

## Effect of Stock Market Activities on Banks' Deposits - Case of Jordan

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### Abstract

This study was to determine the influence between the ASE activity and the activity of the banking system, and to identify the important variables and the most effective in forecasting tool. This study is used to investigate a number of variables in the Amman Stock Exchange activity and their effect on the banks activities for the period of 1992-2009. The study built a predictive model in order to predict the size of the private sector deposits in the banking system as an independent variable and to determine the dependent variables in the banking system. The researcher has used simple linear regression, Multiple Regression, and Stepwise Multi Regression. The study results have confirmed that there is a statistically significant effect of Amman Stock Exchange (ASE) activities on Jordan Banks' deposits.

**Keywords :** Stock Market, Banks, Deposits, Private Sector, Amman Stock Exchange.

### 1. Introduction

The relationship between the financial development and economic growth has been an extensive subject of most empirical research. The question of whether Stock market development causes financial growth. Given the importance role of stock markets and banks in both developed and developing countries in promoting economic growth, many recent researches are now modeling and conjugating stock market and banks with an economic growth in their empirical work. They have shown that both stock market and banks are necessary in promoting economic growth. Therefore, they considered stock markets as compliment to banks rather than substitutes (Vazakidis, Demopoulos, and Yucel, 2009).

Beck and Levine have argued that omitting a stock market variable makes it difficult to appropriately examine banks development and economic growth when controlling for stock market system (Beck and Levine ,2004). Moreover, most researchers did not distinguish between the measures of banking development (such as credit and money supply) and stock market size and liquidity. They also give more attention to the role of banking sector and consider it as the only organized sector in most developing countries. At the same time, they neglected the potential role of stock markets for efficient capital allocation and risk sharing in liberalized financial markets which may produce misleading results because the omission of a relevant variable from a system might invalidate causality inference (Caporale and Pittis (1997).

Accordingly, the purpose of this study is to contribute to the literature on stock market-growth nexus by analyzing simultaneously the causal effect between stock market and banks in a unified framework with a variety of financial measures in a small developing economy such as that of Jordan using time series data during the period 1992-2009. The investigation of such relationship in this country is interesting for several reasons:

First, it assists in an evaluation of the extent to which the financial deregulation that has occurred in Jordan since 1990s has spurred economic growth. Further, it gives some guidance as to whether stock market sector development is a necessary and sufficient condition for a higher banking growth in developing countries.

Second, this paper has used a set of different financial indicators of stock market (such as market capitalization, value traded, and turnover ratio) and banking development (bank credit to the private sector) that were not frequently used to examine this relationship in Jordan. The banking system in Jordan has developed quantitatively and qualitatively as the number of licensed and specialized banks has grown, in addition to the variety of investment functions of their financial resources and outstanding and creative methods of management; the electronic banking process, has enabled the banks to make financial transactions more quickly, efficiently and at lower costs. It is quite evident that the banking system is the main source of financing most economic sectors and it is the prime vehicle which mobilizes savings and channels them towards economic sectors.

The evolution of the banking system in Jordan both quantitatively and qualitatively clearly, where the number of licensed and specialized banks have increased drastically, and a variety of functions and methods in the management of financial resources have been introduced , along with the adoption of many of the banks to process electronic banking, which enabled them to make financial transactions more quickly, efficiently and at lower costs, so it's important to realize that the banking system has become the main source of financing for most economic sectors and the vehicle to mobilize savings and channel them towards economic sectors that lead to the desired growth. Some economic literatures see that there is a positive relationship between the banking system activity and that of the capital market, as both markets are complementary to each other and there is no competition between them(Central Bank of Jordan reports, 2011).

The relationship between the banking system and the stock market is one of the most important topics that were studied in most developed countries or developing countries, in terms of contributing to economic development and access to high growth rates by diverting money from units of surplus unit's deficit.

## **2. The theoretical framework of the study**

### **2-1: A Brief Historical Background of the Jordanian Economy**

Jordan is a small open economy with a limited economic base and it relies heavily on foreign aid and remittances of national expatriates for foreign currency resources. In the 1970s, Jordan has witnessed high growth and large cash inflows due to the boom in oil prices, which contributed to increased foreign revenues through the large inflow of aid and workers' remittances from the Gulf States.

With the drop in oil prices in the early 1980s, the main sources of foreign exchange flows, aid and remittances, dried up, resulting in economic recession and stagnation throughout the decade. Jordan witnessed declining growth rates during the 1980s. Real GDP had been growing strong from 1976 until 1982 at 13 percent on average, before it declined to 1.5 percent in 1988, with a sharp contraction (-10 percent) in 1989 as a result of the crisis. Jordan resorted to heavy external borrowing to compensate for the fall in foreign currency and public revenues more generally. The accumulation of foreign debt coupled with expansionary fiscal policy and accommodating monetary policy which has led to a J.D. exchange rate crisis in 1988-89 and a sharp devaluation of the J.D. exchange rate. In the post-crisis period, fiscal discipline and the enforcement of limitation on central bank financing of the budget deficit were critical reforms in the environment. Jordan's economy has experienced a sharp slowdown of economic growth in 2009. The Growth in real GDP slowed from about 6% in 2007 and 2008 to 3% in 2009. This significant slowdown came after a rapid growth averaging more than 8.0 percent during the period (2004-2008) driven by export expansion, inflows of foreign investments, as well as the efforts of economic reforms (CBJ-2010,2-11).

