# MEASURING THE COSTS OF IPO UNDERPRICING THE ORIGINAL SHAREHOLDERS' VIEW

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## ABSTRACT

*Underpriced initial public offers (IPOs), which include all but 4 of the 223 Malaysian IPOs during the 15 year period from 1979 through 1993, create gains for the new investors when trading begins and offsetting losses for some, but not all, of the original shareholders. When the IPO is a public offer of new shares, the amount of the original shareholders' loss depends on (1) the level of underpricing and (2) the size of the offer. When the IPO is an offer for sale by just some of the owners of existing shares, the loss in addition depends on (3) whether or not the original shareholder participates as a seller. In a public offer the loss from IPO underpricing is shared by all the original shareholders, but in an offer for sale it is borne entirely by the selling shareholders. On average during 1979 through 1993, IPOs involving offers for sale of existing shares had less underpricing and were smaller in size than public offers of new shares. Nevertheless, it was the original shareholders selling shares in offers for sale who incurred the greatest loss from IPO underpricing, 32.5 percent on average compared to 13.6 percent for public offers, while the original shareholders who did not participate in the offer for sale incurred no loss at all from the underpricing.*

## 1. INTRODUCTION

There are three principal participants in an initial public offer (IPO), (1) the new investors, (2) the issuing company, and (3) the original shareholders. Most studies of IPOs measure the gains achieved by the first participants, the new investors, when the new shares are underpriced, that is when the offer price to the public is below the price at which the shares subsequently trade on the exchange when trading begins. (For example, for Malaysia see Dawson 1987,

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Hassan 1992, Hassan 1993, Ismail, Abidin, and Zainuddin 1993, Tay 1993, Wong and Chiang 1986, Wu 1993, Yong 1991, and Yong 1992.) A previous study in **Capital Markets Review** examined the cost to the issuer of underpricing and found that it is greater than previously realised (Dawson 1994). This study analyses the effect of IPO underpricing upon the third, previously unstudied group of participants in an IPO, the original shareholders of the issuing company.

## 2.  TYPES OF INITIAL PUBLIC OFFERS

There are two types of initial public offers. The first, a public issue, is a sale of new shares to the public by the issuer. New funds are raised for the company and the number of shares outstanding is increased. The second, an offer for sale, is a sale of previously issued shares by their owners, rather than the issuer. No new funds are received by the company, and the number of shares outstanding remains the same. Occasionally these two types of IPOs are combined as when 3,875,000 shares of Perfect Food Industries Bhd. were offered for RM2.10 a share in 1993. One million, eight hundred thousand shares were a public issue of new shares and 2,075,000 shares were an offer for sale by their owners. The proceeds from the new shares went to the issuing company. The funds from the offer for sale were received by the original investors.

## 3.  THE EFFECT OF UNDERPRICING

Most IPOs in Malaysia are underpriced and this creates a quick profit for the fortunate new investors who receive an allocation of shares. Out of 223 IPOs sold between 1979 and the end of 1993, only 4 were not underpriced. Underpricing from the viewpoint of investors ($UP_{investors}$) is traditionally measured as the percentage difference between the price at which the shares are offered to the public ($P_o$) and the closing market price on the first day of trading ($P_m$), calculated as follows:

$$UP_{investor} = \frac{(P_m - P_o)}{P_o} (100) \qquad (1)$$

If shares, for example, begin to trade at RM3.00 after a public sale at RM2.00, underpricing is 50 percent, measured as follows:

$$UP_{investor} = \frac{(RM3.00 - RM2.00)}{RM2.00} (100) = 50 \text{ percent}$$

Instead of a percentage increase the Ringgit amount of the gain can be found by subtracting the offer price ($P_o$) from the market price ($P_m$), as follows:

$$\text{WEALTH GAIN} = (P_m - P_o) \qquad (2)$$

The total gain or increase in wealth for all the recipients of the offered shares will be:

