A Review of the Housing Market in Beirut between 2005 and 2019

by

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B.Arch., Architecture, 2014

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Submitted to the Program in Real Estate Development in Conjunction with the Center for Real Estate in Partial Fulfillment of the Requirements for the Degree of Master of Science in Real Estate Development

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ABSTRACT

This paper examines the housing market in Beirut between the beginning of 2005 to the end of 2018, focusing in particular on the slowdown in the early to late 2010s. It will be shown that this slowdown is partly attributable to a mismatch in the supply that private developers have introduced to the market and the actual demand from potential homeowners. The analysis reveals that the most at-risk assets are opportunistic developments targeting high-income buyers and that despite political and economic instability, property owners have continued to realize returns on real estate. At the time of writing this paper, there are no formal metrics to track the movement of real estate prices in Beirut. Two indices are constructed using transaction data to address this using the hedonic and repeat sales models. Finally, the different factors that have affected the real estate market are explored, including slow wage growth that has prevented homeowners from keeping up with housing prices, massive public debt that has paralyzed subsidization programs, and a high cost of debt that has made it difficult and unattractive to finance both new construction and homeownership.

Thesis Supervisor: David Geltner
Title: Professor of Real Estate Finance

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Chapter 1: Introduction

1.1: Introduction & Background

Lebanon is no stranger to conflict, both civil and regional. The devastating 16-year civil war, which began in 1975, formally ended in 1991 after most of the combating parties signed the Ta'if Agreement. Accordingly, a new government was formed by prime minister Rafic Hariri. To facilitate the reconstruction of the country, the Council for Development and Reconstruction became active in 1992 under his leadership.

As prime minister from 1992 to 1998, and again from 2000 to 2004, Hariri imagined that Beirut could once more play a pivotal role in the region, becoming a financial and service center that would rival the emerging Arabian Gulf cities of Dubai, Doha, and Abu Dhabi. He charted Beirut's postwar recovery along a path of urbanism characterized by the privatization of government services, real estate development, and the enhancement of high-end tourism zones, all in the name of attracting flows of capital.[1] A significant part of Horizon 2000 -the government's plan for the rejuvenation of the country- was the creation of Solidere, a privately owned company that would be responsible for the reconstruction efforts. Solidere was owned by both government and private entities and was mostly focused on redeveloping Beirut's downtown and reviving it as a new urban center. To this end, the entity was granted eminent domain as well as limited regulatory authority over the downtown area.

To finance Horizon 2000, the government began issuing Eurobonds and granted private regional and international investors a role in the reconstruction initiatives to ease the financial burden.[2] This plan would allow regional and foreign capital -in the form of loans and grants from the World Bank, UN agencies, and Arab countries- to finance the large-scale reconstruction project. Preliminary figures suggested a budget of $11.7 billion over 10 years[3], with over half the funds coming from foreign borrowing. As the government continued to borrow reconstruction money, the country's debt grew to become the largest on a per capita basis in the world. By 1998, the national debt had skyrocketed 540% from two to 18 billion dollars.

The reconstruction efforts were criticized for focusing on large-scale projects that centered almost entirely on the Beirut Central District in downtown, leaving the country in great debt as it lacked a division of economic recovery that encompassed the various sectors[4]. By 1994 the market was saturated with premium apartments, with prices above $300,000, which sat empty. With available real estate skewed toward expensive properties, many of Lebanon's residents were never likely to become property owners.

More than 25 years after the conclusion of the war, the real estate sector is experiencing another slowdown driven by a public debt that has ballooned to over 150% of GDP[5], high interest rates that have crippled both public and private spending, and a misalignment supply and demand.

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[1] *Kristin V. Monroe, "The Privatized City," in* The Insecure City*, Space, Power, and Mobility in Beirut (Rutgers University Press, 2016), 2*

[2] *Aseel Sawalha,* Reconstructing Beirut: Memory and Space in a Postwar Arab City*, 1st ed, Jamal and Rania Daniel Series in Contemporary History, Politics, Culture, and Religion of the Levant (Austin: University of Texas Press, 2010), 27*

[3] Hassan N. Diab, *Beirut : Reviving Lebanon's Past.*, 1999, 2.

[4] *Howayda Al-Harithy,* Lessons in Post-War Reconstruction: Case Studies from Lebanon in the Aftermath of the 2006 War*., 2010,* p.7

[5] As per the Ministry of Finance Public Debt Directorate, accessed December 2019, http://www.finance.gov.lb/en-us/Finance/PublicDebt.

1.2: Purpose

As of 2019, there are few formal metrics for the Lebanese real estate market, with the exception of a few indices published by some private institutions.[6] Consequently, it is difficult to quantify the problems the sector is facing or compare the current state with that of the market in the past. Instead, reports on the performance of the real estate sector are mainly reliant on the testimony of local developers and brokers, and indirect figures such as issuances of building permits and cement deliveries reported by the Order of Engineers and Architects.[7]

A transaction-based index (TBI) will be constructed to address this, summarizing the returns on real estate since 2005 and how residential sales prices have reacted to volatility both locally and within the region. In contrast to current methods, this index represents the prevailing equilibrium in the property market, and is constructed using empirically observed transaction data, the prices paid and received by investors on both sides of the market (supply and demand).[8]

In addition to these indices, this paper will look at other relevant variables, such as transaction volume and overall prices. It will also examine which property types have been performing the best compared to what developers have been offering. While the results are not representative of the entire market, reflecting around 35% of the Beirut area, the methodology is scalable to encompass the entire city. Finally, the causes of the stagnation in the real estate market will be addressed.

The goal is to assess the performance of the housing sector, provide commentary about the different factors that may have been contributing to its recent performance, and outline the methodologies that could be used for further study.

1.3: Scope and Methodology

The primary resource for this study will be a dataset shared by the Lebanese Ministry of Finance's General Directorate of Land Registry and Cadastre, which is responsible for tracking all real estate transactions in the country. The dataset covers the residential market and is comprised of data for two of Beirut's largest districts, Moussaitbeh and Achrafieh. The data includes observations for several variables that are relevant to the performance of the real estate sector. Transaction prices will be used to construct the indices using the hedonic and repeat-sales regression-based models, while the other variables will be used for supporting analysis.

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[6] The Byblos Bank is one such example. The Index is based on a face-to-face monthly survey of a nationally representative sample of 1,200 males and females living throughout Lebanon, who reflect the demographic, regional, religious, professional and income distribution of Lebanon. The surveyed persons are asked about their plans to buy or build a house in the coming six months. The Byblos Bank Economic Research and Analysis Department has been calculating the Index on a monthly basis since July 2007, with November 2009 as its base month. The survey has a margin of error of ±2.83%, a confidence level of 95% and a response distribution of 50%. The monthly field survey is conducted by Statistics Lebanon Ltd, a market research and opinion-polling firm.

[7] As published on the official website, accessed November 2019, https://www.oea.org.lb/

[8] Contemporaneous Transaction-Price-Based Index of Private Market Values as described in: David Geltner et al., *Commercial Real Estate: Analysis and Investments*, 3e ed. (Mason, OH, USA: OnCourse Learning, 2014).653

Chapter 2: Description of Data

2.1: Locating Regions of Study

The dataset provided includes information about two districts[9]; Moussaitbeh and Achrafieh. These districts represent a large percentage of the city and are characterized by a wide distribution of properties. The map below shows the locations of the districts provided in relation to the rest of Municipal Beirut. The district of Moussaitbeh lies in the Western half of the city, while Achrafieh lies in the Eastern half. Minet el Hosn, the location of the Beirut Central District, lies to the north and will regularly be addressed.

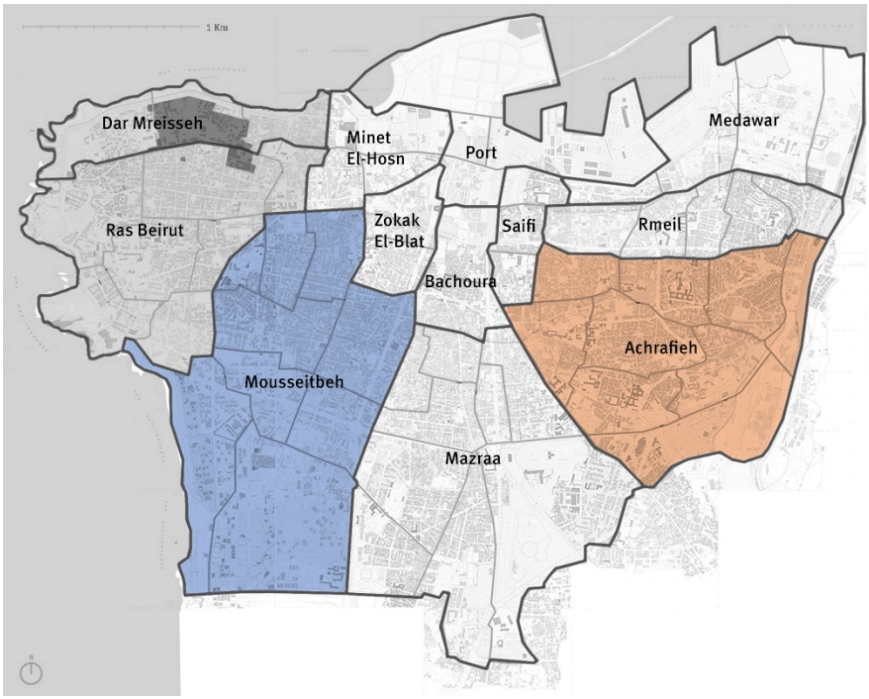

Figure 1: Cadastral Districts of Municipal Beirut[10]

Together, the areas represent about 35% of the total Beirut area. More importantly, the areas themselves encompass different income classes with varying degrees of purchasing power. The southern portion of Wata Moussaitbeh, for example, is mostly comprised of low-income neighborhoods and is probably the poorest of all others in Beirut[11]. By comparison, Ramlet al Baidah bordering the Mediterranean to the west, and the neighborhoods toward Minet al Hosn are largely high-value residential properties.[12]

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[9] Beirut is divided into 12 districts seen above which are further divided into 59 sectors. Two of the 12 official Palestinian refugee camps in Lebanon are in the southern suburbs of Beirut. Solidere focused its reconstruction efforts on the Beirut Central District in Minet el Hosn, a comparatively small area in the Greater Beirut Area.

[10] Adapted from "Analytical Maps of Ras Beirut", American University of Beirut, accessed July, 2019, https://www.aub.edu.lb/Neighborhood/Pages/analyticalmaps.aspx.

[11] Mona Fawaz and Isabelle Peillen, "The Case of Beirut, Lebanon," 19

[12] *Kristin V. Monroe, "The Privatized City," in* The Insecure City*, Space, Power, and Mobility in Beirut (Rutgers University Press, 2016), 18*

Construction has also been evenly distributed between the districts over the timeframe examined. A study by the London School of Economics and the American University of Beirut[13] documented the new construction that has taken place in the city. As the map below shows, these projects -irrespective of plot sizes that may bias visual analysis- are fairly scattered throughout the city.[14] The highest numbers of authorized projects are in Moussaitbeh, and the greater Achrafieh area.[15]

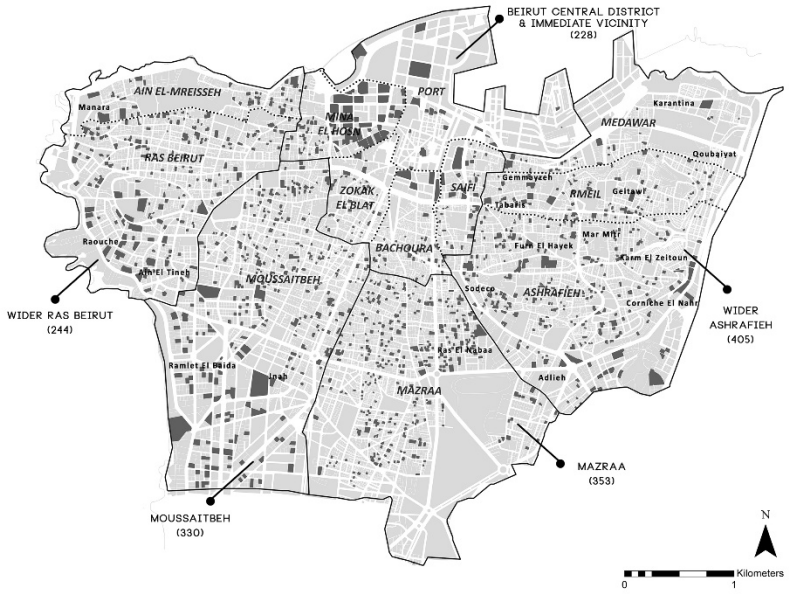

Figure 2: Map showing the distribution of new construction between 2000 and 2013

Based on these characteristics -the relative size of the districts, the income brackets represented, and the level of construction activity throughout- an assumption can be made that this dataset represents a sample of the performance of the city as a whole. It will later be shown, however, that certain areas behave differently in relation to the rest of the city, underscoring the importance of requisitioning the full dataset. The Beirut Central District, for example, has become almost exclusively comprised of luxury properties and has been affected differently in comparison to the rest of the city.

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[13] Hayat Gebara, N. Mona Khechen, and Bruno Marot, "Jadaliyya - Mapping New Constructions in Beirut (2000-2013)," accessed July 2019, https://www.jadaliyya.com/Details/33751.

[14] The largest developments can be observed in the western and southern parts of Achrafieh (Tabaris, Furn El-Hayek, Sodeco), Beirut Central District (BCD) and immediate vicinity, Moussaitbeh, and the western part of Ras Beirut (Raouche, Manara). The map clearly shows that most of the new developments are concentrated around the Beirut Central District in Minet el Hosn, where Solidere focused its reconstruction efforts. Solidere used the powers granted to it to transfer development rights within Beirut's Central District and concentrated large developments in strategic locations along the waterfront in Minet el Hosn.

[15] Hayat Gebara, N. Mona Khechen, and Bruno Marot, "Jadaliyya - Mapping New Constructions in Beirut (2000-2013)," accessed December 12, 2019, https://www.jadaliyya.com/Details/33751.

