Determinants of Non-Disclosure of Intellectual Capital Information in Malaysian IPO Prospectuses

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Received: May 15, 2011 Accepted: May 23, 2011 doi:10.5539/ijef.v3n5p178

Abstract
Intellectual capital (IC) relevant information is an important aspect of the reporting process because it complements the conventional financial disclosure in the new economy. It describes the hidden assets of a company especially in the initial public offering (IPO) setting where high information asymmetry exists. This study investigates several variables that may contribute to the relatively low level of IC disclosures in the IPO prospectus using the maximum likelihood (ML) and Bayesian of the Tobit regression models. The sample of this study consists of 112 randomly selected companies seeking a listing in the Bursa Malaysia between 2004 and 2008.The results provide evidence that board size, board independence, leverage and listing board significantly affect the extent of non-disclosure of IC information in a company's IPO prospectus. Conversely, the study finds no significant association with board diversity, age, size, underwriter and auditor type.

Keywords: Intellectual Capital, Initial Public Offering, Tobit Regression

JELClassification: C33, D8, M14.

1. Introduction

At the turn of the 21st century, the economic environment began to shift from input-driven to knowledge-driven. Knowledge is now recognised as a source of competitive advantage that creates intellectual resources that enhance a company's value (Viedma-Marti, 2001). This recognition has increasingly led organisations to focus on knowledge-based assets – often referred to as intellectual capital (IC) – such as human know-how, innovation, technologies and information rather than exclusively relying on physical assets. All in all, there seems to be general agreement by both academics and practitioners that IC is becoming a highly important factor contributing to value creation in the new economy and to a sustainable competitive advantage (Bontis, 1999; Edvinsson, 1997; Liu et al., 2009; Sveiby, 1997; Villalonga, 2004; Zeghal&Maaloul, 2010). In fact, the amount that companies invest in IC resources appears to be approaching levels comparable to their investment in physical assets (OECD, 2008).

The presence of IC in a company's operations has significant implications for accounting and financial reporting. As a major component of the non-financial and qualitative information demanded by capital market intermediaries, IC disclosure can further improve the informational relevance of financial statements (Holland &Johanson, 2003; Whitwell et al., 2006). Such information is important to investors' decision-making processes and to opinions on the market value of the reporting company. For example, Healy &Palepu (2001) suggest that enhanced disclosures provide an important means for managers to maximise organisation value by reducing information asymmetries between issuers and investors. Nevertheless, the existing accounting standards are not suitable for the reporting of IC. The traditional financial reporting systems face heavy criticism for paying less attention to IC, the majority of which is not captured in balance sheets (Riegler&Hollerschmid, 2006). As such, the financial statements fail to convey the real state of the business, thus decreasing their relevance (Lev &Zarowin, 1999).

The growing dissatisfaction has led to calls for companies to disclose more IC information to complement their financial disclosures, mainly through narrative reporting (Accounting Standards Board, 2007; OECD, 2008; Wallman, 1995). Consistent with this, Beattie & Thomson (2004) clearly call for a revamped business reporting model that goes beyond the traditional financial reporting model to accommodate IC and meet the information needs of the capital market. A company's failure to recognise and communicate IC information may prevent investors from understanding its value creation process, which can significantly affect its future potential (García-Meca&Martínez, 2005). Furthermore, understanding how IC resources are used and managed is crucial to enhancing the company's competitive position (Marr et al., 2003). In light of the growing importance of IC and the deficiency of traditional financial reports, the accounting profession is now being challenged to develop new approaches to business reporting and performance measurement. As underlined by Parker (2007), IC is an important agenda in future financial and external reporting research.

2. IC Disclosure in IPO Prospectuses

A prospectus is a detailed disclosure document that is prepared in compliance with requirements set by the stock exchange whenever a company plans to issue securities to the public. As an important medium to promote the securities being offered, the purpose of the prospectus is to ensure that investors and analysts have access to information about a company prior to its initial public offering (IPO). Hence, voluntary disclosure, for example, of IC-relevant information is an important aspect of the reporting process because it complements the conventional financial disclosure to enhance the quality of disclosure and transparency. Even though the mentality of capital market participants continues to be dominated by financial data, disclosing qualitative information will help to reduce the problem of information asymmetry and facilitate a more precise valuation of the company, lowering companies' cost of capital (Botosan, 1997; Bukh, 2003; Holland, 2001; Johanson, 2003; Lev, 2001). Thus, enhanced IC disclosure is deemed to be useful for investors and as a basis to differentiate companies from their competitors, thus giving better access to a wide pool of capital for future growth.