### **2-2: The banking system in Jordan**

CBJ task of supervision exercised control over the work of the banking system in Jordan through direct control over their work and activities, and is made up of the banking system institutions in Jordan until 2009, as shown in the table (2-1) from 23 banks, including two banks Islamists, and eight branches of foreign banks, exercise these banks its business through 66 branches and 67 representative offices distributed within Almmmlkh, while the number of branches of Jordanian banks operating abroad has reached 138 branches until 2009, as well as lending institutions specialized, and exchange companies, and representative offices outside Kingdom of Jordanian banks (Central Bank of Jordan, the annual report, 2009). Banks play a key role in raising the rate of economic growth through the mobilization of national savings and used to finance productive economic sectors, as well as development requirements, and achieve the goals of monetary policy, they are an effective tool in achieving these goals, with the banking sector contributed to the achievement of the objectives of monetary policy in the framework of the economic reform program since 1989, which was to maintain the stability of the dinar exchange rate, and adjust cash flow, and build foreign exchange reserves, and the adoption credit and investment policies oriented to support some economic sectors targeted.

Banking operations in Jordan have started since the mid-twenties of the last century, when the Ottoman Bank began to exercise its business in the UK in 1925, and known as the Bank of Krndlaz in the late sixties and Standard Chartered Bank since 2000. Followed by the establishment of the first national bank when the Arab Bank moved its head office from Jerusalem to Amman in 1948, followed by Jordan Ahli Bank in 1956, then the two banks and the national two new Jordan and Cairo Amman Bank was established in 1960, as the forties and fifties period saw the entry of four banks is Jordanian, is the British Bank of the Middle East (HSBC) currently, Arab real Estate Bank and the Rafidain Bank and Intra Bank, which came out of the Jordanian market in 1966, following the parent bank stopped in Beirut for work. And then successively the establishment of national banks in the Kingdom along with some foreign banks, while out of the market a number of banks due to the faltering performance caused by mismanagement or due to the faltering parent banks abroad(CBJ, 2010).

### **2-3: Previous studies**

The mutual relation between the stock exchange activity received and the banking activity is of interest of many researchers and economists alike, many studies were conducted using multiple methods and statistical tools in both developed and developing countries and for different time periods using the data daily, weekly, monthly, and yearly; a lot of these studies have led to the conclusion that there is a relationship between each activity of the stock market and banking system and financial market represented by securities. Accordingly, general surveys, of relevant prior studies have been surveyed:

**1-** Study by Shotri, (1999), titled: "the role of the financial market in mobilizing financial resources", the researcher studied the security market's ability to mobilize financial resources available to the banking markets for the period "between 1990 to 1999", the study showed that there was a general weakness in the role of the

security market in mobilizing financial resources, although there are a number of reforms undertaken in this regard. The researcher refers this to several reasons, the most important one is the acquisition of the banking sector the bulk of domestic savings.

2- Study by Gateway, (1999), titled: "The role of the banking system in the development of the primary capital market of Jordan", this study showed the relationship between bank financing and the financing of the primary stock market in Jordan, the study concluded that there is an inverse relationship between bank credit and underwriting of securities issued by corporations, in addition to the lack of relationship banks credit of bonds issued by companies, as well as the study indicated a significant positive impact of securities portfolios at banks, which is greater than the negative impact of banking credit on Stock underwritings. This means that there is a complementary relation rather than a competitive one between the banking system and primary capital market.

3- Study by Jaziri, (1998), titled: "management performance in the stock market", this study examined the effect of some internal variables on stock performance in the stock market in Egypt, the researcher found a strong relationship between some variables of the study and the level of stock performance, researcher reasserted to the importance of applying sound fundamentals in managing cash flow. Researcher affirmed that the stock price is influenced by cash flow and investment expansion; the study concluded that the share price movement is correlated to the positive and negative net cash flow.

4- Study by McMillan (2005) titled: "Time Variation in the Co-integrating Relationship Between Stock Prices And Economic Activity", this study aimed to release the relationship between the market index of the shares and the output and interest rates. The study sample consisted of companies listed on the stock market in the United States, was used monthly data for these companies from the period of 1971-2000, the study found that there is a relationship is positive correlation between the share price and industrial production, and that there is a negative correlation between the share price and interest rate relationship.

5- Study by Apps and Rees (2004), titled: "Stock Market Development And Private Consumer Spending", this study addressed the income relationship in the capital market of bank deposits, this study proved that there is a strong relationship between income in the secondary market via generated profits and the increase in the volume of deposits in the banking system, as the increase of one dollar in the wealth of individuals through the stock market will lead to increased spending by about 4.7 cents and the rest goes into savings through bank deposits, Study has added that economic development, and the banking system are commensurate as the saved money is linked to bank deposit. It is worth to add that there is a lower trend of individuals retains banknotes in their pockets as the modern tools such as credit cards and other modern tools of credit cards are in practice.

