

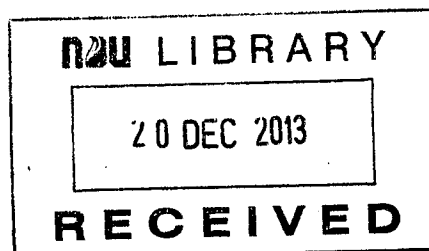
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The Determination of Interest Rates in Lebanon: Interest Rates vs. Debt and
Deposits

**A Thesis Submitted in Partial Fulfillment of the
Requirements for the Joint Degree of the Master of Business
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Approval Certificate

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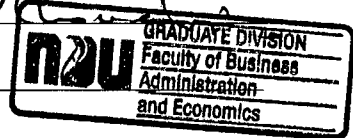
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DECLARATION

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Abstract

The exchange rate peg in an open market economy allows the flow of large amounts of money and helps market participants to take advantage of arbitrage opportunities between domestic and international interest rates. Pegging disconnects the interest rate from real economic conditions of the underlining assets. This is the case of Lebanon, where national banks find a greater return on investment in the risk-adjusted return on government bonds.

The main finding in this thesis is that the high level of deposits at commercial banks correlates directly with the level of the Lebanon national debt. Deposits are not directed properly to generate the expected economic growth, but they are used to further leverage the financial system, and eventually multiplying the detrimental effect of credit crisis.

This research study showed that interest rates in Lebanon have lost their fundamental roles as the center of the economic cycle and are not indicators of the underlining economic situation of the country. Monetary policy in Lebanon is ineffective, and the government range of maneuver is very limited. Policy makers are spectators and reactors to economic developments; they lost their abilities to influence the country's financial situation.

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Chapter 1: Introduction

1.1 Lebanon Inside A Financial Turmoil

Lebanon is in the midst of unprecedented domestic, regional, and global turmoil.

For the first time in a decade, growth in Lebanon is hindered by numerous factors. On the global level, the European crisis shook the world. Europe is the biggest trade partner of Lebanon; events in the EU¹ influence the country's overall financial and economic state. There is persistent risk of EU breakup, which can spill over into a severe recession in Lebanon. On the regional level, Lebanon remains highly vulnerable to events taking place in Syria, Iraq, Egypt and Libya. The uprising of these neighboring countries, particularly in Syria, is keeping Lebanon on the edge of stability because of the countries' strong economic and political connections (Antola M. and Hassan H., 2012).

There is fallout in the investors' confidence, disruption in the tourism sector, and increased costs of bilateral and transit trade. Consequently, Lebanese banks, an essential sector of the local economy, started reducing their exposure to Syria. They started taking out reserves for loans that can go sour in case the situation continues to deteriorate.

On the domestic level, Lebanon has an uncertain economic outlook. This is due to the ever increasing government debt, continued current account deficits, high unemployment, inflation, and the increase of domestic wages beyond productivity gains which could pose troubles for competitiveness.

Furthermore, the entrepreneurship spirit in Lebanon remains subdued because the high public debt is threatening macroeconomic stability, government effectiveness in

¹ European Union

enforcing rules and regulation, and the weakness of the business environment whereby the return on investment becomes lower in the private sector.

In 2010, the IMF² has issued guidance for policy makers in order to preserve the country's sovereignty and to protect it against economic downside risks. It stressed on better implementation of policies aiming at boosting confidence and macroeconomic stability.

IMF pointed out that the fiscal goal of reducing the public debt to GDP³ ratio is to create a bigger space for social and capital spending, which effect is to stimulate economic growth. The objective of the confidence boosting strategy is to help the Lebanese government minimize its reliance on the BDL⁴ for debt financing, and be able to sell its debt in open markets.

The IMF made it clear that the infrastructure in Lebanon remains underdeveloped and this hinders the proliferation of many economic activities built on technological advances (IMF, 2010). The Lebanese high public debt servicing level, which reached 12% of GDP over the 2006-2010 periods, is still constraining the government in weakening its ability to intervene with the intention of fueling growth, in encouraging investment, and in developing the private sector (Lebanese Ministry of Finance, 2011).

IMF pointed out that high interest rates paid on treasury bonds are reflecting the Lebanese uncertain political and debt levels. However, the high cost of capital is not drying up liquidity from the market, and is not hindering the economic activity. Commercial banks are liquid and their deposits are at record levels. This is mainly attributed to the flow of remittances from lebanese expatriates to the Lebanese banks, which in turn are used to buy government bills.

Remittances are the most stable of financial flows to Lebanon; they played and continue to play an imperative role in the interest of the country and its people. On the micro

² International Monetary Fund

³ Gross Domestic Product

⁴ Bank du Liban: Lebanese Central Bank

level, remittances are a safety net for families afflicted by unemployment, underemployment, the burden of children's education and/or the problem of caring for the sick and elderly.

Remittances are an essential source of foreign exchange earnings in Lebanon (Ghobril, 2004). Between 1998 and 2010, FDI⁵ in Lebanon reached 250 million USD, one sixth of the total remittances that reached 1.6 billion USD. Remittances were higher than exports and tourism, which averaged 740 and 840 million USD respectively⁶.

A minor amount of the total remittances is directed toward funding the private sector. The majority of these inflows are channeled towards financing a public sector characterized by weak governance, bad management and proliferated corruption.

The consolidated balance sheet of commercial banks in Lebanon, published on the BDL website (December 2011), shows that total assets stand at 140.6 billion dollars at the end of 2011, a 9% increase compared to 2010. In addition, private sector deposits totaled 115.7 billion dollars, an increase of 7.9% from 2010. Commercial banks account for 51% of the local public debt in 2011, followed by the Central bank (33.2%), while other agencies, financial institutions, and general public account for 15.8% of the local debt (BDL, 2011).

Lebanon's gross public debt attained 53.6 billion USD at the end of 2011 out of which 32.7 bn USD was domestic, whereas 20.9 bn USD was external. Local debt accounted for 61% of gross public debt and foreign dominated debt represented 39% (BDL, 2011).

⁵ Foreign Direct Investment

⁶ Between 1998 and 2010

1.2 Public Debt, Remittances and Deposits

The Lebanese economy is characterized by a liberal system and an open capital and financial hub in the region.

Massive financial transfers flow into the country from remittances, foreign inflow of services, capital and income (60% percent of GDP in 2009, WB⁷).

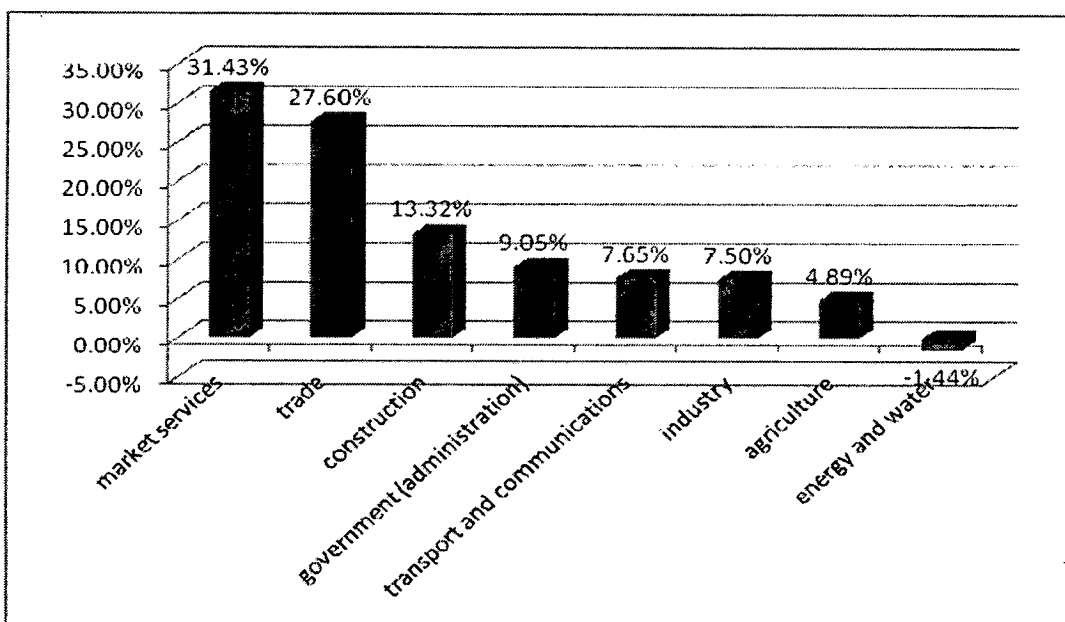
The biggest threat for the future of the country is the ongoing political crisis. Chaos characterizes the business environment. Political tensions, religious conflicts and uncertainties created by the unsure state of relations with Israel and Syria cover the political theme.

The Lebanese population suffers from continuous low standards of living due to a persistent high unemployment rate, surpassing 10% (Euromonitor International, 2011) and even reaching 25% (Naimy V., 2005). Gross National Income per capita expressed in PPP⁸ attained 14,260 USD (WB, 2010) but the big gap between wages and living costs is pushing the working population toward relative poverty.

Construction, financial services, tourism and retailing are the main drivers of economic growth (Figure 1). Real GDP rose by 7.5% in 2010. Nonetheless, the house price bubble and the skyrocketing inflation that is imported with oil, raw materials and food tend to dampen any prospects for real economic growth.

⁷ World Bank

⁸ Purchase Power Parity



Source: Lebanese National Accounts 2009

Figure 1: Contribution of Different Sectors to GDP.

1.2.1 Lebanese Growth Analysis

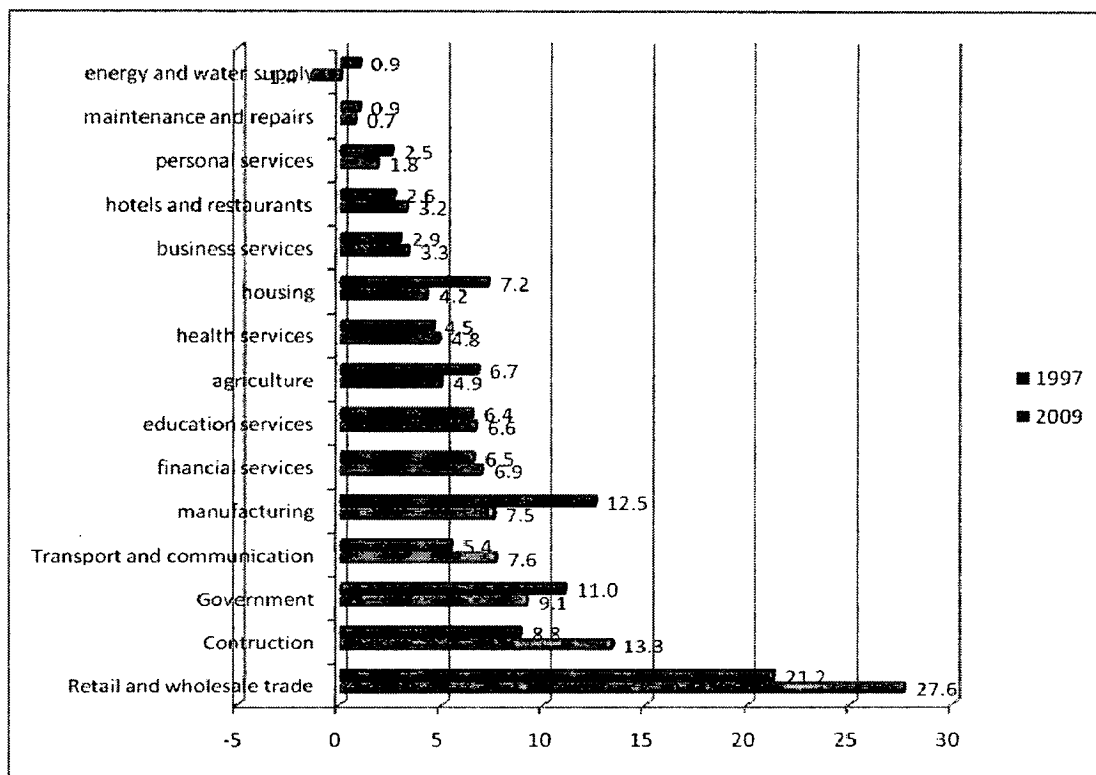
In this section some of the findings of a recent study published by the IMF in 2011 is presented (Motto E. and Nakhle N., 2011). It is the most recent paper that analyses the patterns for GDP growth in Lebanon between 1997 and 2009. This study explained the drivers for growth in the Lebanese economy, the sectors that are pushing towards development, and the sectors that are lagging behind.

Market services sector constitutes the largest portion of GDP (75.7% in 2011⁹). Construction, transportation, and communication sectors are growing due to a boost in investment in the telecom sector (Motto E. and Nakhle N., 2011).

On the contrary, the two most important production sectors, Agriculture and Manufacturing, witnessed a decline in value added at constant prices. In 2009, according

⁹ CIA World Factbook estimation, released February 2012

to the WB, manufacturing had a value added estimated at 9.04% of GDP, whereas in 2011, this share was reduced to 8.2%.



Source: Motto, E. and Nakhle, N. (2011). Lebanon: Real GDP Growth Analysis, 1997-2009, International Monetary Fund, Resident Representative Office in Lebanon, March 2011, pp. 6

Figure 2: Share of Sectors in nominal GDP (%).

The Lebanese economy relies on vivid consumer expenditure (figure 2). Household consumption represented 86.77% of GDP in 1997, 83.84% of GDP in 2008 and 79.02% of GDP in 2011¹⁰. Higher consumer demand, coupled with weak local production and manufacturing results in a flourishing trade sector (Motto E. and Nakhle N., 2010).

The construction sector in Lebanon between 1997 and 2009 witnessed a boom in spending. Some economists admit that the growth in recent years is attributed solely to a pickup in demand for homes; the recession in Arab states ignited a wave of emigrants coming back to settle down in their native country.

¹⁰ WB estimation

The growth of trade and construction had a terrible downside on the local population because Lebanon is importing inflation with raw materials, fuel and tradable goods. This inflation has reached 10% in 2008, 7% in 2009, and 5% in 2011 according to WB estimation.

On the counterpart, figure 2 showed shrinkage of government spending as a percentage of GDP from 11 to 9.1 percent. This can be largely attributed to the overwhelming public debt, inhibiting the government from spending on infrastructure and economic stimulus measures.

Other traditional sectors, like manufacturing and agriculture also shrank from 19.2% to just 12.4%, due to their direct reliance on government subsidies and public contribution (Motto E. and Nakhle N., 2010).

1.2.2 Lebanon's Main Economic Indicators: Debt, GDP, Banks' Assets and Loans

Table 1 below points to the fact that the economy grew in real GDP term between 2008 and 2011 at the levels comparable to emerging markets like BRIC countries¹¹.

GDP growth, when taken as a single metric, is showing a healthy nation, poised for expansion and proliferation. But when looking at inflation, together with GDP, net GDP growth becomes negative in 2011 when GDP growth dipped to 1.5% and inflation remained at around 5%.

The indicator that caught the attention and motivated the pursuit of this thesis is Bank Deposits as a percentage of GDP¹². All other sovereignty related ratios point to an insolvent economy on the verge of default and collapse:

¹¹ Brazil, Russia, India and China

¹² 289% in 2010

- Total debt to GDP is decreasing over time, but remaining at high levels¹³.
- Trade deficit is at 37% of GDP.
- Government budget balance shows persisting long term deficit at 7.9% in 2010.

