REIT-BASED COMMERCIAL PROPERTY INDEX CONSTRUCTION FOR TURKEY

A DISCUSSION ON DATA AND METHODOLOGIES

Workshop on Commercial Property Price Indices
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Three key questions need to be addressed…

Constructing Commercial Property Index Indices
(Eurostat CPPI 2017 Report)

- **Firstly, what are the prices required?**
  - Asking price, appraisal price or transaction price

- **Secondly, how can the quality of the properties whose prices are being compared be kept constant?**
  - Constant-quality price index: Commercial property prices must be adjusted for quality change to measure pure price change

- **Thirdly, how to aggregate the various types of property (offices, industrial, retail etc.) together?**
  - Aggregating and weighting issues (property transaction value or property stock weights)

- These issues are complex and dependent on both
  - the primary use of the index
    - to measure the <u>price development</u> of actual commercial property sale
    - to measure <u>change in the value of the stock of commercial properties</u> (total wealth held in commercial property)

  - the availability of data (CPPIs can be either scarce and/or incomplete).

Different methods of constructing commercial property indices

- Clearly, researchers and investors should not rely on any single index methodology as each has its strengths and weaknesses

  - **1. Transaction-based indices**
    - USA: Moody's/RCA Commercial Property Price Index (CPPI) - Repeat sales
    - USA: Co-Star Commercial Repeat-Sales Index (CCRSI)
    - UK: Investment Property Databank (IPD) Index
  - **2. Appraisal-based indices**
    - USA: NCREIF Property Index
  - **3. Appraisal- based & Stock Market-based Investment Return Indicators (IRIs)**
    - USA: NCREIF-based IRIs
    - USA: FTSE-NAREIT Index

Transaction-based or Appraisal-based indices?

- According to Eurostat (2017) CPPI Report & the European Central Bank surveys for end-users, the target index for a CPPI is the "***Transaction-based constant-quality price index'***

- While a transaction-based price index is clearly the preferred method of CPPI construction, it may not be feasible due to ***data availability***.

- Main problems with the appraisal-based indices
  - can only be computed for property populations that are *regularly and consistently appraised*
  - *independence of appraisers* has been questioned
  - depend on the *quality of the appraisers and appraisal values*
  - are likely to be *smoothed and lag the true price level*
  - guideline for appraisals and definitions vary between and within countries
  - *do not correct for changes in quality* — depreciation and major repairs and renovations. This is less of an issue for frequently appraised properties.

Transactions-based price indices have been the major commercial property performance measurement innovation of the first decade of the 21st century in several countries,

Stock market-based investment return indicators (IRIs) will play that role in some countries in the second decade or beyond (Eurostat, 2017)

Alternative CPPIs:

- *Appraisal-based IRIs*
- *REIT (or stock market)-based indices*

Appraisal- based investment return indicators (IRIs)

- **Appraisal-based IRIs:**
  - *Such an index has been produced in the United States at MIT and by NCREIF (Fisher et al., 2007).*
  - Property appraisal information can be a very important source of information in the estimation of property returns when property transaction prices cannot be observed
  - In recent years, with the remarkable growth in the property investment market, it has become possible to obtain periodically surveyed property appraisals (measuring the performance of investment properties & tax assessment purposes)

- Assuming that the property is bought (sold) at the beginning (end) of each appraisal period, total return is broken out into two additive components:
  - **income return** (y_t) or cash yield
  - **appreciation return** (g_t) or capital return.

