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International Financial Market's Integration and Modelling Returns of Risky Assets

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Abstract

The aim of this paper is to test the ability of conditional and unconditional CAPM models to explain emerging markets returns in terms of their integration into the international market. We use data on 5 developed countries and 5 emerging countries as well as data on the Tunis Stock Exchange (TSE) after the reforms. The results show that the correlations between emerging markets returns and developed markets returns are very low and sometimes negative. Conditional APT (as well as conditional CAPM) has lower predictive power for emerging markets than for developed markets. Finally, following the financial reforms, Tunisian financial markets became more and more integrated to the international market (excess returns and unconditional beta consistent with predictions). However, conditional APT does not accurately explain Tunisian market returns. This study confirms the unavailability of an accurate modelling technique of the Tunis Stock Exchange structure.

Keywords: Conditional, unconditional CAPM, conditional APT, returns

Introduction

As emerging markets follow a snail pace growth process, they represent only a relatively small percentage for developed markets' institutional portfolios. However, these investments have a direct impact on the stock markets of these economies and on their integration into international financial markets. The role of emerging markets in portfolios diversification strategies is now an accomplished fact and all financial institutions are significantly reaching these markets. Likewise, although emerging markets are volatile, they represent important investment opportunities given their high returns potential and their relatively low correlations with developed markets. The correlation between emerging markets and developed ones varies from one region to another and that the possibilities of diversification depends on the region under study. Average correlation of emerging markets – Latin America and World (developed markets) indices went from 27% to 35% between 1988 and 1996, yet the emerging markets-Asia and World indices went from 50% to 35%. Region-wise, correlations between emerging markets and developed markets have evolved greatly. Evaluating stocks traded on the stock markets would be simple if all financial markets operate in a frictionless global market. There would be a full integration of financial markets, which implies that within a CAPM framework, assets would be evaluated by means of their respective beta with the international market portfolio. Many studies applied conditional and unconditional CAPM to evaluate international equities (Harvey, 1991; Solnik and Dumas, 1995; Stulz, 1981). Within emerging stock markets, stocks evaluation is complicated as these markets are not integrated into the international market. It is worth noting that integration is a time-changing process. If these emerging markets, in particular those of the Middle East and

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North Africa, have been till these last years less integrated into the international market, adopting pro-economic liberalisation financial reforms tends to boost integration of these markets into the international market.

The main question to be answered then is in the financial crisis context, whether conditional and unconditional CAPM have power to explain and predict stocks traded on emerging markets and whether this predictive power increases with markets integration? To answer this, we follow the works of Harvey (1993). This paper is structured as follows: the first section reviews the theoretical framework and the studies using the conditional and unconditional CAPM and APT to examine integration. In the second section, we briefly propose the characteristics of the Tunisian financial sector and the main components of the financial reforms undertaken. In the third section, conditional and unconditional CAPM are used to evaluate risky assets traded on the Tunis Stock Exchange as well as on 5 functional markets and 5 emerging markets ultimately to evaluate the models' predictive power. Finally, in the last section we evaluate the risky assets traded on the Tunis Stock Exchange after the 1989 financial reforms and test whether the model's predictive power is higher and whether the integration of the Tunis Stock Exchange is an accomplished fact.

