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**Postgraduate Dissertation**

*The Impact of ECB Interest Rate Fluctuations on Construction  
Activity in Cyprus*

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Patras, Greece, March, 2026

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## **Abstract**

This dissertation examines the relationship between interest rate developments associated with European Central Bank (ECB) monetary policy and construction activity in Cyprus. The construction sector plays a central role in the Cypriot economy and is particularly sensitive to changes in financing conditions, making it an appropriate case for analysing sectoral monetary policy transmission.

The study investigates whether movements in interest rate indicators linked to ECB policy are associated with observable changes in construction activity over time. A quantitative approach is employed, using annual macroeconomic and sector-specific data for Cyprus over a multi-year period that includes both phases of monetary tightening and easing. Construction activity is measured using value added in construction as the main indicator, while building permits are used as complementary, forward-looking measure. Interest rate developments are captured through lending rate indicators that reflect the financing conditions relevant to construction-related investment.

By focusing on Cyprus, a small open economy within the euro area, the analysis contributes to a more detailed understanding of how common monetary policy decisions interact with domestic economic structures. The empirical results indicate that construction activity responds negatively to higher interest rates, while economic sentiment and cost conditions also play an important role. Overall, the results point to a meaningful relationship between monetary policy and construction activity, although the magnitude of the effect varies over time.

## **Keywords**

European Central Bank (ECB), Interest Rate Fluctuations, Construction Activity, Cyprus, Monetary Policy Transmission, Time – Series Econometric Analysis.

## Περίληψη

Η παρούσα διατριβή εξετάζει τη σχέση μεταξύ των εξελίξεων στα επιτόκια που συνδέονται με τη νομισματική πολιτική της Ευρωπαϊκής Κεντρικής Τράπεζας (ΕΚΤ) και της δραστηριότητας στον κατασκευαστικό τομέα στην Κύπρο. Ο κατασκευαστικός τομέας διαδραματίζει κεντρικό ρόλο στην κυπριακή οικονομία και είναι ιδιαίτερα ευαίσθητος στις μεταβολές των συνθηκών χρηματοδότησης, γεγονός που τον καθιστά κατάλληλη περίπτωση για την ανάλυση της μετάδοσης της νομισματικής πολιτικής σε τομεακό επίπεδο.

Η μελέτη διερευνά κατά πόσο οι μεταβολές στους δείκτες επιτοκίων που συνδέονται με την πολιτική της ΕΚΤ συσχετίζονται με παρατηρήσιμες αλλαγές στη δραστηριότητα του κατασκευαστικού τομέα διαχρονικά. Ακολουθείται ποσοτική προσέγγιση, με τη χρήση ετήσιων μακροοικονομικών και τομεακών δεδομένων για την Κύπρο, σε μια πολυετή περίοδο που περιλαμβάνει τόσο φάσεις νομισματικής σύσφιξης όσο και νομισματικής χαλάρωσης. Η δραστηριότητα στον κατασκευαστικό τομέα μετράται μέσω της προστιθέμενης αξίας στις κατασκευές ως βασικού δείκτη, ενώ οι οικοδομικές άδειες χρησιμοποιούνται ως συμπληρωματικό, προπορευόμενο μέτρο. Οι εξελίξεις στα επιτόκια αποτυπώνονται μέσω δεικτών επιτοκίων δανεισμού που αντανακλούν τις συνθήκες χρηματοδότησης που είναι σχετικές με τις επενδύσεις στον κατασκευαστικό τομέα.

Εστιάζοντας στην Κύπρο, μια μικρή ανοικτή οικονομία εντός της ζώνης του ευρώ, η ανάλυση συμβάλλει σε μια πιο λεπτομερή κατανόηση του τρόπου με τον οποίο οι κοινές αποφάσεις νομισματικής πολιτικής αλληλεπιδρούν με τις εγχώριες οικονομικές δομές. Τα εμπειρικά αποτελέσματα δείχνουν ότι η κατασκευαστική δραστηριότητα ανταποκρίνεται αρνητικά σε υψηλότερα επιτόκια, ενώ η οικονομική συγκυρία και οι συνθήκες κόστους διαδραματίζουν επίσης σημαντικό ρόλο. Συνολικά, τα ευρήματα αναδεικνύουν τη σημασία της ανάλυσης σε επίπεδο τομέα κατά την αξιολόγηση της μετάδοσης της νομισματικής πολιτικής σε μικρότερες οικονομίες της ζώνης του ευρώ.

**Λέξεις – Κλειδιά**

Ευρωπαϊκή Κεντρική Τράπεζα, Διακυμάνσεις Επιτοκίων, Κατασκευαστική Δραστηριότητα, Κύπρος, Μηχανισμός Μετάδοσης Νομισματικής Πολιτικής, Οικονομική Ανάλυση Χρονοσειρών.

