Real and Financial Determinants of Pension Markets

Flávio Ataliba and Ivan Castelar
Professors of the Graduate Program in Economics-CAEN at Federal University of Ceará

Abstract:

This paper analyses the real and financial determinants of private pension markets. A preliminary exam of a set of variables representing demand, the stock market and the financial market indicated that income per capita and volatility of the stok market are the main forces influencing pension market size. Regression analyses confirms formally this preliminary funding and shows that the former has a direct relation with pension market size whilst the later displays an inverse relation. Moreover, the elasticity of income per capita is about one third of the elasticity of volatility, implying that a steady growth of income combined with stability of the stok market is the perfect environment to the development of pension market.

Key Words:

Pension funds; Market size; Social Security Reforms.

1 - INTRODUCTION

In the last decades, population aging has been a demographic phenomenon present in most of the countries around the world. This international tendency has stimulated the debate about the necessity to find a new design to pension systems. Traditionally those systems have been structured as benefits on pillar form, state managed, and financed by intergenerational payroll contributions. These features have caused continuous budget imbalances in several economies, and many of these economies have reached insolvency situations. To implement multi-pillar pension system has been the tendency of the reforms made, where one pillar would be responsible for the re-distributive function, paying a minimum benefit, and the other pillar would be responsible for the accumulative function, via individual savings formation.

However, one can ask which are the economic pre-conditions that an economy should fulfill in order to have a successful implementation of a retirement private system. In other words, which are the elements that determine the private pension market size, and through which mechanisms do those elements affect its performance? Since the private pension system can be seen as a provider of financial services, it is believed that its evolution is conditioned by the dynamics of the financial sector.

Part of the recent literature on economic development has been dedicated to examine the relationship existent between the level of financial development and economic growth. The main point of this investigation is to know which is the causality relation between the financial and the real side of the economy. If the real side of the economy, for instance, is the one that affects most the development of the financial system, then the success of social security privatization of a country will not demand a highly sophisticated financial system.

In the light of these considerations the main objective of this paper is to investigate empirically which are the key determinants of pension market size. In order to do that the rest of this paper is structured in five sections. Section 2 presents a brief discussion of the studies that examine empirically the relationship between financial markets and economic growth. The hypotheses regarding the influence of both, the real and the financial variables, are described in Section 3. The description of the data and a suggested methodology of analysis are presented in Section 4. Section 5 is dedicated to present the results of the empirical investigation. And, finally, in the last section, some conclusions are made.

2- A REVIEW OF THE LITERATURE

The link existent between the stage of development of the financial sector and per capita income growth rate has been largely analyzed in the literature, since at least 1911 (e.g., Schumpeter). The argument is that the financial sector design that makes possible the adequate capital allocation is responsible for the incentive to economic growth. The idea behind this reasoning is that the financial sector is fundamental to facilitate funds relocation from individuals, with capital excess, to the companies with resources shortage, given their investment opportunities. Thus, at least theoretically, the development of the financial sector has the effect to reduce both the transaction costs between savers and investors, as well as to reduce the differential cost of external finance - coming from moral hazard problem and adverse selection - to those companies that have to resort to external sources.

Empirical studies, beginning with CAMERON (1967), GOLDSMITH (1969) and MCKINNON (1973), have verified the existence of a significant correlation between financial development and economic growth, although few could be extracted from these studies in regard to the existent causality relation. GOLDSMITH (1969), for instance, makes istclear that there is no possibility of establishing with confidence the direction of the causal mechanism; i.e., of deciding whether financial factors were responsible for the acceleration of economic development or whether financial development reflected economic growth, whose mainsprings must be sought elsewhere.

Two different researches point out to the possibility that the causal relation occurs in both

ways. JUNG (1986) provides econometric evidence, using a sample of 56 countries, of causality running in both directions. This same result is analytically reached by GREENWOOD & JOVANOVIC (1990), indicating that economic growth rate and financial intermediation level are endogenously determined in the economy.

