

Study of Scandinavian Countries' Market Structure, and Its Impact on Value Relevance of Accounting Information

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Abstract

This paper examines the impact of market structure on the value relevance of the accounting information for the Scandinavian countries. The association has been measured by the respective R squares and the countries are classified according to their bank-based and market-based economic framework. The annual data for the share price and accounting variables have been gathered from Thompson and Reuters over a period of 2010 to 2019. Price level regressions have been run using the Ohlson Model. The results suggest market structure plays a significant role in affecting the value relevance of accounting variables in Scandinavian countries. The results also indicate that earnings (EPS) are significant in market-based countries while the book value of equity (BVPS) is more significant in bank-based countries. On the other hand, cash flows from operating activities are significant only in market-based countries.

Keywords:

Bank-Based, Market-Based, Market Structure, Ohlson Model, Scandinavian Countries, Value Relevance.

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1. INTRODUCTION

Value relevance is the joint test of the relevance and reliability of accounting numbers which is considered as evidence of the usability of accounting information in making informed decisions. It is measured as the association between the accounting numbers and the share prices and this association is affected by several factors both endogenous and exogenous. Bank-based economies are considered comparatively closed and banks dependent economies whereas market-based are more open and have equally strong capital markets or stock markets presence in the economic framework of a country. This association is measured by the R squares reported and this paper examines the marginal impact on the R squares because of the specific market structure Vol. 08, No. 01, 2022

(Bank-based or Market based). In this paper, we investigate the role of market structure in influencing the value relevance of accounting information. The study explores how the focus on the specific accounting numbers and their association with the share prices changes with the change in the overall market structure. By market structure, we refer to the bank-based or market-based economic system as classified by the Demirguc-Kunt and Ross Levine (1999).

To ensure the comparability and reduction of external factors (which can impact the association of accounting numbers with the share prices) we choose the set of countries that are quite similar to each other in terms of demographics, macro-economics and socio-politics norms. Although there are several developed (High income) countries, there also exist differences within other developed countries in terms of their tax, accounting, politics and demographics and difference in the institutional factors affects the value relevance of accounting numbers (Soderstorm and Sun, 2007). This study contributes to the literature regarding the role of market structure in affecting the association of accounting numbers with the market value of firms. Moreover, the Scandinavian countries, classified according to their market orientation and the recent 10 years firm-level data, also make a compelling comparison as the majority of the external factors that can influence this association of accounting

numbers with the share prices has been dealt with by the choice of these set of countries.

To get a fair reflection of the whole accounting information, we considered the accounting summary measures from each of the Income statements, Balance Sheet and Cash Flow statement. We found that earnings (EPS) are more relevant and associated with share prices in Market Based countries whereas Book Value per Equity (BVPS) has more impact on share prices of firms in Bank-Based countries. We also included the Cash Flows from Operating activities scaled by the number of outstanding shares (CFsO). Collins et al., (1997) support scaling of non-indicator amounts to facilitate the comparison in conjunction with the prior research. We found that CFsO is not significant in bank-based Scandinavian economies. This study provides useful implications for the policymaker as it unfolds the phenomenon of a specific market framework affecting the usability of accounting information in a comparable and controlled environment. Moreover, a greater association of a specific accounting number with the share prices in a unique market setting also helps investors and stakeholders in making informed business decisions. The rest of the paper is structured as follows. Section 2 deals with the literature review. Section three is about data and results and Section four concludes the study.

2. LITERATURE REVIEW

Value relevance in accounting literature has been explained by the researchers by the empirical investigation. Though there is no exact definition of it in the literature mostly authors try to explain it by empirical analysis for example Barth et al., (2014) described the value relevance as the link between the accounting numbers and share prices of firm or returns. Barth et al., (2007) suggested that the R square represents the measure of association between accounting numbers and share prices. Miller and Modigliani (1966) considered the Net Income and Book value of equity as the primary accounting measures. However, Sloan (1996) stated that operating cash flows can be more consistent than earnings. They also stated that the stock market is the faster and more efficient way of raising capital thus enhancing the overall economic development and resource allocation. Ohlson (1995) added that with the assumption of clean surplus accounting, we can rewrite the firm value solely as a linear function of accounting variables. It also assumes perfect capital markets but still allows imperfections in multi-period settings. Though we have used the linear relation inspired by the Ohlson model as Houlthausen and Watts (2001) suggest there is a possibility of non-linear interactions. Riffe and Thompson (1998) demonstrated in their study that when captured erroneously, the relation between Earnings, BVPS, and Price can be non-linear.