6- Study by Mahmud lAlam & Gazi, (2004) ,titled: "Relationship Between Interest Rate & Stock Price", this study aimed to test the relationship between interest rates and stock prices through the monthly data of stock prices and interest rates for fifteen states : (Australia, Bangladesh, Canada, Chile, Colombia, Germany, Italy, Jamaica, Japan, Malaysia, Mexico, Philippines, South Africa, Spain, and Venezuela), for the period from 1988 up to 2003, and using the multiple regression test, study results revealed that the relationship was negative between interest rates and stock prices for all the sample countries, and therefore researcher recommends that these countries have to manage to control banks interest rates which will reflect significant benefits for their stock markets and will increase the demand for securities.

### 3. The study model

To complement the treatment of the study problem and to achieve the objectives, a model was built which includes the impact of ASE activity representatives of the independent variables (volume, index, and the value of releases, and stock turnover rate) on the activity of the banking system represented by the volume of private sector deposits.

Figure-1- ASE Activity

Independent Variables	Dependent Variable
Trading Volume	
ASE Price index (Weighted Average)	
The Volume of the Primary Market Underwriting	Volume of the Private Sector Deposit
Shares Turnover	

#### 3-1: Study Variables:

The study dealt with the impact of ASE on the banking system activity during the period: 1992-2009.

First: the independent variables:

1-TV: Trading Volume.

2-SPIW.MV: Stock Price Index Weighted by the Market Value price index likely stock market value.

3-PCMI: Primary Capital Market Issuance: the value of the primary market underwriting.

4-TR: Turnover Ratio, the stock turnover is calculated by dividing the number of shares traded during the year on the number of shares subscribed in the year-end rate.

Second: the dependent variable:

1-PD: Private Deposit, total bank deposits of the private sector.

3-2: Study methodology

1. Descriptive analysis:

method of analysis and interpretation in a scientific organizer for access to specific purposes and is a way of describing the phenomenon studied and photographed quantified by collecting information on the problem and classified, analyzed and subjected to minute study has this manner adopted in this study to describe the relationship between the device activity banking and activity of ASE.

2. Analytical Approach:

This study aims at studying the impact of ASE activity on the activity of the banking system. Analysis has been relying on the quantitative approach through the use of simple linear and multiple regression associated with this method of testing for the quality of forecasting and moral regression coefficients such as the coefficient of determination  $R^2$  and statistical F and statistical t.

3-3: Hypotheses:

Null Hypothesis ( $H_0$ ):

No statistically significant effect of the ASE Activity on the activity of the banking system relationship, and the general hypothesis is subdivided into:

$H_{0.1}$ : No statistically significant relationship to the impact of the volume of trading in the ASE on the size of private sector deposits in the banking system.

$H_{0.2}$ : There were no significant statistical effects of ASE weighted index on the size of private sector deposits in the banking system.

$H_{0.3}$ : No statistically significant relationship to the impact of the market value of the initial versions of ASE on the size of private sector deposits in the banking system.

$H_{0.4}$ : No statistically significant effect of the turnover ratio of ASE on the size of private sector deposits in the banking system relationship.

3-4: The study population:

It consisted of all Jordanian banks listed on the ASE and sixteen banks in Jordan. All economic sectors (financial sector and the industrial sector, and services sector) listed on the ASE during the period of study.

3-5: Sources and methods of data collection

In order to achieve its objectives, the researcher has used the following data collection methods and sources:

1. Annual reports and monthly bulletins issued by the Central Bank of Jordan, the study also relied on desktop sources and the sources of information available from previous studies, books and references, both Arab and foreign periodicals concerning the subject study.

2. Statistical data issued by ASE and Security Commission.

#### **4. Data analysis and hypothesis testing**

4-1 Description of study data

A set of Indicators for ASE activities during the study period of 2005-2013 has been tabulated in table (V-1). It has to be noticed that there has been a change in the market value of the ASE during the study period; researcher found that the highest value was in 2007 and it was due to higher market values of most listed companies at the stock market. During 2008 the global financial crisis had casted a shadow effect on the market value; where most of the Arab and international stock markets saw a decline in their performance during the years 2008 and 2009. Notes from the table (V-1), it is noted that the volume of the three market sectors (financial, services, industry), has been included in 2008 the highest trading volume as it rose about 64% from 2007, however, during and after the global crisis, i.e. in 2009 the trading volume has decreased by approximately 53% from the previous year.

With respect to the price index, it is likely to indicate that the stock market value during the study period, 2005 showed the highest increase due to increased stock market activity in that period; it was the best in terms of performance indicators levels for the stock market since the establishment of the stock market; this growth however, is due, to high performance levels of the public shareholding companies, as their profits rose during the first three quarters of 2005 by 103%, along with the continued flow of Arab and foreign investments (ASE, Annual Report, various issues).

