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## ABSTRACT

### Do Retail Incentives Work in Privatizations?

20 countries around the world have used incentive packages, including bonus shares and discounts, to attract retail investors to participate in privatizations. Using a unique dataset, we estimate the total cost of incentive packages at approximately \$27 billion. The expiration of bonus share plans is associated with a six-day abnormal return of -1.1% and a long-term increase in volume. Incentives have been surprisingly effective in meeting stated privatization objectives. A dollar spent on retail incentives helps to attract about 21 times as many investors as a dollar spent on underpricing. Individual-level analysis shows that flipping is not only much reduced in the short term, but also declines by at least 15% over a period of 1,000 trading days.

JEL Classification: D78, G14, G32, G38 and L33

Keywords: bonus shares, discounts, equity offerings, flipping and privatization

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Privatizations represent some of the largest transactions in the equity markets. Megginson et al. (2000) note that over 90 of the 100 largest stock offerings in history have been share issue privatizations (SIPs), many of them attracting millions of investors. Most privatization programs, including those in the UK, Germany, and France, have used incentive packages to entice domestic retail investors to participate. Of the 24 countries in our sample, 20 have used retail incentives.

The most common forms of incentives have been bonus shares and retail discounts. In a bonus share structure, an investor might receive one free share per ten shares held for a year after the offering. In a retail discount, the investor might be entitled to a 5% discount on the institutional offer price, sometimes combined with a requirement to hold the shares allocated for a given period such as a year.

By any measure, the monetary value of retail incentives has been considerable. For our sample of 360 SIPs from 1981 through 2003, we estimate the cost of incentive schemes at around \$27 billion. This is comparable with the evidence in Loughran and Ritter (2002) that a total of \$27 billion was left on the table by underpricing in US IPOs between 1990 and 1998. Total proceeds from the SIPs in our sample were \$814 billion, of which about 3.3% accounts for retail incentives.

Given these high costs, it is surprising that there has been almost no research into the incidence or effectiveness of retail incentives. A notable exception is research by DeGeorge et al. (2004) on the employee tranche of the France Télécom privatization; they examine which employees chose which incentive package. Jones et al. (1999) cite discounts given to domestic retail investors as evidence of political influences on SIP pricing.

That there is little research in the area is likely because it is hard to obtain data. In our work, we have hand-collected a unique global dataset on the exact terms of retail incentive schemes and other privatization terms. We supplement this international data with information on the actions of individual investors in Finnish SIP retail incentive schemes, which provides us a wealth of additional detail on the effects of bonus shares.

A common reason put forth for retail incentive structures is to prevent flipping, i.e. the immediate resale of the shares allocated. The UK National Audit Office, for example, in its 1988 report on the privatization of British Airways, notes “the justification for this incentive [bonus shares] was based on precedent and on the expectation that it would provide encouragement towards a long-term commitment to holding shares.” Krigman et al. (1999), Fische (2002), and Aggarwal (2003) provide prior research on flipping.

But do retail incentives stop flipping, or do they merely postpone it? If the latter is true, the end of the mandatory holding period might see unusual return and volume reactions. Such reactions would be similar to market reactions at the end of IPO lock-up periods, documented in Field and Hanka (2001), Aggarwal et al. (2002a), and Brav and Gompers (2003).

Another objective of retail incentives is said to be creation of a wider and predominantly domestic shareholder base. The UK National Audit Office (1988) notes that “the intention of bonus shares and other incentives in earlier privatization was to help achieve the objective of

wider share ownership.” The structure of ownership in initial public offerings has more complex economic significance in models by Booth and Chua (1996), Brennan and Franks (1997), Mello and Parsons (1998), and Stoughton and Zechner (1998).

For SIPs, however, governments often present the objective of attracting a large number of retail investors as a given. Domestic investors are seen as long-term owners, while foreign investors may be portrayed as short-term speculators. Enhanced liquidity and development of the financial markets are other motivations that may underlie a preference for small investors.

There are likely unstated political objectives at work too, such as extending the rate of shareownership in society. Political aspects of privatization are analyzed in Perotti (1995), Jones et al. (1999), Biais and Perotti (2002), and Bortolotti and Pinotti (2003), while Megginson and Netter (2001) provide a comprehensive review of the empirical privatization literature.

Our results show that retail incentives are more cost-effective than underpricing in increasing the number of investors in an offering. We estimate that a dollar spent on retail incentives increases the number of investors in the offering by some 21 times more than a dollar spent on underpricing. Retail incentives may be a substitute for underpricing, in the sense that both attract more investors to an offering. Retail incentives, however, can be more specifically targeted to small investors, while money spent on underpricing is divided among all investor groups, including institutional investors, which are allocated 54% of stocks in our SIP sample.

We show that flipping activity resumes once the mandatory holding period ends. There is a significant six-day cumulative abnormal return of  $-1.1\%$  and a 50-day abnormal volume of 21.3% after the bonus expiration date. This result is comparable to the  $-1.5\%$  three-day CAR and 40% permanent abnormal volume that Field and Hanka (2001) report for IPO lock-up expirations. Fama (1998) and others suggest that return anomalies are largely limited to small stocks. The fact that SIP offerings are among the largest in the market makes abnormal returns all the more anomalous.

Our investigation of individual flipping indicates that the bonus tranches of SIPs are flipped significantly less than regular (non-bonus) tranches. Immediately after an offering, normal flipping behavior is almost completely blocked in bonus tranches. More surprisingly, even though some of the flipping is merely delayed to the end of the mandatory holding period, some of the difference between bonus and non-bonus tranches is permanent.

One thousand trading days after the offering, 73% of investors with no incentives have flipped, compared to only 62% of investors in the bonus tranche. This result comes from a controlled experiment that compares flipping by the same individual in two tranches of the same offering. In the entire sample, the difference is even greater; 71% of investors with no incentives flipped compared to 36% of the investors in the bonus tranche. In other words, the bonus tranche appears to generate at least 15% less flipping over a period of 1,000 trading days. Differences are greater over shorter periods. At bonus expiration in the controlled experiment, for example, 53% of investors with no incentives had flipped compared to 16% of investors in the bonus tranche. Flipping in employee tranches is lower still. This is consistent

with employee overweighting of their company's shares in their portfolios, as in Benartzi (2001).

Our analysis is structured as follows. Section I describes sample construction and data collection. Section II describes the various retail incentive structures that we found around the world, and studies their functioning and frequency, while Section III analyzes the costs of retail incentives. Section IV examines the effects of retail incentives using international offer-level data. Section V approaches the effectiveness of retail incentives through an examination of the flipping behavior of individual investors in Finland. Section VI concludes.

## **I. Data and Sample Construction**

### *A. Global Offer-Level Data*

While general data on privatizations are readily available, obtaining the exact terms of past share issue privatizations is labor-intensive. Our data come from a number of different sources. We first assembled comprehensive lists of privatizations in various countries using data from ministries, stock exchanges, Megginson (2000), articles in the Lexis-Nexis database, and the SDC New Issues database. We include SIPs from 1981 through June 2003.

Our sample is based on the 20 original member countries of the Organization for Economic Cooperation and Development. We include Australia, Finland, Japan, and New Zealand, which joined the OECD in the 1960s and 1970s, and Hong Kong, Indonesia, Singapore, and South Africa, because we have reliable data for them in the Lexis-Nexis database. Iceland, Luxembourg, and the US are excluded as they had no privatizations of significance, and Turkey is excluded for lack of data. This leaves us with a sample of 24 countries.

To obtain the retail incentive structure and other offer terms of these SIPs one by one, we mailed the companies directly for prospectuses. Additional sources of information for offering terms are articles in the Lexis-Nexis database, company websites, ministries or privatization agencies, official journals of governments, parliamentary documents, stock exchanges, and market regulators.

For other variables, the sources of information are as follows. The number of investors in an offering is hand-collected from news articles in the Lexis-Nexis database, complemented using annual reports, information from the firms themselves, local IPO researchers, and for IPOs the Worldscope Disclosure database. Proceeds, the IPO/SEO division, and government ownership pre-offer are from prospectuses, Lexis-Nexis searches, and Megginson (2000). Information on government type and population is from the World Bank, while data on external capital per GNP are from La Porta et al. (1997).

Underpricing is computed using offer prices and Datastream price data, complemented with data from Megginson (2000) and local IPO researchers. We measure underpricing as the percentage difference between the institutional undiscounted issue price and the first-day closing price. Trading volume data are also from Datastream.

A total of 360 privatizations from 24 countries make up the final sample. We exclude SIPs with no retail component. The Italian sample includes four offerings by municipalities instead of the Italian government and the French sample one carve-out by a state-owned company. Bonus shares were also used in two demutualizations of Irish insurance companies and in the IPO of a UK mobile telephone service provider, but we leave them out of the sample as they were not privatizations.

In all the SIPs in our sample, the bonus shares distributed are secondary shares, i.e., transfers of issued shares from the government to private investors. Consequently, bonus shares do not dilute ownership.

Table I shows descriptive statistics for the sample. Mean government ownership in our sample SIPs declined from 78% before the offering to 36% after the offering. Offer proceeds are on average \$2,260 million in 2002 dollars, with a mean number of 783,000 investors in an offer.

The average SIP had a retail allocation of 46% and an institutional allocation of 54%. Ljungqvist and Wilhelm (2002) document that 32% of all European IPOs are allocated to retail investors, while Aggarwal et al. (2002b) report that 27% of US IPOs are allocated to retail.