Another important study, developed by KING & LEVINE (1993), indicates that financial services stimulate economic growth, by increasing the rate of capital accumulation, and by improving the efficiency with which economies use that capital. Their results show also that predetermined components of these financial indicators predict quite well subsequent values of economic growth indicators. Using data on 80 countries, over the 1960-1989 period, their evidence is consistent with Schumpeter's view that the financial system can promote economic growth. Recently, RAJAN & ZINGALES (1996) argue that in those economies, where the companies are more dependent on external funds, financial development has a substantial and causal influence on the growth rate.

Studies that could evaluate the insurance industry could be a good subsidy to understand pension market specificity. However, the literature in this area has been rather modest. An important contribution in this field has been made by OUTREVILLE (1996). The main concern of his paper is with the relationship between property-liability insurance premium and economic and financial development. A model is specified for property-liability insurance demand and it is tested using a cross-section of 55 developing countries. His results show that in those countries the share of the insurance sector is still irrelevant. Moreover, he considers fundamental that the expansion of this sector should be preceded by financial development, meaning that more attention should be given to supply strengths, in order to provoke a more intense dynamic in this market.

A question not yet studied in the literature is the one dealing with the determinant factors of pension private market size. Many countries have recently substituted their old social security systems, which functioned mostly in a Pay-As-You-Go (PAYGO) basis and a single public pillar, for a system based on individual savings. Those reforms have stimulated experts to investigate the preconditions that a given economy has to have so that implemented reforms will be successful, allowing market development. As the private pension market represents a form of financial service, its dynamic may be in principle influenced either by financial factors or by real conditioning of the economy.

3 - HYPOTHESES ABOUT THE BEHAVIOR OF THE VARIABLES.

Based on the studies cited above a set of variables believed to be important to explain private pension market size was selected. For convenience this set was divided in two subsets: the real variables, that determine sector behavior by the side of the demand, and a group of financial variables, representing the supply side. The assumed hypotheses for each variable chosen to represent the real side are specified below.

The first of these variables is income per capita. The assumed hypothesis is of a positive relation of that variable with pension private market size. Since countries that present a high level of income, clearly show less stringent ideological, cultural and religious restrictions to the development of a pension market. A second variable considered is the age structure of population over 65 years old. This variable tries to capture the population aging degree, and, therefore, to reflect the necessity to guarantee income to the old. The hypothesis about the relationship between age structure and market size is that the higher is this indicator, the greater is the possibility of having a developed pension market.

The third variable used is urban population, as a percentage of total population. The idea is that countries, which present a large part of their population dedicated to the agricultural sector, tend to display a strong income fluctuation if compared to those countries which have their population in the urban sector, given the marked fluctuation of agricultural prices. Demand for pension in these countries, therefore, is incipient. A larger part of the population exercising their

activities in the urban sector, to the contrary, tends to shift the demand for the pension market.

Life expectancy at birth is another important variable, countries that present high life expectancy at birth need to provide income for longer periods of inactivity, consequently increasing the demand for the pension market.

The last variable in the group of real variables is public pension spending, as proportion of GDP. The hypothesis about this variable is that countries that present a well-developed public sector could inhibit, through a sort of crowding-out, the increase of pension private market. Thus, an inverse relation is expected between public pension spending and pension market development.

The variables representing the development of the financial system can be further divided into two distinct groups. The first group is linked to financial intermediation indicators and the second to the stock market. The basic idea is that the pension market tends to develop faster when the financial market supplies the right tools to facilitate transactions, thus stimulating opportunities of investments and providing funds for accumulation. Each of these variables captures different aspects of the financial system. It is discussed below which are the hypotheses considered; i.e., how these variables can influence pension market development.

The first of these variables is liquid liabilities, as proportion of GDP. This ratio is a measure of the overall size of the formal financial system. Considering that there exists a high positive correlation between the size of the financial system and the intermediary services provision, it is expected that a country with a well-developed financial system will present more appropriate conditions to develop its pension market. The second hypothesis made is about the variable quasi-liquid liabilities, as proportion of GDP. This variable is closely related to efficient financial intermediation in regard to long run investment, which affects pension market positively. Another variable utilized here is domestic credit to the private sector, also as proportion of GDP. This variable tries to capture the intermediary financial services destined to generate credit to companies. It is expected that generation of credit be positively correlated with the development of pension market.

