

Internationalization and Capital Structure of Taiwan Electronic Corporations

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Abstract

This paper analyzes capital structure between the internationalized and domestic electronic industries in Taiwan from 1999 to 2008 as the reference for financing strategies and decision. The evidence shows that the leverage and the payout cash dividend ratio in the internationalized electronic firms are lower than those in domestic electronic firms. Due to the uniqueness and the high profit ability of the internationalized electronic firms in the Taiwan, they have more earnings and inside capital so that the leverage is lower. On the contrary, the internationalization level is irrelevant with the payout cash dividend ratio due to the payout cash dividend depending on the dividend balance policy regulated by government in Taiwan.

Keywords: Electronic industry, Capital structure, Leverage, Internationalization

1. Introduction

The electronic related products in 2008 reached to 216.6 billion US dollars, account for 48.84% of the total industrial value in Taiwan. 46% of the market value of 1792 public issued companies belongs to electronic industry. The electronic related products in Taiwan account for more than 50% of the export value from 2000 to 2008. The higher internationalization level the higher product uniqueness and competitiveness. Therefore, the financing and the dividend policy are different between the internationalized and domestic electronic industries.

This paper is to analyze the differences between the leverage and cash dividend of the internationalized and domestic electronic industries so as to provide references for the financing and financial decisions of electronic industries in the Taiwan.

2. Literature Review

2.1 Internationalization

Shaked (1986) and Kim and Lyn (1986) measured the internationalization by foreign sales account for at least 20 percent of total sales. Daniels and Bracker (1989) used foreign assets as percentage of total assets as a proxy of foreign production dependence. Burgman (1996) and Lee and Kwok (1988) defined the internationalization as the ratios of foreign tax divided by total tax greater than 10%. Chen et al. (1997) classified positive foreign pre-tax income of firms as multinationality. Geringer and Olsen (2000) and Ruigrok and Wagner (2003) employed the ratio of foreign subsidiary sales to total sales as the 'degree of internationalization' measure. Hitt (2006) pointed out that international diversification was a strategy through which a firm expands the sales of its goods or services across the borders of global regions and countries into different geographic locations or markets.

2.2 Financing

Aggarwal, 1990; Deesomsak et al. 2004; Rajan and Zingales 1995 thought that the different internationalization level would make different financial decisions. The leverages of international firms were significant lower than those of

the domestic firms (Burgman, 1996; Chen et al. 1997; David et al. 1998; Doukas and Pantzalis, 2003 and Lee and Kwok, 1988). But, Singh and Nejadmalayeri (2004) studied 90 French companies from 1996 to 1999 and found out that the leverage of a firm had positive relationship with internationalization level. According to static trade off theory, the companies would adjust the leverage to the most suitable ratio in order to avoid too much total risk when facing the complicated international environment (Kale and Noe, 1990). The electronic industries in the Taiwan have high internationalization level with mature business and marketing network and that their products are unique and with high profitability. According to pecking order theory, the top choice is inside capital upon considering capital-raising. Outside capital is taken into consideration only when inside capital is not sufficient. Chang (1990) thought that due to the insufficient of proxy cost and investment, the business with high growing opportunities controlled the earnings by decreasing the liabilities. Therefore, the leverage of the international electronic firms in the Taiwan might be lower than that of the domestic.

2.3 Dividend Policy

In 1980s, the electronic industries in Taiwan tended to payout stock dividend while traditional industries tended to payout cash dividend. In 2000s, the market value of the electronic industries in Taiwan has account for more than 50% in the stock market. The business owners then tended to payout cash dividend to avoid EPS dilution. The electronic industries tended to payout cash dividend since 2004 (Lin and Luo, 2005). Review Taiwan, after the implement of combing two taxes and dividend balance policy, it was obvious that the high technology industries payout more cash dividend (Hung et al. 2006). David et al. (1998) pointed out that the higher the internationalization level the bigger the systematic risk. High systematic risk industries had high uncertainty of their future cash flow. They might payout lower cash dividend (Aggarwal, 2010; Rozeff, 1982). In addition, high internationalization would have high growing with more positive reward investment plans to that the stockholders would not worry about over or insufficient investment and were willing to accept lower dividend (Barclay et al. 1995; Porta et al. 2000); therefore, the international electronic firms might have less cash dividend than those in domestic electronic firms in the Taiwan. The purpose of this paper is in the same line as previous literature in investigating the differences between the leverage and cash dividend of the internationalized and domestic electronic industries in the Taiwan. Although their relationship has been the subject of considerable debate throughout the literature, particularly the West, little is known about the implement of combing two taxes and dividend balance policy and the internationalization level impact on the financial decisions of Taiwan electric industry.

