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Stock Market Liquidity: A Case Study of Karachi Stock Exchange

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Abstract

A market is to be considered as liquid when large transactions are executed with a small impact on price. This paper identifies the position of stock market liquidity at Karachi Stock Exchange (KSE) during the period from 1985 to 2006. The analysis is based on using annual data of the listed firms at KSE and the data available on economic survey of the Government of Pakistan and other sources. For measurements of liquidity at KSE we have used three measuring tools as; Liquidity Analysis, Turnover Ratio and Size of Market to determine the liquidity issues at KSE. We provide the evidences of less stock market liquidity or to say illiquidity at Karachi Stock Exchange during the sample period. Consequently, market is still for behind in its efficiency, especially in liquidity hence it fails to attract new investors. We find that less liquidity causes less synchronicity in prices attracting less inventors and results is low size of market.

Keywords: Stock Market Liquidity, Turnover ratio, Aggregate Market Capitalization, Size of Stock Market, Portfolio investors

1. Introduction

Stock markets are playing a crucial role in the capital mobilization and provide secondary markets to the investors and financial institutions to buy and sell the securities. A stock market is to be considered as liquid when large transactions are executed with a small impact on prices of securities. Along with other factors, the stock market liquidity is considered a best tool to measure the efficiency of a stock market. Karachi Stock Exchange (KSE) is one of the oldest security markets of the Pakistan. This research intends to study the liquidity position of KSE through the period 1985 to 2006. The organization of the paper contains review of literature, theoretical framework, data and analysis of liquidity at KSE and finally conclusions with suggestion are given.

2. Review of Literature

Stock market liquidity is a slippery and elusive concept partly because it encompasses a number of transactional properties of the market (Kyle 1985). Glen (1994) defines liquidity, as the ability to transact quickly and without substantially moving prices, and market depth as the ability to transact at the current market price. Madhavan (1992) relates the liquidity with information asymmetry and argued that the quality of information possessed by market makers and the traders significantly influence market depth and the size of the bid-ask spread. Thus, higher the information asymmetry, widen the spread, lowering the market depth and market liquidity. Ahn and Chueng, (1999) conclude that Low liquidity is portrayed with a significantly high negative relationship between the spread and market depth. Pagano and Röell (1996) observe that greater transparency in the trading process enhances market liquidity by reducing the opportunities for taking advantage of less informed or non-professional participants. Cornell and Sirri (1992) find market liquidity increasing with information asymmetry, as insiders are able to obtain superior execution for their trades relative to the contemporaneous liquidity traders, concluding that the presence of informed traders to the market does not necessarily reduce market liquidity.

Empirically, the initial level of stock market liquidity is a robust predictor of economic growth and capital accumulation (Levine and Zervos, 1998; Levine, 1997).

An extensive microstructure literature on the role of liquidity in price formation process of individual securities is present (Amihud and Medlson 1986. Liquidity co-moves with commonality in liquidity with each security traded in the same market (Hasbrouk and Seppi 2001, Huberman and Halka 2000). In some emerging markets study; liquidity and its implication on asset pricing is important and more acute in emerging markets than developed markets (Bakaert, Harvey and Ludblad 2006). The illiquidity may be more of a concern for investors in emerging markets than those in liquid and developed markets. Empirical literature focusing on the emerging markets looks at the impact of institutional changes on market liquidity, etc (Levine, 1996).

Recent performance and its expected variation influence its liquidity by affecting inventory risk of liquidity providers in financial markets or their funding abilities (Copeland and Galai, 1983; Chordia, Roll, and Subrahmanyam 2003; Hameed, Kang and Viswanathan, 2006), co-variation in price and in volatility should also induce a co-variation in the provision of liquidity.