Data collection and methodology

- Detailed information with respect to the asset valuations and cash flows of all individual properties at each period t:
  - asset valuations at the beginning and end of each period: **Vt-1** and **Vt**
  - capital expenditures **CEt**
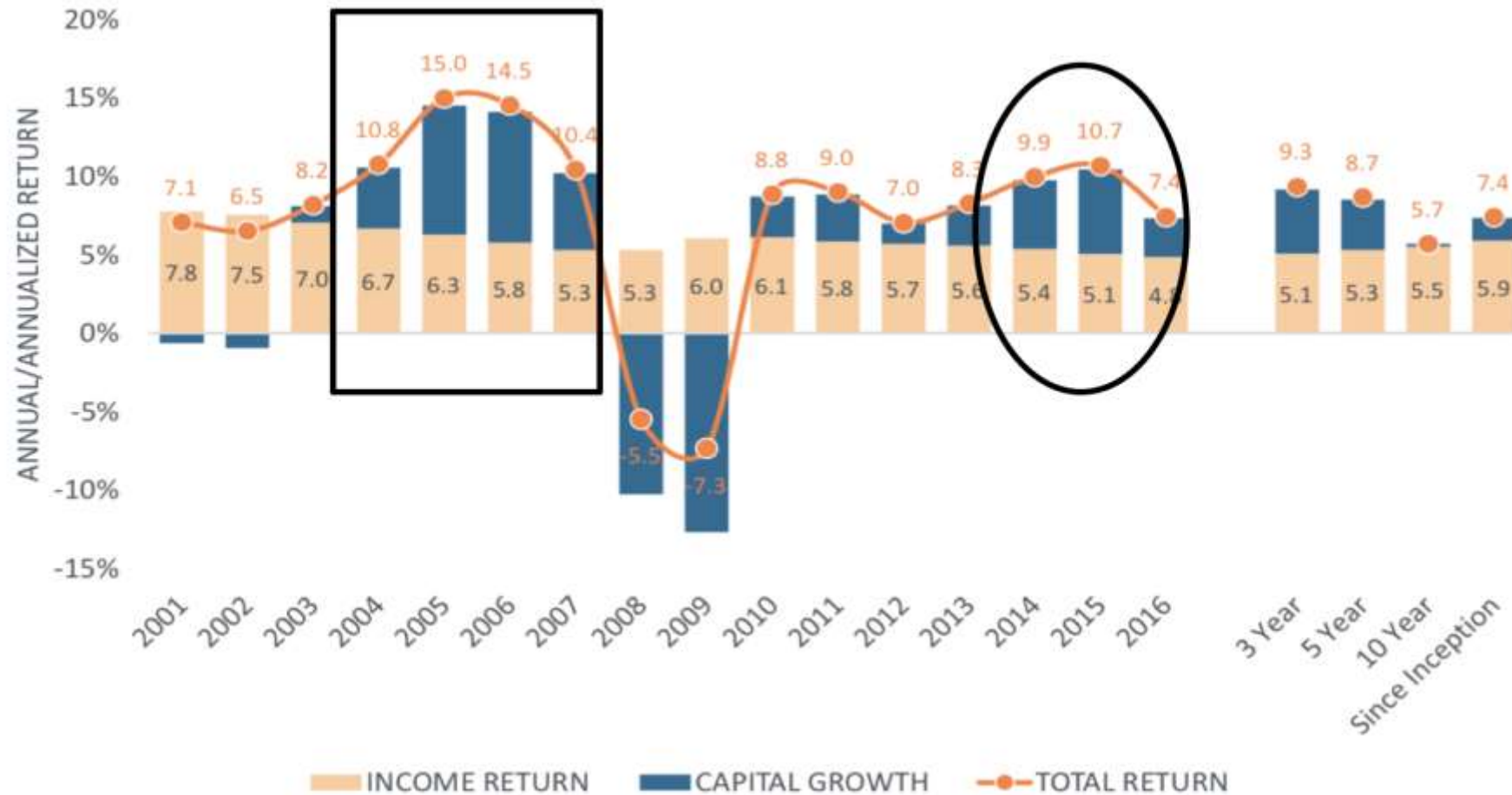 - net proceeds of partial sales **PSt**
  - net operating income **NOIt**

- $y_t = \dfrac{NOI_t}{V_{t-1}}$
- $g_t = \dfrac{V_t - V_{t-1} + PS_t - CE_t}{V_{t-1}}$
- $r_t = y_t + g_t$

- Index is then produced by aggregating the appraisal values across the properties.

Global capital growth (gt) and income return (yt) split
IPD Global Property Index

All property annual returns in local currency

INCOME RETURN   CAPITAL GROWTH   —●—TOTAL RETURN

Questions for Turkey
Constructing an Appraisal-based IRIs

- The Central Bank of Republic Turkey (CBRT) constructed a rich database for the appraisal reports for the houses with mortgage loans and has been publishing since 2010.
- A similar system for the commercial properties possible?
  - CBRT can collect appraisal data not only from commercial banks but also from real estate companies, including REITs and may be REIFs?
  - Is it possible to obtain a <u>reliable pool of periodically surveyed </u>commercial property appraisal reports?

- Commercial property return (both income and capital return) index for private (not publicly traded) transactions.