## Table of Contents

Abstract .....	iv
Περίληψη.....	vi
Table of contents .....	vii
List of Figures .....	xi
List of Tables.....	xii
List of Abbreviations & Acronyms .....	xiii
1. Introduction .....	1
1.1 Background and Motivation.....	1
1.2 Research Objectives and Questions .....	2
1.3 Scope and Structure of the Dissertation.....	3
2. Literature Review.....	4
2.1 Monetary Policy and Interest Rates .....	4
2.2 Monetary Policy Transmission Mechanism.....	5
2.3 Interest Rates and Sectoral Activity in Construction .....	5
2.4 Summary and Research Gap .....	6
2.5 Monetary Policy Transmission in Small Open Economies.....	7
2.6 Construction and Real Estate as a Financial Accelerator .....	9
2.7 The Lagged Transmission of Monetary Policy to Construction .....	11
3. Data and Methodology .....	14

3.1 Data and Sources .....	14
3.2 Methodological Framework and Variable Section .....	14
3.2.1 Expected Signs and Economic Intuition .....	16
3.3 Econometric Model Strategy.....	17
3.4 Limitations and Robustness Considerations .....	18
4. Empirical Results .....	20
4.1 Econometric Analysis – Baseline Model Using Value Added in Construction.....	20
4.1.1 Descriptive Analysis of Construction Value Added .....	20
4.1.2 Model Specification .....	21
4.1.3 Estimation Results.....	21
4.1.4 Diagnostic Tests and Model Stability .....	23
4.1.5 Discussion .....	25
4.2 Robustness model Using Buildings Permits .....	26
4.2.1 Model Specification .....	26
4.2.2 Estimation Results.....	26
4.2.3 Diagnostic Tests and Stability Analysis.....	28
4.2.4 Discussion .....	30
5. Discussion of Empirical Findings .....	31
5.1 Interpretation of Baseline Model Results.....	31
5.2 Robustness Analysis: Building Permits Model.....	32

5.3 Implications for the Construction Sector in Cyprus.....	33
5.4 Transmission Channels and Construction Market Dynamics .....	34
5.5 Synthesis of Empirical Insights and Broader Economic Interpretation .....	36
6. Conclusions, Implications and Future Research .....	38
6.1 Overview and Summary of the Study .....	38
6.2 Summary and Interpretation of Empirical Findings.....	39
6.3 Policy Implications.....	41
6.4 Implications for Investors, Developers and Market Participants .....	43
6.5 Limitations of the Study.....	45
6.6 Policy Trade – offs and Sectoral Vulnerabilities .....	47
6.7 Directions for Future Research .....	49
6.8 Concluding Remarks .....	50
References .....	53
Appendix A: Data Sources and Variable Definitions .....	56

## List of Figures

Figure 1: Building Permits and Value Added in the Construction Sector in Cyprus (1995-2025) .....	20
Figure 2: CUSUM Test for Parameter Stability – Value Added Model .....	24
Figure 3: CUSUM of Squares Test for Parameter Stability – Value Added Model .....	25
Figure 4: CUSUM Test for Parameter Stability – Building Permits Model .....	29
Figure 5: CUSUM of Squares Test for Parameter Stability – Building Permits Model .....	29

## List of Tables

Table 1: OLS Estimation Results – Dependent Variable: LNVACONR .....	22
Table 2: Breusch – Godfrey Serial Correlation Test.....	23
Table 3: White Test for Heteroskedasticity .....	23
Table 4: Jarque – Bera Normality Test .....	24
Table 5: OLS Estimation Results – Dependent Variable: LNBP .....	27
Table 6: Breusch–Godfrey Serial Correlation Test – Building Permits Model .....	28
Table 7: White Heteroskedasticity Test – Building Permits Model .....	28
Table 8: Jarque–Bera Normality Test – Building Permits Model.....	28

## List of Abbreviations & Acronyms

<b>ADF</b>	Augmented Dickey–Fuller test (unit root test)
<b>CBC</b>	Central Bank of Cyprus
<b>COVID-19</b>	Coronavirus Disease 2019
<b>ECB</b>	European Central Bank
<b>ESI</b>	Economic Sentiment Indicator
<b>EU</b>	European Union
<b>GDP</b>	Gross Domestic Product
<b>HAC</b>	Heteroskedasticity and Autocorrelation Consistent standard errors
<b>LN</b>	Natural logarithm
<b>LNBP</b>	Logarithm of Building Permits
<b>LNCPMR</b>	Logarithm of Construction Costs
<b>LNESI</b>	Logarithm of Economic Sentiment Indicator
<b>LNIR</b>	Logarithm of Interest Rates
<b>LNUNR</b>	Logarithm of Unemployment Rate
<b>LNVACONR</b>	Logarithm of Value Added in Construction
<b>OLS</b>	Ordinary Least Squares