2.2: Data Variables

The data supplied contains information about the property transactions within these districts. In addition to the value of the sales[16], other variables include the date the transaction was recorded, the district the property is in, and the area of the property. Unique to the Lebanese market is the division of individual properties into 2400 shares, representing fractional ownership. The number of shares purchased in a transaction is recorded as well. Price per square meter takes this into account and is calculated as:

$$price\ per\ meter = \left(price * \frac{2400}{shares}\right) * (\frac{1}{area})$$

Finally, every entry in the database includes a description of the property detailing the different rooms and amenities. An excerpt of the data has been translated and can be seen below:

Date	District	Area (sqm)	Price (USD)	Shares	Price/ sqm (USD)	Unit Description
1/3/2005	Achrafieh	131	105,560	2400	806	unit 10: entrance, salon, dining room, kitchen, three bedrooms, one bathroom, maid's room, three balconies
1/3/2005	Moussaitbeh	138	74,000	2400	536	unit 99: entrance, salon, dining room, three bedrooms, a kitchen, three bathrooms, three balconies
1/8/2005	Moussaitbeh	115	68,667	2400	597	unit 19: entrance, salon, dining, two bedrooms, a kitchen, two bathrooms, two balconies
1/8/2005	Moussaitbeh	136	100,000	2400	735	unit 28B: entrance, salon, dining room, kitchen, three bedrooms, three bathrooms, three balconies
1/11/2005	Moussaitbeh	283	217,333	2400	768	unit 10: entrance, foyer, two salons, dining room, living room, four bedrooms, kitchen, maid's room, four bathrooms, two balconies
1/12/2005	Achrafieh	188	154,667	2400	823	unit 10: entrance, two salons, dining room, kitchen, three bedrooms, laundry room, four bathrooms, four balconies
1/13/2005	Achrafieh	126	26,667	2271.429	224	unit 15: entrance, foyer, dining room, kitchen, two bedrooms, one bathroom, three balconies
1/13/2005	Achrafieh	127	26,667	2271.429	222	unit 20: entrance, two bedrooms, kitchen, study, two bathrooms
1/17/2005	Moussaitbeh	146	63,333	2400	434	unit 7: entrance, salon, three bedrooms, a kitchen, two bathrooms, four balconies
1/24/2005	Moussaitbeh	162	100,000	2400	617	unit 4A: entrance, two salons, dining room, four bedrooms, a kitchen, three bathrooms, laundry room, three balconies

Table 1: Translation of a section of the dataset showing the different variables that are available for analysis

It is important to note that transaction prices in the dataset are an adjustment on the actual transaction price reported to the Directorate and, as such, constitute a kind of appraisal. This is done for taxation and registration purposes and to mitigate any price manipulation in reporting transactions. As such the prices in the dataset may differ from the actual transaction price. The resulting transaction price error[17] is likely responsible for some of the noise in subsequent chapters. However, given the quantity of data, any variation will likely be averaged out when looking at general price trends.

[16] Prices in the dataset are quoted in LBP but have been converted to USD. Since December 1997, the Lebanese pound has been pegged to the U.S. dollar at 1507.5 pounds per dollar.

[17] David Geltner et al., *Commercial Real Estate: Analysis and Investments*, 3e ed. (Mason, OH, USA: OnCourse Learning, 2014).635

The Lebanese government began implementing this system in 2005.[18] Prices in the database are all taken in nominal figures and are not adjusted for inflation. However, this can be compensated for by rescaling the prices according to the consumer price index (CPI) published by the Central Administration of Statistics[19]:

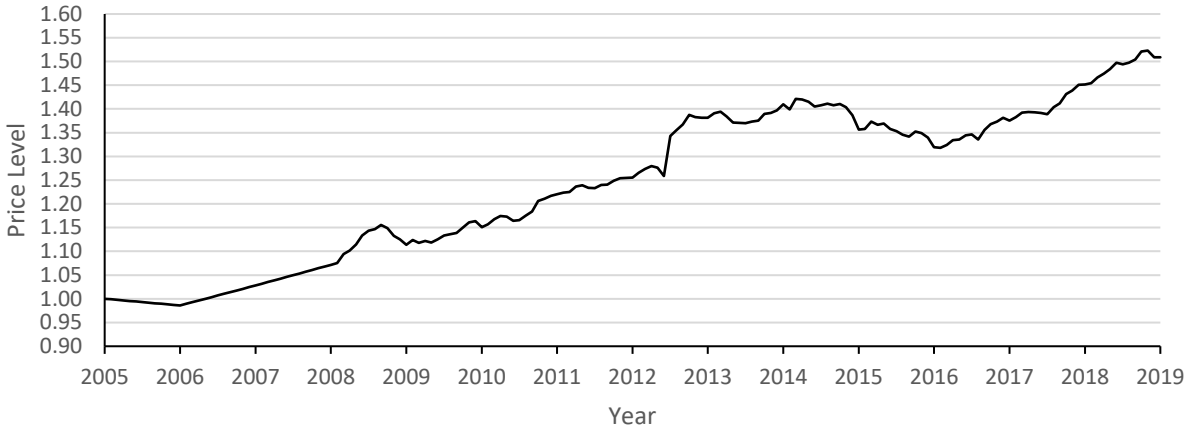

Figure 3: CPI chart showing the effect of inflation over the timeframe

As the chart shows, consumer prices in the market increased by around 50% over the 14 years in the dataset. The prices in the dataset are adjusted accordingly to account for the change in purchasing power in the country and its reflection in the value of the real estate market.

In Chapter 3, the different variables in the dataset will be used to analyze different facets of the real estate market. The most immediate insight is in the price movement over this timeframe and the transaction volume in the two districts represented. Additionally, homeowner preferences will be assessed by looking at the distribution of areas for sales throughout the timeframe. These preferences will, in turn, be used to segment the residential property market to see how performance has varied across different product types.

[18] This was confirmed by The Directorate of Land Registration and Cadastre. Transactions prior to 2005 do exist, dating back to 2001 however they are incomplete and were not included in this study.

[19] The Central Administration of Statistics publishes an adjusted figure for the CPI every month. The current CPI basket is divided into 12 divisions according to "The Classification of Individual Consumption by Purpose" as published by UN. "Central Administration of Statistics - Consumer Price Index - CPI," accessed August 2019, http://www.cas.gov.lb/index.php/economic-statistics-en?layout=edit&id=185.

Chapter 3: Data Analysis

3.1: Introduction

This chapter will directly examine the variables in the dataset. The overall health of the sector will be represented through the volume of property transactions, and the overall value of those transactions. Demand will be studied through changes in buying behavior.

It will be shown that despite a downturn in 2011, the real estate market in these two districts appears to be recovering in terms of transaction volume, while sales values have stagnated following a period of growth. It will also be shown that recent price appreciation is being driven by demand for smaller units.

3.2: Transactions

Demand for real estate in Lebanon has struggled amid the absence of concrete initiatives to stimulate the market, with the Beirut Central District hit hardest by a slowdown that began in 2013. While projects launched at the beginning of the decade have been delivered or are near completion, low sales volumes mean that investors have still not realized gains, and developers that invested in the Beirut Central District are still struggling to keep up.[20] However, the data shows that some areas have been affected differently than others.

Although the Beirut Central District is not part of the dataset, the performance of the other districts can be used to show the extent to which the slowdown has affected other parts of the city. The total annual transaction volume for Achrafieh and Moussaitbeh can be seen below:

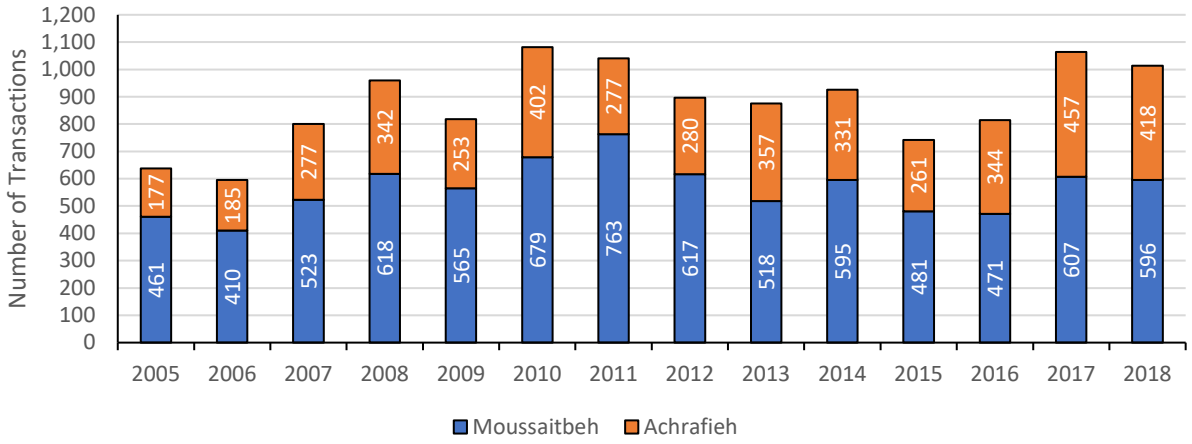

Figure 4: Total Number of Transactions (Annual)

In 2005, following the introduction of new exploitation laws, prices and transactions increased rapidly for five years as investments in the real estate sector increased, tapering off in 2010 at 1,080 transactions. The number of transactions in the two districts then decreased between 2010 and 2015, the low point occurring in 2015 at 742 transactions. However, the market recovered with a growth of around 40%, and transactions hitting an all-time high of 1,221 in 2017.

[20] Scott Preston, "You Can Build It, but Will They Come?," *Executive*, December 2017, 112.

What is also clear is that the percentage change in the number of transactions varies between the different districts in the dataset. Whereas Moussaitbeh experienced a decline in transaction volume, sales in Achrafieh consistently increased[21]. This is evident in Figure 5, where the transactions are disaggregated by the respective district.

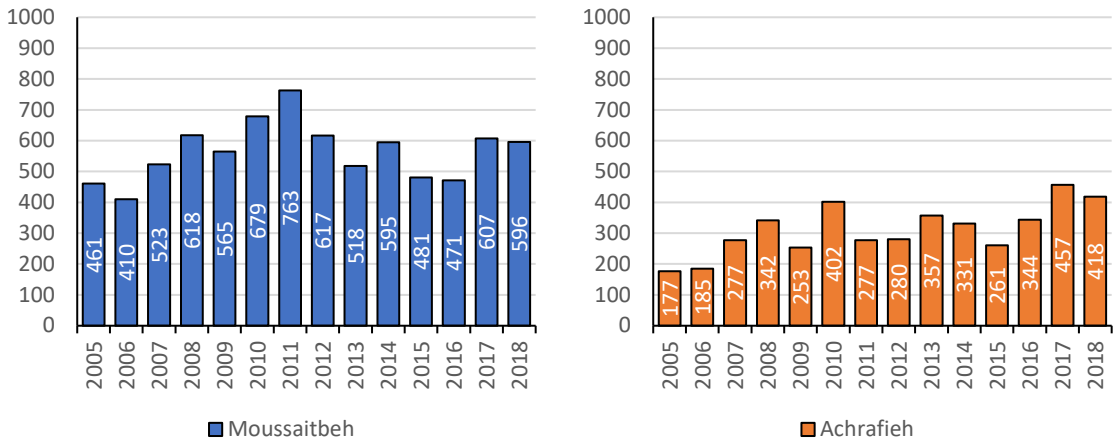

Figure 5: Number of Transactions (By District)

Transactions in Achrafieh are at their highest, with 418 sales recorded in 2018, up from 177 in 2005, representing an annual increase of 6%. Whereas Achrafieh accounted for less than a quarter of the annual total in 2005, by 2018, it accounted for almost half the transactions. This suggests that some areas may have been affected differently by the slowdown, or that perhaps demand has shifted from some areas to others, due to demographics, income, or price shifts.

Although developers in the Beirut Central District may be struggling to move supply, the market appears to be recovering in other parts of the city, if not experiencing consistent growth. However, transaction volume alone is not a good indication of market health and could be driven by depressed prices. As such, the median sales price also needs to be considered in order to get a better idea of how the market has been performing.

3.3: Prices

In addition to a reduction in the number of sales, excess supply in the Beirut Central District has forced developers to reduce their margins and offer discounts of 20% - 40% to move their inventory.[22] By comparison, sales prices appear to be continuously growing in the areas represented in the dataset. This can be seen with a moving median showing how prices have changed over the range of the dataset. Using the CPI index from Chapter 3, nominal and real prices can be compared. In Figure 6 below, the median price of both districts is plotted first. Figure 7 and Figure 8 plots the breakdown between the two districts.

[21] The difference in performance between the two districts stresses the importance of acquiring the full dataset. Whereas Moussaitbeh has experienced a decline in the number of transactions, Achrafieh is at an all-time high. Between 2005 till the end of 2018, transactions increased from 177 to 418 representing an annual increase of around 6%.

[22] Scott Preston, "You Can Build It, but Will They Come?," *Executive*, December 2017, 112.

