Housing and Wealth Inequality in Azerbaijan: A Statistical Analysis of Real Estate Prices in Baku

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Housing affordability is viewed by many as a way of assessing the socioeconomic stability of a country. Housing being one of, if not the largest expense for most households, the COVID-19 pandemic has underscored its importance as many households lost part of their income, leading to unpaid rent and unstable living conditions in many countries. This situation further highlights the need for policymakers to discuss housing affordability.

However, there is another reason housing affordability is an issue not to ignore. As put forward by Thomas Piketty (2014), the return rates on capital (e.g. real estate) are higher than the rate of return on labor, reproducing a cycle of wealth inequalities. While many researchers have assessed housing wealth's effects on inequality in Western cities, none have discussed Baku's case.

In this study, I assess housing affordability for first-time apartment buyers corrected for the average household's savings rate. As of 2015, the average household in Baku could not buy housing due to low income and the *hidden fees* that come with the purchase (by the hidden fees, I mean fees that are mainly related to the construction permits required for new buildings). Even worse, in some instances, middle- and high-income households could not afford housing purchases either (World Bank Group 2015).

Our initial hypothesis is that housing is still not affordable for the average household in Baku as of 2020. Furthermore, if

average salaries were substantially increased, no significant change in housing affordability would be observed. I then discuss the role of housing affordability in perpetuating wealth inequalities and low-level corruption in Azerbaijan.

Results show that in the current situation, the average household cannot afford to buy an apartment during the course of their life as their monthly expenditures surpass their monthly net income by 514 AZN, and thus any real estate price is unattainable. After computing a simulation of increased wages, it has been assessed that even after a 250 AZN increase, most first-time buyers still could not afford housing.

This research's main contribution is the assessment of housing affordability inequality in Baku, Azerbaijan, as of July 2020. Furthermore, by analyzing the current state of the real estate market along with average net savings and access to finance, this paper provides decision-makers empirical evidence of the need to implement financial incentives for homeownership for individuals earning the average salary of 326 AZN per month.

Methodology

The analysis is based on a large sample representative of real estate prices in Baku (n=19.455 with 95% confidence the population mean is between 147,000 and 149,000) collected from two Azerbaijani websites, Bina.az and Yeniemlak.az, in July 2020. The average salary, household expenditure, and household size data have been collected from the State Statistical Committee of the Republic of Azerbaijan's official website. The data related to mortgage and credit lines have been collected from the Mortgage and Credit Fund of the Republic of Azerbaijan's official website.

After collecting all the Baku real estate price data from these online sources, and separating sales from rentals, I used the Tukey method to find outliers in each dataset. Once the outliers were identified, the final dataset for sales

prices included 19,455 values. I calculated the average sale prices per district, total apartment area, and sale prices per meter based on this data. The data were then separated into four groups: under 30, between 31 and 60, 61 and 90, and over 90 square meters. The previous calculations were then computed for these separate groups as well.

In this paper, I determine the affordability of real estate for the average Baku household of 3.86, to simplify, rounded to 4 persons with a 326 AZN monthly salary per working person. Then I subtract the average consumption expenditures per capita and average rent from the household salary to determine the household's average net savings. Each calculation was done for these household compositions: 1 working, three not; 2 working, two not; 3 working one not, and all four individuals working. To calculate the household savings rate, HS:

$$HS^n = \frac{NI^n - CE^4}{NI^n}$$

Where *NI* is the yearly net income, *n* the number of working individuals receiving the average net salary, and *CE* consumption expenditures.

