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Winner's Curse and Underpricing of IPO of Privatised British Companies

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<요 약>

본 논문은 1977-91년 사이 런던증권시장에서 일반공모형태로 주식이 매각된 영국의 41개 민영화기업의 최초공모주 가격결정에 대해 실증분석하고 있다. 특히 단기적으로 볼 때 영국 민영화기업의 최초공모주는 일반기업의 최초공모주에 비해 현저히 낮게 평가되어 발행되고 있음이 밝혀졌다. 본 논문에서는 민영화기업의 이러한 저가발행 현상을 정보비소유 투자자에게 최소한의 수익률을 보장해 주어야 한다는 Rock(1986)의 winner's curse 관점에서 설명하여 보았다. 먼저 정보비소유 투자자가 직면할 수 있는 winner's curse의 존재 가능성을 청약경쟁률과 저평가율과의 관계를 고찰함으로써 확인하였다. 즉 청약경쟁률과 초과수익률(할인규모)은 正의 관계를 보였는 데 이는 정보소유 투자자가 할인규모가 큰 민영화기업의 최초공모주에 집중적으로 청약하여 정보 비소유 투자자를 驅逐하여 정보비소유 투자자를 winner's curse에 직면하게 할 가능성이 있다는 Rock의 주장과 일치하는 것으로 보인다. 또한 배정확률을 고려한 가중평균초과수익률이 무위험수익률을 보장해주는지를 조사함으로써 Rock의 주장을 실증적으로 규명하였다. 한편 영국 민영화기업의 최초공모주는 장기적으로도 正의 초과수익률을 시현하고 있는 데 이는 일반기업의 최초공모주의 누적초과수익률은 장기적으로는 負를 시현한다는 Ritter(1991)와 Levis(1993)의 연구결과와는 대조적이다.

I. Introduction

Around 80 British public enterprises have been privatised through public offers or private sales[1] since 1980. The objectives of this programme initiated by the British Conservative Government were both political and economic. Privatisation of public

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1) Public offers (41 companies) is to sell the new issues to the public investors, but private sales (39 companies) put the limitation of the sale of new issues to the private investors.

enterprises[2] was a policy intended to have influence on the structure of industry in terms of competition, efficiency, regulation, productivity, and labour market performance. At the same time the proceeds from privatisation would be available for the government to fund popular programme such as tax reduction. It was also intended to create wider share ownership and at the same time ensure that borrowings of parastatals became a private rather than public funding issue.

Our interest is to examine the pricing of new issues of privatised British companies through the application of a hypothesis on a corporate finance. Since public offerings of public enterprises contribute both to the size and hence importance of the capitalization of the equity market. They also provide the investing public with the opportunity to buy new shares and an avenue to increase the number of shareholders in the UK economy[3]. These results would be ascribed to the underpriced offerings of privatised new issues.

In pursuing these objectives there are a number of issues. In particular, government could consider the following issues: maximising proceeds on the one hand and achieving market efficiency, and whether to maximise flotation revenues or whether to create an oversubscribed issue through underpricing and through preferential allocation to small applicants to maximise the number of investors. In practice, most privatisation issues have been significantly underpriced.

Explanations for the phenomenon of underpricing of new issues are various but the privatisation public offerings will be explored in the spirit of Rock's model (1986). In investigating the phenomenon of underpricing of privatisation issues, British privatisation flotations are larger than private company over the comparable period.

The first issue to be explored is whether new issues discounts provided above average returns to investors. We also attempt to examine the aftermarket performance of privatisation issues.

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2) Many countries of the world have active privatisation programmes. Industrialised countries such as Canada, France and Japan have already privatised major companies involved in aircraft industry, public utilities and so on. Developing countries including Brazil, Chile, Korea, Malaysia, Turkey, Philippines, etc have also privatised major industries.

3) According to the report of CBI, it is estimated that the number of shareholders increased threefold by privatisation (CBI, 1990).

