MANAGERIAL OWNERSHIP AS MODERATING VARIABLES IN EFFECT OF PROFITABILITY ON FIRM VALUE

Aprih Santoso aprihsantoso@usm.ac.id Universitas Semarang

Teguh Ariefiantoro

Universitas Semarang

ABSTRACT

This study was to examine how the effects of Return on Assets (ROA) on The Firm Value (PBV) with Managerial Ownership (MO) as a moderating variable. The sampling used in this study are firm belonging to the Jakarta Islamic Index (JII) with criteria are: (1) The Company is consistently included in the JII for the period 2016-2017 during the estimated period and window period. (2) Available financial reports published on www.idx.co.id. Based on these criteria, 60 companies are listed in the Jakarta Islamic Index (JII). The results of this study variable Return on Assets (ROA) significant positive effect on the Firm Value (PBV). Variable Managerial Ownership (MO) significantly strengthen the positive relationship between Return on Assets (ROA) with Firm Value (PBV).

Keyword: return on assets, managerial ownershipe, firms value.

INTRODUCTION

One way to measure firm value is by the Price to book Value (PBV) ratio. Price to Book Value is a comparison obtained between the stock price and the book value of the firm's shares. By using the Price to Book Value (PBV) ratio, potential investors can find out the firm whose stock value is undervalued or overvalued. According to Permata, et al. (2003), the value of shares is said to be undervalued when the Price to Book Value is below 1, which means that the firm's shares are valued lower than the book value and overvalued when the Price to Book Value is above 1 which means stock the firm is rated higher than the value of the book. Euis and Taswan (2002) state that the higher the stock price means the higher the value of the firm. Nurlela and Ishaluddin (2008) in Kusumadilaga (2010) state that company value is the price that prospective buyers are willing to pay if the firm is sold.

Profitability measures a company's ability to earn profits in relation to sales, total assets and own capital (Sartono, 2001; Mai, 2006). Companies with high profits tend to use more loans to obtain benefits in the tax aspect. This is because the reduction in profit by loan interest will be smaller than if the firm uses capital that is not subject to interest, but taxable income will be higher (Mai, 2006). Profitability in relation to investment connects profit with investment. One measurement is the rate of return on investment-ROI), or the rate of return on assets (return on asset-ROA).

Managerial ownership is the amount of share ownership by management based on the entire share capital of the managed firm (Agnes, 2103). Share ownership by management is one of the actions that can be taken to overcome agency conflicts between various existing interest groups. Jensen & Meckling (1976) states that firm that have high managerial ownership will reduce agency costs.

Some of the previous studies gave contradictory results so as to make a study of the factors that influence firm value, especially important profitability is done again. Ganerse and Suarjaya (2014); Safitri, Sinarwati and Atmadja (2016) and Ananda and Nur (2016) and Raymond (2016) in their research concluded that profitability (ROA) has a positive and significant effect on firm value (PBV). But the results of research by Shelly and Munzir (2015); Analysis (2011); Juhandi, et al. (2013) and Sudiyanto, et al. (2012); and Herawati (2012), and Susilowati (2011) conclude which contradicts the results, namely that profitability (ROA) does not affect firm value (PBV). According to Anthony and Govindarajan (2007) to address the results of different and conflicting studies there is a need for a contingency approach that reveals that the relationships between various variables studied are influenced by other variables that are conditional. This contingency approach enables one of them to act as moderating. From the inconsistency of the results of previous studies, it turns out that managerial ownership needs to be resolved which is thought to be able to strengthen or weaken the relationship (moderation) between profitability (ROA) and firm value (PBV).

This study was conducted to see Managerial Ownership (MO) as moderating variables in effect of Return on Assets (ROA) on Firm Value (PBV). The managerial ownership was expected to be able to affect the potential occurrence of Return on Assets (ROA), and therefore could also affect the Firm Value (PBV).

THEORETICAL FRAMEWORK AND HYPOTHESIS

Profitability

Weston and Copeland (2008) state the probability of the extent to which a company generates profits from sales and investment of the firm. If the profitability of the firm is good, the stakeholders consisting of creditors, suppliers and investors will see the extent to which the company can generate profits from sales and investment of the company. With good company performance will also increase the value of the company (Suharli, 2006). Profitability in relation to investment connects profit with investment. One measurement is the return on investment (ROI), or the rate of return on assets (return on asset-ROA).

