

An Examination of Installment Receipt Initial Public Offerings (IPOs) and Implications for the Efficiency of the Canadian Capital Market

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In this paper, we investigate the effects of installment receipt IPOs on the short term and long term prices of the underlying securities. Our findings are that: there exist both short term and long term trends in prices implying that investors view the issue as a bargain and therefore buy the issue for both short term and long term gains; that the dominant factor affecting investor uncertainty is the level of confidence attached to the underwriter; and that for installment receipt IPOs, investors have the time leverage to monitor the activities of the firm before making a commitment to purchase the security.

Introduction

An installment receipt (IR) is a corporate security which represents a share that is held by the bearer, but only partially paid for. With IRs, the investor purchases a company's security by paying a portion of the price today and the remainder at a pre-specified future date. The holder of IR enjoys the full rights of owning the common share of a corporation. That is, the holder is entitled to vote and receive the same dividend as a common shareholder. Should the corporation be dissolved, the distribution of residual value would accrue to the holder of the installment receipt as it would to the common shareholder.

The holder of IR, however, has the obligation to make the specified installment payments on the date(s) specified in the prospectus. If the offering is done by way of two installments, the bearer of the first IR has the obligation to purchase the final installment unless the bearer decides to sell it prior to the final installment date in which case, the obligation is transferred to the new holder of the IR. Upon payment of the final installment, the first and second receipts are immediately exchanged for the common share of the underlying firm and there is no longer a market for the receipts. The common share then trades at a price which is a combination of the market price of the first IR immediately preceding the final installment payment date and the full amount of the final IR. In a three installment offering, the first installment ceases trading on the second installment date and the security trades as a combination of the market price of the first IR and the full amount of the second installment. On the final installment date, the receipt is immediately exchanged for a common share of the firm. The non-purchase of the final installment still leaves the bearer liable to the seller. The issuer (normally called the selling shareholder in IPOs) reacquires title to the shares and may sell them in the market. However, the bearer of the installment receipt is liable to the issuer for any deficiency from the sale of the IR.

While the selling of installment receipt IPOs has been used for several decades, the practice has become more popular in recent years. In Canada, they have been used for the privatization of Crown corporations. As noted by Haggett (1996), Canadian governments (both federal and provincial) have found installment receipts as a means to market the issue to their constituents who might otherwise be unable to raise the necessary amount of cash to investment in the newly privatized operations.

The IR investor faces a reduced risk than would be experienced in an equity IPO for the same company. This is because investor has sometime (normally one year) to monitor the performance of the company before committing the remaining capital. If the investor is not satisfied with the firm's performance, he/she could trade out of his/her position prior to that date. Likewise, any potential IR

investor who did not purchase the first installment has the opportunity to monitor the performance of the new company before deciding to purchase the installment receipt from the market, and the obligation for the final installment.

So long as the holder of IR receives the full amount of any dividends declared by the corporation, the yield on IR is enhanced during the installment period. This makes IRs attractive to potential investors given that the investor risks less capital upfront.

Review of the Literature

The pricing of IPOs is difficult partly because there is no observable market price prior to the offering and partly because many of the issuing firms have little or no operational history. Thus, setting the price too low will hurt the issuing firm, too high will be unattractive to the informed investor. Moreover, investors may refrain from investing in IPOs from underwriters with a record of overpriced offerings. However, empirical evidence shows that IPOs are significantly underpriced, on average. Though a number of reasons have been offered to explain the underpricing, yet no widely accepted statistical test has been advanced to explain IPO underpricing.

