UNIVERSITÀ POLITECNICA DELLE MARCHE

DIPARTIMENTO DI ECONOMIA

INVESTORS' BEHAVIOUR IN THE CHINESE STOCK EXCHANGES: EMPIRICAL EVIDENCE IN A SYSTEMIC APPROACH

Caterina Lucarelli Giulio Palomba

QUADERNI DI RICERCA n. 297

Settembre 2007

Abstract

This paper investigates the Chinese mainland Stock Exchanges and their following interconnecting features: savers' attitude towards stock investments, investors' trading behaviour and stock returns explanations. We evaluate the effectiveness of the recent efforts made by the Chinese authorities to improve the level of legal protections for shareholders and the opening-up of the Chinese Stock Markets to foreign investors. The whole analysis is carried out through a system of simultaneous equations. The main results are that Chinese shareholders and stock markets are mostly driven by emotional behaviour. Stock market returns are barely influenced by the overall chinese economic booming, but reveal the presence of speculative influences. Investors' behaviour, as well as general trading activities, hardly seems to be affected by the legal framework introduced by the national Authorities.

JEL Class.: C30, F30, G18

Keywords: Chinese Stock Exchanges, shareholders' rights, corporate governance, investors' behaviour, system of simultaneous equations.

Indirizzo: Dipartimento di Economia, Università Politecnica delle Marche, Piazzale Martelli n. 8, I-60121 Ancona, Italy. *c.lucarelli@univpm.it* (corresponding author), *g.palomba@univpm.it*

Investors' Behaviour in the Chinese Stock Exchanges: Empirical Evidence in a Systemic Approach*

Caterina Lucarelli *Giulio Palomba*

1 Introduction

This article aims to describe the interconnecting features of the Chinese Stock Exchanges using a systematic approach. The various characteristics of a stock market interact with each other, giving rise to a series of complex relationships. It has been shown that the increase in the number of stock investment accounts may depend upon the level of the stock market returns, as well as the level of trust that savers place upon share investment (La Porta *et al.*, 2002). At the same time, this "trust" also influences stock trading volumes, that are clearly affected by the evolution of stock investment accounts.

These simple examples point to the complexities that we have to deal with when drawing up such a unique market scenario such as that for the Chinese Stock Exchanges. In fact, as far as the mainland stock markets are concerned, we have to consider two different Stock Exchanges, the Shanghai Stock Exchange (hereafter SHSE) and the Shenghen Stock Exchange (hereafter SZSE), as well as two sub-set of shares, *A*-shares and *B*-shares.

The *A*-share markets have traditionally been available for Chinese savers only, and the access of foreigners only allowed under the strict control of the Chinese Authorities, according to the "Qualified Foreign Institutional Investor-QFII" formula of 2002. The *B*-share markets, on the other hand, are specific for foreigner investments, even if they have been open to the Chinese citizens since the beginning of 2001. Moreover, since 1999, the Chinese Authorities have been promoting a reshaping of the national stock market regulatory framework, involving considerable changes that would improve the savers legal rights system and widen the number of shareholders in favour of foreign investors (CSRC, 2003, 2004 and 2005).

* *A preliminary version of this paper won the "Best Paper Award" the* 5^{th} International Business Research Conference *held in Dubai, United Emirates on April 26-27*th*, 2007. We are very grateful to Jack Lucchetti, Alberto Niccoli and Gian Mario Raggetti for their comments and suggestions, without implicating them for errors.*

The chinese stock markets provide good investor opportunities due to the large number of potential investors and to the fast increase of per capita income as seen over the last few years. The average growth rate for wages is above 13% and the saving rate is at almost 40% (Source: National Bureau of Statistics of China). The overall positive attitude of the Chinese towards stock investments should also to be taken into consideration, despite the historical "ideological bias" related to the fact that, until November 2002 (and the 16^{th} Chinese Communist Party Congress), any income from holding stocks would not have been approved. Given the abundance of savings, stock investments may also be stimulated by the lack of the attractiveness of alternative investment opportunities, such as bonds, real estate or bank deposits. Even if bond investments remain attractive to chinese savers, other more remunerative opportunities for investments may still arise. In fact, since 2000, many chinese households have intensified the level of their investment in both residential buildings and economical housing; although recent indications suggest that they may be afraid of a speculative real estate bubble. Regarding bank deposits, the People's Bank of China (PBoC) sources reveal that the percentage rate of Household Savings Deposits grew from 7% in 2000 to 16% in 2002. Even if wages and saving rates are still steadily increasing, the upward trend of this rate surprisingly turned upside down in 2004, dropping to 9%. Hence, we may argue that those savings are (or may be "emotionally") attractive for stock investments opportunities.

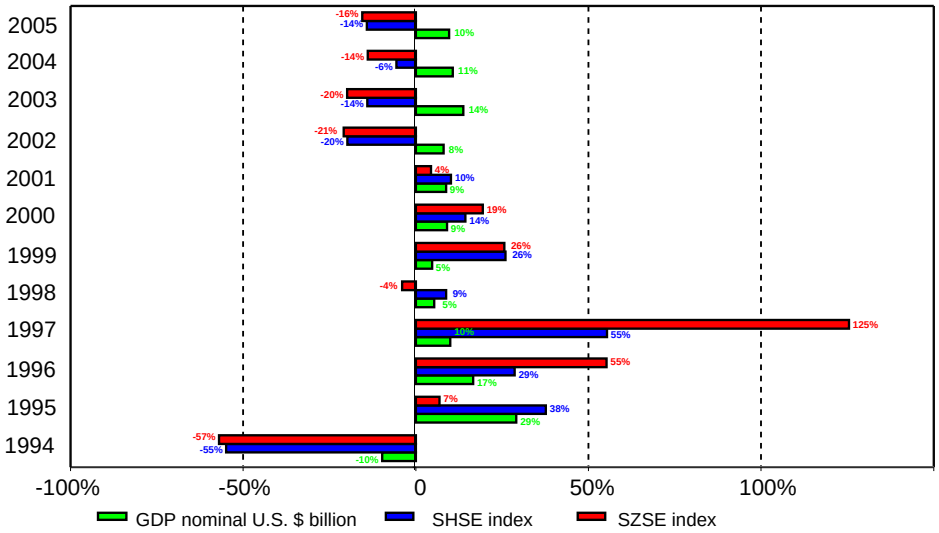
Furthermore, the free-floating of Chinese shares is very low compared to Western standards (on average 30% of the total shares issued). A full two-thirds of the Chinese stock market capitalisation is still tied up in non-tradable or "legal person" shares held by state controlled entities[1]. This is due to historical and political reasons of the chinese stock markets' growth that were related to the partial sell-off of the State Owned Enterprise (SOEs) capital shares. In fact, the Initial Public Offers (IPOs) and raising funds operations are under strict political control (Chen, 2003). This may explain the strong divergence between the Chinese GDP development and the stock index performances. In fact, until 2001, as the GDP grew, the stock markets' trends were positive, while as it decreased, their trends were bearish (see Figure 1). This positive relationship is traditionally expected, as a general phenomenon of a virtuous interrelationship between financial and economic development[2].