<i>Lebanon's Main Economic Indicators</i>	2008	2009	2010	2011
Nominal GDP (billion USD)	29.7	34.7	37.1	39.1
Real GDP growth	9.3%	8.5%	7.5%	3%
External Debt/GDP	71.20%	61.35%	55.40%	53.5%
Local Debt/GDP	87.10%	86%	86.3%	83.7%
Total Debt/GDP	158.3%	147.2%	141.8%	137.2
Trade Balance/GDP	-42.6%	-36.8%	-36.9%	-40.7%
Exports/Imports	21.6%	21.5%	23.7%	21.2%
Budget Revenues/GDP	23.6%	24.3%	22.7%	22.7%
Budget Expenditures/GDP	33.4%	32.8%	30.6%	27.2%
Budget Balance/GDP	-9.8%	-8.5%	-7.9%	-6%

¹³ 141.8% in 2010

BDL FX Reserves/M2	68.9%	75.1%	72.6%	78.8%
Bank Assets/GDP	317.4%	332.1%	347.5%	359.5%
Bank Deposits/GDP	261.9%	276%	289%	296%
Private Sector Loans/GDP	84.3%	81.8%	94.2%	100.7%
Dollarization of Deposits	69.6%	64.5%	63.2%	65.9%
Dollarization of Loans	86.6%	84%	80.3%	78.4%
Inflation Rate ¹⁴	9.86%	7.01%	4.38%	5%
Exchange rate (LBP per USD)	1507.5	1507.5	1507.5	1507.5

Source: Ministry of Economy and Trade, Association of Banks in Lebanon, Byblos Bank Research Association, Ministry of Finance, CIA World Factbook, IMF and WB, 2011

Table 1: Lebanon Main Economic Indicators.

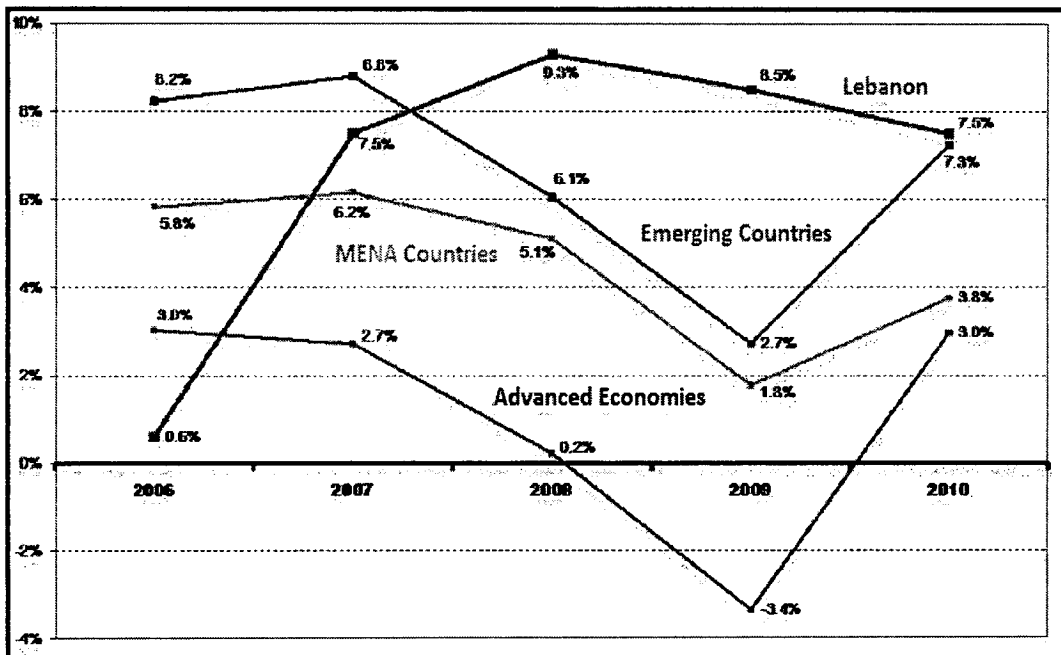
1.3 Lebanese Economic and Financial Performance

Lebanon facing the Global Financial Crisis

In 2008-2009, the world economy was falling off a cliff, suffering from the biggest financial turmoil since the great depression, or what is called the “Global Financial Crises”.

¹⁴ GDP Deflator, WB

The economic and financial performance, as indicated by growth figures of the Lebanese GDP shows that the economy was shielded from the external financial crisis of the 2008. This is due, primarily, to the resiliency of the banking system that is relatively inert from the international environment. In fact, deposits and reserves have been rising since 2008 and money supply increased by USD 13.4 billion (39% of GDP) in 2009¹⁵.

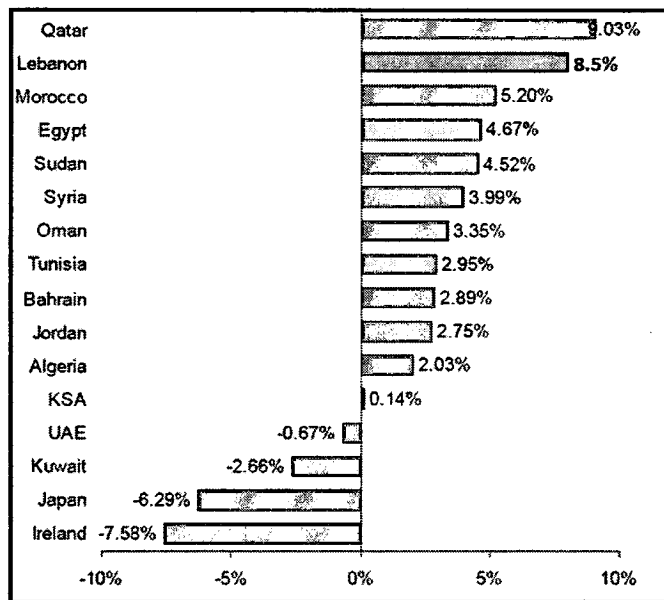


Source: International Monetary Fund, World Economic Outlook Database, April 2010

Figure 3: Real GDP Growth Rates (2006-2010).

Lebanon, together with Qatar, recorded the fastest economic growth in the region in year 2010. In 2009-2010 periods, only countries with limited exposure to places like Europe, Japan and the US saw economic expansion:

¹⁵ BDL



Source: IMF, World Economic Outlook Database, April 2011

Figure 4: GDP Growth rates of Arab countries (2009-2010).

Fiscal Deficit

Unfortunately, Lebanon's fiscal deficit continues to feed a very high public debt. Lebanese monetary policy, based on the BDL role of pegging Lira Currency to the US dollar¹⁶, limits the Lebanese central bank range of maneuver and flexibility and comes with a high cost on the local economy.

As a result, the government is highly leveraged, which poses questions concerning the country's vulnerability to unrest in financial markets and its ability to service its debt and avoid default and bankruptcy. In recent years, continuous recovery efforts have helped containing the Lebanese fiscal and public debt positions. Net public debt as a percentage of GDP has been declining since 2007, from 167% to 128% of GDP in 2009¹⁷.

Capital Movement

¹⁶ Since 1995-1996

¹⁷ BDL

Absence of foreign exchange controls and restrictions on the movement of capital and goods have allowed Lebanon to rank among the lowest countries in terms of Restrictions on Capital flows, making it an attractive environment for private sector development. The banking system governed by bank secrecy underpins the accumulation in foreign reserves which continue to support investors' confidence.

Despite having one of the lowest investment restrictions in the world (figure 5), investors remain cautious when considering deploying funds in Lebanon. The sovereign state in Lebanon is far from being investment friendly.

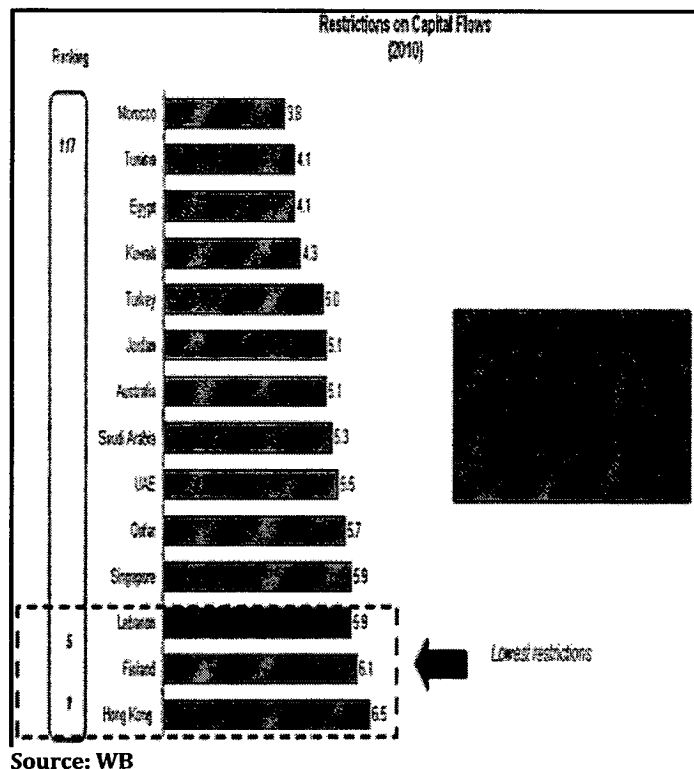


Figure 5: Restrictions on Capital Flows.

Debt Rating

All rating agencies give Lebanon a below-investment grade. The table below summarizes the 2011 rating of Lebanese sovereign debt issuance and Lebanese banks, by different rating agencies:

	<i>Foreign Currency</i>			<i>Local Currency</i>		
<i>Sovereign Ratings</i>	<i>Long-term</i>	<i>Short-term</i>	<i>Outlook</i>	<i>Long-term</i>	<i>Short-term</i>	<i>Outlook</i>
Moody's	B1	NP	Stable	B2		Stable
Fitch Ratings	B	B	Stable	B		Stable
Standard & Poor's	B	B	Stable	B	B	Stable
Capital Intelligence	B	B	Stable	B	B	Stable
<i>Banking Ratings</i>	<i>Banks' Financial Strength</i>		<i>Banking Sector risk</i>	<i>Outlook</i>		
Moody's	D-			Negative		
EIU			B	Stable		

Source: Lebanon this Week, Byblos Bank Economic Research & Analysis Department, issue 253, February 27-March 3, 2012, pp.8.

Figure 6: Rating of Lebanese sovereign debt issuance and Lebanese banks.

The long-term budget deficit and the political instability has stymied plans to reduce the overwhelming debt. The B rating given by different rating agencies reflects the high public debt burden.

However, the stable outlook given to Lebanon is supported by the economic resilience and fueled by generous diaspora:

“Lebanon retains an impeccable debt service record, despite the shocks suffered since 2005. Important rating supports are the resilience of the economy and especially the banking system, a supportive diaspora and donor community, and skilful management of public finances and debt. Despite war with Israel in 2006 and an 18-month political standoff between government and opposition which brought government to a virtual halt, GDP growth could exceed 4% this year, non-resident deposits are up 23% yoy, and the budget deficit and debt burden are declining. Normal access to the Eurobond market has been restored.”¹⁸

1.3.1 Monetary Policy

Monetary policy has three tenets: a stable money demand function, a well specified velocity of money and a reliable money creation process.

Monetary policy is set by the country’s central bank. In Lebanon, BDL is committed to the stability of the Lebanese Pound exchange rate against the U.S. dollar. Its strategy of preserving a high stock of assets in foreign currencies is a preventive measure to deal with any crisis that may hit the economy¹⁹.

The BDL is holding around USD 31 billion in foreign currency assets. This figure does not include gold reserves. Lebanon is the second-largest holder of gold in the MENA region (Euromonitor, 2011). BDL emphasizes the clear distinction between the role of commercial banks and investment banks, which protects both banks’ and customers’ interests (Euromonitor, 2011).

¹⁸ Fitch Ratings, September 2008

¹⁹ Source: www.BDL.gov.lb

As a monetary tool, the BDL uses the spread between foreign currency deposit rates versus those on international markets, and the spread between LP²⁰ and FC²¹ deposit rates as operational targets.

The first spread is used to draw foreign capital to the country hence to finance the current account deficit and external debt. The second spread aims to limit dollarization and to support deposits in Lebanese Pounds. The level of dollarization declined from 77% at end-2007 to 69% at end-2008, reaching a low of around 63% at end-2010.

Before January 2005, BDL used TB²² to control liquidity. However, it now relies as an alternative, on the issuance of FC certificate of deposits to normalize liquidity (Blominvest, Tushar, P. *et al*, 2006).

The underlying factors and risks: public debt and private sector deposits influence those interest rate spreads and therefore changes BDL's operational targets. It is helpful to note that reserves availability is inversely linked to exchange rate risk and public debt is directly associated with default risk.

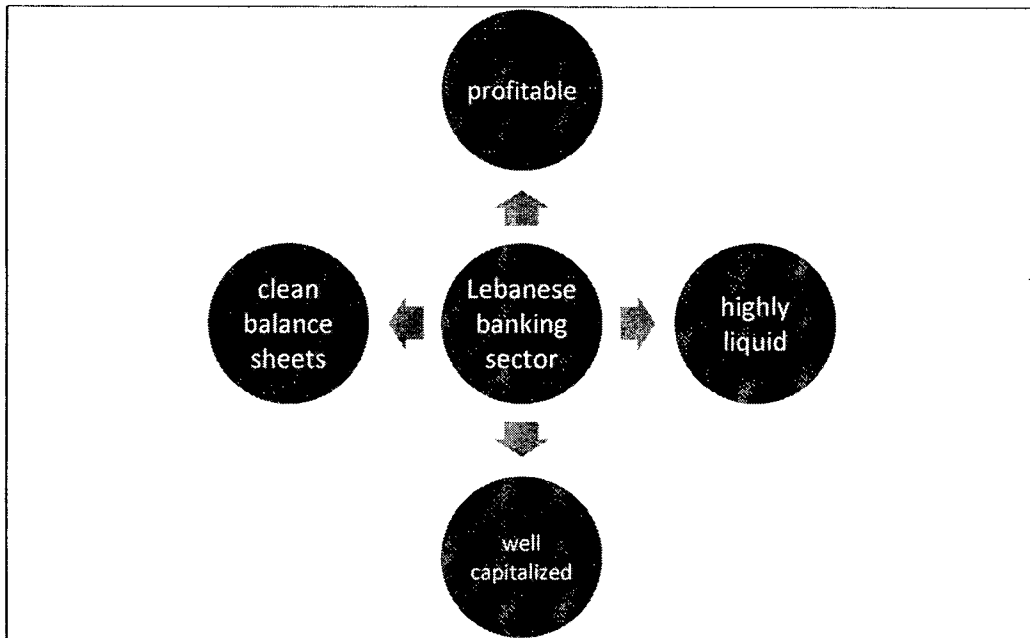
Despite global credit tightening, credit to the private sector has reached a historical level of USD 36 billion in 2010. Coming from very low levels, it has recorded a growth rate of around 20% between 2009 and 2010²³ which is the highest in the region (IDAL, 2010). Lebanese banks are liquid, with the average capital adequacy ratio exceeding 12% (IDAL, 2010).

²⁰ Lebanese pound

²¹ Foreign currency

²² Treasury bills

²³ The Lebanon business and investment summit, Ministry of Finance, September 28, 2010



Source: IDAL, Investment Development Authority of Lebanon, 2010, Economic Outlook.

Figure 7: State of Lebanese Banks.

1.3.2 The Root Cause of The Economic Malaise

The lack of economic reforms poses one of the most important reasons behind economic malaise in Lebanon.