The theoretical and empirical framework

CAPM assumes that an equilibrium stock's expected return rate should be equal to a riskless portfolio's return rate plus a risk premium. If markets are perfectly integrated, stocks with equal risk will have the same expected return rate whatever the market in which they are traded. Several models hypothesized for a perfect integration like Harvey (1991) and Solnik and Dumas (1995). Within emerging markets, there are degrees of integration or segmentation. Errunza and Losk (1985) analysed the impact of investment barriers on prices and portfolio selection within the international capital market. They define a structure where a market is neither perfectly segmented nor integrated. Nath (2003) analyses the effect of financial liberalisation on the integration of the Indian stock market with other developed countries. For this purpose, he compares the National Stock Exchange with six markets including Tokyo and NASDAQ. He analyses the data for daily returns and uses the descriptive statistics of each market for inter country comparisons. He takes the standard deviation from the mean of the daily returns data as the proxy for the degree of integration and concludes that the markets are integrated and move in tandem. Goldstein and Mussa (1993) showed that capital markets of developing countries are more and more integrated with other markets despite a slower progress than developed countries. Bekaert and Harvey (1995) propose a measurement of integration of a market with the rest of the world allowing the description of expected returns of countries that are segmented during a specific period and then integrated in another period. The results show that many emerging markets score degrees of integration that vary in time, although integration of emerging markets is lower than generally assumed. Through a returns-based integration measurement, Bekaert (1995) points that emerging markets have different integration degrees with the American market. The no integration of emerging markets greatly influences the nature of these markets and makes them intrinsically different of functional markets. We can note that macroeconomic conditions in which these markets evolve are very uncertain; return rates are very volatile and show a low and sometimes negative correlation with international market's return rates (Errunza *et al.,* 1993). Flood and Rose (2003) describe a simple methodology to test for asset integration and apply it within and between American stock markets. The technique is based on a general inter-temporal asset-pricing model and relies on estimating and comparing expected risk free rates across assets. Expected risk free rates are allowed to vary freely over time, constrained only by the fact that they are equal across assets. The methodology used here takes into the fact that asset markets are integrated when assets are priced by the same

stochastic discount rate. This model has been applied to stocks drawn from the S&P 500 and the NASDAQ, and the conclusions are that the NASDAQ is usually integrated, the S&P always seems to be integrated and the S&P and the NASDAQ do not seem to be closely integrated. Finally, imperfections characterize more the emerging economies, whether they are external or internal to their financial markets, than functional economies. The importance of these imperfections reflects the hypothesis of investors' expectations homogeneity, an essential hypothesis for CAPM. The imperfections which lie outside the financial market are: the importance of commercial and production distortions under the form of rights to import, taxation or lack of competition between companies. The imperfections peculiar to a financial market are: absence or inefficient functioning of banking institutions, investment intermediaries and the stock exchange, lack of information and restrictions on foreign investors ….. Indeed, the partial elimination of these imperfections, by means of liberalizing the economy and installing financial reforms, increases integration of these markets with the international market. This integration process is true for emerging markets and makes them fit more the use of CAPM models to evaluate traded stocks. This process questions betas stability in time. The main problem of modelling assets returns within emerging markets is that there is no theoretical model for these segmented markets which partially or fully integrates an international model. When integration is partial, this means that the market remains segmented, yet under different degrees of integration. Such complexities are difficult to model. The only models we have like those of Errunza and Losq (1985), Eun and Janakiramanan (1986) are unable to consider such complexities. Te starting of point of portfolio selection theory is the mean-variance model. Since portfolio creation determines the span and variance of its return rate, any assets portfolio may be represented by a point in the mean variance matrix. According to the CAPM model originally developed by Sharpe (1964), Lintner (1965) and Mossin (1966), an asset's expected return rate is determined at market equilibrium by the following equation:

$$E(\tilde{r}_{i,t+1}) = \beta_i E(\tilde{r}_{m,t+1}) \quad \text{…….. (1)}$$

With the coefficient

$$\beta_i = Cov(\tilde{r}_{i,t+1}, \tilde{r}_{m,t+1}) / Var(\tilde{r}_{m,t+1}) et\ \tilde{r}_{i,t+1}, \tilde{r}_{m,t+1}$$

Compared to a riskless asset. Worth noting is that β of a market changes in time and that changes in returns reflect predictable components. Practically, many portfolio managers constantly re-estimate prediction factors of returns while Harvey (1991) and Ferson *and* Harvey (1993) found out that estimated β are subject to a statistically significant time variation. Two asset evaluation models, the conditional CAPM and nonlinear APT, are very interesting for two reasons; (i) they allow β to vary in time, (ii) they preserve the fundamentals of CAPM and APT, i.e. some variables are uniquely needed to explain expected returns. In order to make conditional CAPM operational, Harvey defines a set of projections, mainly:

$$E(\tilde{r}_{i,t+1} | \Omega_t) = Z_t \delta_i \quad \text{…… (2)}$$

and E

$$E(\tilde{r}_{m,t+1} | \Omega_t) = Z_t \delta_m \quad \text{…… (3)}$$

With, $\tilde{r}_{i,t+1}$ denoting an asset's excess returns i à t +1, $\tilde{r}_{m,t+1}$ denotes market return at t+1, Ω_t is an information set, Z_t a set of instruments and vectors, δ_i et δ_m are vectors of stable parameters defining the projections. Then, equation (1) is replaced by:

$$E(\tilde{r}_{i,t+1} | \Omega_t) = \beta_{i,t}\ E(\tilde{r}_{m,t+1} | \Omega_t) \quad \text{……. (4)}$$

