

Land Value Based Wealth Inequality in Turkey

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06/10/2023, Workshop on Turkish Economy: In Memory of
Fikret Şenses

Outline

- Introduction and Motivation
- Related Literature
- Data and analysis
- Conclusion and further questions

Introduction

- Hot topic
- Interesting distinction between wealth and capital
- Very few studies in Turkey
- Super important for both allocation and accumulation in the long-run

Motivation

- Wealth inequality has been increasing globally.
- The biggest component of wealth is real estate.
- Interesting dynamics a la Stiglitz (2015) model
- In this paper we will focus on land values in Turkey

A snapshot

Anasayfa > Emlak > Arsa > Satılık > Ankara >

Favori İlanlarım | Favori Aramalarım | Size Özel İlanlar | İlan Karşılaştır

Emlak
Arsa
Satılık (18.887)

Harita Görünümü

Adres Türkiye
Ankara
İlçe
Semt / Mahalle

Fiyat
TL USD EUR GBP
min TL - max TL

"Ankara Satılık Arsa" aramanızda **18.887 ilan** bulundu.

☆ Aramayı Kaydet

Adres Ankara Tümüü Temizle

Seçtiklerimi Gizle ^

Tüm İlanlar Sahibinden Emlak Ofisinden İnşaat Firmasından Bankadan

Görünüm

Fiyata göre (Önce en yü...)




| İlan Başlığı | m ² | Fiyat | m ² Fiyatı | İlan Tarihi | İlçe / Semt |
|---|----------------|------------------|--------------------------|---------------|-------------|
|  KAZANÇ GAYRİMENKUL'DEN MÜTEAHHİTLİK ARSA | 582 | 5.000.000.000 TL | | 01 Ekim 2023 | Akyurt |
|  MACUNKÖY İSTANBUL YOLU YENİMAHALLE 41.000M2 SATILIK İMARLI ARSA | 41.000 | 2.835.000.000 TL | 69.146 TL/m ² | 26 Eylül 2023 | Yenimahalle |
|  SAHİBİNDEN.. ALTINDAĞ DANIŞMENT DE 220 m2 SATILIK ARSA | 220 | 2.775.000.000 TL | | 14 Eylül 2023 | Altındağ |

Figure 1: Sahibinden Land Sales in Ankara

Results

- We show that the wealth inequality based on land values is dramatic in Turkey as of 2021. The top 1 percent possesses almost 15% of all land wealth based on available data extracted from a comprehensive private dataset
- Top 10 percent controls 59% of all land value.
- Gini coefficient in land values is around 0.7
- There exists a positive relation between the mean price of the land and inequality across cities
- There are significant premiums on features of the land, ie. zoned, sea view, shore, OSB

Inference

- Our findings are underestimation of land wealth inequality
- Sample selection bias: Not everyone has land to sell
- Some of top sellers may have more land to sell in stock
- Trimming the top decreases inequality

Related Literature

- Davies et. al. (2010): Wealth gini=0.71 for Turkey Based of Credit Suisse Wealth Report data
- Torul and Öztunalı (2018): Wealth Gini=0.78 Calibration in a General Eq. model
- World Inequality Database WID (2022): Top 10 wealth share 67.5%