3. Research Methodology

3.1 Model

The empirical models are shown as follow.

$$\text{Lev}_{it} = \alpha_0 + \alpha_1 \text{INTA}_{it} + \alpha_2 \text{Div}_{it} + \alpha_3 \text{Risk}_{it} + \alpha_4 \text{ROA}_{it} + \alpha_5 \text{MTB}_{it} + \alpha_6 \text{MOG}_{it} + \alpha_7 \text{UNQ}_{it} + \alpha_8 \text{NDT}_{it} + \alpha_9 \text{Size}_{it} + \alpha_{10} \text{OL}_{it} + \alpha_{11} \text{FunDef}_{it} + \alpha_{12} \text{Tax}_{it} + \varepsilon_t \quad (1)$$

$$\text{Div}_{it} = b_0 + b_1 \text{INTA}_{it} + b_2 \text{Leverage}_{it} + b_3 \text{Beta}_{it} + b_4 \text{ROA}_{it} + b_5 \text{GR}_{it} + b_6 \text{Size}_{it} + b_7 \text{FCF}_{it} + \varepsilon_t \quad (2)$$

3.2 Measure Variables

Leverage (Lev): was defined in this paper as “total liability at the end of the term divided by total asset at the end of the term” to measure the leverage (Ferri and Jone, 1979; Baskin, 1989; Varouj et al. 2006; Ozkan, 2001). Cash dividend payout ratio (Div): Agarwal (2010) used cash dividend divided by aggregate earning of the year to measure the payout ratio. Cash dividend of each share divided by EPS (Baskin, 1989; Doukas and Pantzails, 2003) was used for measurement in this paper. The proxy we employs to measure the internationalization level is the ratio of foreign sales to total sales. A dummy variable for internationalization level is used to differentiate internationalization electronic firms from domestic electronic firms. Observations with the ratio of foreign sales to total sales more than 50% are classified as internationalized electronic firms (INTA = 1), otherwise, those with zero are classified as domestic electronic firms (INTA = 0).

In the control variables of the leverage, the operational risk (Risk): if the market competitiveness is more aggressive, the operational risk will be higher. In order to avoid the total risk getting too high, the leverage will be lowered. Therefore, the operational risk and the leverage were negative correlated (Aggarwal, 2010; Bradley et al. 1984; Chen and Steiner, 1999; Chuck et al. 2000). Standard deviation of the first difference in EBIT divided by the average total asset over 5-year period is used for measurement. Profit ability (ROA): Shyam-Sunders and Myers (1999) and Baskin (1989) thought that when a company was in need for financing capital, it would look for inside capital and then outside capital for the insufficient part. Therefore, profit ability and the leverage should be in negative correlation (Allen and Mizuno, 1989; Barton and Gordom, 1988; Barclay et al. 2006; Titman and Wessels, 1988). Income before extraordinary items divided by total asset was used for measurement. Growing opportunities (MTB):