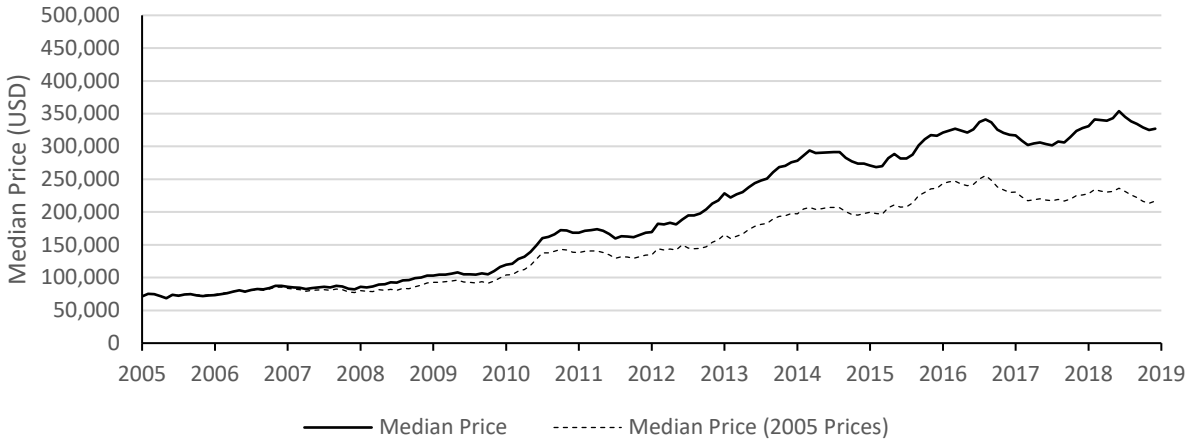

Figure 6: Nominal and real sales price in both districts

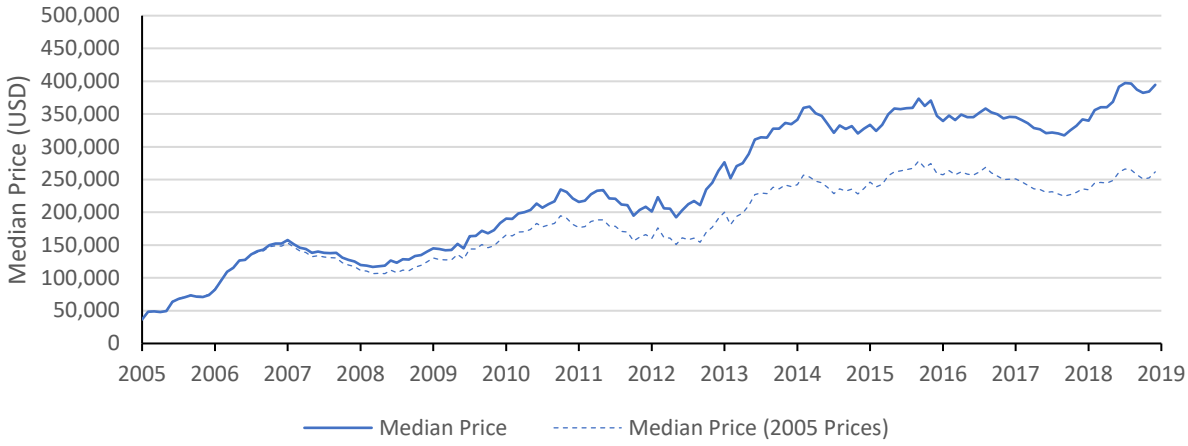

Figure 7: Nominal and real sales price in Moussaitbeh

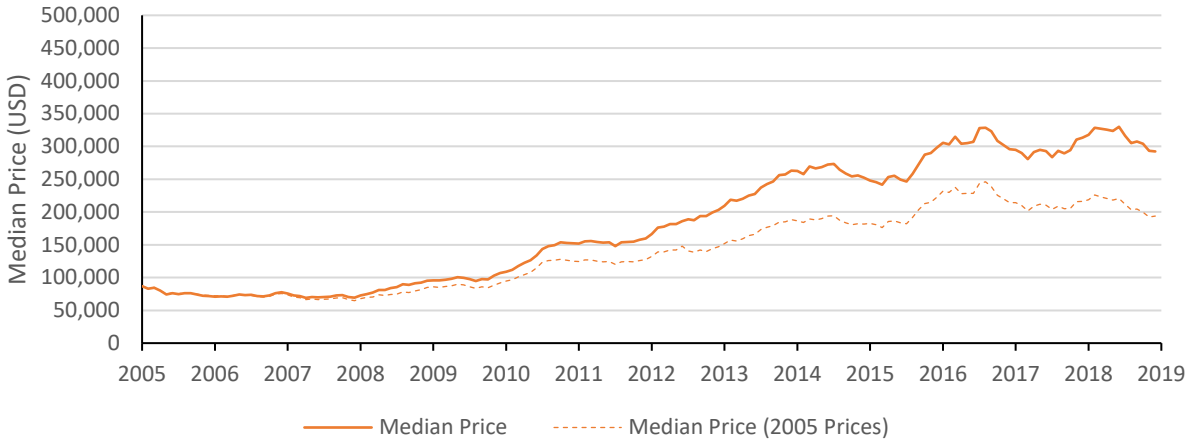

Figure 8: Nominal and real sales price in Achrafieh

Once again, the data reveals a mixed interpretation of what is occurring in the property market. Although median prices fell by almost 8% in 2018, in the long-term, prices have been appreciating at an annual rate of around 11%. Furthermore, Figure 7 and Figure 8 show that both districts have realized increases in value. Prices in Moussaitbeh and Achrafieh have increased at an annual rate of 18% and 9%, respectively. The rate at which this is occurring, however, has slowed down substantially since 2014, with an increase in value of around 20% in a five-year period compared to around 50% in the five years prior. Despite early price gains, in real terms, prices have been relatively flat since 2014, with an increase of just under 2% per year. This is the most visible in Moussaitbeh, where median prices leveled off around $350,000 in 2013 and have largely remained unchanged. Achrafieh, by comparison, hit a price ceiling of 300,000 around 2016.

Overall this analysis demonstrates an inherent price stickiness in the Lebanese real estate market. In both districts, asset prices have been increasing consistently. What this suggests then is that the issue of depressed sales prices is mainly being borne by developers pursuing opportunistic projects that had failed to realize expected returns. This is in comparison to prior property owners that sold at later dates. In Chapter 4, it will be shown that, in fact, property owners have realized consistent returns on their assets over the 14-year time horizon in this dataset.

This analysis suggests that certain segments of the housing sector are performing poorer than others. Given that the Beirut Central District is comprised mainly of larger, more expensive properties, it stands to reason that similar properties in other districts may also be suffering. This can be examined further by disaggregating according to unit size brackets.

3.4: Changes in Buying Behavior

In the previous section, median prices were aggregated by the different districts to show that despite the recent slowdown, prices have increased substantially over the past 14 years. In this section, the data will be aggregated according to different asset classes. The grouping logic used was based on the unit sizes demanded in the market every year.

By plotting the distribution of areas on an annual basis, it can be seen that the types of spaces demanded have been relatively steady:

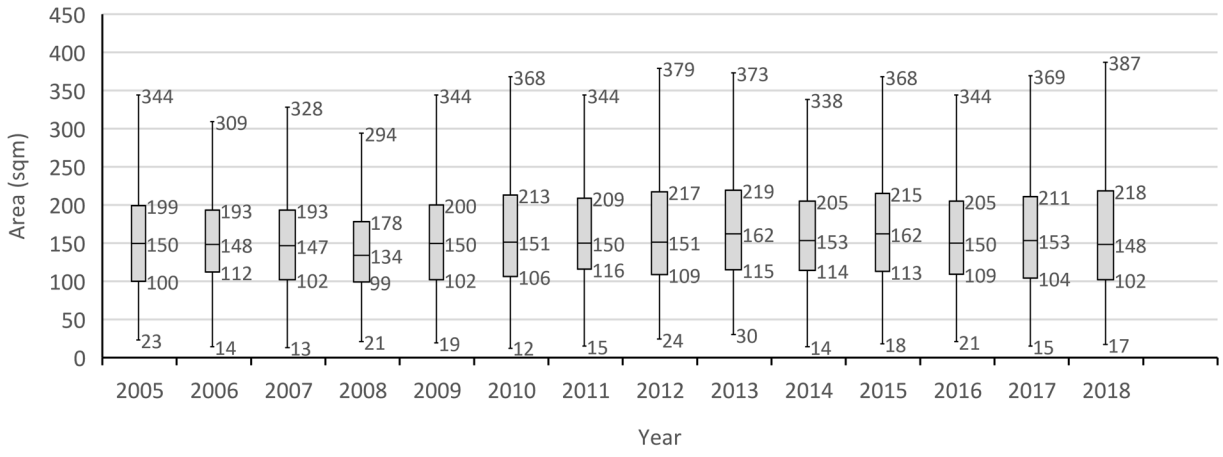

Figure 9: Distribution of Areas Across Years

Figure 9 shows that the biggest fluctuations are in the fourth quartiles, reflecting inconsistent demand for larger properties but an otherwise consistent market in terms of the area demanded. What this means is that the different quartiles can be used as a basis for further analysis of the price behavior of different unit types. For Figure 10, the residential sales have been separated into four categories representing the different area quartiles in the dataset. The table below summarizes these categories based on the average quartile values:

Category	Area (sqm)
Lower	Smaller than 110
Lower-Middle	110 > Area > 160
Upper-Middle	160 > Area > 210
Upper	Larger than 210

Table 2: *market segments determined by the distribution of areas of annual sales*

The median price for these categories was then mapped over the timeframe to show how the different segments of the residential market have been performing:

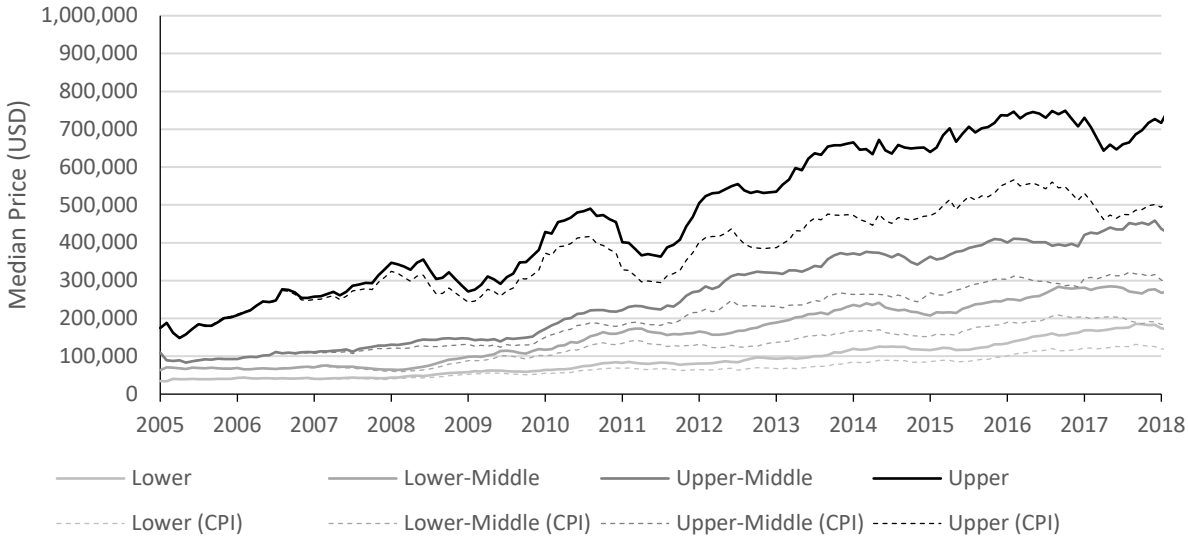

Figure 10: Prices movement by area quartile

As Figure 10 shows, larger properties surged in value between 2005 and 2013 as developers devoted efforts to the construction of luxury units. However, by 2013, units with areas exceeding 200 sqm hit a ceiling for the prices they could command.

The over-representation of luxury real estate and the stagnation of property prices in the upper quartiles reinforces one of the central issues within this environment in the real estate sector. The table below summarizes the change in value between the different asset classes between 2014 and 2018.

	Nominal Prices				Real Prices			
Year	Lower	Middle (L)	Middle (U)	Upper	Lower	Middle (L)	Middle (U)	Upper
2014	119,893	235,529	371,883	665,599	85,058	167,095	263,831	472,207
2018	173,610	267,748	437,255	716,905	119,596	184,445	301,214	493,858
%	45%	14%	18%	8%	41%	10%	14%	5%

Table 3: Showing the returns on different unit sizes.

As the table shows, after 2014, units larger than 200 sqm experienced the lowest price growth as they grew further out of the reach of potential homeowners. Smaller, more affordable units, by comparison, showed more consistent demand and less volatility and have not been as adversely affected by events such as the start of the Syrian civil war in 2011 and the oil price crash in 2014. In response to this, some developers have recently begun building smaller units or subdividing existing ones to meet the purchasing power of the local buyers.[23]

3.5: Strong Growth

Long term, the property market is experiencing steady appreciation in value. As a final look regarding price movements, the median price per square meter has been plotted.

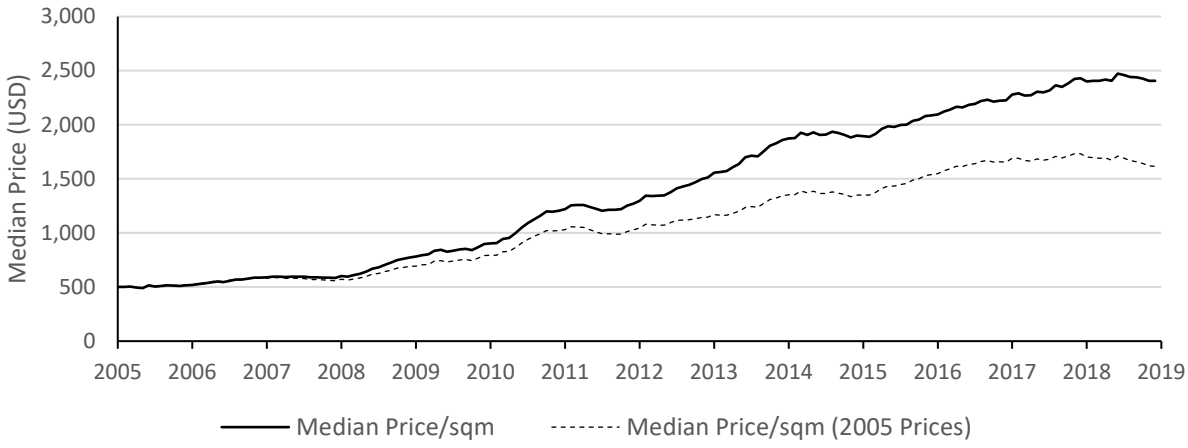

Figure 11: Median price per square meter

Despite the volatility in the region, properties continue to become more and more valuable with the passage of time. Part of the reason why this may be the case is due to a slowdown in the supply that is being added to the market in conjunction with an increasing population.

[23] "Lebanon Real Estate Sector: Short-Term Pain, Long-Term Gain" (Bank Audi, October 3, 2018), 9.

