

# Warrant pricing premiums on the JSE

## 1. INTRODUCTION

On the 2<sup>nd</sup> of October 1997, Deutsche Morgan Grenfell (DMG) issued the first warrant on the Johannesburg Stock Exchange (JSE). Since then the market has grown substantially. The value of warrants traded in 1998 exceeded R1 Billion (Cope, 1999). The number of listed instruments grew from one warrant in October 1997 to forty six warrants in February 1998 and over one hundred warrants in January 2000. No research had been published on this extremely fast growing market and a number of views exist regarding pricing, standard deviation, investor sophistication, and warrant pricing premiums.

In 1972, Black and Scholes (1972) derived a model to determine the theoretical value of a European option as a function of the share price, the maturity date of the warrant, the exercise price, the risk free interest rate and the volatility of the share price. Later Cox, Ross and Rubenstein (1979) developed a binomial-tree pricing model to price warrants with the added complexity of incorporating the discrete dividends paid by equities at variable time intervals.

At any point in time the price of the share on which the warrant is issued, the maturity date of the warrant, the exercise price and the risk free interest rate are directly observable. The volatility (or standard deviation) of the share price over the life of the warrant, however, cannot be directly observed. Two proxy measures of the share price volatility are available. The first is the historical standard deviation (HSD) of the share price over a fixed interval (going backwards in time). The second is the expected standard deviation of the share price – given the price at which the warrant is trading – calculated by working backwards through an option-pricing model. The standard deviation calculated in this manner is known as the implied standard deviation (ISD).

A comparison of the differences between ISD and HSD across warrant markets or warrant issuers can be used to assess the extent to which the pricing premiums charged by market makers differ.

In a *post hoc* analysis, the historical standard deviation and the implied standard deviation (ISD) (calculated, say on the first day of trading of the warrant) can be compared with the actual standard deviation of the underlying stock over the life of the warrant, referred to as the realised standard deviation (RSD). Such an

investigation evaluates the extent to which the HSD or ISD can be used as predictors of RSD.

The objectives of this study were to:

1. Investigate the extent to which implied standard deviations (ISD's) and historical standard deviations (HSD's) predict realised standard deviations (RSD's) on the JSE.
2. Investigate the extent of the pricing premium - calculated as the difference between ISD and HSD - on the South African warrants market:
  - over time since the start of the South African warrants market,
  - across different issuers, and
  - as a function of warrant liquidity.
3. Compare pricing premiums of warrants on the JSE with those on the Australian Stock Exchange (ASX).

## 2. LITERATURE REVIEW

Various models proposed for option valuation are discussed in the first section of this literature review. In the second section, appropriate measures of share price volatility are explored.

### 2.1 Option pricing models

Under a number of assumptions Black and Scholes (1972) found that the value of an option contract is really a function of the common stock price and time, and they presented empirical evidence supporting their model in 1972. Chiras and Manaster (1978) provided support for the Black and Scholes model and at the same time showed that the Chicago Board of Options Exchange was inefficient in some respects. Macbeth and Merville (1979) tested the Black and Scholes model by looking at call options on the same stock at the same time and comparing the standard deviations implied by the prices. "In most cases the mispricing by Black and Scholes is not sufficient to present profitable opportunities to investors when transactions costs and bid-ask spreads are taken into account" (Hull 2000:450).

A disadvantage of the Black and Scholes model is that it does not account for dividends. Dividends on some shares may be substantial and can thus have a considerable impact on the value of options whose shares make such payments during the life of the options. This criticism is particularly relevant in South Africa, where warrants mature over six month periods and dividends are likely to be paid during the warrant life. Merton (1973) showed how to adjust the Black and Scholes model for dividends when the dividend is paid

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out at a continuous rate, but since most firms do not follow such a policy, the improvement has limited value.

In 1979, Cox, Ross and Rubenstein (1979) presented a simple discrete-time model for valuing options which dealt effectively with the adjustments required for dividend payments. Their model was based on the assumption that the stock price follows a multiplicative binomial process over discrete periods. The use of a binomial tree allows for the correct valuation of an option where actual dividends are paid at discrete time periods, and regardless of whether or not the option is exercised early.

### 2.2 The standard deviation of the share price

Regardless of which options pricing model is used, the variable that is not readily observable at the issue date is the standard deviation of the underlying stock over the life of the warrant. Options valuation requires that the standard deviation be estimated.