Nguyen and Faff (2002) thought that when a company had more sales growth opportunities, the insufficient investment problem would be smaller. Therefore, sales growth opportunities and leverage were negative correlated (Barclay et al. 2006; Goyal et al. 2002; Ozkan, 2001). Market value divided by book value of the firm at the end of fiscal year was used for measurement. Asset mortgage value (MOG): asset mortgage value and the leverage were positive correlated (Marsh, 1982; Titman and Wessels, 1988; Jensen et al. 1992; Hovakimian et al. 2001). Net property, plant and equipment divided by total asset was used for measurement. Uniqueness (UNQ): the higher the uniqueness of the products the more competitive and profit ability they would have. The inside capital is then increased and the need for outside financing is decreased. Therefore, the uniqueness of the products and the leverage were negative correlated (Bradley et al. 1984; Burgman, 1996; Lee and Kwok, 1988; Kim and Lyn, 1986; Titman and Wessels, 1988). Ratio of R&D and advertising expenses to total sales was used for measurement. Non-debt tax shield (NDT): the tax saving interest of the debt would be balanced by non-debt tax shield. Therefore, non-debt tax shield and the leverage were negative correlated (DeAngelo and Masulis, 1980; Doukas and Pantzails, 2003; Noronha, 1996; Ozkan, 2001). Ratio of depreciation and amortization expenses to total sales was used for measurement. Size: Graham et al. (2002) indicated that a larger size would have better credit ratings and less information asymmetry. It would be easier to seek for outside financing; therefore, the size and leverage were positive correlated (Aggarwal, 2010; Booth et al. 2001; Doukas and Pantzails, 2003). Natural log of total sales was used for measurement. Operation leverage (OL): Ferri and Jones (1979) thought that when the operation leverage was greater, the differences of the earnings of a business and the cash flow would be greater. The capability of paying fix interest would be decreased. Therefore, operation leverage and the leverage are negative correlated. Annual percent change in EBIT divided by the percent change in sales is used for measurement. The model of the fund deficit (FundDefit): dividend payments + capital expenditures + net increase in working capital + current portion of long-term debt – operating cash flow, the model of the fund deficit of Shyam-Sunders and Myers (1999) indicated that besides the business reaching or close to its liability ability, the predicting model of the fund deficit of the financing order would fill up new debt issue. Therefore, the fund deficit and the leverage are positive correlated. Dividend payout ratio (Div): Jensen (1986) thought that the dividend policy had close relationship with the capital structure. The leverage and cash dividend payout ratio were negative correlated (Aggarwal, 2010; Chen and Steiner, 1999). Average tax rate (Tax): interest had the effect of debt tax shield; therefore tax rate and the leverage were positive correlated (Homaifar et al. 1994).

In the control variables of cash dividend, the systematic risk (Beta): Beta value is used to measure systematic risk. When a firm is in the environment of high risk, the uncertainty of future cash flow is high and tends to payout less cash dividend. Therefore, Beta value and cash dividend had negative relationship (Aggarwal, 2010; Rozeff, 1982). Profit ability: profit ability and cash dividend had positive relationship (Jensen et al. 1992; Aggarwal, 2010; Rozeff, 1982; Varouj et al. 2006; Fama and French, 2001). Sales growth rate (GR): the business that had higher sales growth rate would have more positive net current value investment plans. The shareholders wouldn't worry about the situation of over investment and could accept lower dividend (Aggarwal, 2010; Barclay et al. 1995; Porta et al. 2000; Varouj et al. 2006). Therefore, sales growth rate and cash dividend had negative relationship. Average past 5-year sales growth rate was used for measurement. Free cash flow (FCF): in order to lower proxy cost, the stockholders would ask for more dividend to reduce the free cash flow distributed by the administrators. Therefore, free cash flow and cash dividend had positive relationship (Easterbrook, 1984). (Operating profit before depreciation expenses-interest-cash dividend) / beginning asset is used for measurement. Size: Chang and Rhee (1990), Aggarwal (2010), Smith and Watts (1992) thought that larger size would have more inside capital and tended to payout more cash dividend; therefore, the size and cash dividend had positive relationship.

3.3 Sample

The data recourse of this paper is the data base of Taiwan Economic Journal. The samples are the listing companies in the US from 1999 to 2008. According to their operating characteristic and special financial structures, the specimen selection criteria are deleting insurance business, security business, public affairs and governmental business; 13,250 observations and 2,780 of non-electronic industries are deleted. Due to the different founded time, 9,130 observations of 10-year non-complete specimen are deleted. The extreme values were handled in winsorize way that the first and the ninety-ninth percentiles of the observation were winsorized (Affarwal, 2010). Thus, up to 1340 observations including 980 internationalized electronic firms and 360 domestic electronic firms in the Taiwan are used in this paper.

4. Empirical Result and Analysis

4.1 Descriptive Statistic

Table 1 is the descriptive statistic of the internationalized electronic industries in the Taiwan. The average values of the total asset of the internationalized electronic firms and the domestic electronic firms are 1101.7750 and 382.4317 million US dollars, respectively. The internationalized electronic firms are 2.88 times greater than those in the

domestic. The average leverage of the internationalized electronic industries is 0.414; lower than 0.430 of those in the domestic. The average cash dividend payout ratio in the internationalized electronic industries is 0.243; lower than 0.257 of those in domestic. The average of profit ability, growing opportunities, mortgage asset, product uniqueness, non-debt tax shield, operational risk, operation leverage, systematic risk and sales growth rate, the internationalized electronic industries are higher than those in the domestic. The internationalized average values of the model of the fund deficit, free cash flow and average tax rate are smaller than those in the domestic.