Unlike many MENA countries that moved ahead with macroeconomic and structural reforms during the late 1980s and early 1990s, Lebanon is still lagging behind. These deficient macroeconomic structural reforms are in areas like tax reform, elimination of subsidies, management reform, introduction of indirect monetary instruments, liberalization of trade and foreign direct investment environment, and introduction of some flexibility in exchange rates. Countries such as Jordan, Mauritania, and Morocco that did pursue reforms, enjoyed the region's most rapid growth rates over the past two decades.

The reforms in Lebanon did not reach their necessary goal because it did not go deep enough to address the long-standing structural rigidities and distortions. Real sustainable

growth requires a moderate degree of success in several policy areas in the same time, because poor performance in one area can derail the broad-based progress.

On one hand, the geopolitical importance of Lebanon in the region has kept it under the prevailing external influences, especially when nearby states are still governed by authoritarian regimes. On the other hand, political fragmentation and frequent conflicts have hindered the development of democratic institutions. The widespread corruption remains a major obstacle to economic reform (Abed, G. 2003).

Despite some progress with privatization, Lebanon is still dominated by inflated state institutions and large public enterprise sectors. The public sector in this country is still considered the employer of last resort, especially in the face of rising unemployment. Consequently this inflates public payrolls and wage bills, contributing to higher budget deficit.

Some privatization in recent years, particularly in the telecommunications sector was witnessed. However, by the international standards and as part of the MENA²⁴ region, Lebanon continues to lag in the development of an economic and financial environment favorable to entrepreneurship, risk taking, and private sector-led investment and growth.

The financial sector in Lebanon is still underdeveloped and, as a result, has not played the intermediation role needed to underpin investment and growth. Despite consolidation efforts, the financial markets remain shallow and fragmented. The banks are dominated by public ownership or control and have considerable exposure to government debt; regulations are outdated; management is poor; and links to international capital markets are weak.

To wrap up, Lebanon, like many countries in the region, still maintains inflexible exchange rate regime. While pegging can sometimes be useful, reluctance to exit an inflexible arrangement is considered a major factor in the slow growth of nonoil exporters. Such inflexible exchange rate can also delay the development of monetary

²⁴ Middle East North Africa

policy frameworks (such as inflation targeting) that are judged to be more suitable to the Lebanese emerging economy, seeking to integrate more fully with the world economy (Abed, G. 2003).

1.4 Need for the Study

The need for our thesis is to enlighten readers on an important topic affecting the economic state of the Lebanese population: interest rates and risk factors in Lebanon.

Interest rates are the center of economic functions, interest rates play essential role in stimulating economic activities, stimulating private investments, creating jobs, boosting entrepreneurship, and creating an environment favoring business ventures.

Low interest rate is a sign of confidence in the Lebanese economic situation, and can therefore attract direct investment into sectors of the economy. In addition, low interest rate motivates people to take up loans and open new businesses.

On the counter part, high interest rate can be a sign that the country is not a safe place for investment. High interest rate directly reduces companies' profits. It raises the interest payment and lowers net income (Lawrence J. Gitman, 2009).

By and large, high interest rate is a burden on the government that is highly leveraged, like the case of Lebanon, because it increases the debt service payments and widens the budget deficit.

So, the need for the thesis is to guide policy makers to take the proper decisions concerning interest rate management. The current Lebanese situation is dire. Policy makers should take the right steps to manage interest rates. Proper interest rate management is the center for economic prosperity, and is the first step in the process of stimulating the Lebanese real economic growth.

1.5 Purpose of the Study

In this study our purpose is to find a model explaining interest rate fluctuation in Lebanon. The aim of this thesis is to answer the two fundamental questions: What are the determinants of interest rates and what are the factors affecting interest rates in Lebanon?

This thesis intends to explore risk factors causing interest rate fluctuations. What functions are played by private sector deposits and public debt? Given that deposits are inversely related to exchange rate risk, and public debt is directly related to default (sovereign) risk. High public debt in Lebanon indicates an elevated default risk, whereas the availability of deposits gives protection to the pegged Lira-USD exchange rate. To what extent those risks play a role in interest rate determination?

1.6 International Perspective

Policies to manage interest rates can have different goals. Properly designed interest rate rules can be consistent with exchange rate stability. Previous literature has shown that when a country has a dollar-fixed exchange rate, it implies equality between domestic and foreign interest rates (Bofinger, P. 1999). The economic conditions and the rules applied by the leader country (United States) determine the nature of the fixed exchange rate, because it sets the course of the monetary policy of the follower country (Lebanon).

In reality, simple interest rate pegging by the follower country, in the exchange-rate arrangement, results in indeterminacy of the exchange rate and of the real economy. Exchange rate pegging limits policy-makers ability to influence interest rates. Pegging decouples interest rates from the internal economic situation and links it to the external monetary policy.

The next chapter reviews literature on interest rates. Chapter 3 examines secondary data that are analyzed through regression analysis, followed by the findings, recommendations and the conclusion.

1.7 Research Problems

This thesis relates public debt to deposits and explains the relation between interest rates and the state of the economy.

The Lebanese economy, which is the root cause of the internal economic malaise, is explored along with the monetary policy tools that are used.

The research questions of interest are:

- What determines interest rates in Lebanon?
- What is the impact of private sector deposits and public debt on interest rates?
- How is the correlation between private sector deposits and public debt influencing the Lebanese economic situation?

Chapter 2: Review of Literature

2.1 Interest Rate Definition

In economic literature, interest rates reflect the interaction between the supply of savings and the demand for capital; or between the demand for and the supply of money (Ben, P. and Kristina L., 1999).

Interest is the price to be paid as a temporary condition for funding. Interest is the price of hiring capital. Capital can be machinery, equipment, or any physical assets used to produce goods and services. Savers are the primary providers of funds to entrepreneurs that invest in purchasing assets. In a state of equilibrium, supply (“saving”) and demand (“investment”) are aligned on the capital market (Bhole, L., 1992).

The interest rates are expressed as a percentage payable, a coupon. A coupon is normally sited per annum, or at the present discounted value reflecting the sum of all payables at maturity date. An inverse relationship exists between prevailing interest rate at a specific time, and the discounted value of the underlining assets. An illustrating example would be bond prices which fall when yields increase.

One of the critical distinctions is between nominal and real interest rate. The nominal interest rates do not account for the change in the value of money over time, whereas the real interest rates do. Real rate is an inflation adjusted rate, expressed as nominal rate less inflation. In a deflation environment, the real interest rate is higher than the nominal.

The real interest rates have big implications on the economic behavior. When the real rate on investments is negative people are more inclined to spend rather than invest. And the contrary happens when the return on investment is higher than the inflationary pressures.

Inflationary expectations have also a major effect on the population behavior. If savers expect inflation to pick up in the future, they will require higher nominal rates to

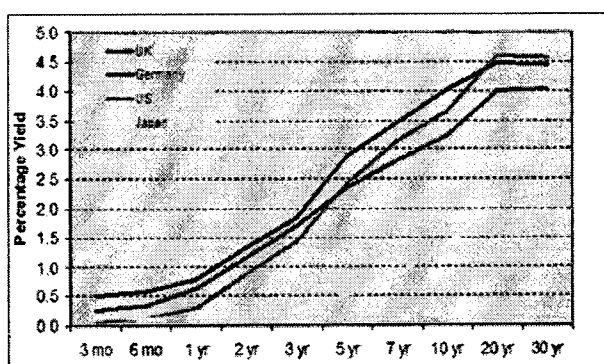
compensate over the period in question. This is a key element in determining long-term rates, whether inflation expectations materialize or not.

Another important distinction is between short-term and long-term rates. At any one point in time, there exists a multiplicity of rates, applicable to assets along a spectrum of maturity. This spectrum spans between interests paid on overnight money, to rates on securities maturing in thirty years. The overnight rates are discount-rates at which the central bank lends selected high quality banks and financial institutions, and call money rates at which inter-bank money dealings occur.

The overnight rates are for lending maturity of one, two days, or at a maximum of a week. Whereas short-term rates are associated with treasury bills or comparable instruments that have three-month maturity. The short-term instruments can have also maturities of one, three, six and twelve months. The long-term rates are usually associated with bonds and instruments of three, ten, and thirty-year maturity. Generally, the benchmark for long-term rates is the ten-year Treasury bond (Cottaralli, C. and Kourelis, A. 1994).

In most cases, the long-term rates are expected to be higher than short-term ones, taking into consideration that the longer the maturity, the higher the default and liquidity risks carried by investors.

The figure 8 shows the typical yield curve as the maturity spectrum progresses from short-term to long-term:



Source: US Treasury, Bloomberg.com

Figure 8: Yield Curve for Government Debt as of January 19, 2010.

The interest rate paid on borrowed funds frequently fluctuates. These fluctuations have direct influence on the market values of debt securities, such as money market securities, bonds and mortgages. And have indirect influence on equity securities.

The relevant factors that affect interest rate movements include changes in economic growth, inflation, budget deficit, foreign interest rates and money supply. These factors can have a strong impact on the aggregate supply or demand for funds, and therefore can affect the equilibrium interest rate.

Anticipating interest rate movements is a central task for financial market participants when structuring their positions, to capitalize on the favorable movements or reduce the exposure to unfavorable ones. These interest rate movements affect the cost of fund to depository institutions and the interest received on some loans by financial institutions (Cooper, S. and Fraser, D.R. 1990).

The borrowing and lending in the financial market rely to a significant degree on the rate of interest. Real interest rates hold considerable information about the investment environment in the capital market and the economy's financing terms. Real interest rate influence saving and investment behaviors of households and companies and therefore determines cyclical development and long-term economic growth (Cooper, S. and Fraser, D.R. 1990).

However, the extent to which interest changes shapes the real economy, investment, growth and employment is not totally clear. An increase in rates has a deteriorating effect on future GDP, and falling rates have positive one. But the recent US and Japanese experiences have shown that low interest rates for long period of time have great downfalls, and can stole a lagging economy instead of reviving it.

Much of the effects of interest rates depend on the structure of a particular economy, and on the components of demand. Interest rate changes infiltrates to different sectors at varying speeds, with different effect on asset prices. The interest rate effect on inventories is more instant than on capital projects.

At the macro level, it is difficult to associate changes to interest rates with its source, being a fiscal policy or monetary policy alteration. At the micro level, the effects of interest rate rise on a certain sector can be offset by state aids or tax breaks.

The long-term interest rates tend to move in correlation with the movements in the real economy, but identifying which is the cause and which is the effect is greatly uncertain.

The role of the central bank is to set the very short-term official interest rates, indicating the price at which it will acquire liquidity available to the banking system. Following the monetary transmission mechanism, changes in rates brought about by open market operations, lead to changes in long-term interest rates (H. Atesoglu, 2005).

2.2 Structure of Interest Rates

The interest rates offered by debt securities at a given point in time have a particular structure. Some types of debt securities always offer a higher yield than others.

The individual and institutional investors must understand why quoted yields vary so they can determine whether the extra yield on a given security outweighs any unfavorable characteristics. The financial managers of corporations or government agencies in need of funds must understand why quoted yields of debt securities vary, so that they can estimate the yield they would have to offer in order to sell new debt securities.

The quoted yields of debt securities at a given point vary for the following reasons: First, securities with higher credit (default) risk must offer a higher yield. Second, securities that are less liquid must offer a higher yield. Third, taxable securities must offer a higher before-tax yield than tax-exempt securities (Don, M. Chance, 2004). Fourth, securities with longer maturities offer a different yield than securities with shorter maturities. Fifth, securities with a call provision offer a higher yield, while securities with a convertibility clause offer a lower yield.

The appropriate yield for any particular debt security is estimated by, first, determining the risk-free Treasury security rate on a debt security with a similar maturity. Then, adjustments can be made according to the credit risk, liquidity, tax status, and other provisions (Besley and Brigham, 2005).

2.2.1 Term Structure of Interest Rates

Three theories explain the term structure of interest rates:

- The pure expectations theory suggests that the shape of the yield curve is dictated by interest rate expectations.
- The liquidity premium theory suggests that securities with shorter maturities have greater liquidity and therefore should not have to offer as high a yield as securities with longer term maturity.
- The segmented markets theory suggests that investors and borrowers have different needs, which cause the demand and supply conditions to vary across different maturities; that is, there is a segmented market for each term to maturity, which causes yields to vary among these maturity markets.

When consolidating the theories, the term structure of interest rates is dependent on interest rate expectations, investor preferences for liquidity, and unique needs of investors and borrowers in each maturity market (Besley and Brigham, 2005).

2.3 Debt and Interest Rates

The empirical evidence has shown that a sustained debt accumulation leads to higher long-term interest rates, even temporarily. This impact is not contained within the country's borders, but it spills over to other economically correlated countries. The fiscal developments play an important role in determining the relation of long-term

interest rate with fiscal deterioration²⁵ leading to higher interest rates (Paesani, P., Strauch, R. and Kremer M. 2006).

There is substantial empirical support pointing to a positive impact of an increase in public deficits and debt, on the long-term interest rates. However, not all evidence agrees in this respect (Gale, W. and Orzag, P. 2001).

Evans and Marshall (2001), looking at US data, found no evidence that fiscal policy shocks lead to any significant interest rate response. Yet, Quiang and Phillippon (2004) that also inspected US data, but using another model, have reported finding that indicate a significant impact of deficits on the yield curve.

Concerning the spill-over of domestic bond market shocks, Barassi *et al.* (2000) found a set of relations between US, Canada and European interest rates, pointing to the US as being the leader on the world-wide platform. In addition, Bruneau and Jondeau (1998) performed a study of long-run links between US, German and French long-term interest rates. They found a long-run, reciprocal effect between the US and the German rates as well as between the German and the French rates.

2.4 Determination of Short Term Interest Rates

Setting short-term interest rates in a country is in part an issue of direct decision, and in part an application of leverage within the financial system.

The monetary authority of the country's economy sets its short-term interest rates. In the European Union for example, the decision authority goes to the GC of the ECB²⁶. But there is an inherited complexity in the transmission mechanism by which these decisions are infiltrated through into the financial markets and into the real economy.

²⁵ Increasing Debt/GDP ratio

²⁶ Governing Council of the European Central Bank

To conduct monetary policy, the Central Bank has at its disposal many instruments that depend mainly on setting and influencing interest rates. Using monetary tools, the monetary authorities try to influence the course of the economy or try to respond to market forces.

For example, in recession times, the central bank lowers interest rates to free up capital as a stimulus measure. And in inflationary times, the central bank increases rates to cool down the flow of money into the country, and stem inflationary pressures.

On the one hand, by increasing interest rates on bonds, reducing their prices, the central bank will alter liquidity preferences. The population will prefer to save instead of spend, putting downward pressure on consumer demand, and reducing inflation.

On the other hand, the higher short-term rates will feed through to the financial markets, raise the cost of borrowing, and as a result, change marginal investment decisions, thereby decreasing inflationary pressures (Favero, G. 1999).

2.4.1 Monetary Policy Instruments

In an economy, the central bank is the lender of last resort. Therefore setting discount rates directly feeds into the financial system, by determining the floor and ceiling. The decisions on interest rates by the central bank are signals to the financial system, reflecting the dominant economic state, and tending to move rates in the same direction.

The Central Bank is normally referred to as the bigger supplier of cash into the economy. It controls the supply part of the equation by making fixed cash amounts available to circulation at a fixed rate of interest.

The central bank can buy and sell treasury bills using open market operations, therefore lowering or raising interest rates. It can affect the degree of liquidity in the financial system by altering the minimum reserve requirements, or by obliging the financial

institutions to deposit certain amount of money, like the case of Lebanon, to support the local currency in the foreign exchange markets.