As a consequence, the more an economy grows, the more the listed companies, which should have contributed to such growth, would increase their market value. On the contrary, starting from 2002, the stock markets indexes have shrunk, although the Chinese GDP has maintained a steady

[1]See Weber (2004) and CSRC (2003, 2004 and 2005).

[2]See King and Levine (1993), Demirguc-Kunt and Levine (1996), Levine (1996), Beck *et al.* (2000), Levine and Loayza (2000), Baier *et al.* (2003).

Figure 1: Chinese Stock Exchanges vs. chinese GDP - percentage changes



Source: DATSTREAM

growth. This may be related to the fact that the major part of the stock markets (almost 80%) refers to big and not particularly efficient SOEs, that have been listed by the chinese government in order to settle financial troubles (Chen, 2003). We could argue that the companies responsible for the chinese development are unlikely to be listed in the chinese stock markets.

An important remark is that since 2001, the Chinese Authorities have been promoting the reshaping of the national stock market regulatory framework, with considerable efforts for both improving the saver legal rights system and widening the shareholders' base in favour of foreign investors.

Specifically, we model the Chinese market dynamics with a system of simultaneous equations in order to identify and quantify the level of influence that interacting features have upon the following variables:

- investors' number in terms of stock investment accounts in both the SHSE and the SZSE markets;
- trading volumes, in terms of deals concluded, in both the SHSE and the SZSE markets;
- stock market returns, which represent the performances of the Shanghai and the Shenghen stock indexes.

Moreover, we insert different dummy variables, representing the regulatory interventions enforced in the Chinese Stock Exchanges, in order to test

whether these efforts have really been effective in improving and developing the national stock markets. This paper is organized as follows: section 2 consists of a short review of the literature concerning shareholder rights protection system and the main features of the chinese stock markets, while in Section 3 we carry out the empirical analysis to model the relationship mentioned above. Section 4 summarizes the main results provided by the model estimation and section 5 concludes.

2 Literature review

The protection of shareholder rights is generally related to a system of corporate governance of a country. Literature has focused on how the legal framework influences the financial development of a country, and it has been asserted that it is important to fully understand the patterns of financial development for different countries[3].

According to La Porta *et al.* (2000), corporate governance can be considered as "a set of mechanisms through which outside investors protect themselves against expropriation by the insiders". But chinese corporate governance, in practice, is very different from this view; the chinese corporate governance reform, started with the Company Law of 1994, was designed to primarily address problems within the State sector and, in particular, to reform traditional State-owned enterprises and their inefficiencies. The key issue relies upon the State policy of maintaining a full or controlling ownership interest in enterprises with different sectors (Clarke, 2003). To reach a paradox, it could mean that chinese corporate governance is a set of mechanisms through which the main inside investor (the State) protects itself against expropriation by outsiders. Thus, with such a weak corporate governance system, such strong implicit contracts and the insecurity of property rights, as characterised by the Chinese legal framework of the 90s and the beginning of the 00s[4], the whole and effective fulfilment of a shareholders' legal protection system has not yet been achieved. The literature does confirm the limited protection of minority rights in Asia, that allows controlling shareholders to expropriate minority shareholders (Claessens and Fan, 2002).

However, the Chinese Authorities are aware of the urgency for improving the legal system for savers' rights and for widening the shareholders' base, especially in order to foster the opening up of the financial system (and Stock Exchanges) to foreign investors. Indeed, specific rules for corporate governance for listed companies have been systematically issued since 1999 (more than 300 regulatory acts)[5].

[3]See Shleifer and Vishny (1997), Demirguc-Kunt and Maksimovic (1998) and La Porta *et al.* (2000).

[4]See Allen *et al.* (2005) and Lin (2004).

[5]For example, on August 16^{th} 2001, the China Securities Regulatory Commission

All this regulatory activity explains the purpose of our article, that is to check whether this new set of rules has been significantly affecting shareholders' behaviour.

3 Methodology and Research Design

3.1 Data

The dataset used in this approach is given by a sample of 93 monthly observations taken from a period that goes from January 1999 to September 2006. The source for data is the Thompson DataStream archives. Table 1 shows a detailed list of all available variables and the corresponding derived variables that enter the model. The SHSE and the SZSE are simply named as market 1 and market 2, while A and B indicate the A-shares and B-shares respectively. The derived series are obtained by using 100 times the log difference transformation. This was used for two reasons: firstly, this is a useful approximation of the percentage variations of time series, and secondly, it avoids any problems due to the presence of nonstationary variables. For example, we express the shares returns at time t as $r_{ij,t} = 100 \cdot [\ln(P_{ij,t}) - \ln(P_{ij,t-1})]$, where $i = A, B$ (shares), $j = 1, 2$ (markets) and $P_{ij,t}$ is the share price at time t.

The variance time series are obtained by exploiting the daily data for A- and B-share returns via the equation

$$\sigma_{ijk} = \frac{1}{T_k} \sum_{t=1}^{T_k} (R_{ijk,t} - \bar{R}_{ijk})^2, \tag{1}$$

where T_k is the sample size at month k, $R_{ijk,t}$ is the daily return at time t, and $\bar{R}_{ijk}$ is the average return for the share i and the market j in the k-th month.

Moreover, all the endogenous variables in Table 1 were previously filtered in order to avoid seasonality; the main assumption here is that all the seasonal patterns can be modelled using deterministic seasonal dummies, thus time series that enter the model are obtained as residuals of an OLS estimation. Table 2 contains the complete list of the regulatory dummies considered in our analysis.

(CSRC) promulgated the "Guidelines for Establishing Independent Directors of Listed Companies" to provide guidance concerning the independent directors in listed companies. On January 7^{th} 2002, the CSRC and the State Economic and Trade Commission jointly issued the "Code of Corporate Governance for Listed Companies" which outlines the fundamental principles of corporate governance for listed companies. These principles ensure a basic level of investor protection, as well as codes of conduct and ethical standards for managers of listed companies (CSRC, 2004).

