



البنك المركزي المصري  
CENTRAL BANK OF EGYPT

# Developing a Residential Property Price Index for Egypt Using Big Data Sources

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# 1. Introduction

# Motivation | Transition to an Inflation Targeting Regime

## CBE Mandate

Achieve and maintain **low and stable inflation rate over the medium-term**, which is essential for achieving sustainable rates of economic growth and employment.

## Transitioning to Inflation Targeting

The Central Bank of Egypt (CBE) has been transitioning to an inflation targeting regime, setting its first target in 2017. In order to officially adopt inflation targeting, the CBE has made significant progress in the prerequisite pillars of an inflation targeting regime.

## Pillars of an Inflation Targeting Regime

Maintain Flexible Exchange Rate Regime

Establish Central Bank Independence

Develop Quantitative Forecasting Framework

Efficient Monetary Policy Transmission

Enhance Communication & Transparency

Absence of Fiscal Dominance

**Sound Financial Systems & Deep Financial Markets**

Accordingly, in line with its mandate to maintain price stability and to further strengthen the last pillar and **given the importance of the Real Estate sector in the Egyptian economy**, the CBE has initiated a project to construct a Residential Property Price Index (RPPI).

## Motivation | Absence of an Official Index

Egypt's housing market has historically operated without an official property price index, creating a significant blind spot in understanding market dynamics and assessing systemic risks.



**To address this challenge, the CBE has initiated a project to construct a Residential Property Price Index (RPPI)**



**In the absence of publicly available official transaction records, the CBE utilizes web-scraped data from the country's leading online real estate platform.**

# Why Tracking the Real Estate Sector Matters? → Inflation Dynamics

Since the real estate sector occupies a distinctive position in the macroeconomy, it plays an important role in inflation dynamics through several channels:

- **Dual role of Real Estate:** Real estate functions as both a **consumption good** and an **investment asset**, so house price movements affect living costs and investment decisions. (*Davis and Heathcote, 2001; Leung, 2004; Muckenhaupt et al., 2025*)
- **Growth channel:** Rising house prices boost construction activity and real-estate–related demand, supporting aggregate demand and consequently impacting inflation.
- **Wealth & borrowing channels:** Higher house prices increase household wealth, encouraging higher consumption and lower saving, which can push inflation upward. (*Zhu, H., 2005*)
- **Macroeconomic feedback:** Improved economic conditions raise household incomes and business activity; increasing housing demand and putting further upward pressure on house prices. (*Aizenman et al., 2019*)
- **Early warning signal:** Rapid house price increases can indicate excess activity in the market and serve as an early warning signal of housing market imbalances or bubbles.

