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The American University in Cairo

School of Global Affairs and Public Policy

**The Dynamics of the Real Estate Sector in Egypt: Is there a Risk
of Having a Housing Bubble?**

A Thesis Submitted to the

Public Policy and Administration Department

in partial fulfillment of the requirements for the degree of

Master of Public Policy

By

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Spring 18

Abstract

This thesis analyzes the real estate sector in Egypt. The thesis attempts to evaluate determinants of housing investment in light of the recent economic shocks within the Egyptian economy. This analysis is done using the mixed method approach of qualitative and quantitative methods. The quantitative methods component examines the effect of monetary policy on housing investment in Egypt using data on real estate stock market index, inflation, interest rates and money supply. The qualitative approach addresses the gap between the supply and demand for housing. This gap is fulfilled by the real estate developers in the Egyptian market. The findings from the quantitative analysis show a significant and positive effect of the monetary policy on the real estate sector, which matches the results from the literature that the real estate sector in Egypt is exposed to the dynamics happening in the monetary policy, especially the change in money supply within the economy. The qualitative data highlights the risks of having a housing bubble in the market as a result of the growing presence of builder-provided credit. The results from the qualitative approach reflected that there is a risk from the financial market. This risk is not coming directly from the banks, however, it is coming from the gap created in the financial market between the demand for mortgages and the legal supply of it from the banking sector. The analysis explains that the real estate developers stepped in to replace the role of the banks and sell the units with easier credit facility terms, with no risk assessment of the buyer. This reflects the risk of accessing credit facility with poor quality of lending that increases the risks within the real estate sector.

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1. Introduction

The real estate sector has become one of the main sectors within the Egyptian market on various levels. The real estate sector plays a vital role as a contributor to GDP growth in Egypt, as the weight of the sector in the nominal GDP reached 10.5%, end of FY16/17 (The Ministry of Planning, Monitoring and Administrative Reform of Egypt website, 2017). Moreover, the real estate sector is the second biggest sector in the market capitalization for the Egyptian stock market, after the banking sector (The Egyptian stock market website, 2017), These two factors highlight the vital role that the sector plays in the rate of the growth of the country in addition to the volume of trade in the financial market, as part of the stock market. Given this significant weight any vulnerability of the sector would have an impact on the Egyptian economy, either through the impact on GDP growth or through its impact on the financial market.

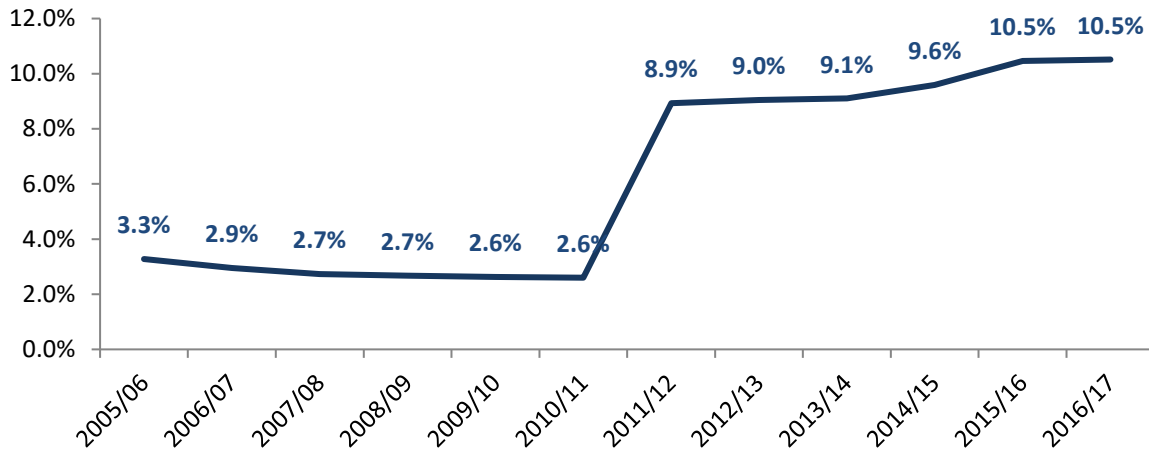
Therefore, the purpose of the thesis is to evaluate the potential risks within the real estate sector to better understand the dynamics of the sector and to suggest any potential intervention by the government or the central bank of Egypt to ensure the sustainability of the sector. This thesis is meant to analyze some of the risks in order to better secure the real estate sector and the Egyptian market from any potential shocks that would hinder the growth of the real estate sector and consequently would hinder the growth of the whole Egyptian economy.

Background

The Importance of the real estate sector as a contributor to GDP growth witnessed an increase, especially starting FY 2011/2012. According to Ministry of Planning, Monitoring and administrative reform published data, the real estate sector represents around 10.5% of

GDP for FY16/17 in nominal values compared to an average of 2.8% during the period from FY05/06 to the FY10/11, as showed in the below chart.

Figure 1: Nominal Real Estate Sector (% of GDP)



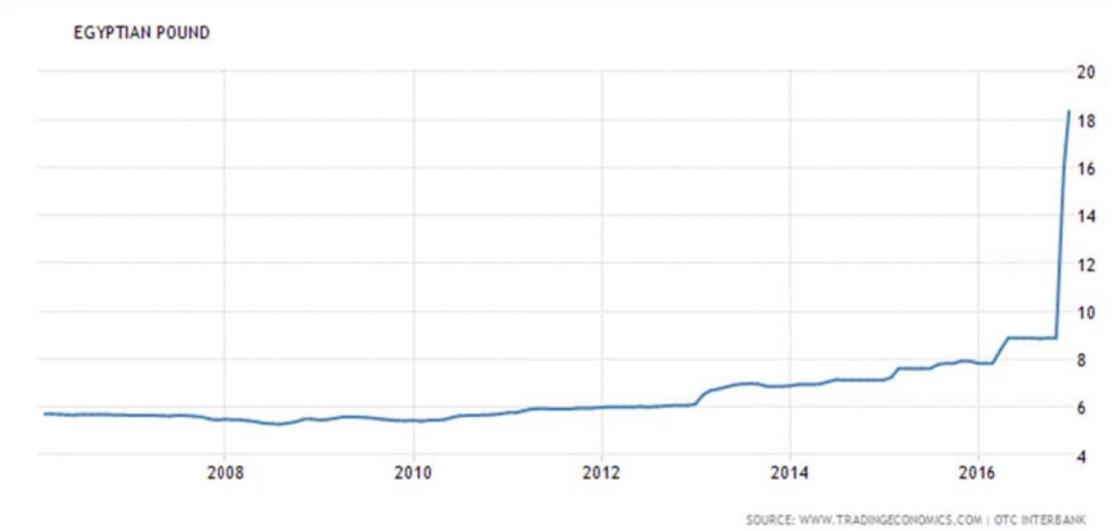
Source: Compiled by the author based on data available on The Ministry of Planning, Monitoring and Administrative Reform of Egypt website (2017).

A number of factors paved the way for the real estate sector to grow and contribute to Egypt's growth rate. Since the recent political turmoil of 2011, as shown in the above chart. The Egyptian economy has been facing many challenges, causing the Egyptian market to be unstable as a result of imbalances on the fiscal and monetary fronts. These fiscal imbalances were reflected in constantly high budget deficit rates as percent of GDP as well as high levels of debt, if compared to peer countries.

On the external front, from the 2011 political turmoil to 2016, the Egyptian economy faced various obstacles, especially concerning the balance of payment challenges, which were reflected on the net international reserves.

The decline in net international reserves can be explained by various reasons. One of the main factors was the political instability that had a negative impact on tourism sector, which was one of the main contributors to the Egyptian Balance of Payments, as well as a severe drop in the foreign direct investments, in addition to the recent fluctuations in international commodity prices that had an impact on the international trade levels, which had a direct impact on the Suez Canal revenues, in addition to the drop in oil prices that also had a negative impact on the Egyptian balance of payments. Moreover all the external debt repayments that Egypt is obliged to pay back. All these factors highlight the persistent need for a policy action that would improve not only the current situation, but in addition ensure a long-term plan that would enhance the economic conditions. Furthermore, taking an advantage of the recent devaluation policy by the central bank of Egypt in November 2016, as shown in the below graph, with the new floatation with around 73% devaluation compared to the official rate in June 2016, end of fiscal year 2015/2016. The following graph shows the developments pertaining to the value of the Egyptian pound versus the US dollar since the financial crisis according to trading economics website.

Figure 2: Developments in the Egyptian Exchange Rate



Source: Trading Economics (2016)

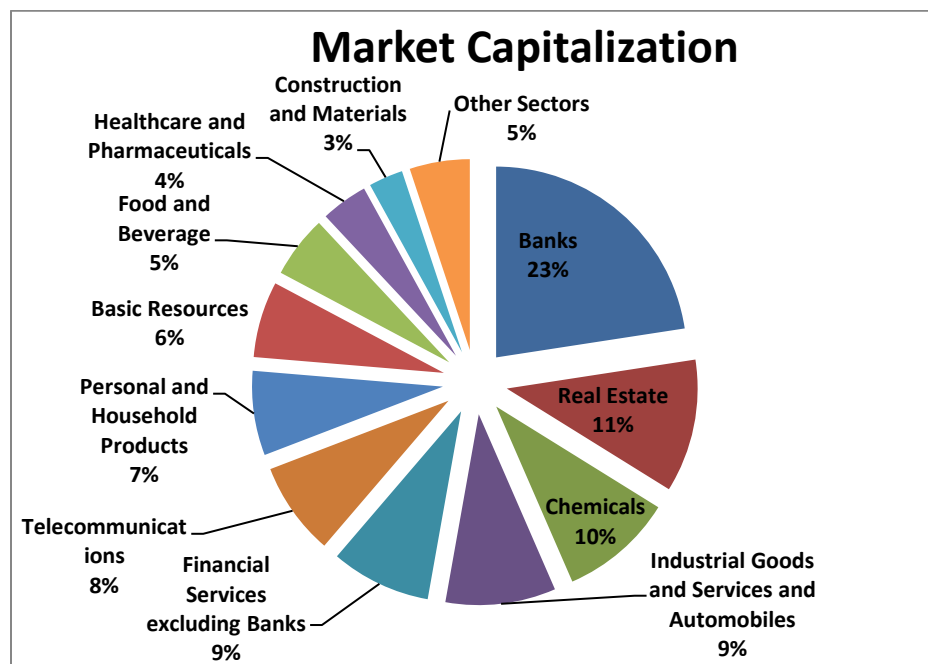
The floatation, together with fiscal measures that have an inflationary impact, such as Value Added Tax (VAT) and decreasing subsidies to electricity and petrol materials have resulted in a decrease in the purchasing power of the Egyptian pound. During the previous decade in the Egyptian economy, money has been losing one of its key functions which is being a store of value, and this created an incentive for people to put their money in another asset that can preserve value, from their viewpoint which is real assets.

Accordingly, the inflation rate has been going high since then. The Egyptian currency has lost almost one half of its value because of the devaluation rate relative to the US dollar and the deficit in the balance of payment. This was one of the main drivers for investment to be directed to the Real Estate sector. The Egyptian currency faced many challenges, which made the currency lose one of its key functions, being a store of value. Hence, this was one of the motivations for the demand side to attract more investment in this sector, because it was perceived by many people as a safe investment and a store of value for their savings,

relative to other risky investment sectors in the Egyptian market in this unstable stage of the Egyptian economy.

Moreover the importance of the real estate sector within the Egyptian economy is also highlighted by its weight in the Egyptian stock market. According to the Egyptian stock market website (2017), the real estate sector is considered to be the second biggest sector between the existing seventeen sector in market capitalization within the Egyptian stock market. Market Capitalization is an indicator of the volume of the sector represented in the number of shares of the sector multiplied by the prices of the shares. The real estate sector market capitalization weight as % of total is 11%, as shown in the below chart, representing the second biggest sector after the banking sector. Any potential fluctuations within the real estate performance will have an impact on the Egyptian stock market as it one of the main contributors to the Egyptian stock market.

Figure 3: Market Capitalization for the Egyptian Stock Market



Source: Compiled by the author from The Egyptian Stock Market website (2017).

Statement of the Problem

There are some speculations in the market that the recent hike in the real estate sector performance and the growth in this sector will not be sustainable and will cause a housing bubble similar to the one that happened in the U.S market, imposing a risk on the Egyptian financial market. Samih Sawiras, who is an Egyptian businessman and a chair of the board of directors at Orascom Development Holding, and one of the main activities of the Orascom company is the construction and real estate sectors, he said in an interview with the Daily News newspaper that the real estate sector performance is not going to be sustainable and he predicts that there are risks of having a housing bubble (Sawiras, Daily News Newspaper, 2017).