Table 1: Variable description

series	**Description**	**Derived series**
	Endogenous Variables	
y_{A1}	A-share investors' number - Shanghai	$i_{A1} = 100 \cdot [\ln y_{A1} - \ln y_{A1}(-1)]$
y_{A2}	A-share investors' number - Shenghen	$i_{A2} = 100 \cdot [\ln y_{A2} - \ln y_{A2}(-1)]$
y_{B1}	B-share investors' number - Shanghai	$i_{B1} = 100 \cdot [\ln y_{B1} - \ln y_{B1}(-1)]$
y_{B2}	B-share investors' number - Shenghen	$i_{B2} = 100 \cdot [\ln y_{B2} - \ln y_{B2}(-1)]$
V_{A1}	A-share trading volume - Shanghai	$v_{A1} = 100 \cdot [\ln V_{A1} - \ln V_{A1}(-1)]$
V_{A2}	A-share trading volume - Shenghen	$v_{A2} = 100 \cdot [\ln V_{A2} - \ln V_{A2}(-1)]$
V_{B1}	B-share trading volume - Shanghai	$v_{B1} = 100 \cdot [\ln V_{B1} - \ln V_{B1}(-1)]$
V_{B2}	B-share trading volume - Shenghen	$v_{B2} = 100 \cdot [\ln V_{B2} - \ln V_{B2}(-1)]$
$A1$	A-share price index return - Shanghai	$r_{A1} = 100 \cdot [\ln A1 - \ln A1(-1)]$
$A2$	A-share price index return - Shenghen	$r_{A2} = 100 \cdot [\ln A2 - \ln A2(-1)]$
$B1$	B-share price index return - Shanghai	$r_{B1} = 100 \cdot [\ln B1 - \ln B1(-1)]$
$B2$	B-share price index return - Shenghen	$r_{B2} = 100 \cdot [\ln B2 - \ln B2(-1)]$
	Exogenous Variables (instruments)	
	A-share lagged investors' number - Shanghai	$i_{A1}(-1)$, $i_{A1}(-2)$
	A-share lagged investors' number - Shenghen	$i_{A2}(-1)$
	B-share lagged investors' number - Shanghai	$i_{B1}(-1)$, $i_{B1}(-2)$
	B-share lagged investors' number - Shenghen	$i_{B2}(-1)$, $i_{B2}(-2)$
	A-share lagged trading volume - Shanghai	$v_{A1}(-1)$
	A-share lagged trading volume - Shenghen	$v_{A2}(-1)$, $v_{A2}(-2)$
	B-share lagged trading volume - Shanghai	$v_{B1}(-1)$, $v_{B1}(-2)$
	B-share lagged trading volume - Shenghen	$v_{B2}(-1)$, $v_{B2}(-2)$, $v_{B2}(-3)$
W_{A1}	A-share weighted average P/E ratio - Shanghai	$w_{A1} = 100 \cdot [\ln W_{A1} - \ln W_{A1}(-1)]$
W_{A2}	A-share weighted average P/E ratio - Shenghen	$w_{A2} = 100 \cdot [\ln W_{A2} - \ln W_{A2}(-1)]$
W_{B1}	B-share weighted average P/E ratio - Shanghai	$w_{B1} = 100 \cdot [\ln W_{B1} - \ln W_{B1}(-1)]$
W_{B2}	B-share weighted average P/E ratio - Shenghen	$w_{B2} = 100 \cdot [\ln W_{B2} - \ln W_{B2}(-1)]$
MV_{A1}	A-share market value - Shanghai	$c_{A1} = 100 \cdot [\ln MV_{A1} - \ln MV_{A1}(-1)] - r_{A1}$
MV_{A2}	A-share market value - Shenghen	$c_{A2} = 100 \cdot [\ln MV_{A2} - \ln MV_{A2}(-1)] - r_{A2}$
MV_{B1}	B-share market value - Shanghai	$c_{B1} = 100 \cdot [\ln MV_{B1} - \ln MV_{B1}(-1)] - r_{B1}$
MV_{B2}	B-share market value - Shenghen	$c_{B2} = 100 \cdot [\ln MV_{B2} - \ln MV_{B2}(-1)] - r_{B2}$
R_{A1}	A-share price index *daily* return - Shanghai	σ_{A1} = see equation (1)
R_{A2}	A-share price index *daily* return - Shenghen	σ_{A2} = see equation (1)
R_{B1}	B-share price index *daily* return - Shanghai	σ_{B1} = see equation (1)
R_{B2}	B-share price index *daily* return - Shenghen	σ_{B2} = see equation (1)
SP	S&P monthly composite index	$r_{SP} = 100 \cdot [\ln SP - \ln SP(-1)]$

Source: DATASTREAM

Table 2: Regulatory dummy description

Date	**Dummy**	**Regulatory event**
1999:07	*seclaw*	PRC Security Law
2001:02	*opchi*	Notice regarding *B*-share investment by chinese citizens
2001:09	*indir*	Guidelines for estabilishing independent directors for listed companies
2002:01	*cgov*	Code of corporate governance for listed companies, Delisting procedures became effective
2002:12	$qfii$	Qualified Foreign Istitutional Investors (QFII) scheme
2003:12	*ipospon*	Interim measures on the sponsor system for securities public offering
2004:02	*prodev*	Guidelines on promoting reform, opening-up and steady development of chinese capital market
2004:12	*intprot*	Rules of strengthening protection of private shareholders' rights and interests, Circular on several issues of the initial public offering book-building pricing system
2005:05	*ipores*	IPO procedures resumption, Extensible Business Report Language for information disclosure of listed companies

Source: CSRC (2003, 2004 and 2005)

3.2 The model

The model consists of a standard system of simultaneous equations, whose structural form at time t is

$$B'y_t = \mu + \Gamma' x_t + \varepsilon_t, \tag{2}$$

where y_t is an n-dimensional vector including all the endogenous variables, x_t is a k-dimensional vector with all the exogenous variables in which the dummy variables are included, $\varepsilon_t \sim i.i.d.(0, \Sigma)$ is the vector of error terms and μ is the vector of constant terms. The matrices B' and Γ' contain respectively $(n \times n)$ and $(n \times k)$ coefficients. In this model $n = 12$ and $k = 32$; thus, considering the triple (B, Γ, Σ) and the vector of constants μ, the total amount of parameters is $n + n(n + k) + 0.5n(n + 1) = 554$.

Hence, the main problem with this kind of model is the imposition of restrictions in order to achieve identification of the system. The solution is provided by two sets of constraints; on one hand, the financial markets and economic theory suggest the use of some exclusion constraints, thus some variables are restricted to be zero in some equations. On the other hand, the diagonal of the matrix B' is imposed to be a n-dimensional vector of ones. This set of normalization restrictions is useful for expressing each element of y_t as a function of the other endogenous variables and of all the exogenous variables. Finally, in our model cross-equations restrictions are not set and this allows us to estimate the model equation by equation.

Given that

$$y_t = [\ i_{A1} \quad i_{A2} \quad i_{B1} \quad i_{B2} \quad v_{A1} \quad v_{A2} \quad v_{B1} \quad v_{B2} \quad r_{A1} \quad r_{A2} \quad r_{B1} \quad r_{B2}\ ]',$$

the system substantially consists of three blocks of four equations, taking markets A- and B-shares into account; in the first block the dependent variables are the changes in the number of stock investment accounts, in the second block the dependent variables are the variations in volumes and the third block is related to returns. Tables 3, 4 and 5 show all the estimated equations in the system.