$$\text{WEALTH GAIN} = S_s (P_m - P_o) \qquad (3)$$

where $S_s$ is the number of shares sold to the new shareholders. Thus if the company and/or original investors sell 2 million shares at an offer price of RM2.00 and the subsequent market price is RM3.00, the increase per share is RM1.00 and the total gain or increase in wealth for the new investors is RM2 million as follows:

$$\text{WEALTH GAIN} = 2,000,000 \left( \frac{(\text{RM}3.00 - \text{RM}2.00)}{\text{RM}2.00} \right)$$

$$= \text{RM}2,000,000$$

It is often said that in finance there is no free lunch and this rule applies to an IPO. The gain or increase in wealth for the new shareholders created by the IPO underpricing is taken or transferred from the original shareholders who owned the company before the IPO was made. In the example above, if the new shareholders own shares worth RM2 million more than they paid for them, then the original shareholders must hold shares that are now worth RM2 million less than they would be worth if the IPO had not been underpriced.

The type of IPO, whether it is an offer for sale of existing shares or a public offer of new shares, determines which of the original shareholders incur the loss of wealth caused by IPO underpricing. In an offer for sale there are two groups of original shareholders, (1) those who sold shares in the IPO, and (2) those who did not sell. In an underpriced IPO the entire loss is borne by the shareholders who sold and it can be measured as the number of shares sold ($S_s$) times the difference between the market price ($P_m$) and the offer price ($P_o$). The original shareholders who did not sell any shares incur none of the loss of wealth caused by the IPOs' underpricing. An offer for sale is thus similar to any sale of shares from one investor to another as occurs every day in the market. The buyer and the seller are affected, but the other investors are not.

The calculation of loss for the original shareholders is less straight forward in a public issue of new shares. Usually it is believed that there are two prices in an IPO, the offer price ($P_o$) and the market price when trading begins ($P_m$). Actually there is a third price, ($P^*$), which is the value of the shares if there is no dilution caused by underpricing the new shares (Dawson 1994). The market price ($P_m$) usually used in most measures of underpricing occurs after the value of the original shares ($P^*$) is diluted by issuing new shares at a price below what they are worth. $P^*$, the predilution price, can be calculated as follows:

$$P^* = \frac{(S_t)(P_m) - (S_n)(P_o)}{S_o} \qquad (4)$$

where ($S_t$) equals the total number of shares after the IPO, ($S_n$) is the number of new shares issued, and ($S_o$) equals the original number of shares outstanding. Returning to our previous example, if there were 4 million shares outstanding when the company issued 2 million new shares at an offer price of RM2.00, and the market price rose to RM3.00 per share, then the value of the issuer's shares before the IPO was underpriced was RM3.50, calculated as follows:

$$P^* = \frac{(6,000,000)\,(RM3.00) - (2,000,000)\,(RM2.00)}{4,000,000} = RM3.50$$

Now that we can calculate the value of the shares before the dilution caused by underpricing, we can (1) calculate the loss of wealth incurred by the original shareholders in a public offer IPO and (2) revise the measure of underpricing from an investor orientation to an issuer orientation. The original shareholders' loss of wealth will be the difference between the value of the original shares without underpricing ($P^*$) and the shares' market price when trading begins ($P_m$). In our example the RM2 million of wealth lost by the original shareholders is thus the decrease in the value of one share from its pre issue value ($P^* - P_m$) or (RM3.50 − RM3.00) multiplied by the number of original shares ($S_o$) or 4 million shares. Similarly $P^*$ can be used to measure underpricing from the issuer's perspective by replacing $P_m$ with $P^*$ in equation (1) as follows:

$$UP_{issuer} = \frac{(P^* - P_o)}{P_o}\,(100) \qquad (5)$$

These two measures of underpricing, equation (1) for investors and equation (5) for issuers, correspond to the traditional measures of underpricing which use the offer price as the base value. The term "underpricing," however, implies that shares are sold for less than they are worth, that is at a discount from their value, and the previous measures of underpricing can be adjusted to show this as follows:

$$DUP_{investor} = \frac{(P_m - P_o)}{P_m} (100) \tag{6}$$

$$DUP_{issuer} = \frac{(P^* - P_o)}{P^*} (100) \tag{7}$$

where $DUP_{investor}$ is the offer price as a discount from the market value of the shares when trading begins and $DUP_{issuer}$ is the offer price as a discount from the value of the shares prior to dilution from underpricing. Discount underpricing calculations will be useful to us in the study since we are analysing IPO underpricing from the perspective of the original shareholders rather than from that of the new investors.

