A Study of the Relationship Between Expansionary Monetary Policy and Real Estate Prices: An Analysis of Capital Flows in the Gulf Countries for the Period 2010-2022

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Abstract. *The relationship between expansionary monetary policy and real estate market performance has become increasingly important in the Gulf Cooperation Council countries, especially in the context of intensified foreign capital movements and post-oil-shock structural shifts. The issue concerns not only changes in real estate prices, but also the broader economic conditions in which these changes occur. The study aims to assess how expansionary monetary policy affects real estate prices in GCC countries during 2010-2022, with particular emphasis on the role of foreign capital flows in shaping market dynamics. The research applies a vector error correction model based on quarterly data from six GCC countries. This methodological framework makes it possible to trace the transmission of monetary shocks and distinguish between immediate and subsequent effects on the real estate market. The findings reveal a significant inverse relationship between long-term interest rates and housing prices. In particular, a 10% decline in the interest rate was associated with an approximately 8.74% increase in housing costs, confirming a strong monetary transmission effect. Foreign direct investment, although smaller in scale than domestic credit, emerged as an important factor explaining real estate trends and market dynamics. Moreover, interest rate spreads, credit expansion, and foreign capital inflows that intensified after the 2015 oil price decline point to structural transformations in GCC economies. At the same time, the effects were less pronounced in the UAE and Saudi Arabia, where regulatory regimes and monetary policy frameworks differ more substantially. The study concludes that real estate price dynamics in the GCC require careful monitoring, while policy responses should support economic activity and ensure stable capital flows. Further studies may examine country-specific regulatory mechanisms, the long-term sustainability of capital-driven real estate growth, and the comparative resilience of GCC housing markets under changing external shocks.*

Keywords: *monetary policy, property prices, investment, capital flow, Gulf Cooperation Council, expansionary monetary policy, foreign direct investment, real estate market, interest rates, housing prices, credit expansion, GCC countries.*
JEL Classification: E52, F21, R31, C33
Formulas: 3; fig.: 3; tabl.: 6; bibl.: 22

Introduction. A similar relationship between interest rate and real estate asset prices has also been considered in the literature to analyze this issue for long time. Such an issue is yet unexplored for a peg to the US dollar (as in the GCC countries) since the monetary transmission mechanisms are not the same as those envisaged by standard theories. This paper has been able to bring light about expansionary monetary policy and real estate markets for six (6) Gulf countries, Saudi Arabia, Qatar UAE (Dubai-Abu Dhabi), Bahrain, Kuwait and Oman from 2010 to 2022. It becomes even more relevant when we are witnessing the persistent volatility of oil prices and the country's increasing integration into the world economy.

Real estate is one of the major contributors to its GDP; housing has or contributes to 8-15%. This is a rather high degree of connectivity, so not only the questions about (functioning as an enabler for hothousing growth), but also as a premature signaler of economic imbalance and/or future crashes. These are getting even more crucial against the rising tide of substantial capital filtering into Gulf economies in recent years. It is also sometimes hard to judge whether a real estate boom reflects basic economic strengths, or nonmonetary and nonfinancial factors at play. As some of the seminal research, for example Bernanke and Gertler's work in 2001 explains, there is a complex puzzle of constraints facing Gulf economies. Including pegging of the local exchange rate, near complete capital account liberalization and relatively little operational independence for monetary policy; leading to a big distance between these economies on one hand and advanced or even emerging market economies on the other.

In this sense and in the fact of imitation by other countries of US Federal Reserve experiences as well as deployment of sovereign wealth funds, we have opened another floodgate of new monetary channels with different characters and impacts. But it is not while these conductor's advance; neither are they the product by theory. In this framework, research is informed by the following queries: Firstly, to which extent does the fact that currencies are pegged with the US dollar and oil revenues recycling limit what can be achieved for reducing property speculation through monetary policy?

The second issue refers to the foreign investors' presence in these countries, more than 30%–50%, who participate in their real estate markets and how they contribute to such a dynamics and price trends. The third relates to the 2014-15 collapse in oil prices. What was the crisis's impact on monetary policy and housing? Did it transform this relationship or merely expose its underlying slapdash quality? To address these enquiries, we apply a combination of conventional and structural identification along with capital flow analysis. This method aims to offer suitable analytical frameworks compatible with an institutional character of the GCC economies considering world-wide liquidity.