These speculations need further study in order to analyze the potential risks and see how the market should adopt precautionary policies to avoid such a possible risk and how the government should react as a regulator to such a phenomenon.

The Egyptian financial system is not considered to have relaxed lending conditions, as Egypt has various restrictions on its credit system; in addition, it usually has high interest rates, which means high cost of borrowing. However, the risk in Egypt comes from a secondary level, where the bank gives credit to the investor and then the investor will later sell the house with credit facilities to the buyer. These credit facilities will be through selling the units with only down payments. This process does not include any restrictions. In addition, it does not require any risk assessment measures for the buyer to ensure the sustainability of the real estate sector. The company has no guarantees that the buyer will be able to pay the installments, except

for the down payment. In addition, the credit facility that the real estate developers give could reach 10 years to fully cover the cost of the asset. This kind of credit facility in a dynamic market such as the Egyptian economy is considered one of the major risks that might face the Egyptian financial markets.

Research Questions

Accordingly, the **Main Research question of this study** is:

What are the key determinants of the dynamics of the real estate Sector in Egypt and what are the risks of having a housing bubble phenomenon in Egypt, focusing on the exposure to the monetary policy shocks within the Egyptian economy, and the non-banking lending mechanisms in the housing sector?

2. Literature Review

Literature on real-estate sector developments and housing bubbles risks could be categorized into four major sections; firstly, the macro-economic dynamics and how these dynamics have a direct and indirect impact on housing prices and the occurrence of housing bubbles (Wong, 2001; Hofmann and Hofmann, 2008; Bernanke, 2010; Afonso and Sousa, 2012; Maclennan et al., 1999).

Secondly, the banking sector which has also played an important role in analyzing housing bubbles via the ease of granting credit and how excess credit might feed a housing bubble (Reinhart and Rogoff, 2008; Koha et al., 2004; Brunnermeier, 2009; Marshall, 2009; Taylor, 2009; Saunders and Aleen, 2009).

Thirdly, speculation is considered in the literature as a key contributor behind fluctuations of real sector assets prices and therefore contributes to the uncertainty that might result at the end in a housing bubble (Foldvary, 1998; Holt, 2009; Hellwig, 2009).

Fourthly, the global financial crises such as the U.S 2008 (Barrell and Davis, 2008; Taylor, 2009; Flodvary, 2007; Hellwig, 2009) and the Asian Financial Crisis in 1997 (Berg, 1999; Takatoshi Ito, 1999) will be discussed to further understand and analyze the main drivers for the historical financial crises.

The Impact of Macro-Economic Dynamics on Housing Prices:

One cannot look at the housing sector without first dissecting two of the most important policies directions: monetary and fiscal. The literature and practical evidence have shown that both policies have direct and indirect effects on the dynamics that run such a sector, in

that prices and demand shift regularly according to decisions made by policymakers. On the monetary side, prices and demand in the housing sector shift dramatically when it comes to tightening or easing monetary policy (Doyle, Kole and Martin, 2005; Catte, Girouard, Price and André, 2004; Bernanke, 2010). On the fiscal side, we can mention a few measures that government can take to affect the sector such as: (1) increasing taxation on housing gains or real estate, (2) expanding subsidies to include a housing scheme to encourage young people to own real estate units or (3) the overall fiscal objective of financing government needs (most importantly the overall fiscal deficit) by tapping into the domestic market and increasing government indebtedness. All these aforementioned measures that consist the core of the two most important policies in a country can make or break a sector as volatile and important as the housing sector (Afonso and Sousa, 2012; MacLennan et al., 1999).

Starting with the monetary policy, the literature view the relationship between the policies involved and house prices is interrelated (Wong, 2001). During the expansionary period of any economy, the increase in money supply lowers the cost of borrowing for buyers, which is considered as an incentive for the demand for the real estate sector. Accordingly, the houses prices increase, as the market sends signals for estimating higher returns for this sector (Goodhart and Hofmann, 2008).

However, when the economy faces high inflation levels, especially after the increase in the money supply within the economy, without sufficient economic growth, this causes high inflation levels that would be tackled by increasing interest rates (Goodhart and Hofman, 2008).

With the recent developments in the macro-economic picture of Egyptian economy, the tightening monetary policies are expected to have a direct impact on the disposable income, hence the individual consumption and savings, which is expected to have a direct impact on the demand for assets, especially the demand for buying new real estate assets (Tsatsaronis and Zhu, 2004).

The above argument bears resonance to the situation in Egypt. Moreover, the recent hikes in interest rates by the Central Bank of Egypt (CBE), as the CBE has increased it by 700 basis points, since November 2017, which has an impact on the cost of borrowing for the individuals and investors. This is expected to further increase the cost of production of the new units, while at the same time is expected to decrease demand as a result of the monetary tightening policies and the reduction of the disposal income of individuals (Tsatsaronis and Zhu, 2004).

When a country faces an easing monetary policy phase, this is expected to raise and boom the house prices. Easing monetary policy phase would cause high inflation rates, and the authorities would take actions to manage this inflation through moving to tightening monetary policies that would cause rapid drop in house prices, which is expected to increase the risks associated as the author explains that “the co-movement of both property prices and default rates with the business cycle means that losses on mortgage lending are likely to be higher when banks’ other lines of business are also performing poorly” (Ahearne, Ammer, Doyle, Kole and Martin, 2005).

Although, house prices are directly related to macro-economic variable, such as inflation and currency devaluation, on many countries, house prices went down in real terms,

especially when these countries had high output and GDP growth rates (Catte, Girouard, Price and André, 2004).

However, there is another argument that explains that there are weak or limited direct links between the house prices and monetary policies, as the monetary policies usually correspond to market dynamics and it is usually lagged and the author gave a supporting example of this analysis as it was mentioned that “house prices began to rise in the late 1990s, and although the most rapid price increases occurred when short-term interest rates were at their lowest levels, the magnitude of house price gains” (Bernanke, 2010).

From the fiscal policy side, there is a direct and indirect relationship with the housing prices. The direct impact comes from increasing the tax policies, such as the real estate tax. Increasing the tax on real estate will have a direct impact on the demand for houses, as it will reduce it. Housing prices are susceptible to the developments occurring on the fiscal policies, especially via tax measures. One can mention taxation on rental value of the house, capital houses on housing gains and VAT on new houses. Imposing such taxes could have a negative effect on the housing market from the demand side, as it is expected to decrease demand on housing units, as well as the prices of the housing units, given the inelastic short-term supply of housing (Afonso and Sousa, 2012).

Moving to the fiscal policies and its impact on the housing prices, the fiscal policies imbalances within an economy has its implications on inflation, and consequently its implications on prices. The fiscal imbalances, such as high levels of the overall deficit for a country can be one of the reasons of pushing inflation rates high. High inflation rates accordingly pushes the prices of the real estate sector high. Moreover, the indirect impact of the fiscal policies on the housing prices comes from the continuous increase in the

overall deficit. Especially if this overall deficit is financed by the domestic debt, because it will push the whole economy to increase the money supply and hence affect the monetary policy, which will have an impact on increasing housing prices (Afonso and Sousa, 2012).

Another implication of the fiscal policies within an economy that pushes the prices of the real estate high is the increase of the financing needs for a government. Increasing the government financing needs, as a result of the increase in overall deficit will cause a higher indebtedness, which will have a crowding out effect on the resources available to potential buyers of the real estate units (Maclennan et al., 1999).

The Impact of Credit Availability

Countries with loose credit regulations, in which credit facilities are granted with minimal restrictions could be very much exposed to shocks especially if credit is not diversified to various economic sectors (Reinhart and Rogoff, 2008). This increases market volatility and therefore it starts to be a vicious cycle starting with abundant credit and ending with increasing the risk of having a financial crisis or more specifically increasing risks of having a housing bubble, if credit risks directed to the real estate sector are the topic of discussion (Mera and Renaud, 2000). Moreover, the excess liquidity that comes from loose credit systems causes unreal appreciation in asset prices, which inflates the prices and the value of the collateral, hence this leads to again excess credit expansion (Koha et al., 2004). The openness of the financial system and the financial innovation were a main driver behind credit expansion which, on its turn, feeds inflation in the housing sector (Brunnermeier, 2009). With the financial innovation securitized products became more popular and resulted in a fall in lending standards and much cheaper credit in light of low

interest rates. This was mainly the result of a reshuffle of the market risk, resulting in banks bearing less risk than other financial institutions and they started to care less about loans provision approvals and monitoring process. Meanwhile, mortgage brokers started to offer mortgages that do not need documentation, a down payment and NINJA mortgages which means no income, no job or assets. This behavior was mainly driven by the myth that housing prices will be always in the upper side and therefore any borrower could safely pay back in light of the increase in the value of his purchased asset (ibid). There are also some regulatory reasons behind granting credit generously to borrowers even when a high risk is involved and the US is an example where the government pressured to foster home-ownership through pushing for lower standards of lending for low income families. The government has also allowed banks to have commercial operations and investment operations simultaneously, the thing that encouraged easy credit (Marshall, 2009).

There is another argument that was discussed by Taylor (2009), as he argues that the empirical study has shown that one of the main drivers of the financial crisis in 2008 in the U.S was not because of the liquidity in the market. However, he discusses that if the problem was coming of the shortage of the credit supply then it could have been solved by the fed policies. He claims that the main driver was coming as a result of the unsecured excess lending policies within the financial market. The main challenge to the financial market was that that unsecured risks associated with the lending on the market. Moreover, Taylor explained that this case is different than the great depression, as the problem back then was mainly coming from the liquidity within the market and part of solving the situation was through printing more money and increasing money supply. However, the risk in 2008 that was associated with the loose credit supply within the financial system and

the uncalculated risk associated with the lending policies were the main drivers of the crisis focusing on the quality of lending more than the quantity of the credit available in the financial market (Taylor, 2009).

Moreover, Saunders and Aleen explain various reasons that caused the financial crisis in the US in 2008. The authors argue that one of the reasons was also the decline of the quality of the borrowers from the banks, which increases the credit risk for the banks and they had to come up with various solutions to reduce such a risk. The authors argue that the creation of the Basel I during the 90s was revolutionary as it regulated the financial market and calculated capital requirement for credit risks in a unified way across banks worldwide. The authors explain that it was developed later on in 2006 to reach the updated capital accord the was named Basel II, which was criticized to have various flaws and to be one of the main drivers of the crisis, as it did not give enough weight to risk exposure (Saunders and Aleen, 2009).

Investors, Speculation, and Fraud

Stakeholders in the real-estate market care about maintaining above-equilibrium prices in the market even if these prices do not reflect the real value of the asset (Foldvary, 1998). Accordingly, they speculate on the value of the asset, and this speculation could lead to unjust shifts of income to landowners. This speculation could be the result of a fiscal drag resulting from lack of an efficient property tax collection mechanism or a monetary drag resulting from excess money supply or maybe a combination of both (ibid). Consequently, speculation is one of the major contributors to the occurrence of a housing bubble, since if it had not been for the belief that home prices are on the upper side, risks for having a housing bubble would have been minimized. Speculation has driven three essential

economic variables to be underestimated. These variables are low mortgage interest rates through maintaining affordable monthly mortgage payments for buyers even as home prices increased causing artificial excess demand, low short-term interest rates which had a direct impact on motivating investment with borrowed money and finally relaxed standards for mortgage loans in light of the supportive government policies towards real sector driven by optimistic speculations (Holt, 2009). However, there is a counter argument in literature explaining that underpricing “leads to inflated asset prices even within efficient markets” (Pavlov, 2004). Underpricing caused countries who witnessed it great losses in the values of real estate, and this decrease reached 80 percent or even more after the financial crisis. Moreover, there was voices in the European banking sector that blamed the U.S mortgage sector to be junk mortgages, and consider them as the main reason of getting the European banking sector in trouble before the financial crisis in the U.S. Hellwig argues that these speculations had a great contribution to the initiation of the financial crisis, as he argues that the fundamental role the speculations play shaping the circumstances surrounding the crisis (Hellwig, 2009).

Global Financial Crises

Global financial crises result from various risks within each and every economy. One of the main factors contributing to a financial crisis is the monetary policy, as Barrell and Davis (2008) argue. Reducing money supply could generate bank failures. Monetary policy errors then give rise to crises that would have never happened in risk-pricing as they are irrelevant from business cycles (Barrell and Davis, 2008). In the following section two historical financial crises are discussed. Those two crises are the 2008 U.S financial crisis and the 1997 Asian Financial crisis.