The rating for savings rate is as follows:

Table 1: Rating for savings rate

Household savings rate (%)	Rating
HS<=0	NEGATIVE
0<HS<20	POSITIVE
HS>=20	OPTIMUM

Before proceeding to the assessment of housing affordability, I first calculate the average housing price-to-net income ratio denoted PI:

$$\mathrm{PI} = \frac{\mathrm{P}}{NI^{n}}$$

Where *P* is the average sales prices of apartments in Baku, *NI* is the yearly average net household income, and *n* the number of working individuals. The higher the ratio, the more difficult it is for a first-time buyer household to buy an apartment. The rating for the price to income ratio is as follows (Demographia International 2011):

Table 2: Rating for price to income ratio

Price to income ratio	Rating
>=5.1	Severely unaffordable
4.1-5.0	Seriously unaffordable
3.1-4.0	Moderately unaffordable
<=3.0	Affordable

Given these, I assess the housing affordability of the market given this rating system:

Table 3: Rating for housing affordability

PI/HS	HS<=0	0<HS<20	HS>=20
>=5.1	UNAFFORDABLE	UNAFFORDABLE	UNAFFORDABLE
4.1-5.0	UNAFFORDABLE	UNAFFORDABLE	UNAFFORDABLE
3.1-4.0	UNAFFORDABLE	UNAFFORDABLE	AFFORDABLE
<=3.0	UNAFFORDABLE	AFFORDABLE	AFFORDABLE

Findings

1. **Low salaries, low savings rate**

Table 4 shows the average monthly and yearly expenditures per person and household in Baku as of 2020. Per person, the average monthly expenditures are 897 AZN, while per household, these expenditures are 1,893.9 AZN.

At the current average salary of 326.1 AZN per capita, the average household of four, no matter the number of working individuals, cannot afford the average monthly consumption expenditures of 332.4 AZN per person. This is without considering non-consumption expenditures, such as rent, which averages 564 AZN in Baku, according to our August 2020 data.

Table 4: Average expenditures. Based on 2019 official statistics and 2020 collected data.

		Monthly	Yearly
	Consumption	332.4	3,989
Person	Rent	564	6,771
	Total	896.4	10,760
HOUSEHOLD	Consumption	1,329.9	15,955
	Rent	564	6,771
	Total	1,893.9	22,726

Depending on the number of working individuals, the average household salary ranges from 326.1 to 1,304.4 AZN per month. However, the household consumption expenditure and average rent being 1,329.6 and 564 AZN, respectively, all household compositions suffer from a shortage of financial funds at the end of the month.

Table 5: Average monthly salary and savings per household composition

Household composition	Average monthly salary	Savings after rent
1 working 3 not	326.1	-1,568
2 working 2 not	652.2	-1,241
3 working 1 not	978.3	-915
4 working	1,304.4	-589

Average	815.2	-1,079

The average household is thus 1,079 AZN short every month, making it impossible to save to buy housing later in life, be it with financing options or without. Even before rent payment, the average household is short 514 AZN.

As an experiment, I decided to compare savings rates at two different salary levels: at 476 and 576 AZN per person. As shown in table 5, the average household can still not afford all its expenditures and save at a salary level of 476 AZN, with an average savings level at –704 AZN.

Table 6: Savings rate at salary of 476 AZN per person

Household composition	Salary	Expenditures	Savings	Savings rate after taxes
1 working 3 not	476	1,894	-1,418	-362.64%
2 working 2 not	952	1,894	-942	-131.32%
3 working 1 not	1,428	1,894	-466	-54.21%
4 working	1,904	1,894	10	-15.66%

At this salary level, household savings become positive only for the household with four salaries; however, after taxes, savings go back into the negative.

Table 7: Savings rate at salary of 576 AZN per person

Household composition	Salary	Expenditures	Savings	Savings rate after taxes
1 working 3 not	576	1,894	-1,318	-282.32%
2 working 2 not	1,152	1,894	-742	-91.16%
3 working 1 not	1,728	1,894	-166	-27.44%
4 working	2,304	1,894	410	4.42%

As can be seen from Table 7, only after a 76% increase in salary at 576 AZN does one type of household with all four persons working start saving 4% of their monthly salary. Based on this analysis, results show that Baku’s average household

salary does not account for all monthly expenditures, including rent, even after an increase of 250 AZN in salary.

It also follows that this situation might affect petty corruption levels. As the salaries are too low compared to the expenditures, the moral costs of corruption decrease as these acts serve a compensatory role aiming at the increase of household financial funds.