Managerial Ownership (MO)

Managerial ownership is the amount of share ownership by management based on the entire share capital of the managed firm (Agnes, 2103). Managerial ownership in this study was measured by managerial ownership (MOWN) (Pratama & Wirawati, 2016). Share ownership by management is one of the actions that can be taken to overcome agency conflicts between various existing interest groups. Jensen & Meckling (1976) states that companies that have high managerial ownership will reduce agency costs

Firm Value (PBV)

Firm value is an investor's perception of the level of success of the firm that is closely related to its stock price (Sujoko and Soebiantoro, 2007). The firm value is reflected in the bargaining power of shares. If the firm is estimated as a firm that has prospects in the future, the stock price will be higher, conversely if the firms is considered to have less prospects then the stock price will be low (Sunariyah, 2003 and Suksmana, 2015). The higher the share price of a firm, the higher the prosperity of shareholders. Increasing the firms stock price means increasing the value of the firm itself, which indicates that shareholders' prosperity is also increasing (Mahendra, 2012).

The Effect of Return on Assets (ROA) on Managerial Ownership (MO)

Dewi & Wirajaya (2013), profitability is the ability of a firm to generate profits for a certain period. Profitability will increase the value of the firm reflected through the increase in stock prices in the market. The higher the level of profitability of a firm shows the better performance of the firm and provides a signal for the firm growth prospects in the future. This of course will attract investors to invest by owning or buying the firm. More and more investors who are interested in buying firm shares will have a positive impact on increasing stock prices in the market and will ultimately increase the value of the firm. So, the greater the profitability of a company, the greater the value of the firm. From the results of research conducted by Sujoko & Soebiantoro, (2007); Ju Chen & Yu Chen (2011); Dewi & Wirajaya (2013); Pratama & Wirawati (2016); Lubis, Sinaga, & Sasongko (2017); and Nandita & Kusumawati (2018) explain that profitability affects the value of the firm

Based on the foregoing, the researcher formulated hypothesis as follows:

H1: Retrun on Assets (ROA) gave significant positif effect on Firm Value (PBV)

The Effect of Managerial Ownership (MO) on Retur on Assets (ROA) and Firm Value (Per Book Value / PBV)

Rahayu & Andri (2010), ownership structure is believed to influence the course of the firm in achieving the goals of a firm, namely achieving maximum profit, prospering shareholders and maximizing the value of the firm. The higher managerial ownership in the firm is expected to increase the value of the firm where management will make every effort to the interests of the shareholders. This is true because the management as shareholders will also get a big return if the firm also gets a bigger profit. When a firm earns a large profit it will give a positive signal to investors and investors will be interested in owning a company that will also affect stock prices on the market. From the results of Anindyati (2011) 's research which was also supported by Putra and Wirawati (2013) research, it was explained that financial performance proxyed ROA had an effect on firm value (PBV) with managerial ownership as a moderating variable.

Based on the foregoing, the researcher formulated hypothesis as follows:

H₂: Managerial Ownership (M0) on Return on Assets (ROA) and Firm Value (PBV) strengthened the relationship between Retrun on Assets and Firms Value

Conceptual Framework

Picture 1

Manajerial Ownership (M0)



The sampling used in this study are firm belonging to the Jakarta Islamic Index (JII) with criteria are: (1) The firm is consistently included in the JII for the period 2016-2017 during the estimated period and window period. (2) Available financial reports published on www.idx.co.id. Based on these criteria, 60 firm are listed in the Jakarta Islamic Index (JII).

Operational Variables

Return on Assets (ROA)

Return on Assets (ROA) shows the firm ability to generate profits by utilizing the total assets it has (Brigham and Houston, 2001).:

$$ROA = \frac{\text{Net Profit}}{\text{Total Assets}} x100\%$$

Firms Value

Prices that prospective buyers are willing to pay if the firm is sold (Baert and Vennet (2009)

$$PBV = \frac{price}{BV}$$

Managerial Ownership (MO)

The number of share ownership by management is based on the entire share capital of the firm managed.