U.S 2008 Financial Crisis

The 2008 financial crisis happened as a result of the various reasons, of which the previously discussed variables, which are the macro-economic dynamics and their impact on house prices, the impact of credit availability as well as the investors' speculation, and Fraud. However, other variables are also claimed to be the reason of the financial crisis on the U.S economy.

Taylor (2007) explains the main reasons of the financial crises in general as a consequence of “frequently monetary excesses” that comes as a result of the expansionary policies that creates a boom within the financial market. The author argues that after these monetary excesses there will always be an expected bust within the economy. However, he argues that the 2008 financial crisis can be mainly described as a vicious cycle that was initiated by a housing bubble or a boom that was followed by a bust. This housing bubble was in itself a translation of excess money supply within an economy that witnessed an increase in the demand for the real estate sector pushing the prices of the housing very high and then resulting in a bust in the economy (ibid).

Flodvary (2007) studied the historical pattern of the start of depression in the U.S economy in light of the land value and the constructions sector in the economy. After analyzing the data he found that the interval of having a depression within the U.S economy is on average around 18 years. He further explains that the depression happens sequentially starting with land values witnessing a peak, this transmits into a peak in construction that is later followed by a depression, and that's how he predicted to have a financial crisis in the U.S before it happened (ibid).

Reinhart and Rogoff (2008) discuss that another factor that caused the financial crisis in the U.S is the financial entities within the economy that were loosely managed or regulated, which had a large contribution to the crisis. These poorly loosely regulated entities caused the quality of borrowers to decrease increasing the credit risk within the different institutions affecting the whole economy with the high risk exposure (ibid).

Moreover, according to Hellwig (2009), he argues that the decrease of the quality of the mortgages increased the outstanding mortgage within the financial market, as it was stated that "...the share of outstanding mortgages in foreclosure proceedings has more than doubled since the end of 2006", as the author argues that this increased the vulnerability of the financial sector to shocks (ibid).

The Asian Financial Crisis (1997)

The Asian financial crisis still is an economic phenomenon that deserves study and deep analysis mainly due to its nature as an intense, and a simultaneously sudden collapse in countries that were claimed to have miraculous economic performance, such as Thailand, Malaysia, Korea, Indonesia and Philippines without any prior signs of deterioration or a malfunctioning economy ahead.

The Asian financial crisis is considered the strongest witnessed crisis after World War II, and it started with a devaluation of the Thai Baht on July 2nd 1997 that spilled over to the rest of the Asian countries. The reasons for the Asian financial crisis can be categorized under four main clusters; macro-economic weaknesses, domestic financial vulnerabilities, external vulnerabilities and changed external environment (Berg, 1999). Macroeconomic weaknesses could be considered the least obvious because there was no sign of macroeconomic imbalances in the Asian countries prior to the crisis. On the contrary all the

signs were directing exactly to the opposite as Asian countries witnessed a surge of capital inflows during the 1990s. Usually the capital inflows implies higher demand on the currency and therefore are accompanied with appreciation, however through tightening their monetary and fiscal policy, Asian countries managed to evade such an appreciation against the dollar to which most of their currencies were pegged.

However this implicitly caused an appreciation of Asian countries currencies against the Japanese yen which on its turn was witnessing a depreciation vis-à-vis the American dollar. The interlinkage between Asian currencies and the Japanese yen comes mainly from two channels; trade and investment and the Japanese economy faced challenges starting 1995 that were mainly due to structural weaknesses in its banking system (Takatoshi Ito, 1999) as nonperforming loans were a trademark in the Japanese banking system especially in the incidence of the decline in land prices, also there was neither in Japan nor in Asian countries a legal framework to deal with insolvency and malfunctioning of banks prior to the Asian crisis. Furthermore, there was also a slow-down in the Japanese economy resulting from tax hikes in 1997 that hit the stock prices and consequently severely hit banks that eventually started to limit lending. This happened at a time when interest rates were almost near zero leaving monetary policy handcuffed. Last but not least, Japan, which is one of the largest Asian exports absorbers became in a struggle and therefore Asian exports were consequently in trouble (Takatoshi Ito, 1999).

Most of the Asian countries also witnessed considerable current account deficits, and since large deficits implies either declining savings or booming investments, the developments didn't raise any red flags as they were investment booming driven, however this didn't help

exports as there were some other additional exogenous factors hindering them, such as competition from China, Mexico and Vietnam (Berg, 1999).

Domestic financial vulnerabilities were also a key player in the Asian crises as the surge of inflows was not going hand in hand with proper regulations and supervision of the financial sector and this gave rise to inefficiency of conducted investments and fragility of the corporate sector. One of the main results of inefficiency of investments was crystallized in investments flowing to sectors with excess capacity that are usually non-traded sectors, such as the real estate. Markets suddenly realized over building and over concentration in real estate sector and the fear from a depression in real-estate prices started to initiate leading to a financial panic that was a natural result of speculation. Speculation then translated people's fear from depressed real estate prices into a 73% decrease in property sector in the Thai stock market which means that it almost halved.

External vulnerabilities were another contributor to the Asian crisis as data shows that most of the countries exposed to the crisis witnessed high short-term external debt ratios to reserves and also high money supply (*M2*) ratio to reserves, which indicates that resources were flying to foreign currency rather than domestic financial assets. Meanwhile, Thailand had facilitated lending to finance companies which focused on property sector and this magnified the problem. Moreover, banks wanted to take advantage of the fixed exchange rate regime and sterilization of capital flows, however this gave rise to an interbank market in which; domestic banks acted as an intermediation tool between borrowers domestically and foreign banks, and in which unwillingness for long-term debt was prevailing (Berg, 1999).

Last but not least, changed external environment which more or less sums up the interactions in which the above mentioned three factors crystallized was key player including the spillovers of the Japanese economy slowdown and the Chinese competition threat.

Conceptual Framework

The housing bubble in general gets affected by different factors. The conceptual framework focuses on the factors that could potentially lead to a housing bubble within the Egyptian economy. This thesis focuses on three main approaches, based on the literature, which are the economic environment, the access to credit, and market speculation.

The first approach, which is the economic environment focuses on the monetary policy and its impact on the price dynamics of the real estate sector and the sector performance in general (Wong, 2001; Goodhart and Hofmann, 2008; Tsatsaronis and Zhu, 2004; Ahearne, Ammer, Doyle, Kole and Martin, 2005).

The Second approach is access to credit. This concept is divided into two parts, which are the availability of credit, and the quality of lending. The availability of credit is mainly the ease of access of funds at the banks to lend mortgages to borrowers. The higher the availability of funds the higher is the risk associated to have a housing bubble. The quality of mortgages based on the assessment that is done by the banks to the borrowers. The poor quality of mortgages negatively affects the associated risks of having a housing bubble (Brunnermeier, 2009; Marshall, 2009; Taylor, 2009; Saunders and Aleen, 2009).

The third approach is market speculations. It is about understanding the effect of market speculations on the real estate sector dynamics and the prices to analyze the potential impact of the market speculations on the housing bubble. In addition, the poor quality of

data and the limited availability of data can result in having an immature market that gives the chance to the developers' speculations to guide the forecast of the real estate market dynamics (Foldvary, 1998; Holt, 2009; Hellwig, 2009).

4. Research Methodology

Analyzing and evaluating the Egyptian real estate market which is the main focus of this thesis will be conducted through a mixed method approach of using the qualitative as well as quantitative approach. The mixed approach uses the quantitative and qualitative data, as both approaches work together to better understand the dynamics of the topic and better analyze the problem (Creswell, 2003). The mixed approach in this thesis will be used to understand the dynamics of the real estate sector from two main factors. The first one is to discuss the real estate dynamics subject to the monetary policy within the Egyptian economy, focusing on the real estate sector performance in the Egyptian stock market using the quantitative approach. The second one will be through discussing the accessibility of the mortgage system in Egypt, and the dynamics between the demand and supply of credit from the Egyptian banking sector using a qualitative approach.

The Quantitative Approach:

Quantitative analysis will be mainly used to examine the relationship between the development of the real estate sector performance in the Egyptian stock market – as the dependent variable – with different independent variables, such as the money supply within the Egyptian economy, the interest rates, the inflation rate. The goal from this quantitative model is to examine whether what was explained by the literature is applicable in Egypt or not. The quantitative model examines the impact of the monetary policy on the real estate sector in Egypt, using an OLS Ordinary Least Squares Multiple Regression Model that uses time series data to arrive at a conclusion on what are the key determinants of the real estate sector dynamics.

Data Collection and Analysis

Data Sources

One of the key characteristics of quantitative data collection is the solid structure, especially if compared to qualitative data collection. In this thesis, the data will be in time-series format and is gathered from the Egyptian Stock Market, Ministry of Finance, the Central Bank of Egypt World Economic Outlook, and the International Monetary Fund. Data used in the quantitative model will be monthly from April 2012 until March 2017. The monthly data were selected to show the recent fluctuations within the Egyptian economy, especially after the floatation of the Egyptian Pound and what has accompanied it from signing the reform program with the International Monetary Fund, higher inflation rates and more responsive monetary policy regime.

The quantitative analysis examines the relationship between the real estate stock market index with the interest rate, inflation rate and the monetary policy on the real estate sector in Egypt, using an Ordinary Least Squares (OLS) Multiple Regression Model that uses time series data to arrive at a conclusion on what are the key determinants of the real estate sector dynamics.

After checking for the stationarity of the variables and taking the recommended difference suggested by the Augmented Dickey-Fuller unit root test, three rounds of the model were conducted to confirm the results at different combinations of the data.

Econometric Model

This section of the paper will present the quantitative analysis that will try to examine whether there is a relationship between the real estate sector and the monetary policy and

whether the monetary policy has a direct impact on the real estate sector and could cause a shock to it.

The literature shows that there is a positive relationship between the monetary policy and the real estate prices; hence, the performance of the sector. It is explained in the literature that when the money supply increases, this results in an increase in the demand (Catte, Girouard, Price and André, 2004; Bernanke, 2010). This has a direct impact on the housing prices pressuring the prices to go up, as a result of increase in demand. Furthermore, the higher prices send positive signals on the returns of the real estate sector.

According to the quantity theory of money, however, when the money supply increases over time, the consequence within the economy is having higher rates of inflation, especially when the increase in money supply is not accompanied with an increase in output (Humphrey, 1974).

According to the quantity theory of money by Keynes in 1930s, the increase of the money supply in the short term gets totally absorbed by inflation, and since of the central banks' main mandate is targeting inflation, the central banks start to adopt contractionary monetary policies, such as raising interest rates (Humphrey, 1974). This translates into increasing the cost of borrowing, putting tight restrictions on credit and therefore, the demand for the real estate decreases, reducing prices and therefore the returns on real estate assets. This raises a red flag for an upcoming housing bubble.

The model is conducted through three stages. The first one is through running the real estate stock market index with the interest rate, inflation rate and annual growth rate of money supply in order to examine the relationship and the impact of those three

independent variables on the real estate sector performance represented by the real estate stock market index. The second round was conducted through running the dependent variable with the independent variables using the square factor of the all of them. The third round was done through using the log factor for all the variables. The second round and the third rounds were conducted in order to use different combinations of the variables to make sure of the results of the first round. All three rounds were executed after checking for the stationarity of the variables and taking the recommended difference suggested by the Augmented Dickey-Fuller unit root test.

The equation used for the quantitative model is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon_i$$

Where,

Y: is the dependent variable, which is the real estate stock market index

β_0 is the intercept,

β_1 - β_5 are the coefficients for the independent variables,

X_1 - X_3 are the independent variables, which are the interest rate, inflation rate and the M2 annual growth.

ε_i : is the Error term

Model Variables

In this section, the model is run using monthly data in order to capture the recent fluctuations and changes in the market in the incidence of the floatation of the Egyptian pound in November 3rd 2016 after which the monetary policy became very responsive to market dynamics. The monthly data that have been selected for the monthly period starts from April 2012 to March 2017. In the period from November 2016 to March

2017 interest rate has been revised upwards by 700 basis points, which is expected to have an impact on the independent and the dependent variables.

In this equation the dependent variable in the OLS estimation of the multiple regression model is selected to be the real estate stock index from the stock market performance. This index has been developed by the Egyptian Stock Exchange (EGX) and was first released in 2007 under the sector indices together with other 11 different sectors with the aim of guiding investors to have well-informed decisions about the Egyptian market. The index is calculated based on the following methodology:

$$\text{Sector Index Value} = \frac{\text{Total Mkt Cap. of the sector's companies} * \text{Free float} * \text{Base Index Value}}{\text{Total Mkt Cap of the sector's companies in base date} * \text{Free float}}$$

Source: Compiled by the author based on data available on the Egyptian Stock Exchange website (2017).