REIT-based Index
(Fisher, Geltner and Webb, 1999)

- Unlevering REIT share prices:
  - *REITs are generally levered and contain debt on both the asset and liability side of their balance sheets.*
    - On the asset side – mortgages as well as property equity
    - On the liability side – mortgages and bonds (or bank debt)
  - *In aggregate across all REITs, the debt on the asset side roughly offsets the debt on the liability side, leaving REIT returns as a reasonable reflection of changes in the value of the properties.*
  - *However, this offsetting relationship may not be exact at all points in time.*
- Therefore, it is possible to unlever the REIT returns by use of a WACC model, which corrects for the debt on both sides of the balance sheet

Computation of REIT-based Index

- The WACC model uses the accounting identity of $P_t + M_t = D_t + E_t$
- Return relationship becomes

- $r_{E,t} = \left(\dfrac{P}{E}\right)_t r_{P,t} + \left(\dfrac{M}{E}\right)_t r_{M,t} - \left(\dfrac{D}{E}\right)_t r_{D,t}$

- Assuming that the return to all REIT debt-like instruments is approximately same:
- $r_{M,t} = r_{D,t}$ $for\ every\ t$
- $r_{E,t} \cong \left(\dfrac{P}{E}\right)_t r_{P,t} + \left[\left(\dfrac{M}{E}\right)_t - \left(\dfrac{D}{E}\right)_t\right] r_{D,t}$

- The derived property (unlevered) return implied by REIT market value:

- $r_{P,t} = \dfrac{\left[r_{E,t} - \left[1 - \left(\frac{P}{E}\right)_t\right] r_{D,t}\right]}{\left(\frac{P}{E}\right)_t}$

$\boldsymbol{r_P}$

Computation of stock market-based IRIs
Eurostat (2017) CPPI Report

- For each individual REIT stock the following data:

  – *Stock market REIT prices*

  – *Dividend payments*

  – *Equity ratio: total stockholder's equity divided by the sum of total stockholder's equity and total liabilities*

  – *Debt interest rate*

  – *Percentage of asset value held by the REIT in each market segment, where market segment is defined by geography, sector and quality.*

  – *Total value of properties within the REIT.*

Unlevered ROA:

$$g_t = \frac{(P_t - P_{t-1})}{P_{t-1}}; \quad y_t = \frac{D_t}{P_{t-1}}; \quad r_t = y_t + g_t$$

$$ROA_t^g = g_t \times E_t$$

$$ROA_t^y = y_t \times E_t + i_t \times (1 - E_t)$$

$$ROA_t^r = r_t \times E_t + i_t \times (1 - E_t)$$

- ***Index construction:*** These unlevered returns on assets (ROA) are input for a stock market based price index.

- ***Market segment analysis:*** The delevered returns are explained by the percentage value of assets held by the REIT in each market segment at time t.

How big is our commercial property market?

Distribution of Construction Permits with respect to usage area, % Shares
(Average figures for the period 2008-2016)

	Total Numbers of Buildings	Total Usage Area (m2)	Total Market Value (TRY)
Residential	90.7	84.5	85.0
Office & Retail	6.1	10.0	9.9
Industrial	3.2	5.5	5.1
Total	100.0	100.0	100.0

Source: Turkish Statistical Institute, building Statistics

Turkish REIT Sector
A hyrid of REIC and REOC

- In 2017
  - *31 REITs listed on BIST*
  - *Total portfolio of US$ 7.13 billion.*
  - *4-5% of BIST capitalization*
  - *Market for REIT IPOs has been vibrant and internationally competitive (Erol et al., 2018, JREFE)*