Insert Table 1 Here

4.2 The Regression Analysis of the Internationalized Electronic Industries

Table 2 is the relationship of the leverage between the internationalized and domestic electronic industries. The leverage of the internationalized electronic industries is lower than those in the domestic and reach significant standard (coefficient is -0.056 and t-value is -7.139). The VIF values of each variables lower than the cut off value 10 shows that each variable has no doubt in co-linearity.

Insert Table 2 Here

As control variables, size and growing opportunities have significant positive relationship with the leverage. This shows that the electronic industries have larger size, higher growing opportunities, the firms are willing to increase finance. Payout cash dividend, profit ability, uniqueness and tax rate have significant negative relationship with the leverage, which means if the electronic industries have more dividend payout, grater profit ability, higher non-debt tax shield, they would unwilling to increase finance. The model of fund deficit has significant negative relationship with the leverage and this means that the financing policy of the electronic industries does not meet the pecking order theory. The mortgaged assets, operation leverage, taxes and operating risk are irrelevant with the leverage.

Table 3 is the relationship of payout cash dividend between the internationalized and the domestic electronic industries. The VIF value of each variable is far below cut off value 10; no doubt of co-linearity. The table shows that the payout cash dividend of the internationalized electronic industries is irrelevant with those of the domestic with non significant level (the coefficient is -0.007 and t-value is -0.403). The payout cash dividend depends on the dividend balance policy regulated by Taiwan government.

Insert Table 3 Here

As control variables, profit ability and firm size have significant positive relationship with the payout cash dividend. This shows that the electronic industries have larger profit and size so that they are willing to pay cash dividend (Aggarwal, 2010; Chang and Rhee, 1990; Jensen et al.1992). The free cash flow has significant positive relationship with the payout cash dividend. The result is consistent with those of Jensen (1986). The leverage and systematic risk have significant negative relationship with the payout cash dividend. This means that electronic industries would give out less cash dividend if the leverage is higher, systematic risk is higher. The sales growth rate is irrelevant with the payout cash dividend.

In order to avoid EPS dilution, the electronic industries tended to pay out cash dividend since 2004 (Lin and Luo, 2005). After the implement of combining two taxes (company and individual taxes) and dividend balance policy (cash and share dividend), the high technology industries pay out more cash dividend and less share dividend (Hung et al. 2006).

In order to test the effect of the relationship of the payout cash dividend between the internationalized and domestic electronic industries after the implement of combing two taxes and dividend balance policy, we separate the sample into two periods of 1999-2003 and 2004-2008. Panel A of Table 4 is the relationship of payout cash dividend between the internationalized and the domestic during1999-2003. The table shows that the payout cash dividend of the internationalized is irrelevant with those of the domestic with non significant level (the coefficient is -0.006 and t-value is -0.311). Panel B of Table 4 is the relationship of payout cash dividend between the internationalized and the domestic during 2004-2008. The payout cash dividend of the internationalized electronic industries is lower than those in the domestic and reach significant standard (coefficient is -0.065 and t-value is -2.363). This means that the internationalized electronic industries tended to pay out cash dividend since 2004 (Lin and Luo, 2005; Hung et al. 2006) influenced by the implement of combining two taxes and dividend balance policy in Taiwan.

Insert Table 4 Here

5. Conclusion

The leverage and the payout cash dividend between the international and the domestic electronic industries in Taiwan from 1999 to 2008 are compared as the reference for financing strategies and decision in this paper. The results show that leverage and the payout cash dividend of the international electronic industries are lower than

those in the domestic. The internationalized electronic industries possibly have the uniqueness and high profit ability and they have more earnings and inside capital so that the leverage is lower. The internationalized electronic industries tended to pay out cash dividend since 2004 due to the implement of combining two taxes and dividend balance policy in Taiwan.

