>(1.60) | -0.0433<br>(1.53) | -0.0421<br>(2.29) | -0.0250<br>(2.18) | -0.0545<br>(2.13) | -0.0541<br>(2.99) | -0.0349<br>(2.10) | -0.0533<br>(1.98) | -0.0409<br>(2.32) | -0.0273<br>(2.51) | -0.0496<br>(2.05) |
| Industry return, value-weighted | -0.0307<br>(1.92) | -0.0253<br>(1.79) | -0.0297<br>(1.39) | -0.0229<br>(1.60) | -0.0246<br>(1.61) | -0.0306<br>(1.63) | -0.0415<br>(2.74) | -0.0394<br>(2.25) | -0.0371<br>(1.89) | -0.0227<br>(1.73) | -0.0213<br>(1.51) | -0.0248<br>(1.41) |
| Industry return, equal-weighted | -0.0475<br>(2.59) | -0.0274<br>(1.95) | -0.0607<br>(2.67) | -0.0392<br>(2.39) | -0.0264<br>(2.04) | -0.0604<br>(3.03) | -0.0569<br>(3.37) | -0.0409<br>(2.43) | -0.0554<br>(2.60) | -0.0413<br>(2.59) | -0.0249<br>(1.78) | -0.0490<br>(2.58) |
| Mean of aircraft variable | | 0.154 | | | 0.214 | | | 0.190 | | | 0.247 | |

**Table VII**
**Regression estimates of stock performance as a function of executives' perquisites**

Ordinarily least squares regression 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 variables are indicators for management perquisite consumption. In the left column, an indicator equals 1 if the company discloses personal aircraft use by any executive in the proxy statement filed at the end of the fiscal year. In the second column, an indicator equals 1 if the company owns or leases a plane, according to 2004 information in the FAA's aircraft registry, and no prior personal aircraft use is disclosed for any company executive in the 1993-2002 sample period. In the third column, an indicator equals 1 if an executive has any other perquisites disclosed in the proxy statement in the categories of automobiles, country clubs, personal security, financial counseling, or medical benefits, while no personal aircraft use is disclosed. Other explanatory variables are the same Fama-French factors from Table V. 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** | |
|---|---|---|---|---|---|---|---|---|
| Intercept | -0.0074 | | -0.0228 | | -0.0155 | | 0.0007 | |
| | (0.32) | | (0.96) | | (0.67) | | (0.03) | |
| Market excess return | 0.8005 | *** | 0.8077 | *** | 0.8126 | *** | 0.8007 | *** |
| | (6.47) | | (6.52) | | (6.54) | | (6.48) | |
| Value - growth excess return | 0.5309 | *** | 0.5295 | *** | 0.5307 | *** | 0.5317 | *** |
| | (2.85) | | (2.82) | | (2.82) | | (2.86) | |
| Small - large excess return | -0.0929 | | -0.0901 | | -0.0916 | | -0.0959 | |
| | (0.50) | | (0.48) | | (0.49) | | (0.52) | |
| Personal use of company aircraft | -0.0454 | *** | | | | | -0.0536 | *** |
| | (2.65) | | | | | | (2.69) | |
| Company has aircraft but no disclosed personal use | | | 0.0124 | | | | -0.0083 | |
| | | | (1.10) | | | | (0.75) | |
| Any other disclosed perquisite, and no disclosed personal aircraft use | | | | | -0.0095 | | -0.0201 | |
| | | | | | (0.39) | | (0.81) | |
| Observations | 2,220 | | 2,220 | | 2,220 | | 2,220 | |
| $R^2$ | 0.132 | | 0.129 | | 0.129 | | 0.132 | |
| Adjusted $R^2$ | 0.130 | | 0.128 | | 0.128 | | 0.130 | |

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

**Table VIII**
**Regression analysis of operating performance variables**

Regression estimates of firms' sales per employee. Explanatory variables include dummy variables for industry and year, and a dummy variable for whether corporate aircraft is made available to the firm's executives for personal use. The aircraft variable takes the value 1 in the first year in which the company discloses personal aircraft use by a top 5 executive and in all subsequent years The sample is a panel of 237 large firms between 1993 and 2002. T-statistics appear below each estimate in parentheses.