- Turkish REITs must invest at minimum 50% of their portfolio in real estate and real estate-backed securities
  - *It was decreased from 75% in 2004.*
  - *REITs are able to invest 50% of their portfolios in money and capital markets instrument and direct equity participations*
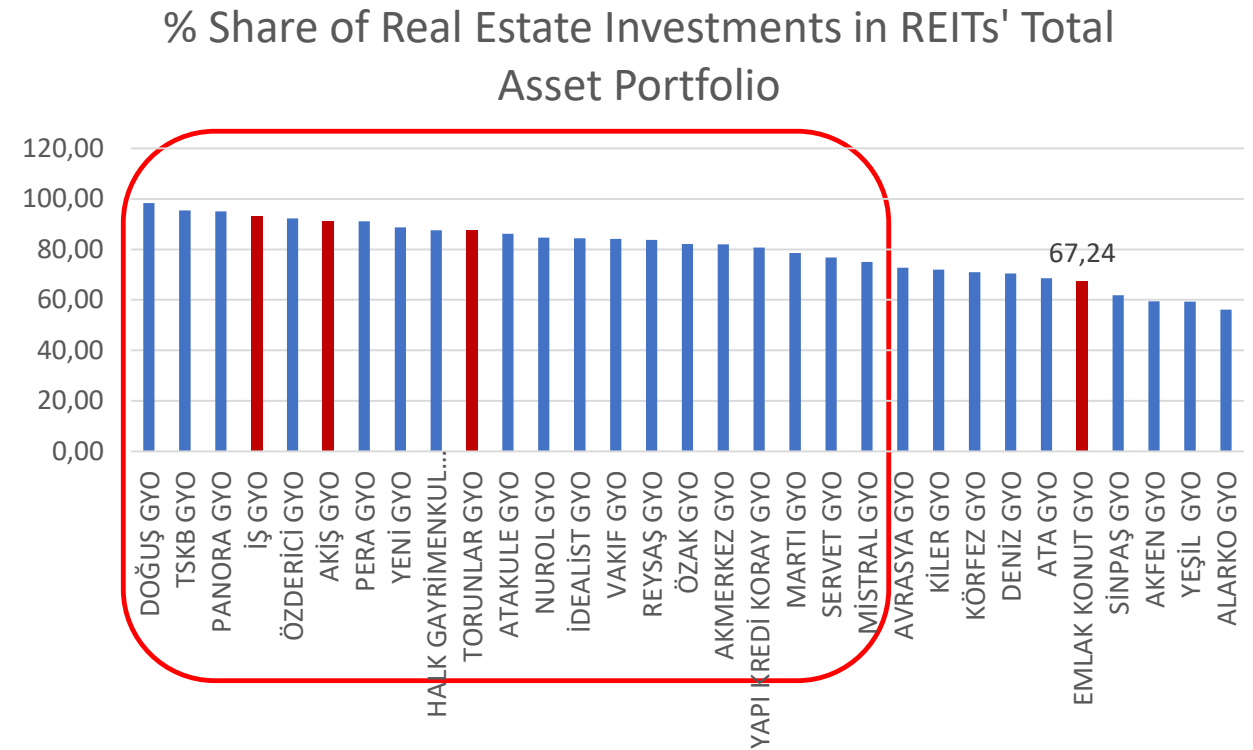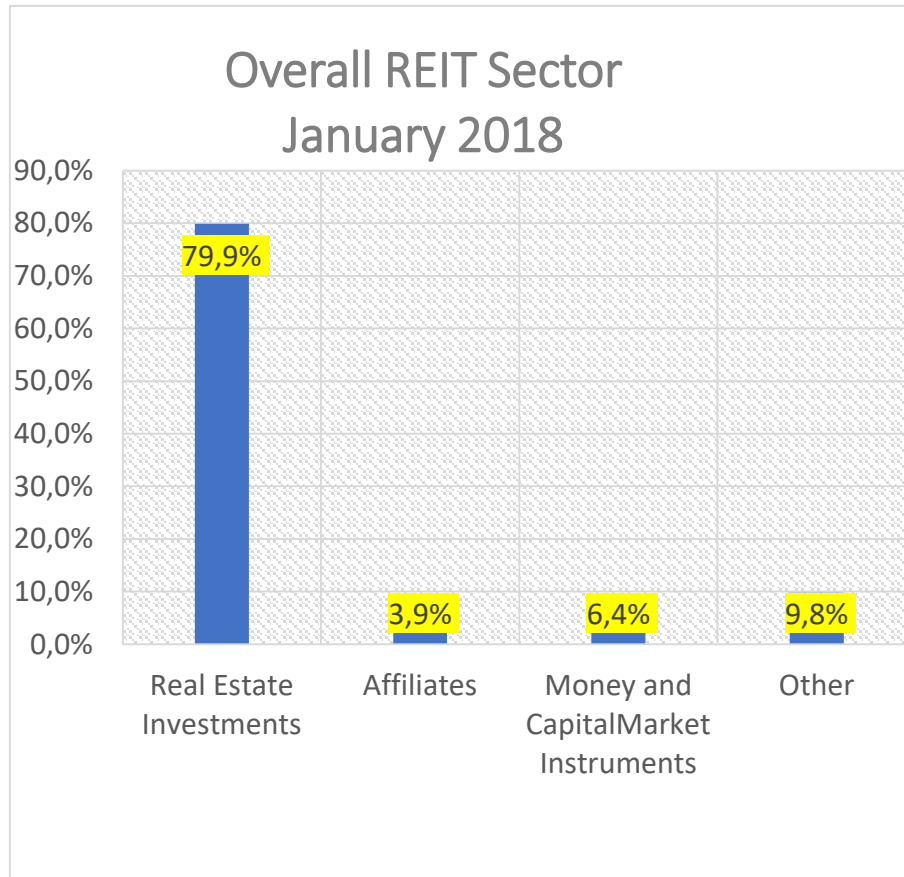
Total Market Values of REITs
EPRA Global REIT Survey, July 2016