There are a number of ways to estimate standard deviation, for example, the Autoregressive Conditional Heteroscedasticity (ARCH) model proposed by Engle (1982), the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model proposed by Bollerslev (1986), the historical standard deviation, the historical mean absolute deviation and regression forecasting models. Following the example of studies by Chiras and Manaster (1978) and Christensen and Prabhala (1998), the two measures of volatility explored in this study are historical standard deviation and the standard deviation implied from the option price.

#### 2.2.1 Historical standard deviation

A record of stock price movements can be used to estimate HSD, and the only variable is the length of time over which the standard deviation is estimated.

Chiras and Manaster (1979) calculated the HSD using twenty observations prior to the observation date and used this to forecast 20 time periods ahead. The periodicity used was monthly. Christensen and Prabhala (1998) also used monthly observations as their study was done on Chicago Board of Options exchange options where each month an option expired.

Beckers (1981) calculated the HSD over the previous quarter, while the realised standard deviation was calculated between the first day of the observation interval and the expiration date.

Canini and Figlewski (1993) used a sixty-day sample for HSD since this was approximately equal to the average forecast horizon in their sample. Interestingly thirty and one hundred and twenty days of data yielded similar results.

Hull (2000) suggests that a commonly used rule of thumb is to make the time period over which the standard deviation is measured equal to the time period over which it is to be applied. Thus if the standard deviation is to be used to value a one year option, then one years' worth of historical data should be used.

Empirical evidence presented by Fama (1965) and French (1980) and supported by French and Roll (1986) indicates that trading days, rather than calendar days, should be used in calculations of HSD.

#### 2.2.2 Implied standard deviations

In an efficient market, the ISD's calculated from option prices should reflect not only the information contained in the share price history (HSD), but also all other available information. It follows that the ISD should be a better predictor of a shares' RSD than should HSD; as Christensen and Prabhala (1998:126) noted: "If option markets are efficient, implied volatility should be an efficient forecast of future standard deviation". Studies conducted by Rendleman and Latane (1976), Chiras and Manaster (1978), Poterba and Summers (1986), Day and Lewis (1988), Sheikh (1989), Harvey and Whaley (1992), and Christensen and Prabhala (1998) support the use of ISD's in forecasting future standard deviation in a wide range of situations.

On the other hand, ISD is not consistently effective in predicting volatility in an uncertain future. Day and Lewis (1992) and Lamoureux and Lastrapes (1993) concluded that ISD's can be biased and inefficient, and Canina and Figlewski (1993) produced a study in which ISD had no significant correlation with RSD. Canina and Figlewski attempted to explain this lack of correlation on the nature of the index markets studied: either the index markets process standard deviation inefficiently, or the Black and Scholes (1973) option pricing model cannot be used to price index options because of the prohibitive transaction costs associated with the hedging of options. The first explanation was considered unlikely given the depth of liquidity and activity of the S&P 100 index options market), and the second also proved unsatisfactory in that Brennan (1979) and Rubenstein (1976) later supported the use of the Black and Scholes model in the same context. In addition, Constantinides (1994) shows that transaction costs do not have a first order effect on option prices and would not alone explain the failure of the Black and Scholes model in respect of the S&P 100 index options market.

Thus, while there is no question about the positive relationship between the volatility of underlying stock price and option value, there is some debate about how accurately the ISD predicts underlying stock price volatility. Aside from the studies by Day and Lewis (1992), Lamoureux and Lastrapes (1993) and Canina and Figlewski (1993), the body of literature on options pricing suggests that ISD's do have some value in predicting future stock price volatility.

This research investigated the ability of HSD and ISD to predict volatilities in the South African warrants market during its early stages of development, and analysed the pricing premiums used by warrant market makers. When compared to international markets in which much of the above research was conducted, at the time of this research there were far fewer warrants available on the JSE, there was considerably less liquidity in the market, and warrants on the JSE could not be sold short. It was anticipated therefore that issuers in South Africa were charging inflated premiums that would be reflected in a consistently higher spread between HSD and ISD than those observed elsewhere.

### 3. RESEARCH HYPOTHESES

The following null hypotheses were defined in order to meet the three objectives of the study.