# Why Tracking the Real Estate Sector Matters? → Financial Sector Stability

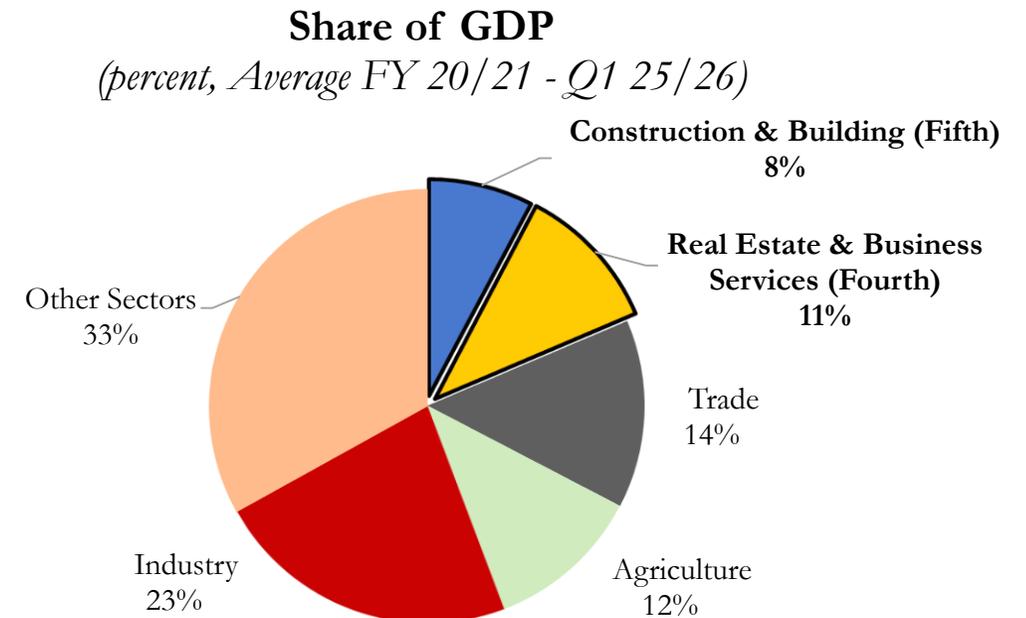
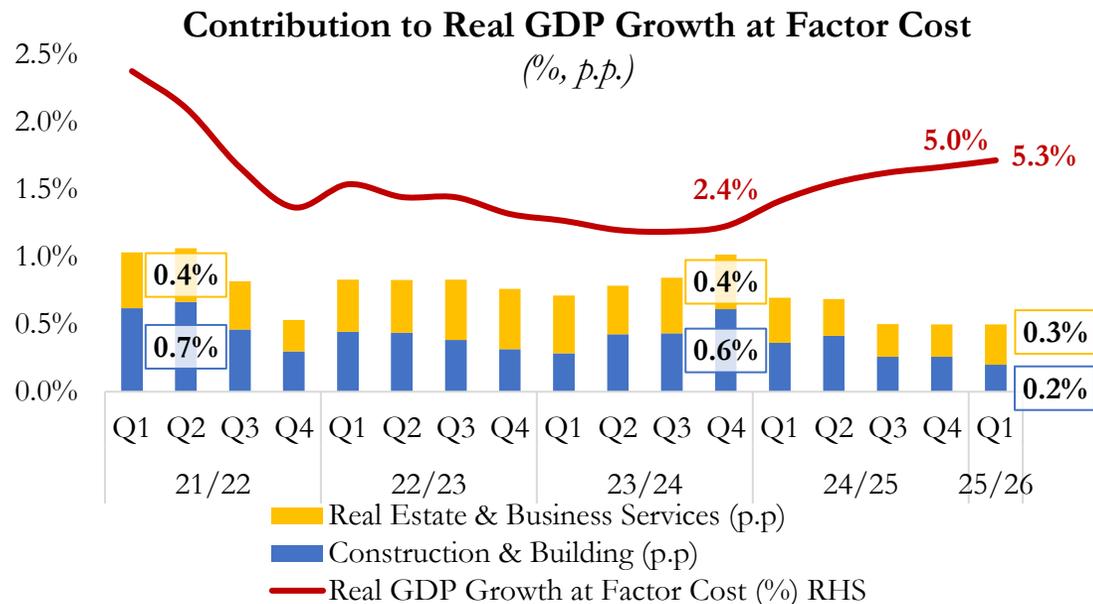
- **High banking exposure:** Bank lending is the primary source of financing for real estate, making banks highly exposed to property price fluctuations. Sharp price declines can significantly weaken loan portfolio quality, profitability, and capital—especially for banks with large exposures to mortgage and real estate-related lending.
- **Collateral channel:** Real estate is widely used as collateral for various types of loans. Falling property prices reduce collateral values, raising default risks not only on mortgages but across the broader loan portfolio.
- **Capital & Profitability:** Lower collateral values increase loan provisions and reduce asset values, weakening the banks' capital base and impacts their profitability.
- **Systemic risk spillovers:** Excessive activity in the sector may signal bubble build-ups. When bubbles burst, house prices can fall sharply, leaving households and firms with negative equity and impaired balance sheets, triggering financial instability and depress consumption and investment.