Total shares of managers and directors

MO = ----- Total outstanding shares

RESULTS AND DISCUSSION

Descriptive statistics

Based on descriptive statistic such as the numbers of sample, average sample (Mean), and standard deviation for each variable, as follows:

| Table 1 Descriptive Statistic | | | | | |
|-------------------------------|--------|----------------|----|--|--|
| | Mean | Std. Deviation | Ν | | |
| PBV | 8.3690 | 9.04511 | 60 | | |
| ROA | .3560 | .54181 | 60 | | |

Source: Secondary data which is processed

The table above, which summarises the results from descriptive statistic data, 8.3690 the average of Firm Value (PBV) and 0.3560 the Return on Assets (ROA).

Normality Test

The normality test in this study used histogram graphical analysis and Normal Probability Plot. Both are distributed normal.

Picture 2 Histograms (Left)





Picture 3

Source : Secondary data which is processed

Test Autocorrelation

The result of the test found that DW 3.083. The score of DW was bigger than the upper limitation 2.890. It shows there is no autocorrelation on model.

Tabel 2 Uji Durbin Watson

ModelDurbin-Watson13.083

Source: Secondary data which is processed

Coefficient of Determination

Table 3 Test Result R² dan Adjusted R²

| Model Summary ^b | | | | | | |
|----------------------------|-------|----------|------------|---------------|--|--|
| | | | Adjusted R | Std. Error of | | |
| Model | R | R Square | Square | the Estimate | | |
| 1 | .357ª | .187 | .174 | 9.06068 | | |

Source: Secondary data which is processed

The result of test was 0.187. It means that independent variables such as ROA, ROA*PBV, ROA*MO were able to explain 18,7 % variation from dependent variable of PBV, meanwhile the rest 81.3 % can be explained by the other factor which not include on model.

Multikolinearitas Test

Multicolinearity test can be seen on the table below:

| | | Collinearity | Collinearity Statistics | | | |
|---|------------|--------------|-------------------------|--|--|--|
| | Model | Tolerance | VIF | | | |
| 1 | (Constant) | | | | | |
| | ROA | .017 | 117.108 | | | |
| | MODERAT | .018 | 114.276 | | | |

Source: Secondary data which is processed

Hypothesis Test Results and Discussion

| Table 5 Coefficients Test Results Coefficientsª | | | | | | |
|--|----------------|--------------|---|------|-------------------------|--|
| | Unstandardized | Standardized | | | | |
| Model | Coefficients | Coefficients | t | Sig. | Collinearity Statistics | |

| | | В | Std. Error | Beta | | | Tolerance | VIF |
|---|------------|--------|------------|-------|-------|------|-----------|---------|
| 1 | (Constant) | 6.836 | .674 | | 9.882 | .000 | | |
| | ROA | 53.266 | 16.384 | 2.388 | 4.474 | .000 | .009 | 107.124 |
| | MODERAT | 12.546 | 3.405 | .394 | 5.753 | .000 | .301 | 2.541 |

Source: Secondary data which is processed

Hypothesis 1 Test: The Effect of Return on Assets (ROA) on Firm Value (PBV).

This study hypothesized Return on Assets (ROA) gave significant positive effect on Firm Value (PBV). Based on the multiple linear regression test, it indicated a = 0.05 return on assets (ROA) with firm value (PBV) significancy level of 0.000. Return on Assets (ROA) gave significant positive effect on Firm Value (PBV) by t = 4.474. This study indicated that Return on Assets (ROA) could affect Firm Value (PBV), because good firm would try to added Return on Assets (ROA). The results of the study support the research conducted by Sujoko & Soebiantoro, (2007); Ju Chen & Yu Chen (2011); Dewi & Wirajaya (2013); Pratama & Wirawati (2016); Lubis, Sinaga, & Sasongko (2017); and Nandita & Kusumawati (2018) who explained that Return on Assets (ROA) has an effect on firm value (PBV).

Hypothesis 2 Test: The Effect of Managerial Ownership (MO) on the Relationship Between Return on Assests (ROA) and Firm Value (PBV).

The second hypothesis stated that Managerial Ownership (MO) gave significant positive effect on the relationship between Return on Assets (ROA) and Firm Value (PBV). The above table, Managerial Ownership (MO) had coefficient value of 5.753 with significancy level of 0.000 less than 0.05. This study indicated that Managerial Ownership (MO) could moderate Return on Assets (ROA) and Firm Value (PBV). This study supports Anindyati (2011) and Putra and Wirawati (2013) that financial performance diproxy ROA has an effect on firm value (PBV) with Managerial Ownership (MO) as a moderating variable.