Such conjecture motivates the second objective of this paper—to investigate what are the possible reasons driving commonality in liquidity. So far there have been several studies documenting the existence of commonality in U.S. (Chordia, Roll and Subrahmanyam, 2002; Hasbrouck and Seppi, 2001; and Huberman and Halka, 2001), Hong Kong (Brockman and Chung, 2002) and Austrian security markets (Sujoto, Kalev and Faff, 2005). But none of them looks at the reasons why such phenomenon exists. Coughenour and Saad (2004) document the co-variation in liquidity among securities handed by the same specialist firm. They believe that shared capital and information among specialists within a firm cause co-movement in their provision of liquidity. Hameed, Kang and Viswanathan (2006) suggest that market states can affect the funding ability of financial intermediaries, and thus inducing the co-variation in their provision of liquidities. Their research extends this stream of research further. First, they investigate another candidate factor that could induce market-wide co-movement in liquidity in emerging markets—market uncertainty. If, as they discussed above, co-variation in price and in volatility could induce co-variation in the provision of liquidity, they see that the market uncertainty is another driving force of intra-market commonality. And this effect should be weaker in developed markets, where security prices do not co-move much with each other. They empirically test this conjecture by looking at the impact of market uncertainty on the time series variation of individual securities. And thy also compare this effect with that from developed market to see if there is a difference. Second, Morck et al. (2000) attribute the high synchronicity of returns in emerging markets to the poor property rights protection which deter risk arbitrage, cause more noise trading and thus causing more market-wide stock price variation. If this is also the underlying reason for commonality in liquidity in emerging markets, we shall see a link between the country governance or market development and intra-market co-variation in liquidity. Emerging markets do have some macro economic features that could induce higher commonality in liquidity. For example, emerging markets usually do not have many alternative investments (for example, bonds). Or even if they have, the markets may not be well developed. As a result, investors facing liquidation needs cannot easily diversify their liquidity shock among several asset classes, thus causing the co-variation in liquidity in one asset market. Therefore, beyond studying at the individual security level, we also investigate the impact of some market or country features on intra-market commonality in liquidity. Third, it has been well acknowledged that liberalization of emerging markets and international fund flows have reduced cost of capital and increased liquidity of these markets (Bekaert and Harvey, 2000 Lesmond, 2005). However, how does the liberalization process affect the risk of liquidity is still unknown. If international fund flows also reduce the commonality in liquidity, there should not be any problem. However, if they cause more commonality, which increases the liquidity risk in emerging markets, it would become a concern for both investors and regulators. Therefore, an investigation into the impact of international fund flow on the market liquidity risk is both necessary and valuable.

3. Theoretical Framework

A stock market is liquid when a large transaction take place without affecting prices of securities or a stock is illiquid when “sell orders” are filled with lower price than “buy orders”. So; stock markets are trapped in a low liquidity –high risk premium equilibrium (Pagano, 1993). Investors have fewer opportunities to diversify their portfolios are at high risk. Less opportunities of diversification cause a panic amongst the investors and they start to fill lower price sell orders then stock market investors start to bear losses. There are so many causes of illiquidity. But, question that how to measure the liquidity or illiquidity and what are the tools to be used for such measurements, we gone through the literature and find that there is no any single tool through which one can directly measure the stock markets liquidity, instead we found that there are some indirect or proxy tools have been used to measure the liquidity of individual stock, individual market, cross-listed firms or commonality in liquidity across the market (Zheng, 2006)

4. Data

We focus on the conventional data sources over the entire sample period are: Economic Surveys being published by the Government of Pakistan, Statistical Reports by State Bank of Pakistan, Analysis of Listed Companies at Karachi Stock Exchange published by State Bank of Pakistan and Data from Annual Reports of KSE over the entire sample period. The data has been filtered and for the purpose of liquidity measurements as Total Value of Shares Traded with GDP only year wise data of these two components has been used. The measurement of Turnover is based on the Yearly wise data of two components viz.: Yearly data of market capitalization and Value of total shares traded during the sample period. The yearly observation is on over the period of 21 years that is 1985-86-2005-06. However a monthly data on the turnover was available from the month of July 1996 to the June 2003 which is separately analyzed and that is depicted as graph-6.

4.1 Stock Market Liquidity at KSE

The stability of market is determined through liquidity of its securities, which means that how these securities are easily bought or sold in the market. The liquidity in one way enables the markets to improve the allocation of capital and enhance prospects of long-term growth. These indicators complement the market capitalization ratio by showing whether market size is large or small.

Here, three methods are used to measure the liquidity in our analysis viz.:

Method 1: In this method the Total Value of Traded Securities (TVTS) is divided with the GDP and multiplied with the hundred to determine the product as percentage of GDP, which measures the organized trading of equities as a share of national output and should therefore, reflect liquidity on an economy-wide basis.