Moreover, the annual growth in money supply, which is the M2, is selected as the independent variable in this equation to understand the relationship between the M2 growth and the real estate sector on a monthly basis to capture the recent dynamics in M2, especially in year 2016 that had witnessed various economic shocks within the Egyptian economy. The M2 growth was selected for the period April 2012 to March 2017. Money supply is mainly money in circulation within an economy. Money supply is measured at various levels. One of them is M0, which refers to hard currency in circulation within an economy. Then another definition is M1, which is M0 plus checkable deposits. The third definition is the M2, which refers to M1 plus savings deposits in addition the certificate of deposits. M0 is the indicator the Central Bank of Egypt has a direct access on, as a monetary tool within the economy. However, in this

model M2 growth was selected, because the M2 represents a wider definition for the money supply, which gives a more inclusive perspective of the potential demand for investing in the real estate sector. M2 annual growth is an implicit reflection of the monetary policy adopted by the central bank. It is the independent variable that received consent from most of the literature that it plays a fundamental role in the changes in the real estate sector prices.

Interest rate was chosen in this round as an independent variable to investigate the relationship between the interest rate and the real estate sector on a monthly basis for the period April 2012 to March 2017. This interest rate represents the monthly rates on the investment certificates. This independent variables was chosen, as the investment certificates are supposed to be a safe saving instrument that could be compared to the buying houses patterns in Egypt.

Inflation rate was chosen in this model as an independent variable to investigate the relationship between the inflation rate and the real estate sector on a monthly basis for the period April 2012 to March 2017.

The Qualitative Approach:

The qualitative approach is by nature exploratory and it aims at developing insights concerning the topic researched, however those insights could be based on thoughts, opinions, secondary research and focus groups (Neuman, 2000). However, in this study, the qualitative aspect will crystalize through its aim to explore and understand the effectiveness of mortgage system within the Egyptian financial system, and to

discuss the gap between the demand and the supply for credit from banking system to analyze the associated risk within the Egyptian economy.

Moreover, the qualitative analysis will be applied through mainly in-depth interviews with the various stakeholders. The interviews were unstructured ones, in order to give the interviewee the chance to explain their personal experience of trying to receive the mortgage from the banking sector. Ten interviews were conducted with respondents who tried to get mortgage loans from banks in the previous six years, especially after the 25th January turmoil. Five of the interviewees were females and another five were males. They were chosen based on snowballing technique, based on non-probability sampling. Another interview was conducted with a 35 years old Retail Credit Risk Manager who works on the risk department at one of the banks in Egypt. This approach was used to ensure credibility and depth of the results.

The Research nature is exploratory. This will be through focusing on better understanding the existing market and the potential associated risks to the real estate sector.

Qualitative Data Analysis:

The aim of the qualitative part is to examine and analyze access to credit within the Egyptian banking sector, and its impact on the real estate sector and the housing prices in Egypt. As explained by the literature review; the poor quality of credit from the banking sector was perceived as one of the main drivers of the housing bubbles, as the lower the quality of credit is, the higher the risks to have a housing bubble is. Moreover, the excess availability of funds have a positive relationship with the

housing prices, which means that when the banking sector increases the availability of loans within the economy, this has an impact on the housing prices, as a result of the increase in the demand by the buyers (Reinhart and Rogoff, 2008; Koha et al., 2004; Brunnermeier, 2009; Marshall, 2009; Taylor, 2009; Saunders and Aleen, 2009).

In Egypt, the conducted interviews show that the banking sector is very conservative, when it comes to access to mortgages, as there is a very long list of requirements explained by the interviewees.

The conducted interviews capture two different perspectives. The first one represents the banking sector point of view, explaining the rules and regulations at the banking sector that ensure the sustainability of the financial market. This will be explained in light of interviewing Mr. Adham who is 35 years old and works as Retail Credit Risk Manager who works on the risk department at one of the banks in Egypt. The second perspective will be explained by a sample of people who tried to have mortgages from banks. They explained the process of trying to get the loan from the banks representing the demand for credit perspective.

Limitations

One of the limitations with the quantitative part of the research paper is the limited availability of data, especially data from the Ministry of Housing, Utilities and Urban Development. Another limitation would be having inconsistent quantitative data overtime, as the Ministry of Planning, Monitoring and Administrative Reform has changed the GDP calculation methodology during fiscal year 2014/2015, as they revised the series since fiscal year 2011/2012, which did not give the chance to

conduct a quantitative model at an annual frequency to examine the results received from the monthly data on an annual basis. Moreover, limitations are expected to be having access to data about the financial contribution of the private sector companies in the real estate sector in Egypt, which will help in analyzing the weight of these companies within the market and their expected impact on the financial market in Egypt.

While running the monthly model, the data available for the dependent variable, which is the real estate stock market index, is not available before April 2012 on monthly basis.

Moreover, there is no official price index for the real estate sector within the Egyptian economy. This would have been used to better understand the pricing mechanisms and the risks associated to the prices of the real estate assets, and its reflection on the demand of the assets.

As for the qualitative part and its limitations, sample selection process is very critical and could be limited to the snowballing technique, which might cause a bias in the research paper, and cause convenience sampling.

Ethical Considerations

As the core of this qualitative research is based on human participants, the researcher aimed to guarantee neither direct nor indirect harm to all partakers of this research study. To do so, consent forms were written to fully explain in all participants the why, how, when and where this research would be conducted. By doing so verbally, this was meant to give the chance to the participants to inquiry about the research as much

as needed prior to the start of the research to ensure that all concerns are answered. The researcher was determined to ensure that all partakers were comfortable with the research study's objectives and the setup of the interviews. To do so, this research uses pseudo names to protect the identity of all persons taking part in the study. After the verbal explanation of the research study, the participants were asked to sign the consent form after reading it. At any point throughout conducting the research, the partakers may choose to no longer participate. Participants were also aware that all data collection processes during interviews – would be audio-taped, if any.

5. Data Analysis:

Descriptive Statistics of Selected Variables:

In this section, the model is run using monthly data in order to capture the recent fluctuations and changes in the market for the monthly period starting from April 2012 to March 2017. The independent variable for this model is selected to be the real estate stock index from the stock market performance. This index reflects has been developed by the Egyptian Stock Exchange (EGX) and was first released in 2007 under the sector indices together with other 11 different sectors with the aim of guiding investors to have well-informed decisions about the Egyptian market. Moreover, the annual growth rate of money supply variable, which is the growth rate in M2, is selected as the independent variable in this equation, in addition to the inflation rate and the investment certificate interest rate.

1. Real Estate Stock Market Index

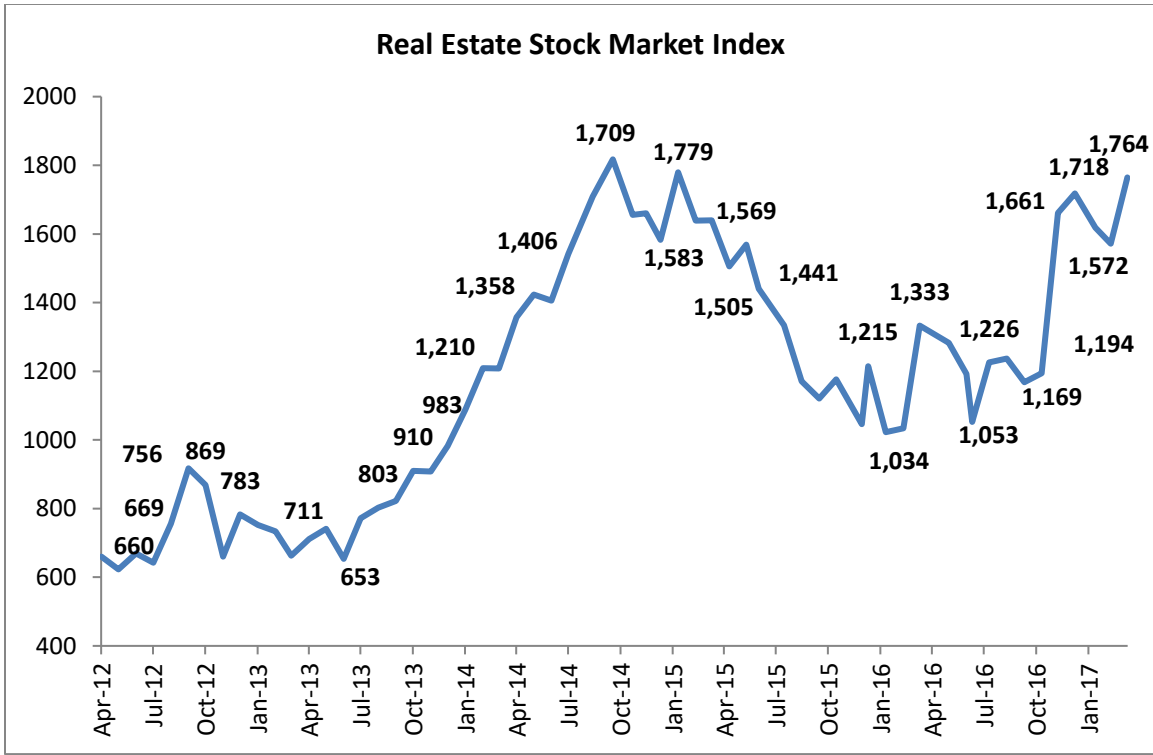
Real estate stock market index has been selected for the monthly period starting from April 2012 to March 2017, as the dependent variable in the OLS estimation of the multiple regression model.

The index is calculated based on the following methodology:

$$\text{Sector Index Value} = \frac{\text{Total Mkt Cap. of the sector's companies} * \text{Free float} * \text{Base Index Value}}{\text{Total Mkt Cap of the sector's companies in base date} * \text{Free float}}$$

Source: Compiled by the author based on data available on the Egyptian Stock Exchange website (2017).

Figure 4: Real Estate Stock Market Index (April 2012-March 2017)



Source: Compiled by the author based on data available on the Egyptian Stock Exchange website (2017).

The variable is used to reflect the performance of the real estate sector on monthly basis to capture the recent economic dynamics on the real estate sector. The real estate stock market index witnessed some fluctuations during the period of study. The index was increasing starting Oct-13 until it peaked in Oct-14, after some stability witnessed in the Egyptian economy as a reflection of a relative calm atmosphere after the two political turmoil in Jan-11 followed by the 30-Jun-13 events. For the period Jan-14 until May-15, the Egyptian market in general had an increasing trend that can be explained in light of finalizing the presidential elections in Jun-14 in addition to finalizing the new constitution in Jan-14. This was a reflection of regaining the investors' confidence in the whole economy. As the

previous year had its political instability that took place in 30-Jun-13. This caused the year Jun-13 until May-14 to have a slow trend.

It is worth mentioning that the new amendments of the property tax law were approved in August 2014, which had a minimal impact on the real estate stock index for the consecutive 3 months, until it picked up again in Jan- 2015.