CONCLUSION AND SUGGESTION

- 1. Return on Assets (ROA) variables gave significant positive effect on Fimr Value (PBV).
- Managerial Ownership (MO) variables gave significant positive effect, strengthening the relationship between Return on Assets (ROA) and Firm Value (PBV).

Suggestion

- 1. The addition of other variables that have not been included.
- 2. The need for the addition of sample or sample usage apart from manufacturing companies, and adding longer time span.

REFERENCES

- Adyana Putra I, W. N. 2013. Pengaruh Kepemilikan Manajerial Terhadap Hubungan Antara Kinerja Dengan Nilai Perusahaan. *E-Jurnal Akuntansi* 5(3), 639-651.
- Agnes. 2013. Pengaruh Kepemilikan Manajerial, Struktur Modal dan Ukuran Perusahaan Terhadap Nilai Perusahaan . *Universitas Negeri Padang*.
- Ayuningtias, D. 2013. Pengaruh Profitabilitas terhadap Nilai Perusahaan: Kebijakan Dividen dan Kesempatan Investasi Sebagai Variabel Antara. *Jurnal Ilmu dan Riset Akuntansi*, 1(1), pp: 37-57
- Chaidir. 2015. Pengaruh Struktur Modal, Profitabilitas, Dan Pertumbuhan Perusahaan Terhadap Nilai Perusahaan Pada Perusahaan Sub Sektor Transportasi Yang Tercatat di Bursa Efek Indonesia Periode 2012-2014. *Jurnal Ilmiah Manajemen Fakultas Ekonomi Volume 1 No 2 Tahun 2015*, 1-21.
- Chun, S. E., & Lee, M. H. 2017. Corporate Ownership Structure and Risk Taking Evidence From Japan. *Journal of Governance and Regulation Volume 6 Issue 4*, 39-52.
- Darminto. 2010. Pengaruh Faktor Eksternal dan Berbagai Keputusan Keuangan terhadap Nilai Perusahaan. *Jurnal Aplikasi manajemen*, Vol. 8, No.1, Februari 2010. ISSN 1963-5241, pp: 138-150
- Dewi, P. Y. S., Gede, A. Y., dan Ananta, W. T. A. 2014. Pengaruh Struktur Modal, Pertumbuhan Perusahaan dan Profitabilitas terhadap Nilai Perusahaan pada Perusahaan LQ 45 di BEI periode 2008-2012. *E-journal S1 Ak Universitas Pendidikan Ganesha*, 2(1), pp: 1-10
- Dewi, A., & Wirajaya, A. 2013. Pengaruh Struktur Modal, Profitabilitas Dan Ukuran Perusahaan Pada Nilai Perusahaan. *E-Jurnal Akuntansi Universitas Udayana*, Vol. 4.2, Halaman 358-372.
- Frederik, Priscilia G., Sibtje C. N., dan Victoria N., Untu. 2015. Analisis Profitabilitas, Kebijakan Hutang, dan Price Earning Ratio terhadap Nilai Perusahaan pada Perusahaan Retail Trade yang terdaftar di Bursa Efek Indonesia. *Jurnal EMBA*, 3(2), pp: 1242-1253