## **1. Introduction**

### **1.1 Background and Motivation**

Monetary policy decisions taken by the European Central Bank (ECB) influence economic activity across the euro area, yet the effects of these decisions are not distributed evenly. Although policy rates are determined at a supranational level, their transmission depends heavily on national financial systems and sector-specific characteristics. As a result, common monetary policy decisions often generate asymmetric outcomes across member states, an issue that remains particularly relevant for smaller economies.

In economies where construction and real estate activity account for a substantial share of domestic output, interest rate fluctuations tend to produce especially visible economic adjustments. Cyprus represents a notable case in this regard. The construction sector has historically formed a core component of the country's growth model, contributing significantly to employment, investment, and overall economic performance. At the same time, the sector remains highly dependent on external financing, making it especially sensitive to changes in borrowing costs and credit conditions.

Recent periods of monetary tightening in the euro area have renewed interest in understanding how higher interest rates affect national economies at the sectoral level. While a considerable body of empirical research examines the relationship between monetary policy and aggregate macroeconomic variables, notably GDP and inflation, considerably less attention has been paid to sector-specific transmission mechanisms. This omission is particularly striking in the context of smaller open economies, where structural characteristics may amplify the effects of common monetary policy decisions.

In this context, Cyprus provides an informative empirical setting. The economy's reliance on bank-based financing, combined with the cyclical nature of construction activity, suggests that interest rate fluctuations may have a pronounced impact on sectoral outcomes. Importantly, this relationship should not be assumed to be immediate or uniform. Adjustments may occur with time lags, operate through indirect channels, or interact with broader macroeconomic conditions such as confidence and cost dynamics.

The present dissertation examines whether fluctuations in interest rates associated with ECB monetary policy are linked to observable changes in construction activity in Cyprus. Rather than presuming a direct causal effect, the analysis explicitly considers the timing, direction, and relative strength of this relationship. In my view, this approach is necessary in order to capture the realistic dynamics through which monetary policy affects investment-intensive sectors in small euro area economies.

To address this objective, the study employs an econometric framework designed to capture dynamic interactions between interest rates and construction-related indicators. The aim is not merely to document correlation, but to evaluate whether interest rate developments constitute a meaningful explanatory factor for construction activity over time. By doing so, the dissertation seeks to contribute empirical evidence to a debate that remains underdeveloped at the sectoral level.

## **1.2 Research Objectives and Questions**

Understanding the transmission of monetary policy at the sectoral level is increasingly important, particularly within a monetary union where national authorities lack independent interest rate instruments. By focusing on the construction sector, which is widely recognised as highly sensitive to borrowing costs and investment conditions, this study provides insight into how common monetary policy decisions may produce differentiated effects across sectors within the same monetary framework.

The primary objective of this dissertation is to assess the extent to which interest rate movements linked to ECB monetary policy influence construction activity in Cyprus. More specifically, the analysis seeks to identify whether interest rate fluctuations help explain observed variations in both realised construction output and forward-looking investment activity.

The study is guided by the following research questions:

RQ1: Is there a statistically significant relationship between interest rate fluctuations associated with ECB monetary policy and construction activity in Cyprus?

RQ2: How does construction activity respond over time to changes in interest rates during the examined period?

RQ3: To what extent do interest rate movements account for variations in construction activity within the broader framework of monetary policy transmission?

These questions establish a clear analytical structure for the empirical investigation. In my assessment, they ensure coherence between the study's objectives, the chosen econometric methodology, and the interpretation of results, while still allowing sufficient flexibility for robustness analysis and alternative specifications.

### **1.3 Scope and Structure of the Dissertation**

The study adopts a quantitative approach, focusing on how changes in financing conditions are reflected in construction activity over time. While the analysis provides sector-specific insight into monetary policy transmission, it does not attempt to evaluate the overall effectiveness of ECB monetary policy, nor does it compare Cyprus directly with other euro area countries. The emphasis remains firmly on understanding sectoral responses within a single national context.

The discussion begins with a review of the relevant theoretical and empirical literature on monetary policy transmission, interest rate effects, and construction activity. This is followed by a detailed presentation of the data and econometric methodology employed in the analysis. The empirical findings are then examined, including both baseline and robustness specifications, together with diagnostic tests designed to assess model reliability and stability.

