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**IS THERE A BUBBLE IN SAUDI REAL ESTATE?
EVIDENCE FROM THE STOCK MARKET**

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Abstract

This paper analyzes the real estate price data in Saudi Arabia, a country not suspected of experiencing a price bubble, but where restrictive land ownership rights are similar with other countries in the GCC. A crucial difference however, is that Saudi Arabia is a vast country when compared with land-tight neighbors such the UAE and Qatar, and where the existence of price bubbles in real estate are not in question. Specifically, our study tries to answer the following questions: is there any evidence of a price bubble in real estate valuations in Saudi Arabia between 2002 and 2010? How did the real estate valuations compare with those in the stock market? Were the real estate valuations justified in relation to the company earnings?

JEL Classifications: E3, E5

Keywords: Real Estate Prices, Price Bubbles, Stock Markets, Saudi Arabia

ملخص

تحلل هذه الورقة بيانات سعر العقارات في المملكة العربية السعودية، وهي بلد لا يشتبه في وجود فقاعة أسعار فيها، ولكنها تشهد حقوق مقيدة لملكية الأرض مماثلة لدول أخرى في مجلس التعاون الخليجي. الفارق الحاسم مع ذلك، هو أن المملكة العربية السعودية بلد شاسع بالمقارنة مع الأراضي المجاورة مثل دولة الإمارات العربية المتحدة وقطر، حيث أن وجود فقاعات أسعار العقارات في هذه البلاد ليست محل استفهام. وعلى وجه التحديد، تحاول دراستنا الإجابة على الأسئلة التالية: هل هناك أي دليل على وجود فقاعة أسعار للعقارات في التقييمات في المملكة العربية السعودية بين عامي 2002 و 2010؟ كيف يتم مقارنة التقييمات العقارية مع تلك الموجودة في سوق الأسهم؟ وهل كان تقييم العقارات مبررا فيما يتعلق بأرباح الشركات؟

1. Background

For most of the past decade, the Gulf Cooperation Council (GCC) region has experienced rapid expansion, driven largely by increasing energy revenues, and growth-focused government policies. As the region's population increases in size, and becomes wealthier and more urbanized, significant opportunities have developed in the housing sector, particularly as it pertains to the region's burgeoning middle class, whose ranks are expanding faster than the economy itself. In the wake of the global financial crisis, however, several leading countries of the GCC experienced considerable economic slowdown. Equity prices tumbled, bank credit dried up, and real estate valuations experienced a dramatic downturn. Most regional markets were confronted with a strong oversupply which peaked in 2008 at over 100% in some residential segments. At the moment, most property developers are cash-strapped, banks are restricting lending, homebuyers are defaulting on payments, and real estate companies are trying to consolidate and pool their resources in order to survive the downturn.

Excess global liquidity from 2002 onwards and the considerable oil revenues played a crucial underpinning role, as did the ready availability of a cheap migrant construction workforce from South Asia. Banks flushed with liquidity provided real estate development firms, large and small, with the necessary capital to build and expand. Some firms borrowed massively from the capital markets to deliver development on the scale mandated by ambitious five-year development plans in each country. By October 2008, a real estate bubble had reached its full size with Moody's warning that the leverage of government-backed companies in some GCC states had approached the level of their GDP. With so many stakes riding on the line, it was only a matter of time that a real estate bust was about to unfold. What follows was that nearly 60% of construction projects in the GCC have been postponed or shelved as a result of the global credit crunch, confidence is now at an all time low and the region's real estate sector was bearing the brunt of the slump. In Dubai, for example, the residential property appreciated at an average rate of 48% in 2007, the highest in the world at that time. By 2009, however, demand for residential property collapsed, housing prices plummeted, and rents fell by 50%. Many real estate companies are now saddled with debt. The state-backed companies in Dubai alone face an annual debt repayment of \$15 to 20 billion over the next three years (Kerr 2010).