From the structural form of equation (2), the identification process requires that both the order condition and the rank condition, should be satisfied; the first is a necessary, but generally not sufficient condition and it necessitates that in each equation the number of excluded explanatory variables should be at least as great as the number of the included endogenous variables. The rank condition is a sufficient condition for identification which takes the equation $\Pi B = \Gamma$ into account, where Π' is taken from the reduced form of equation (2)

$$y_t = c + \Pi' x_t + u_t, \tag{3}$$

where $c = (B')^{-1}\mu$, $\Pi' = (B')^{-1}\Gamma'$ and $u_t = (B')^{-1}\varepsilon_t$. The rank condition is satisfied if the restrictions imposed upon the structural form allow one to

express any condition in terms of both the parameters belonging to (B, Γ, Σ) and the parameters of the reduced form (Π, Ω), with $\Omega = Var(u_t)$ and $u_t = (B')^{-1}\varepsilon_t$ (see for example Davidson and MacKinnon, 1993).

Given the great number of explanatory variables (or instruments), the order condition is very easy to test in our model, and the set of constraints imposed to the coefficients guarantees that the rank condition is also satisfied.

3.3 Estimation

Tables 3, 4 and 5 report the estimates of our system obtained using both the Two Stages Least Squares (2SLS) and the Three Stages Least Squares (3SLS) estimators. Some standard useful diagnostics, such as the Hausman specification test, the Sargan overidentifying restrictions test, the Godfrey test for autocorrelation and the normaliy test by Jarque-Bera tests, are computed. The degrees of freedom of the chi-squared test statistic are provided in parenthesis for the former two tests, while for the autocorrelation and the normality tests they are fixed to 3 and 2 respectively[6].

The 2SLS estimator was chosen for both theoretical and practical reasons. First of all, this estimator provides consistent and asymptotic normally distributed estimates and it is the most efficient instrumental variables equation-by-equation estimator given the assumption that the data generating process is a system of simultaneous equations (Sargan, 1988). Second, this method is not different from the instrumental variables equation-by-equation estimation therefore, if an error of misspecification occurs in one equation, it does not affect the others. Moreover, each equation is not affected by the overidentifying restrictions of the other equations. The use of the 3SLS estimator especially depends upon practical reasons; even if this method improves efficiency under the assumption of a well specified system. Tables 3, 4 and 5 show that its results are very similar to those provided by 2SLS. Finally, 2SLS and 3SLS are closed-form estimators; hence they do not require any numerical algorithm to achieve convergence.

In the literature regarding the systems of simultaneous equations, alternative estimation methods exist, such as the Limited Information Maximum Likelihood (LIML) or the Full Information Maximum Likelihood (FIML) methods. Even if these estimators have the usual properties of the ML estimators[7], they do not have closed-form solutions, they strictly depend on the assumptions regarding the density function of ε_t, and they often fail to achieve convergence, especially for finite samples with a small number of observations. Moreover, the results from the Jarque-Bera test often show a rejection of the normality hypothesis and this supports this choice.

[6]For all the equations of the system, the Godfrey test is always performed with 3 lags. For a detailed review of these tests see for example Davidson and MacKinnon (1993).

[7]Consistency, asymptotic normality and invariance to monotonic transformations.

4 Discussion of Findings

Tables 3, 4 and 5 summarize the whole analysis, with the equation by equation estimates using both the 2SLS and 3SLS methods. The main statistical findings are:

- the estimation output of 2SLS does not substantially differ from those of 3SLS. This enforces the evidence that our results do not substantially depend upon the estimation method;
- in some cases endogeneity is relevant as pointed out by the Hausman test in which the null hypothesis is often rejected: this confirms that the use of the instrumental variables estimator is often required;
- the Sargan test shows the validity of the instruments used. With a confidence level of 5% the only exception is given by equation 11, but the null hypothesis was not strongly rejected (the p-value is 0.0130);
- the Godfrey test always accepted the null of incorrelated residuals[8];
- the normality of residuals is often rejected and this supports the idea of avoiding estimation via ML estimators;
- the Sargan test performed in the 3SLS estimation provided the following results:
  - Test statistic = 311.340
  - p-value = 0.0704 (critical value from a χ^2_{276} distribution).

  This confirms the validity of all the instruments used.

4.1 Investors' number

The following series of findings were identified as relevant from Table 3.

Wave-effects: chinese savers' behaviour generates waves of stock account subscriptions, characterized by a yearly seasonality, as proved by our preliminarily tests. Moreover, imitative behaviour is relevant: the variations in stock account subscriptions were correlated between the two Stock Exchanges, and frequently between the two segments of shares (A and B). The stronger interconnections are relevant between the A-shares segments; A-share investors are influenced by B-share investors' choices, while the opposite is less true. Nevertheless, the influence of emotional waves may also be confirmed for B-investors, given the positive effect of the S&P performances on the SZSE B-shares investors' number;

[8] The only exception is equation 6, but the p-value of 0.0476 highlights that the rejection of the null hypothesis is weak.