Liquidity =Total Value of Traded Securities/ Gross Domestic Product (GDP)

(Liquidity means Liquidity at KSE during the sample period, Total Value of Traded Securities at Karachi Stock Exchange during the Sample Period, Gross Domestic Product means annual GDP at Factor Cost of country Pakistan during the sample period)

Method 2: The second method to measure the liquidity is with the use of Turnover Ratio. Turnover equals the value of total shares traded divided by market capitalization. High turnover is often used as an indicator of low transaction costs.

Value of Shares Traded: Turnover = Aggregate Market Capitalization

(Turnover means Turnover at KSE during the sample period, Value of Shares Traded equals to Value of Shares Traded at KSE during the sample period, Aggregate Market Capitalization stands for Aggregate Market Capitalization at KSE during the sample period)

Method-3: This method complements the second method of turnover ratio as it encompasses the structural reforms of capital market and governments liberalization policies adjustments which are visible through the comparison or determining of the ratio of stock market size and economic growth.

Market Size= Gross Domestic Product/ Aggregate Market Capitalization

(Market Size stands for Market Size of KSE during the sample period, Gross Domestic Product means annual GDP at Factor Cost of country Pakistan during the sample period and Aggregate Market Capitalization stands for Aggregate Market Capitalization at Karachi Stock Exchange during the sample period)

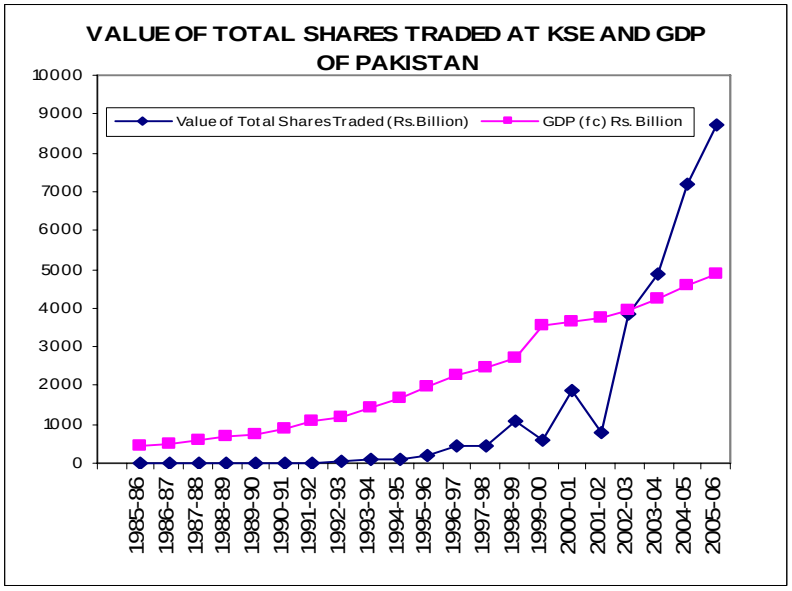
Therefore, these three measures have been used to determine the market liquidity of Karachi stock exchange in detail given as bellow:

5. Analysis of Liquidity at KSE

Method 1: Liquidity as Percentage of GDP

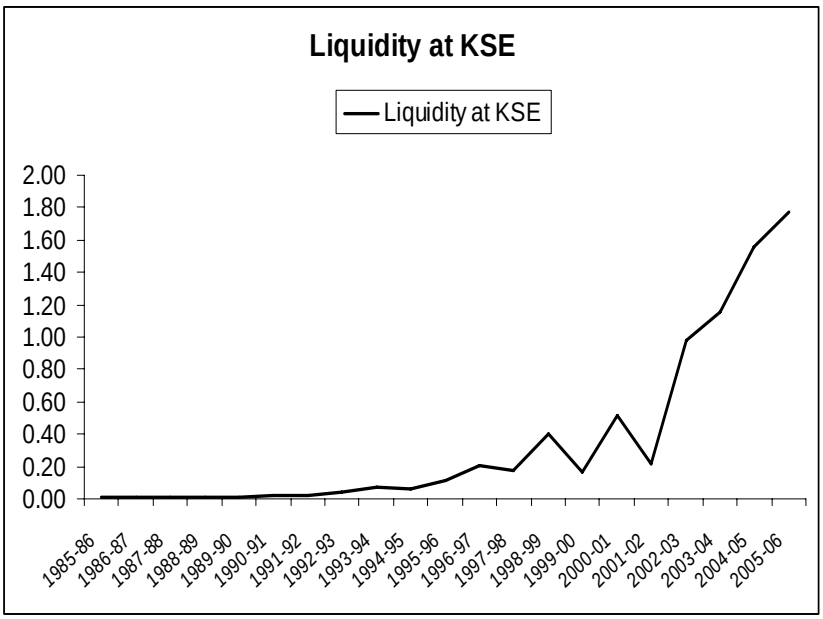
The analysis of total value traded as percentage of GDP for determining of the liquidity of market is given in the table-1. The analysis reveals that the liquidity was less than one percent of the GDP till the year 2002-03. It, however improved significantly and in the year 2003-04 it reached at 1.15 of GDP. Table-1 also reveals that the ratio of liquidity at KSE increased and significantly rose to 1.56 of GDP in the year 2004-05. The liquidity increased during the study year 2005-06 as 1.78 of GDP and it was at high and first time it reached at that point. The change in the liquidity as total value of total shares traded as of GDP given in the table-1 is also significant. The study reveals that during the period from 1994-95 and onward it moved up and sharply increase has been witnessed after 1996-97 to 2006. The same is depicted in the graph -1.