	Number of Trusts	Total Market Value (Million EUR)
USA	220	986,770
Australia	61	106,458
Japan	56	102,695
UK	36	56,585
Singapore	44	51,236
France	32	49,357
Canada	46	41,180
Netherlands	5	29,124
Hong Kong	13	28,828
S Africa	34	26,797
Mexico	13	14,261
Belgium	17	11,027
Thailand	63	10,67
Spain	5	7,806
Turkey	31	7,131
Malaysia	16	6,381
N.Zealand	6	3,973
Germany	4	2,792

Turkish REIT Sector

- "At least 50% real estate holding rule" is a problem for constructing an index?

Overall REIT Sector January 2018 — bar chart showing Real Estate Investments 79,9%, Affiliates 3,9%, Money and Capital Market Instruments 6,4%, Other 9,8%

% Share of Real Estate Investments in REITs' Total Asset Portfolio — bar chart across REITs (DOĞUŞ GYO, TSKB GYO, PANORA GYO, İŞ GYO, ÖZDERİCİ GYO, AKİŞ GYO, PERA GYO, YENİ GYO, HALK GAYRİMENKUL..., TORUNLAR GYO, ATAKULE GYO, NUROL GYO, İDEALİST GYO, VAKIF GYO, REYSAŞ GYO, ÖZAK GYO, AKMERKEZ GYO, YAPI KREDİ KORAY GYO, MARTI GYO, SERVET GYO, MİSTRAL GYO, AVRASYA GYO, KİLER GYO, KÖRFEZ GYO, DENİZ GYO, ATA GYO, EMLAK KONUT GYO 67,24, SİNPAŞ GYO, AKFEN GYO, YEŞİL GYO, ALARKO GYO)
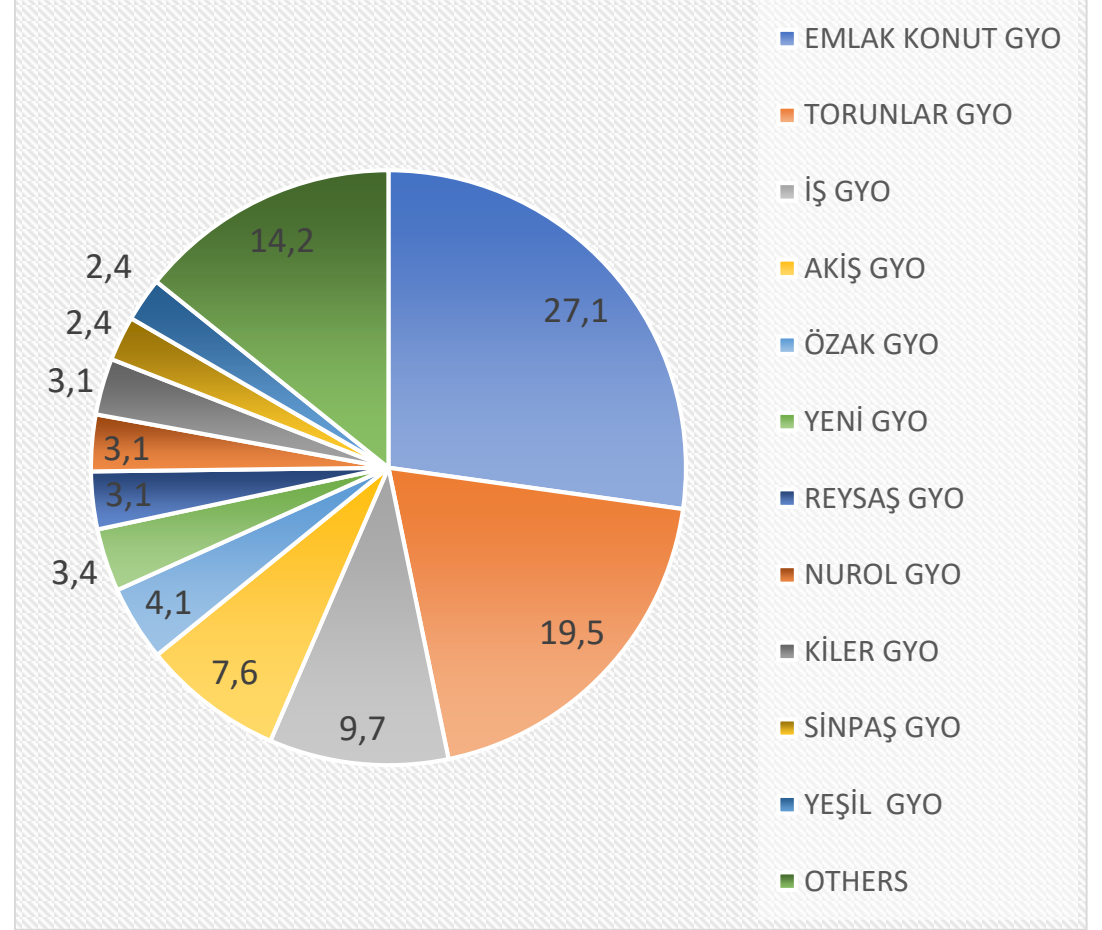
21 out of 31 REITs have more than 75% of their portfolio in real estate