Considering for the years 2008 and 2009, (see appendix1) we note the significant decline in the price index of the stock market value which is due to the fallout from the global financial crisis during that period. As can be seen from the table the value of the primary market underwriting of the ASE during the study period, which reflected the great activity that the secondary market witnessed in 2005 on the initial market activity by

stimulating the establishment of new companies as well as encouraging existing companies to increase their capital; this was possible in the light of the availability of excessive liquidity by the investors due to rising stock prices, as well as to increase the demand for stocks investments due to their higher returns.

Finally, we note from the table appendix1, the turnover rate of the shares at the ASE during the study period, from the above figure, it is worth to note that the stock turnover rate in 2006 has the highest percentage compared to other years, due here also to increase the activity of the stock market during this year where increased by 101% compared with the previous year, but also note the impact of the global financial crisis on the rotation beyond the 2008 rate.

Table1: reflects the major financial indicators for ASE, the highest market capitalization was in 2007, J.D. 29,214,202,327, this value started to decrease gradually and systematically to reach J.D. 17,984,673,970 in 2005 ; the net income was, 1,470,900,200 in 2008 , and the least was in 2009, J.D. 750,132,245. Dividends grew up from J.D. 443,537,476 in 2005 to reach J.D. 842,732,877 in 2011.

**Table (1) : Major Financial Indicators for the ASE**

Year	Market Capitalization (JD)	Book Value (JD)	Net Income After Taxes (JD)	Dividends (JD)	No. of Subscribed Shares
2005	26,667,097,118	7,348,705,691	1,188,745,976	443,537,476	3,016,035,799
2006	21,078,237,222	10,095,259,717	954,625,862	506,413,639	4,560,732,408
2007	29,214,202,327	11,654,623,917	1,224,369,157	609,409,310	5,393,462,524
2008	25,406,265,528	12,836,940,914	1,470,900,200	616,480,402	6,394,576,312
2009	22,526,919,428	13,626,874,513	750,132,245	576,881,469	6,725,549,375
2010	21,858,181,603	13,712,244,862	811,847,384	588,922,976	7,006,444,161
2011	19,272,757,327	13,547,990,002	1,086,936,096	842,732,877	6,951,136,015
2012	19,141,521,210	13,857,956,338	1,057,613,228	793,691,224	7,073,722,684
2013	18,233,491,417	13,989,040,661	1,034,857,807	711,757,101	7,152,011,974

Source: ASE, Annual Report, various issues for the years 2005-2013

#### 4-2 Analysis of Impact of ASE activity on the banking system

To estimate the effect of stock trading in Amman Stock Exchange on the size of deposits in the banking system private sector, Table 2 reflects this effect.

**Table 2: ASE effect on private sector deposits**

Sub-hypothesis	R	R <sup>2</sup>	t	f	Sig.	constant	Independent variable coefficient	Nul-hypothesis Result
Trade volume	0.929	0.863	81.875	9.048	0.000	4178	0.56	Reject
Market Index	0.942	0.886	101.483	10.074	0.000	1602	1.68	Reject
Primary market volume	0.719	0.517	13.92	3.730	0.003	3550	8.95	Reject
Turnover rate	0.654	0.428	9.720	3.12	0.009	2719	77.3	Reject

Spread sheet t (at significant level of 0.05, the degree of freedom (n-k) 14) is 2.145.

Spreadsheet f (at the significant level of 0.05, the degree of freedom (n-k + 1) 13) is 2.66.

It is inferred from the data in Table 2, the existence of a significant correlation between the volume at the macro level in the Amman Stock Exchange and the volume of private sector deposits in the banking system.

The value of the correlation coefficient is (0.929), and the coefficient of determination is 86% of the changes in the size of private sector deposits in the banking system can be explained by variable of the size of stocks traded at ASE.

To determine the explanatory of the model, f value has been calculated and was (81.875), which is greater than the value of F at the spreadsheet (2.66), this suggests that the linear relationship between the change in trading the volume at the stock market and the size of private sector deposits in the banking system is statistically significant and thus the null hypothesis is rejected. This confirms that the level of statistical significance of the test F (0.000).

To test the reliability of the estimated values, t has been calculated and it was (9.048) ,which is greater than the spreadsheet value (2.145).

Accordingly, the estimated value of a parameter change in trading volume of the sample is statistically significant and it confirms that the level of statistical significance to test t (0.000).The table also showed the existence of a significant correlation between the price index of Amman Stock Exchange and the volume of private sector deposits in the banking system; the value of the correlation coefficient (0.942), the coefficient of determination shows that 89% of the changes in the size of private sector deposits in the banking system can be

explained by the index variable rates at the Amman stock Exchange, and to determine the estimated explanatory model  $f$  was calculated and was (101.483), which is greater than the value of  $F$  spreadsheet (2.66). This indicates that the linear relationship between the change in the price index of the stock market and the volume of private sector deposits in the banking system are statistically significant and therefore reject the null hypothesis between the change in the price index of the stock market and volume of private sector deposits in the banking system and this confirms the level of statistical significance of  $F$  test (0.000).

To test the reliability of the estimated values of the tendency, test was calculated and found to be (10.074) which is greater than the value of  $t$  at the spreadsheet (2.145).