Literature Review. The relationship between monetary policy and real estate prices is commonly explained through the credit channel theory and

the borrowing-constraints framework. According to Bernanke and Gertler (2001), central banks face substantial difficulties in distinguishing between changes in asset prices driven by economic fundamentals and those caused by speculative demand, which complicates the timely prevention of asset price bubbles. This issue is especially relevant in the Gulf countries, where attempts to stabilize asset prices may be accompanied by intensified liquidity inflows and additional market distortions (Fetais et al., 2024). Within this context, DSGE-based interpretations suggest that housing demand tends to increase when interest rates decline and mortgage constraints are eased, particularly in economies where mortgage lending is broadly accessible (Adelino et al., 2016). At the same time, empirical findings indicate that the inflationary effect of expansionary monetary policy on property prices is not uniform across locations. In major urban centers such as Dubai and Riyadh, these effects may be more pronounced, whereas in jurisdictions with stricter building and land-use regulations they may remain more limited (Cenesizoglu & Essid, 2012; Fetais et al., 2024; Iacoviello, 2005).

The transmission of monetary shocks to housing markets has become increasingly complex due to the growing interconnectedness of the global financial system. Using structural analysis, Luciani (2015) demonstrated that housing markets tend to respond relatively quickly to lower interest rates, especially in countries exposed to cross-border capital movements, including the GCC economies. This conclusion is consistent with the concept of the global financial cycle developed by Miranda-Agrippino and Rey (2021), according to which US monetary policy is transmitted to emerging and open economies through channels of global liquidity and investor risk appetite. In the Gulf region, this mechanism became particularly visible after the post-2010 liquidity expansion by the US Federal Reserve, which contributed to real estate booms even in cases where domestic interest-rate conditions alone could not fully explain the scale of price growth (Berlemann & Freese, 2013).

Foreign capital flows: Factors that amplify real estate cycles. The role of direct international real estate investment in shaping market liquidity and speculative pressures remains debated in the literature. Some studies argue that foreign buyers can significantly accelerate property price growth in open economies, particularly in premium and internationally visible locations such as Palm Jumeirah, while the indirect spillover effects may be more limited than often assumed (Tai et al., 2017; Ambrogio et al., 2015). Related evidence suggests that cross-border bank lending may produce similar outcomes by stimulating domestic credit expansion, as observed in Qatar during 2012-2015 (Taguchi et al., 2015). In addition, the currency-risk channel helps explain why the US dollar is frequently perceived as a safe-haven anchor in Gulf markets during periods of global uncertainty, even when real estate prices diverge from underlying economic fundamentals (Abakah et al., 2025).

Another important dimension is the role of sovereign wealth funds in domestic real estate dynamics. These funds may reinvest oil revenues into national property markets and thereby provide a form of non-market stabilization during periods of external stress or oil-price collapse, as illustrated by the Saudi Arabian case after 2014 (Farhang & Jiyvan, 2024). However, such state-directed financial support may also weaken market price signals and contribute to distortions, particularly when it operates alongside underdeveloped or weak macroprudential regulation. This risk appears especially relevant for smaller Gulf economies such as Bahrain and Oman, where regulatory constraints have historically been less effective in limiting speculative imbalances (Nusair, 2019).

Dynamics specific to the Gulf States: Oil, linking politics and geopolitics. The strong dependence of Gulf economies on oil revenues substantially affects the transmission and effectiveness of monetary policy. In such conditions, fluctuations in oil prices influence the real estate market not only through fiscal channels, but also through bank lending, liquidity expansion, and broader financial accelerator effects. According to Berlemann and Freese (2013), a 10% increase in oil prices may lead to an approximately 3-4% increase in housing prices, reflecting the sensitivity of property markets to oil-driven liquidity conditions. This relationship is particularly evident in the UAE and Kuwait, where oil-related capital inflows have historically supported real estate expansion (Loghod, 2010). At the same time, Loghod (2010) emphasizes that oil-driven housing cycles tend to be shorter than cycles caused by interest rate changes, which makes Gulf property markets more vulnerable to abrupt external shocks, as demonstrated by Dubai's real estate corrections during 2009-2015.

Additional complexity arises from the fact that GCC central banks often import pro-cyclical monetary conditions by closely following the policy direction of the US Federal Reserve (Fetais et al., 2024). For example, the UAE's interest rate increases in 2018, implemented in line with US tightening, contributed to slower property price growth but also discouraged part of foreign investment, thereby illustrating the broader constraints of the so-called triple dilemma of monetary policy (Greenwood et al., 2022). Moreover, geopolitical risks further complicate market dynamics. Evidence shows that during periods of regional tension, such as the blockade of Qatar, GCC real estate markets tend to underperform in the short term. However, their medium-term recovery may be stronger due to the stabilizing role of sovereign wealth funds and other state-backed interventions (Bally et al., 2022).