These obligations placed on the central banks' shoulders require them to hold a substantial amount of liquid assets to be able to maneuver their strategy in a quick and effective way (Samuelson, Paul A. 1976).

2.4.2 Monetary Policy Objectives and Consequences

The goal of monetary authority, in general, is to set short-term rates at a level just sufficient to prevent future inflation, without being so high to derail economic growth and raise unemployment.

In any case, an extreme difficulty exists in setting interest rates based on a pure technical matter. A neutral level of short-term rates is hindered by incomplete statistics, imperfections in economic models, and of course, unforeseen events having adverse effects on the country's economy.

The mandates of central banks can differ greatly between countries and economies. The ECB for example, puts the biggest weight on supporting the general economic policies of the community, by essentially maintaining price stability. Yet, the United States Federal Reserve has dual mandates, giving both growth and employment equivalent weight in the process of decision making.

Another objective for central bank could be to maintain full employment, the so called "Keynesian" policies. These policies keep interest rates at the lowest possible level to facilitate investment. They aim to ensure full employment by expanding money supply to accommodate the demands of the real economy for cash (Issing, O. 1999).

2.4.3 Effectiveness of Monetary Policy: Transmission Mechanisms

The effectiveness of short-term rate alterations depends to a considerable extent, on the way and speed with which these decisions are fed into the real economy. Studies have shown that the sources of corporate finance, and the level and structure of household and corporate debt influence the transmission mechanisms of monetary policies (Ben, P. and Kristina L. 1999).

The firm's size affects their reaction in face of any monetary policy change. The more the firm relies on external funding, the more it becomes influenced by monetary decisions. The small firms, with less internal liquidity, can be more dependent on external finance rather than internal cash flow generation, and therefore can be more sensitive to a monetary squeeze or relaxation.

A further critical factor determining the sensitivity of companies to the central banks' monetary policies is the extent to which the companies are financed by banks, as opposed to capital markets. The relationship between a bank and its customers decides on the speed by which the transmission mechanism works.

“When lending is organized in a competitive securities market, lenders have no reason to cushion the effect on the borrower of a change in policy-determined interest rates. Instead, a bank which appreciates the long-term relationship with its customer will be prepared to absorb, at least temporarily, some of the consequences of an interest rate hike...”²⁷

A third factor in the transmission mechanism lies within the level of consumers' and governments' indebtedness. The more the consumer is leveraged, the fastest short-term rate hikes become effective in reducing consumption as the disposable income net of debt-servicing is cut.

²⁷ Favero and Giavazzi, 1999

On the contrary, if the level of household debt is small but the savings invested in government debt are elevated, a rise in interest rates can lead to rising consumption, as disposable income rises. A classic example is Lebanon, where the public debt is by majority held internally, which boosts consumption due to the high interest rates on t-bills, providing higher returns on savings.

2.4.4 Short-term Interest and Exchange Rates

The globalization and the free flow of capital made national economies increasingly open to the international financial markets. The internal monetary conditions of a country are strongly influenced by the external, more regional and global factors.

On the one hand, these inflows and outflows of investment funds into and out of the bond markets can result in a rise or fall of bond prices, and hence a fall or rise of long-term interest rates. On the other hand, such flows can result in a disturbance of exchange rate, causing therefore an alteration of internal monetary policy (Bofinger, P. 1999).

For example, a fall in the external value of currency will have inflationary consequences. It will cause the price of imports to increase, and will affect the general price level. Simultaneously, the demand for exports will rise, increasing inflationary pressure further. Likewise, a strengthening in the value of currency can have deflationary effects, causing import prices and demand for exports to decline, like the case of Japan of the last decade of deflation.

“The exchange rate channel will usually add to the interest rate channel and magnify the impact of monetary policy”²⁸.

The currency's exchange rate is greatly manipulated by the relative level of interest rates. The disparities between countries, due to domestic monetary conditions, can

²⁸ EU Commission, 1998

generate large capital flows as investors seek highest returns. In turn, this will result in a fall of the exchange rates of the countries of outflow and a rise in the exchange rates of the capital importers.

This attraction created by higher interest rates could be offset by perception of risk that the underlining currency is likely to depreciate, loose value, and generate losses to security holders.

A monetary policy solely based on domestic monetary criteria can result in imported inflation or deflation through depreciation or appreciation of the currency.

The thing to consider is that external factors cause dilemmas for local monetary authorities because they are outside their control. For example, in times of crisis the short term rates should be high to silent the perception in the market that devaluation of currency is imminent, whereas this boost of rates will unfortunately lead to squeeze on the domestic economy and rise in unemployment (EU Commission, 1998).

2.5 Determination of Long-Term Interest Rates

The quickest answer to the question of what sets long-term interest rates is: the market.

Long-term interest rates are normally higher than short-term ones, because inflation is a risk that multiplies with time, and because the international flow of funds also adds a risk premium relative for the risk of currency depreciation.

The short and long-term interest rates are expected to move in the same direction. A rise in short rates can generate a portfolio effect, motivating investors to allocate their resources to short money market instruments, away from bonds. Leading thus to a fall in bond prices and a rise in long-term yields.

Literature has shown that short and long-term rates move together, on a similar pattern. Studies on US rates have shown the sensitivity of long-term rates to short-term changes (Cohen and Wenniger, 1994 and Lee and Prasad, 1994).

2.5.1 Fisher Effect

Yet, the assumptions concerning the relative levels and movements of rates between long and short are not always similar; occasionally the yield on government securities with longer term maturity can be lower than those with shorter life. The curve is therefore downward sloping like the situation in the United Kingdom in 1989.

The rise or fall in short-term rates does not always lead to a similar reaction in the long-term rates. A study published by the European Monetary Institute in 1996 found that short-term rate changes have no mechanical link to long-term rates; this is because of the expectations effect, or what is called Fisher effect:

“If short-term nominal interest rates were raised by the monetary authorities in an effort to reduce the rate of inflation, this may reduce inflation expectations if the change is seen to be credible. This, in turn, should reduce the inflation premium component of long-term interest rates and may entail a fall in long rates following a rise in short rates.”²⁹

Therefore, the monetary authorities cannot affect the real economy by changing long-term rates using changes in short-term rates. For example, a cut in short-term rates to boost investment could have adverse effect on the economic sovereignty if the result was a raise in long-term rates, rather than a reduction.

²⁹ John, P.C. Fell. 1996 .

The relationship between short and long rates is subject to a great deal of uncertainty. The long-term rates, being affected by any uncertainty concerning the direction of short-term rates could result in counter-intuitive consequences:

“In unregulated financial markets, long interest rates are driven by the interaction of market expectations concerning future developments in inflation, exchange rate, the real economy, monetary policy strategy, and, as a function of these, the future stance of monetary policy...Depending on the economic (or political) situation, a change in policy rates may be seen as conveying different information, and can therefore have different effects on long rates. Co-movements can arise from a causal link; but they do not necessarily imply causality.”³⁰

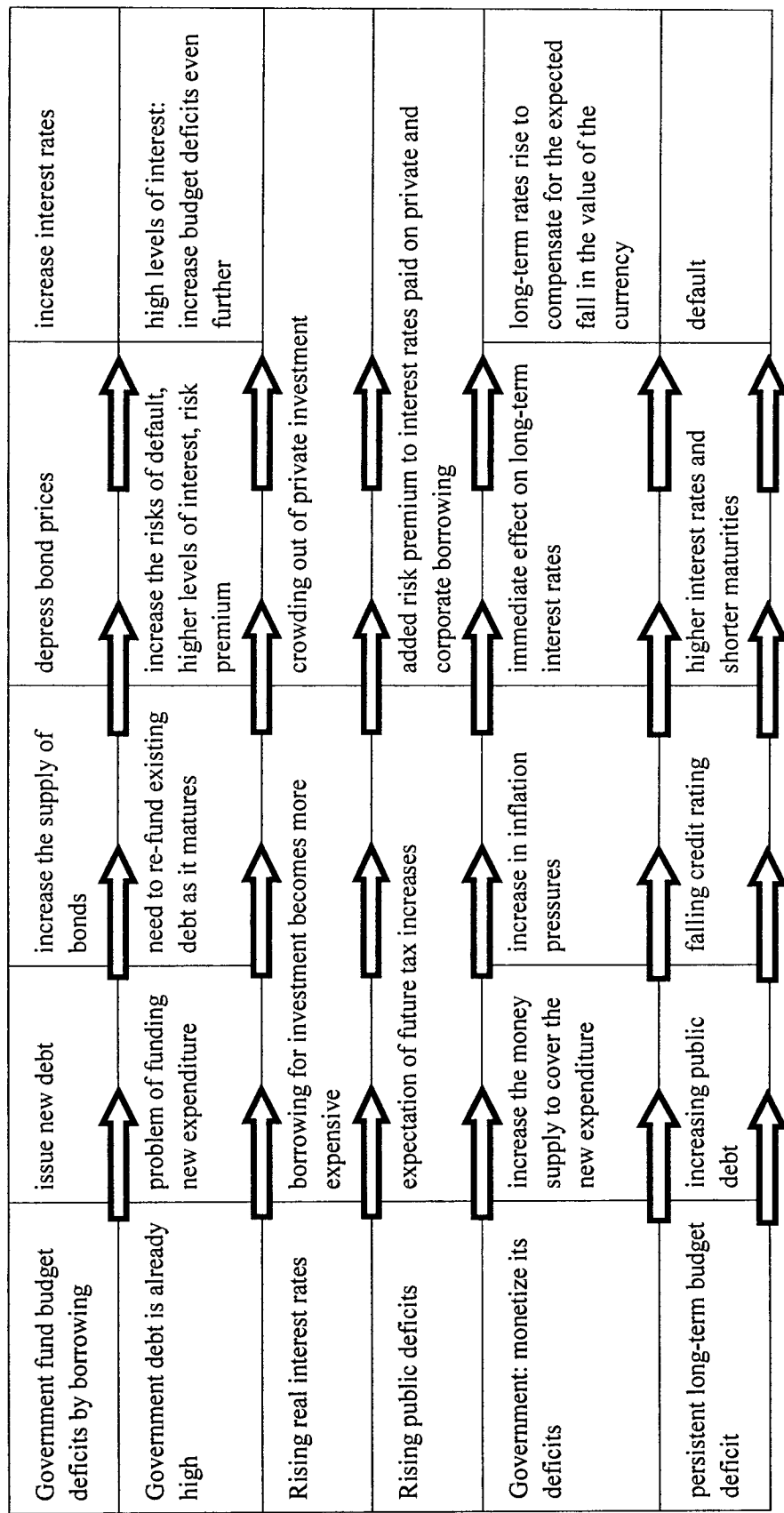
2.5.2 Short-Term Interest and Public Sector Borrowing

Over the last two centuries, the world has seen the emergence of governments bigger than ever. The notion of big government implicates the higher need for financing of public expenditure, and a bigger influence on the long-term interest rates.

In many economies like Lebanon, the available bonds for trading are mainly sovereign debt. These tradable bonds are used as a borrowing tool to fund the budget deficits. In such economies, both fiscal and monetary policies play important roles in interest rate determination.

The table below summarizes the effect of the big government expenditure on interest rates:

³⁰ EU Commission, 1998



Source: Ben, P. and Kristina L. 1999

Table 2: The effect of Big Government on interest rates.

2.6 Yield Spreads

Yield spreads are the difference between yields on any two bond issues or classes of bonds. The yield spread is the difference between the quoted rates of return on two different investments, usually of different credit quality. The yield spread is a way of comparing any two financial products. It is an indication of the risk premium for investing in one investment product over the other.

The yield spread is called risk premium because it measures the additional yield that bonds pay to stimulate investors to buy more-risky bonds, rather than less-risky ones. When spreads widen between bonds with different quality ratings it implies that the market is factoring more risk of default on lower grade bonds, i.e. a slowing economy. When the spread narrows between bonds of different risk ratings, the market is considered to have forecasted a lesser default risk brought about by an expanding economy.

To analyze yield spreads, maturity, liquidity and creditworthiness of two instruments, they should be compared versus a benchmark. This analysis is done in order to determine the best investment option by weighing the risk and return.

Moreover, the yield spread analysis is beneficial to a lender because it can help determine the profitability when a loan is provided to a borrower. The spread increases during periods of recession and decreases during periods of expansion. Risk premiums tend to be higher when economic conditions are unfavorable. During recession, the fear of job loss, and the risk aversion are higher. Therefore, most investors require large risk premiums to induce them to buy risky bonds. Additionally, the daily sale and purchase of bonds by bankers and investment managers have a substantial impact on yield spread (Rossi, M. 2009).

2.6.1 Yield Volatility and Business Cycle

A widening of the yield spread is associated with an increase in the discount rate components of the CAPM³¹ beta of bonds.

In times when the yield spread increases tend to be times when there is increased negative co-variation between stock returns and bond discount rates, which make bonds riskier. Overall, in recessions, when the yield spread widens, the real cash flow (or inflation) risk of bonds decreases. But these are also times in which aggregate risk aversion increases and makes investors dislike all risky assets.

2.6.2 Yield Volatility and Transaction Liquidity

Most papers have shown that liquidity is an important factor in the determination of credit spreads.

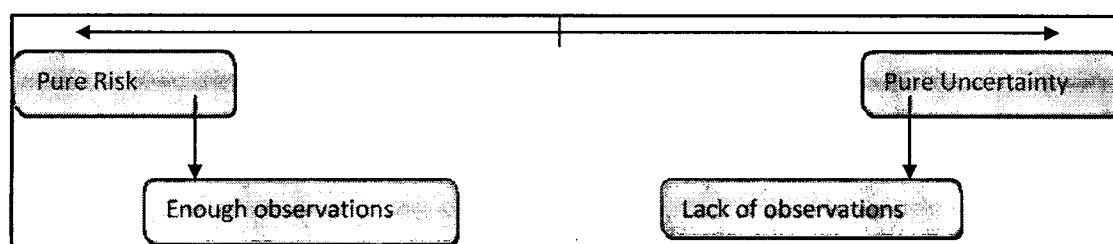
Although the market transaction liquidity plays a significant role in determining yields and yields volatility, credit risk remains more important than illiquidity as the driver in explaining the variation of yield spreads (Rossi, M. 2009).

A growing number of studies argue that illiquidity might be an additional determinant of bond prices. However, in theoretically efficient markets, two trading decisions are simultaneously affected by investors' assessment of credit risk (information side) and by the liquidity of the bond that they wish to trade (friction side).

³¹ Capital Asset Pricing Model

2.7 Risk Definition

In general, risk is defined as an event drawn from a large sample of observations. The unfortunate event is only called risk when the large sample contains enough observations to draw a statistical function open to probability analysis. Otherwise, it becomes uncertainty rather than pure risk.



2.7.1 Risk and Interest Rates

Risk plays an essential role in determining interest rates. The degree of risk involved in holding a particular asset is a key determinant of interest rates. Time, by itself, increases the risks of different securities. The long term rates are likely to be higher than short term rates, because longer maturity implicates greater uncertainty. The interest rate on bonds demanded by investors and savers is determined by comparing rates on bonds to a benchmark, or index-linked bonds of similar maturity.

The savers normally require rates that exceed the expected inflation rate. Meaning they require a positive real rate of return. However, there are examples of savers that accept negative rates, mainly because their alternative is holding cash, which can be more expensive, especially in periods of disasters or hyperinflation.

For example, in times of market turbulence, depositors put their cash into Swiss banks, despite having to pay instead of receiving income. The confidence in Swiss Banks and banking secrecy makes up for the loss. Similarly, issuers of sovereign debt occasionally pay negative real rates because, by comparison to others, there is a guarantee that the

principal will be repaid maturity; contrary to issuers of “junk” bonds which must pay high real rates to compensate for the high risk of default.