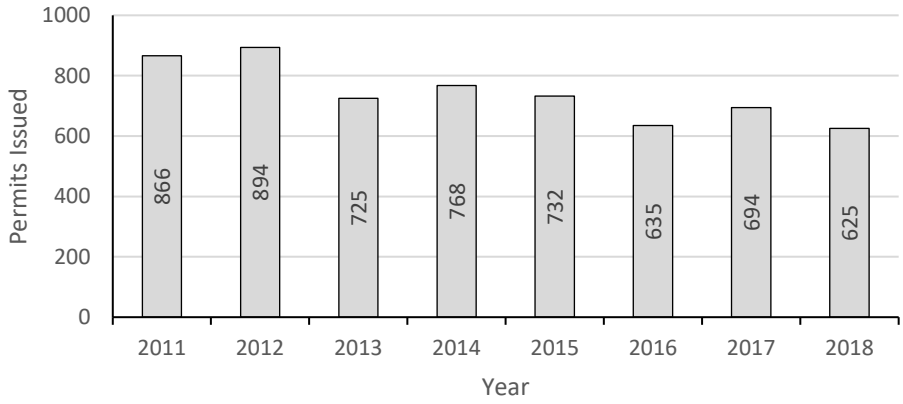

Figure 12: Number of new building executions in Beirut[24]

As Figure 12, sourced from the Order of Engineers and Architects, shows, the plateauing of prices in the Beirut housing market coincides with an increased reluctance by developers to bring new supply onto the market. By comparison, the demand for housing has continued to grow.

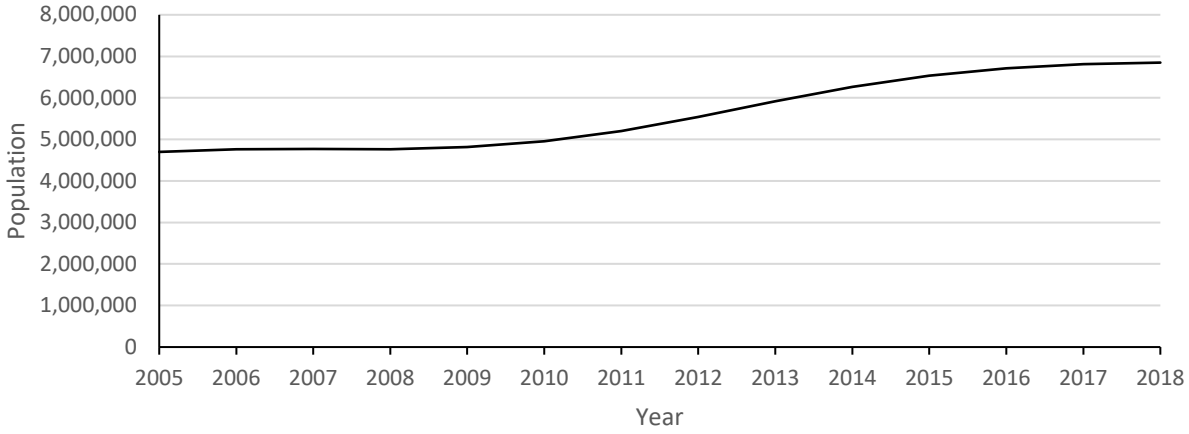

Figure 13: Population in Lebanon

Within the timeframe of the dataset, the population in Lebanon has increased by almost 50% to 6.082 million people driven primarily by the influx of Syrian Civil War refugees after 2011. With almost a third of the Lebanese population residing in Beirut and an average household size of around 4.3 individuals, this means that within this timeframe, over 150,000 units would have needed to be added to accommodate the increased population. With a total of just under 6,000 new project executions within this timeframe, the data suggests that demand has exceeded supply, and as such, prices are naturally going to increase to accommodate the shortage of housing.

[24] Data provided by the Order of Engineers and Architects as part of their annual reports on building permits, "تقارير سنوية لرخص البناء إنقابة المهندسين بيروت," accessed October 2019, https://www.oea.org.lb/Arabic/Listing-Files.aspx?pageid=133&FolderID=13.

3.6: Thoughts

Based on the analysis in this chapter, it can be concluded that the slowdown in the real estate sector is mostly isolated to a particular segment of the housing market. Although no data is available regarding the Beirut Central District, based on the performance of similar properties in other districts, it can be inferred that the most at-risk segment is the one targeting upper-income households. Indeed, the data shows that both transaction volume and median prices have been increasing outside the Beirut Central District, despite stagnation in sales prices in the final five years.[25]

Whereas transaction volume has been holding steady if not increasing in individual districts, prices in the market are mainly being bolstered by a combination of factors on the demand and supply side. On the one hand, transactions of smaller units have maintained the flow of capital into the sector. On the other hand, the amount of space entering the market has decreased as developers decide how to deal with the political and economic climate, restricting supply amidst increasing demand and bolstering prices further. In the next chapter, it will further be shown that returns on reversion for prior real estate owners have been consistently positive.

[25] As the data represents only two districts, this conclusion should be taken with caution as it as was demonstrated that different districts have experienced varying degrees of price change throughout the timeframe.

Chapter 4: Constant Quality Index

4.1: Introduction

The previous chapter looked at some metrics for the real estate market. It was shown that despite short term concerns, the market has been performing relatively well overall. In this chapter, the dataset will be used to construct a price index using two methods that will measure the return on assets in this timeframe. This index will then be used to identify the returns upon reversion for existing owners and how they may have changed over time in response to economic and political activity.

4.2: Methodology & Considerations

The index is constructed based on the hedonic approach and the repeat sales approach. In the hedonic approach, a single regression model is estimated on the entire transaction database. The sale prices are regressed onto the properties' hedonic attributes along with a set of time dummy variables corresponding to the historical periods in the price index. The regression's estimated coefficients on the time dummy variables capture the relative changes in the 'average' cumulative price level over time, and the index is constructed by exponentiating these coefficients[26].

The repeat sales method follows a similar logic. However, in this scenario, rather than constructing variables for the different attributes of the property, every property is assigned its own dummy variable. Doing so allows for any variation associated with the property to be captured in a single variable. Naturally, this provides no generalizable information that could potentially be used to predict the value of a property based on its characteristics, but it does more effectively allow for the isolation of the time effect on the change in the value of the properties in the dataset.

One limitation of these methodologies is the simplification of returns as they do not account for imputed rent and home mortgage interest deduction, both of which are included in profit/loss considerations for investment purposes. However, rents are mostly private transactions in Beirut, and at the time of writing, there is no registry to record rent information. Rents are typically within 3-5% of the value of the property,[27] but given the difficulty in determining what properties were rented in this time frame, rents are excluded from the returns model.

4.3: Data preparation

The first step was to identify the properties that have been sold more than once in this timeframe. Although the ownership and location of the properties have been anonymized, the database itself uses a simple system to register a new owner. The property's characteristics in the database are unaltered except in the case of a renovation. Given that the index will track changes in value, holding all other housing characteristics constant, this does not affect the methodology for identifying repeat sales. Therefore, finding properties that could be included in the index simply involved querying the dataset for matching entries. Based on this, 4,008 transactions were identified, representing properties that were sold more than once.

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[26] Europäische Kommission, ed., *Commercial Property Price Indicators: Sources, Methods and Issues*, 2017 edition, Statistical Reports / Eurostat (Luxembourg: Publications Office of the European Union, 2017), 59.
[27] According to BankMed's 2014 real estate report, "Analysis of Lebanon's Real Estate Sector" (BankMed, February 7, 2015), 10.

4.4: Selection of Properties

Having selected the properties that have been traded more than once, the next step was to identify any anomalies in the data that may affect the construction of the indices. Three changes were made to the dataset in order to remove outliers and transactions that may skew the results. The first of these is the selection of transactions that represent full sales. In order to keep things consistent between the different observations, only properties where all 2,400 shares have been purchased and sold were considered.

Even though the properties that have been entirely transacted have been selected, there are still some properties that have changed hands an unusual number of times. The table below summarizes the frequency of the number of transactions:

Times Property Traded	Frequency
2	1,160
3	119
4	16
5	4
6	4
9	1
11	3
13	1
14	1
16	1
18	1
21	1
37	1

Figure 14: Distribution of the number of transactions

Based on this table, properties that have been traded more than four times were removed from the dataset. Finally, since the purpose of the price index is to evaluate returns on real estate, it makes sense to first look at the distribution of the annualized returns on the properties selected. The graph below shows the distribution of the returns on the sales of existing properties:

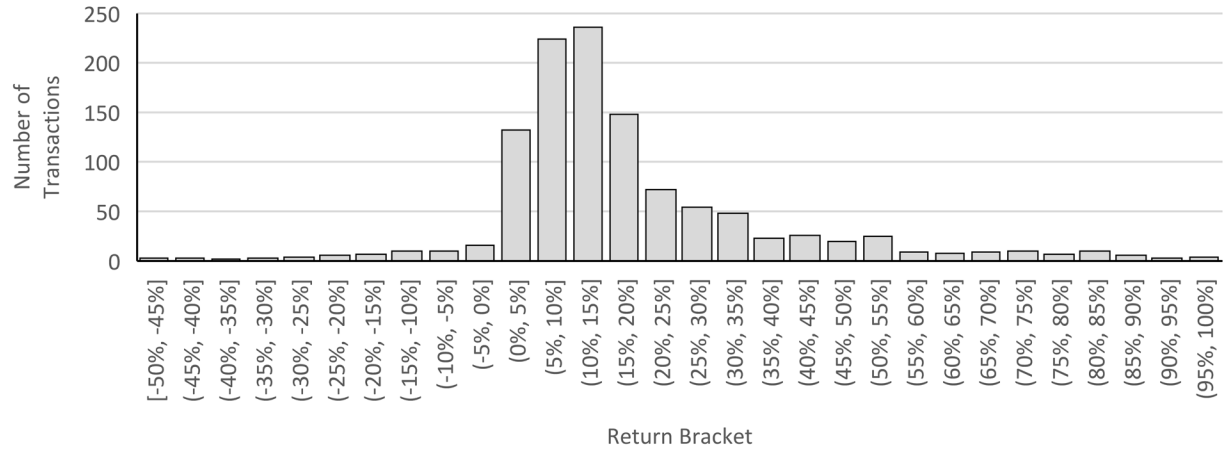


Figure 15: Distribution of annualized returns on real estate sales

On average, when properties are sold at a profit, a return of around 10% is the most common. There is a substantial discrepancy between the mean and median, and the standard deviation seems to indicate that there are some properties that traded for exorbitant returns. In order to prevent these transactions from creating noise, properties that generate returns larger than one standard deviation from the mean were culled from the final dataset. The table below sums up the mean, median, and standard deviation before and after the transformations. With these changes in place, the final dataset is then ready to construct the indices.

Mean	67%	38%
Median	17%	16%
Standard Deviation	304%	52%

Table 4: Mean, median, and standard deviation of annualized returns

4.5: Hedonic Index

For the hedonic index, the next step was to extract information about the property characteristics that would be used in the regression. A language processing application was constructed to achieve this by analyzing the description of the property in Arabic. The application compared the words in the description to a dictionary for each of the categories that were added. These categories comprise features of the property, such as the number of bathrooms and bedrooms and other special features such as salons, balconies, and extra storage space. An extract of the results of this application can be seen below with some of the variables that were selected:

Unit Description	Bedrooms	Bathrooms	Salon	Balconies
unit 10: entrance, salon, dining room, kitchen, three bedrooms, one bathroom, maid's room, three balconies	3	1	1	3
unit 99: entrance, salon, dining room, three bedrooms, a kitchen, three bathrooms, three balconies	3	3	1	3
unit 19: entrance, salon, dining, two bedrooms, a kitchen, two bathrooms, two balconies	2	2	1	2
unit 28B: entrance, salon, dining room, kitchen, three bedrooms, three bathrooms, three balconies	3	3	1	3
unit 10: entrance, foyer, two salons, dining room, living room, four bedrooms, kitchen, maid's room, four bathrooms, two balconies	4	4	2	2
unit 10: entrance, two salons, dining room, kitchen, three bedrooms, laundry room, four bathrooms, four balconies	3	4	2	4
unit 15: entrance, foyer, dining room, kitchen, two bedrooms, one bathroom, three balconies	2	1	0	3
unit 20: entrance, two bedrooms, kitchen, study, two bathrooms	2	2	0	0
unit 7: entrance, salon, three bedrooms, a kitchen, two bathrooms, four balconies	3	2	1	4
unit 4A: entrance, two salons, dining room, four bedrooms, a kitchen, three bathrooms, laundry room, three balconies	4	3	2	3

Table 5: Implementation of the language processing application to extract property characteristics

As described above, the price of the sale is regressed onto these variables and dummy variables created from the dates of the sales. Different timeframes result in varying degrees of volatility and are plotted below to show the difference in volatility between different timeframes:

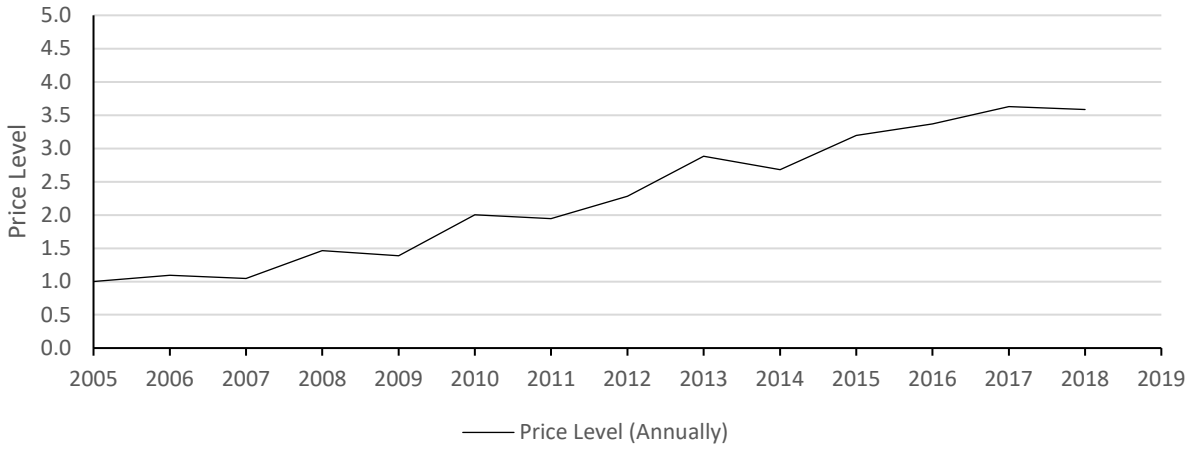


Figure 16: Hedonic index (annually)

Figure 17: Hedonic index (quarterly)