Where $\beta_{i,t} = \text{Cov}(\tilde{r}_{i,t+1}, \tilde{r}_{m,t+1} | \Omega_t) / \text{Var}(\tilde{r}_{m,t+1} | \Omega_t)$. We obtain a set of conditions of moments appropriate for GMM

estimation of $\delta = (\delta_1, \delta_2, \ldots \delta_i, \ldots \delta_N)$ et δ_m (Harvey, 1991)

$$E\begin{bmatrix}(\tilde{r}_{t+1} - Z_t\delta)\cdot \\ (\tilde{r}_{m,t+1} - Z_t\delta_m)\cdot \\ (u^2_{m,t+1}Z_t\delta - u_{m,t+1}u_{t+1}Z_t\delta_m)\end{bmatrix} \otimes Z_t = 0 \quad (5)$$

Where

$\tilde{r}_{t+1} = (\tilde{r}_{1,t}, \ldots \tilde{r}_{i,t}, \ldots \tilde{r}_{N,t})$; $u_t = \tilde{r}_t - Z_{t-1}\delta$ et $u_{m,t} = \tilde{r}_{m,t+1} - Z_{t-1}\delta_m$

Harvey estimates a sample of 16 OECD countries over a 20-year period using monthly returns. The used indices are taken from Morgan Stanley database which includes international stock indices. The used instruments are taken from sources similar to those used by Vswanathan *et al.* (1993). Ferson and Korajczyk (1995) studied US risks and returns, using a multiple-factor conditional APT. Moments conditions are more elaborated given the presence of several factors. Ferson and Korajczyk (1995) define the following moment conditions

$$E\begin{bmatrix}\tilde{r}_{i,t+1} - Z_t\sigma_i)\cdot \\ (F_{t+1} - Z_t\gamma_i)\cdot \\ (F_{t+1} - Z_t\gamma_i)(F_{t+1} - Z_t\gamma_i)\beta_i - F_{t+1}(\tilde{r}_{i,t+1} - Z_t\delta_i)\end{bmatrix} \otimes Z_t = 0$$

….6

Where F denotes portfolios returns factor, β is the vector of asset's K betas indexed as i and Z represents the vector of L instruments. This elaborated model has the convenience of separating projection equations from moment conditions containing conditional β used to evaluate assets. In equation (5), the third set of moment conditions has no new parameter and explicitly introduces β. Two sets of risk factors are examined. The first contains economic variables similar to those used by Chen *et al.* (1986) and Ferson *and* Harvey (1993). Five representative econometric variables are selected and fictitious portfolios are created using stocks. The second approach is motivated by previous studies using APT (Connor and Korajczyk, 1989). Conditional CAPM has been applied to evaluate international assets, size-dependent portfolios and term-based change contracts. Harvey (1993) examines CAPM applied to international assets markets, including emerging markets. It has been shown that nonlinear APT is relatively more stable than conditional CAPM and APT. Emerging markets issue will be relatively simple if all financial markets operate in a frictionless global market. This is typically called full integration of financial markets and implies that emerging markets stocks will be evaluated using their betas with international market portfolio. Within a conditional CAPM, this is similar to applying Harvey's model. However, the results, reported in Harvey (1993) are not reliable. Such a fact is predictable since emerging markets are markets which initially closed to international investors and then gradually liberalized. Harvey (1993) shows that international market portfolio has few content predicting local returns. If these markets are perfectly segmented, returns on each market will be evaluated exclusively by local risk factors that have no link with international markets tendencies. Harvey (1993) describes a composite model of the following form:

$$r_i(t) = E\left[\Phi_{i,t} / Z_{t-1}\right] \lambda_w \operatorname{cov}[r_i(t), r_w(t) / Z_{t-1}] +$$
$$[1 - E\left[\Phi_{i,t} / Z_{t-1}\right] \lambda_i Var(r_i(t) / Z_{t-1}) \quad (7)$$