The need for more IC information is especially important in an IPO setting, where information asymmetry is abnormally high (Guo et al., 2004; Singh & Van der Zahn, 2008). The main reason for this is that there is a paucity even of financial information concerning IPOs because IPOs are required by the Securities Commission to publish only three years of audited financial statements prior to listing (Securities Commission, 2005). Furthermore, companies issuing IPOs are less known to investors and analysts because they are still new in the market, leading to greater uncertainty about their prospects and thereby raising the cost of capital (Certo, 2003; Flostrand& Strom, 2006; Healy &Palepu, 2001; Lev, 2001). IC disclosure in an IPO prospectus is therefore an important way of correcting this information asymmetry gap and lowering the cost of capital, thereby maximising the value of going public (Azarmi, 2002; Bukh et al., 2002; Certo et al., 2001; Diamond &Verrecchia, 1991; Eccles&Mavrinac, 1995; and Lev, 2001). In short, the greater desire by companies to inform the market about the existence of their IC resources in their prospectus is related to the information needs of investors and analysts; IC disclosure strengthens their confidence, leading to high-quality IPOs.

Despite the growing interest in the role of IC and the weaknesses of the financial reporting model, the focus on IC disclosure is indeed limited. For IPOs in Malaysia, the Prospectus Guidelines issued in May 2003 only provide general guidelines as to the information that the Securities Commission considers necessary for inclusion in IPO prospectuses, without referring to any particular IC-related information. According to García-Ayuso (2003), companies that disclose less IC information than analysts expect may broaden the information gap, leading to information and valuation crises such as those faced by capital markets in 1997-2003 (Holland &Johanson, 2003). This fact is especially important in the Malaysian IPO setting, where empirical studies on IPO underpricing are significantly higher in the past (Prasad et al., 2006; Uddin, 2008). Furthermore, the underpricing phenomenon is recognised as the major cost of capital for an IPO (Singh & Van der Zahn, 2007). This situation implies the presence of asymmetric information and an increased need for greater disclosure to reduce underpricing. Schrand&Verrecchia (2002) demonstrated that enhanced disclosure made prior to an IPO may reduce underpricing.

However, the challenge of developing a more comprehensive approach than that of traditional financial reporting is immense for several reasons. First, although it is important to report IC information in a knowledge-based environment, the unique and subjective nature of IC for each company hinders the understanding of IC and limits the progress of IC reporting (Fincham&Roslender, 2003). Because the value of IC is tangled with physical assets, it is hard to understand how a variety of IC elements are linked to the value creation process and eventually used to forecast share price (Holland &Johanson, 2003). Furthermore, the lack of an established framework for reporting IC information leads to considerable variation in prior studies pertaining to the disclosure categories and number of items disclosed (Gerpott et al., 2008; Guthrie & Petty, 2000). Although guidelines on IC practices have been issued in several countries (see, for example, German Ministry of Labour, 2004; Australian IC Guidelines, 2005; Putting IC into Practice Guidelines by Nordic countries, 2006), thus far, there is no commonly accepted index or indicators to provide companies with a basis for the measurement and reporting of their IC information (Singh & Van der Zahn, 2007).

It is also important to note that studies of IC disclosure are currently confined to developed nations (Abeysekera, 2007; Goh& Lim, 2004). Furthermore, their findings may not generalise to other nations as a result of dissimilar economic conditions, regulatory environments, capital market sizes and cultural diversity. This is especially true for an emerging country like Malaysia, where the field of IC disclosure is relatively new (Abdullah &Sofian, 2009; Kin, 2002). Whereas many studies (see, for example, Guthrie et al., 2004; Vergauwen et al., 2007) have investigated IC disclosure practices in companies' annual reports, only a few studies have attempted to do so by analysing prospectuses, as in Denmark (Bukh et al., 2005), Italy (Cordazzo, 2007), Singapore (Singh & Van der Zahn, 2007) and Malaysia (Warn &Somasundaram, 2010). Overall, studies in an IPO setting suggest that IC disclosure is

relatively limited in companies' prospectuses. In addition, a survey of Malaysian financial analysts and fund managers revealed that IC information is not regarded as important to their investment decisions (Huang, 2008).