II. Previous Studies on Underpricing of IPO

Many studies[4] have documented the phenomenon of underpricing of new issues in the short-term and attempted to explain the reasons for their initial excess returns. However, few of the studies reconcile underpricing with modern finance theory and this phenomenon is still considered as one of the puzzles in corporate finance. An early explanation by Baron (1982) in terms of informational disadvantage of issuing companies relative to their investment banks allows underwriters to persuade issuers to accept undemanding price targets. But Baron's hypothesis is not supported by empirical research[5]. Subsequently Rock (1986) argued that new issues would be priced sufficiently below the market price to ensure that uninformed investors, who would acquire a disproportionate share of overpriced new issues would still attain market's required rate of return that keep them in the market. This in turn would mean that informed investors who would apply selectively for underpriced new issues would obtain consistent abnormal returns.

In addition to the hypothesis based on asymmetric information, the signalling hypothesis regards the proportion of shares retained by original shareholders as a positive signal on the value of the issuing firms. This hypothesis was firstly developed by Leland and Pyle(1977) and empirically supported by Downs and Heinkel (1982), with recent further development[6]. The reputation of underwriter and auditor, developed on the certification hypothesis[7] by Booth and Smith(1989) and others[8] may also provide signals about the value of the issuing firms. Tinic(1988) presents the implicit insurance hypothesis that new issues may be fairly underpriced against the

4) See Smith (1986) and Ibbotson, Sindelar, and Ritter (1988) which are the review articles concerning the underpricing of new issues.

5) Muscarella and Vetsuypens (1989) found that new issues of investment banks are also underpriced like other new issues.

6) See Allen and Faulhaber (1989), Grinblatt and Hwang (1989), and Welch (1989).

7) This hypothesis derives from the literature on the use of reputation capital to guarantee product quality. It is assumed that certification of third party such as underwriter and auditor could guarantee the value of risky securities issued by relatively unknown companies in financial markets where there is asymmetric information between corporate managers and public investors.

8) Titman and Trueman (1986), and Megginson and Weiss (1991).

expected legal liabilities.

Table 1 summarises the results of major studies concerning the underpricing of privatisation and non-privatisation new issues. As can be seen in Table 1, the underpricing of initial public offerings differs according to the issuing method[9]. In the UK IPO market, underpricing for a placing is largest and lowest for tender offers. Merrett, Howe and Newbould (1967) found that market discount of new issues is related to prior market returns, the rate of growth of profits, and the price/dividend ratio. In Davis and Yeomans (1974), the method of issues, pre-issue market situations, the issue size and dividend yield are shown as significant variables in explaining the degree of underpricing of new issues. Buckland, Herbert and Yeomans (1981) argue that market discount could be attributed to mispricing of the issuing house and is dependent upon the market demand. In particular, Levis(1990) using the British IPO data on offers for sale between 1985 and 1988 confirmed the main implication of Rock' model by showing the returns of the uninformed investors at least covered the risk-free rate of return.

In recent years, some studies have analysed the discount of privatisation flotations in the UK, France, Spain, Chile, Turkey, etc. In Jenkinson and Mayer (1988), the underpricing of the UK privatisation IPO by an offer for sale is 33% and this is greater than that of general new issues. However, in case of tender offers new shares are overpriced. In France, the underpricing of privatisation flotations is 18.6 % and is smaller than in the UK. However, this figure is larger, compared with the underpricing of 4% for private companies flotations[10]. In addition, Jenkinson and Mayer attempted to apply Rock's theory to the pricing of privatisation initial public

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9) In the UK there are two major methods of new issues : the public offering and placing. The public offering includes an offer for sale and the tender offer. In case of an offer for sale, the offer price is fixed at the beginning of the offer period and investors know what price they will pay for the shares if any are obtained. The tender offer allows the market to set the offer price. A minimum tender price is laid down and investors tender for shares at that or whatever higher price they would be prepared to pay. The striking price, which is generally the common price paid by all investors at which the vendor decides to clear the offer, is then determined in the light of the subscriptions.