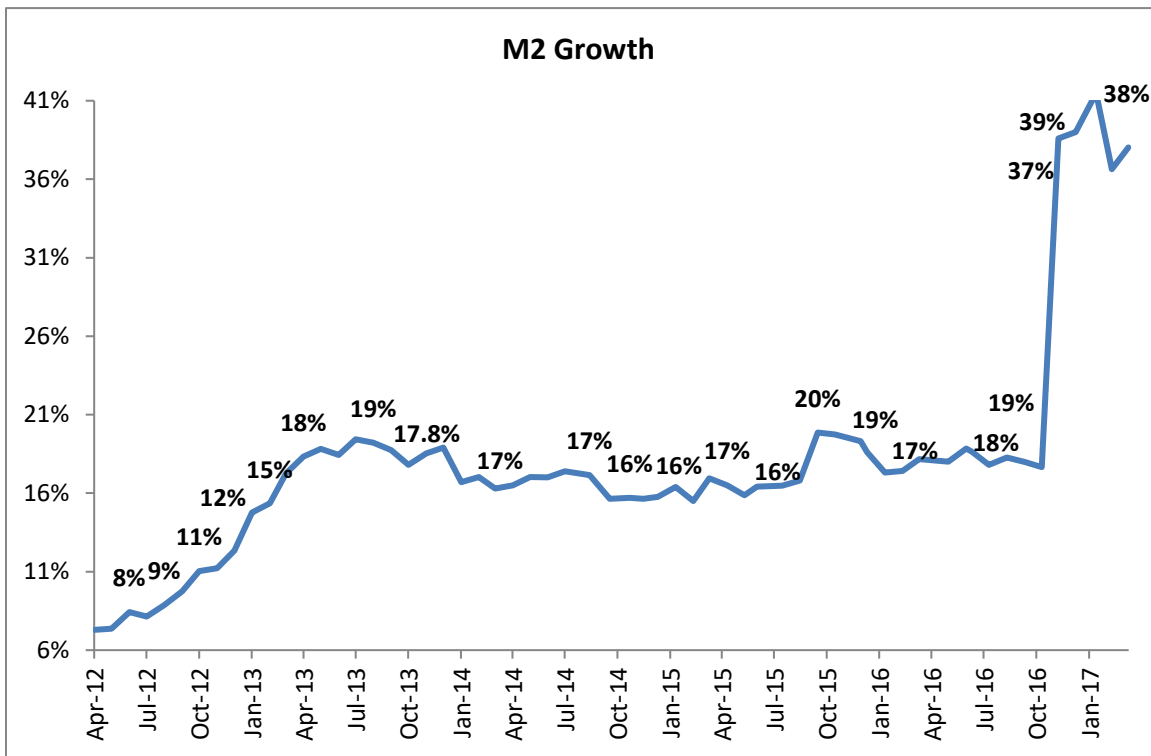
For the period Jun-15 until Oct-16, the shortage of Forex within the Egyptian economy had its implications on the performance of the real estate sector as well as most of the other sectors within the economy, as there was a stage of uncertainty about the Egyptian economy that caused some fluctuations again in the index with a downward trend until October 2016. November 2016 was the month, when the Central Bank of Egypt announced the floatation of the Egyptian pound. In the same month, the government has announced receiving the first tranche of the IMF loan to Egypt under the Extended Fund Facility (EFF). Since Nov-16 there was an increasing trend in the index until Mar-2017. This can be explained in light of two reasons. The first one is the regain of the trust in the Egyptian economy from the investors' point of view. The second reason is the increase in inflation rate, since adopting a floatation exchange rate policy in Egypt. This can be explained as an incentive for investing in real estate sector as a way to store the value of money, as the Egyptian pound has already lost one half of its value, and lost the characteristics of being a store of value, as a reflection of the adopted economic policies.

2. M2 annual growth rate

M2 annual growth was chosen in this model as an independent variable to further understand the relationship between the M2 growth and the real estate sector on a monthly

basis to capture the recent dynamics in M2, especially in year 2016 that had various economic shocks within the Egyptian economy. The M2 growth was selected for the period April 2012 to March 2017.

Figure 5: Development of M2 Annual Growth from April 2012 to March 2017



Source: Compiled by the author based on data available on the Central Bank Egypt website (2017).

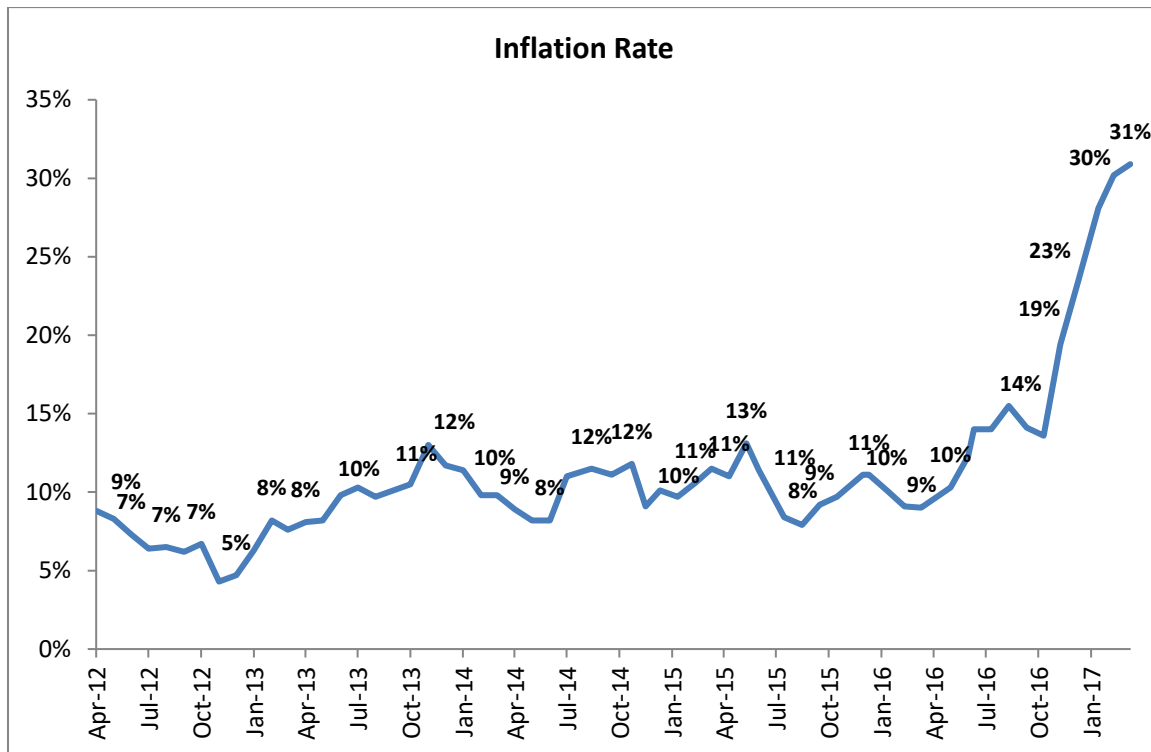
M2 annual growth rate has witnessed fluctuations throughout the analyzed period. M2 annual growth has been witnessing a hike starting from November 2016 until the end of the selected data at March 2017. This can be explained in light of the recent exchange rate floatation policy in addition to the increase in the foreign inflows, since the currency floatation. M2 monthly growth is calculated as year on year growth i.e. the growth rate for March 2017 is calculated relative to March 2016 figure. It is the independent variable that

received consent from most of the literature that it plays a fundamental role in the changes in the real estate sector prices.

3. Inflation rate

Inflation rate was chosen in this model as an independent variable to further understand the relationship between the inflation rate and the real estate sector on a monthly basis to analyze the inflation rate relationship with the real estate stock market index, for the period April 2012 to March 2017.

Figure 6: Developments of the Inflation rate from April 2012 to March 2017



Source: Compiled by the author based on data available on the Central Bank Egypt website (2017).

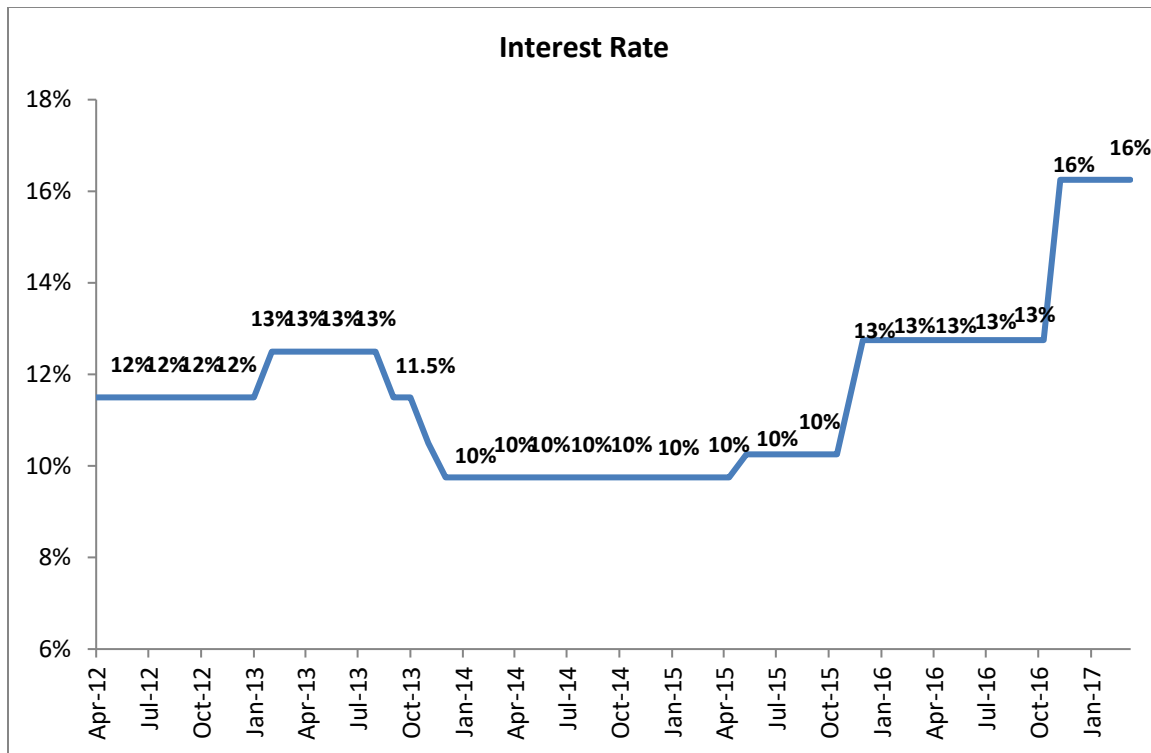
Inflation rate is the annual change in Consumer Price Index (CPI), reflecting the rate of change in the prices. The inflation chart reflects fluctuations in the rate for various

reasons. The inflation rate was a single digit until July 2013, which was right after the second political move that occurred in June 2013, and its impact continued to cause fluctuations of the inflation rate driven by supply bottlenecks in the incidents of closing factories and strikes. The challenges that the Balance of Payments, in addition to the drop in the net international reserves, and the shortages of availability of the foreign currency also pushed the inflation rate high during the period May 2016 until October 2016. Egypt started its reform program with the IMF, which was called an Extended Fund Facility (EFF) with the IMF, which started execution in November 2016. This pushed the inflation levels high as a reflection of the fiscal and monetary shocks that the economy faced. These policies were mainly price adjustments such as oil prices, electricity prices and adopting an exchange rate floatation system, which pushed inflation levels starting November 2016 until March 2017.

4. Interest rate

Interest rate was chosen in this model as an independent variable to further understand the relationship between the interest rate and the real estate sector on a monthly basis for the period April 2012 to March 2017.

Figure 7: Developments of the Interest rate from April 2012 to March 2017



Source: Compiled by the author based on data available on the Central Bank Egypt website (2017).

The interest rate represents the monthly rates on the investment certificates. This independent variables was chosen, as the investment certificates are supposed to be a safe saving instrument that could be compared to the buying houses pattern in Egypt, if these houses are bought as a saving instrument. According to CAPMAS’s press release in March 2017 about their new census, as they announced that around 24% of the existing real estate units are not utilized. This gives an indicator on the appetite of the buyers to save their money in various governorates Egypt.

However, the above interest rate chart shows that there were fluctuations in the interest rate during the period of study, and it was mainly double digit since April 2012 until March 2017. This was a reflection of the political instability in Egypt, especially after 2011

turmoil. It is worth mentioning that the interest rates peaked starting November 2016, as a reflection of the new currency floatation adopted policy by the Central Bank of Egypt.

Table 1: Summary Statistics Table

Variables	Minimum	Maximum	Mean	Standard Deviation	Number of Observations
Real Estate Stock Market Index	622.9	1817.3	1173.4	366.2	60
Inflation Rate	4.3%	30.9%	11.2%	5.3%	60
Interest Rate on Investment Certificate	9.8%	16.3%	11.6%	1.8%	60
M2 Annual Growth	7.3%	41.5%	18.0%	7.1%	60

Quantitative Model Results

This quantitative model illustrates the relationship between the real estate sector and the monetary policy to highlight whether the monetary policy has an impact on the real estate sector dynamics or not. The model is conducted through three stages. Firstly, the model runs the real estate stock market index with the interest rate, inflation rate and annual growth rate of money supply to analyze the relationship and the impact of those three independent variables on the real estate sector performance (Model A). Secondly, the following round was conducted through running the dependent variable with all the independent variables using the square factor of the latter (Model B). Finally, the third round was done through running the model using the log factor for all the variables (Model C). The second round and the third rounds were conducted in order to use different combinations of the variables to make sure of the results of the first one. All three rounds were executed after checking for the stationarity of the variables and taking the recommended differences suggested by the Augmented Dickey-Fuller unit root test.