Although IC constitutes a crucial source of value for the contemporary business enterprise, the non-disclosure of IC information appears to be a common phenomenon in IPOs, and it is being ignored when it is disclosed. Unlike previous studies that tended to focus on the determinants of IC disclosure, this study adopts the perspective of non-disclosure of IC information. Even though this line of inquiry has received very little attention from IC researchers, it is equally important given that IPOs in Malaysia are highly underpriced compare to IPOs in other developing countries and generally have low levels of IC disclosure (Prasad et al., 2006; Warn &Somasundaram, 2010). There is limited and inconclusive evidence on the reasons for non-disclosure of IC information, particularly in the Malaysian IPO setting. As such, the present study is timely in providing much-needed empirical support for IC disclosure.

3. Data and Methods

The sample of this study consists of 112 randomly selected companies (or 49.7% of the total population) seeking a listing in the Bursa Malaysia between 2004 and 2008. The total population is obtained after the exclusion of 17 companies listed under the Real Estate Investment Trusts (REITs), Finance and Closed-end funds sector classifications. This study investigates several variables that may contribute to the relatively low level of IC disclosures in the Malaysian IPO prospectus using the maximum likelihood (ML) and Bayesian of the Tobit regression model. The data used in this study are obtained manually from the prospectus of each IPO downloaded from the website of Bursa Malaysia. Consistent with previous IC disclosure studies (see, for example, Bukh et al., 2005; Cordazzo, 2007; Singh & Van der Zahn, 2007), this study employs content analysis to measure the extent of IC disclosure in IPO prospectuses. A widely used technique for investigating IC disclosure, content analysis enables researchers to record qualitative and quantitative information in predefined categories to understand the disclosure pattern in published media (Beattie & Thomson, 2007; Guthrie et al., 2004).

Because there is no universal index to measure IC disclosure practices (Singh & Van der Zahn, 2007), this study develops its own index based on prior indices developed by Bukh et al. (2005), Cordazzo (2007) and Singh & Van der Zahn (2007) as the basis for classifying the IC categories and items. Furthermore, discussions with investment analysts were conducted to seek their opinion on the items that should be disclosed in Malaysian IPO prospectuses. The proposed framework for the collection of IC disclosures consists of 84 items segregated into six different categories, namely, human resources, IT, R&D, process, strategy and customers. To measure the extent of non-disclosure of IC information in the IPO prospectuses, a disclosure score was first computed using a dichotomous scoring system (scored one if the item appeared in the prospectus and zero otherwise) (Note 1). The formula to compute non-disclosure score is as follows:

$$\text{Non-Disclosure Score } (NDS) = \left[\left(\frac{1}{\sum_{i=1}^{m} d_i \Big/ M} \right) - 1 \right] \quad (1)$$

where d_i can be taken as a dummy variable equal to one if the respective IC item is disclosed on an IPO prospectus and zero otherwise and M represents the total number of items in the IC framework.

It is important to note that the interpretation of the non-disclosure score contradicts that of the disclosure score commonly used in previous studies. For example, the best-disclosing IPO companies (or those that are 100% disclosed) will have a zero *NDS,* and the least-disclosing IPO companies will have a positive *NDS*. Although studies on IC disclosures have frequently used multiple regressions to analyse the factors influencing the IC disclosure level, the dependent variable (i.e., IC disclosure score) is constrained to lie between zero and one, which may not satisfy the assumptions of normality and homoscedasticity (Maddala, 1983). This limitation of ordinary regression analysis can be overcome by using a Tobit model (Tobin, 1958). Because the IC disclosure scores fall between zero and one, Greene (2009) suggests that, for calculation reasons, a suitable normalisation in Tobit studies is to assume a censoring point at zero. The Tobit regression (i.e. modelled the relationships between the non-disclosure score and potential explanatory variables) can be estimated based on the following equation:

$$NDS_i^* = \beta_1 + \beta_2 BSIZE_i + \beta_3 BIND_i + \beta_4 BDIV_i + \beta_5 SIZE_i + \beta_6 AGE_i + \beta_7 LEV_i + \beta_8 UND_i + \beta_9 AUD_i + \beta_{10} LISTING_i + e_i \quad (2)$$

$NDS_i = NDS_i^*$ if $NDS_i^* > 0$ and;

$NDS_i = 0$, otherwise.

where

NDS and NDS^* represent non-disclosure scores and latent variable respectively;

BSIZE represents the total number of directors;