Table II, Panel A, shows the country distribution of the SIPs and retail incentive types. Of the 360 SIPs, 55 offerings are from the UK, 43 each from France and Portugal, and 34 from Italy. There is considerable variation from country to country in privatization incentives. Bonus shares, the most frequent model of retail incentives, have been used in 39 UK, 23 French, and 20 Italian SIPs. Retail discounts have been particularly popular in Portugal (23 SIPs) and France (16 SIPs), while the UK opted for installment plans in 39 SIPs. At least one type of incentive is used in 181 SIPs, or 50% of the sample. Both bonuses and discounts are present in 46 offerings, while bonuses and installments occur simultaneously in 35 cases. Discounts and installments are used together in only two cases.

Table II, Panel B, divides the retail incentives by IPOs and seasoned offerings (SEOs). IPOs represent 61% of the sample. Retail incentives have been widely used in both types of offerings. Bonus shares, for example, were used in 38% of privatization IPOs and 32% of privatization SEOs. These incentives apply to domestic retail investors.

In many cases, employees were offered a similar or more advantageous plan. These employee stock ownership plans have featured a highly complex menu of options, particularly in France (see Degeorge et al., 2004). We exclude employee incentives from the analysis both because of their complex structures and because we want to concentrate on the largest incentive scheme component, that available to the general domestic public. Some offerings also feature preferential terms for specific investor groups, such as tobacco retailers, sugarbeet growers, gas station owners, or residents of particular municipalities. These specific groups are also eliminated from the analysis.

## *B. Investor-Level Data*

We take advantage of a unique data set from Finland, the registry data of the Finnish Central Securities Depository (FCSD). This source provides exhaustive data on stock ownership, initial IPO and SEO allocations, and daily buying and selling decisions of each individual investor in Finland. For a detailed description of this database, see Grinblatt and Keloharju (2000).

The FCSD data used in this study cover the period from January 1, 1995, through November 29, 2002. The analysis is limited to retail tranches. We focus on investor behavior in seven SIPs.<sup>1</sup>

The data cover 1,168,411 individual domestic retail investors, of which 125,297 unique individuals participated in SIPs (10.7% of the sample). As the FCSD identifies each tranche with a unique ISIN code, we can compare flipping behavior in the bonus tranche with the regular tranche in any given offering. Some investors participated in both the regular and the bonus tranche of the same offering, which lets us perform a controlled experiment of the effect of different incentive structures on flipping behavior.

## **II. How Are Retail Incentives Used?**

### *A. Elements of Retail Incentive Plans*

There are three primary types of retail incentives: bonus shares, discounts, and installment plans. In a few cases, other retail incentives have included electricity vouchers, gas vouchers, and even money back guarantees from the government should the share price fall, but we exclude these from analysis. All offerings with more unusual forms of incentives also included one of the three primary incentive types.

#### *A.1. Bonus Shares*

The most common retail incentive in the sample is the bonus share. Bonus shares are offered for free to investors who keep their original shares for a minimum holding period, such as 12 months. This institutional arrangement seems to have originated in Britain; its first use in our sample goes back to the British Telecom privatization in 1984. Most subsequent offerings in the UK privatization program followed the bonus share structure.

From there, the innovation spread quickly to other countries. In our sample, 16 countries have used bonus share structures in a total of 129 SIPs. Some countries, such as France, have followed the UK practice of using bonus shares in virtually all large retail offerings.

Table III, Panels A and B, show some descriptive statistics of the bonus arrangements. The most typical length for the bonus period is 36 months (44 cases). In the UK, most bonus share arrangements have had a minimum holding period of 36 months. Italy has used both 36-month

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<sup>1</sup> We exclude the 1998 Fortum IPO because its shorter bonus period of six months makes it difficult to compare the issue with the other SIPs. The 2002 Fortum SEO is excluded because we do not have investor-level data through the end of the bonus period.

and 12-month periods. Twelve months have been the norm in many countries including Spain, while 18 months have been the norm in France.

The exact way the minimum holding period is calculated varies somewhat. Most countries start from the offer date, give the exact date on the prospectus, and distribute the bonus shares so that they are tradable immediately. In Italy, meanwhile, investors (or the lead underwriter as their representative) must apply for their bonus shares within a set period of two to three months after the end of the minimum holding period. They will then receive the bonus shares within one month of the end of the application period, so that the bonus shares are actually tradable only after approximately three to four months after the original holding period end.

In Portugal, the securities depository account of the investor is monitored throughout the mandatory holding period, and the investor loses the right to receive bonus shares only if the amount held drops below the initial allocation. In France, the exact ex-date is not available in the prospectus or in the offer details published in the French *Journal Officiel*. Instead, according to information we received from the French *Commission des Participations et des Transferts*, the lead underwriter is responsible for bonus share distribution. It tracks security depository accounts, and applies to the government for the required number of bonus shares once the 18-month deadline has passed.

Our event studies eliminate all observations whose event date is not absolutely certain. The most significant implication is that this excludes all French offers.

Table III, Panel B, indicates that the bonus percentage also displays some cross-sectional variation. The most common type is one-to-ten; that is, the government awards each investor one share for every ten allocated shares after the end of the minimum holding period. The 1:10 ratio is used in 74 SIPs, 57% of the bonus share offerings in our sample. One-to-ten is the most common system in France, Germany, and Italy, while UK offerings have used both 1:10 and 1:20. The second-most common ratio is 1:20 with 32 cases (mostly in the UK), but the range is wide from a generous 1:5 in Greek SIPs down to 1:40 in one Italian offer.

#### *A.2. Retail Discounts*

Retail discounts are normally defined as a percentage off the institutional price. Many retail discounts also involve a minimum holding period, lending them an anti-flipping effect that is similar to bonus shares. The discount is sometimes paid in cash after expiration of the minimum holding period, but it may also be combined with an installment plan so that the discount applies to the last installment payment.

Retail discounts in our sample are shown in Table III, Panel C. 90 SIPs have used some kind of retail discount ranging from 1.4% to 29.2%. When a discount was used, the median is 5.0% for IPOs and 4.0% for SEOs (the means are 5.8% and 4.9%). Discounts of 3% and 5% are the most frequent, with 17 and 19 cases respectively. In 26 cases, shown in Panel D, discount schemes involve a minimum holding period.

### *A.3. Installment Plans*

Table III, Panel E, shows that 49 SIPs have involved installments or interest-free loans that allow the price to be paid in several installments with no interest cost. In the December 1989 privatization of UK water companies, for example, the offer price of 240p per share was payable in three installments—100p on application, 70p in July 1990, and 70p in July 1991.

The installment period has typically been 18 months. Twenty-nine SIPs or 59% of all installment plans have used this period. Installment plans typically are not subject to flipping bans. In the UK, for example, partly paid shares have been separately tradable in the secondary market.

### *B. Which Offerings Use Retail Incentives?*

Table IV reports cross-sectional determinants of the likelihood a government will use retail incentives. We use probit and two-stage least squares models where the dependent variable takes the value of one if there are retail incentives, i.e., bonus shares, discounts, or installment plans in the shares issue privatization.

Independent variables include a number of issue-specific and country-specific factors. Underpricing, i.e., first-day return, may involve a trade-off with retail incentives. Dewenter and Malatesta (1997) and Jones et al. (1999) have reported that SIPs are, at least in some countries, more underpriced than private sector IPOs. Including retail incentives may diminish the need for underpricing, making us expect a negative association between the two variables.

Realized underpricing consists arguably of an expected component and a stochastic error term. Since the decision on retail incentives is made before any underpricing is realized, and must thus be based on planned underpricing, we report results from a 2SLS model that uses fitted value for underpricing as an independent variable. We also report results of a simple one-stage probit model that uses realized underpricing instead of fitted underpricing.

In the 2SLS model, realized underpricing is the dependent variable in the first stage. The model produces an estimate of expected underpricing that is used as an independent variable in the second-stage probit. The first-stage underpricing model includes dummies for fixed-price offerings and for offerings that include primary shares, one-month local market return, and all the independent variables used in the second stage (except underpricing).

A dummy for IPOs is included in the probit models because retail incentives may be necessary to attract public investment in a relatively unfamiliar company. SEOs, however, have such low underpricing (0.8% in our sample), that retail investors—who are likely to face higher transaction costs than institutions—may not be attracted to issues unless they have a retail incentive component. These opposing effects mean the expected sign of the IPO dummy is ambiguous.

We expect log proceeds from an issue to be positively associated with the need for retail incentives. This is because larger SIPs require a larger shareholder base, including more

first-time investors. An intensive marketing effort, coupled with a more generous incentive structure, may be necessary to attract them to the stock market. Proceeds are measured in terms of millions of 2002 US dollars before greenshoes or other adjustments to the offer size.

External capital per gross national product is from La Porta et al. (1997). Liquidity is the dollar value of shares traded divided by the average market capitalization in 1997, drawn from the International Finance Corporation Emerging Stock Markets Factbook 1998. These variables serve as proxies of market development in a country. Because they are highly correlated, we include them one by one. Countries with less developed markets and less well-established shareholding cultures may require stronger retail incentives to motivate private investment. More developed capital markets, however, may be more likely to adopt new institutional arrangements such as retail incentives, implying a positive association between both variables and the use of retail incentives. This makes the relationship of market development and retail incentives somewhat ambiguous.

Another independent variable is a dummy for a socialist government at the time of the SIP. The data for this measure come from the Database on Political Institutions compiled by the World Bank's Development Research Group. The socialist government dummy is assigned a value of one if the largest party in a country's government at the time of privatization is left of center according to the World Bank, and zero otherwise. Post-handover Hong Kong is somewhat difficult to categorize—we classify it to the right, which ends up not to affect the results.

Our expectation for the socialist dummy is ambiguous. Center-right governments are generally more fond of privatization. Jones et al. (1999) and Biais and Perotti (2002) point out they may also be promoting their own power base through shareholder capitalism: Citizens with a direct stake in corporate ownership may be more likely to become right-wing voters. Yet once a privatization program is up and running, socialist governments may face more pressure to direct the offering toward domestic retail investors, therefore emphasizing retail incentive structures.