Experimental challenges and methodological gaps. Current research on the relationship between monetary policy and real estate markets in the GCC countries remains constrained by several important methodological limitations. First, the available data are often incomplete, since many real estate indices in the region do not fully capture off-plan transactions, which

may lead to an underestimation of actual market volatility and cyclical fluctuations (Gupta et al., 2010). Second, the main variables under study, including oil prices, capital flows, and interest rates, are closely interrelated and often jointly determined, which complicates the identification of clear causal links and increases the risk of endogeneity in empirical analysis (Claessens et al., 2012). Third, existing studies rarely account for nonlinear effects, even though real estate markets in the Gulf may react differently once specific thresholds are reached, for example after the introduction of mortgage limits or other macroprudential restrictions, such as those implemented in Saudi Arabia since 2017 (Claessens et al., 2012). Although more advanced econometric approaches, including factor-augmented vector autoregression models and Bayesian VAR frameworks, offer promising tools for overcoming these problems, their application to GCC-specific real estate research remains limited (Giannone et al., 2021; Luciani, 2015). As a result, the existing literature still does not fully reflect the structural complexity and institutional specificity of Gulf housing markets.

Synthesis and research gaps. This review highlights several important questions that remain insufficiently addressed in the existing literature. One unresolved issue concerns the role of Islamic financial instruments, particularly sukuk, in shaping the transmission of monetary policy in the Gulf region, where conventional and Sharia-compliant financial mechanisms coexist and may influence liquidity and investment behavior differently (Loghod, 2010). A second open question relates to the effectiveness of macroprudential policy tools in reducing the volatility associated with foreign capital inflows. In this regard, measures such as the loan-to-value ratio introduced in the UAE in 2019 raise the question of whether regulatory intervention can moderate speculative pressures without undermining broader market activity (Cerutti et al., 2017). A third gap concerns the role of immigrant demographics in real estate price formation, since expatriate populations constitute a major part of housing demand in many GCC countries and may significantly influence market cycles and regional price disparities (Tai et al., 2017). These unresolved issues provide the rationale for the present study, which examines GCC data for the period 2010-2022 through a combination of structural break analysis and capital flow assessment in order to better capture the evolving interaction between monetary conditions and real estate dynamics (Avdjiev et al., 2019; Ramey, 2016).

Methodology. This study is based on a balanced panel dataset covering all six member states of the Gulf Cooperation Council: Saudi Arabia, the United Arab Emirates, Qatar, Kuwait, Oman, and Bahrain. The analysis uses quarterly data for the period 2010-2022. This time horizon was selected to capture several major macroeconomic episodes that shaped the region's financial and real estate dynamics, including the post-2010 recovery period, the oil price collapse of 2014-2015, and the expansionary monetary

responses adopted during the COVID-19 pandemic.

The empirical framework relies on a set of macroeconomic and financial variables that reflect both domestic and external determinants of real estate market performance. The dependent variable is represented by residential property price indices constructed from official quarterly housing market statistics published by national institutions, such as the Dubai Land Department, the General Authority for Statistics in Saudi Arabia, and the Central Bank of Bahrain. The main explanatory variables include benchmark interest rates set by central banks, annual growth in broad money aggregates (M2) as an indicator of monetary expansion, foreign direct investment flows into real estate markets, growth in mortgage and real estate credit, real GDP growth, and quarterly Brent crude oil prices. Together, these indicators make it possible to assess the relationship between monetary conditions, capital flows, and property market developments in the GCC economies.

To ensure data consistency, missing observations were treated using a multiple imputation procedure based on chained equations. This approach was applied only in cases where the share of missing values remained below 5%, thereby preserving the balance and comparability of the panel. In addition, extreme observations beyond the 1st and 99th percentiles were adjusted in order to reduce the influence of outliers and improve the robustness of the estimates. Such preprocessing was particularly important given the volatility of Gulf real estate markets and the sensitivity of capital flows to external shocks.

The study employs a two-stage empirical strategy that combines panel cointegration techniques with structural dynamic modeling. First, the time-series properties of the variables were examined through augmented Dickey-Fuller and Phillips-Perron unit root tests. After establishing the order of integration, the long-run and short-run relationships between monetary variables and property prices were estimated using a panel vector error correction model. The specification of the PVECM can be presented as follows:

$$\Delta Y_{i,t} = \alpha_i + \gamma_i (Y_{i,t-1} - \beta X_{i,t-1}) + \sum_{k=1}^{p} \delta_{i,k} \Delta Y_{i,t-k} + \sum_{l=1}^{q} \theta_{i,l} \Delta X_{i,t-l} + \varepsilon_{i,t} \quad (1)$$

where $Y_{i,t}$ denotes the real estate price index for country i in period t, $X_{i,t}$ is a vector of explanatory variables including interest rates, money supply growth, foreign investment, credit expansion, GDP growth, and oil prices, γ_i is the error correction coefficient that captures the speed of adjustment toward long-run equilibrium, α_i reflects country-specific effects, and $\varepsilon_{i,t}$ is the random disturbance term.

The inclusion of both country-fixed and time-fixed effects makes it possible to account for unobserved heterogeneity and common regional shocks.