The phenomenon of significant underpricing in the market for initial public offerings (IPOs) has been well documented over the past quarter century. Empirical evidence of short term abnormal returns, on average, for investors in IPOs has been provided by several researchers (See for example; Ibbotson, 1975; Beatty and Ritter, 1986; Chalk and Peavy, 1987; Miller and Reilly, 1987; Ibbotson, Affleck-Graves and Miller, 1988; and Sindelar and Ritter, 1988). As noted by Affleck-Graves and Miller (1988), the consensus from the research is that IPOs are, on average, underpriced by greater than 10%. While most research on IPOs has been focussed on U.S. securities, others (Jog and Riding, 1987; Menyah, Paudyal, and Inyangete, 1990; and, Levis, 1993; Clarkson and Merkely, 1994) have found consistent results in other countries. Levis (1993) confirmed that a significant IPO underpricing exists in capital markets worldwide. Jog and Riding (1987) found that Canadian IPOs listed on the Toronto Stock Exchange (TSE) between 1971 and 1983 were underpriced, on average, by 9 to 11.5 per cent. Clarkson and Merkely (1994) also studied TSE IPOs from 1984 to 1987 and found that the average initial period return was 6.44%. In addition, both studies confirmed that, consistent with the findings of other countries, a significant portion of the IPOs were overpriced. Jog and Riding (1987) found that about 40% of the securities in their sample were overpriced. Clarkson and Merkely (1994) indicated that 30% of their stocks were overpriced while another 15% exhibited no initial period price change.

In most studies of equity IPOs (for example, Miller and Reilly, 1987; Ibbotson, Affleck-Graves and Miller, 1988; and Sindelar and Ritter, 1988), significant abnormal returns were found to be generated in the initial trading period and that the market adjusted to any abnormal returns during the first day of trading. The observed underpricing in IPOs has normally been explained in terms of the ex-ante uncertainty faced by the potential investor. It is the underwriter's responsibility to structure and market the new issue. Essentially, the underwriter becomes familiar with the company's history and future prospects, including its competitive position within its industry, its track record, and its financial structure and expected earnings. Once the company's preliminary prospectus is released, the underwriter takes the company's story to potential investors. Thus, the underwriter has his/her reputation at risk. If the market indicates that the price was set too low, future issuers may not contract the underwriter; if it was set too high, investors may be alienated from participating in future IPOs arranged by that underwriter. There is also the possibility that an overpriced issue might generate lawsuits from buyers who have subsequently found that their investment has declined in value. Therefore, underpricing has been explained terms of insurance against legal liability (see Tinic, 1988).

Though IPOs have been documented to be underpriced on average, it is important to note that a significant number of IPO issues are also overpriced. Ibbotson (1975) found that, while IPOs on average generate positive excess returns, he was unable to reject the hypothesis that an investor had an equal chance for a gain or a loss. Researchers have proposed several explanations for the phenomenon of IPO mispricing. Much attention has been directed towards theories of ex ante uncertainty and asymmetry of information amongst the participants (Rock, 1986; Beatty and Ritter, 1986; Miller and Reilly, 1987; and Muscarella and Vetsuypens, 1989). Rock (1986) proposed that there are two classes of investor, informed and uninformed. He suggested that IPOs had to be priced below their expected values in order to attract uninformed investors to both good and bad issues. Otherwise, there would be insufficient demand for bad issues given that informed investors would not participate.

Beatty and Ritter (1986), measured initial returns against two proxies for ex ante uncertainty, namely; the issue size and the use of the proceeds from the issue. They concluded that a positive relationship existed although the strength of the relationship was weak. Affleck-Graves, Hedge, Miller, and Reilly (1993) used the listing requirements of different U.S. exchanges as a proxy for ex ante uncertainty. They found that the more stringent the listing standards, the lower the degree of underpricing experienced for the new issue. Jog and Riding (1987) and Clarkson and Merkle (1994) tested several proxies for ex-ante uncertainty against observed returns for Canadian IPOs. Both studies produced results that were consistent with earlier U.S. studies.

Empirical results of Real Estate Investment Trusts (REITs) IPOs have been mixed (see Wang, Chan, and Gau 1992; Ling and Ryngaert 1997). Wang, Chan, and Gau (1992) found that the initial return for REITs was significantly negative, on average, by 2.82%. In addition, they found that new REITs continued to underperform seasoned REITs in the aftermarket. The returns showed no significant relationship with the measures of ex-ante uncertainty. They offered a possible explanation that the issues were aggressively marketed to retail investors and that better informed institutional investors were not large participants in the REIT market. In contrast to the findings of Wang, Chan and Gau (1992), Ling and Ryngaert (1997) found that REIT IPOs issued between 1991 and 1994 displayed an average underpricing of 3.6% and outperformed seasoned REITs in the aftermarket. Moreover, they found a significant relationship between REIT IPO initial returns and the measures of ex-ante uncertainty. They noted that there was far greater institutional ownership of REITs in the 1990s as compared to prior periods and that REITs had become more visible as yield instruments in an era of low interest rates.