Country dummies are included for countries with at least 20 SIPs. The UK dummy is highly correlated with the dependent variable and is therefore excluded. In a robustness check, we exclude the UK offers altogether, and the main results remain unchanged.

Results are mostly in line with our expectations. Log proceeds stand out as the most important and robust variable, positive and significant at the 1% level. In other words, larger offerings rely more on retail incentive schemes.

External capital per GNP takes expected positive and significant values, whereas liquidity is not significant. The coefficient for underpricing is not significant at conventional levels, and the sign is not consistent, whether we use fitted or realized underpricing. The socialist government sign takes a positive sign, but is significant only in two of the four specifications.

### III. How Costly Are Retail Incentives?

The cost of retail incentive schemes is seldom mentioned either in academic literature or political debate. The need for such structures seems often taken almost as a given. This is remarkable, given the sums of money that have been at stake. Following Loughran and Ritter's (2002) terminology regarding IPO underpricing, we call the cost of incentive schemes "money left on the table." In our sample of 360 SIPs, money left on the table has been on the order of \$27 billion in 2002 dollars.

This figure is an upper bound estimate, as it assumes that all investors eligible for bonus shares hold their shares and receive their bonuses. We have exact data on bonus take-up rates for Finland only, but these data suggest that on average as many as 96% of investors choose to hold on to their shares and receive their bonuses. For other countries, we have reliable data on 19 offerings. In these instances, on average 77% of investors kept their shares until the date of the following annual report.

The specifics of our estimation are reported in Table V. For each country in the sample, we show the value of both retail incentives and underpricing. The value of any retail incentive component is calculated as:

$$V = D \times R \times P, \quad (1)$$

where  $V$  is the dollar value of the incentives,  $D$  is the value of the incentive component as a proportion of the proceeds of the offering,  $R$  is the percentage of the offering allocated to retail investors, and  $P$  is the dollar value of the proceeds of the offering measured in 2002 constant dollars. If  $R$  is not known for a particular issue, we use the average  $R$  instead.

In the case of bonus shares,  $D$  is defined as the number of bonus shares to which the investor is entitled, divided by the number of old shares, e.g., 0.1 for a 1:10 bonus ratio. This implicitly assumes that the government's opportunity cost for the bonus shares could be represented as sale to institutional investors at the institutional price. For regular discounts,  $D$  is simply the percentage discount to retail investors. The percentage cost  $D$  of installments is calculated as one minus the ratio of the time-discounted value and the non-discounted value of the installment payments. The payments are discounted by the prevailing 12-month local interbank interest rate at the time of the offering.

The value of the bonus share entitlements comes to \$18.7 billion, while discounts have cost \$4.9 billion. We estimate the value of the interest forfeited in interest-free discount plans at approximately \$3.4 billion. In dollar terms, the UK has had the most generous incentive structures, with a total of \$7.7 billion left on the table, followed by Italy at \$5.7 billion, France at \$5.5 billion, and Germany at \$2.7 billion.

These aggregate figures invariably emphasize large countries with numerous privatizations. In percentages of offering proceeds, Singapore, Indonesia, and Hong Kong actually have had the most generous retail incentives, but samples for these countries are small. Of countries with large privatization programs, the UK tops the list, with 5.6% of proceeds spent on retail incentives, followed by Italy with 5.4% and France with 5.2%. Italy, France,

and Germany have used predominantly bonus share structures rather than discounts, while the UK has used both bonuses and installment plans.

To put the \$27 billion spent on retail incentives in perspective, we need to compare this cost with the largest direct and indirect costs of an IPO. The largest direct cost of an IPO is typically the gross spread paid to the issuing syndicate. Jones et al. (1999) put this gross spread at a mean of 2.2% of privatization proceeds, although it tends to be lower for SEOs. The largest indirect cost is underpricing. In our sample, the average underpricing is 14.2% for IPOs and 0.8% for SEOs.

On average, retail incentives amount to around 3.3% of issue proceeds in our sample. In IPOs, incentive packages cost more than the gross spread and over one-quarter of the money left on the table through underpricing. In SEOs, meanwhile, retail incentives are the most important cost component, about as high as underpricing and gross spreads combined.

One could argue that the money spent on retail incentives is a wealth transfer from the state to domestic retail investors, who are most likely to be of at least moderate wealth. Of course, there are likely to be offsetting benefits for example in terms of financial market development. In any case, the large sums involved require some justification and beg the question of how well the retail incentives actually work.

#### **IV. Do Retail Incentives Work? Offer-Level Data**

##### *A. Number of Investors and Retail Incentives*

One of the measurable political goals of a retail incentive structure is to attract more investors to an offering. We test whether this goal has been reached by performing ordinary least squares and 2SLS regressions, where the dependent variable is the log number of investors participating in a share issue privatization.

Our independent variables are as follows. First is the value of retail incentives in the offering. This is the percentage value of the incentives measured as the dollar value of bonus shares, discounts, and installments divided by the total dollar proceeds of the offering. We expect the value of retail incentives to be positively associated with the log number of investors. The better the terms offered, the more investors are interested.

The second important form of subsidy to investors is underpricing. Realized underpricing arguably consists of an expected component and a stochastic error term. We recognize that the government can influence expected underpricing, but has much less control on realized underpricing. Expected underpricing thus offers a natural benchmark against which to compare the effect of retail incentives.

Our empirical specification assumes that informed investors are likely to care both about expected underpricing and unexpected, or residual, underpricing (Rock, 1986). As in Aggarwal et al. (2002b), we run a 2SLS regression splitting realized underpricing into expected and unexpected components. The first stage of the model includes dummies for fixed-price offerings and for offerings that include primary shares; the local market index return for the month preceding the offering; and all the independent variables used in the

second stage (except underpricing). Although we rely on this 2SLS model for inference, we also report results from a simple one-stage OLS model that uses realized underpricing as an independent variable.

Third, we include an IPO dummy. Our expectations for this variable are somewhat ambiguous, as they are for our analysis of the determinants of retail incentives. On the one hand, IPOs may be more heavily marketed to attract more retail investors; on the other, the companies are less well known in the first place.

Fourth, we add two necessary size variables, one for the offer and one for the country. Larger offerings will most likely be associated with more investors. We use the log of the country's population to control for the potential number of investors able to participate, and expect the two to be positively related.

Fifth, to proxy for the level of development of the financial market, we add external capital per GNP and liquidity; we expect both to be positively associated with the number of investors participating in an offering. Finally, we include dummies for countries with at least four SIPs in the sample.

Results are reported in Table VI. We find a strong relationship, both statistically and economically significant, between retail incentives and the log number of investors in all models. The value of retail incentives is positive throughout and significant at the 1% level. Coefficients range from 18.4 to 19.8, depending on the model. The interpretation is that each percentage point added in retail incentives increases the number of investors by approximately 18% to 20%.

Expected, or fitted, underpricing has the expected positive sign and is significant in one of the two specifications at the 10% level ( $t$ -values 1.09 and 1.71). These results suggest that one percentage point spent on underpricing increases the number of investors by 1.7% to 2.3%. Coefficients for the residual underpricing variable are of the same magnitude as the fitted underpricing variable and are significant at the 10% level ( $t$ -values 1.98 and 1.91). In the OLS model, realized underpricing is significant at the 5% level in both specifications. The coefficient for the underpricing variable is on the same order of magnitude as in the 2SLS specifications.

Log proceeds are significantly positive in all specifications. Results are not robust for the other control variables, i.e. the IPO dummy, log population, external capital per GNP, and liquidity.

Retail incentives seem to be more cost-effective than underpricing in increasing the number of investors. The difference in efficiency may obtain because the terms of the retail incentives are known in advance but underpricing is not, making the former a more effective marketing tool. Moreover, retail incentives can be targeted to specific investor groups, while the costs of underpricing also benefit institutional investors.

Assuming the average coefficients from our 2SLS specifications, and the average 46% retail allocation, retail incentives are  $\frac{19.09\%}{2.00\%} \times \frac{1}{0.46} \approx 20.7$  times more efficient than underpricing. In other words, a dollar spent on retail incentives helps to attract about 21 times more investors than a dollar spent on underpricing.

How much does it cost to attract one investor to participate in a privatization? We can get a rough estimate of this cost by dividing the total cost of retail incentives by the total number of investors participating in privatization offers with retail incentives. The total cost of retail incentives in the 130 offers for which we have participation data is \$14.04 billion. Considering multiple participations by the same investor, a total of 101.73 million investors participated in these offerings. This results in an average cost of \$138 per investor.

This calculation ignores the fact that many investors would probably have participated in the offerings even had there been no retail incentives. The marginal cost of attracting one investor to participate in a privatization by means of retail incentives should thus be higher than the \$138 per investor. We evaluate this marginal cost as follows.

The average 2SLS regression coefficient for retail incentives as a fraction of total proceeds is 19.09. The median firm in the regression sample generated total proceeds of \$1,512 million and attracted 345,800 investors.<sup>2</sup> Therefore, an input of 0.01% of total proceeds in incentives, or \$151,200, increases the log number of investors by 0.01% $\times$ 19.09. This translates into an increase of 661 investors, with a cost of  $151,200 / 661 = \$229$  per investor.

Bear in mind that many retail incentive plans have a dual purpose: to attract new investors and to discourage flipping. As we show below, bonus share incentives reduce flipping for several years, a valuable outcome not considered in our calculation above. Therefore, and because not all investors exercise the option to reap the retail incentives (as the calculations assume), the cost of \$229 per investor should be seen as a high estimate of the cost of attracting new investors to privatizations with retail incentives.