#### Objective 1:

- 1.1: H<sub>0</sub>: ISD contained no information that could have been used to predict RSD.
- 1.2: H<sub>0</sub>: HSD contained no information that could have been used to predict RSD.
- 1.3: H<sub>0</sub>: ISD was not a better predictor of RSD than HSD.

#### Objective 2

- 2.1: H<sub>0</sub>: Since the launch of warrants on the JSE the pricing premium (calculated as the difference between the ISD and the HSD) had not reduced.
- 2.2: H<sub>0</sub>: The three dominant issuers in South Africa namely Societe Generale (SG), Standard Bank (SB) and Deutsche Morgan Grenfell (DMG) did not issue warrants at different premiums.
- 2.3: H<sub>0</sub>: There was no difference in the premium levied on relatively liquid and relatively illiquid warrants.

#### Objective 3

H<sub>0</sub>: The spread between the ISD's and HSD's on the JSE was not significantly larger than the corresponding spread on the ASX, indicating no evidence of overpricing of the warrants on the JSE relative to those on the ASX.

## 4. METHODOLOGY

### 4.1 Data collection and sample sets

#### 4.1.1 South African data

The entire population of warrants issued on the JSE was considered. The number of put and index warrants at the time of sampling was small and hence put and index warrants were excluded from the sample set. One hundred and twenty five equity call warrants were listed on the JSE during the period October 1997 to 6<sup>th</sup> July 2000. Of this number nine warrants had incomplete or

inconsistent data records on either the warrant or the underlying share, and were therefore excluded from the sample. Consequently a sample of 116 equity call warrants was constructed, 80 of which had expired before the 7<sup>th</sup> June 2001. Analysis related to objective one required values of RSD, and hence the sample size for those tests was 80 corresponding to the number of expired warrants. All other tests made use of the full sample of 116 warrants. The data was sourced from Bloomberg and McGregor's BFA-Net.

#### 4.1.2 Australian data

The Australian sample comprised all equity call warrants expiring between January 2000 and the end of June 2000 on the ASX, with a life longer than 6 months. Sixty-four warrants fitted this description. The expiry time period was chosen to coincide with the data available on the Bloomberg database at the time of the study. Since Australian warrants can be issued with a maturity period of less than 6 months (unlike South Africa where the minimum period of issue is 6 months) all equity call warrants with a life shorter than 6 months were omitted from the sample.

#### 4.1.3 Method of analysis

The ISD of each warrant was calculated using either the closing price on the first day of trade or the issue price. A fifty time-step binomial tree was used for all the analyses (since it was shown that further increases in time-steps did not result in more precise ISD values). The HSD of each share was calculated for a period equivalent to that of the warrant life, prior to the first day of trade. The following formulae were used to calculate both the HSD and RSD.

$$s = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (u_i - \bar{u})^2} \quad \dots (1)$$

where  $\bar{u}$  is the mean of all  $u_i$ 's and  $u_i$  is the share price return over a period, given by equation 2. Adjustments were made to incorporate only trading days (i.e. 252 days).

$$u_i = \ln\left(\frac{S_i + D}{S_{i-1}}\right) \quad \dots (2)$$

where D is the value of the dividend.  $S_i$  is the share price for the  $i^{\text{th}}$  interval.

In most instances dividends were known since the warrants had expired. The actual dividends were thus included in the three respective measures of standard deviations. Where the warrants had not yet expired, it was assumed that the company's dividend policy would remain the same, but that earnings would increase by an amount equivalent to the inflation rate.

Dividends through the life of the warrant were therefore assumed to be eight percent greater than the dividends paid out in the equivalent periods prior to issue, based on expectations of the annual inflation rate in South Africa during the year 2000.

Following the example of Latane and Rendleman (1979), Chiras and Manaster (1979), Canini and Figlewski (1993) and Christensen and Prabhala (1998), all hypotheses associated with the first objective of the study were tested by means of regression analysis. In each case the following procedure was followed:

1. Scatter plots of the dependent and independent variables were analysed to determine the nature of the relationship, and as an initial test for linearity and outliers.
2. Coefficients of the independent variables were tested to determine whether or not they differed significantly from zero.
3. Residuals were analysed to ensure that they were normally distributed around a mean of zero, and that there were no signs of heteroskedasticity.
4. Regression equations were compared to determine which predictor (ISD or HSD) was superior during the observed period. R-squared results were examined to determine the extent of the improvement gained by using ISD or HSD rather than a naïve estimate to predict RSD. The combination of the two independent variables was also tested to determine if the two predictors contained unique information in predicting RSD.