Table 3: Investors' number

Equation 1 - Dependent variable: i_{A1}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_1	-0.4881	0.0556	-8.7768	0.0000***	-0.4471	0.0502	-8.8979	0.0000***
i_{A2}	0.3093	0.0837	3.6952	0.0002***	0.3854	0.0753	5.1212	0.0000***
i_{B1}	0.0045	0.0024	1.9070	0.0565*	0.0046	0.0021	2.1300	0.0332**
r_{A1}	-0.0099	0.0044	-2.2356	0.0254**	-0.0118	0.0040	-2.9320	0.0034***
$i_{A1}(-1)$	0.1620	0.0559	2.8999	0.0037***	0.1446	0.0479	3.0178	0.0026***
$i_{A2}(-1)$	0.5673	0.0823	6.8972	0.0000***	0.5206	0.0710	7.3349	0.0000***
r_{SP}	0.0061	0.0067	0.9192	0.3580	0.0018	0.0062	0.2833	0.7770
Hausman test (3)		7.0408	p-value	0.0706				
Sargan test (26)		25.5065	p-value	0.4905				
Godfrey test		3.7973	p-value	0.2842				
Jarque-Bera test		1.4157	p-value	0.4927				
Equation 2 - Dependent variable: i_{A2}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_2	0.1052	0.0798	1.3194	0.1870	0.1378	0.0712	1.9349	0.0530*
i_{A1}	0.9687	0.1020	9.4942	0.0000***	1.0054	0.0914	10.9945	0.0000***
i_{B2}	0.0065	0.0055	1.1852	0.2360	0.0072	0.0044	1.6321	0.1027
r_{A2}	0.0263	0.0054	4.9078	0.0000***	0.0251	0.0050	5.0502	0.0000***
$i_{A1}(-1)$	-0.2870	0.1199	-2.3944	0.0167**	-0.2980	0.1030	-2.8924	0.0038***
$i_{A1}(-2)$	0.1850	0.0884	2.0928	0.0364**	0.1511	0.0705	2.1445	0.0320**
$i_{B2}(-1)$	-0.0132	0.0050	-2.6302	0.0085***	-0.0122	0.0044	-2.7912	0.0053***
r_{SP}	0.0075	0.0101	0.7385	0.4602	0.0073	0.0094	0.7779	0.4366
ipores	0.6343	0.3555	1.7844	0.0744*	0.2927	0.2809	1.0418	0.2975
Hausman test (3)		2.9150	p-value	0.4049				
Sargan test (24)		34.1913	p-value	0.0813				
Godfrey test		3.7865	p-value	0.2855				
Jarque-Bera test		17.0770	p-value	0.0002				
Equation 3 - Dependent variable: i_{B1}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_3	-2.0807	0.3570	-5.8283	0.0000***	-2.1376	0.3238	-6.6006	0.0000***
i_{A1}	0.4462	0.4952	0.9011	0.3676	0.3625	0.3988	0.9088	0.3635
i_{B2}	0.0384	0.0462	0.8312	0.4059	0.0363	0.0400	0.9066	0.3646
r_{B1}	-0.0186	0.0329	-0.5653	0.5718	-0.0122	0.0292	-0.4174	0.6764
$i_{B1}(-1)$	0.7368	0.2641	2.7899	0.0053***	0.7886	0.2037	3.8720	0.0001***
$i_{B1}(-2)$	0.1422	0.0492	2.8902	0.0039***	0.1613	0.0379	4.2506	0.0000***
$i_{B2}(-1)$	1.2114	0.0480	25.2375	0.0000***	1.2352	0.0404	30.6073	0.0000***
$i_{B2}(-2)$	-1.1643	0.3736	-3.1164	0.0018***	-1.2632	0.2876	-4.3924	0.0000***
c_{B1}	0.2818	0.0682	4.1320	0.0000***	0.2911	0.0560	5.1938	0.0000***
c_{B2}	-0.3994	0.0698	-5.7221	0.0000***	-0.4047	0.0577	-7.0103	0.0000***
r_{SP}	0.0195	0.0844	0.2310	0.8175	0.0185	0.0715	0.2583	0.7962
Hausman test (3)		14.8321	p-value	0.0020				
Sargan test (22)		29.5478	p-value	0.1299				
Godfrey test		4.1573	p-value	0.2450				
Jarque-Bera test		31.8051	p-value	0.0000				
Equation 4 - Dependent variable: i_{B2}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_4	-0.5254	0.2594	-2.0254	0.0428**	-0.5404	0.2485	-2.1752	0.0296**
i_{A2}	0.0941	0.3567	0.2638	0.7920	0.0864	0.3462	0.2495	0.8030
i_{B1}	0.3393	0.0311	10.9257	0.0000***	0.3450	0.0287	12.0370	0.0000***
r_{B2}	-0.0087	0.0221	-0.3939	0.6937	-0.0110	0.0207	-0.5303	0.5959
r_{SP}	0.1597	0.0668	2.3909	0.0168**	0.1820	0.0623	2.9238	0.0035***
opchi	65.0968	2.4536	26.5311	0.0000***	64.7772	2.2598	28.6654	0.0000***
prodev	-8.6561	2.4192	-3.5781	0.0004***	-6.9397	2.0869	-3.3254	0.0009***
Hausman test (3)		5.6615	p-value	0.1293				
Sargan test (26)		20.8647	p-value	0.7489				
Godfrey test		1.5023	p-value	0.6817				
Jarque-Bera test		66.1320	p-value	0.0000				
		2SLS Estimation				*3SLS Estimation*		

Investment memory: the waves of stock account subscriptions are generally related with their past, thus the amount of investments have a memory. Sometimes the overall effect indicates a reinforcing trend, along time, as in the case of i_{A1} and i_{B1}. In other circumstances the past seems to be competing with the present (competing trend), when the lagged variables enter the current number of investors with some negative effect as in i_{A2};

SHSE leadership: The estimates reveal that SHSE plays a leading role: the coefficient of i_{A2} in equation 1 is 0.3093, while the coefficient of i_{A1} in equation 2 is greater (0.9687). For the B-shares segment, the number of investment accounts in SZSE is influenced by that of SHSE market. The opposite effect is not statistically relevant;

Market enlargement effect: in equation 3 the number of B-share investors (i_{B1}) is positively affected by the real market enlargement (the real market capitalisation growth, c_{B1}), whereas it is negatively correlated with c_{B2};

Ambiguous returns influence: The relationship between the investors' number and the stock market return is ambiguous for i_{A1}, while for B-shares this is not relevant. On the SZSE a significant and positive relationship of r_{A2} to i_{A2} reveals a traditional link of market performances to stock investments. To the contrary, the significant and negative relationship of i_{A1} with r_{A1} may appear surprising, but also fascinating: this may represent a sort of anti-cyclical behaviour of the Chinese savers. In fact, an increase (decrease) in stock investment accounts should be related to a prudential (opportunistic) reaction to the stock index decrease (increase). Nevertheless, this induces the suspicion that investors' behaviour is affected by irrationality of Chinese savers, pulled towards, or against, the stock exchange investment by a set of reasons, barely explained by the stock market fundamentals. We can refer to emotional or imitative behaviour, but we may also figure out the presence of a compulsory need for savings allocation.

Regulatory insensitivity and untrustworthiness: we use all the nine regulatory dummies of Table 2 in a preliminary OLS setting[9] and find out that five of them (*indir*, *cgov*, $qfii$, *ipospon* and *intprot*) do not have any effect at all. So they have been used, tested and then rejected from our model, while the remaining four regulatory dummies do play some

[9]To find out if the dummy variables have any effects upon the system's endogenous variable, we carried out a preliminary analysis based upon the estimation of the reduced form of the system (2) given by equation (3). The estimation simply consists of n OLS regressions in which the dummy variables of Table 2 belong to the vector x_t containing all the regressors.

role in our system. As far as the investors' number is concerned, we notice the absence of statistical relevance for all the regulatory dummies on the Shanghai A-share investors' number. This should mean that the series of regulatory acts, during the observed period, do not affect the investment choices of chinese savers, especially in the mainland leader Stock Exchange. In the SZSE only the public offering resumption of May 2005 (*ipores*) has any kind of effect. The B segment is obviously positively affected by the *opchi* dummy, which represents the act that allowed the Chinese savers to invest in the B-share market, that is generally reserved for foreigners. Nevertheless, the dicotomical variable *prodev*, referring to a measure addressed to develop and open up the chinese Stock Exchanges, is relevant but negatively affects the SZSE B-share investors' number: this may represent a clear signal of the weak trustworthiness of the investors operating in China, which arises when new legal measures regarding the financial market soundness are issued.