measures degree of integration variation in time. This is about combining a local and an international specification with a mixing process $\Phi_{i,t}$ subject to variations in time. The problem resides in interpreting $\Phi_{i,t}$. Garcia and Ghysels (1996) show that these models have highly unstable parameters, suggesting that modelling the mixing process is inadequate and that the resulting transition dynamic is a false specification of risk. Different segmentation degrees and transition dynamic from a segmented market to an integrated market was difficult to model. The solution consists in accepting the limitations of conditional and unconditional CAPM models, i.e. admitting that their explaining and predictive power is limited while measuring the proportion of expected returns' predictable variations that may be detected by these

models. In order to measure this proportion, Ferson and Harvey (1993) used two variance ratios:

$$V_1 = \frac{V[Z_t\gamma_t\beta_t]}{V[Z_t\delta_t]} \quad (8) \text{ and } V_2 = \frac{V[Z_t\delta_t - (Z_t\gamma_t\beta_t)]}{V[Z_t\delta_t]} \quad (9)$$

Computing $V_1$and V_2 should allow for evaluating the models predictive power and to indirectly clarify the integration issue if we assume that predictive power should increase with integration. We will apply conditional and unconditional CAPM models on 10 functional markets and on 6 emerging markets including the Tunisian stock market. We will test the models predictive power using Ferson and Harvey's (1993) methodology attempting to determine whether this predictive power has increased following the 1989 financial reforms of the Tunisian market.

The institutional environment

The financial sector of many MENA countries is dominated by less developed commercial banks and stock markets. These latter are characterized by a limited stocks offer, a few listed companies and an integration process less advanced than Latin American and Asian countries. Many countries in the region have adopted programs aimed at growth and financial sector liberalization. Tunisia is one of the emerging markets in this region. The financial sector contains the central bank, 13 commercial banks, the treasury, insurance firms and the stock market. The reform of the stock market brought about some changes at the level of the TSE organisation; brokers service conditions, customer protection and fiscal advantages making trading more attractive. This reform has been in place since 1987. A number of measures aiming at economic liberalization and being part of a structural adjustment plan have been implemented since 1990s. These measures include a privatization plan, currency convertibility, and external trade liberalization, fiscal and financial reforms. For Tunisia, the year 1990 can be used as the start date of the financial sector reforms and hence the start of the integration process. The most appealing results of these reforms are the partial liberalization of interest rates, elimination of quantitative credit controls, reinforcement of banking legislation and setting up of a legal framework for the functioning of capital markets. While having been fixed by monetary authorities, creditors or debtors interest rates at result now from the confrontation of those offering and those is demanding liquidity.

Applying conditional and unconditional CAPM

Conditional and unconditional CAPM models are applied to 5 functioning markets and 5 emerging markets including TSE. Data is similar to those used by Harvey (1993) for the developed markets and those of Harvey (1993) for the emerging markets. The first set includes the following countries; Germany, US, France, Italy and Japan. Like Harvey (1993), these countries' indices are created by Morgan and Stanley Capital International (MSCI). The sample covers the 2000-2009 periods. For the emerging countries, we retained Argentina, Brazil, Jordan, Tunisia, and Thailand. These indices are taken from the World Bank and Penn world table base. The results cover the 2000-2009 periods for the emerging and developed countries. Table 1 reports the descriptive statistics in terms of mean, variance and standard deviation of the portfolio returns for each country and of the global portfolio return. Average return for the developed countries during the same period ranges between 16% (Japan) and 5% (Germany), while average return for the emerging countries ranges between 23% (Brazil) and -7% (Argentina). Worth noting is that Tunisia has as well a negative return similar to Argentina during the same period.

Table 2 presents the correlation matrix of the different returns. Emerging markets have common expected returns. Correlation of these markets returns with those of developed markets and with the international market is very low and sometimes negative for some countries. Correlation between developed markets and the international market varies

between 0.47 (Italy and USA) and 0.81 (US), while it varies between 0.02 (Brazil) and 0.25 (Thailand)) for the emerging markets.

Table 3 reports the betas computed using conditional CAPM. For the developed markets, they range from 0.53 (Germany) and 1.058 (Japan). For the emerging markets, the betas are much dispersed, varying between 0.07 (Brazil) and 1.399 (Thailand).