Graph-1



This reveals that the market is unpredcitable in the forecasting of when we look at its trends of liquidity. Though, it has been increased but not constantly that means it changed rapidily up to the year 1999-2000. The given statistics and its analysis has been also dipicted in the Graph-1 given above. Although, the first ten years of our study period showed a slight increase in both the GDP and value of total shares traded at KSE, but there a significant jumps in the liquidity (total value of shares traded to GDP) in last six years (see Graph-2). The overall average liquidity during sample period remained 0.64 which is low than 1. This situation needs more attention towards the issue of liquidity to be studied in detail to know whether there are fundamental changes occurred which changed the whole scenario in last six years or there is something extraordinary in the market? Whether it is market efficiency or an other game of big players in the market? Infact, on economic political front there are so many scandals have been unfold during this period. Business at KSE is also has remained under the flushes of these scandalous news and big wigs of the governemnet as a major players of these scandals. In such conditions the short and medium –term investors are skeptic towards the markets efficiency and they perfer to be away from the game of investment.

Graph - 2

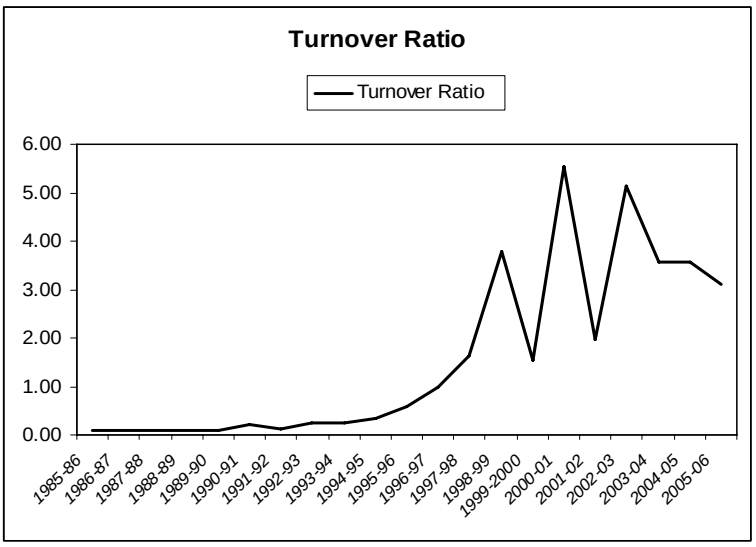


Method 2: Liquidity by Turnover Ratio

The turnover position of the Karachi stock exchange has been only 0.10 of the Aggregate Market Capitalization (AMC) in the year 1986-87, which lowered at 0.09 with -14.22 percent in the year 1986-87, and again lowered at 0.08 which is -6.69 percent decrease over the previous year. The turnover ratio witnessed upward trend but in terms of percentage change over the year 1990-91 a sharp decline of –98.89% in the year 1991-92 has been noticed.