*\*Selected references: Vonlanten (2023); Ingves (2007); Zhu (2005); Allen & Carletti (2011); Cecchetti (2007).*

## 2. Stylized Facts about Real Estate Sector in Egypt

# Real Estate Market Importance in Egypt | Macroeconomic Indicators

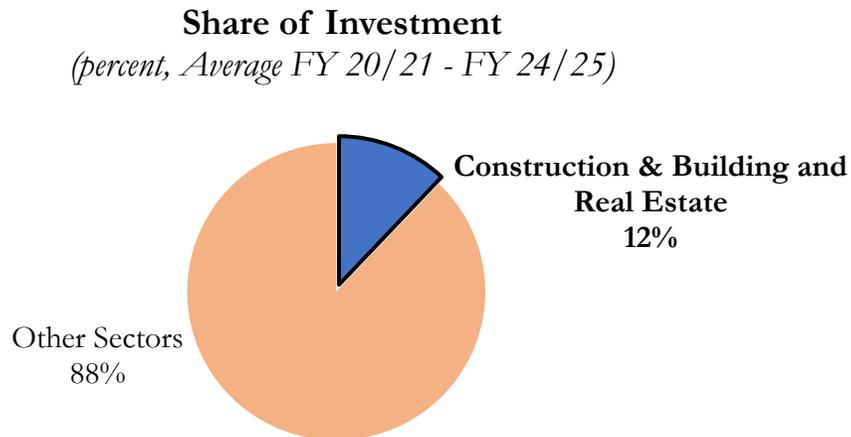
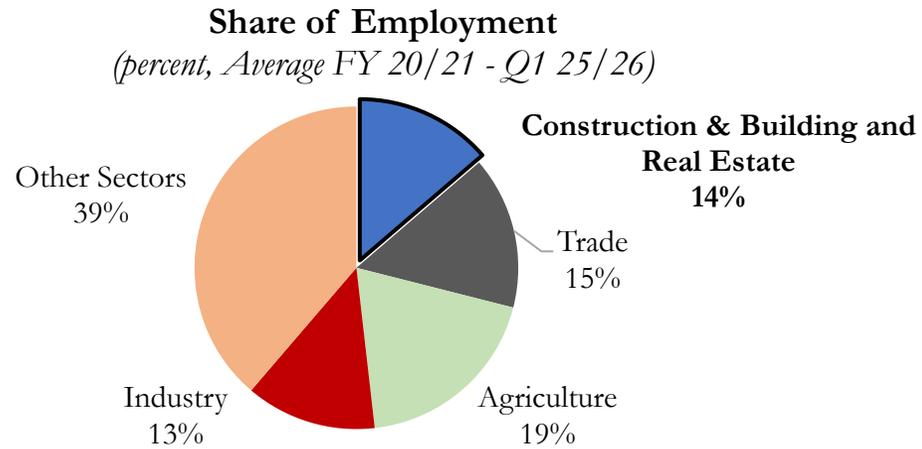
- The Egyptian residential real estate market has been one of most important sectors in the Egyptian economy given its contribution to output, job creation, and investment.
- This is evident by the macroeconomic indicators for the **construction and building sector** (which include primary residential sales and related industries) and **real estate services** (which include the secondary market).
- Both sectors have been contributing positively to real GDP growth for the last 5 fiscal years.
- Combined, they have a share in GDP of 19% on average since FY 2020/21.