All hypotheses associated with the second and third objectives of the study were tested by means of non-parametric two-sample and analysis of variance tests. A preliminary analysis of the data confirmed that mean premiums and spreads were frequently distorted by a small number of particularly large values, so median values were reported in all cases. Non-parametric tests were used to test for differences in those medians, rather than differences in means. In two-sample comparisons the Mann-Whitney U test for differences in medians was used unless the samples had different variances in which case the Kolmogorov-Smirnov test was used. In all cases where there were more than two sub-groups of data (hypotheses 2.2 and 2.3) the Kruskal-Wallis test for differences in medians was used. All tests used are described in detail in Emory and Cooper (1991).

**5. RESULTS AND ANALYSIS**

1.1: *H<sub>0</sub>: ISD contained no information that could have been used to predict RSD.*

The results of the regression of ISD against RSD are presented in Table 1. The results indicate that ISD does contain information that is useful in predicting RSD, as its coefficient is significantly different from zero. Hypothesis 1.1 is therefore rejected. The coefficient of determination (R<sup>2</sup>) is 0.05, implying that the use of ISD as a predictor results in a 5% improvement over a naïve forecasting method.

**Table 1: Regression results: (Dependent variable: RSD Independent variable: ISD)**

ISD vs RSD	Coefficient	Statistic (t, F)	Prob	Decision (5%)
Intercept	0,3847	13,0110	0,0000	Reject Ho
ISD	0,1003	2,3778	0,0191	Reject Ho
Model (Anova - F)		5,6538	0,0191	Reject Ho
R-Squared	0,05			

Upon investigation it was apparent that a few data points with particularly high RSD's that were anticipated and incorporated into the ISD, contribute to the success of ISD as a predictor of RSD (a Datatec warrant issued by Standard Bank falls into this category). The residuals are not normally distributed around zero, so while it is evident that the coefficient of ISD is significantly different to zero, this result should be treated with some caution. The scatter plot of ISD against RSD indicates that there is no obvious transformation that will improve the results.

1.2: *H<sub>0</sub>: HSD contained no information that could have been used to predict RSD.*

The coefficient of HSD is significantly different from zero (Table 2), and the regression model has an R<sup>2</sup> value of 0.31. It is clearly a relatively good predictor of RSD, and there is sufficient evidence to reject Hypothesis 1.2.

**Table 2: Regression results: (Dependent variable: RSD Independent variable: HSD)**

HSD vs RSD	Coefficient	Statistic (t, F)	Prob	Decision (5%)
Intercept	0,1749	4,3847	0,0000	Reject Ho
HSD	0,5797	7,1054	0,0000	Reject Ho
Model (Anova)		50,4870	0,0000	Reject Ho
R-Squared	0,31			

The residuals were skewed to the positive side of the distribution, indicating that while HSD is often a good predictor of RSD, there are occasions when the prediction is considerably lower than the actual value. In the absence of the Datatec anomaly mentioned above, it was observed that a polynomial provided a marginally better fit to the relationship between HSD and RSD than did a straight line. It was also noted that

there was evidence of heteroskedasticity in the data, in that the errors in predicting RSD increased when the HSD was either particularly high or particularly low. The most accurate predictions were obtained when HSD was between 0.4 and 0.6.

1.3:  $H_0$ : *ISD was not a better predictor of RSD than was HSD.*

It is clear that there is no evidence on the basis of which this hypothesis can be rejected. In fact there is strong evidence to suggest that over the first three years of operation of the South African warrants market, HSD was a considerably better predictor of RSD than was ISD. When both HSD and ISD were used to predict RSD, the coefficient of ISD was not significantly different from zero, and the  $R^2$  value – adjusted to reflect the lost degree of freedom – actually declined by roughly 1%. This result indicates that the information contained in ISD that could be used to predict RSD is already contained in HSD.