- Ghozali, Imam, 2011.Aplikasi Analisis Multivarite Dengan Program IBM SPSS 19 (Edisi Kelima), UniversitasDiponegoro, Semarang.
- Hamidah, Ahmad, G., & Aulia, R. 2015. Effect Of Intellectual Capital, Capital Structure and Managerial Ownership Toward Firm Value of Manufacturing Sector Companies Listed in Indonesia Stock Exchange (IDX) Period 2010-2014. Jurnal Riset Manajemen Sains Indonesia (JRMSI), Vol. 6, No. 2.
- Hermastuti, C. 2014. Pengaruh Profitabilitas, Kebijakan Dividen, Kebijakan Hutang, Keputusan Investasi dan Kepemilikan Insider Terhadap Nilai Perusahaan. *Jurnal Ilmu dan Riset Akuntansi Vol 3 No 4*, 1-14.
- Hermuningsih, S. 2012. Pengaruh Profitabilitas, Size Terhadap Nilai Perusahaan Dengan Struktur Modal Sebagai Variabel Intervening. *Jurnal Siasat Bisnis*, Vol. 16, No.2 Halaman 232-242.
- Hoque, J., Hossain, A., & Hossain, K. 2014. Impact of Capital Structure Policy On Value Of The Firm A Study On Some Selected Corporate Manufacturing Firms Under Dhaka Stock Exchange. *ECOFORUM*, 77-84.
- Ju Chen, & Yu Chen. 2011. The Influence of Profitability on Firm Value With Capital Structure as The Mediator and Firm Size and Industry as Moderators. *Investment Management and Financial Innovations*, Vol. 8, Issue 3.
- Kusuma, Ginanjar I., Suhadak, Dan Zainul, A. 2012. Analisis Pengaruh Profitabilitas (Profitability) dan Tingkat Pertumbuhan (Growth) terhadap Struktur Modal dan Nilai Perusahaan (Studi Pada Perusahaan Real Estate And Property yang Terdaftar di Bursa Efek Indonesia (BEI) Periode 2007-2011, Jurnal Fakultas Ilmu Administrasi Universitas Brawijaya, Malang. pp: 38-50.
- Lubis, I. L., Sinaga, B. M., & Sasongko, H. 2017. Pengaruh Profitabilitas, Struktur Modal, Dan Likuiditas Terhadap Nilai Perusahaan. *Jurnal Aplikasi Bisnis dan Manajemen, Vol. 5 No.* 3, 458-465.
- Mahendra, A. D. 2012. Pengaruh kinerja keuangan terhadap nilai perusahaan pada perusahaan manufaktur di Bursa Efek Indonesia. *Jurnal Manajemen, strategi bisnis, dan kewirausahaan*. Vol.6. No.2, pp: 125-140.
- Marangu, K., dan Ambrose, J. 2014. Price to Book Value Ratio and Financial Statement Variables (An Empirical Study of Companie Quyoted At Nairobi Securities Exchange Kenya). *Global Journal of Commercer & Management Perspective*, 3(6), pp: 50-56.

- Mardiyati, U., Ahmad G. N., dan Putri, R. 2012. Pengaruh Kebijakan Dividen, Kebijakan Hutang dan Profitabilitas terhadap Nilai Perusahaan Manufaktur yang Terdaftar di Bursa Efek Indonesia (BEI) Periode 2005- 2010. *Jurnal Riset Manajemen Sains Indonesia (JRMSI)*, Vol. 3, No. 1, 2012, pp: 45-60
- Moniaga, F. 2013. Struktur Modal, Profitabilitas dan Struktur Biaya Terhadap Nilai Perusahaan Industri Keramik Porcelen Dan Kaca Periode 2007 - 2011. *Jurnal EMBA Vol.1 No. 4*, 433-422.
- Nandita, A., & Kusumawati, R. 2018. Pengaruh Profitabilitas, Leverage, Siize Dan Kebijakan Dividen Terhadap Nilai Perusahaan. CAM JOURNAL: Change Agent For Management Journal, Vol 2. No. 2, 188 - 199.
- Nugroho, W. A. 2012. Pengaruh Profitabilitas, Likuiditas dan Leverage terhadap Nilai Perusahaan (Studi pada Perusahaan Sektor Manufaktur Di BEI Periode 2008-2011). *Jurnal Universitas Muhammadiyah Surakarta*. pp: 30-55.
- Nurhayati, M. 2013. Profitabilitas, Likuiditas dan Ukuran Perusahaan Pengaruhnya terhadap Kebijakan Dividen dan Nilai Perusahaan Sektor Non Jasa. *Jurnal. Keuangan dan Bisnis.* pp: 65-80.
- Nuryaman. 2008. Pengaruh Konsentrasi Kepemilikan, Ukuran Perusahaan dan Mekanisme Corporate Governance Terhadap Manajemen Laba. *Simposium Nasional Akuntansi XI*. Pontianak.
- Pallant, J. 2011. A Step by Step Guide to Data Analysis using SPSS. Crows Nest NSW: Allen and Unwin.
- Pangulu, A. L. 2014. Pengaruh Profitabilitas, Growth Opportunity, Dan Struktur Modal Terhadap Nilai Perusahaan (Studi Pada Perusahaan Perbankan Yang Terdaftar Di Bei Periode 2011- 2013). Jurnal Ilmiah. Fakultas Ekonomi Dan Bisnis Universitas Brawijaya, pp: 77-90.
- Pratama, I., & Wirawati, N. 2016. Pengaruh Struktur Modal dan Profitabilitas Terhadap Nilai Perusahaan dengan Kepemilikan Manajerial sebagai Pemoderasi. *E-Jurnal Akuntansi Universitas Udayana*, Vol. 15, Halaman 1796-1825.
- Prisiliarompas, G. 2013. Likuiditas Solvabilitas Dan Rentabilitas Terhadap Nilai Perusahaan BUMN Yang Terdaftar Dibursa Efek Indonesia. *Jurnal Emba* Vol.1 No.3 September 2013, pp: 252-262.
- Pujiati, D., dan Widanar, E. 2009. Pengaruh Struktur Kepemilikan Terhadap Nilai Perusahaan: Keputusan Keuangan sebagai Variabel Intervening. *Jurnal Ekonomi Bisnis dan Akuntansi Ventura*, Vol. 12. No.1, pp: 71-86
- Rachmawati, A., dan Triatmoko, H. 2007. Analisis Faktor-faktor yang Mempengaruhi Kualitas Laba dan Nilai Perusahaan. SNA X, *Jurnal Manajemen*, pp: 26-28.