A classification system was developed by rating agencies to rank bonds, both sovereign and commercial, according to the likelihood of default. The securities with inconceivable probability of default are given AAA rating, whereas other securities with higher default probability have lower rating. They become more speculative and should contain a substantial element of risk premium (Ben, P. and Kristina L. 1999).

The high government debt is associated with high interest rates. In fact, the national fiscal policies play a major part in determining long-term interest rates. A combination of high budget deficits and an elevated public debt will push the government to borrow even more to finance current spending, and to re-finance maturing debt. This borrowing cycle will push up long-term rates.

This is the road of what is called monetization of debt: printing money to meet the current budget deficits, allowing inflation to erode the real value of existing debt. This monetization of debt is a vicious cycle because it leads to borrowing at ever-higher rates of interest and even shorter maturities, with default the inevitable ending result (Marini, G. 1991).

Trying to steam themselves from suffering this interest rate risks associated with the high sovereign debt levels, the EU countries signed the Maastricht Treaty, supplemented by the Stability and Growth Pact. This treaty required all euro area members to be committed to total level of public debt not exceeding 60% of GDP, and requiring balanced budgets over the economic cycle, prohibiting debt monetization, and allowing only privilege access to savings or bailout of defaulting public bodied (Bofinger, P. 1999).

Yet, with recent developments after the global financial crisis of 2008, EU countries started craving bailout to prevent fallout. Like Greece which is taking a hard beating due to its ultrahigh debt levels, and Italy whose interest rates have passed the 6 percent

threshold. This fiscal irresponsibility has led the EU to a dire state, deep recession, inability to monetize debt, risk of default, lack of competitiveness, and a controversial need for austerity measures to prevent default and collapse.

2.7.2 Financial Risk

The risk related to financing is the financial risk; when the actual return on investment is lower than the expected return. The risk that relates to a company's operational cash flow is the business risk.

The other categories of financial risk include: Credit risk, Concentration risk, Market risk, Interest rate risk, Currency risk, Equity risk, Commodity risk, Liquidity risk, Refinancing risk, Operational risk, Legal risk, Political risk, Reputational risk, Volatility risk, Settlement risk, Profit risk, and Systemic.

Credit risk or Default risk

The credit risk, or default risk is the loss arising from the borrower's inability of making promised payments. A high level of credit risk can be translated into a potential default or into a widening of credit spreads and probably a downgrade by the rating agencies.

When a default event occurs, investor can suffer from lost principal and interest, decreased cash flow, or increased collection costs (Hilscher, J. and Mungo W., 2012).

A default takes place in a number of circumstances: A consumer does not make a payment due on a mortgage loan, credit card, line of credit, or other loan. A business does not make a payment due on a mortgage, credit card, line of credit, or other loan. A business or consumer does not pay a trade invoice when due. A business does not pay an employee's earned wages when due. A business or government bond issuer does not make a payment on a coupon or principal payment when due. An insolvent insurance company does not pay a policy obligation. An insolvent bank won't return funds to a

depositor. A government grants bankruptcy protection to an insolvent consumer or business (Madura, J. 2006).

Analyzing and managing credit risk requires a significant resource allocation. To assess the financial health of customers, and decide whether to extend credit facility or not, some companies develop an internal credit risk department. Other companies and governments use programs to recommend on avoiding, reducing and transferring risk or employ third parties provided intelligence. Enterprises like Standard & Poor's, Moody's Analytics, Fitch Ratings, and Dun and Bradstreet supply such information for a fee.

Most lenders employ their own models (credit scorecards) to rank potential and existing customers according to risk, and then apply appropriate strategies. With products such as unsecured personal loans or mortgages, lenders charge a higher price for higher risk customers and vice versa. With revolving products such as credit cards and overdrafts, risk is controlled through the setting of credit limits. Some products also require security, most commonly in the form of property (Crosbie, P. and Bohn, J. 2003).

Country Financial Risk

By nature, investors are risk averse. So, a country's financial and economical risk profile is closely scrutinized by investors willing to commit fund overseas. Expectations are that returns on an investment negatively correlate with forward-looking country risk.

As time passes, the interest rates will shift in order to adjust to changes in underlining country risk factors, and returns should gradually shift to align with the period's risk measure. Consequently, investments into low-risk countries will require lower returns, and low or negative returns in high-risk countries will push investors to abandon business. The new investments into high-risk countries will be made only if investors can earn higher returns (Madura, J. 2006).

The analysts have separated country risk into the six main categories: Economic Risk, Transfer Risk, Exchange Rate Risk, Location or Neighborhood Risk, Sovereign Risk, and Political Risk. Many of these categories overlap each other, given the

interrelationship of the domestic economy with the political system and with the international community (Llewellyn D. Howell, 2001).

Economic Risk

The change in economic structure or growth rate produces change in expected return of an investment. The risk arises from the potential for detrimental changes in the fundamental economic policy goals³² or a significant change in a country's comparative advantage³³. The economic risk often overlaps with political risk in some measurement systems, since both deals with policy.

To measure economic risk, the analysts inspect traditional measures of fiscal and monetary policy. For longer term investments, growth factors are examined (Madura, J. 2006).

For fiscal policy, the analysts examine factors such as the size and detail of government expenditures³⁴, tax policy³⁵, and the government's debt situation³⁶. The analysts examine the impact of monetary policy and financial maturity on the economic growth³⁷. For longer term investments, the analysts focus on long-term growth factors³⁸, the degree of openness of economy³⁹ and the institutional factors that might affect wealth creation⁴⁰ (Llewellyn D. Howell, 2001).

³² Fiscal, monetary, international, or wealth distribution or creation

³³ e.g., resource depletion, industry decline, demographic shift

³⁴ Investment vs. spending as a percent of GDP

³⁵ Types and rates of taxation, fairness, effectiveness vs. popular avoidance

³⁶ Government deficit/GDP, total government debt/GDP, debt financing sources

³⁷ Inflation, money supply growth, real and nominal interest rates, and financial sector/GDP

³⁸ Growth in productive plant and equipment, private and foreign direct investment/GDP, labor force growth, unemployment, productivity

³⁹ Exports plus imports/GDP, FDI/total private investment

⁴⁰ Property rights, the degree of regulation, extent of any black market

Transfer Risk

The transfer risk occurs from a decision by a foreign government to restrict capital movements, making it difficult to repatriate profits, dividends, or capital (Claessens, S. and Embrechts, G., 2002).

Since a government can change capital movement rules at any time, transfer risk applies to all types of investments. It is analyzed as a function of a country's ability to earn foreign currency, with the implication that difficulty earning foreign currency increases the probability that some form of capital controls can emerge.

Quantifying the risk remains difficult because the decision to restrict capital may be a purely political response to another problem. For example, Malaysia's decision to impose capital controls and fix the exchange rate in the midst of the Asian currency crisis was a political solution to an exchange rate problem. The quantitative measures typically used to assess transfer risk provided little guidance to predict Malaysia's actions.

To measure transfer risk analysts examine the ratio of debt service payments to exports or to exports plus net foreign direct investment⁴¹, the structure of foreign debt relative to income⁴², the foreign currency reserves divided by various import categories⁴³, and measures related to the current account status⁴⁴.

The trends in these quantitative measures reveal potential imbalances that could lead a country to restrict certain types of capital flows. For example, a growing current account deficit as a percent of GDP implies an ever-greater need for foreign exchange to cover that deficit. The risk of a transfer problem increases if no offsetting changes develop in the capital account (Madura, J. 2006).

⁴¹ Debt/interest service ratios

⁴² Various Debt/GDP ratios

⁴³ Import coverage

⁴⁴ External financing gap, current account as a percent of GDP

Exchange Rate Risk

The exchange rate risk is an unexpected undesirable movement in the exchange rate, like unforeseen shift in currency regime⁴⁵. The short-term currency fluctuations tend to be driven by currency trading momentum, best assessed by currency traders, rather than economic fundamentals. The short term risks for any currency can be reduced at an acceptable cost through hedging mechanisms and futures arrangements.

There is an overlap in the quantitative measures that identify transfer and exchange rate risk, because a sharp devaluation of the currency can also lead to increased transfer risk.

The country's exchange rate policy plays an essential role in isolating exchange risk. When the government runs a managed float policy to control the currency in a narrow trading range, risks become higher. Whereas floating rate systems possesses the lowest risk of producing an undesirable exchange shock.

The degree of over- or under-valuation of a currency⁴⁶ can help isolate exchange rate risk (Madura, J. 2006).

Location or Neighborhood Risk

A country becomes susceptible to location or neighborhood risk when the region suffers from problems, when the country's trading partner is in poor economic situation, or when the countries with similar perceived characteristics are on the verge of collapse.

The geographic position offers the simplest measure of location risk. Trading partners, international trading alliances⁴⁷, size, borders, and distance from economically or politically important countries or regions can also help define location risk.

⁴⁵ Change from a fixed to a floating exchange rate

⁴⁶ Parity minus actual exchange rate, relative inflation or money supply growth rates, and relative interest rates on similar risk instruments

⁴⁷ Mercosur, NAFTA, EU

Sovereign Risk

The sovereign risk intensifies when a government becomes unwilling or unable to meet its loan obligations, or reneges on loans it guarantees (Donatello R., 2001).

The sovereign risk can relate to transfer risk in that a government may run out of foreign exchange due to unfavorable developments in its balance of payments. It also is associated with the political risk in that a government may decide not to fulfill its commitments for political motives. The sovereign risk is a separate category because a private lender faces a unique risk in dealing with a sovereign government. When the government does not meet its obligations, the private lender realistically cannot sue the foreign government.

The sovereign risk is measured by the country's ability to pay its obligations, using transfer risk indicators⁴⁸. The willingness to pay involves an assessment of the history of a government's repayment performance, an analysis of the potential costs to the borrowing government of debt denial, and a study of the potential for debt rescheduling by consortiums of private lenders or international institutions.

The sovereign risk may be further complicated by the international setting. For example, IMF guarantees to Brazil in late 1998 were designed to stop the spread of an international financial crisis. Had Brazil's imbalances developed before the Asian and Russian financial crises, Brazil probably would not have received the same level of support and sovereign risk would have been higher.

Political Risk

A change in government control, internal and external conflicts, social fabric, or other non-economic factors develops into political risk. The political risk assessment requires analysis of many factors, including the relationships of various groups in a country, the decision-making process in the government, and the history of the country. Insurance

⁴⁸ Structure of foreign debt relative to income: various debt/GDP ratios

exists for some political risks, obtainable from a number of government agencies and international organizations.

The quantitative measurement approaches to assess political risk, range from various classification methods⁴⁹ to surveys or analyses by political experts. Most services tend to use country experts who grade sociopolitical factors and produce a written analysis to go along with their grades or scales.

The company analysts may also develop political risk estimates for their business through discussions with local country agents or visits to other companies operating similar businesses in the country.

In many risk systems, the analysts reduce political risk to some type of index. Unfortunately, little theoretical guidance exists to help quantify political risk, so many “systems” prove difficult to replicate over time as various socio-political events ascend or decline in importance in the view of the individual analyst.

2.8 Interest Rates in Emerging Markets

The arbitrage across different financial assets constitutes the base for the theoretical study on interest rate determination in the emerging markets. Many factors like the balance between risk and return of assets, and the extent of market liquidity also play essential roles in interest rate fluctuations.

An inverse relation exists between capital mobility and arbitrage opportunities in emerging markets. When capital mobility is high, market players will have to dig deep in order to take advantage of small arbitrage opportunities. The analysts expect that an emerging country’s interest rate should be profoundly affected by global financial

⁴⁹ Type of political structure, range and diversity of ethnic structure, civil or external strife incidents

conditions. Therefore, domestic interest rates become linked to international rates which are broadly considered as benchmarks for the financial contracts⁵⁰.

The interest rates in developed economies like for the U.S. treasury bills are practically risk-free; they are the baseline upon which elements that affect interest rates (for instance liquidity and default risk) can be built-in into a particular econometric specification (Kamin and von Kleist, 1999; and Arora and Cerisola, 2001).

2.9 Liquidity and Interest Rates

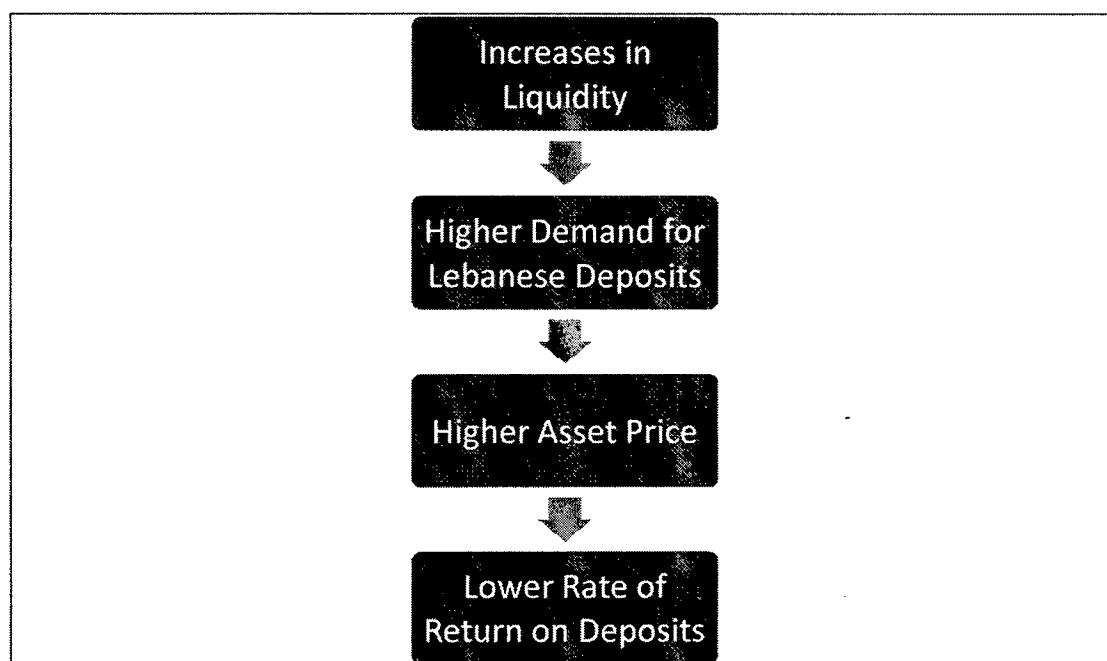


Figure 10: The Effects of Market Liquidity on Interest Rates

The accessibility of cheap universal credit, the increase of risk in foreign markets outside Lebanon, and the changes in risk appetite of international investors are among the factors contributing to the change in liquidity for the Lebanese assets.

⁵⁰ such as the LIBOR or the U.S. T-bill rate

The risk-neutral or risk-averse investors demand higher rates on Lebanese Debt issuance to compensate for higher risk factors like default and exchange rate risk. Lower risk generally indicates more asset attractiveness for a given rate of return.

This alteration in market liquidity leads the central bank⁵¹ to adapt its interest rate policy. For example, an increase in holding of Lebanese assets will lead to an easing of interest rate policy by the BDL.

⁵¹ In this case the BDL

Chapter 3: Model for Interest Rate Determination

3.1 Long-term Discount Rates for Emerging Markets

Jorge O. Mariscal and Kent Hargis, two analysts at Goldman Sachs Investment Research have developed in October 1999 a model for determination of discount rate based on 23 emerging markets, over a period of 25 years.