BIND represents the percentage of independent non-executive directors on the board;

BDIV represents the proportion of Malay ethnic directors on the board;

SIZE represents the total sales as a proxy for company size;

AGE represents the duration between the founding date and the IPO date;

LEV represents the book value of total debt divided by the book value of total assets;

UND is a dummy variable equal to one if the IPO engaged one of the top two underwriter firms (based on frequency) in the year of its listing and zero otherwise;

AUD is a dummy variable equal to one if the IPO engaged a BigFour audit firm and zero otherwise;

LISTING is a dummy variable equal to one if the IPO listed in the Mesdaq Market (Note 2) and zero otherwise;

and $e \sim N(0, \sigma^2)$

Alternatively, we can use (arguably more precisely) a Bayesian framework. We can motivate the censored model in a latent variable framework. The latent variable equation from this model can be written in the form:

$$NDS_i^* = \beta_1 + \beta_2 \text{BSIZE}_i + \beta_3 \text{BIND}_i + \beta_4 \text{BDIV}_i + \beta_5 \text{SIZE}_i + \beta_6 \text{AGE}_i + \beta_7 \text{LEV}_i + \beta_8 \text{UND}_i + \beta_9 \text{AUD}_i + \beta_{10} \text{LISTING}_i + e_i \quad (3)$$

for $i = 1, \ldots, N$

where $e \sim f_N(0, h^{-1}I)$ and $h = 1/\sigma^2$ (precision). In the latent framework we do not observe NDS_i^* instead we observe

$$NDS_i = \begin{cases} NDS_i^* \; if \; NDS_i^* > 0 \\ 0 \; if \; NDS_i^* \leq 0 \end{cases}$$

Thus we can model this censored model in a Bayesian framework using a Gibbs algorithm confidently using on the following facts:

if $NDS_i^* > 0$ then $NDS_i^* = NDS_i$

if $NDS_i^* = 0$ then NDS_i^* has the probability density function (pdf)

$$p(NDS_i^* \mid NDS_i^* \leq 0, \boldsymbol{\beta}, h) \propto f_N(NDS_i^* \mid \mathbf{x_i}\boldsymbol{\beta}, h^{-1}) I(NDS_i^* < 0)$$

4. Empirical Analysis

To investigate the determinants of the non-disclosure of IC information in the IPO companies' prospectuses, the descriptive statistics and Tobit regression are discussed in more detail in the next two subsections.

4.1. Descriptive Statistics

The descriptive statistics for the explanatory variables are presented in Table 1. The average number of directors on a board is 6, and approximately 36.3% of board members are independent. The average proportion of Malay ethnic directors on the boards is approximately 20.9%. Total sales as a proxy for company size shows an average amount of RM35.8 million. The average age of companies in the sample is about 2.4 years; the oldest company was 13.9 years old and the youngest 5 months old prior to IPO. The mean leverage in the year of the companies' IPO is 0.41.

4.2. Maximum Likelihood and Bayesian Estimation of Tobit Regression Model

Two different Tobit estimators (i.e., ML and Bayesian estimators) were run to explore the factors influencing the non-disclosure of IC information in IPO prospectuses for selected IPO companies. Table 2 presents the empirical results for the Tobit ML and Bayesian estimations using the non-disclosure score as the dependent variable for the sample companies. For ML results, the log-likelihood ratio test is used to test whether the variables contribute to the fit of the model, which is similar to an F-test in standard regression analysis (Chilingerian, 1995). As shown in Table 2, the result indicates that the ML estimation of the Tobit model is significant at the 5% level and is sufficiently robust (Note 3). However, the Tobit ML estimator is unbiased and efficient, but we do not have adequate knowledge about its properties in finite samples. Therefore, we may need to perform other statistical tests to confirm our ML Tobit estimator.

Bayesian estimation is an alternative approach that provides us with exact finite sample results. We use a Bayesian framework with a non-informative prior to estimate this Tobit regression model. All of the OLS estimates are used as

starting values for a Markov Chain Monte Carlo (MCMC) simulation. The stationarity of the algorithm can be assessed by examining the time paths of the parameters. The time paths of the β parameters are depicted in Figure 1, and all chains seem to be stationary from the first draw. It is interesting that the Bayesian estimates are similar to the ML estimates we reported in Table 2. These similar results do not lead us to favour either the ML or the Bayesian estimation of the Tobit model. Hence, the following discussions will be based on the ML results.