The alert observer will note that in an offer for sale, the market price $(P_m)$ will be equal to $P^*$, the price if there is no IPO underpricing, since no new shares are sold by the company and there is thus no dilution of value. Referring to the previous example, if the original shareholders sell 2 million previously owned shares for RM2.00, and the market price when trading for the newly listed shares begins is RM3.00, then RM3.00 was the value of the shares before the IPO was made as well as after the IPO was made. Thus for offers for sale either equation (6) or equation (7) can be used to measure underpricing from the original shareholder's perspective.

There are three possible groups of original shareholders who are involved in the transfer of wealth that occurs when an IPO is underpriced:

1.  All the original shareholders if the IPO is a public issue of new shares.

2.  The selling shareholders if the IPO is an offer for sale.

3.  The non selling shareholders in an offer for sale.

The way to calculate the loss of wealth caused by IPO underpricing varies for the three groups. In a public issue of new shares, the total loss of wealth experienced by the original shareholders is equal to the total gain for the new investors, and for an individual investor this loss is proportional to the shares held. In an offer for sale, in contrast, the entire loss is incurred by the selling shareholders and there is no loss for the remaining non selling shareholders. Measured as a percent of the original value of the shares held, the loss of value caused by underpricing of IPOs is therefore as follows for the three groups of shareholders:

1.  Original shareholders for a public offer of new shares:

$$\frac{(P^* - P_m)}{(P^*)} (100) \qquad\qquad (8)$$

where $(S_o)$ equals the number of shares held before the IPO by all the original shareholders.

2.  Selling shareholders in an offer for sale:

$$\frac{(P_m - P_o)}{P_m} (100) \qquad\qquad (9)$$

where $(S_s)$ equals the number of original shares sold in the IPO. If the selling shareholders own more shares than they sell, the loss as a percentage of their original investment will be:

$$\frac{(P_m - P_o) (S_s)}{(P_m) (S_h)} (100) \qquad\qquad (10)$$

where $(S_s)$ equals the number of original shares sold and $(S_h)$ is the total shares held by the selling shareholders before the IPO.

3.  Non selling shareholders in an offer for sale:

$$\frac{(P^* - P_m)}{(P_m)} (100) \qquad\qquad (11)$$

which will be equal to zero or no loss in an offer for sale since $(P^*)$ is equal to $(P_m)$.

Obviously the consequences of IPO underpricing are much more serious for the selling shareholders in an offer for sale, because they absorb the entire loss, than they are for either the entire group of original shareholders in a public offer or for the non sellers in an offer for sale. In a public offer all the original shareholders, not just the selling shareholders, share in the loss and this means the loss per original share is less. The non selling shareholders in an offer for sale incur none of the loss caused by IPO underpricing and are thus not affected by an underpriced offer for sale IPO.

Since underpricing is more costly for the original investors who sell some or all of their shares in an offer for sale than it is for all the original shareholders as a group in a public offer, we can hypothesize that IPOs involving offers for sale will have less underpricing than IPOs using public offers of new shares. Of course this assumes that the seller, either the issuer in a public offer or the original shareholders in an offer for sale, is able to influence the offer price. The Securities Commission probably has the dominant influence on the offer price, but there is, for instance, a range of prospective PE ratios which can be used and there is also the possibility of reporting or forecasting higher earnings to get a higher offer price. All sellers and issuers in an IPO have good reasons to prefer a high offer price and less underpricing, provided the IPO is still attractive enough to be sold, and the motivation of the offering shareholders in an offer for sale will be greater than for the issuer in a public offer because of the way the loss caused by underpricing is allocated.