**Table 3: Regression results: (Dependent variable: RSD Independent variables: ISD, HSD)**

HSD, ISD vs RSD	Coefficient	Statistic (t, F)	Prob	Decision (5%)
Intercept	0,1662	3,9674	0,0001	Reject Ho
HSD	0,5621	6,5613	0,0000	Reject Ho
ISD	0,0263	0,6937	0,4893	Accept Ho
Model (Anova - F)		25,3682	0,0000	Reject Ho
Adjusted R-Squared	0,2995			

If the relatively low correlation between ISD and HSD (0.30) is evidence of the fact that issuers of warrants on the JSE have been extensively modifying their forecasts of volatility on the basis of their expectations about market movements, the result has been far less effective than forecasting only on the basis of HSD. (The correlation between HSD and RSD was 0.56, whereas the correlation between ISD and RSD was only 0.22). These findings accord with those of Day and Lewis (1992), Lamoureux and Lastrapes (1993) and Canina and Figlewski (1993) all of whom found evidence to suggest that ISD's can be biased predictors of RSD.

2.1:  $H_0$ : *Since the launch of warrants on the JSE the pricing premium (calculated as the difference between the ISD and the HSD) has not reduced.*

All warrants issued prior to the 26<sup>th</sup> of August 1999 (just under 2 years into the market) were compared with those issued after this date. The difference between the ISD (on issue price) and the HSD was calculated, and is presented in Table 4.

**Table 4: Warrant price premiums pre / post 26/09/1999 ( $H_0$ : Since the launch the pricing premium has not reduced)**

Sub-Group	Count	Median Premium	Statistic	Prob	Decision
Before 26/08/1999	43	0,133	0,1972	0,843	Accept Ho
After 26/08/1999	73	0,124			

It is evident from the median values reported in Table 3 that the premium decreased only marginally after the first two years of operation of the market. The results from the two sample tests confirm that there is insufficient evidence to reject null hypothesis 2.1.

The results are not surprising given that there were only three warrant issuers throughout the period under review. The market had not matured to the extent that warrants on specific underlying shares had been offered by more than one issuer, and an investor seeking exposure to a particular share had no choice other than to purchase from one issuer. It seemed therefore that competitive forces were not causing a narrowing of premiums during this period.

2.2:  $H_0$ : *The three dominant issuers in South Africa namely Societe Generale (SG), Standard Bank (SB) and Deutsche Morgan Grenfell (DMG) do not issue warrants at different premiums.*

The difference between the ISD (on issue price) and the HSD for each of the issuers was compared by means of a non-parametric analysis of variance test (Kruskall-Wallis).

**Table 5: Premiums paid to different warrants issuers ( $H_0$ : The three dominant issuers do not issue warrants at different premiums)**

Bank	Count	Median Premium	Statistic	Prob	Decision (5%)
DMG	40	0,113	3,6914	0,158	Accept Ho
SB	41	0,115			
SG	31	0,221			

As illustrated, the median premium charged by SG (0.221) was higher than those charged by SB (0.115) and DMG (0.113). The Kruskal-Wallis test routine indicated that there was insufficient evidence to reject the null hypothesis that the medians are equal, but the probability (0.158) of making a type one error - were the null hypothesis to be rejected - was not particularly high.

### 5.1 Bid-ask spreads

Traders of warrants on the JSE are affected by the premiums charged on the initial sale of warrants, and

also by the bid-ask spread encountered if they buy or sell active warrants. Median values of the bid-ask spreads charged in the sample of warrants issued by each of the three market makers were compared by means of the Kruskal-Wallis one-way analysis of variance test (though bid-ask spreads were not available for all warrants included in the original sample). A ratio of the ask price to the bid price was calculated for the first 60 trading days from date of issue. The results of this comparison are presented in Table 6.

**Table 6: Spreads charged by different warrants issuers (Ho: The three different issuers do not have different bid -ask spreads)**

Bank	Count	Median Spread	Statistic	Prob	Decision (5%)
DMG	36	1,040	28,2847	0,000	Reject Ho
SB	34	1,085			
SG	28	1,047			

SB had the highest median bid-ask spread, and one that was significantly higher than those of both DB and SG. This finding may have limited impact on investors purchasing warrants to hold them (as hedging instruments, for example), whereas a large bid-ask spread would certainly impact profit margins achieved by a trader buying and selling warrants over short periods of time.