10) See Husson and Jacquillat (1989).

offerings but they did not test directly Rock's model. A study by Menyah, Paudyal and Inyangete (1990) compared UK privatisation flotations with non-privatisation IPO, arguing that the underpricing of privatisation issues exceeds private flotations even though stable quasi-monopolistic cash flows of privatisation companies makes them low risk issues. As shown in Table 1, the estimated mean excess return on the first trading day of privatisation new issues is 45.1%, compared with 12% for non-privatisation flotations.

<Table 1> Summary of Studies on Pricing of Initial Public Offerings

Study	Country	Sample period & size	Estimated underpricing(%)
Private Companies			
Merrett, Howe & Newbould (1967)	UK	1959-63 · offer for sale: 149 · tender offer: 15 · placing: 193	 13.7 3.5 19.2
Davis & Yeomans (1974)	UK	1965-71 · offer for sale: 174 · tender: 41 · placing: 60	 8.5 6.9 19.1
Buckland, Hebert & Yeomans(1981)	UK	1965-75 297	9.7
Levis(1990)	UK	1985-88 offer for sale: 123	8.6
Privatised Companies			
Jenkinson & Mayer (1987)	UK	1979-87 · offer for sale: 14 · tender offer: 6	 32.8 -4.0
Jenkinson & Mayer (1987)	France	1986-87 · size: 11	 18.6
Menyah, Paudyal & Inyangete (1990)	UK	1981-87 · privatization: 13 · private: 148	 45.1 12.0
Aggarwal, Leal & Hernandez(1993)	Chile	1982-90 · privatization: 9 · all: 19	 7.6 16.3
Perotti & Guney (1993)	· Spain · Turkey · Malaysia	1986-89: 7 1988-91: 24 1984-92: 13	68.7 4.8 99.6

In addition, some authors studied the pricing of privatisation issues in emerging economies such as Chile, Turkey and Malaysia. Aggarwal, Leal and Hernandez's (1993) findings that the underpricing of 7.6% for Chilean privatisation IPO is smaller than 16.3% for all sample including privatisation and non-privatisation companies are dissimilar to the results of other previous studies. In a study by Perotti and Guney (1993), the underpricing of privatisation IPO in several countries was estimated. In particular, the underpricing of Turkish privatisation issues is very small (4.8%), compared to Spain and Malaysia which show at 69% and 100%, respectively.

To sum up, these studies concentrated only on the presence of underpricing of privatisation IPO but did not explore the explanations of their findings. In our study, underpricing of UK privatisation issues will be investigated from Rock's winner's curse perspective.

III. Data and Methodology

As the sample for an investigation of pricing of privatisation IPO, we selected the 41 companies privatised by public offerings during the period from 1977 to 1991 listed in *Privatisation: The Facts* published by Price Waterhouse in 1990 and 1991. Share prices for those issues were obtained from DATASTREAM.

The market discount or underpricing of privatisation IPO was estimated by computing the post issue abnormal returns which are defined as the difference in returns on new issue, *i*, relative to returns on the market index (FTA-All Share Index). Abnormal returns, AR_{it}, at time *t* relative to market (FTA-All Share Index) was computed by deducting market index returns from returns achieved over the comparable period from new issues.