It must be noted that the official average salary statistics might not be the closest to reality, as the shadow economy of Azerbaijan represented over 65% of GDP in 2010 (Bayramov 2012). This shadow economy includes informal employment that goes undeclared and informal payments such as small bribes paid to government officials in exchange for standard public services (Guliyev, 2015). As a result, official salary levels might be lower than the real financial funds that households receive monthly.

1. **No access to financing**

Based on these findings, I analyzed the official statistics on mortgage and credit in Azerbaijan (MCGF, 2019). As of 2019, only 3% of mortgage borrowers had a salary of under 500 AZN, while 42% have a salary between 501 and 1,000 AZN (inclusive), and over 53% had a salary of over 1,001 AZN.

When calculating the largest amount borrowable by a household at the average salary via the MCGF website, it appears that neither ordinary nor social mortgages can be taken out by the household, even when the mortgage is joint. In all cases, because of the lack of savings, the average borrower cannot pay an initial down payment of 10% or 15% for an ordinary or social mortgage, respectively.

Options to finance housing are thus not only limited but also not accessible to the average household. Even when assessing the possibility of a *soft* mortgage intended for the poorer population, these social loans remain inaccessible for the

low- to average-income households.

1. **Lack of housing affordability**

Based on our collected data, the average housing sales price is 148,907 AZN, with a price per meter of 1,515 AZN. Table 7 estimates that the average sales price is 450 times the average salary per person.

Table 8: Average sales price per size of apartment

Average	Under 30m^2	31-60m^2	61-90m^2	Over 90m^2
Total price	₼ 50,222	₼ 76,219	₼ 111,514	₼ 205,250
Price per meter	₼ 1,916	₼ 1,554	₼ 1,472	₼ 1,513

Table 9: Average price per district

District	Average price	Average price per meter
Nasimi	₼ 185,174	₼ 1,668
Yasamal	₼ 152,562	₼ 1,540
Sabail	₼ 195,730	₼ 2,113
Khatai	₼ 143,555	₼ 1,418
Binagadi	₼ 118,880	₼ 1,404
Narimanov	₼ 179,438	₼ 1,658
Nizami	₼ 109,142	₼ 1,355
Sabunchu	₼ 88,647	₼ 1,186
Surakhani	₼ 68,145	₼ 1,027
Khazar	₼ 62,871	₼ 950
Garadagh	₼ 65,472	₼ 960
Pirallahi	₼ 45,883	₼ 996
Average in Baku	₼ *148,907*	₼ *1,515*

As shown in table 9, the highest housing price is in Sabail district, with Nasimi following close behind at 195,730 and 185,174 AZN, respectively. The lowest real estate prices are recorded in the Garadagh and Pirallahi districts. Building

from these numbers, I compute the price-to-income ratio for the overall average real estate price before going ahead to the assessment of housing affordability:

Table 10: Average price-to-income ratio with rating

Household composition	Price to salary	Rating
1 working 3 not	43.9	Severely unaffordable
2 working 2 not	21.9	Severely unaffordable
3 working 1 not	14.6	Severely unaffordable
4 working	10.9	Severely unaffordable

Table 11: Housing affordability rating

Household composition	P/I ratio rating	Savings rate rating	Housing affordability
1 working 3 not	Severely unaffordable	Negative	Unaffordable
2 working 2 not	Severely unaffordable	Negative	Unaffordable
3 working 1 not	Severely unaffordable	Negative	Unaffordable
4 working	Severely unaffordable	Negative	Unaffordable

Results show that for all household compositions at the current savings level and price-to-income ratio, housing is, as expected, unaffordable. As an experiment, I compute housing affordability, where the average salary per person would be 576 AZN.