4.2 Trading volumes

Table 4, regarding trading volumes, confirms the previous findings: wave-effects and imitative behaviours, investment memory and a general regulatory insensitivity. Only the *opchi* dummy positively affects the trading activity but with reference only to the SZSE A-market segment.

Democratisation strengths are significant for the SHSE A-market. We refer to the negative relationship between the stock trading volumes (v_{A1}) and the number of stock investment accounts (i_{A1}). This could mean that the larger the stock investment basis is in the SHSE, the lower the average trading activity is. This suggests that a large number of new investors may not feel comfortable with stock trading. When the investors' basis increases, the probability of having smaller shareholders negotiating lower quantity of stocks (or not to negotiate at all) augments. Nevertheless, this relationship is not relevant for the other markets;

Emotional trends, are revealed by the relationship of v_{A2} and v_{B1} with the performances of the S&P monthly return. This is particularly strange if we keep in mind that A-share investors are mainly chinese and they are not allowed to invest abroad. Therefore, this connection may reflect an emotional or an irrational influence upon the chinese stock trading activity, as carried out by international stock markets trends;

Risk drivers: the trading volumes of the leader market (SHSE) are positively affected by the weighted average price/earning (P/E) ratios (variables w_{A1} and w_{B1}). This should mean that the more, on average, the

Table 4: Trading volumes

Equation 5 - Dependent variable: v_{A1}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_5	3.7160	3.5693	1.0411	0.2978	3.2188	3.3168	0.9704	0.3318
i_{A1}	-7.8941	3.1064	-2.5413	0.0110**	-6.7909	2.8875	-2.3518	0.0187**
v_{A2}	0.2530	0.0831	3.0438	0.0023***	0.3141	0.0765	4.1053	0.0000***
v_{B1}	0.2201	0.0566	3.8866	0.0001***	0.1811	0.0511	3.5443	0.0004***
r_{A1}	0.9024	0.5169	1.7458	0.0809*	0.9819	0.4741	2.0713	0.0383**
$v_{A1}(-1)$	-0.0893	0.0538	-1.6610	0.0967*	-0.1154	0.0489	-2.3614	0.0182**
w_{A1}	0.7500	0.4143	1.8100	0.0703*	0.6877	0.3644	1.8875	0.0591*
σ_{A1}	-0.8279	1.5460	-0.5355	0.5923	-0.6671	1.4122	-0.4724	0.6367
r_{SP}	0.9895	0.6444	1.5355	0.1247	0.6896	0.6066	1.1368	0.2556
Hausman test (4)		8.0260	p-value	0.0906				
Sargan test (24)		31.8245	p-value	0.1314				
Godfrey test		4.3448	p-value	0.2266				
Jarque-Bera test		1.7542	p-value	0.4160				
Equation 6 - Dependent variable: v_{A2}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_6	-6.6036	4.0996	-1.6108	0.1072	-5.5724	3.6395	-1.5311	0.1258
i_{A2}	-4.3024	4.1943	-1.0258	0.3050	-4.0766	3.7797	-1.0785	0.2808
v_{A1}	0.9106	0.1353	6.7324	0.0000***	1.0368	0.1138	9.1110	0.0000***
r_{A2}	0.3163	0.6053	0.5226	0.6012	-0.0521	0.5112	-0.1018	0.9189
$v_{A2}(-1)$	0.0471	0.0596	0.7898	0.4296	0.0920	0.0506	1.8197	0.0688*
w_{A2}	0.1713	0.5713	0.2999	0.7643	0.0604	0.4647	0.1299	0.8966
σ_{A2}	2.9005	1.5749	1.8416	0.0655*	2.2586	1.3199	1.7111	0.0871*
r_{SP}	1.5913	0.7532	2.1127	0.0346**	1.7017	0.6714	2.5346	0.0113**
opchi	222.1530	30.0404	7.3951	0.0000***	204.5310	25.8582	7.9097	0.0000***
Hausman test (3)		1.5802	p-value	0.6639				
Sargan test (24)		22.6472	p-value	0.5407				
Godfrey test		0.8888	p-value	0.8281				
Jarque-Bera test		254.965	p-value	0.0000				
Equation 7 - Dependent variable: v_{B1}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_7	-0.0697	3.5622	-0.0196	0.9844	0.1468	3.2100	0.0457	0.9635
i_{B1}	-0.1702	0.3442	-0.4944	0.6210	-0.1156	0.2796	-0.4134	0.6793
v_{B2}	0.6139	0.0924	6.6416	0.0000***	0.7380	0.0735	10.0472	0.0000***
v_{A1}	0.1224	0.1494	0.8195	0.4125	0.1121	0.1157	0.9694	0.3324
r_{B1}	0.4440	0.3631	1.2228	0.2214	0.1372	0.3062	0.4482	0.6540
$v_{B1}(-1)$	-0.0180	0.0430	-0.4187	0.6754	0.0012	0.0355	0.0324	0.9742
$v_{B1}(-2)$	-0.1342	0.0461	-2.9113	0.0036***	-0.0687	0.0379	-1.8144	0.0696*
w_{B1}	0.7145	0.2866	2.4934	0.0127**	0.4320	0.2377	1.8174	0.0692*
σ_{B1}	0.0842	0.5492	0.1533	0.8782	0.1119	0.4673	0.2394	0.8108
r_{SP}	1.3706	0.7790	1.7595	0.0785*	0.8049	0.6907	1.1653	0.2439
Hausman test (4)		12.5018	p-value	0.0140				
Sargan test (23)		14.7022	p-value	0.9050				
Godfrey test		3.7371	p-value	0.2913				
Jarque-Bera test		0.1923	p-value	0.9083				
Equation 8 - Dependent variable: v_{B2}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_8	0.2206	3.3873	0.0651	0.9481	0.1750	3.0375	0.0576	0.9541
i_{B2}	-0.4415	0.3238	-1.3634	0.1728	-0.1205	0.2634	-0.4574	0.6474
v_{B1}	0.7744	0.1022	7.5806	0.0000***	0.8756	0.0788	11.1092	0.0000***
r_{B2}	0.9135	0.3796	2.4062	0.0161**	0.5694	0.3150	1.8077	0.0707*
$v_{B2}(-1)$	-0.1245	0.0369	-3.3705	0.0008***	-0.1282	0.0306	-4.1951	0.0000***
$v_{B2}(-2)$	-0.0779	0.0434	-1.7940	0.0728*	-0.0397	0.0346	-1.1484	0.2508
$v_{B2}(-3)$	-0.0665	0.0370	-1.7985	0.0721*	-0.0575	0.0270	-2.1296	0.0332**
w_{B2}	0.3653	0.3054	1.1960	0.2317	0.2277	0.2447	0.9303	0.3522
σ_{B2}	-0.2756	0.4973	-0.5541	0.5795	-0.2968	0.4189	-0.7084	0.4787
r_{SP}	0.0282	0.7194	0.0392	0.9687	-0.3378	0.6376	-0.5298	0.5962
Hausman test (3)		1.8960	p-value	0.5943				
Sargan test (23)		28.3574	p-value	0.2026				
Godfrey test		7.9266	p-value	0.0476				
Jarque-Bera test		0.9556	p-value	0.6202				
		2SLS Estimation				*3SLS Estimation*		

chinese stocks are overvalued (high P/E ratio), the more frenetic the market activities become. As a consequence, this should reveal the presence of speculative bubble risks, which will be confirmed by the stock index estimations. The variance σ_{A2}, a traditional measure of market risk, seems to play some role only in equation 6.