The market-adjusted returns of individual firms calculated by equation (1) are averaged across firms to compute average abnormal returns(AAR_t) (see equation (2)).

$$AR_{it} = R_{it} - R_{mt} \quad (1)$$

$$AAR_t = \frac{1}{n} \sum_{i=1}^{n} AR_{it} \quad (2)$$

Cumulative abnormal returns (CAR_{it}) for each issuing firm and cumulative average abnormal returns ($CAAR_t$) across firms for given time horizons are calculated using equations (3) and (4)[11], respectively. This market-adjusted returns model assumes that the beta of the portfolio of sample firms is equal to that of the market portfolio. AARt and $CAAR_t$ will be used to examine the underpricing of unseasoned new issues and to analyse the aftermarket performance of the British privatised enterprises one month and 24 months from the flotation date.

$$CAR_{it} = \sum_{i=1}^{T} AR_{it} \quad (3)$$

$$CAAR_t = \frac{1}{n} \sum_{i=1}^{n} CAR_{it} = \frac{1}{n} \sum_{i=1}^{n} \sum_{i=1}^{T} AR_{it} \quad (4)$$

IV. Empirical Findings

4.1 Short-Term and Long-Term Performance

Table 2 presents the estimated underpricing of 41 privatised companies, calculated by the difference between the offer price[12] and the first day price of trading on the market. The underpricing was estimated by the average rate of return of individual companies adjusted by rate of market return.

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11) In general, cumulative average abnormal returns (CAAR) is obtained through cumulating average abnormal returns (AAR). However, in measuring the long-run performance this can be unsatisfactory as the number of companies in portfolio are different over time. (see Asquith and Mullins (1986, pp.68-70) and Franks and Harris (1989,pp.230-232))

12) When the issues were sold by instalment, the prices paid on the application day in the first instalment were used as the offer price.

<Table 2> Estimated Abnormal Returns, % of Subscription Price1)

	Mean	Median	Stdev	Min	Max
First Day	38.42 (t=11.76**)	41.07	20.92	-19.16	82.94
First Week	39.09 (t=11.32**)	43.04	21.73	-26.05	81.76

Note: 1) Computed on the basis of the first instalment payment.
** significant at 1% level.

Market-adjusted average returns over an offer price on the first dealing day and one week after listing were 38.42% and 39.09% respectively, in both cases larger than for non-privatisation IPO (see Table 1). Despite a presumption of stability of future cash flows of the former state-owned companies, discount was large. Of 41 privatised companies, 39 showed relatively high excess returns compared with initial public offerings of private companies. Only two companies recorded negative returns and these were privatised subject to flotation by tender. One of the companies exhibiting positive abnormal returns, BAA, employed a joint tender offer and offer for sale, the other 38 used offer for sale only.

Despite a range varying from the highest abnormal return at 82.9% (of British Telecom privatised in September 1984) to the lowest at -19.2% (of Britoil), the average underpricing of the British privatisation public offerings at 38.42% is around three or five times greater than that of private sector new issues (see Table 1).

We can conclude that the prices of privatisation new issues were set at a relatively low level even by standards of new issues in general. The underpricing on IPO of privatisations seemed to be designed to maximise the allocation of shares to small investors[13].

Table 3 presents the change of daily returns for privatisation for the first 25 days after being listed on the market. These daily returns are calculated on the basis of the fully

13) At the second issue of British Telecom, the government employed the method of a kind of tender offer and set the offer price at a high level so as to avoid criticism of having sold a public asset at a very cheap price. The size of discount of this issue shows as relatively small, around 14%.

paid offer price[14]. Had the calculation been made using part payments the premium on actual outlay would be even higher but this approach overestimates the degree of underpricing. For 25 days following listing, the average abnormal returns are small and almost half of the t-values of excess returns are not significant at a conventional level. 9 of 25 days show negative returns and in particular negative return presented at the 9 day horizon is attributable perhaps to the receipt of allotment letters.