It is important to note that the signs of all coefficients are inverted. Whereas a positive coefficient means a connection with higher non-disclosure levels, a negative coefficient indicates an association with higher disclosure levels. Overall, the results suggest that the factors with the most influence on the level of non-disclosure of IC information are board size, board independence, leverage and listing board. At the same time, board diversity, age, size, underwriter and auditor type do not affect the non-disclosure level.

Previous studies have claimed that larger boards are less effective and have less capacity to monitor the company due to problems of coordination (Eisenberg et al. 1998, Jensen, 1993; Lipton &Lorsh, 1992). The results in Table 2 show that non-disclosure score is negatively related to the size of the board ($p<0.01$). The results imply that having a larger board in an IPO company reduces the company's tendency not to disclose IC information in its prospectus. This is especially true for companies seeking initial listing on the stock market because the supply of IC information provides the means by which IPO companies enhance their competitive advantage in the marketplace (Seetharaman et al., 2002).

The purpose of independent directors is to bring objectivity and clarity to the board, ensuring more effective control of top management (Fama& Jensen, 1983). Hence, the presence of more independent directors will provide the incentive to disclose more voluntary information (Chen &Jaggi, 2000; Cheng & Courtenay, 2006). However, the present study finds that the proportion of INEDs on a company's board is positively associated with its non-disclosure score ($p<0.01$) among IPO companies in the industrial and technology products sectors. A plausible explanation is that many companies will instinctively resist disclosing IC information because of its strategic importance (Vergauwen&Alem, 2005).

Companies with high levels of debt are likely to incur much higher costs of monitoring (Jensen &Meckling, 1976). Hence, managers of companies with high amounts of debt could try to reduce these costs by giving out more information voluntarily in the IPO prospectus as a signal of their favourable financial structure (Ahmed &Courtis, 1999). As in previous studies, leverage and the non-disclosure score of IPO firms are inversely related in all three models ($p<0.01$) in the present study. The results suggest that as a company's debt levels become higher, its propensity of non-disclosure of IC information will decline, implying increased IC disclosures. A possible justification for this finding is that most IPO companies incur substantial primary costs during start-up, which, in turn, lead them to understate both their assets and their earnings. As a result, companies will be motivated to use IC disclosures as a tool for strategic alerts.

In addition, the Tobit regression results revealed that listing board has a positive and significant influence at the 1% level on the IC non-disclosure score. IC is an integral part of companies' value-creating processes by which they enhance their competitive advantage in the marketplace (Seetharaman et al., 2002). However, a company may begin to reduce its level of voluntary disclosure to protect its competitive advantage when it reaches a high level of performance (Williams, 2001).

5. Conclusions

This study provides empirical evidence on the factors affecting the non-disclosure of IC information using the ML and Bayesian of the Tobit regression analysis. A sample of 112 companies that went through an IPO in Bursa Malaysia between 2004 and 2008 were selected for this study. The results provide evidence that board size, board independence, leverage and listing board significantly affect the extent of non-disclosure of IC information in a company's IPO prospectus. Conversely, the study finds no significant association with board diversity, age, size, underwriter and auditor type. The present study contributes to the IC disclosure literature by focusing on the reasons for non-disclosure of IC information in IPO prospectuses. Consistent with the government's aspiration to transform Malaysia into an advanced nation, coupled with the increasing importance of IC to business enterprises for fostering competitive advantage, the findings have significant implications for the development of the IC agenda and reporting in Malaysia. They may also help interested parties such as policy makers and regulators to better understand factors that hinder disclosure of IC information. This, in turn, may increase companies' willingness to measure and report IC resources, thus enhancing transparency and disclosure in the capital market and eventually driving Malaysia forward in the global economy.

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Notes

Note 1. It is important to note that if a disclosure item is stated repeatedly in a prospectus, it was captured once on the scoring sheet.

Note 2. The MESDAQ (Malaysian Exchange of Securities Dealing and Automated Quotation) market of Bursa Malaysia was launched in 1997 to cater for technology-based and/or high-growth companies.

Note 3.The heteroskedasticity has been modeled implicitly in our Tobit regression analysis and therefore the ML estimates are consistent with heteroskedastic errors.

