

Zagreb International Review of Economics & Business, Vol. 11, No. 2, pp. 139-146, 2008
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ISSN 1331-5609; UDC: 33+65
SHORT PAPER

The Relationship between Stock Market Reaction and Issuing DRs in Taiwan Listed Companies

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Abstract: This investigation utilized the event study methodology to examine the information effect of announcements on depositary receipt listing and stock reward fluctuation behavior during 1990 to 2006. Empirical evidence demonstrates that listing depositary receipts leads to negative abnormal returns around the recommendation date. Furthermore, the stock market exhibits negative abnormal returns near the recommendation date when listed depositary receipts in the electronics industries, but the stock prices in the non-electronics industries are not immediately influenced by the announcement of DRs.

Keywords: Depositary Receipts, Event Study, Abnormal Return, Information Effect

JEL Classification: C80, G14

Introduction

International capital markets have become extremely globalized since the 1990s. Marketable securities are important tools for fundraising and investment for enterprises and investors respectively. If enterprises wish to raise funds on overseas capital markets, they must use a form of DR owing to discrepancies in policies among various countries. Therefore, DRs play an important and special role (Mathur et al., 1998; Miller, 1999; Patro, 2000; Szakmary and Mathur, 2000). In recent years, Taiwan government actively promoted financial liberalization and internationalization, the Taiwan Securities & Futures Information Center (SFI) began a domestic enterprise to publish Depositary Receipts (DRs) and Euro-Convertible

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Bonds (ECBs) in 1989, it was advantageous to directly fundraise from foreign capital market. Furthermore, the SFI not only announced its main purpose to issue Depository Receipts (DRs) for the listed firm in 1992, but also amend the relevant laws hereafter. This evolution has encouraged sustainable enterprise development.

In a previous study examining motivations of firms listing abroad. Saudagaran (1988) demonstrated that these motivations can be divided into financial motives and motivations related to public relations. With regard to financial motivations, the domestic market remains small is easily saturated, thus affecting the stock price. Furthermore, marketing motivations promote firm reputation and marketing capacity. Michael and Wibricht (1989) applied questionnaire survey to analyze motivations of American Enterprise issuing Eurobond, and according to the research showed that the main motivation is reducing the interest burden to decrease the cost of funds. Choi and Levich (1990) interviewed executives of multinational corporations to explore the motivation of industries choosing overseas financing and the result reveal that motivation includes the degrees of financial information disclosure and trading relationship with that country.

For announcement effect of DRs listing. Jayarman et al. (1993) found that the DR listing date shows a clear positive effect on the underlying stock, and moreover significantly increases volatility, representing that DR issue creates clear positive rewards for the underlying stock, and the volatility of the underlying stock is greater on the listing date. Miller (1999) noted that the announcement effect undoubtedly increases shareholder wealth. Szakmary and Mature (2000) discovered that The DRs and underlying stock price move in unison. Furthermore, the influence of exchange rate on DRs has gradually been increasing. Patro (2000) indicated that the returns on ADRs have notable risk exposures to the returns on the international market portfolio and their respective domestic market portfolios. Jaiswal-Dale and Jithendranathan (2001) discovered a positive correlation among the DR, market index and underlying share. Ely and Salehizadeh (2001) applied a cointegration approach and an estimation of error-correction models to examine the degree of integration between the US with United Kingdom, Japan, and Germany. Their research showed that the underlying stocks market and the market impacted DRs, and furthermore, that underlying stocks market strongly influences DRs pricing. Karolyi (2004) evaluates the dynamics of the development and extension of international cross-listings by ADRs in emerging markets around the world and estimates the impact on their growth and integration with world markets. They claimed that the raising volume of new ADR programs, their trading quantity and market capitalization in those nations are positively related to the pace of international capital flows and increased market integration. Conversely, impact the liquidity and size of the internal markets. From the previous study, most of these studies demonstrated that DRs issues yield positive returns.

Recently, Aggarwal et al. (2007) indicated that ADRs are the preferred manner of holdings if the local market lacks investor safeguards, or has low liquidity and high transaction costs. Grossmann et al. (2007) confirmed that ADRs have high transactions costs and low dividend payments, and thus are more likely to display high price disparities. Moreover, the price deviation is greater during periods of higher T-bill interest rates. Finally, ADRs prices are driven not only by the price of the underlying asset, but more by U.S. consumer sentiment and consumer sentiment in the source country.