The fourth hypothesis is about the ratio of the total claims of deposit banks, as a proportion of GDP. As much as developed the banking system of a country is the higher will be its capacity to supply financial services and this, hopefully, will cause a positive impact on the pension sector. The difference between bank lending and borrowing rates reflects the efficiency level of the banking system. A more efficient banking system means a higher capacity to provide financial services, thus affecting the pension market positively. Therefore, the higher is this rate, the more concentrated is the banking system and this can provoke a negative impact on the pension market. Finally, the last variable considered in this group is total assets of private non-bank financial corporations, as proportion of GDP. This ratio measures the size of non-bank financial corporation, such as finance companies, mutual funds, and brokerage houses. It is expected a positive effect of these variables on pension market.

The other subgroup of financial variables is made up of indicators representative of the stock market. The first of them is stock market size. The hypothesis is that the pension market has more conditions to develop in those economies in which there is a high capacity to mobilize and to diversify capital. The second and the third hypothesis are related to market liquidity, i.e. the capacity to buy and sell securities. The total shares traded in the market exchange, as proportion of GDP, reflects positively their liquidity level and this causes the pension market capacity to develop. The other variable is the turnover ratio. A high turnover is often used as an indicator of low transaction costs. The fourth, and last variable is security market volatility. The hypotheses considered is that securities market with high volatility in their rate of return tend to be associated with a less developed stock market inhibiting, therefore, pension private market.

4 - DESCRIPTION OF THE DATA AND METHODOLOGY

TABLE 1 , in the Appendix, defines the variables used in this analysis. Total assets of

private insurance plus pension funds to GDP measures pension market size, denoted by INSPENY. The variables MKTCAP, VALTRAY, TURNOVER and VOLATILY, represent the indicators of the stock market, while the variables defined as LIQUBY, QLILIBT, PRICREDY, BKDEPY, SPREAD and FINASTY represent the financial intermediation indicators. The rest of the variables, YCAP, OVER65, URBPERCT, LIFEEXP and SIZE represent the real side indicators.

The sample extends for 22 countries, both developed and developing. A statistical summary of these variables is presented in TABLE 2, in the Appendix. Some information is restricted to only 20 countries such as VOLATILY, FINASTY, and SIZE, while others like QLILIBY, BKDEPY and SPREAD were available for 21 countries.

The empirical model suggested considers a dependent variable, INSPENY, and independent variables taken out of the two subsets representing the real and financial sides of the economy. It is evident that the sample size forbids the inclusion of all the variables in the regression analysis. Because of that, regression analysis was preceded by an exploratory correlation analysis to identify which are the most important variables in the determination of pension market size. The following section presents the results of this analysis.

5 - EMPIRICAL RESULTS

Correlation Analysis

To sort out the relationship among the variables under study a correlation analysis was made. TABLE 3, in the Appendix, presents the correlation coefficients between the pension market size indicator and the variables in the real and financial groups discussed above.

The correlation coefficients between the pension market size indicator and the variables measuring economic, social and demographic factors; i.e., the demand factors, are high and positive, as established in the hypotheses. The higher coefficients occur with OVER65 and YCAP. These variables present also an expressive correlation with the other variables within the group, excepting URBPERCT. These results suggest that the most important factors to explain pension market size of a country are the level of income per capita and population age structure, meaning that the demand variables become especially relevant in this explanation.

Correlation coefficients between pension market size and the financial indicators are examined next. Unlike what happened to the group of variables representing demand, the results, shown in TABLE 4, indicate that there exists a weak correlation between the financial variables and pension market size and among themselves; with values well below 0.5, except for PRICREDY. The general picture seems to point out to the fact that countries that do not possess a well developed intermediation system not necessarily will have a weak private pension market.

Finally, considering the correlation coefficients for the share market indicators the results, as can be seen in TABLE 5, indicate that, like in the previous case, there exists a low correlation between the variables within this group and the variable INSPENY. The most expressive result occurs with the variable VOLATILY, which displays a strong correlation with INSPENY and presents the expected sign.