<Table 3> Changes of AAR and CAAR for the First 25 Days and for 24 Months after Privatisation

Day	AAR(%)	t(AAR)	CAAR(%)	Month	N	AAR(%)	t(AAR)	CAAR(%)
1	17.77	12.31	17.77	1	40	0.41	0.57	0.41
2	-0.15	-0.78	17.61	2	40	4.00	4.93	4.41
3	-0.71	-3.92	16.90	3	40	-0.73	-0.77	3.68
4	1.04	4.5	17.94	4	40	-0.97	-1.70	2.71
5	0.73	3.27	18.67	5	40	2.51	2.93	5.22
6	-0.21	-1.07	18.46	6	40	-0.28	-0.27	4.94
7	-0.30	-2.14	18.16	7	40	0.89	0.85	5.83
8	0.37	2.11	18.53	8	40	0.54	0.48	6.37
9	-0.47	-2.73	18.06	9	40	0.56	0.8	6.93
10	-0.42	-3.66	17.64	10	40	0.12	0.16	7.05
11	0.02	0.28	17.66	11	40	-0.65	-0.85	6.42
12	0.10	0.89	17.76	12	40	2.72	2.37	9.14
13	0.28	2.28	18.04	13	40	0.36	0.45	9.50
14	0.01	0.06	18.05	14	40	2.50	2.95	12.00
15	0.22	2.27	18.27	15	38	-0.97	-0.87	11.20
16	0.00	0.03	18.27	16	38	2.26	2.27	13.46
17	0.14	0.92	18.41	17	38	-0.90	-1.18	12.57
18	-0.18	-1.29	18.23	18	36	-1.41	-1.20	10.75
19	-0.45	-3.06	17.78	19	36	0.70	0.65	11.44
20	-0.08	-0.43	17.71	20	36	0.49	0.75	11.93
21	0.13	0.88	17.84	21	24	1.45	1.25	9.37
22	0.09	0.66	17.93	22	24	-2.42	-2.20	6.95
23	0.39	2.72	18.32	23	24	0.05	0.04	7.00
24	0.21	1.42	18.53	24	24	0.55	0.54	7.55
25	0.59	3.01	19.12	-	-	-	-	-

14) In case of privatisation by instalment, the actual payment on the application day is different from the offer price. Datastream provides share prices on the basis of the full paid offer prices. Therefore, the size of underpricing computed over the first instalment payment differs from that of the fully payment. It is estimated that the former is greater than the latter.

Positive daily returns after this time though are small. Thus the price of new issues is immediately adjusted on the first trading, which confirms the efficiency of the secondary market found in other studies[15]. This finding implies that the investors who purchase the privatisation new issues on the first trading day could not make abnormal returns over this period. However the incentives to apply for new issues still exists because the investors who obtained privatisation shares at the time of initial offerings realise excess returns of around 19 per cent during first month of trading.

Looking at the long-term performance, beyond 25 days privatisation issues continue to show abnormal returns with Table 3 showing excess returns for 24 months following first trading. This contrasts with the results of Ritter (1991), Aggarwal and Rivoli (1990), Aggarwal, Leal and Hernandez (1993) and McGuinness (1993), where negative long-run returns of new issues of private companies reverse positive initial excess returns. In contrast, the British privatisation issues provided positive returns on both issue and the first trading days. Such positive cumulative returns suggest that the investors could be given the incentive to buy these shares on the secondary market and hold them for a long time.

4.2 Winner's Curse and Underpricing of Privatisation IPO

In Rock's model, it is suggested that informed investors tender only for underpriced new issues leaving uninformed investors applying for both over-and underpriced issues, resulting in disproportionate allocation of underperforming issues. If uninformed investors repeatedly face this winner's curse, they will withdraw from the new issue market until the price of initial public offerings declines to compensate for the loss from this adverse selection. The new issue, therefore, should be underpriced, on average, to compensate the uninformed investors for the bias in the probability of allocation between undervalued and overvalued issues.

The availability of subscription times and allocation rates on the new issues of privatised British companies, not normally revealed in the US, allows the test of

15) See Copeland and Weston (1983,pp.333-336) and Ibbotson (1975).

Rock's model. Rock's model could be tested by observing the degree to which new issues are rationed and whether on the basis of these allocations, new issues provide the uninformed investors with the required rate of return or not.