Also table notes that there were no significant correlation between the value of the primary market's exports in the Amman Stock Exchange and the volume of private sector deposits in the banking system; also the value of the correlation coefficient relationship (0.719), indicates that the coefficient of determination reflects that 52% of the changes in the size of private sector deposits in the banking system can be explained by the value of the primary market issuance variable at Amman Stock Exchange.

To determine the estimated explanatory model  $f$  was calculated and was (13.916), which is greater than the value of  $f$  in the spreadsheet (2.66); this suggests that the linear relationship between the change in the value of the primary market issuance and size of private sector deposits in the banking system is statistically significant and thus we reject the null hypothesis of the relation between the change in the value of the primary market issuance and size of private sector deposits in the banking system. This was confirmed by the  $f$  value (0.003).

To test the reliability of the estimated values it is inferred from the table that there were no significant correlation between the shares turnover rate at ASE and the volume of private sector deposits in the banking system; the value of the correlation coefficient was (0.654), the coefficient of determination indicates that 43% of the changes in the size of private sector deposits in the banking system can be explained by turnover rate at ASE, and to determine the estimated explanatory model  $f$  has been calculated as (9.720) which is greater than the value  $f$  in the spreadsheet (2.66). This indicates that the linear relationship between the change in the on the shares turnover rate and the size of private sector deposits in the banking system is statistically significant and therefore we reject the null hypothesis of a lack of linear relationship between the change in the turnover rate and the size of private sector deposits in the banking system and this confirms that the level of statistical significance of the test  $f$  (0.009).

To test the reliability of the estimated values of the tendency significance,  $t$  test was conducted and its value was (3.12) which are greater than the value of  $t$  in the spreadsheet (2.145).

Based on these proven values and the tendency resulting from regression analysis results show that the shares turnover rate at ASE affects in the volume of private sector deposits in the banking system in a positive way.

In order to assess the impact of the independent variables (combined) for the activity of the Amman Stock Exchange on the size of private sector deposits in the banking system.

#### 4-3 Multiple regression analysis

All independent variables have been grouped as collective independent variables together and the multiple regression tests were used. The following table 3 shows the results of multiple regression analysis:

**Table 3:** the impact of the independent variables Activities at ASE (combined) on the size of private sector deposits in the banking system

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	Change Statistics			Durbin-Watson
					R Square Change	F Change	Sig. F Change	
1	.987a	.975	.964	647.466	.975	95.757	.000	1.555
a. Predictors: (Constant) The volume of trading, the index, the turnover rate, the value of the versions of the primary market								
b. Dependent Variable: The size of private sector deposits								

It is Inferred from the table above that the linear relationship between the independent variables ASE activity and private deposit size variable have strong correlation coefficient (R) 0.987 and the coefficient of determination ( $R^2$ ) reflects full relationship between independent variables and the size of private sector deposits, which indicates that 97% of changes in the size of private sector deposits in the banking system can be interpreted by the variables (volume, the index, the turnover rate, the value of the primary market underwritings).

The  $f$  test which is used to test the causal relationship between the dependent and independent variables variable combined indicated the existence of a linear relationship between the dependent variable and independent variables combined, as the value of  $f$  calculated was (95.757), which is highly greater than the

tabulated value (2.66) and this is confirmed by the statistical significance of the coefficient of determination (.000).

The Std. Error of the Estimate refers to the small random errors and thus the quality of the representation of the regression line for any form of proliferation that the size of the mistakes of appreciation is minimal.

To detect autocorrelation between the limited value errors, the Durban test - Watson test was used reaching statistical (DW = 1.56) and the decision is made about the existence of a self-link after comparing this figure with the highest tabular DW value (du) and the minimum DW value (dL) in the Durbin - Watson table at the significance level (0.05) corresponding to the degree of freedom (N = 18) and the number of independent variables K = 4, according to base the decision not to be calculated in the decision-zone value.

$$0.82 < 0.96 < 1.87$$

To determine the estimated explanatory model of our subject study concerning the suitability of any of the regression line for viewing values to the variables of the model. we use(ANOVA) test as in the following table4:

4- 4 the results of analysis of variance

ANOVA <sup>b</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.606E20	4	4.014E7	95.757	.000 <sup>a</sup>
	Residual	4192124.842	10	419212.484		
	Total	1.648E8	14			

Fisher distribution (F) is used to determine the explanatory model. To do this test F value is calculated and amounted to (95.737), which reflect the average regression boxes to the average residuals boxes, which indicates statistical significance level of Fisher distribution (.000a), this indicates that the linear relationship between the change in the variables independent in the Amman Stock Exchange and the change in the volume of private sector deposits in the banking system is statistically significant.