REAL ESTATE INVESTMENT VALUE İN MİLLİONS (GREATER THAN128 MİLLİON)

5 biggest biggest companies hold 68% of the total real estate investments in REIT sector
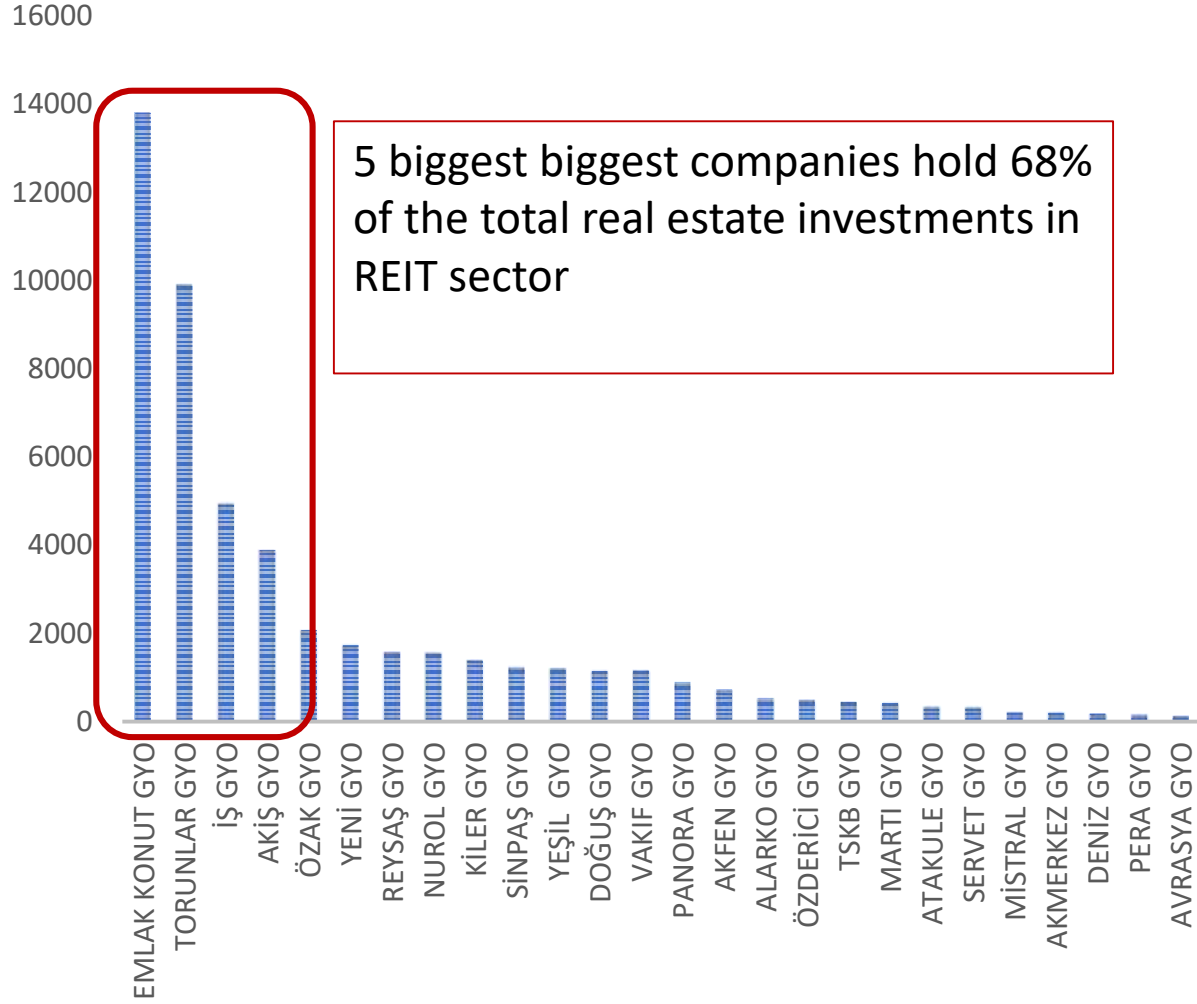
%Share of companies in Overall REIT Real Estate Portfolio