In the first place, let us examine the probability of obtaining an allocation by subscription size for privatisation issues. Table 4 presents probabilities of receiving an allocation according to the size of application for 33 privatisation new issues. These exhibits show that privatisation issues are allocated favourably to small investors. The probability of obtaining an allocation is ranged from 1 for subscription of £100 to 0.058 for £50,000. In addition, the Table 4 also reveals that the probability of receiving an allocation in small underpriced issues is higher than in large underpriced issues. The probabilities of obtaining an allocation in privatisation issues, where the initial excess return is less than 30%, are in the range of 1 to 0.12. The probabilities for privatisation issues showing more than 50% are ranged from 1 to 0.023.

<Table 4> Probability of Obtaining an Allocation and Weighted Excess Return by Application Size

Application size (£)	Probability of an allocation by initial return extent				Weighted excess return by initial returns extent			
	below 30%	30% to 50%	above 50%	total	below 30%	30% to 50%	above 50%	total
100	1.000	1.000	1.000	1.000	0.167	0.428	0.630	0.434
300	0.912	0.654	0.537	0.673	0.158	0.273	0.342	0.269
500	0.839	0.538	0.366	0.549	0.148	0.225	0.234	0.212
800	0.809	0.475	0.274	0.485	0.141	0.201	0.177	0.181
1000	0.701	0.418	0.246	0.426	0.127	0.177	0.158	0.160
1500	0.636	0.325	0.179	0.346	0.115	0.137	0.114	0.125
2000	0.596	0.232	0.147	0.283	0.105	0.096	0.093	0.097
3000	0.445	0.203	0.102	0.224	0.076	0.084	0.065	0.077
4000	0.371	0.166	0.133	0.199	0.061	0.068	0.086	0.072
5000	0.298	0.146	0.069	0.155	0.048	0.060	0.044	0.053
10000	0.202	0.082	0.019	0.091	0.031	0.033	0.011	0.026
15000	0.159	0.062	0.017	0.070	0.024	0.025	0.009	0.020
20000	0.153	0.056	0.025	0.068	0.023	0.022	0.014	0.020
50000	0.120	0.051	0.023	0.058	0.017	0.020	0.013	0.017

Table 4 presents weighted excess returns[16] by probabilities of receiving an allocation conditional on the size of subscription. In considering the probability of an allocation, the rate of return of small (uninformed) investors is higher than that of large (informed) investors. And the weighted returns for small investors could cover the risk-free rate of return.

Table 5 shows the relation between the size of underpricing and the level of subscription for privatisation new issues. The times subscribed to the privatisation initial issues, on average, was 8.42. As can be seen from Table 5, the greater the oversubscription, the higher the rate of return. On first trading, the group of shares oversubscribed by more than 10 times achieved higher returns than the mean return of all issues. In contrast, undersubscribed issues recorded negative returns and hence were overpriced. We can infer that informed investors would avoid applying for these overvalued issues but would apply for the underpriced issues in a large quantities (a large size of application) which may be disproportionately scaled down. On the other hand, the uninformed investors face the winner's curse because of adverse selection on the overpriced issues.

<Table 5> Abnormal Returns by the Level of Subscription

Times subscribed	No. of companies	First day return	First week return
more than 10 times	10	49.05	50.87
5 to 10	14	45.26	44.19
1 to 5	15	31.51	33.30
less than 1	2	-10.66	-12.25
Total sample	41	38.42	39.09

The conclusion is that the uninformed investor could receive substantial positive

16) This weighted return is calculated as follows:

$$WARi = ARi * PROBi$$

$$WAAR = \frac{1}{n} \sum_{i=1}^{n} WARi$$

where, AR = market adjusted return at listing day
PROB = probability of obtaining an allocation
WAAR = weighted average abnormal returns.

abnormal return to cover the riskless rate of return as shown in Table 4. The ability to anticipate and adjust in tendering for oversubscription issues could be manifested by the existence of a positive relationship between underpricing and oversubscription. Such a relationship appears to exist and is estimated in Table 6.