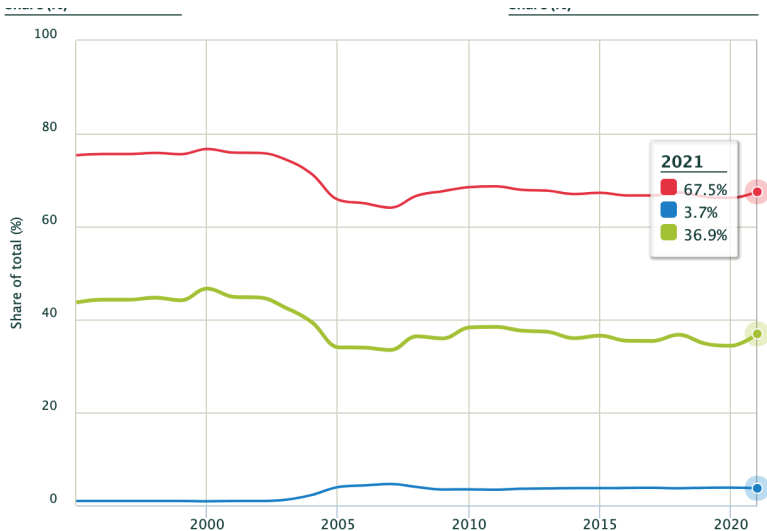


Figure 2: WID Wealth Inequality in Turkey

Difference with WID estimate

- WID uses generalized pareto intrapolation
- WID includes financial and equity wealth as well
- However, WID takes parameters of the pareto model from a different country or use a synthetic comparison benchmark since Turkey has no wealth data or tax survey data
- Our study is partial but more robust

Data and analysis

- The raw data is extracted from a commercial website (sahibinden.com) in March 2021.
- There are 188 thousand observations with info on city, town, size and price.
- The raw data has quite a bit outliers.
- One particular ad involves a land size with 15 million square meters.
- We eliminate the outliers by removing the bottom and top 1%.

Data

- The top three land sales in terms of price which exceeds 23 million TL are in “Beylikdüzü”, “Sarıyer” and “Yenimahalle”.
- The total land value is around 93 billion TL and the total land size in sale is around 526 thousand square meters.
- The land value gini is 0.69
- The land size gini is 0.71

Summary of the Data

Table 1: Descriptive Statistics, Turkey

| Statistic | Mean | St. Dev. | Min | Median | Max |
|-----------|-------------|-------------|--------|---------|------------|
| price | 1,096,704.0 | 2,266,945.0 | 20,160 | 360,000 | 23,750,000 |
| size | 6,177.6 | 12,177.6 | 101 | 1,783 | 134,600 |
| Pmsq | 700.3 | 1,898.0 | 0.3 | 230.9 | 67,164.2 |

US Residential Land Share of Home Values

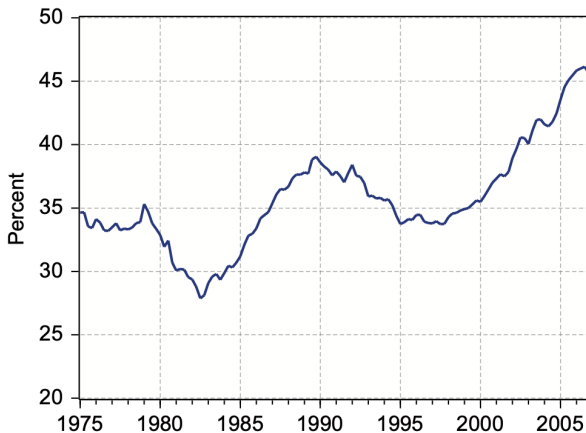


Fig. 2. Land's share of home value.

Figure 3: Residential Land Share (Source: Davis and Heathcote 2007)

Selected Cities

Table 2: Summary Statistics for Selected Cities

| city | cityMeanP | cityMeanS | cityPmsq |
|-----------|------------|-----------|-----------|
| istanbul | 10010109.4 | 7441.365 | 5359.6353 |
| izmir | 2719356.9 | 15469.884 | 975.2958 |
| mugla | 2011005.6 | 11161.370 | 908.0400 |
| antalya | 2429786.3 | 14055.737 | 855.4837 |
| sanliurfa | 1872708.3 | 32722.013 | 834.1184 |
| kocaeli | 1779136.1 | 7078.282 | 833.9609 |

Method 1

- We will mainly use three measures to analyze overall wealth inequality based on land values.
- First is the Gini coefficient. Second is the share of top 1 and 10 percent. Third measure is Theil index.