Their aim was to develop a model of the determinants of discount rates based on local and global fundamental variables. Their starting point was the fact that emerging financial markets volatility limits the usefulness of market determined measures of the cost of capital in valuation analysis. And the challenge that they faced was the short price history of emerging bond market, a similar barrier that was faced in this thesis.

3.1.1 Defining Discount Rates

$$R = Ru + [Rs + (Sb/Su)Eu]$$

Where:

- R: sovereign risk-adjusted discount rate.
- Ru: risk-free rate.
- Rs: the spread over Treasuries for sovereign, dollar-denominated emerging market bonds of similar maturity.
- Eu: the equity risk premium in the United States.
- Sb: daily volatility of the emerging stock market index.
- Su: the volatility of the U.S. market.

After adjusting for double-counting stemming from movements in sovereign spreads and equity market volatility that are likely to reflect a similar change in risk of the underlying economy, the formula becomes:

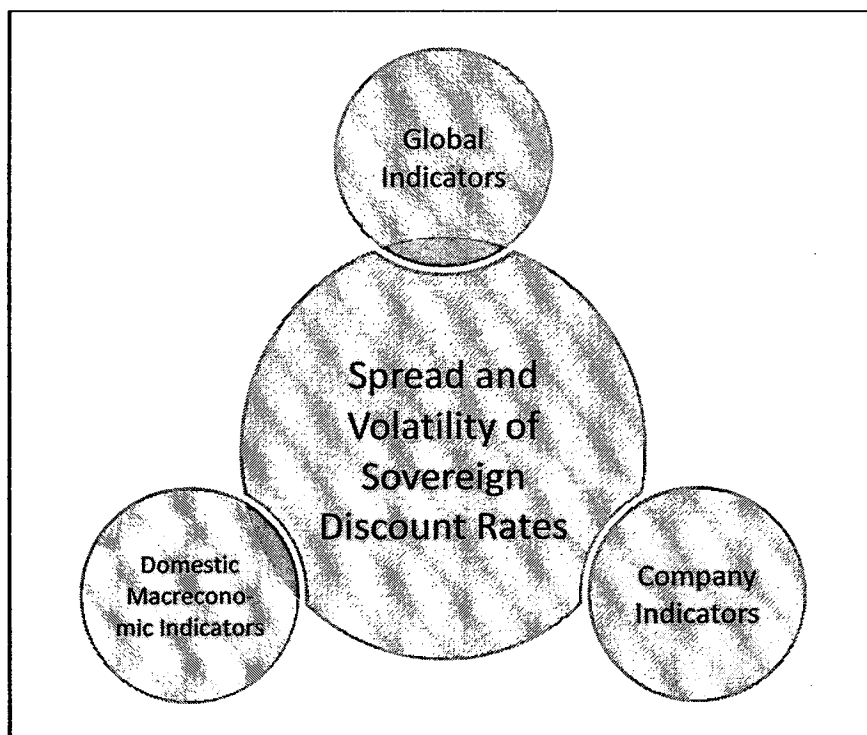
$$R = Ru + [Rs + (Sb/Su)Eu(1 - corr(S, B))]$$

Where S and B are dollar-denominated stock and bond returns, respectively (Jorge O. Mariscal and Kent H., 1999).

3.1.2 Model of Discount Rate Drivers

Global risk drivers: Degree of risk aversion in developed markets, global monetary conditions, and commodity prices.

Domestic risk drivers: Country balance sheet and wealth, country income statement, stability of cash flows, and debt service history (Jorge O. Mariscal and Kent H., 1999).



Source: Jorge O. Mariscal and Kent H., Goldman Sachs, 1999 pp.6

Figure 11: Model for Discount Rate Drivers.

3.1.3 Sovereign Spread Model Variables

		<i>Model Variables</i>	<i>Expected Sign</i> ⁵²
<i>Domestic Indicators</i>	<i>Balance Sheet</i>	Net external debt (gross ext debt minus reserves) divided by exports	Positive
	<i>Wealth</i>	GDP Per Capita	Negative
	<i>Income Statement</i>	GDP growth	Negative
	<i>Stability of Cash Flows</i>	Inflation	Positive
	<i>Debt Service History</i>	Dummy for countries defaulting on foreign currency debt	Positive
<i>Global Indicators</i>	<i>Global Risk Aversion</i>	BB Corporate Bond Spreads	Positive
	<i>Monetary Policy Tightness</i>	(U.S. T-Bond - U.S. T-Bill Spread)	Positive
	<i>Commodity Prices</i>	Goldman Sachs Commodity Index (GSCI)	Negative

Source: Jorge O. Mariscal and Kent H., 1999, pp.8

Table 3: Variables and Correlations.

⁵² Based on the model for discount rate drivers detailed in: Jorge O. Mariscal and Kent H., 1999, pp.6-7

3.1.4 Model Estimates

$$\begin{aligned} \text{Spread} = & \alpha + \beta 1 \text{ NetExternalDebt} + \beta 2 \text{ GDP PerCapita} + \beta 3 \text{ Growth} \\ & + \beta 4 \text{ Inflation} + \beta 5 \text{ Default} + \beta 6 \text{ BB Spread} + \beta 7 \text{ TBill} \\ & - \text{T Bond Spread} + \beta 8 \text{ GSCI Index} \end{aligned}$$

This study is based on the domestic indicators and equation of the above model, adapting it to the Lebanese economy: As a gauge of sovereign risk, local and foreign currency public debts are used. As an indicator of exchange rate risk, private sector local and foreign currency deposits are used.

This study analyzed the relation between debt and interest, deposits and interest and concluded by explaining the relation between debt and deposits and its impact on the Lebanese economic state.

Chapter 4: Procedure and Methodology

4.1 Introduction: Implementing The Model on The Lebanese Equation

Interest rates are an essential component contributing to the economic prosperity of the nation. According to literature, interest rates are the drivers of money flow in and out a country.

The macro and micro situations of both public and private sectors are sensitive to even minor changes in interest rates. Fluctuations of these rates can determine profitability of companies, and sovereignty of countries.

Interest rates: at the heart of the economy

On one hand, interest rates are indicators of economic health. On the other hand, they dictate the behavior of markets around the world. If interest rates are low, companies' net income and cash flow are boosted because they pay lower coupons.

In an environment dominated by low rates, TBs become safe haven for investment dollars. Cash on companies' balance sheets start having negative inflation adjusted yield. So enterprises are encouraged to invest cash in capital expenditure or return cash to shareholders.

Capital expenditure takes the form of technological improvements, upgrading of business processes, and possible acquisitions of competitors. Returning cash to shareholders is done through share buybacks and dividend payments.

In an environment where interest rates are high, companies and governments struggle to pay down their debt⁵³. High debt loads and absence of real market confidence in places

⁵³ As is now the case of Europe, it is a self fulfilling prophecy

like Italy and Spain, are pushing treasury yield to levels not seen before, therefore sounding the alarm of default and breakdown.

Interest rates and Risk factors

Risks have considerable weight in interest rate determination. How risk factors are perceived by aggregate market players dictate interest rates fluctuations in the long run.

Consequently, interest rates (being high or low) take their toll on the country's economic prospects. High interest rates reflect higher risk premium required in the marketplace, therefore scaring away investors. Low interest rates reflect safety and trust in the strength of the underlying interest components.

There are many risk factors in Lebanon. This country is characterized by many analysts as a sleeping time bomb. Lebanon bears its share of shocks and disasters, on the local, regional and international level: Lebanon is a country crippled down by debt after years of civil war (1975-1990), followed by a period of reconstruction that is still under way. The 1990s era was marked by periods of high interest rates, leading to depreciation of the local currency and a bubbling of the sovereign debt. Then came the political and security shocks of 2005 (the death of prime minister Rafic el Hariri) and the 2006 Israeli war on Lebanon.

Surprisingly, Lebanon was not affected by the global credit crisis of 2008, but it is affected by the deteriorating economic, social and safety states of regional Arab countries following the outburst of the Arab Spring.

Banks with branches in these neighboring countries saw their businesses pair back due to the lack of security. Financial institutions started increasing reserves for bad loans, therefore reducing their free cash flow and putting a cap over their growth and expansion.

The Lebanese government suffers from prolonged budget deficit. This deficit results from the high cost paid as coupons on sovereign debt issues, and from the funds used in order to stabilize Dollar-Lira exchange rate.

This deficit keeps the government unable to take measures to boost the private sector and stimulate the overall economy. The only factor keeping the Lebanese financial system afloat is the amount of deposits in the local banks and the BDL.

This thesis studies and interprets correlations between interest rates, public debt and private sector deposits, and will conclude with few recommendations.

4.2 Research Questions

- 1) What are the determinants of interest rates in Lebanon?
- 2) What are the factors affecting interest rates in Lebanon?
- 3) What is the impact of private sector deposits and public debt on interest rates?
- 4) How is the correlation between private sector deposits and public debt influencing the Lebanese economic situation?

4.3 Data Collection

All the collected data are published on the Central Bank of Lebanon Website⁵⁴.

The equations are a series of simple regressions taking the form of:

$$y = ax + b$$

Where y is the dependant variable, x is the independent variable, and a is the coefficient reflecting the relation determined between different variables.

⁵⁴ www.BDL.gov.lb

<i>Equations</i>	<i>Dependant Variable</i>	<i>Independent Variable</i>	<i>Sample Size (N)</i>	<i>Time Horizon Period</i>
(1)	Public Debt - Gross Local Currency Debt- in billions of LBP	Time and Saving Deposits in LBP of Private Sector- in billions of LBP	216 Monthly Observations	December 1993- November 2011
(2)	Public Debt - Foreign Currency Debt- in millions of US\$	Private Sector Deposits in Foreign Currencies- in millions of US\$	216 Monthly Observations	December 1993- November 2011
(3)	Time and Saving Deposits in LBP of Private Sector- in billions of LBP	LBP: Average Rate on Deposits (Weighted Average)	202 Monthly Observations	February 1995- November 2011
(4)	Private Sector Deposits in Foreign Currencies: in millions of US\$	US\$: Average Rate on Deposits (Weighted Average)	202 Monthly Observations	February 1995- November 2011
(5)	Local Currency Debt by Type of Instrument - 12 Months TBs: in billions of LBP	Yield on Treasury Bills - 12 months	202 Monthly Observations	February 1995- November 2011
(6)	Local Currency Debt by Type of Instrument - 3 Months TBs: in billions of LBP	Yield on Treasury Bills - 3 months	202 Monthly Observations	February 1995- November 2011

Table 4: Dependant and Independent Variables, Samples Size and Time Horizon Period

4.4 Findings

<i>Parameters</i>	<i>Equation</i>		<i>Interpretation</i>
Debt (LBP)= f(Deposits in LBP)	1	$y = 0.798x + 10,166$ $R^2 = 0.875$	Positive Correlation
Debt (USD)= f(Deposits in USD)	2	$y = 0.551x + 1,695$ $R^2 = 0.882$	Positive Correlation
Ln Deposits (LBP)= f(Average Deposit Rates in LBP)	3	$y = -0.146x + 11.26$ $R^2 = 0.769$	Negative Correlation
Ln Deposits (USD)= f(Average Deposit Rates in USD)	4	$y = -0.420x + 11.94$ $R^2 = 0.611$	Negative Correlation
Ln Debt (12Ms TBs)= f(yield 12Ms TBs)	5	$y = 0.107x + 6.541$ $R^2 = 0.426$	Weak Correlation
Ln Debt (3Ms TBs)= f(yield 3Ms TBs)	6	$y = 0.218x + 3.428$ $R^2 = 0.277$	Weak Correlation

Table 5: Equations and Findings.

4.5 Interpretation of Findings

Debt vs. Yield

Equations 5 and 6 show weak correlation between Debt level and corresponding yield, for three and twelve months periods. The coefficient a for the two equations is 0.1 and 0.2 with R-square of 42 and 28 percent respectively.

This weak correlation can be interpreted by the fact that there is decoupling between the constantly decreasing Lebanese TB rates and the Lebanese dire local economic conditions: increasing level of public debt and other political risk factors.

Deposits vs. Deposit Rates

Equations 3 and 4 show negative correlation between deposits and deposit Rates, for both local currency and foreign currency private sector deposits. The coefficient a has a value of -0.15 and -0.42 respectively. R-square is high also at 77 and 61 percent respectively.

Rates on Deposits are influenced by two factors: US expansionary policies (explained in section 4.6) and remittances flow. Remittances are the building block of deposits in commercial banks. The total number of emigrants as a percentage of population has reached 15.6% in 2010, and is escalating.

These emigrants send remittances and aid to their fellows in the home country, thereby feeding into banks' deposits, increasing the supply of loanable funds and pushing TB rates and Deposit Rates lower, explaining the negative correlations seen in equations 3 and 4.

Debt vs. Deposits

Equations 1 and 2 show a strong positive correlation between debt and deposits in both local and foreign currencies. The coefficient a is 0.8 and 0.55 whereas r-square is at 87.5 and 88 percent respectively. This correlation will be explained in the conclusion section.

4.6 Conclusions

Currency Pegging and Monetary Policy

Lebanese Pound currency is fixed on the US Dollar, which puts the Lebanese monetary policy in the hands of external control. Pegging the Lebanese Pound on the USD means that inflation and price stability policies applied in the US are directly reflected on the Lebanese internal economy. The Lebanese monetary policy becomes directly influenced by the US monetary policy.

In fact, there is an absence of real monetary policy in Lebanon. The government toolbox is very limited when it comes to applying measures to control prices and boost the economic engine. The BDL employs its foreign currency reserves to stabilize and shield the Lebanese Lira, preventing its appreciation or depreciation. The government issues debt to cover the extensive budget deficit. This debt is bought by Lebanese local banks.

Consequently, policy makers became like spectators, reactive to worldwide economic developments, instead of being proactive in finding ways for controlling raging inflation and fueling growth. The Lebanese currency is no more a gauge of the economic health of the nation, neither are interest rates.

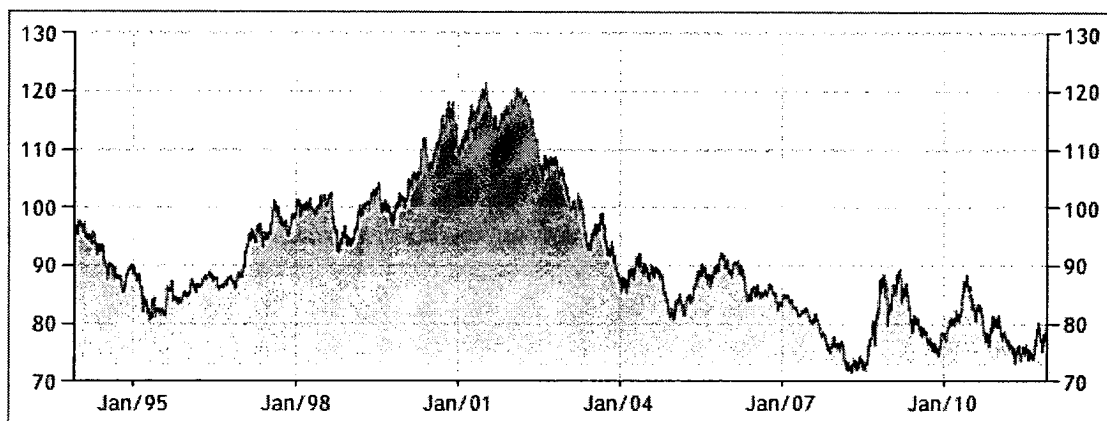
US Influence

The US is following an expansionary policy by lowering interest rates to fuel investments. As a result, the US Dollar is being manipulated, and has been drifting in a prolonged downward trend.

