Macroeconomic Factors and Company Value in the Context of the Ohlson Residual Income Valuation Model: Empirical Findings from Greece

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ABSTRACT

Over the past decades the Ohlson Residual Income Model for equity valuation has drawn much attention concerning its advantages when compared to traditional models (DDM, FCFM). This paper attempts to empirically investigate the validity of the Ohlson Residual Income model using data from the Greek economy over the period 1969-2001. By using multiple regression analysis and by incorporating macroeconomic factors as explanatory variables, we investigate the link of accounting and macroeconomic factors in the market valuation of major Greek companies listed in the Athens Stock exchange. We find that the performance of the Ohlson Residual Income Model is quite satisfactory and the use of factors such as commodity prices, discount rates, and market level in some cases add to the explanatory power of the examined model. Our findings are important for both economists and fund managers, because they show that a relation between accounting and macroeconomic data is valid in the Greek market and economy, alongside more developed markets.

Keywords: Asset Pricing, Capital Budgeting, Contingent Pricing, Financial Markets, Macro Economy, Market Efficiency, Real Options, Residual Income

1. INTRODUCTION

Determining the value of a company has always been a challenge to economists and market practitioners, due to its importance and difficulty, because it requires a credible relation between accounting values and market value. Two models are most often used for that purpose: Dividend Discount Model, and Free Cash Flow Model. However, the link of economic to accounting values has not been established at a satisfactory level, until Ohlson (1995) and Feltham and Ohlson (1995) introduced an alternative model, known as the Ohlson Model. Ohlson

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model estimates the value of a company using the book value, the residual earnings and other variables that relate to the economic environment. This paper applies the Ohlson model to the Greek economy of the second half of twentieth century, and tries to examine the effect of macroeconomic factors in three firm’s value. We examine the Residual Income Valuation model, then we present the Ohlson Model, describe its derivation and discuss relevant literature and finally we empirically investigate the validity of the model for the Athens Stock Exchange for the period 1969-2001.

2. LITERATURE REVIEW

Tswei, k., (2012), assess the information content in equity prices in addition to that in book values and reported earnings and obtains two cointegration relations from the residual income valuation model to estimate trivariate error-correction models with aggregate stock market data from Taiwan. He finds that prices in the long-run have lesser fundamental information content than book values, indicating that the quarterly prices may contain sizable noise trading elements while in the short-run prices exert a stronger causal influence compared to book values. Shih-Cheng et al. (2011) examine the relation between a firm’s market value, financial performance, and corporate governance as a cointegrated system in the Ohlson valuation framework for Taiwanese firms. They find that governance related to ownership structure and divergence between cash flow rights and control rights are important for a firm’s market valuation. Vergos and Mylonakis (2009) and Vergos (2003a), Vergos (2003b) investigate the validity of Ohlson model for companies listed on the Athens Stock Exchange. In particular, Vergos (2003a) develop a framework for incorporating Real Options in Ohlson model, further developed in Vergos (2003b), while Vergos and Mylonakis (2009) investigate the validity of the model for Growth options for the period 1992-1998.

Gode and Ohlson (2002) use stochastic interest rates to generalise the Ohlson Model, an approach that gives new meaning to the Linear Information Dynamics as it develops a class of valuation functions and derives the implied information dynamics. Gode and Ohlson (2002) conclude that allowing the interest rates to be stochastic provides a better understanding of the key dynamic aspects accounting-based valuation framework that were obscured by the assumption of constant interest rates in Ohlson (1995). In Ohlson (2001) some aspects of the Ohlson Model mostly concerning the role of the “other information” variable and the Linear Information Dynamic, are clarified. It is argued that the Ohlson model becomes patently simplistic without “other information”, thus equating $v_t$ to zero may be of analytical interest, but it severely reduces the model’s empirical content, while pinpointing that RIV can be used to articulate accounting-based equity valuation with the appealing feature that it elegantly distinguishes the creation of wealth from the distribution of wealth inherent in PVED. It concludes that if one introduces assumptions on the accounting in addition to Clean Surplus Relation, then RIV can streamline the analysis and in the process enhance our economic intuition as to how value relates to accounting data. Ota (2001) also examines the validity of the Ohlson Model and attempts to improve it. He transforms the Linear Information Dynamics and comes up with empirically testable models, which he tests using a sample of Japanese firms. Each model is built by making various assumptions about the behaviour of LID. The findings of his study generally support the validity of the Ohlson Model and indicate that there is potential for further improvement. Vergos (2003a), Vergos (2003b) and Vergos and Mylonakis (2009) findings support the validity of Ohlson Residual Income model for the Athens Stock Exchange.

Ohlson (2000) identifies problems related to the Residual Income Valuation model’s applicability, in an equity valuation context, associated with the net surplus relation. It is
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