### *B. Market Reaction to Bonus Share Waiting Period Expiration*

Do retail incentives also help in retaining buyers as long-term investors? To answer this question, we examine the behavior of stock price and trading volume around the end of the mandatory holding period using international offer-level data. We focus on bonus shares rather than discounts as the bonus ratios are much higher than the discount percentages, with a mode bonus of 10% versus a mode discount of 5%.

When the minimum holding period for the bonus share arrangement expires, investors become free to sell the shares they obtained in their initial allocation without losing their incentive benefit. As bonus percentages are quite important, it often pays to wait unless the investor expects a rapid decline in the stock price. Bonus share expiration bears some similarity to IPO

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<sup>2</sup> We use medians instead of means because the distribution of gross proceeds (skewness = 3.06) is much more skewed than the distribution of the number of investors (skewness = 1.58).

lock-up period expiration. Field and Hanka (2001) and Brav and Gompers (2003) document that the lock-up expiration date is associated with abnormal negative return and positive volume. Field and Hanka report that IPO lock-up expiration is followed by a three-day abnormal return of  $-1.5\%$  and a 40% permanent increase in average trading volume.

There is an important difference between lock-ups and bonus share structures. For the lock-up, the whole lock-up allocation is tradable on the ex-date. Bonus shares are not necessarily tradable on the ex-date because of institutional constraints. In Italy, for example, the waiting period for bonus share delivery can be as long as three to four months after the deadline has run out.

If investors want to wait for the bonus and then flip, would they flip all their shares, or only the bonus part? Probably all of them, as the average allocation in SIPs is relatively low. With small allocations, flipping only the bonus shares may not make sense because of transaction costs.

In international event studies, one must decide which index and which currency to use to build the model of normal returns and volumes. As in Foerster and Karolyi (1999), we conduct our analysis using daily abnormal returns in local currency in excess of the local market model. The parameters of the model are estimated separately for each firm from a time series covering days  $-250$  to  $-50$ . Excess volume is calculated in excess of the average volume on days  $-45$  and  $-6$  before the event date.

Volume and return data for individual stocks as well as aggregate market returns are all from Datastream. Events with unreliable expiration days are discarded. The event study sample includes sequential bonus arrangements in two Singapore Telecom offerings (i.e. there is more than one bonus expiration day per offering). Excluding these events does not change the results.

These restrictions give us a sample of 107 observations for abnormal returns and 103 observations for excess volume. Results are reported in Table VII for returns and Figure 1 for volumes.

The period from days 0 to 5 produces an average CAR of  $-1.1\%$ , which is significant at conventional levels. This is comparable to three-day abnormal returns of  $-1.5\%$  for IPO lock-up expirations, as reported by Field and Hanka (2001).

There is an important difference, however: Lock-up expirations are particularly important for relatively small IPOs, while SIP bonus shares involve some of the largest issues on the market. As Fama (1998) and others note, anomalies are largely limited to small stocks. The fact that companies in our SIP sample are on average large makes their abnormal returns all the more anomalous.

On day zero, we observe a mean abnormal return of  $-0.29\%$ , significant at the 10% level. Outliers do not have a material effect on these results; for example, the median day zero abnormal return of  $-0.20\%$  is significant at the 5% level.

The results are similar for volume effects. Day 0 shows a clear peak in excess volume at 36.7% above normal. While economically important, the high volume is statistically insignificant ( $t$ -value = 0.60), because of high short-term volatility. Volume remains consistently above normal in the 50 days after the bonus expiration date, generating an average abnormal volume of 21.3% for the 50-trading-day window ( $t$ -value = 2.49).

As in IPO lock-ups, the increase in volume appears permanent. The mandatory holding period blocks some of the free float waiting for the ex-date. After the ex-date, volume increases significantly as both the new bonus shares and, more important, the original allocations enter the free float.

We conclude there is evidence both of short-term negative abnormal returns and of an increase in volume around the end of the mandatory holding period for SIP bonus shares. We also investigate, in untabulated analysis, potential determinants of CARs and excess volumes, such as the bonus ratio and the length of the mandatory holding period, but do not find robust effects because of the small sample.

## **V. Do Retail Incentives Work? Investor-Level Data**

### *A. Flipping Ratios in Different Tranches*

We analyze seven Finnish share issue privatizations providing bonus shares over 1995-1999: three IPOs and four SEOs. Descriptive statistics for the offerings are shown in Table VIII. A total of 202,176 retail investors (125,297 different individuals) were allocated shares in these offerings. Combined proceeds from all tranches of the offerings amounted to \$5.4 billion.

The retail offerings were structured in three tranches: regular (no incentives), retail with bonus, and employees with bonus. The regular tranche is for companies that do not qualify as institutional investors (not included in our data), and for individuals who wished to maximize their allocation (the regular tranche might be less oversubscribed) or who did not want bonus shares for some other reason. The minimum holding period for bonus shares was 12 months, and the bonus ratio was 1:10 in all seven SIPs. The 12-month holding period equals approximately 250 trading days, with minor year-to-year variation ranging from 242 to 256 trading days. Four of the offerings included an employee tranche, with ratios of 3:20 (three cases) or 2:10 bonuses (one case) after 12 months.

A Finnish bonus investor may sell shares early, forfeiting the right to bonus shares, but only through a process that first converts the shares with bonus rights into ordinary shares. This conversion process is observable in the data, so we can distinguish between bonus shares first converted and then sold from other shares sold. Converting the shares may involve a small administrative cost, depending on the investor's brokerage contract. The conversion takes up to five banking days, which effectively makes it impossible to flip the bonus tranche for the first week of trading.

We calculate the stock inventory of each investor using the first-in-first-out (FIFO) method. Because of FIFO and because the flipping ratios cannot exceed 100%, only shares sold from the initial allocation are counted as flipped in IPOs. The case is different for SEOs. If

the investor held the stock at the SEO date, sales are first subtracted from that inventory. This may understate the flipping of non-bonus shares in SEOs. We err, however, on the side of caution, as we are understating flipping for the non-bonus tranche, which has a higher flipping rate than the bonus tranche.

If an investor has both regular shares and shares with bonus rights in inventory at the bonus expiration date, we allocate shares sold after the expiration date to both share classes proportionally. For example, if the investor has 200 shares left in regular share inventory and 100 shares in bonus share inventory, and she sells 50 shares after bonus expiration, we

assume that  $\frac{100}{200+100} \times 50$  of the shares are sold from the bonus series and the rest from

the regular series. We also perform robustness checks using the most conservative approach possible, i.e., allocating all flipping to the bonus shares before any sales are allocated to the regular series.

Table IX shows information on flipping behavior in Finnish SIPs. We compute two measures of the flipping ratio, which each vary between 0 and 100%. The first is the ratio of the number of flipping investors and the number of investors who received an initial allocation. Investors who flipped some of their shares count as the fraction they flipped. The ratio is then averaged over offerings. The second measure is the ratio of the flipping volume and the total initial allocation. This too is averaged over offerings.

The results indicate that short-term flipping is most common in the regular tranche, much less common in the bonus tranche, and least common in the employee tranche. In the first two days of trading, in regular tranches, on average 5.0% of retail investors flip. The flippers have somewhat larger allocations than other retail investors on average: The fraction of shares flipped amounts to 7.4%. This is clearly lower than in Aggarwal (2003); she reports that on average 18.2% of shares in the retail tranche are flipped in the first two trading days. In the bonus and employee tranches, conversion delays make the two-day flipping ratio equal to zero.

This short-term pattern is replicated in the long run. Over the first 1,000 trading days after the offering, the regular tranche sees 71% of investors flip versus 36% in the bonus tranche and 24% in the employee tranche. The  $t$ -value for the difference between the regular tranche and the bonus tranche is 4.02 over 1,000 days. Over the long term, the bonus tranche appears to generate only half the flipping of the regular tranche.

We also test whether the proportion of flipping investors is different in the bonus tranche and the regular tranche of the same offering. We test all seven offerings separately after 1,000 days. The difference is highly significant for all seven separately, with  $t$ -values ranging from 7.5 to 85.6.

Figure 2 depicts flipping ratios in the bonus tranche on a day-to-day basis. Panel A shows the results for the retail bonus tranche and Panel B the employee tranche. Daily flipping ratios are very close to zero until the mandatory holding period expires, at which point flipping increases sharply. On the bonus expiration date, on average 25.6% of total trading volume for the security is generated by the retail flippers in our sample.

The patterns between tranches can be better compared in Figure 3, which shows cumulative flipping ratios for the same data. Flipping in the regular tranche starts rapidly, reaches 40% in the first 100 trading days, and continues to increase at a declining rate. For the bonus tranche, 96% of investors wait until the bonus date. After that, the flipping rate is faster than for the regular tranche for a while. After 1,000 trading days, flipping rates for both tranches are roughly equal, and very low. Interestingly, cumulative flipping is still about 35 percentage points lower for the bonus tranche and appears permanently reduced. Flipping in the employee tranche follows a pattern similar to that of the bonus tranche, but holds at a slightly lower level throughout.

Why do bonus shares appear to reduce flipping on a permanent basis? Samuelson and Zeckhauser (1988) introduce the concept of status quo bias, a preference for the current state. The extra waiting period may help investors feel that their shares are part of a stable initial endowment and that the status quo should be preserved (see Kahneman et al., 1991 for a discussion of the endowment effect).

#### *B. Controlled Experiment: Investors Subscribing to Both Regular and Bonus Tranches*

Finally, we match individuals who subscribed to shares in both the regular and bonus tranche of the same offering. This possibility was open in all seven offerings, and we can identify 8,221 such subscription pairs, on average 1,174 per offering. These were commonly active investors who sought to maximize their allocation, as minimum allocations were counted separately for both tranches. This provides a perfect controlled experiment: Any differences in behavior can be attributed only to differences in the incentive structure.