4.3 Stock index returns

Table 5 contains the estimation of the equations referred to stock index returns foundations, from which we notice the following findings.

Market correlations: there is a positive estimated correlation between the returns of the same kind of share and all these correlations are statistically relevant;

IPOs distrust: the primary market structure could play a role in explaining the trend of the Chinese Stock Exchanges. Since the beginning, chinese authorities chose to characterise their stock market growth through external expansion that means the issue of new shares, such as Initial Public Offering (IPOs), secondary placements (SPs) and follow-up offerings. On the contrary, the internal expansion, followed by many western stock exchanges, would have slowed down the breath of the stock markets in favour of the appreciation of existing stocks. The external growth of stock markets introduces a problem: further bids of capital could cause a sort of "dilution effect", making the existing stock prices suffer. This is reasonable if either the IPOs or SPs are competing for limited capital, or if investors distrust their quality. If the new offers are economically attractive and flows of capital are not limited, the external growth of the Exchanges can easily co-exist with a steady uptrend of their performances. In China, funds streaming towards stock markets cannot be imagined as limited. So, the significant and negative relationship between all the four return indicators (r_{A1}, r_{A2}, r_{B1} and r_{B2}) with their respectively net market values (c_{A1}, c_{A2}, c_{B1} and c_{B2}) may only be explained by a general disbelief in the fundamental attractiveness of the new listings;

Risk drivers are provided by a remarkable relationship between all the four stock indexes and the relative P/E indicators. The market performances, as well as the trading volumes, seem to be strongly driven by the overevaluation (high P/E ratios) of listed shares. This may depend upon emotional and speculative behaviours. Instead, the traditional risk-return relationship between the variance $\sigma_{i,j}$ and the stock index performance is not relevant;

Changing attitudes towards regulation: the regulatory insensitivity of A-share investors has been systematically confirmed in all of our estimations.

Table 5: Stock index returns

Equation 9 - Dependent variable: r_{A1}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_9	0.7278	0.2628	2.7689	0.0056***	0.7298	0.2415	3.0212	0.0025***
r_{A2}	0.6081	0.0808	7.5240	0.0000***	0.6288	0.0717	8.7702	0.0000***
i_{A1}	0.1386	0.1861	0.7446	0.4565	0.0923	0.1743	0.5294	0.5965
w_{A1}	0.0734	0.0283	2.5906	0.0096***	0.0606	0.0259	2.3402	0.0193**
w_{A2}	0.1983	0.0696	2.8505	0.0044***	0.1919	0.0617	3.1109	0.0019***
c_{A1}	-0.2545	0.0815	-3.1221	0.0018***	-0.2370	0.0718	-3.3029	0.0010***
σ_{A1}	-0.1323	0.0946	-1.3993	0.1617	-0.1521	0.0869	-1.7501	0.0801*
Hausman test (2)		3.0817	p-value	0.2142				
Sargan test (26)		32.3501	p-value	0.1818				
Godfrey test		2.4119	p-value	0.4914				
Jarque-Bera test		0.0600	p-value	0.9704				
Equation 10 - Dependent variable: r_{A2}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_{10}	0.3138	0.2734	1.1474	0.2512	0.2336	0.2432	0.9607	0.3367
r_{A1}	0.6178	0.1144	5.3981	0.0000***	0.7152	0.0956	7.4823	0.0000***
i_{A2}	0.2638	0.2343	1.1259	0.2602	0.1931	0.2156	0.8959	0.3703
w_{A1}	0.0526	0.0363	1.4487	0.1474	0.0337	0.0312	1.0815	0.2795
w_{A2}	0.3533	0.0770	4.5872	0.0000***	0.2976	0.0644	4.6226	0.0000***
c_{A2}	-0.4268	0.0891	-4.7890	0.0000***	-0.3622	0.0739	-4.9037	0.0000***
σ_{A2}	0.0522	0.0949	0.5502	0.5822	0.0526	0.0818	0.6430	0.5202
Hausman test (2)		7.6171	p-value	0.0222				
Sargan test (26)		21.4724	p-value	0.7172				
Godfrey test		3.0309	p-value	0.3869				
Jarque-Bera test		9.9551	p-value	0.0069				
Equation 11 - Dependent variable: r_{B1}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_{11}	1.0318	0.7175	1.4379	0.1505	1.1871	0.5901	2.0117	0.0443**
r_{B2}	0.1780	0.0747	2.3811	0.0173**	0.1612	0.0605	2.6638	0.0077***
i_{B1}	-0.0903	0.0492	-1.8348	0.0665*	-0.0868	0.0397	-2.1891	0.0286**
$i_{B1}(-1)$	0.0956	0.0309	3.0934	0.0020***	0.1110	0.0242	4.5838	0.0000***
$i_{B1}(-2)$	0.1172	0.0267	4.3896	0.0000***	0.1135	0.0209	5.4397	0.0000***
i_{A1}	2.3359	0.9246	2.5264	0.0115**	2.6896	0.7569	3.5532	0.0004***
$i_{A1}(-1)$	-2.1276	0.8615	-2.4696	0.0135**	-2.4512	0.6897	-3.5541	0.0004***
w_{A2}	0.1257	0.0556	2.2589	0.0239**	0.1464	0.0461	3.1737	0.0015***
w_{B1}	0.6320	0.0458	13.8046	0.0000***	0.6157	0.0364	16.8984	0.0000***
w_{B2}	0.0771	0.0624	1.2340	0.2172	0.0847	0.0494	1.7157	0.0862*
c_{B1}	-0.9283	0.0751	-12.3661	0.0000***	-0.9431	0.0610	-15.4499	0.0000***
σ_{B1}	0.0447	0.0610	0.7324	0.4639	0.0682	0.0492	1.3867	0.1655
opchi	4.6790	2.8745	1.6278	0.1036	4.1757	2.3198	1.8000	0.0719*
ipores	15.1742	3.0904	4.9101	0.0000***	12.9739	2.4769	5.2380	0.0000***
seclaw	-9.0954	3.2810	-2.7721	0.0056***	-9.2950	2.5678	-3.6198	0.0003***
Hausman test (3)		4.4005	p-value	0.2213				
Sargan test (18)		33.9015	p-value	0.0130				
Godfrey test		0.8598	p-value	0.8351				
Jarque-Bera test		15.8786	p-value	0.0004				
Equation 12 - Dependent variable: r_{B2}								
var.	coeff.	s.e.	t-stat	p-value	coeff.	s.e.	t-stat	p-value
μ_{12}	0.6031	0.6673	0.9038	0.3661	0.6516	0.6074	1.0727	0.2834
r_{B1}	0.1906	0.1006	1.8938	0.0583*	0.1504	0.0870	1.7292	0.0838*
i_{B2}	0.0349	0.0636	0.5486	0.5833	0.0212	0.0572	0.3712	0.7105
w_{B1}	0.0823	0.0824	0.9987	0.3179	0.0719	0.0684	1.0501	0.2937
w_{B2}	0.6483	0.0553	11.7205	0.0000***	0.6747	0.0467	14.4430	0.0000***
c_{B2}	-0.7484	0.1029	-7.2720	0.0000***	-0.7838	0.0886	-8.8463	0.0000***
σ_{B2}	0.0427	0.0961	0.4445	0.6567	0.0462	0.0807	0.5726	0.5669
Hausman test (2)		15.0410	p-value	0.0005				
Sargan test (26)		36.0015	p-value	0.0916				
Godfrey test		4.1192	p-value	0.2489				
Jarque-Bera test		99.9449	p-value	0.0000				
		2SLS Estimation					*3SLS Estimation*	