Table 12: Housing affordability rating at salary level of 576 AZN

Household composition	P/I ratio rating	Savings rate	Savings rate rating	Housing affordability

1 working 3 not	Severely unaffordable	-282%	Negative	Unaffordable
2 working 2 not	Severely unaffordable	-91%	Negative	Unaffordable
3 working 1 not	Severely unaffordable	-27%	Negative	Unaffordable
4 working	Severely unaffordable	4.4%	Positive	Unaffordable

It follows that even at a salary increase of 250 AZN per working person, the average household can still not afford real estate in Baku.

Discussion

1. **Housing affordability and wealth inequalities**

Housing affordability has become problematic worldwide, putting the lower and lower-middle-income households further under strain. This lack of affordability has even been linked to poorer health as households tend to spend less on their health when housing costs represent a higher percentage of their income (Stud 2000). In a 2020 study, links between the deprivation of stable shelter and household health were assessed in Hong Kong, which has been suffering from housing unaffordability for many years. Due to low disposable incomes, households suffer from increased stress levels, leading to overall poor physical and mental health (Chung et al. 2020).

The analysis done for this paper supports the hypothesis that housing inequality is related to wealth inequalities in Azerbaijan’s capital city, Baku. The traditional way of explaining inequalities is the struggle between capital and labor, or the distribution of income between capital and labor. Piketty, in his work *Capital in the Twenty-First Century* (2014), shows how it is no longer possible for an individual to increase their income through their labor as capital’s growth rate has exceeded that of labor. This means

that labor returns have decreased while returns on capital, including real estate, have increased. A situation that further supports the idea that housing capital helps perpetuate social segregation and wealth inequalities.

The declining labor share of income has been documented worldwide (e.g., Karabarbounis and Neiman 2014; Chi Dao et al. 2017), further emphasizing the need for housing affordability policies. In Baku's case, despite the average household's housing costs being more than half of their monthly income, there are no policies targeted at creating more social housing (housing provided for lower prices or even for free by a government). The data shows that housing is not affordable regardless of the size of the apartment or the district, but most households also cannot save since their total expenditures surpass their income. Even more surprising in our findings is that even after a hypothetical 250 AZN increase in individual income, the average household can still not afford to buy housing.

Access to housing finance is virtually non-existent for these households. Mortgage plans do not seem to have successfully penetrated the market. Social mortgages have only made housing purchases more affordable for households with higher salaries. This is just as much an issue in Baku as it is in London (UK). A 2017 London School of Economics report showed that despite the government targeting poorer households with its low-cost homeownership opportunities, the average person to benefit from this type of help already earned 1.5 times the median wage (LSE 2017). Instead of promoting homeownership for average-income households, these schemes made housing purchases more affordable for households that could have bought without governmental help.

It is worth noting that despite having poor access to housing finance, microfinance is well-established and offered by all banks. Although microfinancing was first introduced in the late 1970s to alleviate poverty and promote social development

via small loans, especially in parts of the world where the average person does not have access to banking, it has since become one of the main reasons for increased indebtedness in lower-income segments of the population. This tool became so popular that its creator, Muhammad Yunus, received the Nobel Peace prize in 2006. Nevertheless, concerns around its negative consequences are not new. For instance, in one of the more extreme cases, the microfinance market in the Indian region of Andhra Pradesh completely collapsed in 2010 after a series of suicides by microfinance debtors (Gallarati 2018).

The impact of microfinancing on household debt in Azerbaijan has not been thoroughly investigated. However, incidences of parallel borrowing from different institutions have been documented in earlier research (Pytkowska 2012). Given the lack of access to standard banking solutions such as mortgage and credit, the average household turns increasingly towards microfinancing, making housing purchase unaffordable.

In the lack of strategic targeting and redistribution in the form of, for example, housing capital taxation, the wealthier households continue buying more housing and continue receiving passive income from rents. This situation perpetuates the already existing social inequalities as the average household continues struggling with high rents and, thus, unstable housing.

Homeownership rates' and wealth inequalities' negative relationship has been analyzed by many researchers (Bezrukovs 2013; Mathä, Porpiglia, and Ziegelmeyer 2017; Kass, Kocharkov, and Preugschat 2019). The general consensus is that the lower the ownership rates, the higher the wealth inequalities. This is especially true for populations' poorer segments as the savings rate increases together with the homeownership rate, leading to higher wealth distribution and accumulation.