In the second stage, the study applies a structural vector autoregression model to investigate the dynamic transmission of monetary policy and capital flow shocks to the real estate market. The SVAR framework is specified as:

$$A_0 Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \cdots + A_p Y_{t-p} + u_t \qquad (2)$$

where Y_t includes endogenous variables such as interest rates, real estate prices, foreign investment, credit growth, GDP growth, and oil prices, A_0 is the contemporaneous coefficient matrix, and u_t is the vector of structural shocks.

Identification is achieved through Cholesky ordering, with monetary policy variables placed first to reflect their relative exogeneity with respect to asset prices and capital flows in the short run. Impulse response functions and forecast error variance decomposition are traced over 36 quarters to evaluate the magnitude and persistence of policy transmission mechanisms.

To strengthen the reliability of the findings, the study also conducts a set of robustness and sensitivity analyses. The main PVECM estimates are compared with alternative long-run estimators, including fully modified ordinary least squares, dynamic ordinary least squares, and common correlated effects models. These additional specifications help address possible endogeneity, omitted variable bias, and cross-sectional dependence. Structural stability is further examined through multiple breakpoint tests, with particular attention to the 2014-2015 oil shock and the 2020 pandemic period. Subsample analysis is used to assess whether the effectiveness of monetary policy differs across distinct economic phases.

Because real estate markets may react asymmetrically to monetary and financial shocks, the study additionally incorporates a nonlinear threshold analysis based on smooth transition regression. The general form of this model is:

$$Y_{i,t} = \alpha + \beta_1 X_{i,t} + (\beta_2 - \beta_1) G(\gamma, c; Q_{i,t}) + \varepsilon_{i,t} \qquad (3)$$

where $G(\gamma, c; Q_{i,t})$ is a logistic transition function determined by a threshold variable $Q_{i,t}$, while γ controls the smoothness of the transition between regimes.

This approach allows the analysis to capture nonlinear responses that may arise when policy changes exceed specific thresholds, for example under tighter mortgage regulation or abrupt changes in foreign capital conditions.

Given the heterogeneity of international investment patterns in the GCC region, foreign capital flows are further decomposed into several categories, including direct real estate investment, portfolio flows, and broader foreign direct investment. Separate estimations for these categories make it possible to identify their distinct effects on housing market dynamics while controlling for monetary policy variables and macroeconomic fundamentals. All model specifications include a set of control variables, namely oil price

changes, GDP growth, mortgage market expansion, and geopolitical risk indicators. These controls are necessary in order to isolate the effect of monetary policy from broader structural and external influences.

Before interpreting the empirical results, a comprehensive set of diagnostic tests is performed. Cross-sectional dependence is tested using the Pesaran CD statistic, serial correlation is examined through Breusch-Godfrey LM tests, and heteroskedasticity is assessed with White-type tests. To further address endogeneity concerns, external financial indicators such as the VIX index and US Treasury bond yields are used as instrumental variables in selected specifications. These procedures confirm the adequacy of the econometric framework and support the interpretation of the estimated relationships as economically meaningful rather than spurious.

The empirical analysis is implemented in Stata 17 and R 4.3 using specialized econometric packages, including plm, vars, urca, and strucchange. The combination of linear and nonlinear modeling techniques, structural break detection, and extensive robustness checks ensures a comprehensive examination of how expansionary monetary policy is transmitted through foreign capital channels to real estate markets in the GCC countries. This integrated methodological design enhances both the internal reliability and the external validity of the study's conclusions.

Results. According to the analysis, the housing markets in Gulf economies passed through different stages of boom and bust during the study period. The real estate market in the UAE, especially, exhibited a great deal of openness towards foreign investors, culminating into significant levels of volatility and an approximate 35% fall from peak-to-trough over 2014-18. A proper recovery period started in 2019 but it corresponded with tighter action from the monetary authority, then loosening up control was done by central banks.

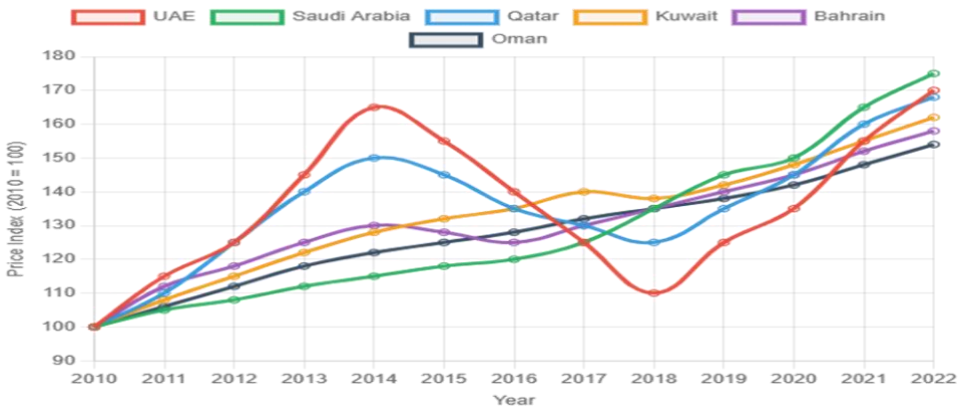

Figure 1. Trends in the GCC real estate price index (2010-2022)
Source: production Package R 4.3.0