It is worthy to notice that the two subgroups constituting the financial variables represent the supply elements in this market. The conclusion that can be drawn from this analysis is that the supply factors do not have a great importance in determining the dynamics of the pension market, which is more strongly influenced by demand elements.

Regression Analysis

The correlation analysis above has shown that the most important variables in the determination of pension private market size, represented by INSPENY, were YCAP and VOLATILY[1]. Based on this evidence a regression model, including all the variables in logarithm form, was defined; i. e.,

[1] The inclusion of PRICREDY in the regression did not improve the explanation and its coefficient turned out to be insignificant.

$$LINSPENY = \alpha + \beta_1 LVOLATILY + \beta_2 LYCAP + \varepsilon_i$$

where,

LINSPENY = the logarithm of INSPENY
LVOLATILY = the logarithm of VOLATILY
LYCAP = the logarithm of YCAP
ε_i = a disturbance term, assumed to be a white noise.

TABLE 1 shows the results of the estimation of the model above. Looking at the estimates one can see that the parameters of the model are both statistically significant at a 1% level of significance, and both presented the expected sign. On the other hand, the fit of the regression is rather good, presenting an R^2 of 0.84.

Cross sectional data are prone to the problem of heteroskedasticity. To confirm this possibility a White test was run and its result has shown no indication of this phenomenon. The values of the White test with and without cross terms were 6.17 and 5.75. Comparing these values with the values in a Chi-Squared distribution table with 5 and 4 degrees of freedom, which are 11.07 and 9.49 respectively, one can conclude that the null hypothesis affirming the existence of homoskedasticity cannot be rejected.

A test to verify if the model should be specified either in levels or in the log-form may be stated as

H_0: $y_t = \alpha_0 + \beta_0 x_t + u_t$;
H_1: $\log y_t = \alpha_1 + \beta_1 \log x_t + u_t$;

To test these hypotheses the log-likelihood ratio test is used. To form this ratio one needs the log-likelihood of the model under the null and the alternative hypotheses, which are given by (DAVIDSON & MACKINNON, 1993)

$$l_1(y.\boldsymbol{b}_1) = C - \frac{n}{2}\log\left(\sum_{t=1}^{n}(y_t - \boldsymbol{a}_1 - \boldsymbol{b}_1 x_t)^2\right)$$

$$l_2(y.\boldsymbol{b}_2) = C - \frac{n}{2}\log\left(\sum_{t=1}^{n}(\log y_t - \boldsymbol{a}_2 - \boldsymbol{b}_2 \log x_t)^2\right) - \sum_{t=1}^{n}\log y_t$$

The last term on the right of the equation above arises because the Jacobian of the transformation is given by

$$\frac{\partial \log y_t}{\partial y_t} = \frac{1}{y_t}$$

The calculated value of the log-likelihood ratio multiplied by two is 35.83. Thus, one has to reject the null in favor of the alternative. The rationale of this decision is based on the fact that a more general Box-Cox transformation, of which H_0 and H_1 are special cases, should fit at least as well as the best of the two particular forms. That is, the log-likelihood function for this general model must be at least as great as 20.2, the value of l_2. Therefore, a test of H_0 against the embedding model must produce a log-likelihood ratio no less than 35.83. Since the value of a Chi-Squared distribution, with one degree of freedom is 3.84, one can conclude that the model in levels will be rejected against the embedding model. It is worthy to point out that this test says only that the log-linear model is better than the linear form, not that the former is the best model. To check this possibility one has to specify a general Box-Cox model and test it against the log-linear form.

An important point to notice is the relative magnitude of the coefficients of LYCAP and LVOLATILY, which measure elasticity . The elasticity of volatility is about three times greater than the elasticity of income per capita, which means that a disarray in the share market should cause great disruption to the pension market. On the other hand, the progress brought to pension market by the increase of income per capita comes in a lower pace. This result should not come as a surprise. Rather it should be attributed to the nature of both variables. Income per capita is a structural factor. Its effects should spill over slowly through out the economy. Yet volatility of the share market is a daily market factor. Economic variables should react immediately and with great intensity to abrupt changes in the stability of the stock market.