It is recommended that policymakers in ever-growing Baku prioritize reducing asset-based inequality by implementing

housing affordability programs that target first-time buyer average and low-income households. To curb wealth inequalities, policymakers should also consider better-targeted mortgage plans that are accessible to lower-income families. Such policies should also consider increasing the affordable housing supply for rent and sale to boost social mobility. The results from homeownership and rental policies will have spillover effects on the economic and social development of the population by, for example, increasing the ability of parents to support their children during their secondary and higher education, which in turn leads to higher wages.

Such spillover effects might also be linked to petty corruption levels. Usually, when discussing corruption, I tend to focus on high-level corruption schemes, such as the Hajiyev scandal or the Panama Papers involving many Azerbaijani ruling elite members. Nevertheless, low-level corruption is just as widespread.

It must be stated that the wage increase targeting policies suggested here are not the only way of addressing housing affordability issues in Baku. As researched by the World Bank (2015), the real estate market is heavily affected by the bureaucracy around construction permits. These fees in turn inflate housing prices.

1. **Wealth inequalities and petty corruption**

In 2018, in just one year, Azerbaijan fell from 122nd to 152nd in terms of corruption levels, to then bounce back to 126th in 2019 out of the 180 countries surveyed by Transparency International. It is not surprising considering the links between wealth inequalities and corruption. As of now, the average income is so low that most households cannot afford their basic needs, and some must turn towards several microfinancing options to afford their expenditures. As discussed before, this is not a sustainable solution as the

risks of indebtedness for the most vulnerable households are increased. This is where petty corruption comes into play, from a bribe for a civil servant to do their job correctly, to making a deal with a kindergarten director or doctor.

Our analysis contributes to a better understanding of the motivations to be corrupt for the Azerbaijani population's low- and average-income individuals. Given that most households do not earn enough to live comfortably, be it a public servant or a private sector worker, the working individual chooses to be corrupt to earn the fair wage they expect for their work. This fair wage-effort hypothesis first theorized by Akerlof and Yellen (1990) can be very well applied in Baku's case. The income inequalities are so high that the average worker is motivated to accept corruption opportunities to achieve their desired income, which covers all their household expenditures.

This does not mean that once the real wage equals the one expected by the worker corruption is wholly eradicated. Instead, it is a matter of using wage-increasing policies to reduce the motivation to compensate for the lack of desired income with corruption. Corruption will not disappear even with very high incomes if the bribe is appropriately high and the penalties low. Increasing the current salaries to this *fair wage* would not eradicate corruption but reduce its opportunities (Mahmood 2005). Once the *fair wage* is achieved, a civil servant would still be motivated to participate in corrupt acts as their income stays low, albeit sufficient to cover most life expenditures (Van Rijckeghem and Weder 1997).

In the case of housing, the bribery of government officials by developers for construction permits is a situation that could benefit from policies targeting the attainment of a *fair wage*. By reducing the motivational incentives to act corruptly, one could decrease the transaction costs surrounding the acquisition of construction permits, which could in turn reduce the final sales price of real estate.

Wage policies targeting underpaid workers could positively affect both the population's living standards and corruption levels. It is not measurable at which level of income corruption would be eradicated, nor is it required. Other policies can reduce corruption by increasing the penalties for higher-level corruption, decreasing corruption opportunities with fully automated processes for certain government agencies.

One of the more successful attempts in Azerbaijan is the Azerbaijani Service and Assessment Network (ASAN), in place since 2012. To some extent, ASAN did fulfill its promises as it promoted better transparency for state agencies and helped with the heavy bureaucracy by simplifying specific government procedures (Oxford, Blavatnik School of Government 2017). However, ASAN did not reduce petty corruption, which is not surprising given the low wages.