The international financial environment is constantly changing and developing. Particularly, practice of collecting operating funds on overseas capital market is growing. This study thus applies event study methodology to investigate the information effect of announcements on depositary receipt listing and stock reward fluctuation. Furthermore, this investigation compares the announcement effect in the electronics and non-electronics industries.

Database and Methodology

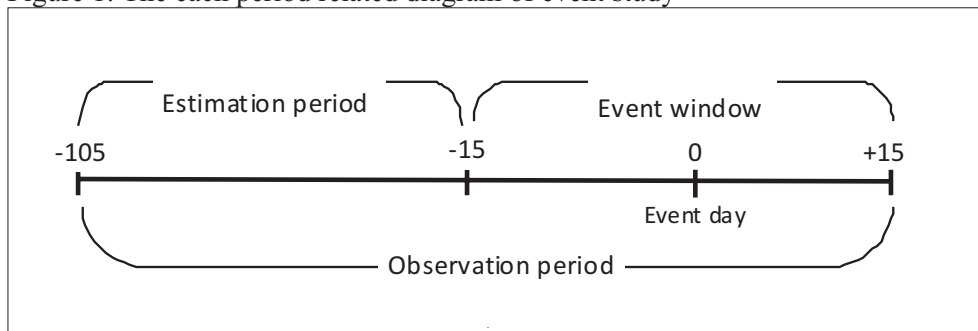
Description of the Sample

The data used in this research was from the Market Observation Post System of Taiwan Stock Exchange Corporation (TSEC). The main data comes from published trading information and historical information. The data period from July 17, 1990 to August 30, 2006 and the investigation includes a total of 61 companies, including 43 electronics companies and 18 non-electronics companies.

Estimating Period and Event Period

To determine whether there exists announcement effect on the stock market around the DR listing, an event study methodology described is performed. This study obtained the time point of the listed companies issuing DRs by the public information and defined the time point as Day 0 (event day). Therefore, the estimation period is from Days -105 to -16. The event window of interest begins from Day -15 and ends on Day +15, and total observational period covers 121 trading days. The each period related show to Fig. 1.

Figure 1: The each period related diagram of event study



Event Study and Methodology

This research applied market model to inquire into Taiwanese listed companies issuing DRs which impact on stock price. Therefore, it produces the abnormal returns (AR). The method had already applied extensively in the finance and accounting. So far, the research approach of the evidence is still important. The market model of the event study is as follows:

The expected return was derived using the market model where the model parameters α and β were obtained from the estimation period. The market model hypothesis is the linear relations between the individual stock return and the market return, namely

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

where R_{it} is the return rate on stock i on day t and R_{mt} is the return rate in the TAIEX on day t . α_i is the intercept term, β_i is the Beta modulus, that is system risk of individual stock, ε_{it} is the residual error term.

The standardized average abnormal return and the standardized average cumulative abnormal returns will be able to improve ability of test the abnormal return especially to the stock price have weaker reaction to some events (Zibart, 1985). The SAR_t is the some of period t in event period, and the standardized abnormal return is

$$SAR_t = \frac{1}{N} \sum_{i=1}^N SAR_{i,t} \quad (2)$$

The standardized average cumulative abnormal returns is standardization the individual stock's abnormal return rate, then calculates the event period to the period

t . The variance of abnormal return on the standardized residual cross-sectional as the denominator, namely

$$t_{SROCSM}^{SCAR} = \frac{SCAR(\tau_1, \tau_2)}{\sqrt{Var(SCAR(\tau_1, \tau_2))}} \quad (3)$$

where $SCAR_i(\tau_1, \tau_2) = \sum_{t=\tau_1}^{\tau_2} SAR_t$

The ordinary cross-sectional method ignores estimation period estimates of variance, thus, this paper uses the standardized residual cross-sectional for its t-test (Boehmer et al., 1991). The resulting t-test statistic for AR_{it} is

$$t_{SROCSM}^{AR} = \frac{SAR_E}{\sqrt{\frac{1}{N(N-1)} \sum_{i=1}^N (SAR_{iE} - \sum_{i=1}^N \frac{SAR_{iE}}{N})^2}} \quad (4)$$

where $SAR_E = \sum_{i=1}^N \frac{SAR_{i,E}}{N}$.