Neverthless, in equation 11 *seclaw* and *ipores* dummies cause two opposite effects: the former, related to the first regulatory act, is a decreasing level of trust in the market. The latter, on the other hand, refers to the more recent regulatory act considered in our analysis and its contribution is strong and positive. This may indicate a sign of a change in the attitude towards the regulative activity.

5 Concluding remarks and further research

Through estimating a system of simultaneous equations, we find that the overall Chinese savers' attitude towards stock investment is affected by emotional and speculative behaviour, especially for the *A*-share segment of the market. Waves of new stock investment accounts are interconnected between the two Stock Exchanges and somehow also between *A*- and *B*-segments of the market, with a feeble (or unexpected) relationship with the stock market performances. This may be coherent with behavioural finance conceptual findings (see for example Thaler and Barberis, 2003), and also with the abundance of savings looking for remunerative investment alternatives. The more imitative and "emotionally" driven market side is the *A*-share market. A more dominant role of the SHSE has also been identified, compared to the SZSE which acts as a follower.

Estimates referring to the trading volumes confirm emotional or imitative and speculative behaviour and risk driven market activities. In particular, the relevance of the average price/earning ratios in sustaining the trading activity may also suggest the presence of a speculative bubble. These emotional strengths are confirmed as being more evident for the *A*-share segment of the market, whose trading volumes paradoxically also react to the S&P performances.

Stock index returns are strongly correlated and negatively affected by the stock market enlargement, indeed we refer to a sort of IPOs distrust. Emotional-speculative strengths are also evident, given the relevance of the P/E ratio in sustaining stock index returns.

The final remarkable result is related to the relevance of the regulatory dummies. Our findings suggest that savers' attitude towards stock investment, trading volumes and market returns are seldom affected by changes in the Chinese legal framework. The regulatory insensitivity of *A*-share investors (typically chinese) has been systematically confirmed for the chinese leader Stock Exchange (SHSE). A sporadic effect displayed by some dummies shows the widespread distrust of investors towards the chinese financial legal system and this is particularly relevant for the initial regulation of 1999. Finally, signals of a better attitudes towards the more recent legal acts are shown.

A possible extension of this work would be to carry out a cointegration

analysis to enhance the system of equation (2): in particular taking into account the long run relationships between the endogenous variables. If any cointegration vector exists, we could also use some linear combination as an instrument in our analysis.

References

Allen F., Qian J. and Qian M. (2005), "Law, Finance, and Economic Growth in China", *Journal of Financial Economics* 77, pp. 57–116.

Baier S., Dwyer G.P. and Tamura R. (2003), "Does Opening a Stock Exchange Increase Economic Growth?", *Working Paper* 2003-36, Federal Reserve Bank of Atlanta.

Beck T., Levine R. and Loayza N.V. (2000), "Finance and the Sources of Growth", *Journal of Financial Economics* 58(2), pp. 261–300.

Chen Z. (2003), "Capital Markets and Legal Development: The China Case", *China Economic Review* 14, pp. 451–472.

Claessens S. and Fan J. (2002), "Corporate Governance in Asia: A Survey", *International Review of Finance* 3(2), pp. 71–103.

Clarke D.C. (2003), "Corporate Governance in China: An Overview", *China Economic Review* 14, pp. 494–507.

CSRC (2003), "China' Securities and Futures Markets", Technical report, China Securities Regulatory Commission, annual Report.

CSRC (2004), "China' Securities and Futures Markets", Technical report, China Securities Regulatory Commission, annual Report.

CSRC (2005), "China' Securities and Futures Markets", Technical report, China Securities Regulatory Commission, annual Report.

Davidson R. and MacKinnon J.G. (1993), *Estimation and inference in econometrics*, Oxford University Press, New York.

Demirguc-Kunt A. and Levine R. (1996), "Stock Markets, Corporate Finance, and Economic Growth: An Overview", *World Bank Economic Review* 102(May), pp. 223–239.

Demirguc-Kunt A. and Maksimovic V. (1998), "Law, Finance, and Firm Growth", *Journal of Finance* 536(December), pp. 2107–2137.

King R.G. and Levine R. (1993), "Finance, Entrepreneurship, and Growth", *Journal of Monetary Economics* 32, pp. 513–542.

La Porta R., Lopez-De-Silanes F., Shleifer A. and Vishny R. (2000), "Investor Protection and Corporate Governance", *Journal of Financial Economics* 58(1-2), pp. 3–27.

La Porta R., Lopez-De-Silanes F., Shleifer A. and Vishny R. (2002), "Investor Protection and Corporate Valuation", *Journal of Finance* 57(3), pp. 1147–1170.

Levine R. (1996), "Stock Markets: A Spur to Economic Growth", *Finance and Development* 331(March), pp. 7–10.

Levine R. and Loayza N.V. (2000), "Financial Intermediation and Growth: Causality and Causes", *Journal of Monetary Economics* 46(1), pp. 31–77.

Lin T.W. (2004), "Corporate Governance in China: Recent Developments, Key Problems, and Solutions", *Journal of Accounting and Corporate Governance* 1, pp. 1–23.

Sargan J.D. (1988), *Lectures on Advanced Econometrics Theory*, Basil Blackwell, Oxford.

Shleifer A. and Vishny R. (1997), "A Survey of Corporate Governance", *Journal of Finance* 52(2), pp. 737–783.

Thaler R. and Barberis N. (2003), *A survey of behavioural finance*, in "Handbook of the Economics of Finance", Elsevier Science.

Weber M. (2004), *Environment And Changing US-Chinese Relations-21st Century Challenges in China*, Edward Elgar Publishing Inc.