This study conducts the comparative analysis of value relevance of developed markets to develop an understanding of the reasons why accounting numbers in one country are more value relevant (Higher R²) than other countries although the accounting information in all these countries is produced under the same set of accounting standards (IFRS). Does their economic system (Bank based vs Market-based) have an impact on the value relevance of accounting information? An interesting question that arises is that why does it matter to differentiate between the bank-based and market-based financial structure? Demircuc Kunt and Levine (1999) concluded that bank-based and market-based financial framework leads to the different growth patterns. They also found a propensity of higher-income countries' financial structure to be more market-oriented as the stock markets become the more active and preferred source of financing and investment for both corporations and other stakeholders. For any country, the choice of a specific market structure depends on the existing financial and legal system and the firm's preferred way of raising capital (Chakraborty and Ray, 2006). Linking the financial structure with the information asymmetries, Holmstorm and Tirole (1997) stated that a bank-based financial structure is preferred in face of information asymmetries arising between lenders and borrowers. Countries that are under the influence of common law tend to have market-based financial system science common law is more protective of shareholders rights as compared to the code law.

For the smooth functioning of the economy, both the stock market and financial institutions need to complement each other. However, certain institutional factors help to push the scale and one's favor. These factors range from the legal framework, ease of raising capital, protection of stakeholders vested interests, strength of banking institutions to other institutional and policy settings. In our case, all four countries are governed under the Scandinavian law which belongs to the family of code law. Two of these countries have a market-based financial system and the other two countries have a bank-based financial system. In countries where shareholders' interests are not actively safeguarded, establishments in those countries tend to raise capital through banking channels. Banks are traditionally quite stringent in their assessment and evaluation which leads to the reduction in the agency cost and information asymmetry (Boid and Prescott, 1986).

Financial Structure or Economic structure commonly categorized as Market-Based and Bank-Based are meant to price, trade and distribute the debt and equity. Market-based financial orientation predominantly deals with the capital markets. Underdeveloped countries where stock markets are not very accessible and developed have the

banking and other financial institutions to satisfy the financial needs of investors and corporations. Allard and Blavy (2011) compared the bank-based and market-based economic structures and found that the market-based economy is more likely to experience profound economic recovery after the recession or economic shocks than the bank-based market structures. The developed countries have mature capital markets and financial institutions. Investors, stakeholders and firms, however, prefer the mode of financial structure based on the ease of accessing finance along with other legal and institutional factors. Before the financial crisis of 2008, no one system was particularly favorable. The research on the subject matter, post-global financial crisis, found support for the market-based economic structure because the financial crisis and mortgage crisis were economically most severe in bank-based market structures (Langfeld and Pagano, 2016).

Due to the high leverage in bank-based financing, bank-based market structures are subject to higher systematic risk. During financial growth, banks extract high returns on their equity. However, in a recession, the increased cost of capital along with the increased number of liquidation claims amplify the systematic risk to the overall financial stability at an institutional and country level. Acharya and Thakor (2016) tested this claim empirically and found that the bank runs prompted by credit rationing or other credit discipline techniques significantly increases the risk of financial debacle or bankruptcy claims. Laporta et al., (1998, 1999) argued that legal orientation is the primary determinant of the effectiveness of the financial system. Modigliani and Perotti (1999) investigated the prominence of the bank-based market system in code law countries. According to them, the primary reason for this preference lies in the fact that the code law is not as strong as common law concerning the legal protection of shareholders' rights.

3. DATA AND METHODOLOGY

Data for the four Scandinavian economies have been collected from the Thompson and Reuters Database. The data has been collected from 2010 to 2019 and is of annual frequency. Association between accounting variables and share prices has been done by conducting the fixed effect regression.

Table 1. Classification of Scandinavian Economies

Market-Based Economies	Bank Based Economies
Denmark	Finland
Sweden	Norway

The accounting information variables have been collected from three main financial statements. EPS from the income statement, BVPS from the balance sheet and CFs from operating activities are collected from the cash flow statement. All accounting variables are scaled by the number of outstanding shares. The list of variables is presented in Table two.

Table 2. List of Variables

<u>Dependent Variable</u>
- Share Price
<u>Independent Variables</u>
- Earnings Per Share (EPS)
- Book Value of equity per share (BVPS)
- Cash Flow from Operating Activities scaled by the outstanding common shares (CFSO_CS)

4. RESULTS

The descriptive statistics, the Hausman test and the results of panel regression for market-based and bankbased economies are presented in this section. The measure of dispersion, along with the relative distribution and skewness is reported. The number of observations in the sample selected is also mentioned.

Table 3. Descriptive statistics of Market-Based Economies

	SP	EPS	BVPS	CFSO CS
Mean	56.25335	4.062849	78.19423	5.852392
Median	8.809438	0.541574	3.667216	0.601853
Maximum	20092.39	2888.700	30525.93	4335.316
Minimum	0.045599	-2736.390	-3.584458	-2844.244
Std. Dev.	675.8137	110.0163	1247.753	144.0817
Skewness	21.10452	6.843028	21.03998	14.31972
Kurtosis	510.3756	504.4794	463.7488	563.9027
Jarque-Bera	22259793	21612068	18382421	27087729
Probability	0.000000	0.000000	0.000000	0.000000
Sum	115938.2	8373.532	161158.3	12061.78
Sum Sq. Dev.	9.41E+08	24933410	3.21E+09	42764658
Observations	2061	2061	2061	2061

Table 3 and 4 list the descriptive statistics of Market-based (MB) and bank-based (BB) economies. The size of the sample is 2061 for MB countries and 1924 for BB countries. The center of data is reported along with the range of samples. The mean and median values show that the data is not symmetric for both MB and BB. Standard deviation gives us the spread of the data and skewness and kurtosis show the shape of the data distribution. Sample data for all variables is positively skewed and has a leptokurtic distribution.