Table 2: *Model results*

Variable	Model A		Model B (Square)		Model C (Log)	
	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
Inflation Rate	24.96	0.98	-21227099.00	0.10*	0.07	0.48
Interest Rate on Investment Certificate	-14.78	0.66	1730.81	0.76	-0.23	0.50
M2 Annual Growth	2122.99	0.00***	10943836.00	0.05**	0.36	0.01***
Number of Observations (After Adjustment)	59		59		59	
R ²	20.3%		14.7%		14.6%	

***p<0.01, **p<0.05, *p<0.1

Model A

After checking for the stationarity of the variables and taking the recommended difference suggested by the Augmented Dickey-Fuller unit root test. The multiple regression model has been run using the real estate stock market index as the dependent variable and using M2 annual growth rate, inflation rate and the investment certificate interest rate as the independent variables.

The regression equation showed the following relationship:

Real Estate Stock Market Index

$$= 8.751715 + 2122.994 \text{ M2} + 24.95908 \text{ Inflation} - 14.77666 \text{ Interest Rate}$$

The results of the model A show that the money growth is significant with a positive relationship with the independent variable, which is the real estate stock market index. This matches the literature previously discussed in this paper. This indicates that when there is a change in the money supply in an economy that is mainly happens when the central banks change their monetary policies, there is an expected impact on the real estate sector performance within the Egyptian stock market, consequently the Egyptian economy.

In addition, the dependent variables which are inflation rate and interest rate are insignificant. This can be explained by the nature of the inflation targeting policies at the central bank of Egypt, as the inflation policy in Egypt was not considered a flexible inflation rate.

Model B

After checking for the stationarity of the variables and taking the recommended difference suggested by the Augmented Dickey-Fuller unit root test. The multiple regression model has been run using the square factor for the real estate stock market index as the dependent variable and using the square factor for M2 annual growth rate, inflation rate and the investment certificate interest rate as the independent variables.

The equation for the model B is as follows:

$$\begin{aligned}
 &\mathbf{Real\ Estate\ Stock\ Market\ Index} \\
 &= \mathbf{14105.6 + 10943836\ M2 - 21227099\ Inflation\ Rate} \\
 &+ \mathbf{1730.813\ Interest\ Rate}
 \end{aligned}$$

Model B was the same as the first one except for using the square factor for all the variables. The M2 annual growth is significant with a positive relationship, which is a

similar result as the first round. In addition, the interest rate was not significant, which is also the same result as the first round. However, the inflation rate in model B had a significant relationship with the real estate stock market index, with a negative relationship.

Model C

After checking for the stationarity of the variables and taking the recommended difference suggested by the Augmented Dickey-Fuller unit root test. The multiple regression model has been run using the log factor for the Real estate stock market index as the dependent variable and using the square factor for M2 annual growth rate, inflation rate and the investment certificate interest rate as the independent variables.

The equation for model C is as follows:

Real Estate Weight

$$\begin{aligned} &= \mathbf{0.006383} + \mathbf{0.359492} \mathbf{M2} - \mathbf{0.226928} \mathbf{Interest\ Rate} \\ &+ \mathbf{0.072732} \mathbf{Inflation\ Rate} \end{aligned}$$

This model was to confirm that the results from the first and the second rounds. In this round, it is confirmed that the money supply growth rate is the only variable that is significant with a positive relationship between the other examined independent variables.

Discussion of Results:

Those three models were conducted to confirm that monetary policy primarily represented in annual growth rate of M2 has a positive significant relationship with the performance of the real estate stock index performance. This confirms conclusions retrieved from various papers of literature review that tried to study and anticipate real estate sector bubbles that

money supply has a positive impact on the real estate sector performance (Ahearne, Ammer, Doyle, Kole and Martin, 2005; Catte, Girouard, Price and André, 2004; Bernanke, 2010). In these models, it is confirmed that money supply growth rate is significant with a positive relationship.

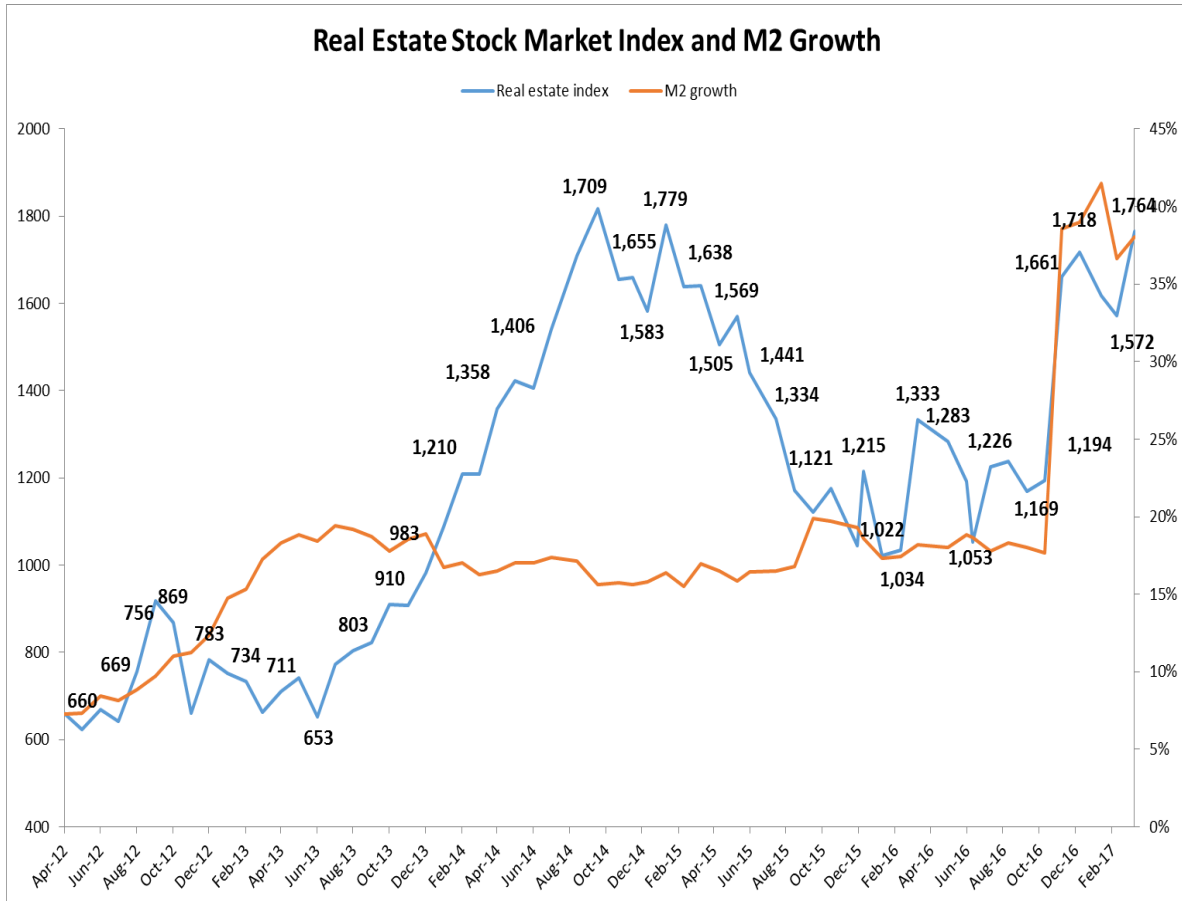
Results of the quantitative approach

The run models have arrived at the same conclusion that the monetary policy is a game changer in the real estate market in Egypt. This confirms that the real estate sector performance in Egypt is exposed to the monetary policy in general, and M2 annual growth rate in specific. This builds up on literature conclusion about how fundamental monetary policy is in shaping the real estate sector and anticipating associated risks to it within different economies.

Monetary policy seasonality is a reflection of the business cycle phases; expansionary policy using M2 as a fundamental tool (whether through the very traditional way of printing money or indirectly through discount rate, legal reserves ratio and open market operations by the central bank) to speed up the economy especially when it is in a recession and the government wants to achieve high employment and output growth rates are usually followed by contractionary policies to correct for inflation. Whenever money supply is increased, it is associated with increase in prices as long as there are no changes in the output which is a classical case in the short-run. With inflation, people run to an asset that preserves the value of their money other than cash which loses its value. As reflected by Egypt's data in the graph below, the hike in M2 growth rates was accompanied with a hike in the real estate sector index reflecting flourishing performance in the past few months. This confirms the positive relationship between monetary policy and real estate sector. The

importance of the real estate sector and its reflection on the Egyptian economy comes from two main factors which are the sector's weight of the GDP or the real estate stock market capitalization volume, as it is considered to be the second biggest sector after the banking sector.

Figure 8: Developments of the Real Estate Stock Market Index and M2 annual Growth from April 2012 to March 2017



Source: Compiled by the author based on data available on the Central Bank Egypt website (2017).

After arriving at the conclusion about the positive relationship between the monetary policy, especially the money supply with the real estate sector performance, it is clear that the risk that might be imposed on the sector will come from the change in the monetary policy once adopting a contractionary monetary policy that would be achieved through

lower M0, and hence M2 annual growth rates. The above graph shows the seasonality of the M2 growth rate where it frequently declines as a reflection of reverse in the monetary policy (from expansionary to contractionary) after reaching a peak with the real estate stock market index. This graph shows that since November 2016, both indicators are moving on the same direction.

Consequently, this will put pressure on real estate sector performance hence real estate prices to go down increasing the risk of having a housing bubble in Egypt, if contractionary policies are adopted by the Central Bank of Egypt. The findings from the quantitative model about Egypt using data on relevant indicators matches what the literature concluded about historical financial crises and risks associated to them as a result of the change in the monetary policy within different economies, This was evident in the financial crisis in 2008 and the Asian financial crisis in 1997 (Wong, 2001; Goodhart and Hofmann, 2008).

Data Analysis: The Qualitative Component

The qualitative section focuses on interview data in order to analyze the dynamics between the demand and the supply for credit within the Egyptian economy. These dynamics show the gap between the demand for credit from the buyers' side and the supply for it through the banking sector. The supply of credit perspective is divided into two sections. The first section is the credit analysis and requirements from the bank's point of view. The second section explains the legal requirements and the paper work needed for the process to be completed. As for the demand side, the section is divided into two parts. The first part is the cost of borrowing, which explains how the buyer compare

the cost of mortgage to the cost of buying from a developer. The second part is the ease of finalizing the paper work, and the ease of finalizing the process, if compared to the real estate developers' process.

Supply of Credit Perspective

Accessing mortgage from the banking system in Egypt can be done through two types of mortgages. The first one is the regular mortgage loan. The second one is the recent mortgage initiative by the Central Bank of Egypt. One major difference between the two types of available mortgage systems is the cost of borrowing.

According to an interviewed retail credit risk manager, who works on the risk department at one of the banks in Egypt, he explained:

“The regular mortgage loan cost in December 2017 has reached around 24% interest rate, as an interest rate for the loan, while the cost of the mortgage initiative by the Central Bank of Egypt ranges from 5-10.5% interest rate” (Adham November, 2017).

The exact cost for mortgage initiative by the Central Bank of Egypt is defined based on the client's portfolio, and the income he/she receives. This initiative has a maximum of credit that can be offered by the bank, which is 950,000 L.E, unlike the regular mortgage that has no fixed ceiling.

There is a law, which is law No. 148, 2001, which is the main regulator of the mortgage loans in Egypt. This law states that there are main requirements for the buyer to be able to receive mortgage. These requirements are divided into two stages:

Credit Analysis and requirements:

This stage requires many steps for the client to get approval to access credit. The first requirement is to check the credit history for each client. This history is based on the IScore. This IScore is an indicator, which is used to reflect all the credit facility to the client with all the historical data to the frequency of the repayment for the client's previous loans. The second requirement is to check the credit worthiness of the client. This stage is assessed based on the source of the income for the client. In addition, if the client has any different loan, then the total monthly repayment cannot exceed 40% of his/her monthly net income. As the interviewed retail credit risk manager explained:

“This 40% was fixed in January 2016 by the Central Bank of Egypt, as previously each bank had the option to charge installments and interest up to 75% of the client's net income in some cases. The Central Bank of Egypt found that this was not sustainable and stepped in the financial market and enforced a new regulation via which the clients should not exceed 35% for consuming purposes (i.e. car loan, credit card use, personal loan, etc...), and this ratio can reach 40% in case of having a mortgage” (Adham, November, 2017).

This is a conservative assumption from the banking sector that forces the borrower or the buyer to stick to 40% ratio, which limits the buyer to borrow a specific amount that limits his/her options when choosing the asset they want to buy. However, this is not the case when they buy from the real estate developers.

Legal requirements:

The first step from the legal requirement perspective is that the unit that the client will buy has to be already built and not in the construction phase. This implies that the buyers cannot choose any unit they like, but it is restricted only to the existing units. Unlike the developers who usually give the buyer all the options to choose any convenient unit without any restrictions, the bank limits the available options for the buyers.