To show the capabilities of least squares for the model parameters, we use the multiple regressions equation can be written as follows:

$$\left\{ \hat{PD} = 3342.7 + 0.423 TV + 1.4 SPI - 4.513 TR - 27.9 PCMI \right\}$$

Table:5: activity decline coefficient of private sector deposits in the banking system on ASE variables

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3342.7	429.456		7.784	.000		
	Trading Vol	0.423	0.078	.704	5.459	.000	.153	6.530
	Index	1.4	0.22	.782	6.265	.000	.163	6.116
	Primary Mk Underwriting	-4.513	1.189	-.362	-3.796	.004	.279	3.581
	Turnover	-27.9	9.337	-.236	-2.989	.014	.407	2.455

a. Dependent Variable: Private Sector Deposits

So that; the variable parameter  $\hat{PD}$  is the estimated size of the deposit.

The t value reflects the reliability of the estimated values of the constant term t value is (7.784), which is statistically significant (0.000)as being less than (0.05) and this indicates that the estimated constant value of the sample is statistically significant and can be trusted as a good prediction basis.

Also the indicative slope reflects that an increase in the total trading volume in ASE by one unit increases the amount of private sector deposits in the banking system by (0.423) units, however, this interpretation can be more clear if we use the regression coefficient beta which indicates that. 0.70 of the change in the volume of private sector deposits in the banking system is the result of changing one unit of trading volume in ASE. This is advocated by the calculated t (5.459), which is higher than tabulated value (2.14) at the

significant level (0.05), and this indicates that the trading volume coefficient is statistically significant.

#### 4- 5 Statistical significance

The Inclination parameter of the price index variable suggests that an increase in the index by one unit causes an increase to the amount of private sector deposits in the banking system by (1.4), however, this interpretation can be more clear if we use the regression coefficient beta which demonstrates that 0.78 from a change in the volume of private sector deposits in the banking system is the result of a change of one unit of ASE price index; this is advocated by the value of t (6.265) which is higher than tabulated value (2.14) at the significance level (0.05). This indicates that the price index parameter of the stock prices at ASE is statistically significant.

The slope for the variable parameter also points that an increase in the primary market underwriting by one unit leads to a decrease in the size of private sector deposits in the banking system by (-4.513), but this interpretation can be more evident if we use regression coefficient beta which denotes that a -.362 of the changes in the volume of private sector deposits in the banking system is the result of changing one unit of the value of the primary market issues in the banking system and this supported by the calculated t (-3.796) which is higher than tabulated t value (2.14) at the significance level (0.05); and thus the market value of the initial coefficient in the banking system is statistically significant (0.004).

Slope parameter also indicate that the turnover of shares rate in the ASE one unit leads to a decrease in the size of private sector deposits in the banking system by (-27.9), however, this interpretation can be more clear by using the regression coefficient beta which indicates that(-.236) of the changes in the volume of private sector deposits in the banking system is the result of changing one unit in the value of the turnover rate in ASE and this figure is supported by the calculated t value (-2.989) which is higher than tabulated value (2.14) at the significance level (0.05), and therefore the value of the shares turnover rate in the ASE is statistically significant (0.014).

In order to assess the impact of the independent variables (combined) of the activity of ASE on the volume of deposits of the private sector in the banking system has been the introduction of all the independent variables together and use the Stepwise Regression to sort and raise out the statistically significant and influential variables which have significant effect on the dependent variable and the ablest to predict the market value in ASE. Under the method of gradual regression, the introduction of the four variables one after the other, and the variable could be excluded later on if it proves to be insignificant with the presence of the other variables. Following table shows the results of the gradual regression analysis.

**Table-6:** results of gradual regression analysis indicate the impact of the independent variables of ASE on the size of private sector deposits in the banking system:

Model Summary <sup>c</sup>								
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			Durbin-Watson
					R Square Change	F Change	Sig. Change	
1	.942 <sup>a</sup>	.886	.878	1199.661	.886	101.483	.000	
2	.961 <sup>b</sup>	.923	.910	1027.146	.037	5.734	.034	
3	.976 <sup>c</sup>	.952	.939	849.424	.029	6.542	.027	
4	.987 <sup>d</sup>	.975	.964	647.466	.023	8.933	.014	1.555
a. Predictors: (Constant) ASE Index								
b. Predictors: (Constant) Trading Volume, ASE Index								
c. Predictors: (Constant) Turnover, Trading Volume, ASE Index								
d. Predictors: (Constant) Primary Market Under writing, Turnover, Trading Volume, ASE Index								
e. Dependent Variable: Private Sector Deposits.								

It is inferred from the table that ASE index was the first variables, which came to the form because it has the largest simple correlation coefficient (R) across the volume of deposits of the private sector in the banking system variable; in the second phase the trading volume, the third phase the value of the primary market

Under-writings, and in the fourth stage the income turnover rate, the coefficient of determination (R<sup>2</sup>) reflects a full relationship between the set of independent variables (d in the table sub notes) and the volume of deposits of the private sector( e sub note) which indicates that 97% of the changes in the volume of deposits of the private sector in the banking system can be explained by the index variables and the trading volume and value of the releases and the turnover rate has reached the level of statistical significance of the coefficient of determination ( 0.000). In order to determine the estimated explanatory model, researcher used Fisher



distribution test(F); the calculated value was (8.933), which is greater than the value of F tabulated (2.66) which indicates that the linear relationship between the four independent variables (ASE index, trading volume, primary market underwriting, and ASE turnover) on the volume of private sector deposits in the banking system are statistically significant.