Dependent variable: Sales per employee (000)

| | **Random Effects Estimate** | | **Fixed Effects Estimate** | |
|---|---|---|---|---|
| Personal use of aircraft by CEO | -27.8 | ** | -25.1 | * |
| | (1.96) | | (1.83) | |
| Year dummy variables | Yes | | Yes | |
| Industry dummy variables | Yes | | n.a. | |
| Observations | 2,296 | | 2,296 | |
| $R^2$ | n.a. | | 0.758 | |
| Adjusted $R^2$ | n.a. | | 0.724 | |

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

**Table IX**
**Personal aircraft use compared to other perquisites**

Comparisons of a variety of summary statistics for executive perquisites in a sample of 237 large companies between 1993 and 2002. The left column contains information for years in which personal aircraft use is disclosed for any company executive. The right column contains information for years in which any other perquisite is disclosed according to the classifications shown in Table II. The top section of the table shows annual disclosure frequencies for the years 1993 and 2002. The second section summaries results from the regression analysis in Table III, with Yes indicating that a group of variables had statistical significance in the regression model, and No indicating no significance. The third section reports main abnormal stock returns around the dates of proxy statement filings, with the data partitioned according to whether the company did or did not disclosure perk consumption by an executive. The bottom section reproduces coefficient estimates and t-statistics for the indicator variables in the first and third columns of Table VII.

| **Frequency of disclosure** | **Personal aircraft use** | **All other perquisites** |
|---|---|---|
| 1993 | 0.113 | 0.147 |
| 2002 | 0.333 | 0.266 |
| | | |
| **Variables associated with perk values** | | |
| Compensation | No | No |
| Ownership | No | No |
| Monitoring indicators | No | No |
| Other personal attributes of CEO | Yes | Yes |
| Firm size | Yes | Yes |
| Leverage | No | No |
| | | |
| **Market reaction to perk disclosures (all events)** | | |
| Proxy statement indicates perk | -0.11% | 0.10% |
| (t-statistic) | (0.38) | (0.42) |
| | | |
| Proxy statement indicates no perk | 0.27% | 0.22% |
| (t-statistic) | (0.47) | (0.89) |
| | | |
| **Association with annual stock return** | | |
| Indicator variable coefficient | -0.0454 | -0.0095 |
| (t-statistic) | (2.65) | (0.39) |

**Figure 1**
**Firms with personal use of corporate aircraft by CEOs: 1993-2002**

Annual frequency of personal use of corporate aircraft use disclosed for CEOs in 237 *Fortune 500* companies between 1993 and 2002. Data is obtained from annual company proxy statements. 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.