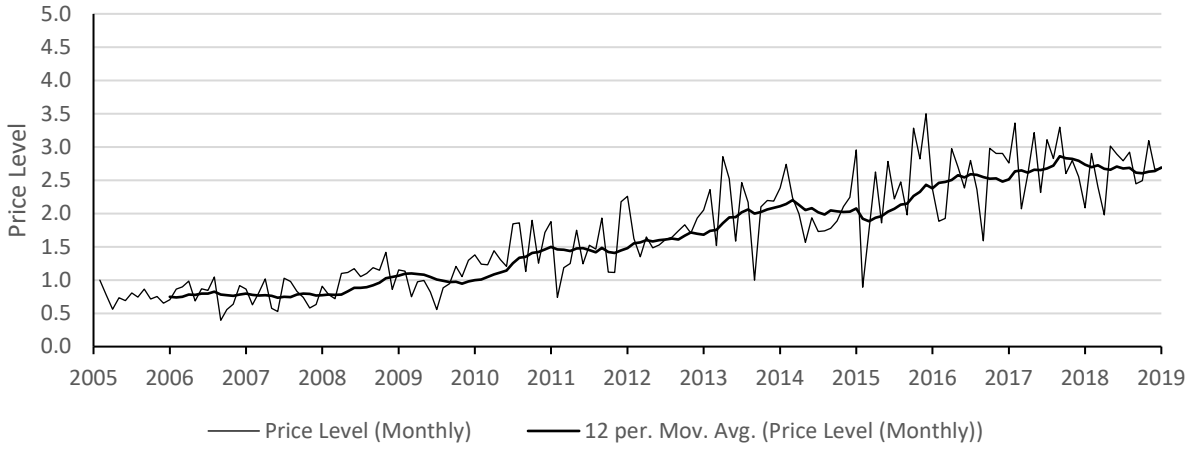


Figure 18: Hedonic index (monthly)

The figure below combines the above plots to compare the difference in volatility between the different models:

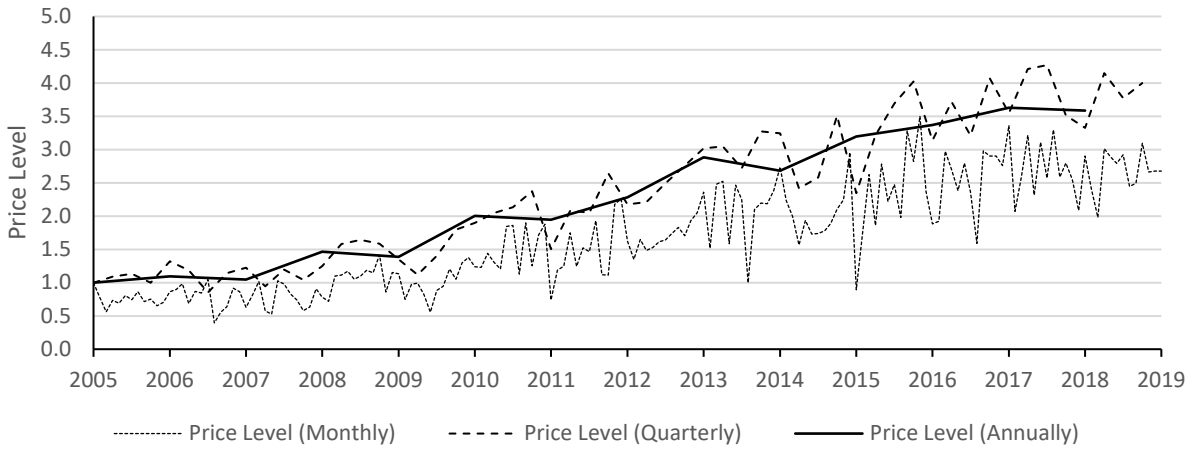


Figure 19: Hedonic index (combined)

It is immediately apparent that each time period communicates something different about the volatility of the residential market. The mean, standard deviation, and the first-order autocorrelation[28] for the different time periods are used to quantify this. These figures are calculated off the change in the index between one period to another or the return between one timeframe and the next. Thus, the mean is an indication of the average return between each month, quarter, and a year respectively, whereas standard deviation and autocorrelation are a measure of the volatility in returns. A summary of these figures can be seen below:

	Monthly	Quarterly	Annually
Mean	1.00%	6.41%	19.90%
Standard Deviation	50.61%	41.74%	27.88%
Autocorrelation	-0.46	-0.48	-0.52

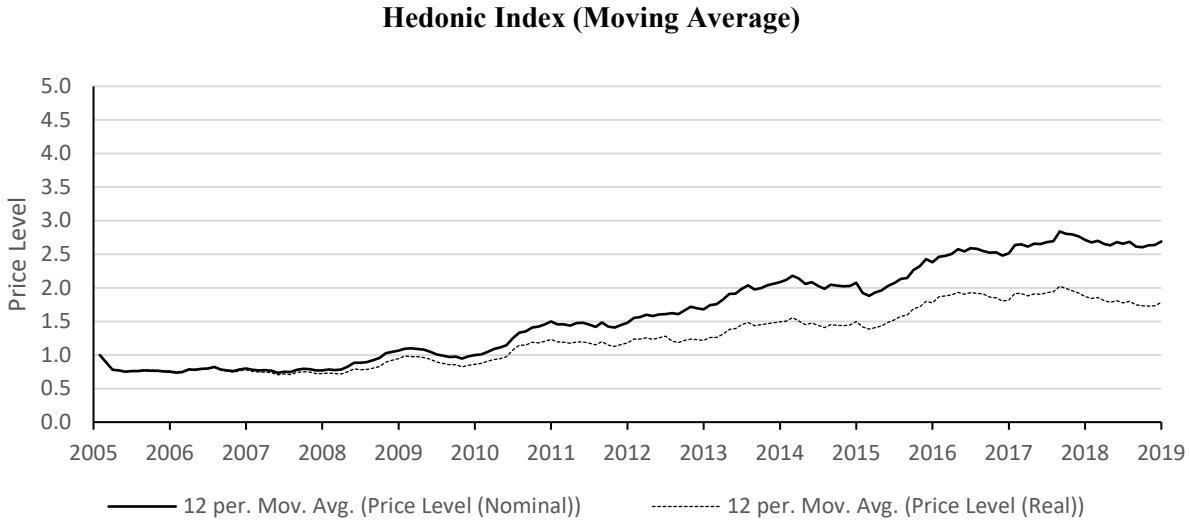
Table 6: Mean, median, and standard deviation of the hedonic indices

As expected, the average change in returns between time periods varies proportionally to the different periods within which the index is being constructed. The higher standard deviation on the monthly and quarterly indices indicates that it may be too volatile to provide insights into the mechanics of the market. It would be expected that the annual model is the least noisy. However, the negative autocorrelation for all timeframes suggests that either the market is pretty volatile. One way to get around this would be to apply some kind of smoothing to get a more useful model.[29]

[28] First order autocorrelation is the correlation between the change in the index at time t and the change at time t-1. It is a measure of stable returns are between periods. Numbers closer to 1 indicate consistent returns whereas numbers closer to -1 indicate more volatile behavior.

[29] The negative autocorrelation for the annual index may be a result of too few data points as opposed to volatility.

Although regressing the data against more extended time periods yields smoother indices, none of these models really give an idea of nuances in price movement. A more detailed price index was achieved by taking a window of 12 observations to smooth the time variables obtained from the monthly regression. The price index can also be adjusted to reflect the changes in purchasing power. This index suggests that over the timeframe of the dataset, investors in real estate doubled their investments when values are adjusted to reflect CPI. It is important to note that these returns are gross of capital expenditures as there is no information reflecting spending on property maintenance and improvements in the database. The addition of capital expenditures would decrease returns.



4.6: Repeat Sales Index

In comparison to the hedonic price method, the repeat sales method is more straightforward. As described, the different properties are assigned their own variable to isolate any variation in price that may be associated with characteristics of the property. These variables, along with the time dummies, are then regressed, and the coefficients are plotted to build the index. Like the hedonic model, different time dummies were used to compare the volatility at different timeframes. Below are the different models for the regression taken on a monthly quarterly, and annual basis:

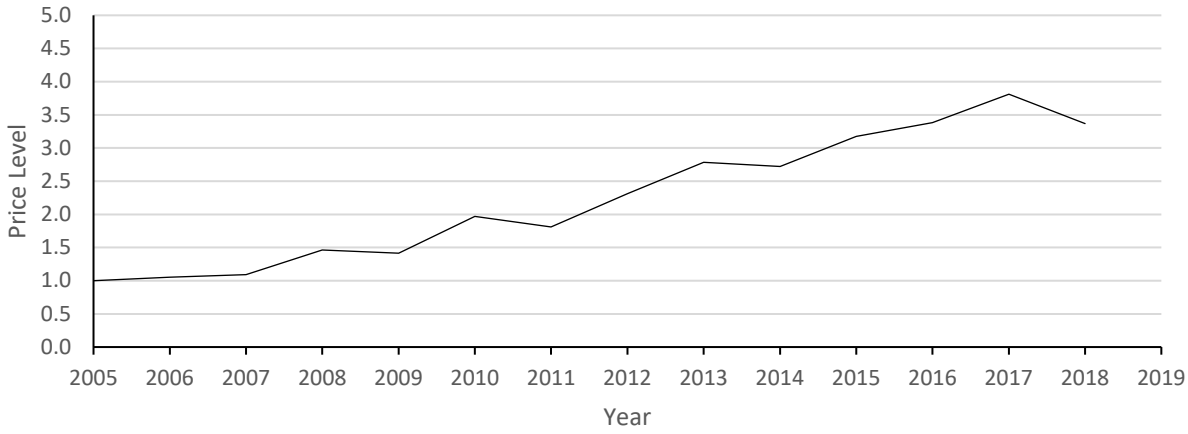


Figure 20: Repeat sales index (annually)

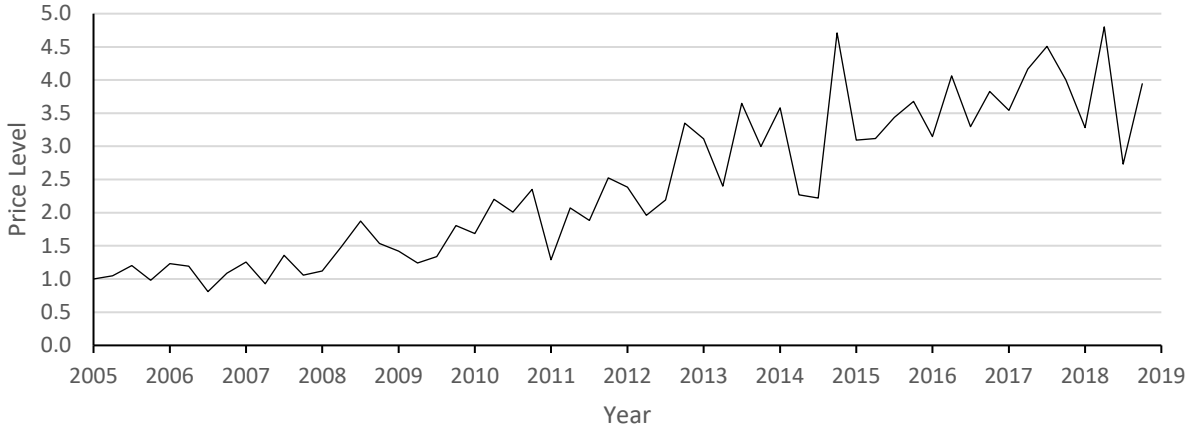


Figure 21: Repeat sales index (quarterly)

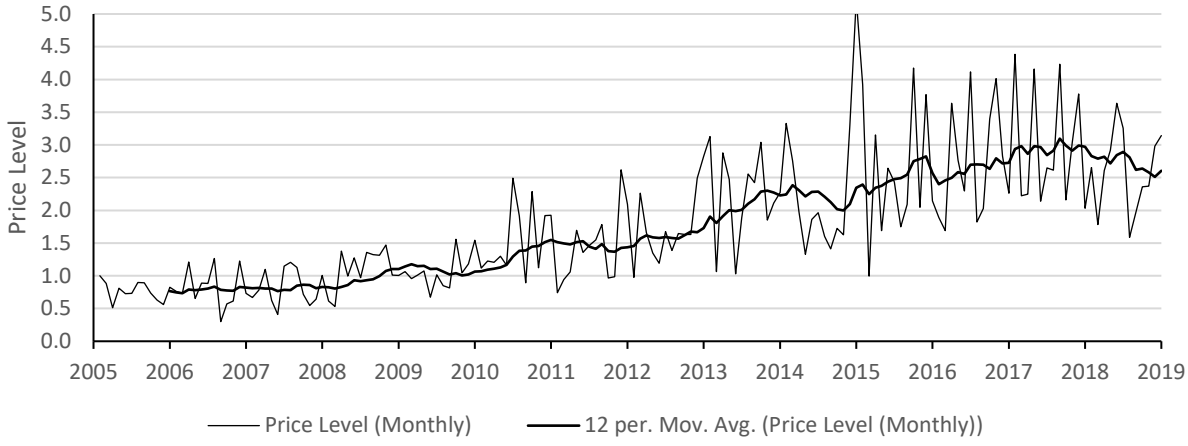


Figure 22: Repeat sales index (monthly)

Again, there are varying degrees of volatility between the different timeframes, and none of them really provide a detailed enough image of the reaction of the real estate sector to different events. The combined chart is below for reference. As with the hedonic index, the different statistics associated with returns are used to measure the effectiveness of each model.

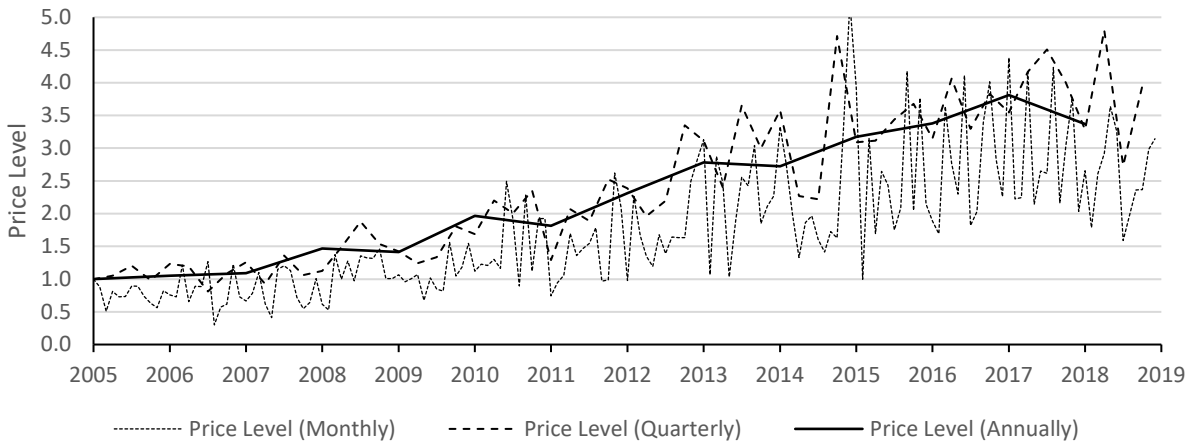


Figure 23: Repeat sales index (combined)

	Monthly	Quarterly	Annually
Mean	1.28%	5.35%	18.21%
Standard Deviation	89.16%	75.13%	30.93%
Autocorrelation	-0.44	-0.59	-0.63

Table 7: Mean, median, and standard deviation for repeat sales indices

Again it can be seen that the mean adjusts proportionally according to the timeframe that is being modeled and that there is a high degree of volatility as suggested by both the standard deviations and the first-order autocorrelation.