Table X shows the results for the controlled experiment. In the regular tranche, within the first two trading days, 3.7% of investors flip 4.4% of the stock. In the bonus tranche, the flipping ratios are zero (because of conversion delays). After 500 trading days, 65.8% of the investors have flipped their regular shares, but only 48.7% of these same investors have flipped their bonus shares ( $t$ -value of 2.99 for the difference). After 1,000 trading days, the flipping ratios for regular and bonus shares are 72.9% and 61.7%, respectively ( $t$ -value of 1.73 for the difference).

Figure 4 shows that the difference in flipping behavior starts to diminish after the bonus date, but a significant difference remains between the two tranches. According to these numbers, bonus shares have reduced flipping by 15% over a period of 1,000 trading days. Since these figures are calculated from a subsample of relatively active traders, the reduction in flipping for the overall investor population could well be larger.

The preceding analysis allocates shares sold after bonus expiration proportionally to bonus and regular tranches. This implies that if the flipping ratio of the bonus tranche is lower at bonus expiration, it can never exceed the flipping ratio of the regular tranche. Therefore, as a robustness check, we allocate sales primarily to the bonus series. This is the most conservative approach possible, in effect assuming that after the expiration date all bonus shares are sold before any regular shares. In this case, the difference between flipping ratios in bonus and regular series persists, equaling 7.4% (versus 11.2% above) after 1,000 trading days.

## VI. Concluding Remarks

Our research documents widespread use of retail incentives in privatizations. These retail incentives include bonus shares (such as one for ten shares held for 12 months), retail discounts (such as 5% off the institutional price if shares are held for 18 months), and interest-free installment plans. Examining the retail terms of 360 share issue privatizations from 24 countries over 1981-2003, we estimate the total cost of retail incentives at approximately \$27 billion. This assumes implicitly that all investors eligible for bonus shares hold their shares for the required period, an assumption that appears reasonable considering the high bonus take-up rates in our Finnish data.

Bonus shares have been the most expensive component of retail incentives. The costs of retail incentives are comparable to the primary direct issue cost, the gross spread to the underwriting syndicate, and equal about one-quarter of the largest indirect issue cost, IPO underpricing. For SEO privatizations, retail incentives are the largest cost component.

Is the \$27 billion money well-spent? Governments have argued that retail incentives result in a larger domestic shareholder base. Our results strongly support this argument, suggesting that one dollar spent on retail incentives increases the number of investors by about 21 times more than a dollar spent on underpricing.

It has also been argued that retail incentives are an effective anti-flipping device. We show with individual-level data that flipping is indeed clearly reduced for bonus tranches, even when we are comparing the actions of the same individual in the regular and bonus tranche of the same offering. Initially, flipping is very low in the bonus tranche. After the mandatory holding period ends, flipping increases sharply. It is probably because of this surge in flipping that we find a six-day abnormal return of  $-1.1\%$  and an 21% increase in trading volume at the end of the mandatory holding period. And even though flipping in the bonus tranche increases after the end of the mandatory holding period, the flipping ratios after 1,000 trading days are still at least 15% lower for the bonus tranche than for the regular tranche.

Retail incentives have performed well in meeting their stated goals. They have also been very expensive: Attracting one additional investor with retail incentives has cost up to \$229. The fact that virtually no such arrangements are seen in private sector offerings implies that private issuers do not consider the economic benefits of additional investors worth the cost. This suggests that political motives such as those discussed in Jones et al. (1999) and Biais and Perotti (2002) play a pivotal role in making retail incentives more attractive to privatization issuers than to private sector issuers.

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**Table I**  
**Descriptive Statistics**

This table reports descriptive statistics for a sample of share issue privatizations (SIPs) from 1981 through 2003.

Variable	N	Mean	Median	Min	Max
Government ownership					
Before (%)	330	77.9	94.8	1.0	100.0
After (%)	330	35.7	39.5	0.0	92.8
Initial return (%)	234	9.2	5.2	-23.5	100.7
Allocation					
Retail (%)	172	46.0	47.0	2.8	95.0
Institutional (%)	172	54.0	53.0	5.0	97.3
Offering size					
Proceeds, \$m	360	1,817	570	3	40,260
Proceeds, 2002 \$m	360	2,260	734	5	63,757
Number of investors (1000s)	130	783	346	2	4,200

**Table II**  
**Use of Retail Incentives Across Sample Countries**

This table reports the distribution of retail incentives in SIPs from 1981 through 2003 by country and by type of offering.

Panel A: Distribution of Retail Incentives by Country					
Country	Number of Offerings				Number of Offerings, Total
	Bonus	Discount	Installments	Offerings with at Least One Incentive	
Australia	0	4	3	5	10
Austria	2	5	1	6	22
Belgium	0	0	0	0	1
Canada	0	0	6	6	16
Denmark	0	0	0	0	4
Finland	9	0	0	9	14
France	23	16	0	25	43
Germany	4	2	0	5	15
Greece	9	5	0	11	17
Hong Kong	2	2	0	2	2
Indonesia	1	1	0	1	1
Ireland	1	0	0	1	2
Italy	20	6	0	21	34
Japan	0	0	0	0	14
Netherlands	1	3	0	3	8
New Zealand	0	0	0	0	4
Norway	2	2	0	2	5
Portugal	10	23	0	23	43
Singapore	2	2	0	3	15
South Africa	1	1	0	1	2
Spain	3	12	0	12	23
Sweden	0	2	0	2	9
Switzerland	0	1	0	1	1
UK	39	3	39	42	55
Total	129	90	49	181	360

Panel B: Distribution of Retail Incentives by Offering Type					
Offering Type	Number of Offerings				Number of Offerings, Total
	Bonus	Discount	Installments	Offerings with at Least One Incentive	
IPO	84	45	40	110	219
SEO	45	45	9	71	141

**Table III**  
**Terms of Retail Incentives**

This table reports the distribution of the length of the bonus period, the bonus fraction, the discount percent, and the length of retail installment period in SIPs from 1981 through 2003. Value of offering is measured as offering proceeds in 2002 dollars.

Panel A: Length of Bonus Period				
Period, Months	Number of Offerings	%	Value of Offerings	%
Less than 6	3	2.3	128	0.0
6 to less than 12	8	6.2	4,990	1.2
12 to less than 18	39	30.2	139,331	34.4
18 to less than 24	27	20.9	101,352	25.0
24 to 36	47	36.4	150,591	37.1
Special	5	3.9	9,009	2.2
All	129	100.0	405,401	100.0

Panel B: Bonus Fraction				
Fraction	Number of Offerings	%	Value of Offerings	%
1:40	1	0.8	67	0.0
1:25	9	7.0	17,097	4.2
1:20	32	24.8	61,522	15.2
1:15	6	4.7	27,882	6.9
1:10	74	57.4	289,700	71.5
1:5	3	2.3	547	0.1
Special	4	3.1	8,586	2.1
All	129	100.0	405,401	100.0

Panel C: Size of Discount				
Discount, %	Number of Offerings	%	Value of Offerings	%
0.00-1.99	3	3.3	10,490	4.5
2.00-3.99	28	31.1	109,564	47.2
4.00-5.99	39	43.3	88,787	38.3
6.00-7.99	7	7.8	6,286	2.7
8.00-9.99	6	6.7	9,398	4.0
10.00-30.00	7	7.8	7,595	3.3
All	90	100.0	232,118	100.0

Panel D: Length of Discount Lock-up Period				
Period, Months	Number of Offerings	%	Value of Offerings	%
No lock-up	64	71.1	177,358	76.4
Less than 6	11	12.2	14,720	6.3
6 to less than 12	4	4.4	12,620	5.4
12 to 24	11	12.2	27,420	11.8
All	90	100.0	232,118	100.0

Panel E: Length of Installment Period				
Period, Months	Number of Offerings	%	Value of Offerings	%
Less than 6	1	2.0	1,194	0.9
6 to less than 12	4	8.2	15,320	10.9
12 to less than 18	15	30.6	59,610	42.5
18 to 24	29	59.2	63,985	45.7
All	49	100.0	140,108	100.0

**Table IV**  
**Determinants of the Decision to Include Retail Incentives in a Share Issue Privatization**

This table reports results from probit and 2SLS regressions of the decision to include retail incentives in a share issue privatization. The dependent variable takes the value of one if there are bonus shares, discounts, or installments for retail investors in the offering. In the first stage of the 2SLS models the dependent variable is realized underpricing. Independent variables include all the independent variables in the second stage regression (except underpricing) plus instruments. The instruments are a dummy for fixed-price offering, a dummy for offerings which include primary shares, and one-month market return, which is measured as the change in the local market index one month before the offering. Underpricing is measured as percentage change from the issue price to first day close. Ln(Proceeds) is calculated in 2002 dollars. External capital per GNP is taken from La Porta et al. (1997) and measures the ratio of stock market capitalization held by minorities to gross national product for 1994. Liquidity is the dollar value of shares traded divided by the average market capitalization in 1997, drawn from the IFC Emerging Stock Markets Factbook 1998. The socialist government dummy is assigned the value of one if the largest party in a country's government at the time of the offer is left of center, zero otherwise. Data on government is obtained from the Database on Political Institutions compiled by World Bank's Development Research Group. Dummies are included for every country with at least 20 observations, except for UK, whose dummy is excluded due to high correlation with the incentive dummy. SIPs with missing values of any variables used in the regression are excluded. *t*-values are reported in italics below the coefficient. Pseudo- $R^2$  is from McFadden (1974). \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% respectively. All significance tests are two-sided.