REITs published their detailed asset portfolios until 2011

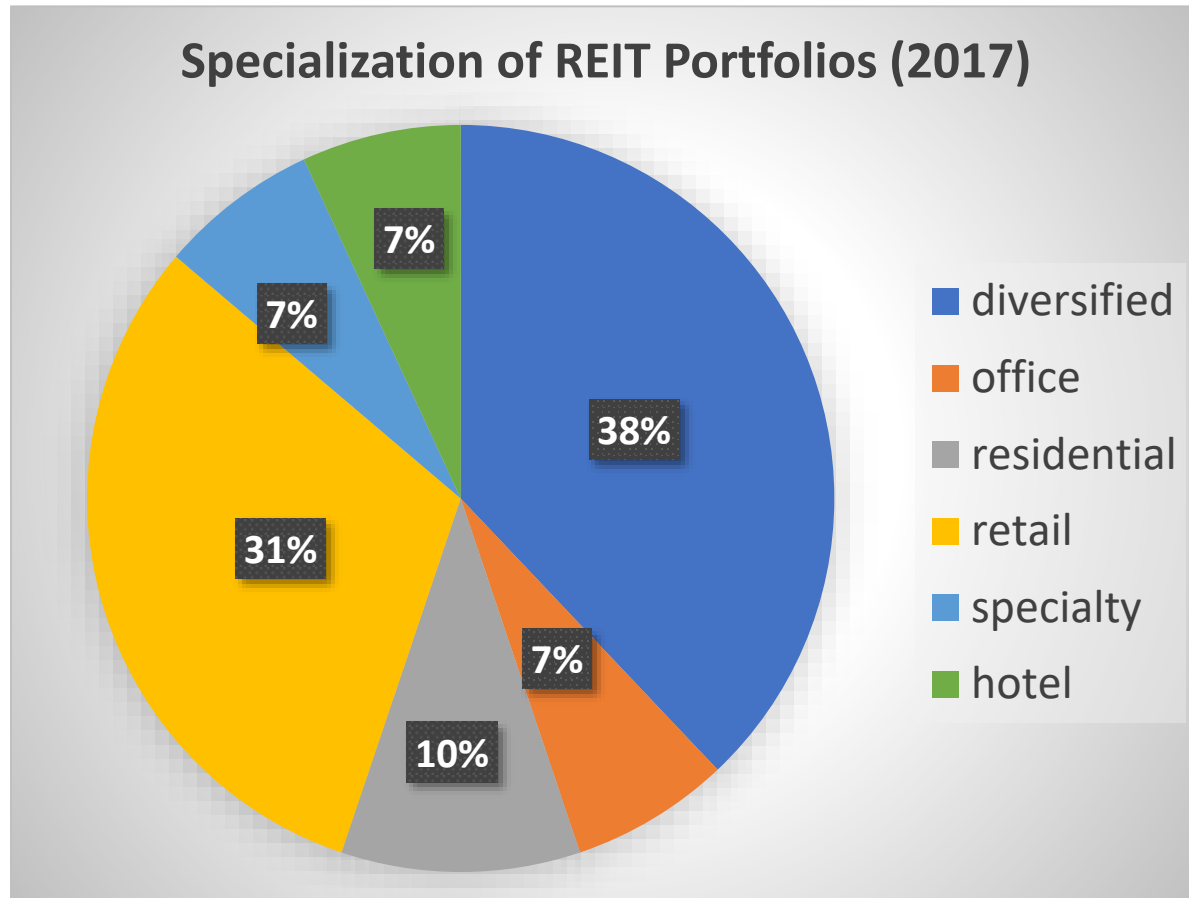## Portfolio Structures of Individual REITs (2005)