Table 1. Descriptive Statistics

Variables	Mean	Minimum	Maximum	Median	Std. Deviation
BSIZE	6.402	4.000	10.000	6.000	1.455
BIND	0.363	0.250	0.571	0.333	0.063
BDIV	0.209	0.000	0.750	0.167	0.190
SIZE	35.841	1.148	335.646	20.682	45.496
AGE	2.436	0.403	13.904	1.678	2.314
LEV	0.412	0.017	1.521	0.401	0.232

Note: Total observations: n=112

Table 2. Estimated Parameters of the Tobit Regression Analysis

Explanatory Variables	ML Tobit Estimation[a]		Bayesian Tobit Estimation[b]
	β	P-value	Posterior Mean
BSIZE	-0.0923 (0.0246)	0.0002	-0.092 (0.0233)
BIND	3.3438 (0.5044)	0.0000	3.3474 (0.4493)
BDIV	-0.2492 (0.2475)	0.3140	-0.2517 (0.2586)
SIZE	0.0013 (0.0014)	0.3365	0.0013 (0.0014)
AGE	0.0323 (0.0206)	0.1175	0.0330 (0.0207)
LEV	-0.6830 (0.1873)	0.0003	-0.6856 (0.2077)
UND	-0.0108 (0.0911)	0.9053	-0.0118 (0.0963)
AUD	0.1462 (0.0913)	0.1094	0.1469 (0.0986)
LISTING	0.3848 (0.1024)	0.0002	0.3844 (0.1160)
Likelihood Ratio	70.8346 ($p < 0.05$)		

Notes: [a]Totalo bservations: n = 112;[b]sample size: n = 2000; standard errors in parentheses.

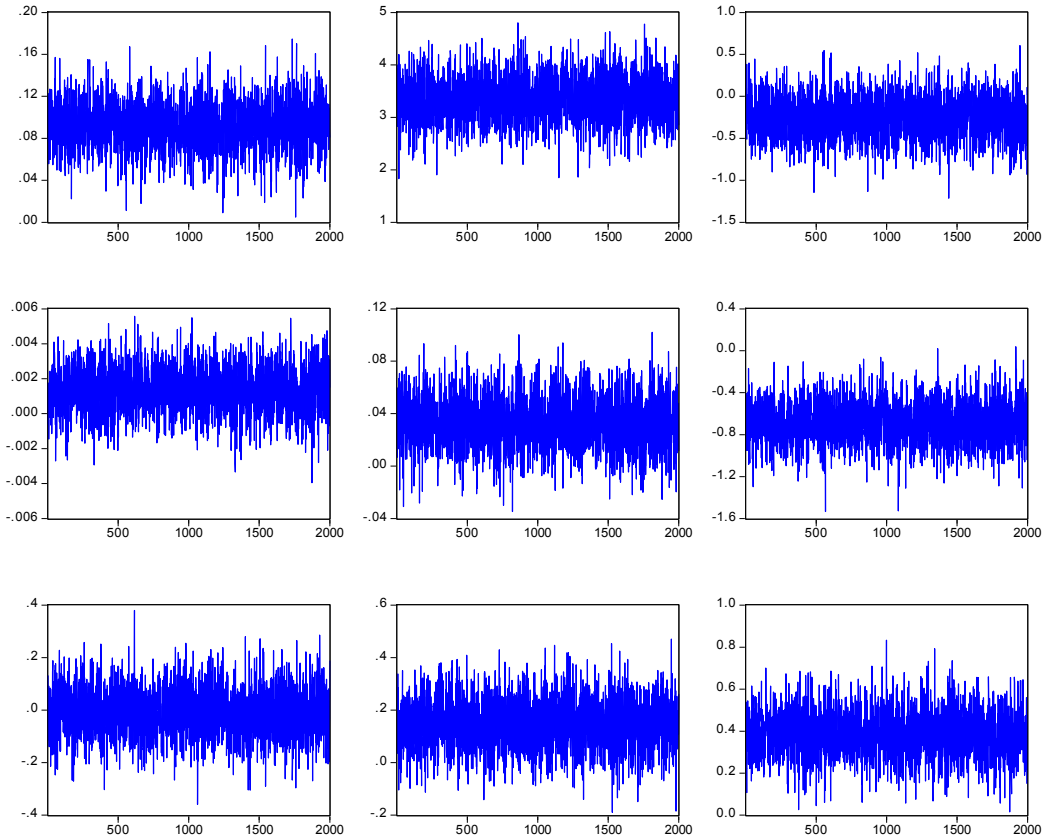

Figure 1. The Markov Chain Monte Carlo (MCMC) for the β_i's