The coefficients at the monthly level are then smoothed in the same way as the hedonic indices, by taking and a moving average with a 12-month window:

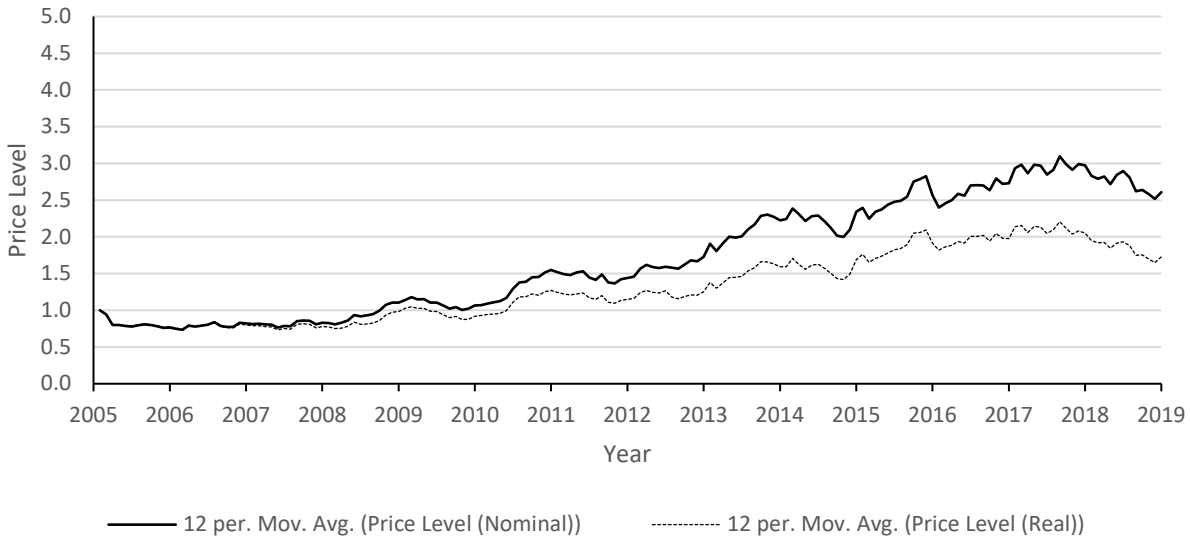


Figure 24: Repeat sales index (moving average)

4.7: Model Comparison

Regardless of the methodology used, both indices show the same outcomes characterized by returns of around 8.5% per year over the 14 years in the dataset. Previously the mean, standard deviation, and first-order autocorrelation of the two indices were calculated. The table below summarizes these figures across the two indices for comparison.

	Hedonic Method			Repeat Sales		
Period	**Monthly**	**Quarterly**	**Annually**	**Monthly**	**Quarterly**	**Annually**
Mean	1.00%	6.41%	19.90%	1.28%	5.35%	18.21%
Standard Deviation	50.61%	41.74%	27.88%	89.16%	75.13%	30.93%
Autocorrelation	-0.46	-0.48	-0.52	-0.44	-0.59	-0.63

Table 8: Comparison of metrics for hedonic and repeat sales indices

In summary, the mean on both indices is very much similar, indicating that both methods are equally viable. Specifically, there is a correlation of 0.94 between the price level movement of the hedonic index and that of the repeat sales index. The volatility of the different indices is also very similar, with the notable exception being the standard deviation of the monthly and quarterly hedonic index, which is much higher than that of the repeat sales.

Three periods stand out when looking at the indices. The first of these is between 2005 and 2008 and revolves around the political uncertainty surrounding Hariri's assassination, the Summer War of 2006, and the string of other assassinations that took place in that timeframe. The second period is around 2011 and is primarily centered around the beginning of the Syrian civil war. The final period arguably begins around 2013 and is attributed to decreasing investment interest from the Arabian Gulf states.

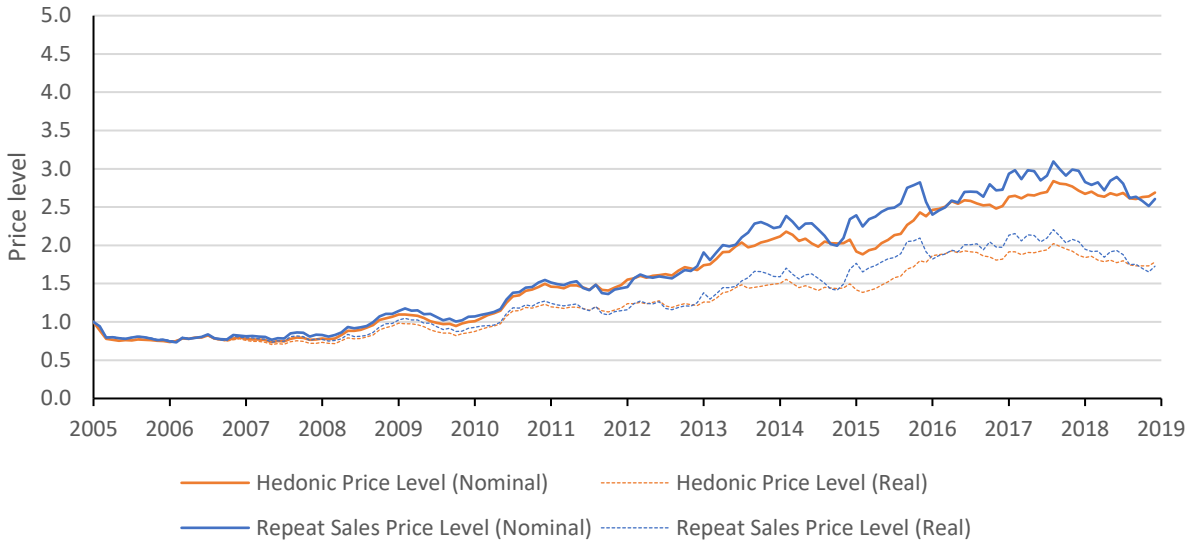


Figure 25: Comparison of hedonic and repeat sales indices

Finally, the models also suggest that the rate of increase has been slowing. Whereas prices tripled in the period between 2005 and 2013, it would take the remainder of the timeframe to realize a 30% return.

Chapter 5: Commentary

5.1: Introduction

In the previous chapters, different models were put forth representing the health of the Lebanese real estate market. The number of transactions and average prices of the sales were mapped over time using the data. It was shown that although median sales prices stagnated in the last five years, transactions have been recovering, albeit in certain areas. It was also shown that different sectors of the residential market have been performing better than others, with prices of smaller units exhibiting less volatility and consistent price increases over the timeframe. Finally, two models representing the returns on real estate were built.

The conclusion is that for existing property owners, disregarding capital expenditures that may have gone into the property, real estate has yielded steady returns. By comparison, developers seeking opportunistic returns have found it challenging to meet their investment goals. This chapter provides a commentary on the different factors that have affected the real estate market in Beirut, examining the political and economic climate that influenced investment in real estate and homeownership. Among these are the ramifications of the Horizon 2000 initiatives that indebted the country, limiting future public expenditure to service debts and preventing subsidies from reaching potential homeowners.

In addition to local economic issues, the political climate in the region also affected the surrounding Gulf countries, limiting foreign expenditure that Solidere and other developers were relying on. This resulted in an oversupply of luxury housing in the Beirut Central District and adjacent areas on which most of the reconstruction efforts focused.

5.2: Internal Conflict and Policy

The commencement of the property boom in 2005 coincided with the adoption of a new Law of Construction in 2004 that significantly increased the total exploitation of land and allowed for denser constructions. Real estate developers were putting their projects on hold pending the enactment of this law, to benefit from these additions, resulting in a surge of construction beginning in 2005. The targeted clientele were Lebanese expatriates, wealthy foreigners, and Lebanese higher classes, including the real-estate investors and developers themselves.

It would take a while for the new properties to enter the market, and over the next few years, the returns on real estate were flat, reflecting the difficult period the country was going through. 2005 and 2006 were particularly violent, characterized by strings of assassinations of political and journalistic figures. In the summer of 2006, conflict with neighboring Israel also placed pressure on investment in the sector. The index constructed confirms that this period of uncertainty would have lasting effects on the property market as returns would not pick up for another two years following the conclusion of the conflict.

In order to stimulate the sector, the central bank began a subsidization program that reduced interest rates to buyers. The programs were successful, and it is estimated that over 90% of residential property transactions obtain financing through the two main programs provided by the government; the Banque d'Habitat (the Housing Bank) for those with higher incomes, or the Public Corporation for Housing (PCH), for those with lower incomes.[30] This program, along with the new construction law and a brief period of relative peace, spurred the real estate sector to new highs driven mainly by the luxury property

[30] TK Maloy, "A Snag in Lebanon's Residential Subsidy Program Puts Buying on 'Hold' - TK Maloy," An-Nahar, March 12, 2018, https://en.annahar.com/article/772959-a-snag-in-lebanons-residential-subsidy-program-puts-buying-on-hold.

market and capital from the oil-rich states. However, in 2011, uprisings throughout the Middle East and eventually neighboring Syria pushed the Lebanese economy into a period of economic difficulty. Wary of the investment climate in Lebanon, expatriates and foreigners curbed purchases in the country.

5.3: The Syrian Civil War

The beginning of the civil war in Syria in 2011 has had several repercussions on the neighboring countries. In Lebanon, where more than one million Syrians sought refuge, this added further strains to the already precarious social and economic conditions of the country. At this time, the real estate market had already begun to experience a slowdown, and the argument could be made that the ensuing refugee crisis bolstered the weakening real estate market.

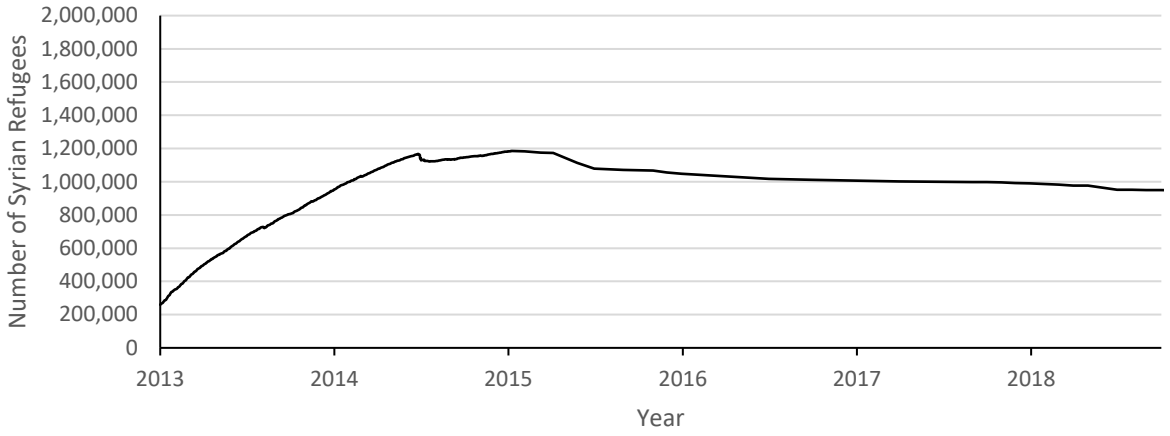


Figure 26: Number of registered Syrian refugees in Lebanon[31]

According to the United Nations High Commissioner for Refugees, it is estimated that of the 950,000 registered refugees in Lebanon, 25% are currently residing in Beirut.[32] The majority of these displaced Syrian nationals opted to rent a property while waiting for the situation to improve in their country, maintaining the demand for real estate and keeping upward pressure on rental prices in Lebanon. In fact, in 2013, Lebanon's average monthly rent at $2,082, was high in comparison to other countries in the region, surpassed only by the UAE.[33]

The shift to the rental economy alleviated the real-estate industry from part of the financial losses due to the slump in sales. Given that a correlation exists between rents and sales, the ongoing increase in rents helped to maintain land and apartment prices at their high level.[34]

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[31] United Nations High Commissioner for Refugees, https://data2.unhcr.org/en/situations/syria/location/71
[32] A detailed breakdown of the number of Syrian refugees residing in Lebanon and how they are distributed can be found on the website of the High Commissioner for Refugees
[33] "Analysis of Lebanon's Real Estate Sector" (BankMed, August 8, 2014) 10.
[34] ibid

5.4: Developer Behavior

With a new series of conflicts in place, capital from abroad began to disappear, and the local market stepped in to relieve the real estate sector. However, the properties that were developed in this timeframe did not reflect the purchasing power of the local population. The argument could be made that the primary source of trouble in the market in 2018 is a direct consequence of this mismatch in supply and demand and a lack of insight into the demographics of the city.