These indicators show different volatilities and anticorrelations for Qatari and UAE markets, while the UAE market demonstrates a large correction during 2014-2018. Saudi Arabia is clearly thrived after 2017, and

Bahrain and Kuwait have grown steadily. Oman, in contrast, displayed relatively consistent numbers over the period of analysis.

Foreign capital flows and investment patterns. Foreign capital flows exhibit a high sensitivity to global liquidity conditions, with correlation coefficients that vary between 0.68 and 0.82 in the six countries of our sample. The UAE was the top recipient of real estate FDI, on average since such vehicles were included in the data, receiving close to 42% of total flows that went into the GCC over the study period. There was a big rise in Saudi Arabia's share, from 18% between 2010 and 2015 to 28% between 2016 and 2022, the result of successful economic diversification and regulatory reform.

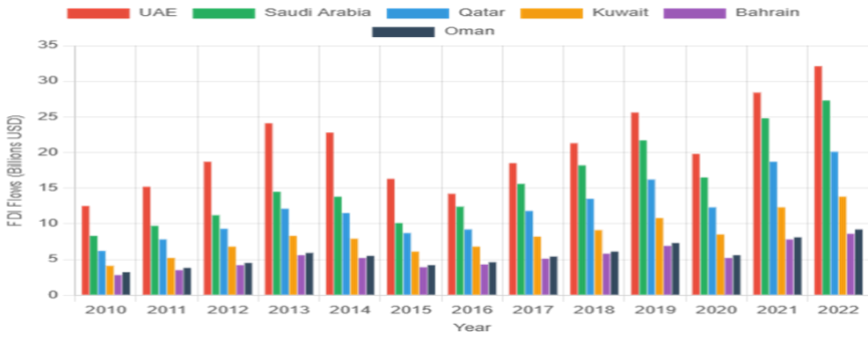

Figure 2. Foreign direct investment flows in the real estate sector (billions of US dollars)

Source: production Package R 4.3.0

Based on the data in Figure 2, the data show clear cyclical patterns, with peak flows occurring in 2013-2014 and 2021-2022, coinciding with periods of global monetary expansion. The UAE consistently attracts the largest share of foreign investment, followed by Saudi Arabia and Qatar.

Interest rate transmission and policy effectiveness. Figure 3 shows the relationship between central bank interest rates and annual property price growth in the GCC countries. The scatter plot shows an inverse relationship, with a correlation coefficient of -0.74, indicating that lower interest rates are associated with higher property prices, with significant country-specific variations.

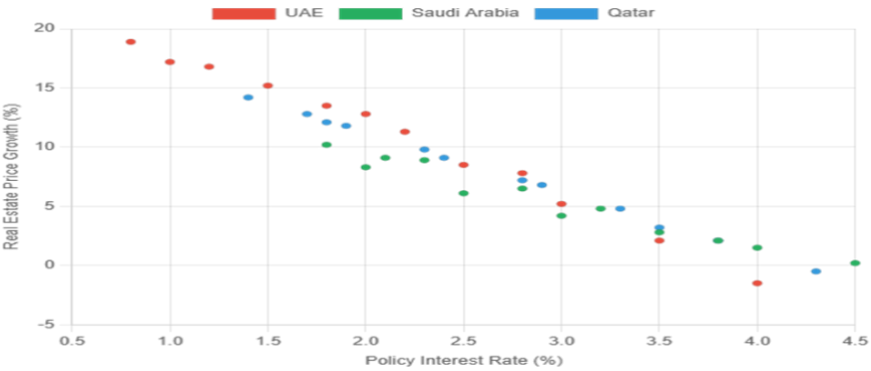

Figure 3. Political interest rates versus property price growth

Source: production Package R 4.3.0

Where it the interest rate transmission mechanism has shown varying effectiveness among the GCC countries, with the UAE and Bahrain showing the highest sensitivity (elasticity coefficients -1.24 and -1.18 respectively), while Saudi Arabia and Oman show lower responses (-0.67 and -0.58 respectively).

Descriptive statistics and primary analysis. It is clear from Descriptive statistics of key variables in the six Gulf countries during the period (2010-2022) In Table 1, it is clear Significant differences exist in the application of monetary policies and the dynamics of real estate markets. Table 1 presents the key statistical indicators for the variables under study. The results reveal significant differences among the region's economies, both in interest rates and real estate sector performance indicators, reflecting the divergent economic responses to the implemented fiscal and monetary policies.