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Table 1. Descriptive statistics of variables

Variables	Internationalized electronic firms				Domestic electronic firms			
	Min.	Max.	Average	S.D.	Min.	Max.	Average	S.D.
Leverage	0.053	0.875	0.414	0.152	0.026	0.875	0.430	0.165
Div	0.000	1.079	0.243	0.289	0.000	1.654	0.257	0.335
Risk	-24.698	21.487	0.075	4.885	-24.698	21.487	0.059	5.799
ROA	-0.278	0.244	0.049	0.091	-0.505	0.264	0.045	0.098
MTB	0.284	8.802	1.785	1.363	0.191	8.802	1.672	1.574
MOG	0.006	0.693	0.290	0.155	0.006	0.693	0.261	0.170
UNQ	0.000	0.415	0.036	0.039	0.000	0.447	0.031	0.052
NDT	0.002	0.719	0.083	0.088	0.001	1.030	0.072	0.123
Size	4.399	9.290	6.933	0.710	4.780	8.279	6.585	0.610
OL	-14.918	5.837	0.099	2.130	-29.140	19.581	-0.159	3.519
FundDeft	-0.336	1.063	0.413	0.241	-0.687	1.237	0.437	0.323
Beta	0.413	1.590	1.082	0.233	0.208	1.590	0.994	0.297
GR	-4.554	0.640	0.085	0.297	-4.454	0.542	0.063	0.373
FCF	-0.848	0.515	-0.018	0.165	-0.870	0.566	-0.011	0.225
Tax	0.000	3.810	1.852	1.429	0.000	3.810	1.902	1.350
Assets	13.5706	26738.3194	1101.775	2553.132	14.3172	9991.0847	382.4317	881.1867

Table 2. Regression analysis of the leverage

Variable	Leverage		
	β	T-value	VIF
Intercept	-0.059	-1.623	
INTA	-0.056	-7.139	***
Div	-0.046	-3.641	***
Risk	0.000	-0.122	
ROA	-0.610	-12.840	***
MTB	0.005	2.013	*
MOG	0.017	0.574	
UNQ	-0.924	-10.501	***
NDT	-0.333	-6.898	***
Size	0.096	18.693	***
OL	-0.001	-1.104	
FundDeft	-0.120	-8.404	***
Tax	-0.004	-1.633	
F-vale	72.591***		Adj.R ²
			39.08%

*, **, ***Significant at the 10%, 5%, and 1% levels, respectively.

Table 3. Regression analysis of the cash dividend

Variable	Dividend		
	β	T-value	VIF
Intercept	-0.193	-2.464 ***	
INTA	-0.007	-0.403	1.090
Leverage	-0.259	-4.628 ***	1.373
Beta	-0.120	-3.739 ***	1.210
ROA	0.915	9.747 ***	1.373
GR	-0.028	-1.106	1.219
Size	0.095	6.932 ***	1.670
FCF	0.168	4.021 ***	1.066
F-valeur	45.327***	Adj.R ²	18.81%

*, **, ***Significant at the 10%, 5%, and 1% levels, respectively.

Table 4. Panel A of Table 3. Regression analysis of the cash dividend during 1999-2003

Variable	Dividend		
	β	T-value	VIF
Intercept	-0.015	-0.148	
NUTI	-0.006	-0.311	1.114
Leverage	-0.121	-1.580	1.481
Beta	0.137	3.417***	1.244
ROA	0.790	5.872***	1.642
SalesGR	-0.117	-1.495	1.501
Lsize	0.010	0.521	1.745
FCF	0.115	2.416***	1.036
F-valeur	10.8348***	Adj.R ²	9.33%

*, **, ***Significant at the 10%, 5%, and 1% levels, respectively.

Table 5. Panel B of Table3. Regression analysis of the cash dividend during 2004-2008

Variable	Dividend		
	β	T-value	VIF
Intercept	-0.140	-1.226	
NUTI	-0.065	-2.363 ***	1.070
Leverage	-0.603	-7.996***	1.237
Beta	-0.375	-7.838***	1.202
ROA	0.041	3.434***	1.098
SalesGR	0.094	3.008***	1.398
Lsize	0.161	8.315***	1.698
FCF	0.018	0.681	1.203
F-Valeur	28.636***	Adj.R ²	22.43%

*, **, ***Significant at the 10%, 5%, and 1% levels, respectively.