<Table 6> Regressions of Excess Returns on Subscription Level

Model	Constant	Coefficient	R-sq	F-ratio
FDR=α+βSUBT	30.32	0.96(t=2.29*)	0.118	5.24
FWR=α+βSUBT	30.86	0.98(t=2.23*)	0.113	4.96

FDR = rate of return on the first dealing day over offer price

FWR = rate of return at one week after listing over offer price

We can conclude that Rock's model is therefore satisfied to the extent that uninformed investors, even if adverse selection is applied through the published allocation procedures, receive a substantial positive return on tendering for new issues.

V. Summary and Conclusions

In examining the pricing of UK privatisation new issues during the last 15 years from 1977, it has been shown that underpricing of 40 per cent of privatisation IPO has been substantially greater than for private company IPO. Underpricing of privatisation issues minimises potential capital losses for uninformed investors. However, it is difficult to avoid criticism that the UK Government did not set the best price of initial issues of state-owned companies[17]. At the second issue of British Telecom in December 1991, the government set the offering price at a considerably higher level by employing a kind of tender offer. The rate of return of around 14 per cent accruing on the first trading day is much less than the 83% of the first issue but even so is high for a share which was already quoted.

In the process of two recent privatisations in Korea, POSCO and KEPCO, the Korean government has also set offer prices at a low level as in pricing of new shares of privatised companies in the UK. Therefore, both the two countries have to

17) See Financial Times, 10 December 1991.

explore the technique to set an accurate offer price.

We explored the reason for the underpricing phenomenon of initial issues of public enterprises from Rock's winner's curse perspective. The empirical test of the model was conducted by investigating the relation between the degree of underpricing and the level of subscription, and by observing the probability of obtaining an allocation and further by computing weighted abnormal returns by application size. The empirical evidence shows that the extent of underpricing of privatised companies can be explained through linking underpricing to the level of subscription. This evidence suggests the possibility that the uninformed investors would face the winner's curse. In order to solve this problem the new issues would be underpriced at a level which would compensate the uninformed investors for the risk-free rate of return. Allocations which favour the uninformed investors would be consistent with the spirit of Rock's model and weighted excess returns for small investors are higher than for large investors. Our finding is consistent with the implication of Rock's model which the weighted returns for small investors should at least cover the risk-free rate of return.

This paper has some limitations. Sample companies are the privatised companies which are offer not encountered in all firms. The size of the abnormal returns on privatisation issues is the opportunity cost above the amount required to produce excess return for the uninformed investor but the variety of allocation rules and the importance of the allocation and cheque return timetable in delivery return to oversubscribed issue makes an entirely objective appraisal impossible. It is possible to argue from a cost perspective that underpricing / oversubscription reduce returns to the professional investors because of lower rate and the delay in refunding. Therefore the naive investors may do better or even the sophisticated investors may find it cheaper to buy in the secondary market.

References

Aggarwal, R., Leal, R. and Hernandez, L., "The Aftermarket Performance of Initial Public Offerings in Latin America," *Financial Management*, 22(1), 1993, pp. 42-53.

Asquith, P. and Mullins, W., Jr, "Equity Issues and Offering Dilution," *Journal of Financial Economics,* 15(1/2), 1986, pp.61-89.

Baron, D.P., "A Model of the Demand for Investment Banking Advising and Distribution Services for New Issues," *Journal of Finance*, 37(4), 1982, pp.955-976

Brown, S.J. and Warner, J., "Measuring Security Price Performance," *Journal of Financial Economics,* 8, 1980, pp.205-258.

Buckland, R., Herbert, P. and Yeomans, K.A, "Price Discount on New issues in the UK and Their Relationship to Investor Subscription in the Period 1965-75," *Journal of Business Finance and Accounting,* 8(1), 1981, pp.79-94.