Unlike traditional investments, housing is generally the primary asset and store of wealth for households. Understanding the main drivers of real estate price is critical because of the trickle down effects to other sectors such as public transportation, road construction, and urban development. A bust in a real estate bubble is also highly contagious and could easily spread to other financial sectors and the real economy, both domestically and in neighboring countries. Another unique characteristic of housing that sets it apart from other financial sectors is the limited arbitrage opportunity. Households cannot easily 'buy low' and 'sell high' as frequently as prices permit because of liquidity constraints, and high registration and moving expenses which take time and raise the costs of transacting in this sector. As a result, if a price bubble truly exists, the correction toward the 'true' value is likely to be a prolonged process and any 'inefficient' pricing will be perpetuated for long and often uncertain periods because households have limited opportunities to take advantage of mispricing. Add to this characteristic the fact that unlike financial securities, short sales are not possible: if property values are overvalued, market participants cannot sell real estate assets *short* hoping to buy them back at a lower price. As a result, real estate prices could be rigid in their downward adjustment.

With all these factors at play, we propose to analyze the real estate price data in Saudi Arabia, a country not suspected of experiencing a price bubble, but where restrictive landownership rights are similar with other countries in the GCC. A crucial difference however, is that

Saudi Arabia is a vast country when compared with land-tight neighbors such the UAE and Qatar, and where the existence of price bubbles in real estate are not in question. Specifically, our study asks: is there any evidence of a price bubble in real estate valuations in Saudi Arabia between 2002 and 2010? How did the real estate valuations compare with those in the stock market? Were the real estate valuations justified in relation to the company earnings?

2. Motivation and Outline

A large amount of academic literature on price bubbles is centered on financial markets. The dominant theory of asset pricing is that stock prices are equal to the sum of expected discounted dividends and when market prices deviate from such fundamental value then a 'bubble' may exist. As a result, prices develop a momentum of their own. They rise (fall) and are expected to continue to rise (fall). In other cases, price bubbles constitute evidence of irrationality. Prices deviate from fundamentals due to factors extraneous to asset value (Diba and Grossman 1988). In other cases, price bubbles derive all of their variability from exogenous fundamentals rather than from extraneous factors (Froot and Obstfeld 1991). These intrinsic bubbles do not continuously diverge but periodically revert toward their fundamental value.

Our work is embedded in this stream of the financial economics applied to the real estate sector. This is motivated by the fact that, in contrast with the large body of research on financial markets, the real estate sector has received limited attention. Our analysis is limited to Saudi Arabia primarily because its economy absorbed the impact of the financial crisis with minor effects, and also because the banking sector in Saudi Arabia had not overextended credit to large property investors as the case of UAE, and this is where price bubbles were fairly obvious. Another reason to focus on Saudi Arabia is that, unlike other countries in the GCC, its economy is the largest in the GCC, and its capital market the broadest and the most liquid. Nevertheless, the Saudi stock market experienced a bubble between 2005 and 2006 when equity prices soared to unusual levels with oil prices before falling sharply. So its financial markets provide a good example where a price bubble in real estate can be investigated.

Our focus on the real estate market has three important motives: First, in Saudi Arabia, like in many other countries, wealth effects are likely to be greater for housing than for any other financial assets (Case et al. 2005; Benjamin et al. 2004). Second, real estate is also the major asset in the household portfolios (Flavin and Yamashita 2002). Third, studies have shown that a recession in the real estate sector generally creates more damage to the economy than a meltdown in stock prices (Helbling and Terrones 2003). These factors lead us to conclude that an investigation of the real estate valuations in Saudi Arabia would have many benefits in terms of market efficiency, and also for its impact on the macro-economy in that country.

The paper is divided into 4 sections. Section 1 explains the problem and states the objectives. Section 2 reviews the literature on real estate finance and its relation with the business cycle. Section 3 discusses the analytical methodology, presents the data, and analyzes the results. Section 4 summarizes the analysis, discusses the policy implications and concludes the paper.

3. Methodology and Analysis

We begin by analyzing the behavior of equity prices of Saudi real estate companies over the most recent 9 year period between 2002 and 2010. From Table 1, the average price to earnings (PE) ratio has ranged between 3.75 and 168.23, while the price to book (PTB) ratio varied between 0.7 and 14.25. The average level of these metrics across the sample was 32.4 and 2.3 respectively. These figures should be compared with the performance of the real estate sector as a whole which includes all real estate Saudi public companies, large and

small. Again from Table 1, the real estate sector achieved an average PE ratio of 33.7 and an average PTB ratio of 2.4. These figures are reasonably close to the companies in our sample, indicating that our selection of companies is balanced and that these corporations are representative of the real estate sector in Saudi Arabia during that time period.