So far the explanations for underpricing include price stabilization by the underwriter (Ruud, 1991; and Bhagwan, Chowdry, and Nanda, 1996); signalling the future value of the firm to new investors (Allen and Faulhaber, 1989; and Grinblatt and Hwang, 1989); insurance against the legal liabilities of the underwriter (Tinic, 1988); underwriter reputation (Beatty and Ritter, 1986); and the periods of high and low volumes of IPO activity (Ibbotson, Sindelar, and Ritter 1988).

In this paper, we investigate the extent of mispricing of installment receipt IPOs. Further, we investigate the aftermarket adjustment of prices to the initial mispricing of installment receipt IPO and as well, examine the factors that contribute to the initial mispricing. Since installment receipt IPOs, unlike equity IPOs, have two event dates namely; the first installment trading date and the final installment trading date, we decompose investor uncertainty into two components: that due to the underwriter with which carries the obligation to purchase the final installment receipt, and that due to the issuer.

Data Sources and Selection

The initial selection of installment receipt IPO securities were obtained from the “Partly Paid Shares” section of the Toronto Stock Exchange (TSE) daily returns listing in the *Globe and Mail*. Initially forty firms were identified which had issued installment receipt IPOs between January 1, 1994 and July 1, 1997.

The prospectus was obtained for each issue. The price per installment, number of installments, installment dates, and issue size were recorded. Using information from the prospectuses, four securities were excluded because the receipts represented convertible debentures, or were sold as a unit including a debenture or a warrant with a common share.

Daily volume and closing price for each of the securities was obtained from two primary sources: the TD Securities Inc. and Reuters Canada. For shares paid in two installments, data was requested for the first installment receipt from the date it was issued until the date of the final installment payment. Data for the fully paid share was requested for a period of two months following the payment of the final installment. For shares paid in three installments, data for the second installment receipt was requested from the date of the second installment payment until the date of the final payment. Any gaps in the daily data for individual IRs, were filled by consulting the daily returns for the Toronto Stock Exchange in the *Globe and Mail* or the *Financial Post*. Another four securities were excluded, at this stage, because insufficient data was obtained from the primary sources. Dividends were obtained from the *Financial Post Quarterly Review of Dividends* and the Bloomberg Financial News wire service.

Two other securities were eventually excluded from the sample. Boliden Ltd. installment receipts (BOL.ir) were suspended from trading on the TSE on May 27, 1998 when their value became negative. Shiningbank Energy Income Fund (SHN.ir) issued a second series of the first installment at a date between installment payments. A final sample of thirty securities was, therefore, available for this analysis.

Of the thirty firms included in the sample, the minimum issue size was \$35m, while the maximum issue size was \$2.29bn with an average issue size of \$460m

Methodology

IPO underpricing has been linked to the effects of investor uncertainty. Several proxies are used in statistical models to capture the effects of investor uncertainty. These include, among others, issue size, age of the firm, alternative uses for the proceeds from the issue specified by the offering, the listing requirements of the exchanges, quality of underwriter and IPO market conditions. The claim is that investor uncertainty causes market friction and pricing inefficiency. While it is well documented that IPOs are, on average, underpriced there is no consensus on the aftermarket adjustment to the mispricing. This is because some researchers define the aftermarket in terms of one week period, while others define it in terms of one month period.

In all of these studies, it was also shown that abnormal returns were available only in the initial trading period. Ibbotson (1975) noted that there were few deviations from efficiency in the aftermarket trading in new securities. Miller and Reilly (1987) found that the market adjusted to any mispricing during the first day of trading. Excess returns were not available in the aftermarket for either underpriced or overpriced IPOs.