Table 4. Descriptive statistics of Bank-Based Economies

	SP	EPS	BVPS	CFSO CS
Mean	17.63077	-4.187975	20.99994	0.531308
Median	6.166229	0.635000	3.641074	0.395836
Maximum	10212.59	290.6447	8421.765	85.79736
Minimum	0.024992	-5637.514	-1390.665	-47.73509
Std. Dev.	246.8417	153.1647	277.4215	4.353022
Skewness	37.68587	-29.50545	22.88962	1.146238
Kurtosis	1524.135	999.0343	588.4896	112.1338
Jarque-Bera	1.86E+08	79811264	27648986	955220.5
Probability	0.000000	0.000000	0.000000	0.000000
Sum	33921.60	-8057.665	40403.88	1022.237
Sum Sq. Dev.	1.17E+08	45112482	1.48E+08	36438.54
Observations	1924	1924	1924	1924

Table 5 reports the estimation result of the Hausman test for market-based economies. As the p-value is less than five percent so we fail to accept the null hypothesis that random effect is more suitable. Thus, according to the estimation result of the Hausman test, we applied the fixed effect model. The results of the fixed effect estimation are reported in Table 7.

Table 5. Hausman Test Result for Market-Based Economies

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	684.506789	3	0.000

Table 6 gives the estimation result of the Hausman Test for bank-based markets. The p-value is less than five percent indicating that we fail to accept the null hypothesis. Hence fixed-effect model was applied.

Table 6. Hausman Test Result for Bank-Based Economies

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	203.588209	3	0.0000

Fixed effect results of the market-based economies are presented in Table 7. The estimations show that the

adjusted R square of market-based economies is ninety percent as compared to 84 percent of bank-based economies.

Table 7. Fixed Effect Regression for MB countries

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	32.94146	4.752680	6.931134	0.0000
EPS	0.820082	0.051161	16.02943	0.0000
BVPS	0.285924	0.008520	33.55801	0.0000
CFSO CS	-0.406253	0.038600	-10.52474	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.918690	Mean dependent var	56.25335	
Adjusted R-squared	0.900712	S.D. dependent var	675.8137	
S.E. of regression	212.9493	Akaike info criterion	13.72268	
Sum squared resid	76501077	Schwarz criterion	14.74450	
Log likelihood	-13767.22	Hannan-Quinn criter.	14.09730	
F-statistic	51.10092	Durbin-Watson stat	1.849362	
Prob(F-statistic)	0.000000			

According to the fixed effect estimations, all accounting information is relevant and significant in market-based economies. Earnings have a coefficient of 0.82 while BVPS has 0.28. We can compare the results of bank-based and market-based economies.

Table 8. Fixed Effect Regression for BB countries

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.226808	2.442982	-0.092841	0.9260
EPS	0.545250	0.019337	28.19751	0.0000
BVPS	0.968500	0.012283	78.84889	0.0000
CFS O CS	-0.371466	0.663816	-0.559592	0.5758
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.844988	Mean dependent var	17.63077	
Adjusted R-squared	0.817124	S.D. dependent var	246.8417	
S.E. of regression	105.5595	Akaike info criterion	12.29621	
Sum squared resid	18162784	Schwarz criterion	13.14615	
Log likelihood	-11534.96	Hannan-Quinn criter.	12.60890	
F-statistic	30.32525	Durbin-Watson stat	1.833341	
Prob(F-statistic)	0.000000			

From Table 8, we can see the financial indicators from the three financial statements explain almost 82 percent of the variance in share prices. The Durban Watson test is also reported while F statistics indicate the health and suitability of the model. In bank-based economies, we can see that the coefficient of the BVPS is the most significant one. One percent change in the book value of equity changes the share prices by 96.8 percent. Earnings influence the share price by 54.5 percent. Cash flows from the operating activity are not significant in valuing a firm in bank-based economies.

5. CONCLUSION

This study is designed to measure the association of accounting variables from three different financial statements for Scandinavian countries classified into market-based and bank-based economies. We can see that earnings are more significant in impacting the share price in market-based economies while the book value of equity is more significant in bank-based economies. Another important result is the non-significance of cash flow

from operating activities in bank-based economies while these cash flows are significant in market-based countries. This shows that market-based economies have a more open economic infrastructure where stakeholders give due consideration to the earning part of the financial statements. In bank-based countries, economic infrastructure is more institutional-based, and institutions find the book value of equity a more predictable indicator for valuing the firm. Institution-based economic structure finds the earnings part more volatile and unpredictable for the valuation of the firm. Price level estimations of the bank-based economies indicate that stakeholders refer to the income statement and balance sheet while valuing the firm and in bank based countries, the book value of equity originating from the balance sheet is the most significant piece of accounting information that all stakeholders refer to.

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