Suppose that there is an n units of land values (or land sizes) and that unit i has a price (size) of x_i . The price (size) distribution is then simply the vector $X = (x_1, x_2, \dots, x_n)$. Let $\mu(X) = \frac{1}{n} \sum x_i$ be the mean of the price (size) vector. Then Gini coefficient will be

$$I_{gini}(X) = \frac{1}{2n^2\mu(X)} \sum \sum |x_i - x_j|$$

Method 2

- Top 10 percent share is simply the sum of the largest 10% of the ordered vector X in total.
- Theil index is based on the generalised entropy class measures.

$$I_{Theil}(X) = \frac{1}{n} \sum \left[\frac{x_i}{\mu(X)} \right] \log \left(\frac{x_i}{\mu(X)} \right)$$

Overall

Table 3: Wealth Inequality in Land Values

| | |
|------------|-------|
| Gini | 0.689 |
| 10 Percent | 0.59 |
| Theil | 0.955 |

Table 4: Wealth Inequality in Land Size

| | |
|------------|-------|
| Gini | 0.707 |
| 10 Percent | 0.556 |
| Theil | 1.133 |

Premiums on Particular Features of Land

Table 5: Premiums in %

| | |
|------------|-------|
| Zoned Land | 43.17 |
| Sea view | 55 |
| Industrial | 111 |
| Agr. Field | -71 |

Sorted by Inequality

Table 6:

| | city | cityGiniP | cityGiniS | cityMeanP | cityMeanS | cityPmsq | GDP |
|----|-----------|-----------|-----------|----------------|------------|-----------|------------|
| 1 | balikesir | 0.858 | 0.903 | 1,312,727.000 | 28,917.950 | 403.928 | 44,302.030 |
| 2 | tekirdag | 0.843 | 0.883 | 2,376,028.000 | 13,756.060 | 566.722 | 70,787.610 |
| 3 | kirikkale | 0.833 | 0.914 | 1,236,803.000 | 17,575.080 | 421.565 | 39,245.880 |
| 4 | istanbul | 0.832 | 0.929 | 10,010,109.000 | 7,441.365 | 5,359.635 | 86,798.440 |
| 5 | bursa | 0.820 | 0.916 | 1,764,816.000 | 19,778.010 | 833.245 | 58,956.730 |
| 6 | izmir | 0.797 | 0.857 | 2,719,357.000 | 15,469.880 | 975.296 | 60,553.550 |
| 7 | antalya | 0.790 | 0.875 | 2,429,786.000 | 14,055.740 | 855.484 | 60,631.640 |
| 8 | konya | 0.789 | 0.909 | 763,585.300 | 61,178.580 | 218.958 | 40,892.630 |
| 9 | kutahya | 0.787 | 0.820 | 619,167.500 | 10,359.310 | 375.719 | 41,820.160 |
| 10 | eskisehir | 0.784 | 0.910 | 1,110,588.000 | 45,687.060 | 435.434 | 55,608.160 |

Mapping



Figure 4: Land Wealth Gini

Land Prices and City Income

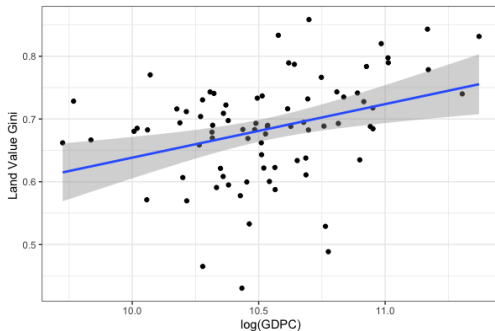


Figure 5: Income and Land Based Wealth Inequality

A Simple OLS Regression

Table 7: OLS Regression

| | <i>Dependent variable:</i> |
|-------------------------|----------------------------|
| | cityGiniP |
| log(GDPC) | 0.048** (0.022) |
| log(cityMeanP) | 0.083*** (0.012) |
| log(cityMeanS) | 0.015 (0.010) |
| Constant | -1.108*** (0.289) |
| Observations | 81 |
| R ² | 0.440 |
| Adjusted R ² | 0.419 |
| Residual Std. Error | 0.063 (df = 77) |
| F Statistic | 20.207*** (df = 3; 77) |

Note:

* p<0.1; ** p<0.05; *** p<0.01

Conclusion and Further Questions

- Adding Housing Wealth Inequality
- Comparison with Financial Wealth Inequality
- Taxing Land Wealth
- Time Series dimension as in Acciari et. al. (2021) for Italy