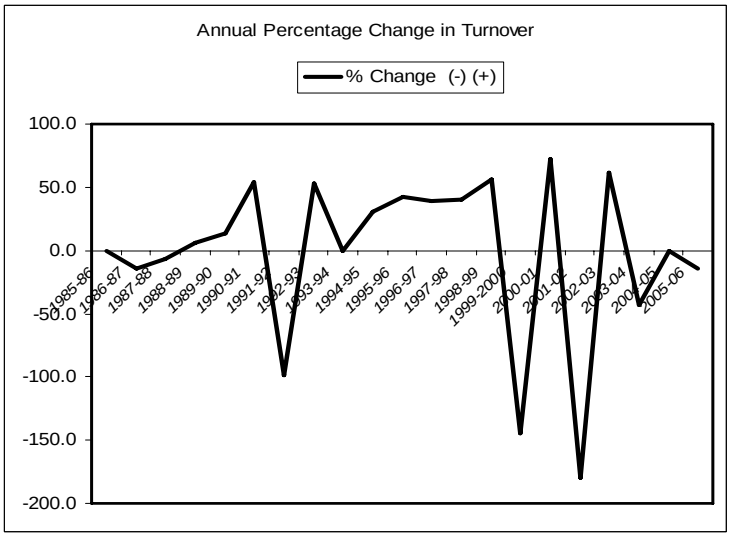
The turnover has witnessed an increase during the study period from 1990-91 to 1996-97 as less than 1 or say the ratio was 1:0.98 in the year 1996-97. As revealed in the Table-2, the turnover ratio sharply increased to 1.64 of Market Capitalization in the year 1997-98, or with the tremendous change of 39.28 percent over the year 1996-97. The percentage change during the study period has witnessed sharp upward and downward trend from the period 1994-95 to 1998-99 and 1999-00. But after this period a sharp incline has been witnessed during the year2000-01. In commencing year a sharp decline and again a sharp incline in the turnover at KSE (see Graph-3 and Graph-4). Following the same trends; the market some how maintained its turnover position during the years 2003-2004, 2004-2005 and 2005-2006 respectively. The average Turnover ration of KSE has been remained 1.57 during the sample period.

Graph – 3



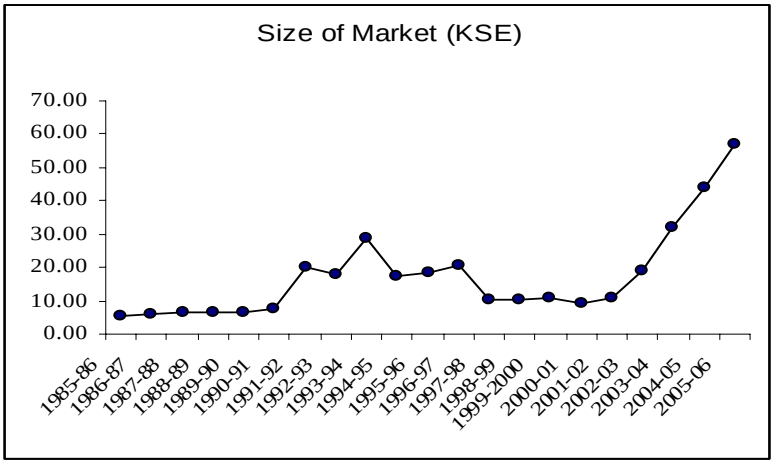
This whole study reveals that after the 1994-95 the following years has seen a tremendous increase in the turnover. It accelerated and reached to 3.78 turnover ratios in the year 1998-99 after slight trends of inclination (see Table-2).

Graph - 4



But, when percentage wise change has been studied it is showing a zigzag position in its trends during the study period from 1987-88 to 2005-06. It is obvious to note that the turnover ratio remained constant from1992-93 to 1998-99 with slight ups and down but it gone its maximum and minimum points during the period from 1998-99 to 2003-2004 and even in negative during the period 2003-04 to 2005-06 (see Graph 4 and Graph-6)