	Alarko REIT	Atakule REIT	EGS REIT	Garanti REIT	Ihlas REIT	Is REIT	Nurol REIT	Vakif REIT	Yapi Kredi REIT	REIT Total
Asset Portfolio										
Financial Assets:	42.2 %	4.3 %	0.4 %	25.5 %	0 %	7.1 %	0.6 %	17.2 %	12.0 %	**11 %**
Real Assets:	57.8 %	95.7 %	99.6 %	74.5 %	100 %	92.9 %	99.4 %	82.8 %	88.0 %	**89 %**
Buildings	33.1 %	95.7 %	65.0 %	21.6 %	66.0 %	81.3 %	66.3 %	73.4 %	36.5 %	**68 %**
Land	24.3 %	-	0.3 %	-	2.0 %	0.4 %	32.5 %	9.4 %	34.5 %	**7 %**
Real Estate Projects	0.4 %	-	34.3 %	52.9 %	32.0 %	11.2 %	0.6 %	-	17.0 %	**14 %**
Sector-based Real Estate Portfolio										
Retail	30.0 %	50.0 %	91.9 %	-	-	4.0 %	3.1 %	36.3 %	37.2 %	**22 %**
Office	3.7 %	22.5 %	8.1 %	29.0 %	35.8 %	67.0 %	19.4 %	52.3 %	46.2 %	**46 %**
Residential	18.6 %	-	-	71.0 %	64.2 %	4.0 %	77.5 %	-	16.6 %	**12 %**
Tourism	47.7 %	10.5 %	-	-	-	19.0 %	-	-	-	**15 %**
Service	-	17.0 %	-	-	-	6.0 %	-	11.4 %	-	**5 %**

All diversified portfolios

Capital Markets Board (CMB) has ruled out the obligation to disclose NAV data of REITs. Monitoring the company performances becomes difficult, transparency problem.

Focus area or specialization of REITs in terms of number of companies (data for 29 REITs)

Specialization of REIT Portfolios (2017)

- diversified 38%
- retail 31%
- residential 10%
- office 7%
- specialty 7%
- hotel 7%

- Except for Emlak Konut GYO (Residential REIT) other 4 biggest companies (Torunlar, İş, Akiş, Özak) hold diversified protfolios.

- Retail + Office + Hotel = 45%

- Diversified = 38%

- Residential = 10%

- Specialty = 7%

	diversified	office	residential	retail	specialty	hotel
2017	11	2	3	9	2	2

Is it possible to construct REIT-based commercial property return index for Turkey?

- Questions
  - What percentage of commercial properties are held by the publicly listed REITs?
    - 68% of the REITs (21 out of 31) can be accepted as property companies as they hold at least 75% of portfolio in real estate.
    - The share of REITs dominantly invest in commercial properties? (45% and diversified portfolios)
    - REIT-based CPR index will not capture the whole market or will not be perfectly representative of all commercial properties but produce valuable information.
  - What is the share of privately-owned property companies? How to integrate them?

  - Technical or methodological differences for unlevering REIT share prices
    - Turkish REITs do not hold mortgages in the asset side, but other debt instruments and some direct equity participations

  - Market segment analysis may not be possible as:
    - there is not a large or well established sectors of specialized REITs (Martı GYO: Hotel; Reysas GYO: Logistics, etc.)
    - companies do not disclose their asset portfolio details (sector-based data)