Following table (V-7) models that have been tested until a final model, and notes that the first incoming variables under gradual gradient method to the form is a variable price index likely stock market value and can be written model equation (capabilities of least squares to landmarks model) through Coefficient table transactions to become a model in the first step.

Also Table V-8 shows all the models that have been tested until a final model, the table notes that the first variables tested by the systematic regression method is ASE price index which can be written in the following form:

$$\left\{ \hat{PD} = 1602 + 1.68S PI \right\}, \text{ where } \hat{PD} \text{ is the estimated value of the bank deposits}$$

**Table7:** results gradual decline to estimate the slope of the volume of deposits of the private sector on variables Activity ASE model parameters analysis

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1602	522.1		3.069	.009		
	Price Index	1.68	.166	.942	10.074	.000	1.000	1.000
2	(Constant)	2574	603.8		4.263	.001		
	Price Index	.98	.322	.554	3.066	.010	.196	5.095
	Trading Volume	0.26	0.109	.433	2.395	.034	.196	5.095
3	(Constant)	2776	505.51		5.491	.000		
	Price Index	1.192	.278	.670	4.289	.001	.180	5.563
	Trading Volume	0.355	0.097	.591	3.653	.004	.168	5.968
	PrimaryMarket Underwriting	-3.937	1.539	-.316	-2.558	.027	.287	3.486
4	(Constant)	3343	429.5		7.783	.000		
	Price Index	1.391	.222	.782	6.265	.000	.163	6.116
	Trading volume	0.423	0.078	.704	5.459	.000	.153	6.530
	Primary market underwriting	-4.513	1.189	-.362	-3.796	.004	.279	3.581
	Turn over	-27.9	9.34	-.236	-2.989	.014	.407	2.455

a. Dependent Variable: Deposits volume

Stage -1: Statistical indicator t refers to the reliability of the estimated values of the parameter of the constant term and slope, it is statistically significant as it is less than (0.05).

Stage- 2: Trading volume variable has been considered in the model beside the price index. The formula becomes:

$$\left\{ \hat{PD} = 2574 + 0.98 SPI + 0.26 TV \right\}$$

Stage – 3: The statistical variables model includes: Price index , Trading volume, and Primary market underwritings. The formula becomes:

$$\left\{ \hat{PD} = 2776 + 1.2 SPI + 0.36 TV - 3.94 PCMI \right\}$$

Stage-4 : The statistical variables model includes : Price index , Trading volume, Primary market underwritings , and Turn over. The formula becomes

$$\left\{ \hat{PD} = 3343 + 1.4 SPI + 0.42 TV - 4.51 PCMI - 27.9TR \right\}$$

The above stage-4 model is the ultimate model and it represents the best regression model, its statistics indicate to the reliability of the estimated values of the parameter of the constant term in the final model, as its (7.783), it is statistically significant as it is less than the significance level selected (0.05) and it can be trusted as a good basis for prediction:

--Slope coefficient indicates that an increase in the price index of ASE by one unit would increase the amount of private sector deposits in the banking system by (1.4).

--The slope coefficient indicates that an increase in trading volume at the macro level in ASE by one unit will increase the amount of private sector deposits in the banking system by (0.423)

--The slope coefficient indicates that an increase in ASE primary underwriting by one-unit will lead to a decrease in the size of private sector deposits in the banking system by (4.513-).

--The slope of coefficient indicates that an increase in the turnover rate for shares in ASE by one unit will decrease in the size of private sector deposits in the banking system by (-27.9)

## 5. Conclusions and Recommendations:

### 5-1 Conclusions

This study was conducted to determine the influence of ASE activities on the activities of the banking system, and to identify the most important variables and the most predictability came with the application on a number of variables in ASE and the banking system activities for the period of 1992-2009 by using simple linear regression, multiple regression, and Stepwise Multi regression, the study build and refine the model predictive in order to predict the size of private sector deposits in the banking system as a dependent variable, by using the independent variables: price index, turnover, primary market underwriting, and trading volume, at ASE. The study of data through statistical analysis and hypotheses tests has led to the following:

- A statistically significant relationship between the volume of trading at ASE and the size of private sector deposits in the banking system, simple regression analysis indicated that 86% of the changes in the size of private sector deposits in the banking system can be explained by the volume of stocks trading at ASE.

- A statistically significant relationship between the price index at ASE and the volume of private sector deposits in the banking system, simple regression analysis indicated that 89% of the changes in the size of private sector deposits in the banking system can be explained by the price index of ASE.

- A statistically significant relationship between the value of the primary market underwriting at ASE and the volume of private sector deposits in the banking system, simple regression analysis indicated that 52% of the changes in the size of private sector deposits in the banking system can be explained by the primary market underwriting variable at ASE.

- A statistically significant relationship between the turnover rate at ASE and the volume of private sector deposits in the banking system, simple regression analysis that 43% of the changes in the size of private sector deposits in the banking system can be explained by the turnover rate at ASE.