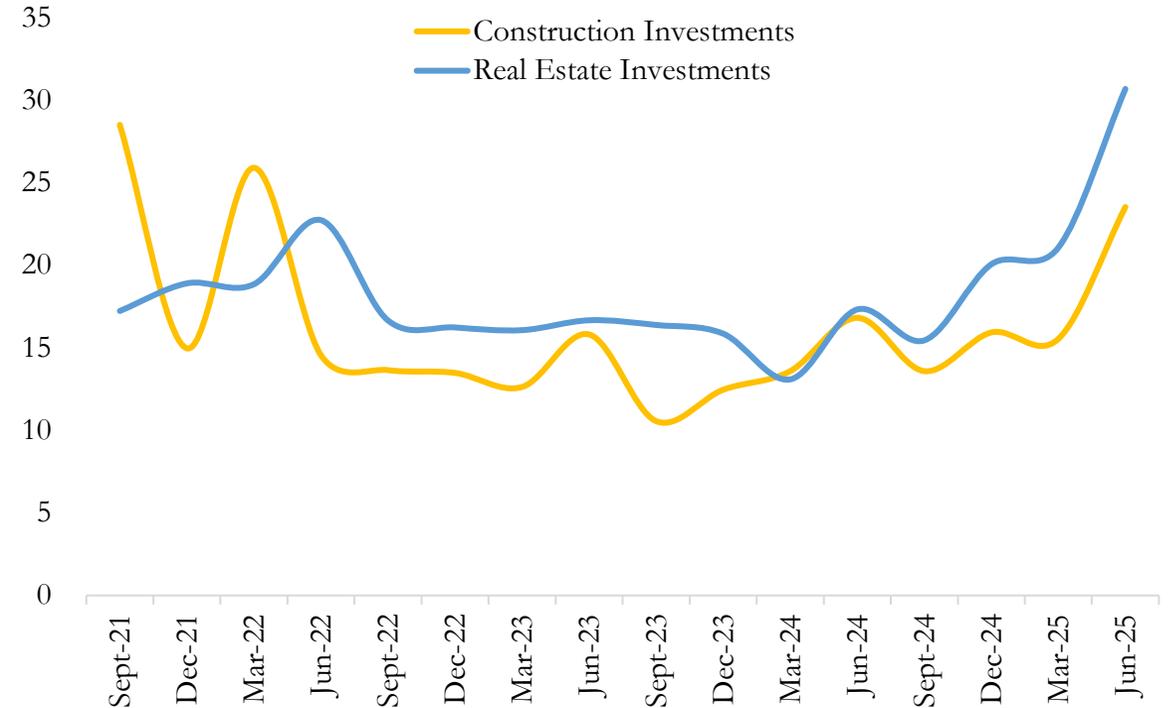
# Real Estate Market Importance in Egypt | Macroeconomic Indicators

- These sectors have a combined share of **14% in employment**, on average since FY 2020/21.
- Additionally, they constitute **12% of investment**, on average since FY 2020/21.

- Investment picked up in both sectors in FY 2024/25, owing to the macroeconomic stabilization and improved market sentiment



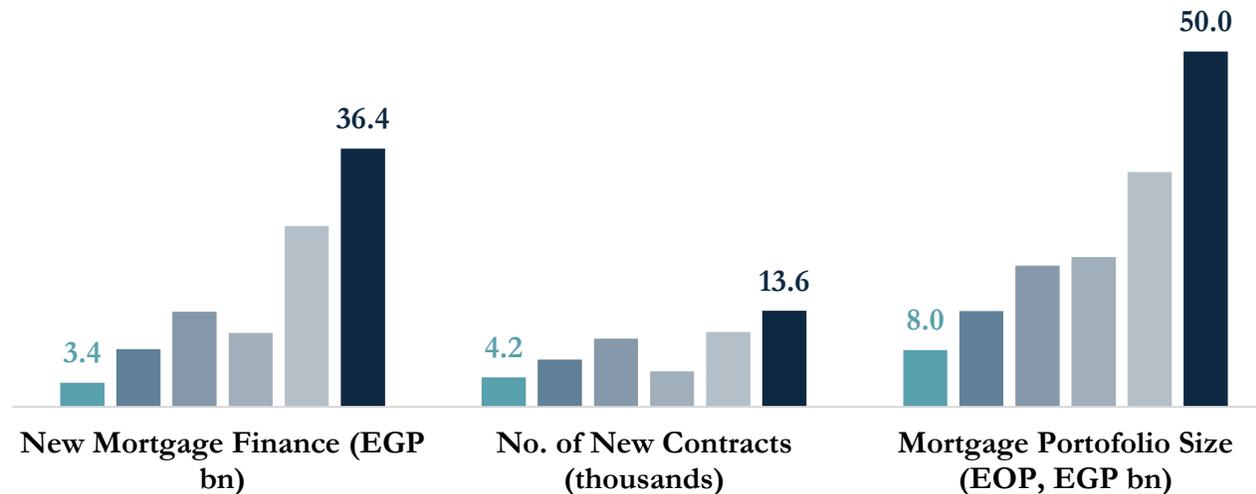
**Quarterly Investment**  
(EGP bn, Real Basis)