It is worth noting that an increase in penalties for low-level corruption will not produce the expected results. A zero-tolerance policy, such as the one implemented in Singapore, would not address the underlying issue of low wages. Instead, a more proactive solution would be to increase social welfare in order to decrease the motivation of lower-income workers to be corrupt.

Furthermore, after a certain threshold, increased wages do not have the intended effects on petty corruption. Such was the case for the Ghanaian government in its 2010 attempts at decreasing low-level corruption on its roads by increasing the salaries of the police officers. The level of corruption was not reduced despite the increase. The police officers put more effort into taking bribes, thus reducing the number of bribes but increasing the average amount of money taken per bribe (Foltz and Opoku-Agyemang 2015).

This does not invalidate other research that shows the negative relation between high-level political corruption and

civil service salaries. The factors motivating the corruption differ, but as in the case of political corruption, those who offer bribes can adjust their offer to a higher price once they are notified of the salary increase of the public servant.

1. **Lack of precise data and the informal economy**

Despite this study's findings, the results are difficult to generalize due to a lack of reliable data on household budgets, incomes, and expenditures. One might wonder how Azerbaijan received the world's lowest Gini coefficient in the 2018 UNDP Human Development Report. This coefficient measuring the income inequality among a country's individuals was the lowest in Azerbaijan, making it the country with the lowest income inequality. However, Azerbaijan's 2019 and 2018 overall human development index does not rank it even in the top twenty. Our income and expenditure statistical research in this paper is inconsistent with the UNDP's analysis. Any research based on official statistics is thus limited by the data's low reliability. This is an important issue not only for research but also for policymakers to determine which issues to prioritize and which policies to implement.

More specifically, in the case of housing affordability, reliable and up-to-date statistics are required for measuring the income at which the average household can save and afford a housing purchase and the demand for social housing for which target populations. It would further strengthen any policies targeting higher access to mortgage options for low- and average-income first-time buyer households. Finally, improved statistical capacity for household budgets would enable policymakers to calculate the *fair wage* at which low corruption opportunities can be reduced.

A second issue that is more difficult to tackle for any government is the informal economy and undeclared revenue. According to the International Labor Organization, as of 2018,

61% of all workers were working informally worldwide without work contracts and undeclared (ILO 2018). The exact percentage of the Azerbaijani economy that is informal is not measured. However, the World Bank estimated it at 60% of the GDP in 2010, while official statistics estimated it at only 7-8% in 2014. Regardless of the informal economy scale, the real income that households dispose of every month is difficult to measure reliably.

The lack of precise data somewhat constrains the housing affordability results; however, our findings are confirmed even when the average salaries increase by 250 AZN. In this scenario, housing affordability does not seem to budge as the average household still does not have wider access to housing financing, nor does it have a better probability of buying housing with savings alone.

Conclusion

This paper's primary purpose was to assess housing affordability in the city of Baku, Azerbaijan, and to correctly measure it, considering the low savings rate of the population. The main takeaways from this research are as follows:

The findings presented here show that the average household cannot afford its monthly expenditures and is unable to save towards a future housing purchase. Given the current household budget statistics, the average household does not have access to housing finances, be it credit or mortgage. This issue is further generalized to rental as the average rent represents a substantial burden for the average household.

The lack of savings and the inaccessibility of financing options make it difficult for the average to low-income households to accumulate housing wealth, a situation that further perpetuates wealth inequalities in Azerbaijan's capital city. Furthermore, the inability to save and the low-income level tends to strengthen the average worker's

motivation to commit or participate in corrupt acts. Research findings and discussion present new directions for future policies that target housing affordability, as well as low-level corruption.

A significant limitation of the study is the real estate price database being based on supplier side information declared online on Bina.az and Yeniemlak.az. However, considering several real estate selling and renting websites appear in the top 50 most visited in Azerbaijan (Alexa 2020), it is assumed that the data collected for this study is well-grounded, and the results from its analysis generalizable to some extent. Further research should focus on controlling for the housing price difference between online and face-to-face real estate sales. A second limitation is that of the lack and unreliability of official statistics, a factor that is not accounted for in our research.

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