Dependent Variable Specification	Retail Incentives (0/1)			
	Probit		2SLS, Second-Stage Probit	
	1	2	1	2
Intercept	-3.52*** <i>-5.88</i>	-2.60*** <i>-3.36</i>	-2.75*** <i>-4.14</i>	-1.65 <i>-1.64</i>
Realized Underpricing	-0.12 <i>-0.18</i>	0.24 <i>0.38</i>		
Fitted Underpricing			-1.93 <i>-0.79</i>	0.95 <i>0.41</i>
IPO Dummy	0.13 <i>0.57</i>	0.14 <i>0.63</i>	0.02 <i>0.07</i>	-0.04 <i>-0.15</i>
Ln (Proceeds)	0.37*** <i>5.68</i>	0.38*** <i>5.78</i>	0.26*** <i>3.50</i>	0.30*** <i>3.93</i>
External Capital per GNP	1.32*** <i>3.33</i>		2.04*** <i>4.01</i>	
Liquidity		-0.06 <i>-0.07</i>		-0.39 <i>-0.34</i>
Socialist Government Dummy	0.57** <i>2.34</i>	0.23 <i>1.03</i>	0.57** <i>2.20</i>	0.14 <i>0.59</i>
Country Dummies	✓	✓	✓	✓
Pseudo- $R^2$	0.21	0.17	0.21	0.14
$\chi^2$	66.32	54.97	53.17	36.13
Observations	234	234	190	190

**Table V**  
**Costs of Retail Incentives in Share Issue Privatizations**

This table reports the value of retail incentives and underpricing in share issue privatizations. The dollar value of a retail incentive component is calculated as  $V = D \times R \times P$ , where  $D$  is the value of the incentive component as a percentage of the offering proceeds,  $R$  is the percentage of the offering allocated to retail investors, and  $P$  is the value of the offering proceeds measured in 2002 dollars. In the case of bonus shares,  $D$  is defined as the number of bonus shares to which the investor is entitled divided by the number of shares that are needed to receive the bonus shares. For regular discounts,  $D$  is the percentage discount to retail investors. The percentage cost  $D$  of installments is calculated as one minus the ratio of the time-discounted value and the non-discounted value of the installment payments. The payments are discounted by the prevailing 12-month interbank interest rate at the time of the offering. If retail allocation  $R$  is not known for a particular issue, the average  $R$  is used. The analysis is performed separately for those cases for which data on underpricing is available (the last four columns). Data on underpricing are available for 228 offerings.

Panel A: Distribution of Retail Incentive Costs by Country																
Country	Dollar Value of Privatization Offerings	Number of Privatization Offerings	All Data				Data Available for Underpricing									
			Dollar Value, Millions				Percent Value, %				Percent Value, %					
			Bonus	Dis-count	Install-ments	Sum	Bonus	Dis-count	Install-ments	Sum	Bonus	Dis-count	Install-ments	Under-pricing	Sum	
Australia	34,026	10	0	888	402	1,290	0.0	2.6	1.2	3.8	0.0	2.2	1.2	-5.7	-2.3	
Austria	5,186	22	58	45	4	106	1.1	0.9	0.1	2.0	1.3	1.0	0.1	1.8	4.2	
Belgium	1,261	1	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	4.7	
Canada	10,486	16	0	0	91	91	0.0	0.0	0.9	0.9	0.0	0.0	0.4	11.7	12.2	
Denmark	4,090	4	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	6.8	
Finland	8,287	14	97	0	0	97	1.2	0.0	0.0	1.2	1.3	0.0	0.0	10.1	11.3	
France	105,597	43	4,277	1,199	0	5,475	4.0	1.1	0.0	5.2	3.9	0.8	0.0	8.1	12.9	
Germany	58,964	15	2,635	96	0	2,731	4.5	0.2	0.0	4.6	4.4	0.0	0.0	9.6	14.0	
Greece	8,377	17	187	32	0	219	2.2	0.4	0.0	2.6	1.7	0.5	0.0	12.6	14.8	
Hong Kong	5,860	2	276	124	0	400	4.7	2.1	0.0	6.8	5.3	2.4	0.0	23.7	31.4	
Indonesia	1,877	1	109	27	0	137	5.8	1.5	0.0	7.3	5.8	1.5	0.0	2.4	9.7	
Ireland	4,823	2	102	0	0	102	2.1	0.0	0.0	2.1	2.1	0.0	0.0	18.6	20.7	
Italy	105,929	34	5,091	645	0	5,736	4.8	0.6	0.0	5.4	4.2	0.6	0.0	3.3	8.1	
Japan	203,167	14	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.8	14.8	
Netherlands	16,406	8	47	183	0	230	0.3	1.1	0.0	1.4	0.0	1.1	0.0	5.4	6.5	
New Zealand	2,878	4	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.9	12.9	
Norway	5,598	5	32	17	0	48	0.6	0.3	0.0	0.9	0.7	0.3	0.0	1.8	2.8	
Portugal	25,605	43	378	527	0	905	1.5	2.1	0.0	3.5	1.6	2.8	0.0	9.3	13.7	
Singapore	4,396	15	498	26	0	523	11.3	0.6	0.0	11.9	14.2	0.7	0.0	71.7	86.6	
South Africa	2,372	2	10	2	0	12	0.4	0.1	0.0	0.5	2.0	0.5	0.0	0.7	3.2	
Spain	41,917	23	202	728	0	930	0.5	1.7	0.0	2.2	0.5	1.8	0.0	1.5	3.8	
Sweden	13,956	9	0	150	0	150	0.0	1.1	0.0	1.1	0.0	0.6	0.0	3.5	4.1	
Switzerland	6,181	1	0	32	0	32	0.0	0.5	0.0	0.5	0.0	0.5	0.0	10.0	10.5	
UK	136,339	55	4,673	148	2,868	7,690	3.4	0.1	2.1	5.6	3.4	0.1	2.0	7.0	12.6	
All	813,576	360	18,670	4,868	3,365	26,904	2.3	0.6	0.4	3.3	2.2	0.6	0.5	8.3	11.6	

Panel B: Distribution of Retail Incentive Costs by Type of Offering															
Type of Offering	Dollar Value of Privatization Offerings	Number of Privatization Offerings	Bonus	Dis-count	Install-ments	Sum	Bonus	Dis-count	Install-ments	Sum	Bonus	Dis-count	Install-ments	Under-pricing	Sum
IPO	401,994	219	9,419	1,806	2,346	13,570	2.3	0.4	0.6	3.4	2.6	0.5	0.7	14.2	17.9
SEO	411,582	141	9,252	3,063	1,020	13,335	2.2	0.7	0.2	3.2	1.8	0.7	0.3	0.8	3.6

**Table VI**  
**Determinants of the Number of Investors Participating in a Share Issue Privatization**

This table reports determinants of the log number of investors participating in share issue privatizations. We report two specifications using OLS and two specifications using 2SLS. In the first stage of the 2SLS models the dependent variable is realized underpricing. Independent variables include all the independent variables in the second stage regression (except underpricing) plus instruments. The instruments are a dummy for fixed-price offerings, a dummy for offerings which include primary shares, and one-month local market return prior to the offerings. The fitted values and residuals from the first stage are included as independent variables in the second stage regression. Value of retail incentives refers to the percentage value of the incentives measured as the total dollar value of bonus shares, discounts, and the time value of installments divided by the offering proceeds. Ln (Proceeds), external capital per GNP, and liquidity are defined as in Table IV. Market return is measured as the change in the local market index one month before the offering. Country dummies are included for countries with at least four observations. SIPs with missing values of any variables in the regression are excluded. *t*-values are reported in italics below the coefficients and are White (1980) heteroskedasticity-consistent. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% respectively. All significance tests are two-sided.

Dependent Variable Specification	Ln (Number of Investors)			
	OLS		2SLS	
	1	2	1	2
Intercept	-2.93* <i>-1.85</i>	-2.93* <i>-1.86</i>	-2.99* <i>-1.81</i>	-2.79* <i>-1.84</i>
Value of Retail Incentives	19.72*** <i>5.05</i>	18.42*** <i>5.39</i>	19.76*** <i>5.12</i>	18.43*** <i>5.32</i>
Realized Underpricing	1.87** <i>2.56</i>	1.91*** <i>2.63</i>		
Fitted Underpricing			1.68 <i>1.09</i>	2.33* <i>1.71</i>
Residual Underpricing			1.92** <i>1.98</i>	1.78* <i>1.91</i>
IPO Dummy	0.19 <i>0.76</i>	0.19 <i>0.76</i>	0.19 <i>0.74</i>	0.19 <i>0.76</i>
Ln (Proceeds)	0.74*** <i>7.89</i>	0.73*** <i>7.96</i>	0.74*** <i>7.96</i>	0.73*** <i>7.95</i>
Ln (Population)	0.19 <i>0.90</i>	0.12 <i>0.60</i>	0.20 <i>0.90</i>	0.10 <i>0.53</i>
External Capital per GNP	-0.64 <i>-0.71</i>		-0.67 <i>-0.72</i>	
Liquidity		0.68 <i>0.77</i>		0.66 <i>0.74</i>
Country Dummies	✓	✓	✓	✓
Adjusted $R^2$	0.76	0.76	0.76	0.76
<i>F</i>	27.34	27.34	24.90	24.97
Observations	103	103	103	103

**Table VII**  
**Cumulative Abnormal Returns Around the Bonus Expiration Date**

This table reports the cumulative abnormal returns (CARs) around the bonus expiration day, i.e. the day on which an investor is for the first time free to sell without forfeiting the right to bonus shares. CARs are measured in excess of local market model. The parameters of the model are estimated separately for each firm from a time series covering days  $-250$  to  $-50$ . Return data for individual stocks and aggregate market returns are from Datastream. Events that have unreliable expiration days are discarded from the analysis. Test statistics below means are  $p$ -values based on a two-tailed test assuming independence of observations. Test statistics below medians are  $p$ -values based on a Wilcoxon signed rank test. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% respectively.