Lebanon is an economy based on consumer expenditure rather than production. The health of the consumer is critical to keeping the country afloat. As long as the Lira is pegged to the dollar, the country will continue to suffer from inflation imported with raw materials.

The US is no longer the only economy controlling the worldwide growth engine. On the contrary, the US has reached stagnation, and BRIC emerging markets are the new places of investment and expansion.

If the US Dollar continues to slide, as shown in the chart below, the Lebanese economy will continue to suffer, because of the unbalances in the economic structure and the inability of government effective monetary intervention.



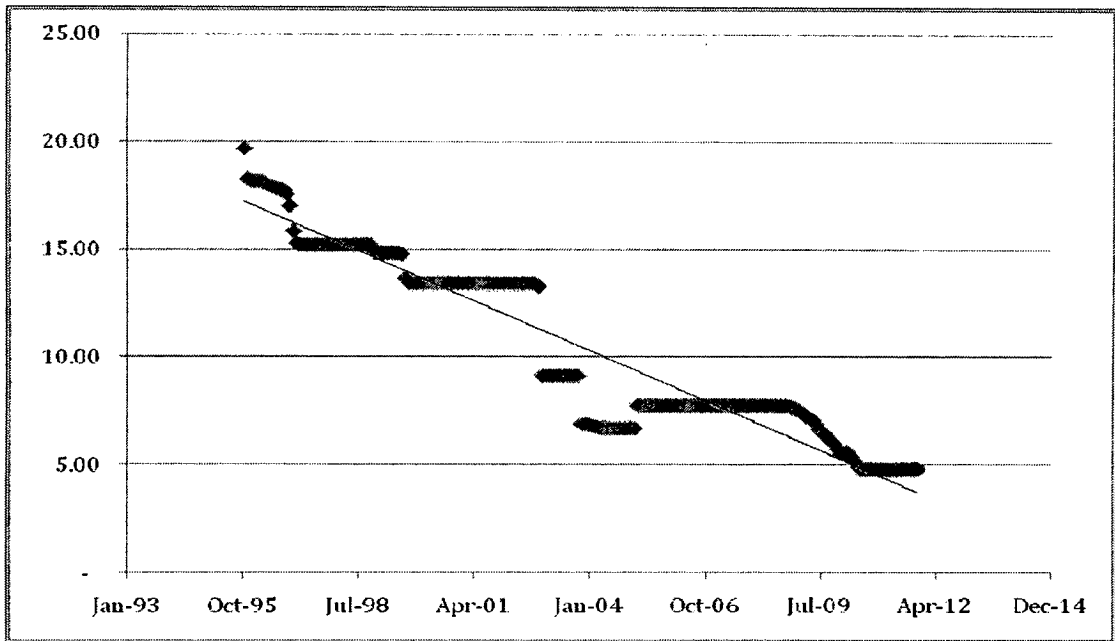
Source: www.Tradingeconomics.com OTC Interbank

Figure 12: United States Dollar Index (DXY). December 1993- November 2011⁵⁵.

Interest Rates and Internal Economic Conditions

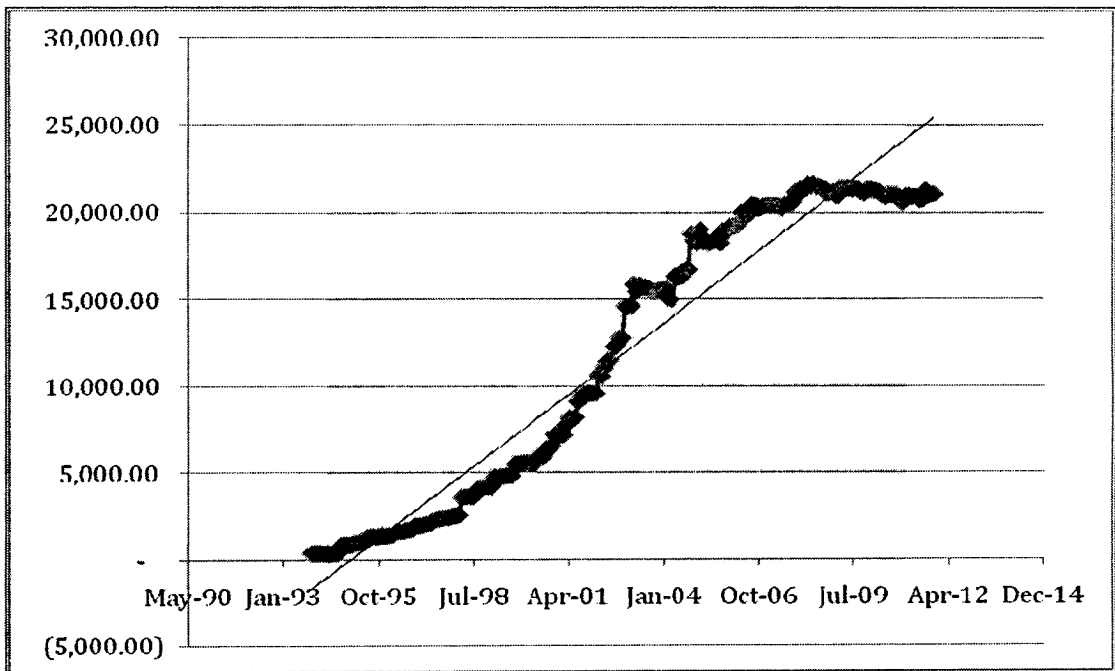
TB rates continue to fall (Figure 13) influenced by US policies, despite that all internal economic conditions point to the fact that Lebanon is in a difficult state: mounting sovereign debt (Figure 14 and 15), shrinking middle class, growing poverty, and unstable political scene.

⁵⁵ Source: www.Tradingeconomics.com OTC Interbank



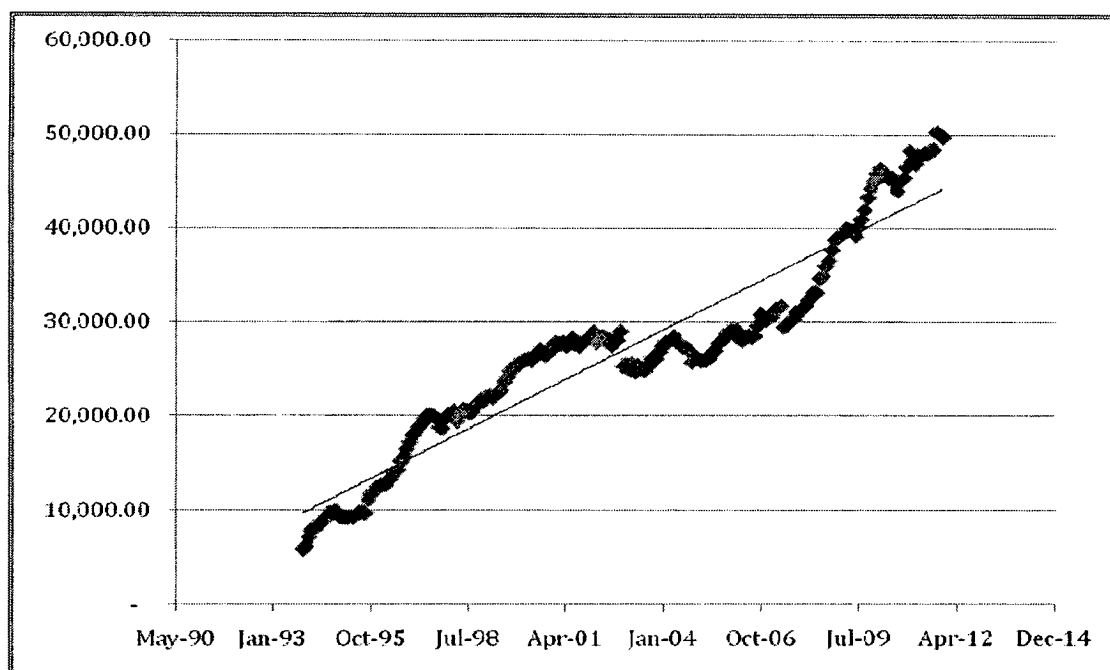
Source: BDL

Figure 13: Rates on Lebanese 12 Months TBs vs Time. November 1995- November 2011.



Source: BDL

Figure 14: Public Debt, Foreign Currency Debt (in millions of US\$) vs Time. December 1993- November 2011.



Source: BDL

Figure 15: Public Debt, Gross Local Currency Debt (in billions of LBP) vs Time. December 1993- November 2011.

Debt and Commercial Banks

Yield is no longer an issue for debt volume, because strong commercial banks are the most important buyers of government bonds. Yields on TBs are already high compared with other bond yields. TBs are still the best opportunity for banks to invest their funds.

Commercial Banks are very liquid; the CAR II⁵⁶ of banks in Lebanon has surpassed 13% (Lebanese Banks Association, 2011), and LDR⁵⁷ ratio is at 34% (Lebanese Banks Association, 2011).

Banks have very high level of deposits and their assets have reached 347.5% of GDP in 2010⁵⁸. The primary factor feeding into deposits is the increase in remittances sent by

⁵⁶ Average capital adequacy ratio

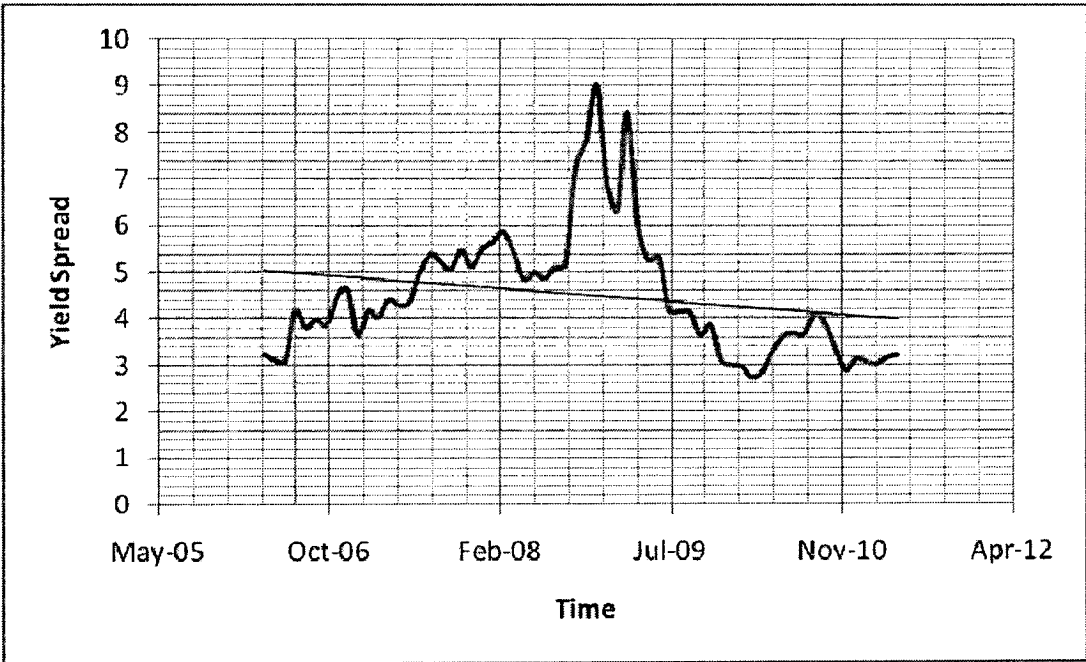
⁵⁷ Loan-to-Deposits

⁵⁸ Source: Ministry of Economy and Trade, Association of Banks in Lebanon, Byblos Bank Research Association, Ministry of Finance, IMF and WB, 2011

the generous diaspora abroad. Banks are the most important lenders for the Lebanese government.

As shown in the chart below, the spread between yields on 15-years Eurobond and yields on US TBs of the same Maturity has reached as high as 9% in December 2008, and as low as 2.74% in March 2010.

Till present, this spread remains comfortable for banks to insure their profitability and prosperity. A future decrease in TB rates will put pressure on banks' margins and will cause them to decrease deposit rates in order to lower costs and keep profitability.



Source: BDL

Figure 16: Spread between Eurobond-15 years (04/2021-US\$ 2092.469Mn) Monthly Yields and yields on US Treasury Bonds of the same Maturity vs Time.

Conclusion

To conclude, this thesis has demonstrated that the Lebanese economy is in vicious circle. This thesis has explained the determinants of interest rates in Lebanon: Interest rates are neither an indicator of, nor a driver to the economic engine. Interest rates have lost their fundamental roles.

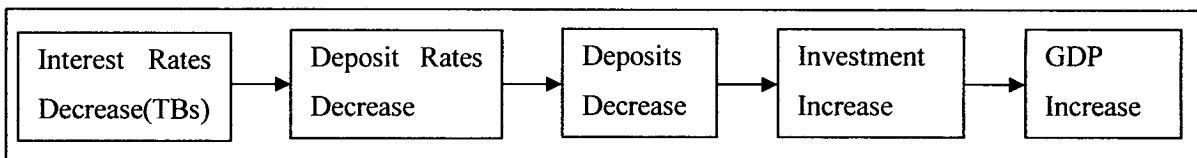
Due to currency pegging (US influence), and the abundance of liquidity and money supply (remittances influence), interest rates are expected to continue to go down. Due to the prolonged budget deficit, debt is expected to continue to go up.

Therefore, the lower rate paid by the government is stimulating the higher take up of loans and even leveraging further the financial system. The increase in deposits is pushing toward an increase in debt (equation 1 and 2), and therefore contributing negatively to the general sovereign Lebanese financial situation.

Interest rates in Lebanon have lost their value at the heart of the economy. Interest rates in Lebanon have defied the economic logic and even the Keynesian theories of demand and supply. They are no longer a driver, nor a gauge of the state of the economy. They are only a consequence of malfunction in decision making, and a lack of leadership and vision from the part of leaders.

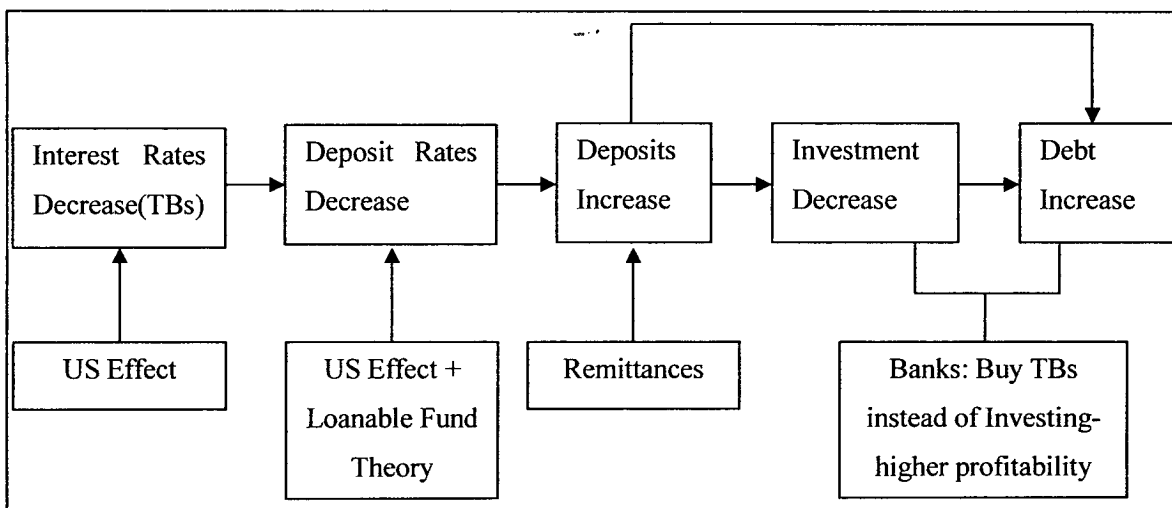
The figure below is an illustration of the disparity between the normal economic cycle and Lebanese economic situation:

I. Normal Cycle:



Source: John C. Hull (2009)

II. The Lebanese Situation:



Chapter 5: Recommendations and Challenges

5.1 Recommendations

Lebanon must be put on the right track towards prosperity.