In this paper, we investigate the validity of the competing hypotheses on equity IPOs for installment receipts IPOs. First, we examine whether or not there are short term and long term trends in prices of underpriced and overpriced installment receipt IPOs. To achieve this, we postulate the following cross-sectional relationship:

$$CR_{2i} = \gamma_0 + \gamma_1 CR_{1i} + \gamma_2 D_{1i} + \gamma_3 D_{1i} CR_{1i} + \varepsilon_i \quad (1)$$

where,

CR_{2i} = Cumulative returns for the final IR up to and including the first week of trading,

CR_{1i} = Cumulative returns for the first IR over the first week of trading,

$D_{1i} = 1$ if the installment receipt IPO is underpriced and zero otherwise, and

ε_i is the error term.

The rationale behind equation (1) is that if there is any significant degree of underpricing/overpricing of IR by the investment banker would cause underreaction or overreaction in the market. For this reason, we should expect the coefficient γ_1 to be negative. A negative γ_1 value therefore represents short term trends in prices. On the other hand if γ_1 is positive and significant would indicate long term persistence in prices which has implications for market efficiency with respect to installment receipt IPOs.

Next, we examine whether the sign of the initial IR return is a predictor of its aftermarket return, both short and long term. To test this, we postulate the following models:

$$CR_{1i} = \gamma_0 + \gamma_1 R_{1i} + \gamma_2 D_{1i} + \gamma_3 D_{1i} R_{1i} + \varepsilon_i \quad (2)$$

and

$$CR_{2i} = \gamma_0 + \gamma_1 R_{1i} + \gamma_2 CR_{1i} + \gamma_3 D_{1i} + \gamma_4 D_{1i} R_{1i} + \gamma_5 D_{1i} CR_{1i} + \varepsilon_i \quad (3)$$

where,

R_{1i} = Returns for the first trading day of IR, and

CR_{2i} , CR_{1i} and D_{1i} are as previously defined,

ε_i is the error term.

Equation (2) examines the short term direction of trends in prices conditional upon the initial signal, while equation (3) examines the long term direction of trends in prices conditional upon the initial signal.

Finally, we examine the effects of investor uncertainty induced by the uncertainty surrounding investment banker's subjective evaluation of the initial pricing of the installment receipts as well as the uncertainty surrounding the issuing firm. We postulate the following relationship:

$$R_{2i} = \gamma_0 + \gamma_1 R_{1i} + \gamma_2 V_{1i} + \gamma_3 V_{2i} + \gamma_4 D_{1i} + \gamma_5 D_{1i} R_{1i} + \gamma_6 D_{1i} V_{1i} + \gamma_7 D_{1i} V_{2i} + \varepsilon_i \quad (4)$$

where,

V_{1i} = Proportionate volume of trade during the first trading day of the IR,

V_{2i} = Proportionate volume of trade during the first trading day of the final IR,

$D_{1i} = 1$ if the installment receipt IPO is underpriced and zero otherwise, and ε_i is the error term.

In equation (4), V_{1i} measures the investor degree of uncertainty induced solely by the investment banker pricing mechanism, while V_{2i} reflects the investor degree of uncertainty due to the firm's characteristics.

Analysis of Results

The results of the behavior of returns during the first day of trading for the first installment receipts and the fully converted share is shown in Table 1 below.

Table 1
Underpricing/overpricing of IR IPOs during the first trading day of the first and final IRs

	# of securities	Day 1 trading of the first Installment Receipt			Day 1 trading of the fully converted Receipts		
		average returns	standard deviation	coefficient of variation	average returns	standard deviation	coefficient of variation
Underpriced securities	19	14.872	9.27	0.6251	1.864	2.751	1.470
Overpriced securities	7	-4.730	5.518	-1.167	0.807	1.588	2.548
Total sample	30	8.315	7.610	0.9152	0.951	2.423	2.548

The results seem to be consistent with those reported for equity IPO's. Installment Receipts (IR's), like equity IPO's, on average, tend to be underpriced in the market. During the first trading day of the Installment Receipts, a positive average returns of 8.32% was realized for the thirty firms. During the same period, the underpriced IPO's realized a net gain of 14.67%, while the overpriced IPO's realized a net loss of 4.73%. The degree of underpricing/overpricing is almost eliminated by the time the final IR's are paid and the receipts fully converted into common shares.