- Rahayu, S., & Andri, A. 2010. Pengaruh Kinerja Keuangan Terhadap Nilai Perusahaan Dengan Pengungkapan Corporate Social Responsibility Dan Good Corporate Governance Sebagai Variabel Pemoderasi (Studi Empiris Pada Perusahaan Manufaktur di Bursa Efek Jakarta). Universitas Diponegoro.
- Rustam, C. W. A. 2013. Pengaruh Tingkat Likuiditas, Solvabilitas, Aktivitas, Dan Profitabilitas Terhadap Nilai Perusahaan Pada Perusahaan Real Estate Dan Property Di Bei Tahun 2006 – 2008. Jurnal Ekonom, Vol 16, No 2, April 2013, pp : 12-35
- Scott, W. R. 2012. Financial Accounting Theory 6th edition. Toronto: Pearson Education Canada
- Sudiyatno, Bambang, Elen P., dan Andi, K. 2012. The Company's Policy, Firm Performance, and Firm Value: An Empirical Research on Indonesia Stock Exchange. *American International Journal of Coutemporary Research*, 2(12): pp: 30-40
- Sujoko, & Soebiantoro, U. 2007. Pengaruh Faktor Kepemilikan, Leverage, Faktor Intern, dan Faktor Ekstern Terhadap Nilai Perusahaan (Studi Empiris Pada Perusahaan Manufaktur dan Non Manufaktur di Bursa Efek Jakarta. *Jurnal Manajemen dan Kewirausahaan 9(1)*, 41-49.
- Supratiningrum dan Sabat, N. A. 2013. Pengaruh Moderasi Pengungkapan Corporate Social Responsibility (CSR) dan Good Corporate Government (GCG) Terhadap Hubungan Return On Equity (ROE) dan Nilai Perusahaan. *Jurnal Manajemen*, pp: 83-97.
- Susilawati. 2014. Pengaruh Kebijakan Dividen, Keputusan Investasi, Keputusan Pendanaan, Kepemilikan Institusional Dan Likuiditas Terhadap Nilai Perusahaan Pada Perusahaan Manufaktur Yang Terdaftar Di Bursa Efek Indonesia Periode 2010-2013, *Jurusan Akuntansi*, pp: 40-65.
- Wahyudi, U., dan Hartini, P. P. 2006. "Implikasi Struktur Kepemilikan terhadap Nilai Perusahaan : dengan Keputusan Keuangan Sebagai variabel Intervening". Simposium Nasional Akuntansi IX. Padang. Jurnal Manajemen, pp: 55-80.
- Wardjono. 2010. Analisis Faktor-faktor yang Mempengaruhi *Price to Book Value* dan Implikasinya pada Return Saham. *Jurnal Dinamika Keuangan dan Perbankan*, 2(1), pp: 83-96.
- Wulandari, D. R. 2014. PengaruhProfitabilitas, Operating Leverage, Likuiditas terhadap Nilai Perusahaan dengan Struktur Modal sebagai Intervening. *Accounting Analysis Journal*, pp: 26-55