A comparison of the real estate sector with the stock market index performance shows that the mean PE of the stock market index was 29.3 with a mean PTB ratio of 3.3. These figures are important because when compared with the real estate sector, they suggest that Saudi real estate companies achieved on average higher earnings than other companies in the stock market index, but had traded at a lower multiple to their book values. Based on this observation, it appears that, if a price bubble had occurred at one point in time, it would have been of a limited duration and had not caused a permanent impact on valuations.

To identify whether a price bubble existed at some point in time between 2002 and 2010, we refer to Table 2 which shows the valuation and earnings performance of the Saudi real estate sector and the entire stock market. Figures 1 and 2 display the same information graphically. The valuation of the real estate sector peaked at a PTB multiple of 9.15 in 2005. On an international comparison, this represents an unusually high valuation. For example, in Singapore, a country where real estate is highly prized because of the small size of the country, the stock prices of the largest 4 real estate companies traded at an average PTB ratio of 1.23 between 2002 and 2010, with a peak of 2.59 in 2007. By that standard, one may conclude that Saudi real estate prices are over-inflated. However, this comparison ignores how the real estate companies perform in relation to the entire stock market. In the same year when the prices of Saudi real estate equities soared to their highest valuations, the stock market was also trading at a maximum PTB ratio of 7.81, a level only slightly lower than the 9.15 PTB ratio of the real estate sector¹. So it is difficult to argue that the real estate sector was *uniquely* overpriced.

Another important observation is the earning performance of the real estate sector in relation to the entire stock market. In 2005, the average PE of the real estate sector was 97.8, which is actually lower than the average PE of 123.21 of the broad stock market. So, from an earnings perspective, it would appear that the real estate sector was not overvalued. One would expect a price bubble to form when the valuations far exceed and earnings fall behind those in the rest of the economy.

Another important observation from Table 2 is the *relative* valuation of the real estate sector. In 2003, the average PTB ratio of the real estate sector was 2.24 compared with only 1.01 for the broad stock market. In essence, the valuation of the real estate sector was more than double the rest of the stock market. From an earnings perspective, the average PE of the real estate sector was 36.92, slightly less than the average of the entire stock market of 39.01. Consequently, based on this descriptive observation, it would appear that 2003 was the more likely year when real estate valuations were out of synch with the rest of the economy.

Table 3, shows the relative premium or discount in PTB valuation of the real estate sector. In that table, a figure equal to 1 indicates that the PTB value of the real estate sector is at par with the rest of the stock market. Likewise, a figure >1 indicates that the real estate sector is overvalued while a figure <1 indicates a discount. Clearly, this comparison ignores the effect of earnings but it useful to analyze trends in the market. As discussed earlier, a true price bubble would require both a premium valuation and lower earnings relative to the stock market. We notice that, in 2003, the PTB ratio of the real estate sector relative to the stock market was 2.22 representing a 222% excess valuation in the market price of real estate companies in relation to the broad stock market. By 2004, the excess valuation disappeared,

¹ The Saudi stock market peaked in the 1st half of 2006, and has not regained that level since. See Hakim (2008)

and the real estate sector was trading at a PTB value discount of 36% (or 1- 0.64) below the rest of the stock market. In fact, with the exception of 2003 and 2005, the real estate sector was valued at a discount to the entire stock market. The average figure for the entire period 2002-2010 was 0.84 indicating that the real estate sector was, on average, at a 16% discount relative to the stock market index.

We complete our analysis by presenting an econometric analysis of the real estate sector valuation over time and across firms between 2002 and 2010. We analyze the valuation and earnings performance of the largest 8 Saudi real estate companies that are part of Tadawul, the Saudi stock market index. The 8 public companies are:

RealEstate,
 Taiba,
 Makkah,
 Arriyad Construction,
 Emaar,
 JabalOmar,
 DarAlArkan, and
 KEC

Only 3 of these companies existed in 2002 (they are Taibah, Makkah, and Arriyad Construction), and the remaining 5 were formed after 2005. In total, we have 46 annual observations on the valuation and earnings of real estate companies which we combine with similar observations on the stock market index average PE and PTB ratios. The financial information on these companies and the index are available from Bloomberg and from Al Tadawul annual reports for the years 2002 through 2010.