Graph-5



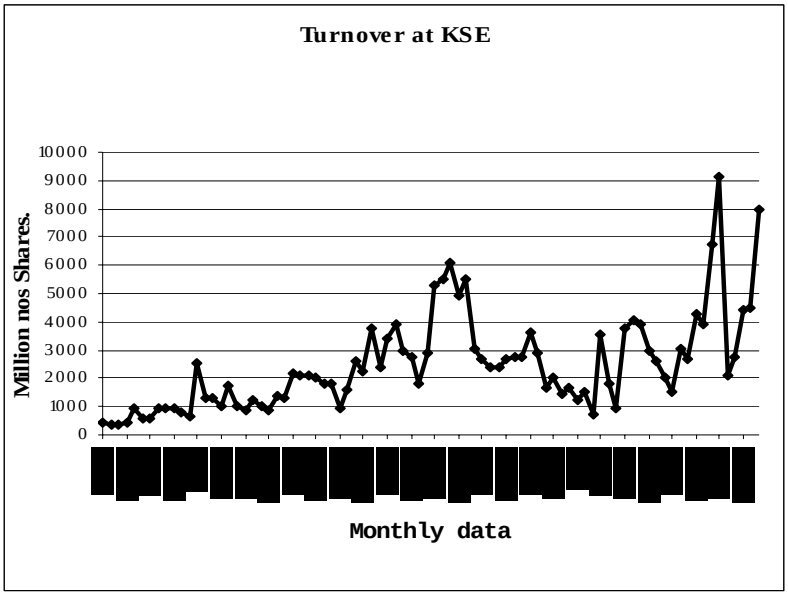
Method-3: The Size of Karachi Stock Exchange

This study is to determine the size of the KSE with two components viz; Aggregate Market Capitalization as the ratio of Gross Domestic Product of the country Pakistan during the sample period. The results are given in Table-3 and Graph-5.

According to our study the size of KSE remained very low from the year 1985-86 to 1990-1991. The overall average size of the market has remained only 22.90 percent of GDP which is still very low in comparison of this with other emerging markets of the world. (Note: For short of space here we do not give any comparison) But after the structural and developments policies like emergence of a number of countries including Pakistan in the capital market during this period, four main ideas have dominated its development. First, the privatization of public sector units gave a boost to the capital market especially in Mexico, Malaysia, Pakistan, Philippine and India. Second, the capital market was opened to foreign investors through its internationalization and hence it encouraged the foreigners to make direct investment in a number of south Asian countries. Third, due to the fall of Soviet Union and some other socialist countries, the command economies were transforming into the capitalist system. Along with other changes, the transformation also led to the emergence of new capital markets even in china, Vietnam and Mongolia, the citadels of the socialist system. Finally, the tremendous increase in the services for trading, settlement and depositing system and the introduction of automation and computerization of stock exchanges accelerated the emergence of capital market (Mian Mumtaz Abdulah 2003).

Thus, the study suggests that the first five and second five years of study period KSE have witnessed very low liquidity and it was even less than 0.1 during 1985-86 to 1989-90. But due to some policy changes (as mentioned above) and liberal changes in the institutional setup and some improvement in the access to information, the market liquidity has been improved systematically.

Graph-6



6. Conclusion

The above used all measurements are proxy or indirect measurements of liquidity in a stock excahnge and results therefore are mostly on ratios concerning with GDP and Aggregate Market Capitalization as the denonimators on the value of total share traded as numerator in first two measures; but the third mearuement to detrmine the size is the ratio between the GDP and Aggregate Market Capitalization. The liquidity at KSE has been witnessed a dormant situation during the first five years of the study. It has been moving upoward from the year 1990-91 to 1995-96 and again a zigzag trends say moving upward and downward in its liquidity from the year 1996-97 to 1999-00 has been seen. But after 2001-2002 it has tremendously gone to its high peaks as witnessed in this study. This reveals that the market was unpredcitable in the forecasting of its liquidity during the study years from 1985-86 to 1999-00. The sharp inclining and declining trends in its liquidity and turnover during the third period from year 1995-96 to 1999-00 suggested that the market was totally unpredictable and it restricted the short medium and long-term investment, because low and unpredictable liquidity or more appropriately said illiquidity. The last spell of study period from the year 2001-2002 onward has been a sharp upward trend which may causes a removal of fear of loss amongst the long term investors and portfolio investors. Through the above study wee provide the evidences of less stock market liquidity or to say illiquidity at KSE during the sample period. Consequently, market is still for behind in its efficiency, especially in liquidity hence it fails to attract new investors. We find that less liquidity causes less synchronicity in prices attracting less inventors and results is low size of market.