A few additional observations are in order before we measure the effects of underpricing on the original investors for IPOs on the Kuala Lumpur Stock Exchange. First, a few IPOs are overpriced, that is they are sold to the new investors for more than they are worth and the subsequent market price is below the offer price. When this occurs there is a gain, rather than a loss, for all the original shareholders except those who do not sell shares in an offer for sale. Just as they incur no loss when an IPO is underpriced, they get no gain when an IPO is overpriced. The calculation of the size of the gain and how much of it is allocated to each group of investors is similar to the calculation and allocation of the loss.

A second point is that the sellers and the buyers may be the same persons or organizations and whenever this occurs the loss caused by IPO underpricing will be reduced. For instance, if some of the original shareholders apply for and are allocated new shares in a public offer

IPO, they will be able to offset part of their loss on their original shares with the gain from their new shares. Similarly, selling shareholders in an offer for sale can offset losses with the gain from allocated shares. Non selling shareholders receiving allocated shares in an offer for sale will actually come out ahead in an underpriced IPO since they will receive only the gain from their underpriced new shares and they will have none of the losses from underpricing. The practice of reserving a proportion of IPO shares for various groups, including eligible directors and employees, increases the chance that some shareholders will be on both sides of the transaction and thus be able to offset some of the underpricing losses with gains on the shares received.

## 4. LOSSES INCURRED BY ORIGINAL INVESTORS: 1979-1993

The next step is to measure the losses incurred by the original shareholders when IPOs in Malaysia are underpriced. Beginning in 1979 and continuing for 15 years through 1993, there were 223 IPOs. One IPO, that of Arab Malaysian First Property Trust in 1989, was excluded because the 134,999,000 new shares sold to the public represented almost all the 135 million shares outstanding after the issue and this distorts the calculations of percentage underpricing costs. Table 1 shows that the remaining 222 IPOs in this study consist of 72 public offers of new shares, 122 offers for sale of existing shares, and an additional 28 IPOs combined a public issue and an offer for sale. The number of IPOs rose sharply beginning in 1990 as both the number of offers for sale and the combined issues of offers for sale with public issues increased dramatically. The rise in offers for sale means the IPO market was used increasingly by original investors to distribute part of their investment rather than to raise new funds for the issuing company.

TABLE 1

NUMBER OF IPOS BY TYPE OF OFFER
1979 – 1993

| Period | Public Issue | Offer for Sale | Combined Offer | Total |
|--------|--------------|----------------|----------------|-------|
| 1979 | 1 | 0 | 0 | 1 |
| 1980 | 1 | 1 | 0 | 2 |
| 1981 | 4 | 0 | 0 | 4 |
| 1982 | 5 | 0 | 0 | 5 |
| 1983 | 8 | 0 | 1 | 9 |
| 1984 | 9 | 1 | 2 | 12 |
| 1985 | 5 | 0 | 1 | 6 |
| 1986 | 3 | 0 | 0 | 3 |
| 1987 | 3 | 2 | 0 | 5 |
| 1988 | 3 | 2 | 0 | 5 |
| 1989 | 4 | 8 | 0 | 12 |
| 1990 | 13 | 12 | 5 | 30 |
| 1991 | 6 | 29 | 5 | 40 |
| 1992 | 5 | 30 | 9 | 44 |
| 1993 | 2 | 37 | 5 | 44 |
| Total | 72 | 122 | 28 | 222 |

Measures of underpricing from the perspective of the original shareholders are reported in Table 2 for the 222 IPOs by type of offer. For IPOs involving public offers, underpricing is calculated using the issuer based measure (equation 7) which compares the price without dilution caused by underpricing ($P^*$) with the offer price ($P_0$). For the offers for sale, underpricing is measured with the market price ($P_m$) and the offer price ($P_0$) using equation (9). Because