The model takes the form:

$$PTB_{it} = \beta_0 + \beta_1 PE_{it} + \beta_2 IndexPTB_t + \beta_3 IndexPE_t + u_{it}$$

Where:

- PTB_{it} : the price to book ratio of company i in year t
- PE_{it} : the price earnings ratio of company i in year t
- $Index PTB_t$: the average price to book ratio of all companies that are part of the Saudi Tadawul index in year t
- $Index PE_t$: the average price earnings ratio of all companies that are part of the Saudi Tadawul index in year t
- u_{it} : iid error term

We expect the coefficients β_1 , β_2 , and β_3 to be positive to the extent that a high market to book ratio suggests an overvaluation relative to the book value of the company. Such overvaluation is consistent with a high price relative to earnings or a high PE ratio. In the above model, the last two independent variables pertaining to the stock market are included to control for the effect of variability in the stock market valuation and the earnings on the price to book ratio of a real estate company. If the entire stock market rises in valuation, real estate companies are likely to follow suit, and therefore we would expect the coefficient β_2 to be positive. Likewise, a high average PE in the stock market indicates that equities in general are getting more expensive relative to earnings, and this should drive the valuation of real estate companies higher. So, similar to β_1 , we would expect the sign of β_3 to be positive as well.

Table 4 provides the results of the cross section, time series analysis. As expected all the coefficients have the proper signs. Starting with the coefficient of the price to earnings, a higher ratio causes the market price of a real estate company to increase relative to its book value. The same effect is noted for the average PE ratio of the companies that are part of the Tadawul index.

The impact of the overall stock market valuation measured by the variable Index PTB is the strongest. The β_2 coefficient is positive and highly significant at 1%. The importance of this variable is that it shows the extent to which the valuation of publically traded real estate companies in Saudi Arabia are influenced by the stock market overall. For example, if the Tadawul index valuation relative to book were to rise by 100%, the real estate companies' valuation relative to its book value will rise by 0.34, or 34%. This sensitivity would hardly suggest that the valuations of Saudi real estate companies are exaggerated and likely to experience a price bubble phenomenon. Any sharp increases in real estate prices seem to be in line with the overall stock market.

A β_2 coefficient > 1 would be a cause of concern because it would have suggested that the valuations of real estate companies are rising faster than the overall stock market, a necessary condition for the formation of a price bubble. Based on our analysis, however, we find no evidence that the price behavior of real estate companies exhibit the tendency to form bubbles, at least no more so than the entire stock market. In fact, the evidence suggests that the valuation of real estate companies have traded at a *lower* price to book multiple than the average stock market.

4. Discussion and Policy Implications

Housing is generally one the largest sectors in the real economy. Its impact on other sectors, particularly banking, is pervasive, and the spillover affects on the real economy both domestic and in neighboring countries, is wide and pronounced. Unfortunately, the data on housing in the GCC countries is sparse and when found, it is unreliable². None of the international economic / development organizations (World Bank, IMF, UNDP) collects such data. And the individual governments in the GCC, as well as the local real estate associations, do not disclose their data for public scrutiny and analysis. So the researcher is obligated to look for alternative sources that could serve as basis for a reliable analysis.

One such source is the price and financial information of publically traded real estate companies. The information about such companies has been verified to be accurate, and their market prices are transparent. These companies are also owners, professional managers, and builders of a country's main and largest real estate projects, and therefore, one would expect that their stock price and valuations would exhibit the same pattern as the actual assets they own, develop, or operate. To that end, we focused on Saudi Arabia's largest publically traded companies between 2002 and 2010, a period when the stock market rose to historical levels before collapsing. This period is interesting because it is during this time that the Saudi stock market is widely acknowledged to have experienced a price bubble (starting in 2005 and bursting in the second half of 2006). What is not clear, however, is whether the valuation of the Saudi real estate sector was or has been in excess of the overall stock market.

To address this precise question, we compared the price to book multiples and PE ratios of Saudi real estate companies with the broad stock market. We found that in 7 of the 9 years we observed, the Saudi real estate companies had a price to book ratio *below* the market average. For the entire 9 years, the valuation discount in the price to book measured 16% from the market average. Only in 2003, and to a lesser extent in 2005, the real estate sector traded at a premium to the overall stock market. However, in these 2 years, the PE ratio of

² See for example Beidas-Strom et. al (2009)

the real estate sector was actually better (ie. lower) than the overall stock market, suggesting that the higher valuation may have been justified.