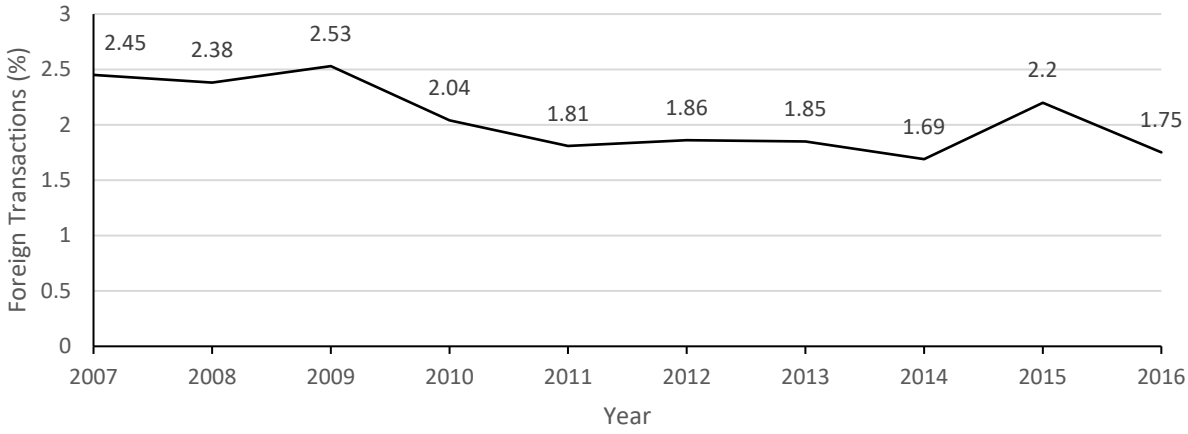

Figure 27: Percent of all real estate transactions made by foreigners

The post-war reconstruction effort, which imagined Beirut as a primary business center, had little to offer the city's poor.[35] With over $1.6 billion initially devoted to the reconstruction of the Beirut Central District, nearly a sixth of the capital budgeted for the reconstruction plan,[36] efforts were skewed away from the demographics in lower-income groups. A lack of affordable housing, a problem that became more acute as squatters were removed for reconstruction was not alleviated in recreated Beirut. Horizon 2000 acknowledged the overall shortage of housing in the city and called for the creation of residential areas for all income levels. The plan, however, offered few details or numbers as to how this would be achieved.

When the boom started in 2005, almost all the supply was life-sized luxury apartments because it was targeting the expatriate and foreign population, which represented just over 2% of all real estate purchases.[37] A large proportion of apartments between 400 and 600 square meters were built[38] as developers didn't investigate the market to determine what the real needs and actual purchasing power were. It is clear from looking at the data that most of the properties that were purchased between 2005 and 2019 were far smaller than what was being added to the overall supply.

[35] Hassan N. Diab, *Beirut : Reviving Lebanon's Past.*, 1999, 2.
[36] Hassan N. Diab, *Beirut : Reviving Lebanon's Past.*, 1999, 2.
[37] "Analysis of Lebanon's Real Estate Sector" (BankMed, August 2014).
[38] Scott Preston, "You Can Build It, but Will They Come?," *Executive*, December 2017, 113.

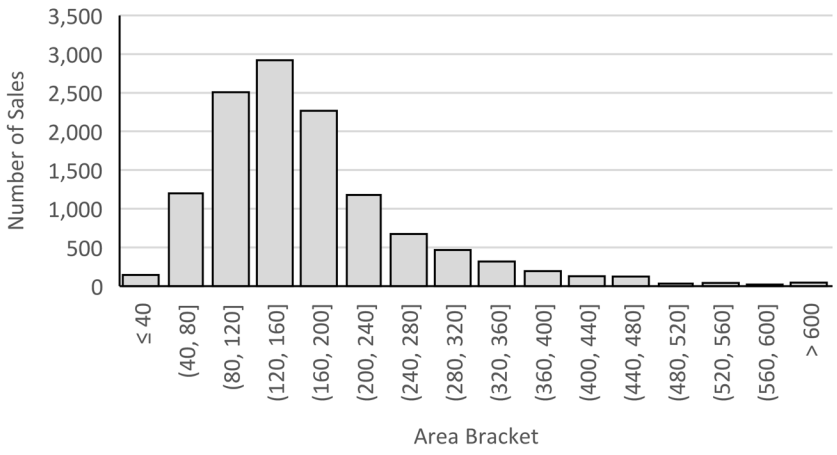

Figure 28: Distribution of Areas

The average size of an apartment that was sold between 2005 and 2019 was around 171 sqm, far below the sizes that developers were placing on the market. In Chapter 3, it was also shown that even in 2018, when prices were at an all-time high, median sales prices were still below $500,000. Furthermore, looking at the distribution of sales values between 2014 and 2018, the middle 50% of all sales were between around $130,000 and $600,000.

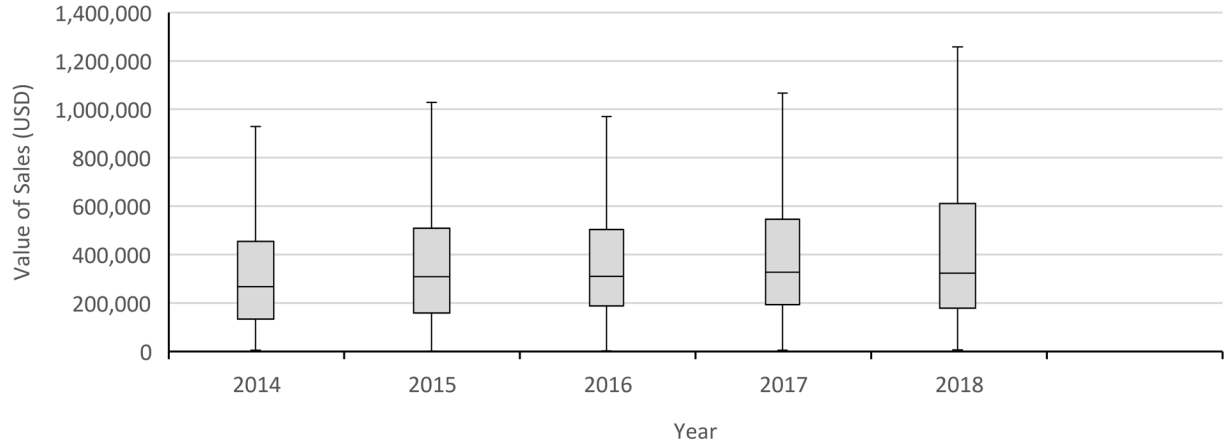

Figure 29: Distribution of sales prices between 2014 and 2018

The new apartments and offices rumored to be sold for several million dollars each then were beyond the means of most residents,[39] whose average annual income is just under $15,000.[40]

[39] Aseel Sawalha, *Reconstructing Beirut: Memory and Space in a Postwar Arab City*, 1st ed, Jamal and Rania Daniel Series in Contemporary History, Politics, Culture, and Religion of the Levant (Austin: University of Texas Press, 2010), 61.
[40] Edwin Saliba, Walid Sayegh, and Talal Salman, "Assessing Labor Income Inequality in Lebanon's Private Sector" (United Nations Development Programme, February 2017).

The misalignment with demand thus meant that the development strategy was short-lived, and the legacy of the boom years was an overabundance of luxury residences, especially in the downtown area, often with a price tag of over a million dollars.

5.5: Economic Issues

Exacerbating the problem further is the relative weakness of the Lebanese government, which is ill-equipped to deal with the present challenges. The financial stress of post-Taif Accord reconstruction left the Lebanese government with a debt burden that makes it very problematic for it to either commit its own financial resources to reconstruction or engage in further borrowing.

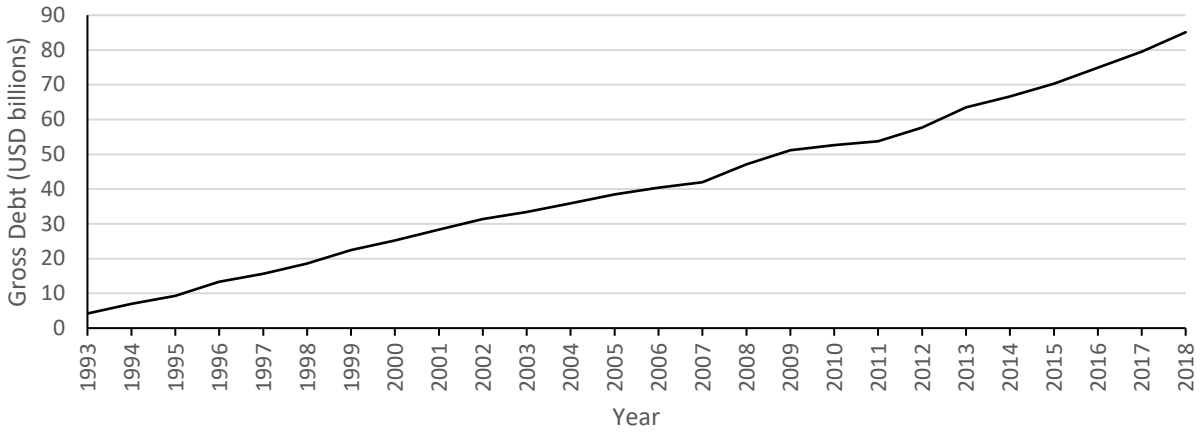

Figure 30: Gross public debt in Lebanon

Initially, massive state spending had led to strong growth driven by a boom in construction that saw GDP increase by 8% in 1996. However, copious financing through domestic and international loans caused massive indebtedness draining the country's public resources in the years that followed. In order to combat this, the Lebanese government shifted the responsibility of reconstruction to the private sector but provided subsidized loans to stimulate investment in real estate.

The July War of 2006 further aggravated the public debt crisis. The conflict resulted in a great deal of destruction and renewed the post-war reconstruction process at a time when the country had barely recovered from a brutal Civil War that had ravaged it for 15 years.[41] According to the Council for Development and Reconstruction, direct damage to civilian infrastructure and industries was estimated at some $3.6 billion. Indirect economic loss, including those resulting from the loss of foreign investment, and the cost of stabilizing the currency, places the total cost to the country at estimates as high as $15 billion.[42]

[41] Howayda Al-Harithy, *Lessons in Post-War Reconstruction : Case Studies from Lebanon in the Aftermath of the 2006 War.*, 2010, 2.
[42] Howayda Al-Harithy, *Lessons in Post-War Reconstruction : Case Studies from Lebanon in the Aftermath of the 2006 War.*, 2010, 5.

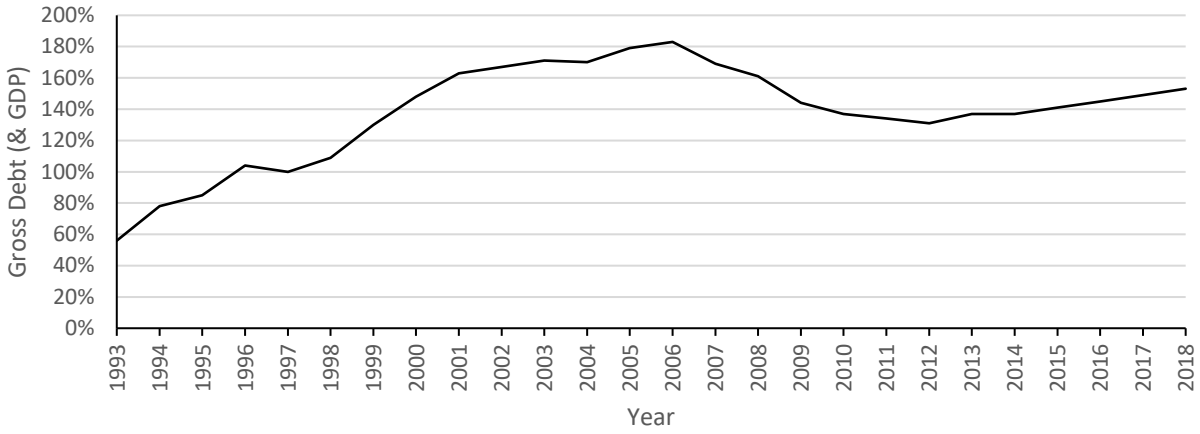

Figure 31: Lebanese public debt as a percentage of GDP

With Lebanon's total public debt at $74.5 billion as of 2018, more than 150% of the country's GDP, debt service obligations have completely absorbed any government revenue increases. Reflecting Lebanon's financial troubles, yields on government bonds, which had increased to 8.7% after Hariri's assassination, remain very high. These debts levels, as well as increased levels of political risk, are both expected to limit future lending potential severely. In this context, any additional borrowing is likely to be devoted to rolling over existing debt, capping the potential for future independent financial commitments to reconstruction on the part of the Government of Lebanon.

The relative weakness of the Lebanese economy has also meant that salaries have not been able to keep up with costs, especially in the real estate market. In Chapter 2, it was shown that real estate prices had increased by almost 11% per annum. By comparison GDP per capita according to the World Bank has remained relatively unchanged since 2009:

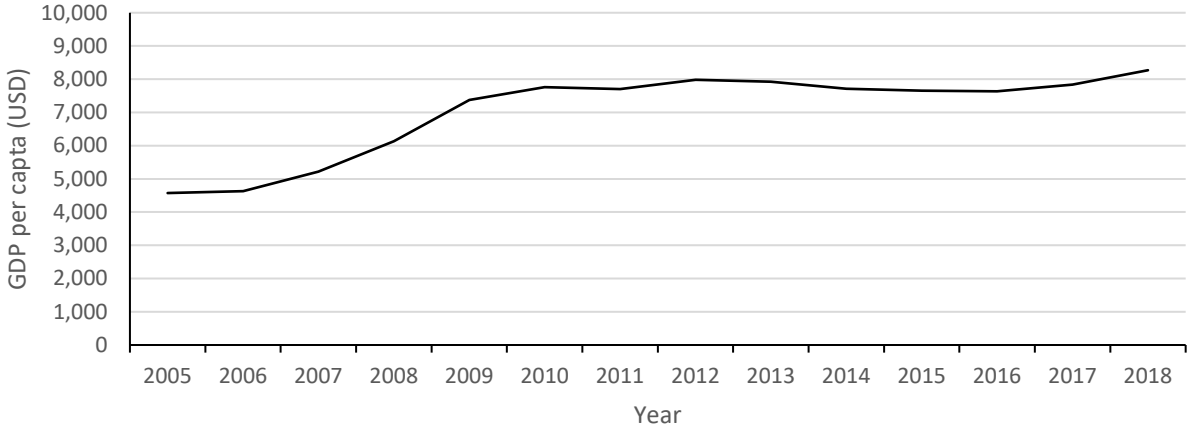

Figure 32: GDP per capita in Lebanon has been not grown since 2009

Chapter 6: Returns on Other Investments

6.1: Interest rates and returns on real estate

In Chapter 4, a price index was built to establish a long-term view about returns in the real estate sector, and it was shown that long-term investments in the real estate sector have been positive. In this chapter, the returns on real estate will be compared to other investment alternatives in the market. In addition, real estate price movements will be compared to those in other countries in the region.