## TABLE 2

### AVERAGE UNDERPRICING BY TYPE OF IPO
#### 1978 – 1993

| Period | Public Offer | Offer for Sale | Combined Officers | |
| --- | --- | --- | --- | --- |
| | | | Public Offer | Offer for Total |
| 1979 | 51% | – | – | – |
| 1980 | 60 | 50% | – | – |
| 1981 | 59 | – | – | – |
| 1982 | 42 | – | – | – |
| 1983 | 73 | – | 73% | 73 |
| 1984 | 60 | 39 | 59 | 52 |
| 1985 | 63 | – | 31 | 27 |
| 1986 | 43 | – | – | – |
| 1987 | 65 | 66 | – | – |
| 1988 | 51 | 26 | – | – |
| 1989 | 46 | 40 | – | – |
| 1990 | 45 | 20 | 38 | 35 |
| 1991 | 20 | 26 | 31 | 28 |
| 1992 | 31 | 22 | 34 | 32 |
| 1993 | 62 | 46 | 43 | 38 |
| 1979-89 | 57% | 42% | 55% | 51% |
| 1990-93 | 38% | 31% | 36% | 33% |
| 1979-93 | 50% | 33% | 39% | 35% |

of the small number of IPOs in some years it is difficult to distinguish trends in the annual
data but the figures correspond to the results expected if underpricing is lower for offers for
sale than for public issues as hypothesized earlier. First, in all but one year for which under-

pricing is reported for both public issues and offers for sale, the offer for sale underpricing is lower. The only exception is 1991 when public offers were underpriced by 20 percent and offers for sale by 26 percent. Second, for the entire 1979 through 1993 period offer for sale underpricing (33 percent) is less than for public offers (50 percent). For joint issues, the part of the IPO which is an offer for sale averages less underpricing (35 percent) than the part which is a public offer of new shares (39 percent). Third, since underpricing has declined in recent years while relatively more public issues were made in the early years and more offers for sale in the later years, the data was also divided into two periods, from 1979 through 1989 and from 1990 through 1993. For both periods the average underpricing again is lower for offers for sale than for public issues.

Since underpricing is more costly for the original shareholders in an offer for sale, because it is borne entirely by the selling shareholders rather than by all the original shareholders as in a public offer, we can also hypothesize that offers for sale will involve not only lower underpricing as seen before in Table 2 but also a smaller amount of the firm being sold so as to further limit the loss incurred. Table 3 shows that the 122 offers for sale averaged 26.9 percent of the companies' total shares while the 72 public issues, as hypothesized, represented a larger amount of the issuers' shares, 45.0 percent of the shares outstanding before the issue was made. In joint offers the offer for sale segment of the IPO also represents on average less of the companies' shares (14.5 percent) than the public offer segment (19.4 percent).

TABLE 3

NUMBER OF SHARES OFFERED AS A PERCENT OF THE PRE ISSUE
NUMBER OF SHARES (1979 – 1993)

| Type of Issue | Percent |
|---|---|
| Public Offer | 45.0% |
| Offer For Sale | 26.9 |
| Combined Issue:  Public Offer | 19.4 |
| Offer for Sale | 14.5 |

Although offers for sale have less underpricing and involve a smaller part of the existing shares, the underpricing loss is absorbed entirely by the selling shareholders, rather than being shared by all the original shareholders. Table 4 shows that this crucial difference makes IPO

underpricing much more costly for the selling shareholders in offers for sale. The average public offer cost the original shareholders over RM68 million, or 13.6 percent of the RM643 million pre-offer value, in lost value because of IPO underpricing. For the original shareholders who sell in an offer for sale the pre-offer value of the shares sold is substituted for the value of the pre-issue company. Given a loss in value of RM19.7 million on average, compared to a pre-issue value of RM48.4 million, the average offer for sale's cost of underpricing as a percentage of the original value of the shares sold is much higher at 32.5 percent.