To analyze more closely the valuation and dependency of the real estate sector on the overall stock market, we focused on the largest 8 real estate publically traded companies during the same period. As expected, the results showed that their valuation depended on their earnings and those of the broad stock market. The most interesting result however was how their valuation responded to that of the entire market. As the stock market index soars and overall price valuations rise, valuation of real estate companies' rise only modestly, by about 1/3 of the stock market average. If a price bubble were to form, the real estate companies would need to rise significantly more than the stock market average.

As a result, we concluded that we find no evidence of a price bubble in Saudi real estate companies. This finding, however, does not preclude the possibility of a price bubble forming in selective regions, cities, or parts of the real estate sector (commercial vs. residential). Such cases are possible but, based on our limited evidence, they are not necessarily widespread in Saudi Arabia to create a serious concern or warrant a government intervention. We hasten to add that the absence of specific individual housing data prevents us from authoritatively measuring the price pattern of residential or commercial dwellings and how their prices evolve with economic and financial conditions. Such data is critical if one is to formulate policies designed to reduce the price volatility of housing, avoid an excessive build-up of units, and prevent the amplification of the business cycle.

References

- Beidas-Strom S, Lian W, and Maseeh A. 2009. "The Housing Cycle in Emerging Middle East Economies and its Macroeconomic Policy Implications." International Monetary Fund Working Paper WP09/288 December 2009.
- Case, K.E. and R.J. Shiller. 2003. "Is There a Bubble in the Housing Market? An Analysis." Paper prepared for the Brookings Panel on Economic Activity (September 4–5).
- Case K.E., J.M. Quigley and R.J. Shiller.2005., "Comparing Wealth Effects: The Stock Market versus the Housing Market." *Advances in Macroeconomics* 5: 1–32.
- Diba, B.T. and H.I. Grossman. 1988. "Explosive Rational Bubbles in Stock Prices?" *American Economic Review* 78: 520–528.
- Flavin, M. and T. Yamashita .2002" Owner-Occupied Housing and the Composition of the Household Portfolio." *American Economic Review* 92:345–62.
- Froot, K.A. and M. Obstfeld. 1991. 'Intrinsic Bubbles: The Case of Stock Prices', *The American Economic Review*, 81:1189–214.
- Hakim S. R. 2008." Growth and Cycles in the Stock Markets of the Gulf Cooperation Council since September 11." *Middle East Policy Journal* Volume XV, Number 1, Spring 2008.
- Helbling, T. and M. Terrones."When Bubbles Burst", in *World Economy Outlook*, (Washington, DC: *International Monetary Fund*, 2003), 61-94. Available for download at: <http://www.imf.org/external/pubs/ft/weo/2003/01/pdf/chapter2.pdf>.
- Kerr, S. 2010. "Dubai's Nakheel presents restructuring plans." *Financial Times* 14 July.

Figure 1: Price to Book Valuation of the Real Estate Sector and the Stock Market Index



Figure 2: Price Earnings Ratio of the Real Estate Sector and the Stock Market Index

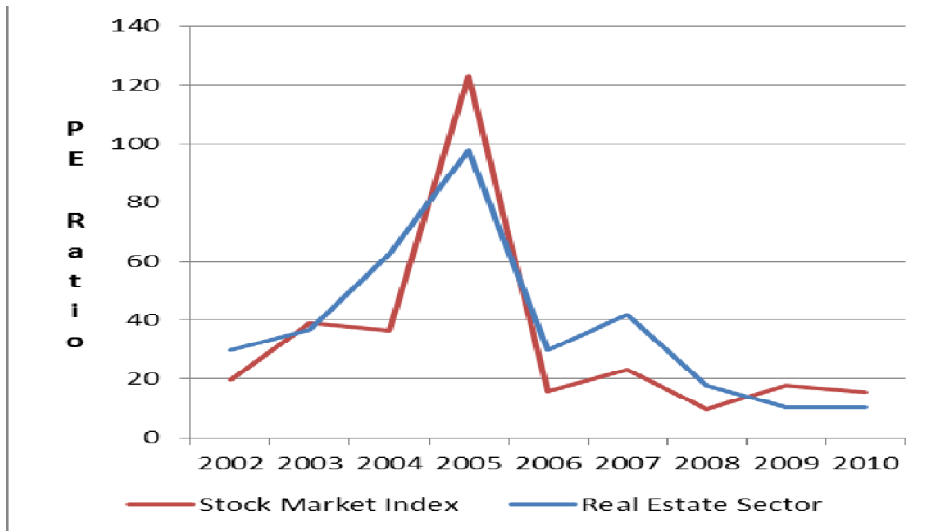


Table 1: Summary Statistics: Financial Metrics for Saudi Real Estate Companies: 2002 - 2010