TABLE 1
REGRESSION RESULTS

LS // DEPENDENT VARIABLE IS LINSPENY
SAMPLE: 1 22
INCLUDED OBSERVATIONS: 19
EXCLUDED OBSERVATION: 3

VARIABLE	COEFFICIENT	Std. ERROR	T-stat	PROB
LVOLATILY	-2.08	0.51	-4.04	0.0010
LYCAP	0.74	0.15	5.00	0.0001
C	-9.79	1.39	-7.03	0.0000

VARIABLE	0.844027	MEAN DEPENDENT VAR	-1.912487
ADJUSTED R-SQUARED	0.824530	S.D. DEPENDENT VAR	1.471307
S.E. OF REGRESSION	0.616317	AKAIKE INFO CRITERION	-0.824048
SSE.	6.077550	SCHWARZ CRITERION	-0.674926
LOG LIKELIHOOD	-16.13138	F-STATISTIC	43.29091
DURBIN-WATSON START	2.782656	PROB (F-STATISTIC)	0.000000

6 - CONCLUSION

Reforms of pension systems, based on Pay-As-You-Go environment, towards private systems, structured on the basis of capitalized individual accounts, has been one of the main areas of research in public finance in the last years.

The main concern of specialists in this area has been to investigate the most important difficulties in the transition of regimens. Special attention has been given, for instance, to the features a country should possess in order to implement a private pension market. The generally accepted idea is that a successful reform has to be anchored in a well-developed financial market.

To check this proposition this article has examined empirically the effect of financial and real variables on the size of pension private market, using data from a sample of 22 countries. It was found that there is a strong positive correlation between real variables and pension market size, the higher correlation being that of income per capita income. On the other hand, the same cannot be said of financial indicators. The only exceptions to this are credit availability to the private sector, PRICREDY, that presents a reasonable correlation with pension market size, and the degree of volatility of share returns, VOLATILY, indicating that this feature of the share market can inhibit pension market development. The results of the correlation analysis have a similarity to those found by DEMIRGÜÇ-KUNT & LEVINE (1996). However, in this study, the analysis was extended to include real and financial variables, what made possible to have a broader view of the problem.

In terms of regression analysis, estimated parameters indicate that per capita income level is an important variable to explain pension market development, and that volatility of the stock market can inhibit its development. Measured elasticity suggests that an increase of 1% in income per capita increases only by 0.74% the size of the pension market whilst an increase of 1% in volatily decreases pension market size by 2%. These results are different from those reached by OUTREVILLE (1990) about the insurance market. In OUTREVILLE (1990), both the level of Gross Domestic Product and the level of financial development affect positively the growth of pension market in developing countries.

In the light of these results one can conclude that a private pension market has its dynamics strongly influenced by real variables and, except in the case of a strongly volatile share market,

financial market conditions are not a constraint for reform of traditional pension markets.

Resumo:

Analisa os fatores reais e financeiros determinantes do mercado privado de fundos de pensão, uma lacuna na teoria do Desenvolvimento Econômico. Da análise de conjunto de variáveis representativas da demanda potencial, do mercado de ações do mercado financeiro conclui que as principais forças afetando o tamanho do mercado de pensões são o nível de renda *per capita* e a volatilidade da taxa de retorno das ações comercializadas. A renda influencia positivamente o desenvolvimento do mercado, enquanto a volatilidade relaciona-se inversamente com o tamanho do mercado, como era de se esperar. Constata, por outro lado, que um impacto na renda *per capita* produz conseqüências bem mais modestas sobre o mercado de fundos de pensão do que alterações na volatilidade. Portanto, a estabilidade do mercado de ações conjugada ao crescimento contínuo da renda *per capita* seria o ambiente ideal para o crescimento do mercado de fundos de pensão.

Palavras-Chaves:

Fundos de Pensão; Tamanho do Mercado; Reforma dos Sistemas Previdenciários.

7 - CONSULTED BIBLIOGRAPHY

DAVIDSON, R., MACKINNON, J.G. **Estimation and inference in econometrics.** Oxford University Press. 1993.