While the selling shareholders in offers for sale were relatively hard hit, the non sellers had a free ride: their loss from the IPO underpricing was zero. Since the offer for sale did not dilute the value of the shares, because no new shares were sold at a cheap price by the issuer, shareholders who did not sell any of their holdings in the offer for sale were not affected by the IPO underpricing.

Table 4 also contains the 28 combination IPOs with both public offers of new shares and offers for sale of existing shares. The average size of the public offer portion of the IPO is RM307.8 million, less than half the size of the IPOs involving only a public issue. The average size of the offer for sale portion, measured as the value of the shares sold, is RM63.5 million.

TABLE 4

AVERAGE COST OF IPO UNDERPRICING FOR ORIGINAL SHAREHOLDERS
BY TYPE OF ISSUE, 1979-1993
(RM MILLION)

| Type of Issue | Number of Issues | Total Average Ringgit Cost | Average Per- Issue Value | Average Cost as % of Pre- Issue Value |
|---|---|---|---|---|
| Public Offer | 72 | RM68.3 | RM643.0 | 13.6% |
| Offer for Sale: | | | | |
|   Sellers | 122 | 19.7 | 48.4 | 32.5 |
|   Non Sellers | 122 | 0.0 | 212.2 | 0.0 |
| Combined IPOs: | | | | |
|   Public Offer | 28 | 12.9 | 307.8 | 6.3 |
| Offer for Sale: | | | | |
|   Sellers | 28 | 21.6 | 63.5 | 35.5 |
|   Non Sellers | 28 | 0.0 | 330.7 | 0.0 |

The selling shareholders lost on average RM21.6 million, and the average offer for sale's cost of underpricing as a percentage of the pre-IPO value is 35.5 percent, a much higher cost than the 6.3 percent for the public offer portion.

## 5. SUMMARY AND CONCLUSIONS

Underpriced IPOs, which include most offers in Malaysia during 1979 through 1993, create widely recognised gains for investors and make the new issue market a very popular part of the KLSE. Unfortunately for the original shareholders, IPO underpricing can be costly: the increase in value for the new shareholders who are allocated underpriced new shares comes from the value of the shares held by the original shareholders. The cost of underpricing is greatest for the original shareholders who sell shares in an offer for sale and least for the original shareholders in a public offer of new shares. The original shareholders who do not sell shares in an offer for sale avoid the costs of underpricing IPOs.

The hypothesis that offer for sale IPOs will have less underpricing, and involve fewer shares, because underpricing is more costly for the sellers and will therefore be reduced, is supported by the data for the period 1979 through 1993. Nevertheless, because the cost of underpricing IPOs is shared by all the original shareholders in a public offer, and only by the sellers in an offer for sale, the effective cost is greater for the sellers in an offer for sale than for the original shareholders in a public offer.

Based upon the analysis in this study, and the observed results for 1979 through 1993, several observations can be made.

First, for a variety of reasons IPOs are almost always underpriced. If it is necessary to make an IPO before the shares are listed and a market price is available for selling shares, the most equal distribution of the cost of underpricing comes from a public offer of new shares.

Second, if an IPO is necessary to qualify for listing on the KLSE, and original shares are sold in an offer for sale, the loss is very unequally distributed and the selling shareholders provide a valuable service for the other original shareholders by absorbing the entire loss. It is better to be a non seller than a seller in an underpriced IPO. For the sellers it is better to offer as few shares as possible and still have the issuer qualify for listing. Should they

desire to sell more than the minimum shares, because IPOs are almost always underpriced, it appears to be better to wait until a market price is available than to sell them in an offer for sale.

Third, the losses can be reduced by getting on both sides of the transaction. Original shareholders who are allocated shares in an IPO can offset some of the losses from underpricing with gains on the allocated shares.

Fourth, the decline reported in IPO underpricing in recent years (Hassan 1993) may be at least partly a result of the increased use of offers for sale in IPOs seen in Table 1 and the greater incentives in offers for sale IPOs to the selling shareholders to reduce underpricing.

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