# Real Estate Market Importance in Egypt | Credit Indicators

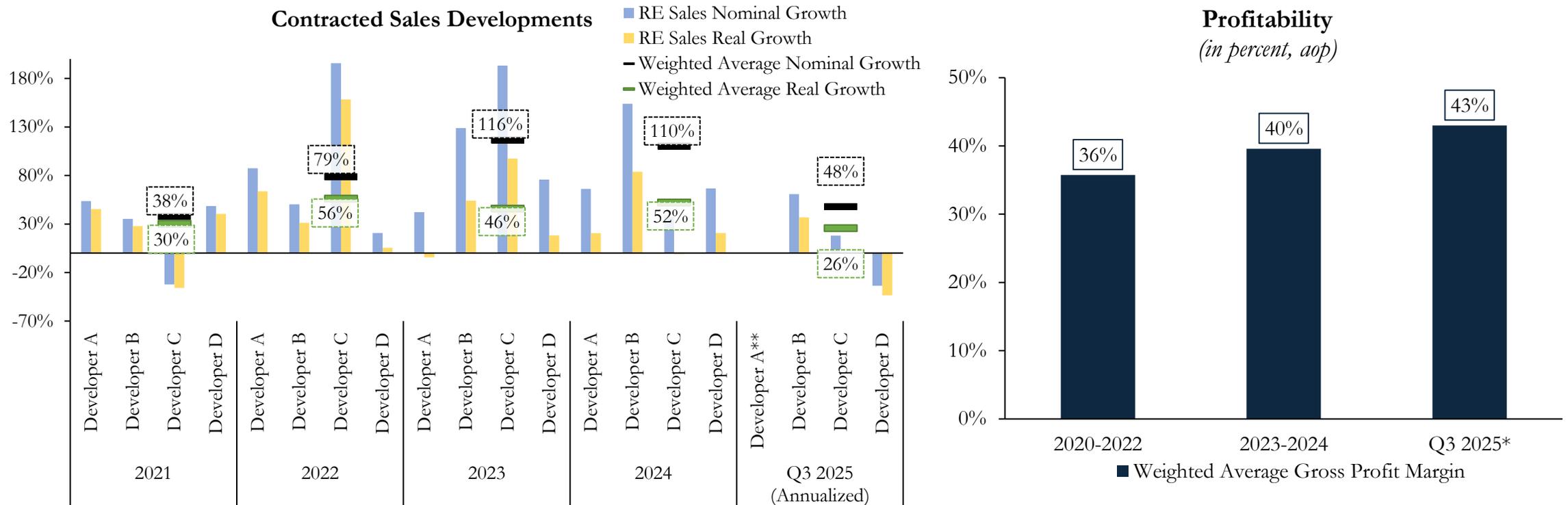
- The Egyptian mortgage market has significantly picked up during the last five years, experiencing an average annual real growth of 20.6%.
- The value of the mortgage portfolio expanded from EGP 8 bn in Dec-20 to EGP 50 bn in Nov-25.
- This growth trajectory can be attributed to increased real estate supply, growing demand, and supportive regulatory framework.

Egyptian Mortgage Market  
(2020-2025)



# Real Estate Market Importance in Egypt | Real Estate Developers Figures

- The financial performance of major market players is also assessed, in order to evaluate the overall performance of the sector and to gauge the demand on real estate.
- The increase in contracted sales for the top real estate developers and improving profitability over the past years underscore the strong market demand for real estate projects, even in the face of rising unit prices, and demonstrates the companies' ability to effectively pass higher raw materials and construction costs onto their clients.