Event Period	CAR (%)	
	Mean	Median
-50 to -11	1.39 <i>0.245</i>	1.50 <i>0.115</i>
-10 to -6	-0.47 <i>0.147</i>	-0.69** <i>0.021</i>
-5 to 0	-0.37 <i>0.322</i>	-0.05 <i>0.396</i>
-1	0.07 <i>0.696</i>	-0.10 <i>0.853</i>
0	-0.29* <i>0.053</i>	-0.20** <i>0.013</i>
1	-0.11 <i>0.536</i>	-0.11 <i>0.212</i>
0 to 5	-1.07*** <i>0.007</i>	-0.77*** <i>0.002</i>
6 to 10	-0.28 <i>0.493</i>	-0.33 <i>0.521</i>
11 to 50	-0.23 <i>0.818</i>	-0.39 <i>0.542</i>
-1 to 1	-0.33 <i>0.269</i>	-0.30* <i>0.062</i>
-5 to 5	-1.15** <i>0.022</i>	-0.57** <i>0.041</i>
Observations	107	

**Table VIII**  
**Descriptive Statistics on Flipping**

This table shows descriptive statistics for the seven SIPs in which we analyze investor-level flipping behavior. We compute two measures of the flipping ratio, which both vary between 0 and 100%. The first is the ratio between the number of flipping investors and the number of investors who received an initial allocation. Investors who flipped some of their shares count as the fraction they flipped. The second measure is the ratio between the flipping volume and the total initial allocation.

Listing Month	Company	Tranche	Type	Proceeds, 2002 \$m	Bonus Fraction	Length of Bonus Period, Months	Number of Retail Investors	Flipping Ratio at Bonus Expiration (%)	
								Number of Investors	Volume
11/95	Neste	Regular	IPO	127	-	-	1,670	18.1	40.3
		Bonus, retail			1:10	12	22,264	1.5	2.6
06/96	Valmet	Regular	SEO	288	-	-	211	51.7	51.1
		Bonus, retail			1:10	12	6,561	1.6	1.7
		Bonus, employees			2:10	12	449	0.4	0.2
10/96	Kemira	Regular	SEO	249	-	-	159	48.8	55.9
		Bonus, retail			1:10	12	12,554	1.0	1.1
		Bonus, employees			3:20	12	515	0.2	0.4
05/97	Rautaruukki	Regular	SEO	59	-	-	558	67.5	62.9
		Bonus, retail			1:10	12	15,364	2.8	2.9
		Bonus, employees			3:20	12	413	2.3	2.9
06/98	Sponda	Regular	IPO	91	-	-	765	68.2	67.8
		Bonus, retail			1:10	12	7,840	4.8	5.4
11/98	Sonera	Regular	IPO	1268	-	-	16,700	68.9	75.6
		Bonus, retail			1:10	12	66,468	10.8	10.8
10/99	Sonera	Regular	SEO	3334	-	-	3,916	66.8	63.4
		Bonus, retail			1:10	12	44,133	5.1	4.8
		Bonus, employees			3:20	12	1,636	4.1	4.3

**Table IX**  
**Flipping Ratios in Share Issue Privatizations**

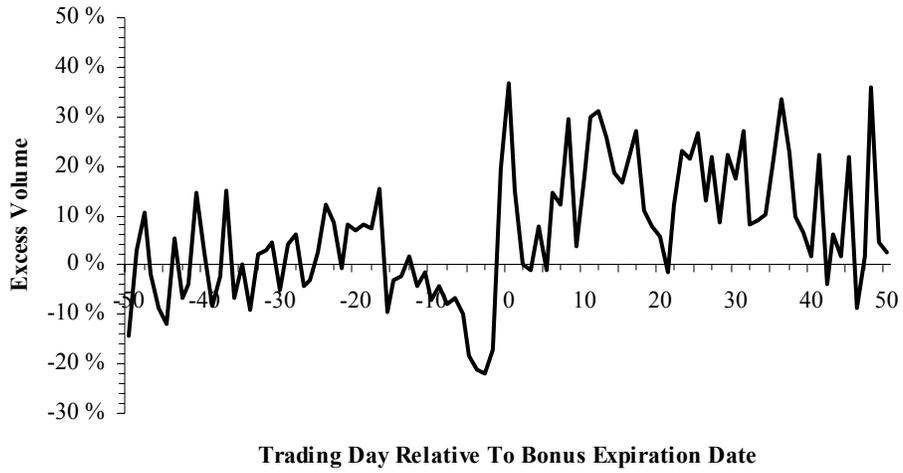
This table shows flipping ratios relative to listing date for three tranches of seven Finnish SIPs. The tranches are regular (no bonus), retail with bonus, and employees with bonus. We compute two measures of the flipping ratio which both vary between 0 and 100%. The first is the ratio between the number of flipping investors and the number of investors who received an initial allocation. Investors who flipped some of their shares count as the fraction they flipped. The ratio is then averaged over offerings. The second measure is the ratio between the flipping volume and the total initial allocation. Like the first measure, we average it over offerings. *t*-values for a test of difference in means against the regular tranche, assuming unequal variances, are in italics below the flipping ratios.

Period	Number of Investors						Volume					
	Regular		Bonus, Retail		Bonus, Employees		Regular		Bonus, Retail		Bonus, Employees	
	Flipping Ratio	Cumulative Flipping Ratio	Flipping Ratio	Cumulative Flipping Ratio	Flipping Ratio	Cumulative Flipping Ratio	Flipping Ratio	Cumulative Flipping Ratio	Flipping Ratio	Cumulative Flipping Ratio	Flipping Ratio	Cumulative Flipping Ratio
0	3.58	3.58	0.00	0.00	0.00	0.00	5.17	5.17	0.00**	0.00**	0.00	0.00
			<i>1.92</i>	<i>1.92</i>	<i>1.42</i>	<i>1.42</i>			<i>2.55</i>	<i>2.55</i>	<i>1.88</i>	<i>1.88</i>
1	1.39	4.97	0.00**	0.00*	0.00*	0.00	2.21	7.38	0.00**	0.00**	0.00**	0.00*
			<i>2.64</i>	<i>2.11</i>	<i>1.95</i>	<i>1.56</i>			<i>3.66</i>	<i>2.93</i>	<i>2.70</i>	<i>2.16</i>
[ 2,4 ]	11.40	16.37	0.00**	0.00**	0.00	0.00	12.04	19.42	0.00**	0.00**	0.00*	0.00*
			<i>2.55</i>	<i>2.47</i>	<i>1.89</i>	<i>1.83</i>			<i>2.96</i>	<i>3.21</i>	<i>2.19</i>	<i>2.37</i>
[ 5,19 ]	12.00	28.37	0.57***	0.58**	0.24**	0.24**	11.22	30.64	0.66***	0.66***	0.25**	0.25**
			<i>4.02</i>	<i>3.68</i>	<i>3.07</i>	<i>2.75</i>			<i>4.34</i>	<i>4.22</i>	<i>3.35</i>	<i>3.16</i>
[ 20,239 ]	26.93	55.30	3.08***	3.66***	1.51***	1.75***	28.61	59.25	3.21***	3.88***	1.68***	1.93***
			<i>4.98</i>	<i>7.25</i>	<i>4.00</i>	<i>5.63</i>			<i>5.38</i>	<i>12.38</i>	<i>4.28</i>	<i>9.78</i>
[ 240,259 ]	1.09	56.38	2.70**	6.36***	2.28	4.03***	0.93	60.18	3.79**	7.66***	4.31	6.24***
			<i>-2.71</i>	<i>7.13</i>	<i>-1.02</i>	<i>5.58</i>			<i>-3.00</i>	<i>11.96</i>	<i>-1.44</i>	<i>8.98</i>
[ 260,499 ]	9.84	66.22	17.43*	23.79***	10.13	14.16***	10.88	71.06	23.32***	30.98***	14.64	20.89***
			<i>-2.02</i>	<i>5.45</i>	<i>-0.06</i>	<i>5.11</i>			<i>-3.41</i>	<i>6.80</i>	<i>-0.85</i>	<i>6.28</i>
[ 500,999 ]	4.89	70.50	10.48**	35.77***	8.87	23.54**	5.48	76.89	13.02**	45.98***	10.65***	33.60**
			<i>-3.36</i>	<i>4.02</i>	<i>-2.61</i>	<i>3.57</i>			<i>-3.27</i>	<i>4.70</i>	<i>-5.65</i>	<i>4.20</i>

**Table X**  
**Flipping Ratios in SIPs: Controlled Experiment**

This table shows flipping ratios relative to listing date for seven Finnish SIPs for those 8,221 pairs of subscriptions in which the same individual participated both in the regular (no bonus) and retail bonus tranche of the same offering. We compute two measures of the flipping ratio which both vary between 0 and 100%. The first is the ratio between the number of flipping investors and the number of investors who received an initial allocation. Investors who flipped some of their shares count as the fraction they flipped. The ratio is then averaged over offerings. The second measure is the ratio between the flipping volume and the total initial allocation. Like the first measure, we average it over offerings. *t*-values for a test of difference in means against the regular tranche, assuming unequal variances, are in italics below the flipping ratios.