DEMIRGÜÇ-KUNT, A., LEVINE, R. Stock markets, corporate finance, and economic growth: an overview. **The World Bank Economic Review**. v. 10, n. 2, p. 223-239, february, 1995.

_____. Stock market development and financial intermediaries: stylized facts. **The World Bank Economic Review**. v.10, n. 2, p. 291-321, february, 1995.

_____. **Stock market development and financial intermediaries**: stylized facts. Washington: World Bank, Policy Research Department, 1995. (Working Paper, 1462)

GOLDSMITH, Raymond W. **Financial structure and development**. New Haven: Yale University Press, 1969.

GREENWOOD, Jeremy, JOVANOVIC, Boyan. Financial development, growth and the distribution of income. **Journal of Political Economy**. n. 98, p. 1076-1107, 1990.

JUNG, W. S. Financial development and economic growth: international evidence. **Economic Development and Cultural Change**. n. 34, p. 333-346, 1986.

KING, Robert G. , LEVINE, Ross. **Financial indicators and growth in a gross section of countries**. Washington: World Bank, 1992a. (World Bank Working Paper, 819).

_____. Financial intermediation and economic development. In: MAYER, Colin, VIVES, Xavies (Ed.) **Capital markets and financial intermediation**. London: Centre for Economic Policy Research, 1993a.

_____. Finance, enterpreneurship and growth: theory and evidence. **Journal of Monetary Economics**. n. 32, p. 513-542, December, 1993.

_____. Finance and growth: schumpeter must be right. **Quarterly Journal of Economics**. p. 717-737. August, 1993.

LEVINE, Ross. Stockmarkets, growth, and tax policy. **Journal of Finance**. v. 46, n. 4, p. 1445-65, September, 1991.

_____. Financial intermediary services and growth. **Journal of Japanese and International Economics**. n. 6, p. 383-405, 1992.

LEVINE, Ross, ZERVOS, Sara. Stock market development and long-run growth. **The World Bank Economic Review**. v.10, n.2, p. 323-39. 1996.

OUTREVILLE, J. François. Life insurance markets in developing countries. **The Journal of Risk and Insurance**. v. 63, n. 2, p. 263-278. 1996.

_____. Trade in Insurance in the Central-America common market. **The World Economy**. p. 575- 593, 1996.

_____. The Relationship between insurance, financial development and market structure in developing countries an international cross-section study. **UNCTAD Review**, n.3, p.53-69, 1992.

_____. The Economic significance of insurance markets in developing countries. **Journal of Risk and Insurance**. v. 57, n.3, p.487-498, 1990.

Oxford University Press. **From plan to market**. World Development Report. Published for the World Bank. Oxford, 1996.

Rajan, Raghuram G., ZINGALES, Luigi. **Financial dependence and growth**. Chicago: University of Chicago & NBER, 1996.

_____

Recebido para publicação em 27.AGO.1999.

TABLE 1
VARIABLE DEFINITIONS

VARIABLE	DEFINITION
INSPENY	Assets of Private Insurance plus Pension Funds to GPD (%)1
MKTCAP	Market Capitalisation Ratio-Value of Shares to GPD (%)3
VALTRAY	Total Shares Traded on the Stock Market Exchange to GPD (%)4
TURNOVER	Value of Total Shares Traded to Market Capitalisation (%)5
VOLATILY	Stock Market Volatility-Std Dev Estimate Based on Market Return6
LIQUBY	Liquid Liabilities to GPD-M3 Money Supply to GPD7
QLILIBY	Quasi-Liquid Liabilities to GPD-M3 Money Supply minus M1 to GPD8
PRICREDY	Domestic Credit to Private Sector to GPD9
BKDEPY	Ratio of the Total Claims of Deposit Banks to GPD10
SPREAD	Difference Between Bank Lending and Borrowing Rates11
FINASTY	Assets of Private Non-bank Financial Corporations to GPD12
YCAP	Income Level Per Capita (US$1,000)13
OVER65	Age Structure Population OVER65 Years old (years)14
URBPERCT	Urban Population As % of Total Population15
LIFEEXP	Life Expectancy at Birth (years)16
SIZE	Public Pension Spending to GPD (%)17