# 3. Methodology

# Methodology | Alignment with International Standards

- CBE's approach employs a multi-faceted methodology designed to ensure robustness and reliability in constructing the index, utilizing two operational models that complement each other's strengths and limitations.
- **This aligns with the international standards for constructing RPPIs, broadly based on the guidelines of:**
  - Eurostat Handbook on Residential Property Price Indices (RPPIs)
  - IMF Residential Property Price Index (RPPI) Practical Compilation Guide

## Repeat-Sales Approach

- Tracks specific properties that reappear on the market over time to measure price trajectories while controlling for quality changes
- Price changes are computed using apartments that appear in two consecutive months

## Stratification Approach

- Listings are grouped each month into homogeneous strata by similar characteristics; including location, size, and property type
- Price changes are calculated by comparing strata-level prices across months.
- This method includes listings that enter and exit the market within a month and may not appear in other months.

# Methodology | Process Overview

## Data Collection

Monthly web-scraping leading online real estate platform, which provides rich and detailed information on properties for sale across Egypt



## Data Preparation

Raw data are preprocessed through:

1. Handling Outlier
2. Imputation (KNN)
3. Feature Engineering
4. Data Cleaning (Standardization)
5. Mapping (Geocoding Matching)
6. Price per SQM



## Calculating RPPI

- I. Repeat-Sales Method
- II. Stratification Method

# Methodology | Limitations

## Scope & Coverage

- Analysis is limited to **residential apartments only**, excluding other real estate types.
- Geographic coverage is restricted to **the biggest two cities**.
- Data is **skewed toward higher-end developments**, though middle- and lower-priced areas are modestly represented.

## Data & Methodological constraints

**Repeat-Sales Index:** Some months have low sample sizes (~200 matched observations).

## Online Listings Bias

- **Asking prices may differ systematically from final transaction prices**, potentially overstating price levels.
- Some listings remain active after properties are sold or withdrawn.
- **High-end developments are overrepresented**, while informal and privately negotiated transactions are excluded.

## 4. Results

# Results

## ➤ Observations:

- a. Stratification Approach: October 2024 – January 2026
- b. Repeat-Sales Approach: February 2025 – January 2026

**The index is disaggregated into primary and secondary markets:**

- **Primary Market:** properties sold for the first time directly by the developer
- **Resale Market:** refer to previously owned properties that are resold by individuals.

## ➤ Validation:

- Other external constructed indices were reviewed to crosscheck the resulting trend.
- Another leading online real estate platform, published monthly growth rates for real estate prices\* that were used to crosscheck results.
- The comparative analysis indicates a positive correlation between the CBE's stratification-based index for the primary market and the published index for the available data points (Dec-24 to Jun-25)
- Work is ongoing to identify additional external benchmarks for further validation.

\*/The methodology used was not disclosed. It should be noted that the website discontinued the publication of this data as of June 2025.

## 5. Conclusion and Way Forward

## Conclusion & Way Forward

- This project demonstrates the Central Bank of Egypt's experience in addressing and narrowing the statistical gaps related to the Residential Property Price Index (RPPI), reflecting the strategic importance of this sector to macroeconomic and financial stability.
- The work presented constitutes an important step in the development of robust and reliable real estate price statistics.
- Nevertheless, the RPPI framework remains an evolving initiative, with several areas identified for further enhancement.

# Conclusion & Way Forward

## Areas for Improvement

### Model Development

Developing a **Stratified Hedonic approach** as a third method for calculating the index, with gradual transition as sufficient data becomes available.

This approach would account for a specific property feature through regression-based techniques that model the contribution of individual attributes to property prices.

### Data Expansion

Ongoing **enhancements to the data collection** pipeline aim to increase sample sizes and expanding historical data coverage to measure y-o-y price changes.

**Broader coverage** across price segments and locations to improve market representation.

### Methodological Enhancements

Continued stabilization of the repeat-sales index through **higher match counts**.

### Robustness & Validation

Further **validation using external data sources** and consistency checks across methodologies

Thank you!