Table 4 reports the results of computing V_1 and V_2 and indicates the models predictive power. We report the results of the conditional APT model as those of conditional CAPM are similar. We have expressed V_1 and V_2 in percentage of (V_1+ V_2) to make the interpretation of the results easier. The results apply to equation (6) with instruments and factors similar to Harvey (1993). It is about a conditional APT model with US market instruments in order to evaluate the predictable proportion of returns for the developed markets as it is detected by the conditional APT. To evaluate the conditional APT, we should analyse the model's predictive power. In Table 4, we note that this power is generally important for the developed markets and that some emerging markets have interesting V_1 and V_2 results. Countries such as Argentina and Thailand have higher V_1 results (more than 50%). For the other countries, V_1 coefficient is very low (Brazil and Jordan).

We will apply unconditional CAPM on the TSE for periods before and after the financial reforms. The aim is to test whether the model's predictive power increase with integration of the Tunisian market into the international market. Table 5 below reports the descriptive statistics, betas and predictive power for the two periods. It is worth noting that the results for the second period are much closer to expectations in terms of risk and returns. We note that β increases from 0,0112 to 0,1994. However, observing VR1 and VR2 coefficients, it is clear that conditional models explain less Tunisian market returns. Still, this market, although significantly better integrated to the international market (increase in β), has become more volatile (increase in variance) and that conditional APT explains only a small portion of this variance.

Conclusion

In this paper, we examined risk and returns for a set of developed and emerging markets. The results are similar to those of Boyer *et al.* (1998) and Harvey (1993) and allowed us to evaluate the performance and emergence of the Tunisian market. Using returns of assets quoted on the TSE, we were able to evaluate financial liberalization and privatization reforms in Tunisia, This country is indeed an emerging one. Our study indicates that Tunisia follows truly the process of international integration. We found out that the unconditional CAPM beta in relation to international returns for the 89-91 period is low, as if the case of a pre-emergence market. Beta estimation over data since the reforms shows a substantial increase. As for the conditional models, we found however a conflicting result as this model predicts less expected returns since the emergence of the TSE. This result, which seems contradictory, shows that conditional CAPM is ill-specified to predict returns, a phenomenon which characterized the developed markets in the works of Ghysels (1997). Our study confirms that there is yet no efficient modelling technique of the structure of the TSE.

References

Bekaert, G. (1995). Market integration and investment barriers in emerging equity markets. *World Bank Economic Review*, 9, 75-107.

Bekaert, G., & Harvey, C. (1995). Time varying world market integration. *Journal of Finance*, 50, 403-444.

Boyer, M., Cherkaoui, M., & Ghysels, E. (1998). The integration of emerging markets and yield modeling of risky assets. *Applied Econometric*, 311-330.

Chen, N., Roll, R., & Ross, S. (1986). Economic forces and the stock market. *Journal of Business*, 59, 373-392.

Connor, G., & Korajczyk, R. A. (1989). An intertemporal beta pricing model. *Review of Financial Studies*, 2, 383-403.

Errunza, V. R., Diwan, I., & Senbet L. (1993). country funds for emerging economies world bank, discussion paper no. 228.

Errunza, V., & Losq, E. (1985). International assets pricing under mild segmentation: Theory and test. *Journal of Finance*, 40, 105- 124.

Eun, C., & Janakiramanan, S. (1986). A model of international asset pricing with a constraint on the foreign equity ownership. Journal of finance 41, 1015-1124.

Ferson, E. W., & Harvey, C. R. (1993). The risk and predictability of international equity returns. *Review of Financial Studies*, 6, 527-566.

Ferson, W. E., & Korajczyk, R. A. (1995). Do arbitrage pricing models explain the predictability of stock returns?. *Journal of Business*, 68(3), 309-49.

Flood, R. P., & Rose, A. K. (2003). *Financial integration: a new methodology and an illustration*. NBER Working Papers 9880, National Bureau of Economic Research, Inc.

Garcia, R., & Ghysels, E. (1996). *Structural change and asset pricing in emerging markets*. Discussion Paper CIRANO, 96s.

Ghysels, R. (1997). Stable factor structures in pricing of risk: do time varying betas help or hurt? Journal of finance, 53, 549-573.