2.3 *Ho: There is no difference in the premium levied on liquid and illiquid warrants.*

The first days' volume traded on each warrant was recorded and the mean volume was calculated. Warrants with a volume traded above the mean were categorised as 'more liquid' and those less than the mean were categorised as 'less liquid'. Those warrants that were not traded on the first day of trade were classified as having 'no liquidity'.

The difference between ISD and HSD for each of the liquidity sub-groups was investigated using the Kruskal-Wallis test for equality in medians.

**Table 7: Premiums charged on more/less liquid warrants**

Liquidity	Count	Median Premium	Statistic	Prob	Decision (5%)
None	24	0,141	0,3906	0,823	Accept Ho
Limited	45	0,132			
High	47	0,124			

The results show that no significant difference existed between median premiums of warrants with high, limited or no liquidity on the first day of issue. This

result implies that there is no obvious relationship between market response to a warrant, and the premium charged on that warrant – possibly as a result of a lack of depth in the market.

3.1 *Ho: The difference between the ISD's and HSD's on the JSE is not significantly larger than the corresponding difference in the Australian market, indicating no evidence of overpricing of the warrants on the JSE relative to Australia.*

The difference between the median premiums charged by warrant issuers in each of the two countries was tested using the Kolmogorov-Smirnov non-parametric test for different distributions. The results are presented in table 8.

**Table 8: Comparison of SA and AUS premiums**

Bank	Count	Median Premium	Statistic	Prob	Decision (5%)
SA	116	0,132	0,3848	0,000	Reject Ho
AUS	63	0,089			

The null hypothesis is rejected indicating that there is a significant difference between the median premiums charged by Australian and South African warrants issuers. The South African market issuers charge a premium significantly greater than that charged by the Australian issuers, when calculated on the basis of warrant HSDs. (Since the mean HSD calculated for the ASX sample was lower than that calculated for the JSE sample, the premiums calculated on each market were also compared as a percentage of their HSDs. This comparison supported the findings presented in Table 8.) Perhaps it is more correct to say that the South African market is prepared to pay a price greater than fair value when compared to the Australian market. Two possible explanations exist for the difference between the markets in South Africa and Australia:

1. There is greater competition in the Australian market than in the South African market. In Australia, at the time this study was conducted, there were more than ten active issuers, whereas in South Africa there were only three.
2. Being a far more mature market, the Australian investors have had a number of years to become confident in establishing the fair value of a warrant, and are able to discern between warrants that are and are not fairly priced.

It should be noted that there is no secondary market for warrants on either the JSE or the ASX. Thus there are no opportunities for arbitrage in which warrants are sold short to eliminate pricing inefficiencies, and ensure fair warrant pricing. This is fundamentally different to the options markets in Europe and the US.

One would therefore expect warrant pricing premiums to be consistently higher on the JSE and ASX than on markets in other parts of the world.

### 6. CONCLUSIONS

The results produced in this paper do not support previous studies by Christensen and Prabhala (1998) and Rendleman and Latane (1976), which showed that the standard deviation implied in the option prices contain more information about RSD than does HSD. The analysis of warrants traded on the JSE shows clearly that HSD has been a far better predictor of RSD than has ISD. What information ISD contains that can be used to predict RSD is already contained in HSD. These results suggest that it is very rare that market makers have generated any increase in accuracy in their predictions of warrant volatility by modifying their expectations from historic values. Two possible explanations for these results were suggested: a lack of experience in the market makers, or the fact that warrants cannot be sold short and pricing anomalies can therefore not be corrected by the market once they have been identified.

Warrant pricing premiums have not changed over time since the launch of the market in South Africa, nor are there significant differences in premiums charged by different issuers, or on warrants trading with different liquidity on the day of issue. There were indications that SG charged higher premiums than did SB or DMG, but these differences were not found to be significant. By contrast, a significant difference was found in the bid-ask spreads charged by different issuers, with SB charging a spread considerably higher than SG and DMG.

Warrants issued on the JSE are sold at a higher initial premium than the ASX. Possible explanations for this finding relate to the level of competition and investor sophistication in the warrants market on the ASX relative to the JSE.

This study provides a framework for further studies of warrant pricing on the JSE. Once the market is more established and a larger data set is available, further comparisons would be of great interest to both investors and issuers. Investors would become more aware of pricing models and differences between issuers, while the existing issuers and potential new issuers would become more competitive.

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