The second requirement is that the developer has to own the land, as they borrow money from banks to finance buying the land of the compound or the building. The land will not be their property and they will not legally own it, until they finish paying all the required installments to the banks.

As retail credit risk manager explained:

“Around 95% of the existing compounds in Egypt that still have available units for sale do not yet own the land of these compounds, as they are taking it with credit facility from the bank and are still paying installments .. The developers including big companies in this sector of the compound owners do not own the lands of these compounds until they finish the required installments” (Adham, November, 2017).

This means that none of the available units in any compound in the new cities can be financed by a mortgage through the regular banking channel. Accordingly, this increases the gap between the demand of the credit from the bank by the clients and the supply of the credit from the banks, hence, this increases the favorability of buying the asset directly from the developers with the credit facility they offer, which means that the developers are replacing the banks in this aspect.

The third requirement is having a document for the history of the unit, in case the unit is an old one and was owned previously by different owners. This step as retail credit risk manager describes in the following quote is very challenging. He notes:

“It is very challenging to get this document and it takes so long to get this document from the registration office, which is called “El shahr El Aqari” (Adham, November, 2017).

Because the buyer has limitations on buying new assets, because it has to be already built, which already restricts the available options, the buyer still has another barrier for buying an old unit. This barrier is having the history of the unit over the past, even if it reaches 10 or 20 years. This requirement complicates further the process of accessing mortgage through the bank.

The fourth legal procedure is a price analyst or evaluator, who is assigned by the bank to assess the unit price to know the fair value of the asset through three technical ways of calculations. There is a legal list of the price evaluators who are certified by the central Bank of Egypt. This list consists of 270 price evaluators. The fifth requirement and the final stage is the contract of the unit. This contract has to be a multi-pillared agreement based on three main shareholders, which are the seller of the unit, the investor or the asset buyer, and the bank. One of the main clauses of the contract is that the buyer of the asset cannot sell the asset unless he pays the bank back all the asset price. This condition is an extra challenging clause, if compared to the contract done between the buyer and the developer without the bank's intervention, in case the

buyer goes directly to buy an asset from the developer. As retail credit risk manager explained:

“The strict banking rules and regulations are supposed to contribute positively to ensure the sustainability of the financial sector in Egypt, because as he explained, that the risk assessment is being conducted through a comprehensive analysis, and results in a limited and structured risks that the bank can cover, within certain parameters. These regulations are coming from the international best practices to guarantee the solvency of the banks (Adham, November, 2017).

These regulations and restrictions are meant to ensure the sustainability of the banking system and to ensure mitigating any potential risks or shocks within the Egyptian economy. Unlike the U.S financial system in 2007, where the banks expanded in lending mortgages with poor quality of lending that led to the housing bubble, and hence the financial crisis (Barrell and Davis, 2008), the Egyptian economy is supposed to be conservative as explained by Mr. Adham, because of the rules and regulations to access mortgages within the Egyptian financial market.

Demand for Credit Perspective

The demand for credit perspective is the section where two main approaches will be discussed to further understand the buyers' perspective. Those two approaches are the cost of borrowing and the terms and conditions.

Cost of borrowing

The respondents who tried to access credit, especially the regular mortgage explained that the cost of borrowing from the bank is very high, which is 24%, as they explained. This cost is very high, especially that they cannot receive a mortgage that the service of the loan is more than 40% of their income. The price of the mortgage in addition to the condition related to the servicing of the mortgage, as it has a ceiling that would limit the amount of mortgage they receive; are two obstacles the interviewees faced, while dealing with banks. However, they explained that buying directly from the developers, even if high prices are still adopted, they see that without the 40% limitations, they can choose whatever unit they want, with less restrictions if compared to the banks. According to Halah, who is 55 years old woman who tried to buy a housing unit through the banking sector:

“Once I knew that the interest rate that the bank offers was around 20%, I started to look at other units offered by different real estate developers that can sell with way better conditions if compared to the banks. I found that the cost of borrowing from the bank is very high, and I bought directly from the developer” (Halah, November, 2017).

Sabry who is 59 years old client elaborates on this point, noting

“My main concern was the cost of borrowing from the bank, especially with the 40% ceiling for servicing all kinds of loans. This was my main issue, as I already have credit cards with high limits. I was informed from the bank that because of these credit cards, the amount of the mortgage will shrink” (Sabry, November, 2017).

Khaled who is 29 years old works at one of the famous banks in Egypt, and he is a buyer that tried to get the youth mortgage from the bank that he works at. Khaled explained that he had to choose a unit that the bank offers as one of the bank's investments to speed up the process of having the loan. Khaled notes: "A risk free client from the banks point of view" (Khaled, November, 2017). Khaled explained that he is almost a risk free client, because he works at the same bank, so the bank has his payroll on its system, which is a guarantee for the bank that he is capable on repaying the installments.

In addition, Khaled chose one of the units offered by the bank, so the bank has all the required and legal papers for the unit. Khaled explained that the process was so long and he finally knew that he has access to the mortgage and can buy the unit, he was surprised that in order to finalize the deal he had to pay around 60% of the unit's price as a down payment, because the bank requirements relative to his salary will not allow him to get credit facility more than 40% of the unit price. This condition forced Khaled, after he got the approval from the bank on the loan, to reject the mortgage, because he did not have the 60% of the unit price, as down payment to finalize the deal.

Khaled's example is not the regular case, he had access to the mortgage, which is not the usual case, as he was considered almost a risk free client, even though he could not benefit from the mortgage, because of the bank's regulations concerning his salary and the condition the bank had for the 60% down payment for the unit in cash. The only solution Khaled had was to go to one of the real estate companies to buy directly from

it. He paid for the company around 10% of the unit's price and he would pay the installments over 8 years.

Khaled's case confirms that the idea of having a gap between the demand for mortgages and the supply of it, having the real estate developers interfering to fulfill this gap with very flexible terms and conditions. The fact that the developers are filling the gap by playing the role of the banks puts the Egyptian financial market in question, whether it is really conservative or not. According to the data collected, the banks are conservative, however the financial market is not, and financial market is a broader and a more inclusive definition that includes any financial intermediaries, regardless of their institutional definition. The banks are too conservative to the extent that the market overcame this problem through having the real estate developers as an intermediary. This intermediary does not have the adequate tools to assess the buyers and test their ability to pay the loans back. This increases the risk within the financial markets, because the access to credit facility is not subject to the international practices or any regulations that will ensure the sustainability of the financial market.

Terms and Conditions

As explained before in the supply of credit section, there are various restrictions enforced by banks, such as credit analysis requirements in addition to the legal requirements. These kinds of restrictions are not encouraging the potential asset buyer to get the required financing from the bank, but rather they choose to buy directly from the real estate developers. According to Mr. Mostafa who is 30 years old and working in one of the big real estate developers, he stated:

“The repayment schedule and terms offered by the developers are always better than the terms that could be offered by the banks” (Khaled, November, 2017).

The developer sells the unit and receives in advance checks from the buyer, and if the buyer did not have enough cash at his/her account, when the check is due, the developer can give warnings or grace period for the buyer, and if it is repeated then the developer has the right to take the asset or the unit back, as this is usually part of the contract of the asset, and refund the paid amount to the buyer, but with a penalty ranging from 10-15% of the previously paid amount. Hamady who is a 55 years old, and was trying to have a regular mortgage loan explained:

“Getting a mortgage to finance a unit in new cities is a complicated process, because one of the bank requirements is to have the land, building and unit licensees” (Hamady, November, 2017).

Hamady further explained:

“Various lands, the buildings and units at the new cities are not licensed and the process takes so long to be finalized and it could reach 5 years, which was the main constraint he faced while trying to have mortgage” (Hamady, November, 2017).

Hamady failed to receive the mortgage and he bought from a real estate developer with 10% down payment, and he is paying the installments over 4 years.

According to Halah, who is 55 years old. She defines the process of getting a mortgage from the bank as:

“Incapacitating and hectic terms if compared to buying from the developer” (Halah, November, 2017).

Reem who is 32 years old and lives in Alexandria. She wanted to get a mortgage through the bank. Reem mentioned that the bank employee told her that:

“He has been working for the bank for years and he did not see anyone getting an acceptance on their mortgage requests” (Reem, November, 2017).

Reem failed to receive the mortgage from the bank and went to a real estate developer and bought her unit directly through the developer with “very reasonable terms”, as she described.

Respondents who tried to get regular mortgage loans noted that the process of the bank and its regulations are complicated and the requirements are not clear from the beginning of the process, as the required paper work by the banks to be able to access the mortgage is one of the challenges that face the buyer of the asset, which is not the case if the buyer goes directly to the real estate developers. Mr. Mostafa who is 30 years old and is working in one of the big real estate developers explained:

“Buying directly from the company is very easy, because it needs no collateral and there is no risk assessment to the buyer that would guarantee the repayment of the installments” (Mostafa, November, 2017).

Khaled who is 29 years old. He works at one of the banks in Egypt. He explained the process of buying a unit from a developer and stated:

“The process for buying the unit from the real estate company was as easy as buying a washing machine directly from the store”. (Khaled, November, 2017).

Analyzing the data received from the interviewees, which represent the demand side, highlight a potential risk within the Egyptian financial sector. This risk is not similar to the one that happened in the U.S. The risk within the Egyptian financial market is coming from an indirect implication of the strict rules of the banking sector. The conservative banking sector in Egypt, as described by Mr. Adham, has created a gap between the demand for mortgages from the potential buyers and the supply of credit from banks for accessing the real estate sector. This gap that was created by the non-resilient banking sector regulations caused the market dynamics to create a substitute for access to credit. This substitute is the developers within the real estate sector. Those developers started to sell the real estate units with credit facilities that reached in some cases zero down payments and the buyer can pay the unit price over a period that reaches 10 years.

As mentioned at the literature review that poor quality of credit at the U.S was one of the main sources of having the financial crisis, especially when the economy faces shocks (Barrell and Davis, 2008). What is happening in the Egyptian market is with the poor quality of credit facility by the developers directly to the buyers are increasing the exposure level of the real estate sector to the risk of having a financial crisis, especially within an economy that is facing various shocks starting with the exchange rate floatation and the hikes in inflation as well as the interest rates.

The analysis from the conducted interviews with the buyers links what is mentioned in the literature about the excess access to credit and poor quality of lending to the real estate sector in Egypt. The excess availability of credit leads to increase in demand for the real estate assets, and hence to increase in the housing bubble. In addition, the poor quality of lending created by the developers through stepping into the financial market and replacing the banks' role to fulfill the gap between the demand for mortgages and the supply of it. This intervention by the developers increased the vulnerability of the real estate sector to high risk coming from the poor quality of credit offered by the lenient regulations by the real estate developers. Those two factors have a direct impact on increasing the risks of having a housing bubble in Egypt.

6. Conclusion

The mixed approach was used in this thesis to test the sensitivity of the real estate sector through two main approaches. Both approaches were mentioned in the literature review, and they are claimed to be of the main reasons of having a housing bubble in the real estate sector.

The first approach is the exposure of the real estate sector to the monetary policy, especially the money growth. An OLS quantitative model was used to test the relation between the real estate sector and the money supply in Egypt. This relation has been confirmed to be significant and a positive relationship, which matches the results from the literature that the real estate sector in Egypt is exposed to the dynamics happening in the monetary policy, especially the change in money supply. Moreover, the risk of having a contractionary policies in Egypt will risk the housing sector performance and hence increasing the risks of having a collapse on the prices of the real estate assets, after the expansionary policies that are taking place recently in Egypt. Accordingly, the real estate sector in Egypt is exposed to risk that is coming from the impact of the recent changes taking place in monetary policies in Egypt.

The second approach is the risks of having a housing bubble in a market as a result of the availability of credit and the quality of lending for the buyers to access the real estate sector. The qualitative approach uses un-structured interviews to analyze and understand the dynamics of banking sector in Egypt. The results from the qualitative approach reflected that there is a risk from the financial market with its broad definition, which implies including any financial intermediaries. This risk is not coming directly from the

banks, however, it is coming from the gap created in the financial market between the demand for mortgages and the legal supply of it from the banking sector. The qualitative approach helped in understanding the dynamics in the financial market, explaining that the gap created by the strict regulations within the banking sector to offer mortgages to the buyers was fulfilled by the real estate developers without any regulations to ensure the sustainability of the financial sector. This explains that the real estate sector is exposed to another risk, coming from the indirect channel created by the real estate developers to lend the buyers directly. This non-banking type of lending is considered as a poor-quality lending, because it is not subject to any regulations or risk assessments that would ensure the repayment of this credit nor the sustainability of the financial system. Hence, the exposure of the real estate sector to risks would increase, especially with the recent shocks happening on the Egyptian economy, especially the recent shocks concerning monetary policies. The fundamental risk lies in the potential impact of the real estate market dynamics on business cycle fluctuations in Egypt. Consequently, the high share of the real estate sector of GDP is also on risk of hindering not only the real estate sector growth, but also hindering GDP growth within the Egyptian economy. In addition, the importance of the real estate sector within the Egyptian stock market and its weight in the stock market will be on a risk as well, threatening the stability of the Egyptian stock market's performance, if the sector is exposed to any shocks.