The t-test statistic for the $CARt$ for standardized residual cross-sectional is calculated as

$$t_{SROCSM}^{SCAR} = \frac{SAR(r_1, r_2)}{\sqrt{\frac{1}{N(N-1)} \sum_{j=1}^N \left(SCAR_i(r_1, r_2) - \sum_{j=1}^N \frac{SCAR_i(r_1, r_2)}{N} \right)^2}} \quad (5)$$

Results and Discussion

The Announcement Effect for TSE Listed Non-Electronics Industries Issuing DRs

Table 1 and 2 present the empirical evidence results by the event study. T-test statistics are used to examine the standardized average abnormal returns (SAR) and standardized average cumulative abnormal returns (SCAR) for listed non-electronic industries in the event window around the announcement effect of issuing DRs.

Table 1 shows the SAR for the DRs issue announcement effect. For issued events, the table reveals significantly negative SAR of -0.2083 for day -6 using a t-test at 0.05 level. The positive SAR around the announcement date are 0.2070, 0.2352, 0.2404, and 0.2754, for days -2, 9, 11, and 15 are statistically significantly at 0.05 level by

t-test. The phenomenon indicates that the negative announcement effect turn into positive gradually.

Table 1: SAR around announcement date for non-electronics industries issuing DRs

Event window	SAR	t value	Event window	SAR	t value
-15	-0.0525	-0.5075	0	0.0829	0.6725
-14	-0.1031	-0.9723	1	0.0725	0.6636
-13	-0.0255	-0.2264	2	-0.0379	-0.3111
-12	-0.0620	-0.5021	3	0.0618	0.5518
-11	0.1236	1.0039	4	-0.0535	-0.4365
-10	0.0153	0.1242	5	-0.1495	-1.3776
-9	0.0307	0.2879	6	0.1085	0.9682
-8	-0.1580	-1.4160	7	0.0019	0.0203
-7	-0.0167	-0.1642	8	-0.1087	-1.0414
-6	-0.2083	-1.9945*	9	0.2352	1.9818*
-5	-0.0295	-0.2754	10	-0.1033	-0.8473
-4	0.0334	0.3564	11	0.2404	1.9800*
-3	-0.0112	-0.1143	12	-0.0572	-0.5847
-2	0.2070	2.1464*	13	0.1828	1.2660
-1	0.0070	0.0828	14	0.1690	1.3151
			15	0.2754	2.0273*

Note: 1. The * (**) denotes statistical significance at the 0.05 (0.01) level.
2. The t value is computed by Standardized-Residual Cross-Sectional Method.

Table 2 reveals SCAR associated with DR announcement for non-electronics industries. For issued events, the empirical evidence found that the negative SCAR from days -15 to 10, while from days 11 to 15, they are positive, but the returns are not statistically significantly at the 0.05 level. Thus, the stock prices in non-electronics industries are not significantly influenced by the announcement effect of issuing DRs.

Table 2: SCAR around announcement date of the non-electronics industries issuing DRs

Event window	SCAR	t value	Event window	SCAR	t value
-15	-0.0525	-0.5075	0	-0.1668	-0.3664
-14	-0.1556	-1.1144	1	-0.0943	-0.1949
-13	-0.1811	-1.0621	2	-0.1321	-0.2688
-12	-0.2431	-1.1123	3	-0.0703	-0.1416
-11	-0.1194	-0.5034	4	-0.1237	-0.2392
-10	-0.1042	-0.3933	5	-0.2732	-0.5170
-9	-0.0735	-0.2397	6	-0.1647	-0.3040
-8	-0.2315	-0.7276	7	-0.1628	-0.2907
-7	-0.2482	-0.7284	8	-0.2715	-0.4585
-6	-0.4565	-1.3156	9	-0.0363	-0.0594
-5	-0.4860	-1.3032	10	-0.1396	-0.2275
-4	-0.4525	-1.1315	11	0.1009	0.1528
-3	-0.4638	-1.1284	12	0.0437	0.0645
-2	-0.2567	-0.5954	13	0.2265	0.3194
-1	-0.2497	-0.5671	14	0.3955	0.5275
smult1			15	0.6709	0.8539

Note: 1. The * (**) denotes statistical significance at the 0.05 (0.01) level.
2. The t value is computed by Standardized-Residual Cross-Sectional Method.

Conclusion

This study demonstrates of this investigation show that, for non-electronics industry industries, issue of DRs typically first causes the firm stock price to decline, followed by a gradual rise. This good outcome may result from the good performance and it also reflects in stock prices, meaning that investors have a positive view of the non-electronics industry. However, around the announcement date, the SCAR are positive and negative, exhibiting a stochastic change. This study implies that stock

prices in the non-electronic industry are not immediately influenced by the announcement of DRs issues.

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