TABLE 2
DESCRIPTIVE STATISTICS

VARIABLE	N	MEAN	STD DEV	MINIMUM	MAXIMUM
INSPENY	22	0.30	0.31	0.00	1.08
MKTCAP	22	0.47	0.34	0.07	1.28
VALTRAY	22	0.20	0.17	0.01	0.62
TURNOVER	22	0.41	0.31	0.07	1.47
VOLATILY	20	0.05	0.02	0.03	0.10
LIQUBY	22	1.38	0.70	0.42	3.57
QLILIBY	21	0.98	0.60	0.25	3.00
PRICREDY	22	1.18	0.56	0.25	2.27
BKDEPY	21	1.42	0.57	0.48	2.58
SPREAD	21	0.05	0.03	0.01	0.14
FINASTY	20	0.29	0.26	0.00	0.89
YCAP	22	15.26	10.53	0.43	34.63
OVER 65	22	0.10	0.05	0.03	0.18
URBPERCT	22	0.70	0.22	0.10	0.89
LIFEEXP	22	73.86	4.91	60.00	79.00
SIZE	20	0.06	0.05	0.00	0.14

TABLE 3
CORRELATION MATRIX – REAL VARIABLES

		INSPENY	YCAP	OVER65	URBPERCT	LIFEEXP	SIZE
	N	22	22	22	22	22	20
INSPENY	22	1.00					
		[0.00]					
YCAP	22	0.63	1.00				
		[0.00]	[0.00]				
OVER65	22	0.66	0.83	1.00			
		[0.00]	[0.83]	[0.00]			
URBPERCT	22	0.57	0.40	0.58	1.00		
		[0.00]	[0.06]	[0.00]	[0.00]		
LIFEEXP	22	0.58	0.84	0.81	0.53	1.00	
		[0.00]	[0.00]	[0.00]	[0.01]	[0.00]	
SIZE	22	0.50	0.68	0.93	0.48	0.68	1.00
		[0.03]	[0.00]	[0.00]	[0.03]	[0.00]	[0.00]

TABLE 4
CORRELATION MATRIX – FINANCIAL VARIABLES

		INSPENY	LIQUBY	QLILIBY	PRICREDY	BKDEPY	SPREAD	FINASTY
	N	22	22	21	22	21	21	20
INSPENY	22	1.00						
		[0.00]						
LIQUBY	22	0.19	1.00					
		[0.41]	[0.00]					
QLILIBY	21	0.20	0.95	1.00				
		[0.39]	[0.00]	[0.00]				
PRICREDY	22	0.49	0.74	0.72	1.00			
		[0.02]	[0.00]	[0.00]	[0.00]			
BKDEPY	21	0.37	0.73	0.7	0.93	1.00		
		[0.10]	[0.00]	[0.00]	[0.00]	[0.00]		
SPREAD	21	-0.29	-0.40	-0.44	-0.41	-0.17	1.00	
		[0.19]	[0.07]	[0.05]	[0.06]	[0.46]	[0.00]	
FINASTY	20	0.04	0.23	0.55	0.23	0.12	-0.31	1.00
		[0.85]	[0.97]	[0.93]	[0.32]	[0.62]	[0.19]	[0.00]

TABLE 5
CORRELATION MATRIX – STOCK MARKET VARIABLES

		INSPENY	MKTCAP	VALTRAY	TURNOVER	VOLATILY
	N of Obs	22	22	22	22	20
INSPENY	22	1				
		[0.00]				
MKTCAP	22	0.29	1			
		[0.20]	[0.00]			
VALTRAY	22	0.33	0.82	1		
		[0.14]	[0.00]	[0.00]		
TURNOVER	22	0.11	0.02	0.51	1	
		[0.62]	[0.93]	[0.01]	[0.00]	
VOLATILY	20	-0.55	-0.33	-0.27	0.07	1
		[0.01]	[0.15]	[0.24]	[0.75]	[0.00]