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Table-1 LIQUIDITY AT KARACHI STOCK EXCHANGE

Year	Value of Total Shares Traded (Rs.Billion)	GDP (fc)* Rs. Billion	Liquidity
1985-86	2.583	466.319	0.01
1986-87	2.813	515.431	0.01
1987-88	3.181	601.025	0.01
1988-89	3.91	683.138	0.01
1989-90	4.979	759.854	0.01
1990-91	15.232	908.374	0.02
1991-92	24.435	1077.943	0.02
1992-93	51.579	1200.129	0.04
1993-94	97.472	1412.858	0.07
1994-95	101.446	1688.126	0.06
1995-96	218.21	1951.56	0.11
1996-97	461.611	2255.649	0.20
1997-98	424.675	2480.884	0.17
1998-99	1081.143	2711.078	0.40
1999-00	605.6	3,562.02	0.17
2000-01	1877.8	3,632.09	0.52
2001-02	805.6	3,745.12	0.22
2002-03	3841	3,922.10	0.98
2003-04	4862	4,215.61	1.15
2004-05	7167.58	4,593.23	1.56
2005-06	8707.46	4,896.74	1.78
Total	30360.31	47279.27	0.64
Average	1445.73	2251.39	0.64

Sources: IFC Emerging Market Data Base (Various Issues)

SBP Annual Report and Economic survey (Various Issues)

Table- 2 TURNOVER RATIO

Year	Value of Total Shares Traded (Rs.Billion) A	Aggregate Market Capitalization (Rs. Billion) B	Turnover (A/B)	Annual Change in % (-) (+) of Turnover Ratio
1985-86	2.583	25.42	0.10	0.00
1986-87	2.813	31.62	0.09	-14.22
1987-88	3.181	38.15	0.08	-6.69
1988-89	3.91	43.93	0.09	6.32
1989-90	4.979	48.63	0.10	13.07
1990-91	15.232	68.44	0.22	54.00
1991-92	24.435	218.36	0.11	-98.89
1992-93	51.579	214.43	0.24	53.48
1993-94	97.472	404.58	0.24	0.16
1994-95	101.446	293.33	0.35	30.34
1995-96	218.21	365.24	0.60	42.11
1996-97	461.611	469.15	0.98	39.28
1997-98	424.675	259.3	1.64	39.92
1998-99	1081.143	286.2	3.78	56.64

1999-00	605.6	391.86	1.55	-144.43
2000-01	1877.8	339.249	5.54	72.08
2001-02	805.6	407.637	1.98	-180.08
2002-03	3841	748.434	5.13	61.49
2003-04	4862	1357.5	3.58	-43.29
2004-05	7167.58	2013.2	3.56	-0.60
2005-06	8707.46	2801	3.11	-14.53
Total	30360.31	10825.66	33.06	
Average	1445.73	515.50762	1.57	

Source: Government of Pakistan, Finance Division, Economic Adviser's Wing, Islamabad, Economic survey (Various Issues), Annual Reports of SBP (Various Issues)

Table-3 SIZE OF KARACHI STOCK EXCHANGE

Year	GDP (fc) Rs Billion	Aggregate Market Capitalization (AMC) (Rs. Billion)	Size of Market (KSE)
1985-86	466.319	25.42	5.45
1986-87	515.431	31.62	6.13
1987-88	601.025	38.15	6.35
1988-89	683.138	43.93	6.43
1989-90	759.854	48.63	6.40
1990-91	908.374	68.44	7.53
1991-92	1077.943	218.36	20.26
1992-93	1200.129	214.43	17.87
1993-94	1412.858	404.58	28.64
1994-95	1688.126	293.33	17.38
1995-96	1951.56	365.24	18.72
1996-97	2255.649	469.15	20.80
1997-98	2480.884	259.3	10.45
1998-99	2711.078	286.2	10.56
1999-00	3,562.02	391.86	11.00
2000-01	3,632.09	339.249	9.34
2001-02	3,745.12	407.637	10.88
2002-03	3,922.10	748.434	19.08
2003-04	4,215.61	1357.5	32.20
2004-05	4,593.23	2013.2	43.83
2005-06	4,896.74	2801	57.20
Total	47279.27	10825.66	22.90
Average	2251.39	515.50762	22.90

Source: Government of Pakistan, Finance Division, Economic Adviser's Wing, Islamabad, Economic survey (Various Issues), Annual Reports of SBP (Various Issues)