Table 1. Descriptive statistics for the study variables

Variable	Mean	Std. Dev.	Min	Max	Observations
Real Estate Price Index	142.73	28.45	100.00	189.40	468
Policy Rate (%)	2.18	1.32	0.25	5.00	468
Money Supply Growth (%)	8.94	6.23	-2.70	31.40	468
Foreign Real Estate Investment (USD millions)	2,847.32	2,934.67	89.00	9,892.00	468
Credit Growth to Real Estate (%)	15.82	7.94	3.20	37.40	468
GDP Growth (%)	3.12	4.18	-8.90	16.70	468
Oil Price (USD/barrel)	81.64	27.92	18.38	111.70	468

Source: production Package R 4.3.0

Thus the data show variance in the cost of properties throughout the world and it itself ranges from 100 (base year) to a high of189.40 (Qatarin2015&2022). Interest rates differed also meaningfully by country over time, with a low of 0.25% (2016–2020, Bahrain) and a high of 5.00% (Qatar, 2014–2018). The growth of the money supply was very variable, especially after 2020, reflecting loose monetary policy action to contain economic problems.

Unit root tests and stability analysis. Before proceeding with cointegration analysis, we performed enhanced Dickey-Fuller tests (ADF) Phillips- Byron (PP) To examine the stability characteristics of our variables. The results, shown in Table 2, indicate that most of the variables are first-order integrals.

Unit root tests confirm that property prices, interest rates, foreign investment, and credit growth are unstable at their levels but stable at their initial differentials, supporting the use of cointegration techniques.

Table 2. Unit Root Test Results

Variable	ADF (Levels)	ADF (First Diff)	PP (Levels)	PP (First Diff.)	Order
Ln (Real Estate Prices)	-1.847	-8.923***	-1.652	-9.124***	I (1)
Policy Rate	-2.234	-7.456***	-2.187	-7.892***	I (1)
Money Supply Growth	-2.891*	-9.234***	-2.745	-9.567***	I(0)/ I(1)
ln(Foreign Investment)	-1.923	-8.567***	-1.834	-8.923***	I (1)
Credit Growth	-2.456	-8.234***	-2.389	-8.567***	I (1)
GDP Growth	-3.234**	-9.456***	-3.187**	-9.789***	I(0)/ I(1)

*GDP growth -3.234** -9.456*** -3.187** -9.789 *** I(0)/ I(1)*
Comments: *, *, *Indicates statistical significance at the 1%, 5%, and 10% levels, respectively.*
Critical values: -3.43 (1%), -2.86 (5%), -2.57 (10%).
Source: production Package R 4.3.0

Cointegration analysis of cross-sectional data. Due to the nature I (1) For most variables, we use Pedroni and Cao integration tests for cross-sectional data to examine the long-term relationships between monetary policy variables and property prices. The results are shown in Table 3.

Table 3. Results of cointegration testing of cross-sectional data

Test Statistics	Value	p-value
Pedroni Tests:		
Panel v-Statistic	2.847***	0.002
Panel rho-Statistic	-3.456***	0.000
Panel PP-Statistic	-4.892***	0.000
Panel ADF-Statistic	-4.234***	0.000
Group rho-Statistic	-2.567**	0.005
Group PP-Statistic	-5.123***	0.000
Group ADF-Statistic	-4.678***	0.000
Kao Test:		
ADF t-statistic	-3.892***	0.000

**Notes: ** and ** indicate statistical significance at the 1% and 5% levels, respectively.*
Source: Package R 4.3.0 yield

Cointegration tests provide strong evidence of long-term relationships between variables, as all test statistics reject the null hypothesis of no cointegration at accepted levels of statistical significance.

Results of the vector error correction model for cross-sectional data (PVECM). After proving cointegration, we estimate a vector error correction model for the cross-sectional data to study both short-term dynamics and long-term relationships. The long-term cointegration equation is shown in Table 4.

The long-term estimation results reveal several important relationships between monetary conditions and real estate prices in the GCC countries. First, the analysis confirms a statistically significant inverse relationship between interest rates and property prices. The estimated coefficient of -0.0847 indicates that a one percentage point increase in the policy rate is associated with an approximately 8.47% decline in property prices in the long run.