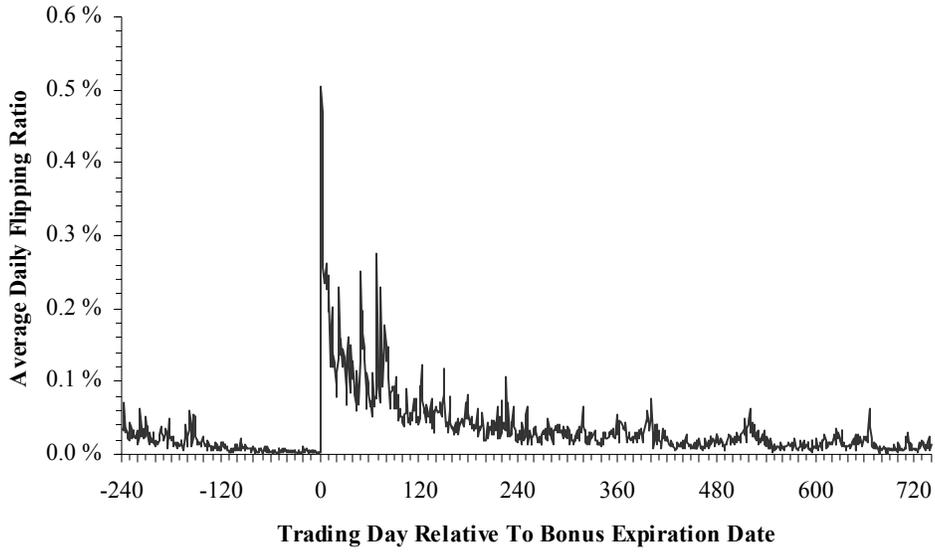
Period	Number of Investors				Volume			
	Regular		Bonus, Retail		Regular		Bonus, Retail	
	Flipping Ratio	Cumulative Flipping Ratio	Flipping Ratio	Cumulative Flipping Ratio	Flipping Ratio	Cumulative Flipping Ratio	Flipping Ratio	Cumulative Flipping Ratio
0	2.96	2.96	0.00**	0.00**	3.95	3.95	0.00**	0.00**
			<i>2.45</i>	<i>2.45</i>			<i>2.98</i>	<i>2.98</i>
1	0.74	3.69	0.00*	0.00**	0.44	4.38	0.00**	0.00**
			<i>2.30</i>	<i>2.76</i>			<i>2.94</i>	<i>3.31</i>
[ 2,4 ]	7.69	11.38	0.00**	0.00**	8.43	12.81	0.00**	0.00***
			<i>3.06</i>	<i>3.64</i>			<i>2.95</i>	<i>3.87</i>
[ 5,19 ]	11.05	22.43	2.20**	2.20***	9.29	22.10	1.04**	1.04***
			<i>2.86</i>	<i>3.81</i>			<i>3.13</i>	<i>3.95</i>
[ 20,239 ]	28.13	50.56	7.10***	9.29***	31.06	53.16	1.97***	3.02***
			<i>4.96</i>	<i>7.83</i>			<i>6.06</i>	<i>10.37</i>
[ 240,259 ]	1.98	52.54	6.23***	15.52***	1.18	54.35	6.60***	9.62***
			<i>-4.47</i>	<i>7.77</i>			<i>-6.13</i>	<i>9.29</i>
[ 260,499 ]	13.28	65.83	33.17***	48.69**	16.77	71.12	39.14***	48.76***
			<i>-3.57</i>	<i>2.99</i>			<i>-3.76</i>	<i>4.84</i>
[ 500,999 ]	7.41	72.89	11.39*	61.70	8.01	81.07	12.38*	61.93***
			<i>-2.01</i>	<i>1.73</i>			<i>-2.14</i>	<i>3.40</i>



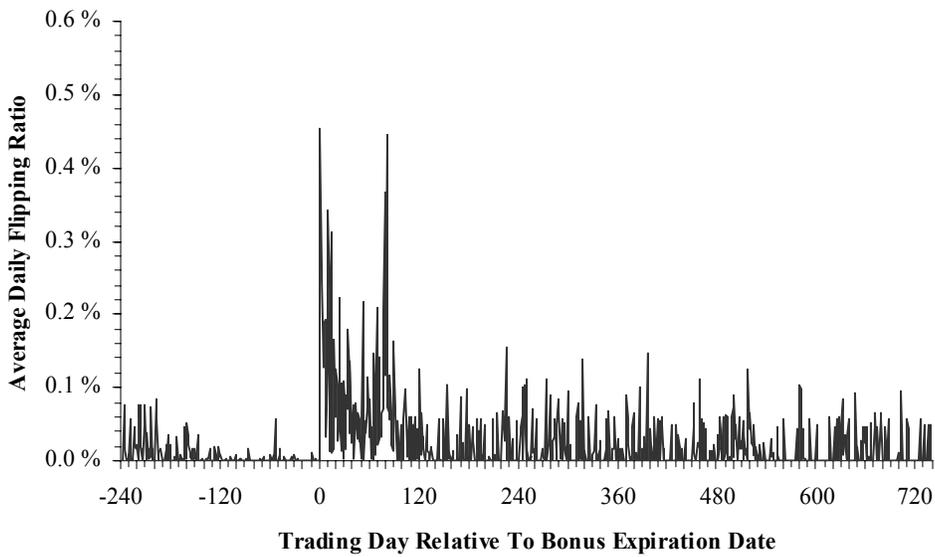
**Figure 1. Average Excess Volume Around the Bonus Expiration Date.**

This graph depicts the average excess volume around the bonus expiration date. Excess volume is defined in excess of the average daily volume over the period -45 to -6 days before the event date. Volume data is from Datastream and is available for 103 SIPs.

**Panel A: Retail Bonus Tranche**

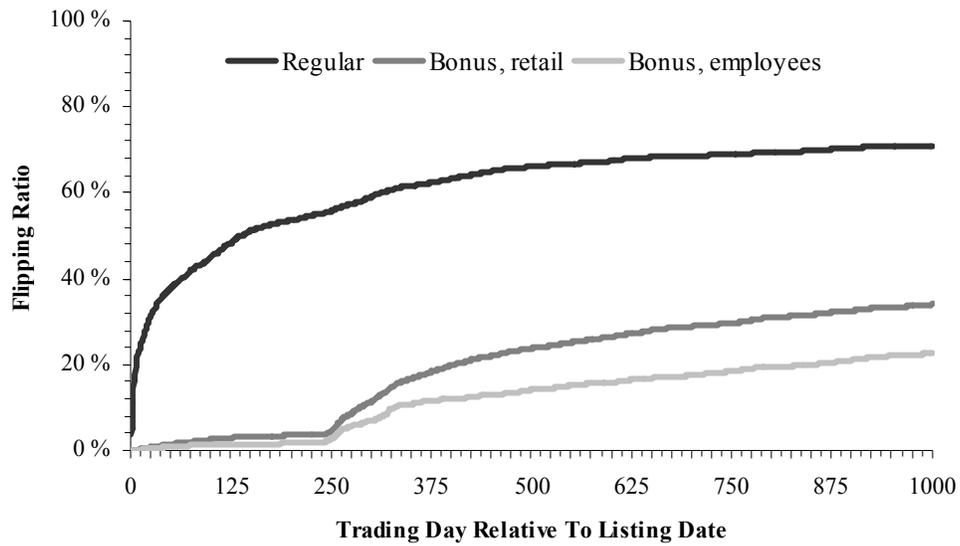


**Panel B: Employee Tranche**



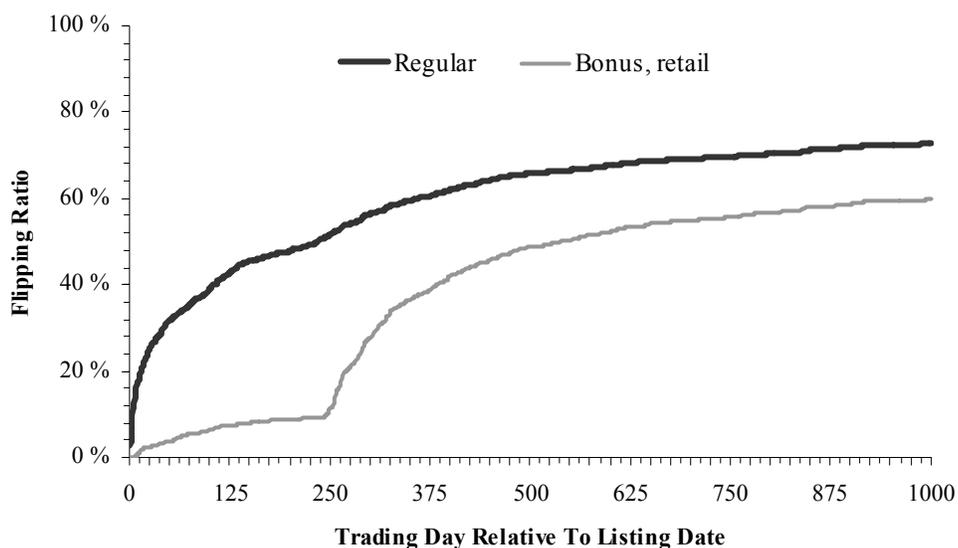
**Figure 2. Average Daily Flipping Ratio around the Bonus Expiration Date.**

This graph depicts the average daily flipping ratios for seven Finnish SIPs around the bonus expiration date. Panel A shows flipping ratios in the retail bonus tranche, while Panel B shows flipping ratios in the employee tranche. The flipping ratio is the ratio between the number of flipping investors and the number of investors who received an initial allocation. Investors who flipped some of their shares count as the fraction they flipped. The ratio is then averaged over offerings.



**Figure 3. Cumulative Flipping Ratios in Three Tranches.**

This graph depicts the cumulative flipping ratio by offering tranche in seven Finnish SIPs. The tranches are regular (no bonus), retail with bonus, and employees with bonus. The flipping ratio is the ratio between the number of flipping investors and the number of investors who received an initial allocation. Investors who flipped some of their shares count as the fraction they flipped. The ratio is then averaged over offerings.



**Figure 4. Controlled Experiment on Flipping Ratios.**

This graph depicts cumulative flipping ratios relative to listing date for seven Finnish SIPs for those 8,221 pairs of subscriptions in which the same individual participated both in the regular (no bonus) and retail bonus tranche of the same offering. The flipping ratio is the ratio between the number of flipping investors and the number of investors who received an initial allocation. Investors who flipped some of their shares count as the fraction they flipped. The ratio is then averaged over offerings.