				Real Estate Sector		Stock Market Index	
	BOOK VALUE	PRICE TO BOOK RATIO	PE RATIO	AVG PRICE TO BOOK RATIO	AVG PE RATIO	AVG PRICE TO BOOK RATIO	AVG PE RATIO
Mean	38.2	2.3	32.4	2.4	33.7	3.3	29.3
Median	23.28	1.38	25.93	1.88	29.81	2.34	18.72
Std Dev	32.95	2.57	34.58	2.22	25.13	2.04	30.00
Kurtosis	3.65	13.57	8.28	5.27	1.49	0.11	6.53
Skewness	1.83	3.37	2.76	2.44	1.36	1.08	2.71
Range	145.73	13.55	164.48	8.16	87.51	6.8	113.49
Minimum	9.02	0.7	3.75	0.99	10.29	1.01	9.72
Maximum	154.75	14.25	168.23	9.15	97.8	7.81	123.21

Table 2: Valuation and Earnings of the Real Estate Sector: and the Saudi Stock Market Index: 2002 - 2010

	YEAR	Avg Price to Book Ratio	Avg Price Earnings Ratio
Real Estate Sector	2002	1.62	29.72
Stock Market Index	2002	2.62	19.65
Real Estate Sector	2003	2.24	36.92
Stock Market Index	2003	1.01	39.01
Real Estate Sector	2004	4.21	62.57
Stock Market Index	2004	6.57	36.47
Real Estate Sector	2005	9.15	97.8
Stock Market Index	2005	7.81	123.21
Real Estate Sector	2006	2.15	29.89
Stock Market Index	2006	3.54	15.89
Real Estate Sector	2007	2.13	41.92
Stock Market Index	2007	4.28	23.21
Real Estate Sector	2008	1.26	17.81
Stock Market Index	2008	1.65	9.72
Real Estate Sector	2009	1.21	10.29
Stock Market Index	2009	2	17.79
Real Estate Sector	2010	0.99	10.29
Stock Market Index	2010	2.06	15.28

Table 3: Premium and Discount Valuation of the Real Estate Sector: Relative to the Saudi Stock Market Index: 2002 – 2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Relative PE (Avg PE of Real Estate Sector / Avg PE of Stock Market Index)	1.51	0.95	1.72	0.79	1.81	1.81	1.83	0.58	0.67
Relative PTB (Avg PTB of Real Estate Sector / Avg PTB of Stock Market Index)	0.62	2.22	0.64	1.17	0.61	0.50	0.76	0.61	0.48

Notes: A Relative PTB > 1 indicates that the price to book (PTB) ratio in the Saudi Real Estate Sector exceeded the average PTB of the Saudi Stock Market Index. In such case, the real estate sector would be trading at a premium to the overall stock market. A Relative PTB < 1 indicates a discount in valuation of the real estate sector relative to the overall stock market.

Table 4: Explaining the Price to Book Ratio of Saudi Real Estate Companies: 2002 – 2010

$$PTB_{it} = \beta_0 + \beta_1 PE_{it} + \beta_2 Index\ PTB_t + \beta_3 Index\ PE_t + u_{it}$$

PTB_{it} : the price to book ratio of company i in year t

PE_{it} : the price earnings ratio of company i in year t

Index PTB_t : the average price to book ratio of all companies that are part of the Saudi Tadawul index in year t

Index PE_t : the average price earnings ratio of all companies that are part of the Saudi Tadawul index in year t

u_{it} : iid error term

	coefficient	std.error	t-ratio	p-value	
const	-0.77842	0.488	-1.59	0.120	
PE	0.0258	0.0123	2.09	0.045	**
INDEX PTB	0.3421	0.1125	3.04	0.004	***
INDEX_PE	0.0369	0.0099	3.71	0.0008	***

Notes: SSR 42.28 S.E. of regression 1.15; Adj R-squared 0.799; Log-likelihood -53.98; Akaike criterion 115.96. ** Significant at 5%

*** Significant at 1%