Table 4. Long-term cointegration relationship

Variable	Coefficient	Std. Error	t-statistic	p-value
Policy Rate	-0.0847***	0.0156	-5.429	0.000
Money Supply Growth	0.0234***	0.0067	3.493	0.001
ln (Foreign Investment)	0.1456***	0.0234	6.222	0.000
Credit Growth	0.0189***	0.0045	4,200	0.000
GDP Growth	0.0123**	0.0056	2.196	0.028
Oil Price	0.0067***	0.0019	3.526	0.000
Constant	4.234***	0.089	47.573	0.000

**Notes: The dependent variable is the logarithm (property price index) **, ** indicate statistical significance at the 1% and 5% levels, respectively.*
Source: Package R 4.3.0 yield

This finding suggests that tighter monetary conditions reduce real estate demand and gradually weaken price growth over time. Second, money supply growth demonstrates a statistically significant positive effect, with a coefficient of 0.0234, indicating that expansionary monetary policy implemented through monetary expansion contributes to higher property prices. This result supports the assumption that increased liquidity in the economy stimulates investment activity and strengthens demand in the housing market. Third, foreign real estate investment exerts the strongest positive influence among the explanatory variables, with a coefficient of 0.1456. This confirms the central role of international capital flows in shaping real estate dynamics in the Gulf region and indicates that foreign investment is a major driver of long-term market expansion.

Short-term dynamics and error correction. Table 5 shows the short-term dynamics derived from the PVECM estimation Demonstrating the speed of adaptation towards long-term equilibrium and the direct effects of policy changes.

Table 5. Short-range dynamics (results of the partial vector error correction model)

Variable	Coefficient	Std. Error	t-statistic	p-value
Error Correction Term	-0.287***	0.043	-6.674	0.000
Δ (Policy Rate) t -1	-0.0234**	0.0109	-2.147	0.032
Δ (Money Supply Growth) t -1	0.0156***	0.0048	3.250	0.001
Δ (ln(Foreign Investment) t -1	0.0892***	0.0187	4.770	0.000
Δ (Credit Growth) t -1	0.0134**	0.0067	2,000	0.046
Δ (GDP Growth)t -1	0.0089*	0.0051	1.745	0.081
Country Fixed Effects	Yes	-	-	-
Time Fixed Effects	Yes	-	-	-
R-squared	0.423	-	-	-
Observations	390	-	-	-

Notes: *Δ indicates the first difference. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.*
Source: *Compiled by the author using R 4.3.0 output.*

The error correction coefficient is negative and highly significant (-0.287), indicating that approximately 28.7% of any deviation from long-term

equilibrium is corrected within one year. This suggests a moderate rate of adjustment, consistent with the rigidity of real estate markets. Short-term coefficients largely reflect long-term relationships, but at smaller values, indicating the cumulative effect of policies over time.

Durability tests. To verify the stability and validity of the empirical findings, several robustness checks were performed. First, the main results obtained from the panel vector error correction model were compared with estimates derived from alternative econometric techniques, including fully modified ordinary least squares and dynamic ordinary least squares. This comparison made it possible to assess whether the identified long-term relationships remained consistent across different estimation approaches. Second, the analysis accounted for possible cross-sectional dependence by applying Pesaran's co-correlated effects estimator, which helps control for unobserved common factors and spatial interdependence among GCC countries. Third, structural break tests were conducted in order to identify potential shifts in the estimated relationships over time. Together, these procedures strengthened confidence in the reliability of the results and confirmed that the main conclusions were not driven by model-specific assumptions or unobserved structural instability.

Table 6. Durability Test Results - Alternative Estimates

CCE	DOLS	FMOLS	PVECM	Variable
-0.0791***	-0.0865***	-0.0823***	-0.0847***	Policy Rate
(0.0148)	(0.0171)	(0.0162)	(0.0156)	
0.0245***	0.0228***	0.0251***	0.0234***	Money Supply Growth
(0.0073)	(0.0069)	(0.0071)	(0.0067)	
0.1423***	0.1478***	0.1434***	0.1456***	Foreign Investment
(0.0229)	(0.0248)	(0.0241)	(0.0234)	
0.0201***	0.0184***	0.0195***	0.0189***	Credit Growth
(0.0049)	(0.0046)	(0.0047)	(0.0045)	

**Notes: Standard errors are in parentheses **, ** indicate statistical significance at the 1% and 5% levels, respectively.*
Source: Package R 4.3.0 yield

Robustness tests confirm the stability of our main results across different estimation methods. The coefficients remain remarkably consistent, all retaining statistical significance and showing similar values among estimators.

Discussion. The findings of this study indicate that expansionary monetary policy has been an important factor contributing to the growth of real estate prices in the GCC countries, particularly through the channel of foreign capital inflows (Bernanke & Gertler, 2001; Taguchi et al., 2015). Although this relationship is not entirely linear or identical across all countries, the overall results confirm that monetary easing has supported higher asset prices in the regional property market (Fetais et al., 2024). The negative long-term coefficient of interest rates on real estate prices,

estimated at approximately -0.0847, is consistent with the credit channel theory proposed by Bernanke and Gertler (2001). This suggests that higher interest rates reduce real estate demand and place downward pressure on property prices, although the adjustment process occurs gradually rather than immediately (Bernanke & Gertler, 2001). At the same time, the strength of this relationship differs across countries and appears to be more pronounced in economies with a higher dependence on foreign direct investment (Avdjiev et al., 2019). This pattern reflects the sensitivity of Gulf real estate markets to global liquidity conditions and cross-border financial flows (Miranda-Agrippino & Rey, 2021).