Confederation of British Industry(CBI), *A Nation of Shareholders: Report of the CBI Wider Share Ownership Task Force.* 1990

Copeland, T.E. and Weston, J.F., *Financial Theory and Corporate Policy,* Addison-Wesley Publishing Co. *1983*

Davis, E.W. and Yeomans, K.A., *Company Finance and the Capital Market:A Study of the Effects of Firm Size,* Cambridge Univ. Press. 1974

Franks, J.R. and Harris, R.S., "Shareholder Wealth Effect of Corporate Takeovers: The UK Experience 1955-85," *Journal of Financial Economics,* 23, 1989, pp.225-249.

Husson, B. and Jacuilatt, B., "French New Issues, Underpricing and Alternative Methods of Distribution," in Guimaraes, R.M.C et. al.(eds), *A Reappraisal of the Efficiency of Financial Markets,* Berlin: Springer-Verlag, 1989, pp.349-368.

Ibbotson, R.G., Sindelar, J.L., and Ritter, J., "Initial Public Offerings," *Journal of Applied Corporate Finance*,1, 1988, pp.37-45.

Jenkinson, T. and Mayer, C., "The Privatisation Process In France and The U.K.," *European Economic Review,* 32, 1988, pp.482-490.

Koh, F. and Walter, F., "A Direct Test of Rock's Model of The Pricing of Unseasoned Issues," *Journal of Financial Economics,* 23, 1989, pp.251-272.

Krinsky, I. and Rotenberg, W., "Signalling and Valuation of Unseasoned New Issues Revisited," *Journal of Financial and Quantitative Analysis,* 24(2), 1989, pp.257-266.

Levis, M., "Winner's Curse Problem, Interest Costs, and Underpricing of Intitial Public Offerings," *Economic Journal, 1*00, 1990, pp.76-89.

Levis, M., "The Long-run performance of Initial Public Offerings: The UK Experience 1980-88," *Financial Management,* 22(1), 1993, pp.28-41.

McGuinness, P., "The Post-listing Performance of Underpricing of Unseasoned Issues of Common Stock in Hong Kong," *Journal of Business Finance & Accounting,* 20(2), 1993, pp.167-194.

Megginson, W.L. and Weiss, K.A, "Venture Capitalist Certification in Initial Public Offerings," *Journal of Finance,* 46(3), 1991, pp.879-904.

Menyah,K., Paudyal, K.N. and Inyangete, C.G., "The Pricing of Initial Offerings of Privatised Companies on the London Stock Exchange," *Accounting and Business Research,* 21, 1990, pp.50-56.

Merrett, A.J., Howe, M. and Newbould, G.D., *Equity Issues and the London Capital Market,* Longmans. 1967,

Muscarella, C.J. and Vetsuypens, M.R., "A Simple Test of Baron's Model of IPO Underpricing," *Journal of Financial Economics,* 24, 1989, pp.125-135.

Perotti, E.C. and Gunney, S.E., "The Structur of Privatisation Plans," *Financial Management,* 22(1), 1993, pp.84-98.

Price Waterhouse, *Privatisation - The Facts,* London. 1990,1991

Ritter, J.R., "The Long-Run Performance of Initial Public Offerings," *Journal of Finance,* 46(1), 1991, pp.3-27.

Rock, K., "Why New Issues Are Underpriced," *Journal of Financial Economics,* 15, 1986, pp.187-212.

Smith, C.W., "Investment Banking and the Capital Acquisition Process," *Journal of Financial Economics,* 15, 1986, pp.3-29.

Titman, S. and Trueman, B., "Information Quality and Valuation of New Issues," *Journal of Accounting and Economics,* 8, 1986, pp.159-172.

Veljanovski, C., *Selling The State:Privatisation In Britain,* London:Weidenfeld And Nicolson, 1987.

Vickers, J. and Yarrow, G., *Privatization:An Economic Analysis,* Cambridge: MIT Press. 1988