Goldstein, M., & Mussa, M. (1993). *The integration of world capital markets*. IMF Working Papers 93/95, International Monetary Fund.

Harvey, C. (1991). The world price of covariance risk. *Journal of Finance*, 46, 111-157.

Harvey, C. R. (1993). *Predictible risk and returns in emerging markets.* The Review ... the Experience in Chile, Indonesia, Korea and Thailand, IMF Working Paper.

Lintner, J. (1965). The valuation of risk assets on the selection of risky investments in stock portfolios and capital budgets. *Review of Economics and Statistics*, 47, 13-37.

Mossin, J. (1966). Equilibrium in a capital asset market. *Econometrica*, 34, 261-276.

Nath, G. C. (2003). *Integration of global equity markets-A case study for India National Stock Exchange*. Accessed on 26 September 2003 at http://www.nse-india.com/content/press/nov2002c.pdf.

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance*, 19, 425-442.

Solnik, B., & Dumas, B. (1995). The world price of exchange rate risk. *Journal of Finance*, 50, 445-480.

Stulz, R. (1981). A model of international assets pricing. *Journal of Financial Economics*, 9, 383-406.

Vswanathan, S., Basnal, R., & Hsieh, D., (1993). A new approach to international arbitrage pricing theory. *Journal of Finance*, 48, 1719-1747.

Appendix

Table 1: Descriptive statistics: assets return

	Mean	Variance	Standard deviation
World	0.086	0.0016	0.04
Developed markets			
Germany	0.05	0.0033	0.057
USA	0.068	0.0019	0.043
France	0.069	0.0055	0.074
Italy	0.123	0.0062	0.078
Japan	0.162	0.0039	0.062
Emerging markets			
Argentina	-0.071	0.0498	0.223
Brasil	0.23	0.0311	0.176
Jordanie	0.145	0.007	0.083
Tunisia	-0.019	0.0004	0.02
Thailand	0.104	0.0038	0.061

Table 2: Correlation return matrix: (2000- 2009)

	World	Ger	USA	FR	ITA	JPN
World	1	0.49	0.81	0.59	0.47	O.61
Ger		1	0.29	0.62	0.33	0.34
USA			1	0.44	0.22	0.23
FR				1	0.44	0.42
ITA					1	0.42
JPN						1

World	ARG	BRE	JOR	TUN	THAI
	0.06	0.02	0.11	0.04	0.25
GER	0.08	0.06	0.04	0.03	0.09
USA	0.05	0.01	0.07	0.02	0.22
FR	0.05	-0.01	-0.03	0.04	0.12
ITA	0.03	0.07	0.03	-0.04	0.00
JPN	0.05	-0.05	0.16	0.03	0.02

	ARG	BRE	JOR	TUN	THAI
ARG	1	0.06	0.02	-0.01	-0.01
BRE		1	0.07	-0.02	-0.04
JOR			1	0.17	-0.06
TUN				1	0.11
THAI					1

Table 3: Estimation of beta with conditional CAPM (2000- 2009)

Country	Beta	Standard deviation
Developed countries		
Germany	0.53	(0.3420)
USA	1.008	(0.1523)
France	0.54	(0.3225)
Italy	0.65	(0.2712)

Japan	1.058	(0.2188)
Emerging markets		
Argentina	11.075	(0.8865)
Brazil	0.07	-10.430
Jordan	0.428	(0.4766)
Tunisia	0.246	(0.1096)
Thailand	1.399	(0.4190)

Table 4: Measure of VR1 and VR2 for conditional APT (%)

	VR1	**VR2**
Developed countries		
Germany	0.34	0.57
USA	0.66	0.19
France	0.27	0.65
Italy	0.35	0.55
Japan	0.77	0.22
Emerging markets		
Argentina	0.68	0.33
Brazil	0.04	0.91
Jordan	0.01	0.98
Tunisia (1989-1991)	0.16	0.79
Tunisia (1991-2009)	0.07	0.93
Thailand	0.66	0.39

Table 5: TSE

	Période 1 (1989- 1991)	**Période 2 (1991- 2009)**
Mean	0.0102	0.0241
Variance	0.0005	0.0172
Standard deviation	0.0193	0.1258
non conditional *b*	0.0112	0.1994
(conditional model)		
VR1	0.37	0.02
VR2	0.49	0.89