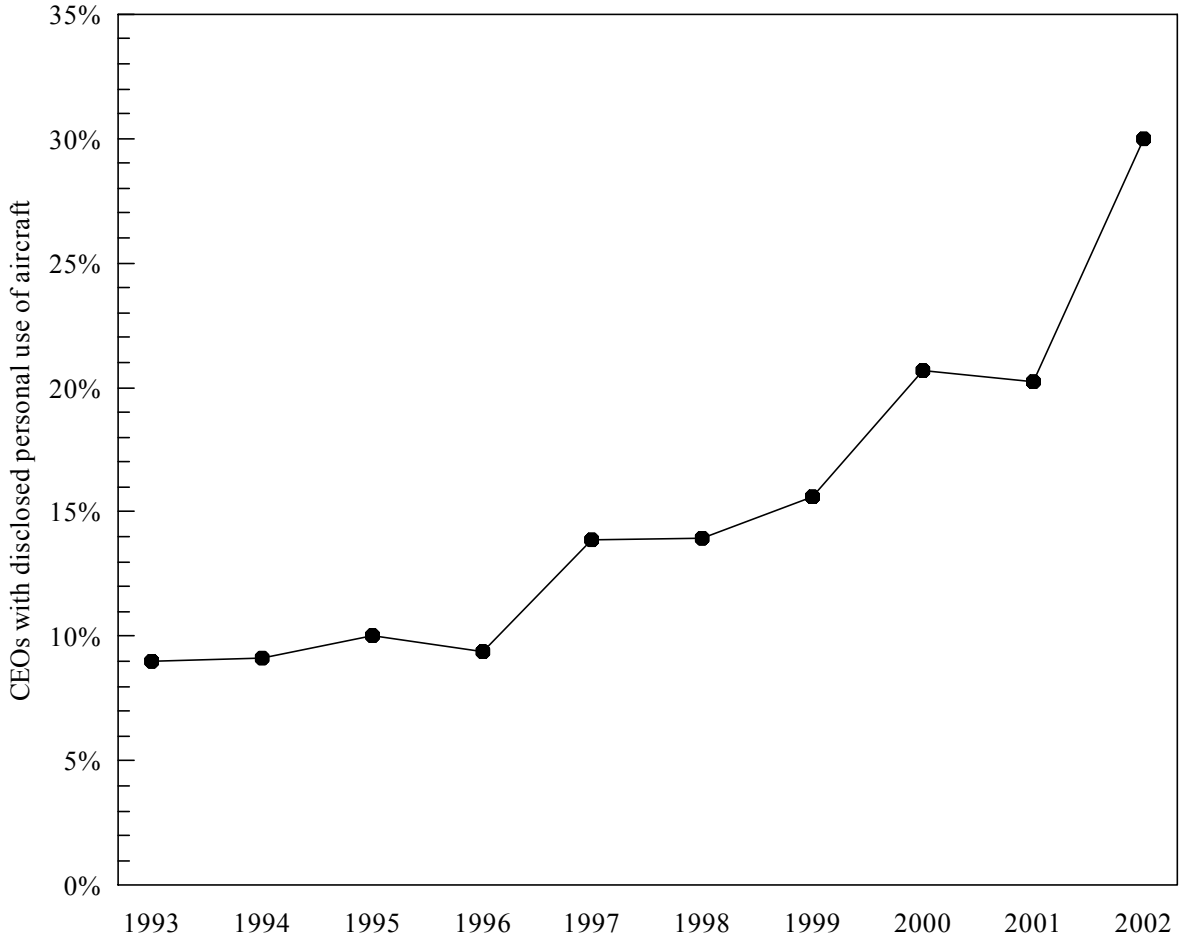

**Figure 2**
**Cumulative abnormal stock returns**
**for initial disclosures of managers' personal aircraft use**

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 2,217 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.

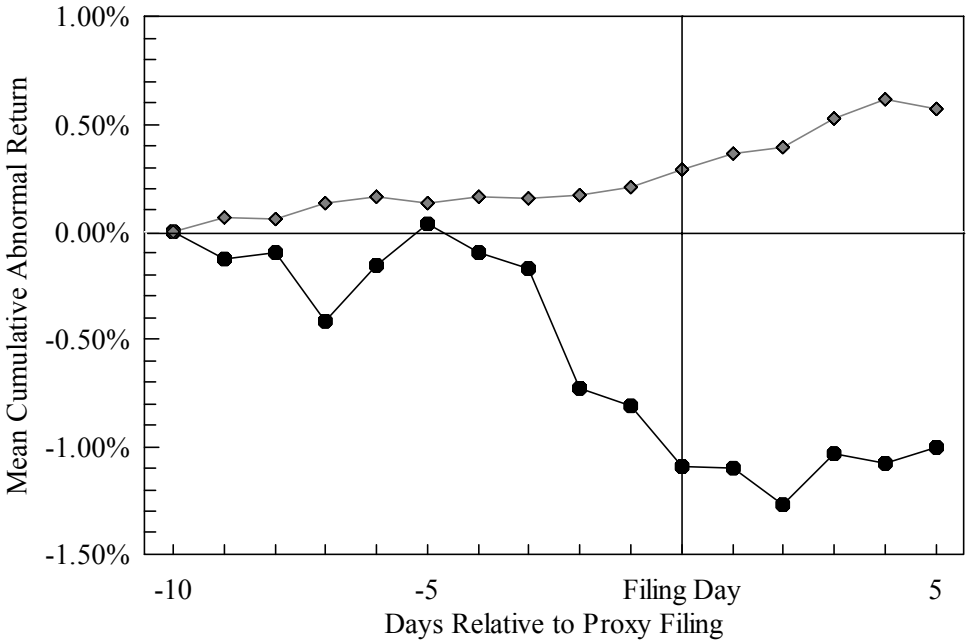

**Figure 3**
**Abnormal stock returns of companies and CEOs' personal aircraft use**

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-French (1993) regressions identical to the left column of Table V. The dotted line shows mean abnormal returns for 104 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.