Freeing up exchange rate in an orderly fashion is the first step toward helping the national government closing its deficit. The second step would be a better utilization of deposits in commercial banks to fuel investments.

Deposits are ought to be invested in growing different sectors of the economy. Nowadays deposits are not channeled toward broad economic growth, but they are used to cover the public budget deficit. Lebanon cannot move toward real economic expansion without the proper employing of deposits.

Lebanon does not have an investment grade credit standing and lenders are concentrated in small number of internal national banks. The abundance of liquidity has artificially push interest rates down. Although the monetary situation is currently stable, leveraging of the Lebanese financial system makes it very fragile in the face of any credit crisis.

If, in the future and for some reason, lenders (Commercial Lebanese banks and BDL) cannot provide the liquidity to the system, or if remittances stop flowing into banks' deposits, interest rates will rapidly skyrocket because the government cannot get the same rates on its bonds if they are offered to the international markets, causing instant currency depreciation, country default and economic Pearl Harbor!!

5.2 Challenges and Limitations

The first challenge was to find the most accurate data. Although the central bank is currently audited by external auditors⁵⁹, there is absence of numbers published by third party institutions like WB and IMF for similar time frame. Doubts in the accuracy of data are present when going back to the high inflation periods of the 1990s.

The second obstacle is that the central bank doesn't indicate if debt and deposits numbers are adjusted to currency exchange rate fluctuations before December 1997, when Lira-Dollar pegging became effective.

The third obstacle lies in the fact that the BDL also does not indicate how weighted average was calculated and if the weighted average interest rates on Deposits are inflation adjusted or not.

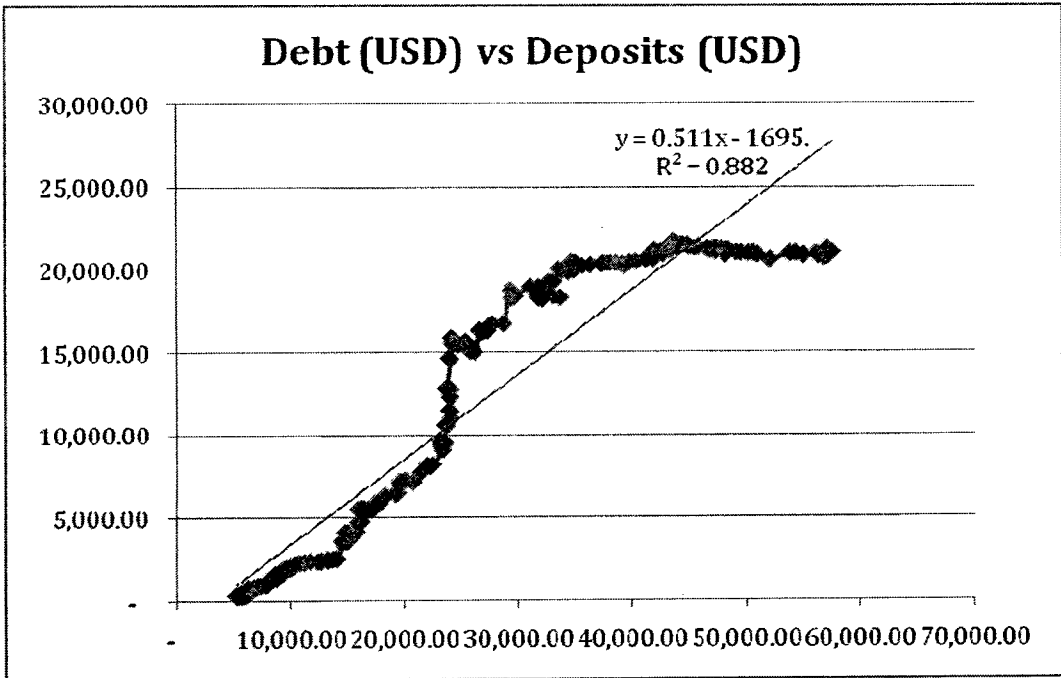
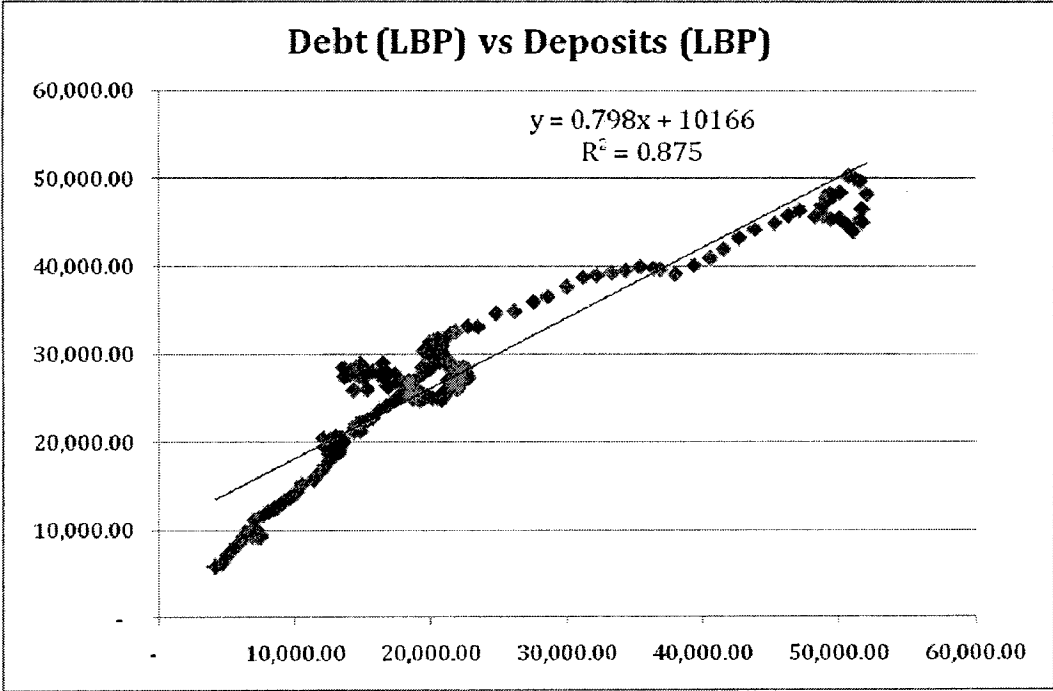
To perform our analysis, we had to rely on these publically disclosed data, given the absence of alternative ways to retrieve additional figures.

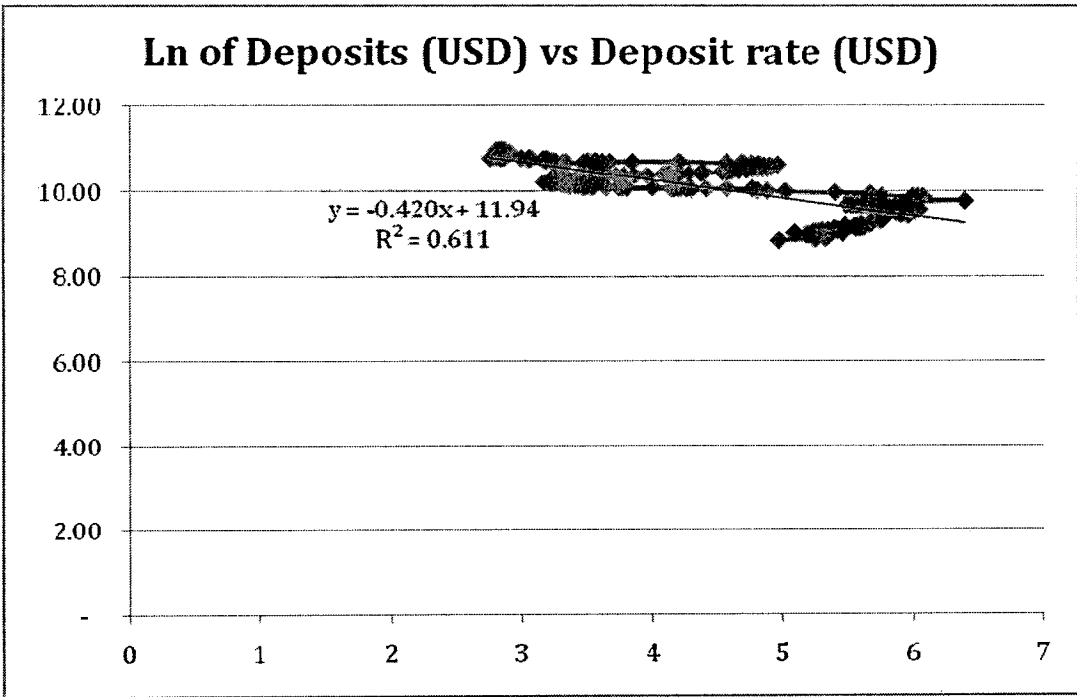
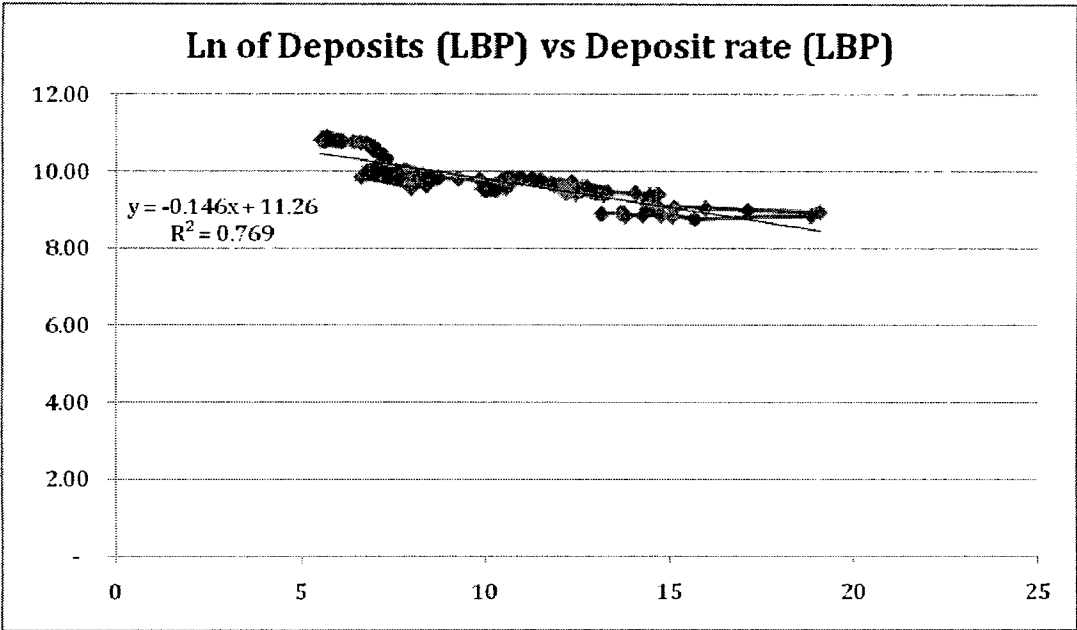
The main limitation of this thesis is the fact that not only deposits influences debt and interest rates. Lebanon has other risk factors that can play also a crucial role: Corruption is high within the government agencies and the political security state is very fragile and unstable.

So, finding an adequate benchmark to compare interest rates and debt is very difficult. It can limit the outcomes of our thesis, and its ability to guide the process of decision-making.

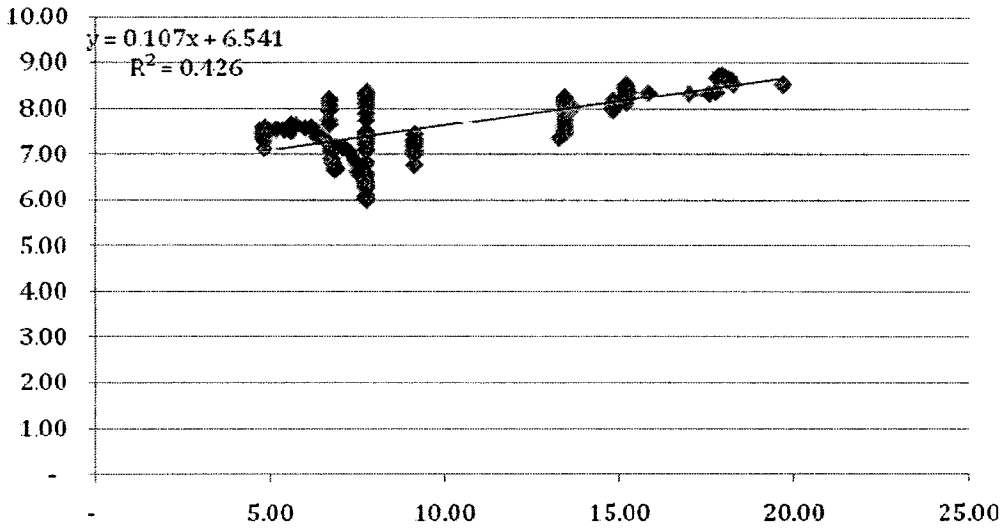
⁵⁹ Deloitte & Touche, and Ernst & Young

Appendix

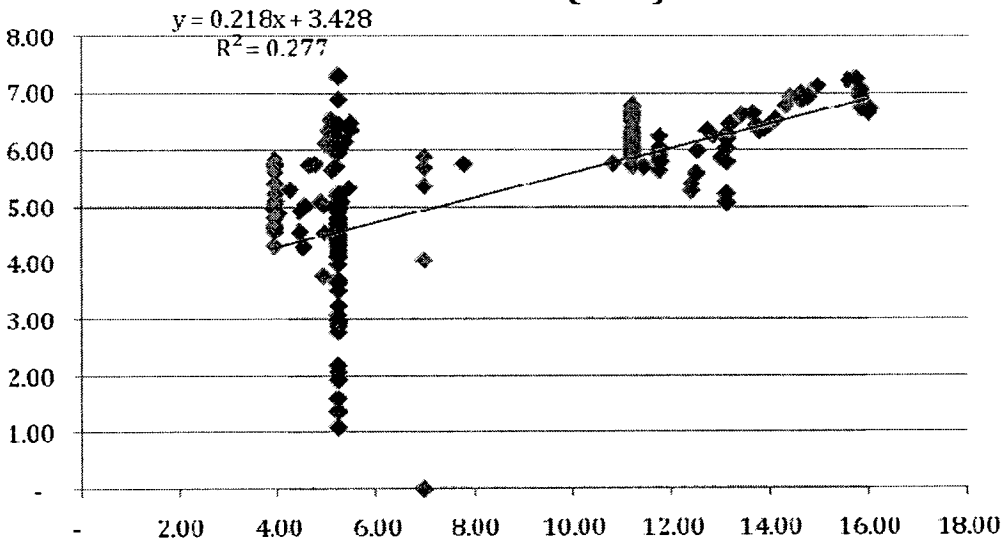




Ln of 12 months TBs (LBP) vs Yield on 12 months TBs (LBP)



Ln of 3 months TBs (LBP) vs Yield on 3 months TBs (LBP)



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