Since installment receipt IPOs are to some extent identical to equity IPOs we can only test the proposed models using cross-sectional data on the firms. However, as with any cross-sectional data the residuals from OLS regressions are heteroscedastic which may bias the t-test statistics. Thus, we face the risk of wrongly accepting the null hypotheses when in fact they should be rejected. To correct for this problem, we employ three estimating techniques, namely, the OLS, a Heteroscedastic Estimation technique and a Simulation technique. The results for equation (1) are shown in Table 2 below:

Table 2

Test results for the presence of long term and short term trends in prices of underpriced and overpriced IRs (equation 1)

$$\text{MODEL: } CR_{1i} = \gamma_0 + \gamma_1 R_{1i} + \gamma_2 D_{1i} + \gamma_3 D_{1i} R_{1i} + \varepsilon_i$$

		γ_0	γ_1	γ_2	γ_3
OLS	Coefficient	0.005048	0.0542	0.2065	0.0348

	t-statistics	0.783	1.025	0.257	0.875
GLS	Coefficient	0.005126	0.0621	0.2082	0.0342
	t-statistics	1.982	2.051	1.635	2.354
SIM	Coefficient	0.005130	0.0598	0.2078	0.0344
	t-statistics	2.245	2.128	1.687	2.535

The results for the tests of short term and long term trends in prices confirm that investors purchase IRs with the intention of making long term gain from their investment. The OLS results failed to confirm this assertion due partly to the relatively small sample size and partly due to the effect of heteroscedasticity in the residual term of the model. Both the GLS and the simulation techniques confirm this assertion. The coefficients are all positive and statistically significant at the 5% level for the GLS and the simulation techniques. Finally, we test for the effect of investor uncertainty on the prices of the IRs using equation (4).

To achieve these, we decompose investor uncertainty into two components, namely that due to the underwriter, and that due to the issuing firm. We postulate that the uncertainty due to the underwriter is reflected in the volume of trade for the installment receipt first trading day, while that due to the issuing firm is reflected in the volume of trade for the final installment first trading day. The results are shown in Table 3 below:

Table 3

The statistical results for tests of investor uncertainty in periods surrounding the first and final installment receipt trading days.

$$\text{MODEL: } R_{2i} = \gamma_0 + \gamma_1 R_{1i} + \gamma_2 V_{1i} + \gamma_3 V_{2i} + \gamma_4 D_i + \gamma_5 D_{1i} R_{1i} + \gamma_6 D_{1i} V_{1i} + \gamma_7 D_{1i} V_{2i} + \varepsilon_i$$

		γ_0	γ_1	γ_2	γ_3	γ_4	γ_5	γ_6	γ_7
OLS	Coefficient	-0.0068	0.0244	0.0858	0.3887	-0.074	0.1633	-0.0345	0.1265
	t-statistics	-0.678	1.128	1.456	0.865	-1.087	0.984	-1.113	1.012
GLS	Coefficient	-0.0124	0.0286	0.0784	0.4235	-0.0821	0.1845	-0.0421	0.1324
	t-statistics	-1.145	4.989	3.132	2.154	-1.128	1.876	-2.165	1.654
SIM	Coefficient	-0.072	0.0274	0.0794	0.435	-0.0945	0.178	-0.0456	0.146
	t-statistics	-1.348	5.135	3.876	3.186	-1.564	1.934	-1.986	1.879

The results indicate that investors uncertainty about the IPO is accounted for by both the risk attached to the underwriter and the uncertainty surrounding the issuing firm. Of the total risk faced by the investor, approximately 65% is accounted for by uncertainty about the underwriter while 25% is accounted for by uncertainty surrounding the issuing firm. A plausible explanation to this finding is that investors engaged in installment receipt purchases have a long time span to monitor the activities of the issuing firm in order to decide on whether or not to make a commitment to buy and hold the stock or to trade out of their positions.

Conclusions

In this paper, we investigate the effects of installment receipt IPOs on the short term and long term prices of the underlying securities. Our findings are that: there exist both short term and long term trends in prices implying that investors view the issue as a bargain and therefore buy the issue for both short term and long term gains; that the dominant factor affecting investor uncertainty is the level of confidence attached to the underwriter; and that for installment receipt IPOs, investors have

the time leverage to monitor the activities of the firm before making a commitment to purchase the security.

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