Recommendations

It is recommended to have a policy intervention to ensure the sustainability of the real estate sector. The aim of the policy intervention is to close the gap between the demand and supply for credit within the banking sector regulations to ease and waive the possible risks

associated within the indirect lending process through the real estate developers. This policy intervention can be done through two stages.

The first one through revisiting the regulations of the banks on accessing mortgage loans. The regulations have to be clear and easy for everyone since the first day, so it should not be complicated for the users nor the bank employees themselves. The bank should have a big role in closing this gap or otherwise it will eventually harm the whole financial market through the indirect lending of the real estate developers. This can happen through having a more lenient regulations that would ensure the sustainability of the banking sector, but yet ensure easing the access to credit through the formal lending channel, which is the banks.

The second recommendation is having some measures and regulations for the real estate developers in order to force the real estate developers to assess the buyer and his/her ability to pay back the mortgage or the asset price. This can happen through having a section for the buyer risk assessment that would be provided by the developer within the legal documents that are submitted for the registration office, which is called “El shahr el Aqary” as a fundamental requirement

Moreover, regulating the lending process by the real estate developers can be achieved through the intervention of the central bank to have a department that would help and train the real estate developers to assess the risk for the buyers. The central bank can have a score for each developer based on the assessment the real estate developers do for the buyers. This score can be a prerequisite for all the real estate developers to get any access to credit from the banking sector in general. This score will reflect the level of exposure each developer has to risks within the financial market. Based on this score, the central bank can have regulations that limit that access to credit for each company based on the

score it gets in order to ensure the sustainability of the financial market and wave the risks of having an unstable real estate sector that would have a direct impact on the financial market and the Egyptian economy.

This thesis does not assume that there will be a housing bubble in Egypt causing a financial crisis, however, it highlights some of the forecasted risks within the real estate sector in Egypt. These risks are increasing the chance of having a housing bubble in Egypt, especially with the recent developments and change of fiscal and monetary policy atmosphere. These risks require policy intervention to pave the way for the sector to further grow and contribute more to the GDP growth within the Egyptian economy in a sustainable manner. It is worth mentioning that the counter argument of not having a housing bubble in Egypt is that the limited data available about the real estate sector in Egypt, such as not having a credible price index that can guide the market based on scientific measurements. This limited availability of data results in having an immature market that gives the chance to the developers' speculations to guide the forecast of the real estate market dynamics. These speculations as proved by the literature review in this paper have a direct impact on the real estate dynamics and prices (Foldvary, 1998; Holt, 2009; Hellwig, 2009). The speculations of the developers have an incentive to keep pushing the prices high without the need to prove the reasons scientifically, so this could not be reflecting the real value of the assets, even if the prices of these assets should eventually drop; these speculations can fake the value of the assets at an overvalued prices.

Another counter argument that can be discussed is the estimated volume of the informal economy within the Egyptian economy. This unpredicted informal economy can keep the prices of the assets over valued, as they will push the demand and the prices high, because

it is one of the safe investments that will not force the informal investors to go through the banking sector, as the case of any different investment. This will keep creating more demand within the sector, which will keep pushing the prices of the assets high.

7. References

- Ahearne, A. G., Ammer, J., Doyle, B. M., Kole, L. S., & Martin, R. F. (2005). House Prices and Monetary Policy: A Cross-Country Study. *International Finance Discussion Papers*, 841. Retrieved December 10, 2016, from <https://www.federalreserve.gov/pubs/ifdp/2005/841/ifdp841.pdf>.
- Afonso, A., & Sousa, R. M. (2011). *The macroeconomic effects of fiscal policy. The macroeconomic effects of fiscal policy*, (0003-6846), 1-17. Retrieved December 2, 2017, from <http://www.tandfonline.com/doi/pdf/10.1080/00036846.2011.591732?needAccess=true&>
- Akin, O., Montalvo, J. G., Villar, J. G., Peydró, J., & Raya, J. M. (n.d.). The Real Estate and Credit Bubble: Evidence from Spain. Barcelona gse. Graduate School of Economics. Retrieved December 10, 2016, from http://www.barcelonagse.eu/sites/default/files/working_paper_pdfs/772.pdf
- Al Aees, Shaimaa. "Egypt's real estate market approaching bubble: Sawiris." *Daily News Egypt*, 26 Nov. 2016. Retrieved January 15, 2018, from <https://dailynewsegyp.com/2016/11/27/egypts-real-estate-market-approaching-bubble-sawiris/>
- Barth, E., Gomez-Biscarri, J., & Lopez-Espinoza, G. (n.d.). Fair Value Accounting and Firm Valuation. <http://pendientedemigracion.ucm.es/centros/cont/descargas/documento18505.pdf>. Retrieved December 10, 2016, from <http://pendientedemigracion.ucm.es/centros/cont/descargas/documento18505.pdf>
- Bernanke, B. S. (2010). Monetary Policy and the Housing Bubble. 1-36. Retrieved December 10, 2016, from <https://www.federalreserve.gov/newsevents/speech/bernanke20100103a.pdf>.
- Bernanke, B. S. (2010). Monetary Policy and the Housing Bubble. Annual Meeting of the American Economic Association. Retrieved December 10, 2016, from <https://www.federalreserve.gov/newsevents/speech/bernanke20100103a.pdf>.
- Brunnermeier, M. K. (2009). Deciphering the Liquidity and Credit Crunch 2007–2008. *Journal of Economic Perspectives*, 23. Retrieved December 10, 2016, from https://www.princeton.edu/~markus/research/papers/liquidity_credit_crunch.pdf.
- Berg, A. (1999). The Asia Crisis, Causes, Policy Responses, and Outcomes. *International Monetary Fund*. 1-62. Retrieved December 1, 2017, from <https://www.imf.org/external/pubs/ft/wp/1999/wp99138.pdf>.
- Catte, P., Girouard, N., Price, R. W., & André, C. (2004). Housing markets, wealth and the business cycle. Retrieved December 10, 2016 from <http://www.oecd-ilibrary.org/docserver/download/534328100627.pdf?expires=1515441331&id=id&accname=guest&checksum=B24F0766106E223F4EBAE651EBBEA93D>

- Creswell, J. W. (2003). *Research Design* (2nd ed.). University of Nebraska. Retrieved from https://ucalgary.ca/paed/files/paed/2003_creswell_a-framework-for-design.pdf.
- Foldvary, F. (1998). Market-Hampering Land Speculation: Fiscal and Monetary Origins and Remedies (Vol. 57). *American Journal of Economics and Sociology*, Inc. https://www.jstor.org/stable/3487124?seq=1#page_scan_tab_contents
- Foldvary, F. E. (2008). The Depression of 2008. 1-40. Retrieved December 3, 2017, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1103584
- Goodhart, C., & Hofmann, B. (2008). House prices, money, credit, and the macroeconomy. *Oxford Review of Economic Policy*, 24(1), 180-205. Retrieved December 10, 2016, from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.165.2414&rep=rep1&type=pdf>
- HELLWIG*, M. F. (2009). SYSTEMIC RISK IN THE FINANCIAL SECTOR: AN ANALYSIS OF THE SUBPRIME-MORTGAGE FINANCIAL CRISIS**. *DE ECONOMIST*, 175(2), 1-79. Retrieved December 2, 2017, from <https://link.springer.com/content/pdf/10.1007%2Fs10645-009-9110-0.pdf>.
- Holt, J. (2009). A Summary of the Primary Causes of the Housing Bubble and the Resulting Credit Crisis: A Non-Technical Paper. *The Journal of Business Inquiry*. Retrieved December 10, 2016, from <https://www.uvu.edu/woodbury/docs/summaryoftheprietarycauseofthehousingbubble.pdf>.
- Humphrey, T. M. (may/june 1974). THE QUANTITY THEORY OF MONEY: ITS HISTORICAL EVOLUTION AND ROLE IN POLICY DEBATES. *FEDERAL RESERVE BANK OF RICHMOND, ECONOMIC REVIEW*, 1-18. Retrieved December 4, 2017, from https://www.richmondfed.org/~media/richmondfedorg/publications/research/economic_review/1974/pdf/er600301.pdf.
- Ito, T. (1999). Japan and the Asian Financial Crisis: The Role of Financial Supervision in Restoring Growth. *Institute of Economic Research Hitotsubashi University*, 1-28. Retrieved December 1, 2017, from <http://en.agi.or.jp/workingpapers/WP1999-10.pdf>
- Marshall, J. (2009). The financial crisis in the US: key events, causes and responses. House of Commons Library. Retrieved December 10, 2016, from http://www.voltairenet.org/IMG/pdf/US_Financial_Crisis.pdf
- Mera, K., & Renaud, B. (2015). *Asia's Financial Crisis and the Role of Real Estate*. New York: Routledge. <https://books.google.com/eg/books?id=VmulDAAAQBAJ&pg=PT38&lpg=PT38&dq=Mera+and+Renaud&source=bl&ots=CAtxroxr5j&sig=WDSZHu9-ZM7zAs0w4P-n860gIsU&hl=en&sa=X&ved=0ahUKEwj72ZSs5YfRAhUFExoKHbFrBGEQ6AEIGDAA#v=onepage&q=Mera%20and%20Renaud&f=false>

Neuman, W. L. (2000). *Social research methods: Qualitative and quantitative approaches* (7th ed.). Boston: Allyn and Bacon.

Pavlov, A., & Wachter, S. (2004). Real Estate Crashes and Bank Lending. Retrieved December 10, 2016, from <http://realestate.wharton.upenn.edu/research/papers/full/451.pdf>

"Publications." *The Central Bank of Egypt*. Web. 5 December 2016. <<http://www.cbe.org.eg/English/>>.

"Publications." *The Ministry of Finance of Egypt*. Web. 5 December 2016. <<http://www.mof.gov.eg/English.aspx>>.

Reinhart, C. M., & Rogof, K. S. (2008). IS THE 2007 U.S. SUB-PRIME FINANCIAL CRISIS SO DIFFERENT? AN INTERNATIONAL HISTORICAL COMPARISON. *NATIONAL BUREAU OF ECONOMIC RESEARCH*, 1-15. Retrieved December 1, 2017, from <http://www.nber.org/papers/w13761.pdf>

Saunders, A., & Linda Allen, L. (2010). *Credit Risk Management In and Out of the Financial Crisis: New Approaches to Value at Risk and other Paradigms*. Hoboken, New Jersey: John Wiley & Sons, Inc. doi: https://books.google.com.eg/books?hl=en&lr=&id=Rr_6y9evvowC&oi=fnd&pg=PR1&dq=loose credit facility policies and 2008 financialcrisis&ots=rMtj6HvrwE&sig=uR9BLI7ONxT9L1hxsenu9CaBc&redir_esc=y#v=onepage&q&f=false

Taylor, J. B. (2009, January). *THE FINANCIAL CRISIS AND THE POLICY RESPONSES: AN EMPIRICAL ANALYSIS OF WHAT WENT WRONG* [Scholarly project]. In *NATIONAL BUREAU OF ECONOMIC RESEARCH*. Retrieved December 3, 2017, from <http://www.nber.org/papers/w14631.pdf>

T.H. Koh, W., Mariano, R., Pavlov, A., Yong Phang, S., H. H. Tan, A., & Wachter, S. (2004). Bank Lending and Real Estate in Asia: Market Optimism and Asset Bubbles. Retrieved December 10, 2016, from <http://realestate.wharton.upenn.edu/research/papers/full/461.pdf>

The Egyptian Exchange. (n.d.). Retrieved December 2, 2017, from <http://www.egx.com.eg/english/OverviewSEC.aspx?Nav=5>

Trading Economics. Trading Economics. Web. 12 December 2016. <<http://www.tradingeconomics.com/egypt/currency>>.

Tsatsaronis, K., & Zhu, H. (2004). What drives housing price dynamics: cross-country evidence. Retrieved December 2, 2017, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1968425

Wong, K. (2001). Housing market bubbles and the currency crisis: The case of Thailand. *Japanese Economic Review*, 52(4), 382-404. doi:10.1111/1468-5876.00202.