- The multiple regression analysis results showed that 97% of the changes in the size of private sector deposits in the banking system can be explained by the following variables: ASE price index, trading volume, value of primary market underwriting, and the turnover rate at ASE.

- The results of the multi-gradual regression analysis for all independent variables: ASE price index, trading volume, the value of the primary market underwriting, turnover of ASE, are the best and strongest variables and the most indicative to predict and interpret the changes in the size of the private sector deposits in the banking system.

### 5-2 Recommendations

In light of these study findings, the recommendations are as follows:

- The need to achieve greater transparency and disclosure by providing all the relevant information in the stock market free of charge and to be published via the internet.

- To increase the coordination between monetary policy tools to influence the level of activity in the stock market, such as changes in the discount rates interest rates.

- To encourage the contribution of non-Jordanians in the capitals of Jordanian public shareholding companies, which will lead to the entry of new cash liquidity to ASE and thus achieve the highest levels of growth.

- Urge the central bank through its management of monetary policy to forward the cash surpluses within the banking system to be invested in the stock market, also to effect the laws that will encourage the entry of banks into the financial market and working to organize a sound investment environment to maintain economic

stability indicators such as maintaining acceptable inflation.

- To take advantage of the newest electronic products, both in the regular banking business or what is known as e-banks and in the stock exchange by introducing electronic trading and disclosure of data.
- The central bank is urged to encourage all banks to expand in granting credit, especially in periods of economic recession, which works to activate ASE, the results of this study showed a positive and strong correlation between each of the credit facilities and market value of ASE.

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**Appendix**  
**ASE Statistical Indicators**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Number of Listed Companies</b>	201	227	245	262	272	277	247	243	240	236	228
<b>Market Capitalization (JD million)</b>	26,667.10	21,078.20	29,214.20	25,406.30	22,526.90			19,141.5	18233.49	18082.62	17984.67
<b>Value Traded (JD million)</b>	16,871.0	14,209.9	12,348.1	20,318.0	9,665.3	6,690.0	1,858.2	19,272.7	2,850.2	1,978.8	3,027.3
<b>Average Daily Trading (JD million)</b>	69.1	58.7	50	82.9	38.8	26.75		11.5	7.9	12.4	9.1
<b>No. of Traded Shares (million)</b>	2,582.6	4,104.3	4,479.4	5,442.3	6,022.5	6,988.8	4,072.3	2,384.1	2,705.8	2,321.8	2,585.8
<b>No. of Transactions (Thousand)</b>	2392.5	3442.6	3457.9	3780.9	2964.6	1880.2	1318.3	975.0	1074.4	956.0	899.0
<b>No. of Trading Days</b>	244	242	247	245	249	250	247	251	245	249	246
<b>Turnover Ratio (%)</b>	94.1	101.1	91.2	91.5	91.3	102.2	58.2	33.9	38.0	32.8	37.3
<b>ASE General Weighted Price Index (point)</b>	8191.5	5518.1	7519.3	6243.1	5520.1	5318.0	4648.4	4593.6	4336.7	4237.6	4229.9
<b>ASE General Free Float Weighted Price Index (point)</b>	4259.7	3013.7	3675.0	2758.4	2533.5	2373.6	1995.1	1957.6	2065.8	2165.5	2136.3
<b>ASE General Un-Weighted Price Index (point)</b>	2171.0	1608.1	1798.1	1235.5	1056.1	834.4	606.8	552.3	585.11	585.85	533.32
<b>No. of Traded Bonds (Thousand)</b>	3.4	1.2	1.6	0.4	0.8	0.14	0.6	0	2.1	0.02	0.012
<b>Value of Traded Bonds (JD million)</b>	3.1	1.9	3.8	0.6	2.5	0.14	0.6	0	2.04	0.02	0.85
<b>P/E Ratio (times)</b>	44.2	16.7	28	18.8	14.4	26.3	22.6	15.6	14.7	15.3	14.0
<b>P/BV (times)</b>	3.2	2.9	3	2.2	1.8	1.7	1.5	1.5	1.3	1.3	1.3
<b>Dividend Yield Ratio (%)</b>	1.6	2.3	1.8	2.5	2.8	2.7	3.3	4.6	4.6	4.2	3.6
<b>Non-Jordanian Ownership of Market Cap. (%)</b>	45	45.5	48.9	49.2	48.9	49.6	51.3	51.7	49.9	48.8	49.5
<b>Non-Jordanian Buying (JD million)</b>	2,152.2	1,995.1	2,825.3	4,219.8	2,135.5	1,036.6	555.8	322.9	939.5	362.7	981.7
<b>Non-Jordanian Selling (JD million)</b>	1739.2	1814.5	2359.1	3910.0	2139.3	1051.2	477.2	285.3	792.6	384.8	971.1
<b>Net Investment of Non-Jordanian (JD million)</b>	413	180.6	466.2	309.8	-3.8	-14.6	78.6	37.6	146.9	-22.2	10.6
<b>Market Capitalization / GDP (%)</b>	326.6	233.9	289	216.7	149.6	122.7	102.7	93.5	83.0	75.8	70.7

Source: ASE, Annual Report, various issues for the years 2005-2013.