The first thing is to establish a base point for expected returns. The capital asset pricing model forms the basis for expectations regarding returns on investment. The model describes the relationship between systematic risk and expected returns and accounts for the fact that investors expect to be compensated for the time value of money as well as the inherent risk in the investment. It can be summed up as:

$$ER_i = R_f + \beta_i(ER_m - R_f)$$

In this case, R_f represents the risk-free rate, which is the point of comparison. Investors that look to deploy capital in the real estate market would expect to receive a premium on their returns. Below is the average interest rate paid by the local banks on deposits in the Lebanese lira, which is assumed in this case to represent the risk-free rate.

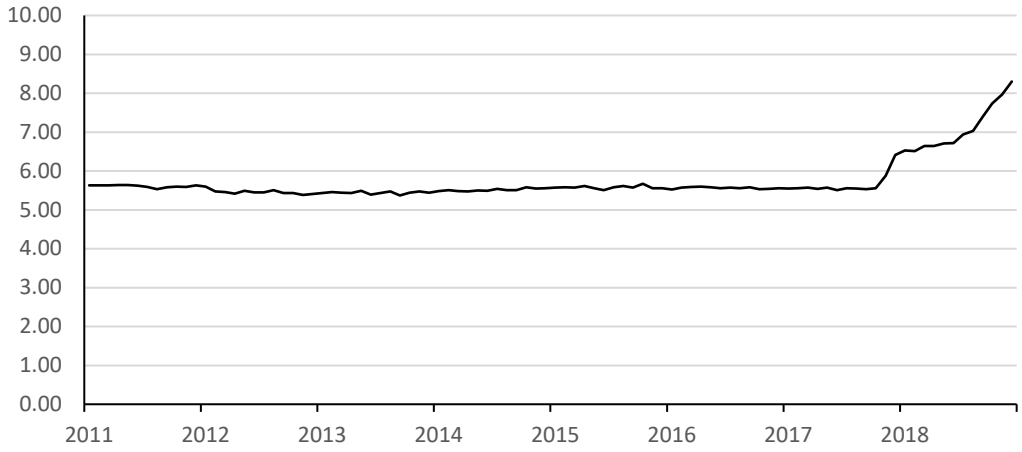

Figure 33: Average interest rates on the lira[43]

Already it can be seen that interest rates are relatively high in comparison to the returns on real estate. In this period, interest rates on deposits in the lira ranged between 5.63% and 8.30%. By comparison, the previous chapters established an average return on real estate of around 8.5%. This is low in comparison to the risk-free rate offered in the banks and weakens the incentive to invest in real assets. At the same time, high interest rates make it difficult for developers to take on debt to finance any new projects creating further impediments to the growth of the sector as viable development projects become more and more scarce. Outside of interest rates on deposits, other fixed assets offer even more lucrative rates.

[43] "Average Interest Rate on LBP Deposits - LBP Accounts - Financial - Lebanon - BRITE," accessed December 2019, https://brite.blominvestbank.com/series/Average-Interest-Rate-on-LBP-Deposits-3256/.

6.2: Government Treasuries

Traditionally, the safest investments outside of returns on bank deposits tend to be government-issued securities. In 2018, the Lebanese government estimated that 80% of the new Eurobond issue went to local investors, and 20% to international investors[44] demonstrating their ubiquity in local investment. Several securities are offered with varying investment horizons and minimum investment requirements.

Lebanese Republic Bonds	Coupon Rate	Bid	Ask	Issue Date	Bid Yield	Ask Yield	Average Life (years)
28 Nov 19	5.45%	98.875	99.625	28 Nov 11	8.87%	6.55%	0.3
09 Mar 20	6.38%	97.975	98.750	09 Mar 10	10.24%	8.50%	0.6
14 Apr 20	5.80%	96.750	97.750	14 Apr 14	10.66%	9.13%	0.7
19 Jun 20	6.15%	96.000	97.000	20 Jun 13	10.98%	9.74%	0.9
12 Apr 21	8.25%	94.000	95.000	12 Apr 06	12.24%	11.55%	1.7
27 Mar 22	6.25%	86.625	87.625	27 May 16	11.95%	11.49%	2.8
04 Oct 22	6.10%	85.500	86.500	12 Nov 10	11.68%	11.26%	3.2
27 Jan 23	6.00%	84.000	85.000	29 Nov 12	11.71%	11.32%	3.5
26 May 23	6.40%	84.125	85.125	27 May 16	11.66%	11.29%	3.8
22 Apr 24	6.65%	82.375	85.375	22 Apr 16	11.59%	11.27%	4.7
04 Nov 24	6.25%	79.750	80.750	04 Nov 15	11.48%	11.18%	5.3
03 Dec 24	7.00%	82.000	83.000	03 Dec 09	11.61%	11.32%	5.3
26 Feb 25	6.20%	79.875	80.075	26 Feb 15	11.14%	10.86%	5.6
12 Jun 25	6.25%	79.875	80.075	12 Jun 12	10.99%	10.72%	5.9
27 Nov 26	6.60%	78.875	79.875	28 Nov 11	10.855	10.62%	7.3
23 Mar 27	6.85%	79.250	80.250	23 Mar 17	10.92%	10.69%	7.7
29 Nov 27	6.75%	78.125	79.125	29 Nov 12	10.97%	10.58%	8.3
20 Mar 28	7.00%	81.250	82.250	20 Nov 17	10.33%	10.13%	8.6
03 Nov 28	6.65%	78.375	79.375	04 Nov 15	10.33%	10.13%	9.3
25 Mar 29	6.85%	77.625	78.625	27 May 16	10.56%	10.37%	9.8
26 Feb 30	6.65%	76.875	77.875	26 Feb 15	10.29%	10.10%	10.6
22 Apr 31	7.00%	77.375	78.375	22 Apr 16	10.38%	10.20%	11.7
20 Nov 31	7.15%	77.875	78.875	20 Nov 17	10.37%	10.20%	12.3
23 Mar 32	7.00%	78.500	79.500	23 Mar 17	10.04%	9.87%	12.7
17 Mar 33	8.20%	86.375	87.375	17 May 18	10.04%	9.89%	13.8
17 Mar 34	8.25%	86.250	87.250	17 May 18	10.05%	9.91%	14.8
02 Nov 35	7.05%	76.625	77.625	04 Nov 15	9.98%	9.83%	16.3
23 Mar 37	7.25%	77.375	78.375	23 May 17	10.00%	9.86%	17.7
					10.70%	**10.22%**	**7.53**

Table 9: Summary of government-issued bonds[45]

With an average return of just over 10% on government securities, real estate investment is only viable for the most opportunistic projects. Naturally investing in government bonds comes with its risks, and both S&P and Fitch have assigned a B- rating to these instruments with Moody's assigning the country an overall rating of Caa1, placing the country's debt at the bottom of investment grade.

[44] "Lebanon Banks Suck in Dollars to Maintain Peg, but Economy Stagnates," *Reuters*, August 16, 2018, https://www.reuters.com/article/us-lebanon-economy-idUSKBN1L11IR.

[45] Banque Audi

6.3: Comparison to other Markets:

Compared to other markets in the Middle East, price growth in Beirut has been positive and relatively steady:

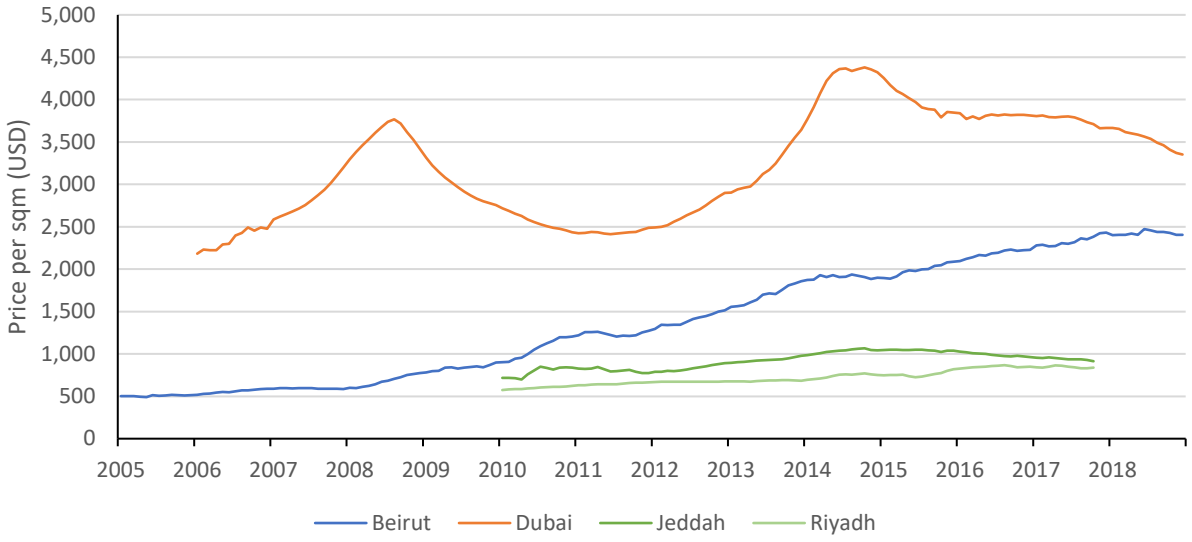

Figure 34: Price per sqm for different cities in the region over time

Dubai, in comparison to Beirut, has undergone two price depressions in the timeframe of the dataset.[46] While prices in Dubai have grown the most when considering short term trough to peak, Beirut has remained less volatile, offering consistent appreciation in prices over the entire timeframe of the dataset. Sales prices in Jeddah and Riyadh have grown between 2010 and 2018, where data is available[47], but have not realized the same level of appreciation as those in the districts that were considered in this study. Overall prices in Dubai have increased by 53% over the 13-year timeframe for which data is available representing an annual growth rate of around 3.3%, although it should be noted that the highest rate of growth was experienced between June 2011 and October 2014 where prices appreciated 81% representing an annual growth rate of around 19.5%. Prices in Jeddah and Riyadh grew 27% and 46%, respectively, representing annual growth rates of around 3.1% and 4.8%.

As was previously established, prices in the districts in this dataset experienced an annual growth rate of around 11%. Despite the inherent economic and political risks in Lebanon, long term, the country remains an apparently healthy destination for real estate investment in comparison to other countries in the region.

[46] Data for the Dubai market was sourced from REIDIN through their REBIS offering
[47] Data for Saudi Arabia is part of an open-source project and can be found on aqarsas.com

Chapter 7: Recommendations for Further Study

This study introduced Beirut's residential sector. It has shown both the difficulties that the property market is facing in the short term but also that in the long term, the market has remained robust. The study could benefit from several additions that would provide more detail about the performance of the real estate market and improve the results.

7.1: Complete Information

The first step would be the requisitioning of the full dataset from the real estate registry to study the entirety of Beirut and, potentially, the country. This would provide further insights into the price history of other districts. While the results reflect the conditions in the market, the added data would perhaps show which areas are performing better than others and where a concerted effort needs to be made to realign the market. In Chapter 2, for example, it was shown that the number of transactions in the district of Achrafieh more than doubled between 2005 and 2019. It is possible then that other districts exhibit similar characteristics or otherwise and were affected differently through the reconstruction.

7.2: More Detailed Characteristics

In addition to information about property prices, the Ministry of Finance also keeps details about the owners of the different properties, including their country of origin. Although most property held in the country is owned by Lebanese, more than two-hundred countries invested in Beirut's reconstruction.[48] The nationalities associated with the transactions would help quantify the amount and source of foreign capital that was entering the real estate market and the percentage of sales for which it accounted. As was seen, the availability of foreign capital provided an incentive for developers to undertake new development. Tracking this data would identify any trends and their correlation with price levels. Given the sensitivity of this information, it would need to be anonymized.

Providing the parcel number associated with the sales in the dataset would allow for a more in-depth analysis of the property market. For example, cross-referencing this information with a separate database held by the Order of Engineers and Architects would establish the age of the building in the transaction, an essential characteristic in building the hedonic model for the price index. Locating the property would also allow for relational studies by evaluating the effect of distance from different urban centers on the price, as well as other spatial relations such as proximity to the Mediterranean Sea. It would also allow for the visualization of price changes at a smaller scale showing how different neighborhoods rather than districts have appreciated in value. For example, in Ain Mreisse, which borders Minet al Hosn on the West, property prices tripled in value in the two years following the civil war.[49]

7.3: Smoothing Techniques

It should be noted that the smoothing method used can be more sophisticated. Although a moving average is sufficient, the price indices remained highly volatile at all levels even after a smoothing window was used. A better method would incorporate time series smoothing techniques and, in particular, Bayesian repeat structures, which are better able to distinguish between signal and noise.

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[48] Nabil Beyhum, Assem Salam, and Jad Tabet, "Beyrouth: Construire l'avenir, Reconstruire Le Passe?," Beirut: Dossiers de l'Urban Research Institute.

[49] Aseel Sawalha, *Reconstructing Beirut: Memory and Space in a Postwar Arab City*, 1st ed, Jamal and Rania Daniel Series in Contemporary History, Politics, Culture, and Religion of the Levant (Austin: University of Texas Press, 2010), 32.

Chapter 8: Final Thoughts

The threat to Lebanon's real estate market is ultimately a combination of a misalignment in the market and an ineffective government. Lebanon's real estate sector faces real demand and not much speculative demand. In fact, Lebanese residents account for the largest portion of demand for property. Hence, Lebanon's real estate sector does not encompass the high-risk associated with speculative pressure that has been witnessed in other countries during the global financial crisis. The results of this are apparent in the stickiness in property prices. In addition, the scarcity of land and the view that property is a store of value, especially with the threat of a devaluation of the lira, also maintains upward pressure on prices.

The conclusion is that despite the prevailing pessimism in the country, real estate continues to be a safe investment in the long-term. What is clear is that for the sector to recover, any economic and financial stimulus should be targeted at lower income brackets, where most of the buying power in the country comes from. With a sustained decrease in foreign investment from the Gulf states and an increased interest in development within the Arabian Gulf, the target audience has shifted toward the local market. Consequently, developers and policymakers should focus on real estate products and financial incentives that reflect the local demographics and better serve the Lebanese people.

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