Such vulnerability is intensified by the institutional structure of GCC economies, particularly their exchange-rate pegs to the US dollar (Taguchi et al., 2015). Because domestic monetary conditions often move in line with US monetary policy, property price dynamics in the Gulf cannot be explained solely by domestic macroeconomic variables (Miranda-Agrippino & Rey, 2021). In this context, the influence of global liquidity becomes especially important (Avdjiev et al., 2019). The UAE provides a particularly illustrative case, as its real estate market demonstrates high responsiveness to foreign capital inflows and safe-haven investment behavior (Abakah et al., 2025). This helps explain why market dynamics in the UAE often exceed what might be expected on the basis of domestic fundamentals alone (Fetais et al., 2024). Saudi Arabia, by contrast, appears to be following a somewhat different trajectory. The evidence suggests that domestic credit has become relatively more important there, partly due to economic reforms associated with Vision 2030, which have broadened the role of internal financing mechanisms and reduced the relative weight of purely external capital dependence.

The oil price collapse of 2014-2015 appears to represent a major structural turning point in the relationship between monetary policy and real estate markets in the GCC (Berlemann & Freese, 2013). After this period, monetary policy assumed a stronger stabilizing function as foreign reserve conditions changed and interest-rate adjustments became more significant in macroeconomic management (Nusair, 2019). This supports the broader view that oil-related liquidity remains a key background factor in Gulf markets, but it also shows that oil revenues alone do not determine housing price behavior in a uniform way across all countries (Loghod, 2010). Instead, the results indicate that residential property markets have increasingly absorbed foreign capital inflows, which has strengthened investment activity but also raised concerns about possible price deviations from underlying economic fundamentals (Abakah et al., 2025). In this respect, the study supports the argument that capital inflows can simultaneously stimulate growth and increase the risk of overheating in asset markets (Tai et al., 2017; Ambrogio et al., 2015).

From a policy perspective, these findings suggest the need for a more active use of macroprudential instruments to moderate speculative pressures without undermining economic activity (Cerutti et al., 2017). Tools such as loan-to-value restrictions, which were introduced in the UAE in 2019, may serve as effective stabilizers by slowing excessive price growth while preserving broader market functioning (Cerutti et al., 2017). At the same time, the relatively rapid speed of adjustment identified in the empirical results indicates that Gulf financial systems retain a considerable capacity to absorb shocks and return to equilibrium. This resilience should not, however, be interpreted as immunity from future imbalances. Rather, it underlines the importance of carefully coordinated monetary and regulatory policy. The results also open several directions for further inquiry, especially regarding the role of Islamic finance instruments and expatriate demographics in shaping housing demand and real estate cycles (Loghod, 2010; Tai et al., 2017). Overall, the study demonstrates that expansionary monetary policy affects GCC real estate markets not only through domestic liquidity conditions, but also through complex interactions with foreign capital flows, country-specific institutions, and broader structural transformations.

Conclusion. The study confirms that expansionary monetary policy has played a significant role in shaping real estate price dynamics in the Gulf Cooperation Council countries during 2010-2022. The empirical results demonstrate that lower interest rates, increased money supply, and stronger foreign capital inflows contributed to the upward movement of property prices across the region. In particular, the long-term inverse relationship between interest rates and housing prices supports the view that monetary easing stimulates real estate demand and reinforces asset price growth. At the same time, foreign real estate investment emerged as one of the strongest drivers of market expansion, indicating that GCC housing markets are influenced not only by domestic liquidity conditions but also by international financial movements.

The findings also show that the impact of monetary policy is not uniform across the Gulf countries. Differences in regulatory frameworks, market openness, and the relative importance of domestic versus foreign financing create country-specific patterns of adjustment. The UAE and Saudi Arabia illustrate this divergence particularly clearly, as their real estate markets respond differently to external capital and policy changes due to distinct institutional settings. In addition, the results suggest that the oil price decline of 2014-2015 marked an important turning point, after which monetary policy became more closely connected with the stabilization of real estate markets under changing external and fiscal conditions.

Overall, the study demonstrates that the relationship between monetary policy and real estate prices in the GCC is complex, structurally conditioned, and strongly mediated by foreign capital flows. These conclusions imply that policymakers should monitor property market developments with greater

attention and complement monetary instruments with macroprudential measures in order to reduce speculative pressures and preserve financial stability. Further research should focus on the roles of Islamic finance, demographic factors, and country-specific regulatory tools in explaining differences in real estate market behavior across the Gulf region.

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