The final chapters interpret the results in the context of the Cypriot construction sector and discuss their broader economic and policy implications. Particular attention is given to how monetary conditions influence investment behaviour and decision-making by market participants. The dissertation concludes by identifying limitations of the analysis and outlining directions for future research that may further enhance understanding of sectoral monetary transmission in small open economies.

## **2. Literature Review**

### **2.1 Monetary Policy and Interest Rates**

The relationship between monetary policy and real economic activity has long occupied a central position in macroeconomic research. Traditional frameworks emphasise the interest rate channel, through which policy rate adjustments influence borrowing costs, investment decisions, and aggregate demand. Despite this well-established mechanism, the strength and speed of monetary transmission remain far from uniform across economies and sectors.

A large share of the empirical literature focuses on aggregate macroeconomic outcomes, such as output growth, inflation, and employment. While this approach has provided valuable insights, it often obscures important sectoral dynamics. In particular, capital-intensive sectors may respond more strongly to changes in financing conditions than sectors with lower investment requirements. Construction is widely regarded as one of the most interest-sensitive sectors, largely due to its dependence on long-term borrowing and its exposure to credit market conditions.

Empirical evidence generally supports the view that higher interest rates dampen investment activity by raising financing costs and constraining credit demand. However, the magnitude and timing of this effect vary considerably across studies. Some contributions identify relatively rapid responses, while others emphasise delayed adjustments arising from contractual rigidities, expectation formation, and financial intermediation processes. In my view, this heterogeneity reflects the complexity of monetary transmission rather than weakness in the underlying theoretical framework.

It is also increasingly recognised that market-based lending rates often provide a more accurate representation of effective monetary transmission than policy rates alone. Firms and households typically respond to the financing conditions they actually face, rather than to changes in headline policy instruments. For investment-driven sectors such as construction, this distinction is particularly important. Accordingly, the literature provides strong justification for analysing interest rate measures that directly reflect borrowing costs relevant to sectoral investment decisions.

## **2.2 Monetary Policy Transmission Mechanism**

Monetary policy affects the real economy through several interrelated channels, most notably the interest rate channel, the credit channel, and the expectations channel. These mechanisms operate simultaneously and may reinforce one another, especially in environments characterised by financial frictions and uncertainty.

The credit channel plays a particularly important role in shaping investment behaviour. Changes in interest rates affect banks' balance sheets, lending capacity, and risk assessment, thereby influencing both the supply of credit and its cost. When monetary conditions tighten, lending standards may become more restrictive, disproportionately affecting sectors that rely heavily on external financing. Construction, given its leverage and long project horizons, is especially exposed to these dynamics.

Expectations also play a decisive role. Anticipated changes in future interest rates, economic growth, and market conditions influence current investment decisions. In periods of heightened uncertainty, expectations may amplify the effects of monetary policy, either by reinforcing contractionary impulses or by delaying recovery. From an analytical perspective, ignoring expectations risks underestimating the true impact of monetary policy on investment-intensive sectors.

In my assessment, sectoral characteristics largely determine how monetary policy transmission unfolds. Sectors with long planning horizons, high capital requirements, and limited flexibility in adjusting output tend to exhibit stronger and more persistent responses. Construction fits this profile closely, suggesting that interest rate changes are likely to affect the sector with both intensity and delay.

## **2.3 Interest Rates and Sectoral Activity in Construction**

Construction activity is inherently linked to financing conditions. Projects typically require substantial upfront investment, extended planning phases, and long repayment periods. As a result, borrowing costs play a central role in determining project feasibility and investment timing. Lower interest rates reduce financing costs and support housing demand, while higher rates increase financial pressure and may delay or cancel planned developments.

Empirical studies examining construction activity across countries generally report a negative relationship between interest rates and indicators such as construction output, investment, or building permits. Nevertheless, the strength and persistence of this relationship differ across institutional and economic contexts. Housing market regulations, mortgage structures, credit availability, and income dynamics all shape how construction responds to interest rate changes.

Within the euro area, the transmission of monetary policy is complicated by the coexistence of a single monetary authority and heterogeneous national financial systems. Identical policy rate changes may therefore generate uneven sectoral outcomes across member states. Countries with greater reliance on bank-based financing or stronger exposure to real estate cycles often exhibit more pronounced responses.

In the case of Cyprus, the relevance of these mechanisms is difficult to overstate. Construction has historically functioned as a key driver of economic expansion and contraction, making the sector particularly vulnerable to shifts in financing conditions. Despite this importance, empirical research focusing explicitly on construction activity in Cyprus remains limited. This lack of sector-specific evidence represents a notable gap in the literature.

## **2.4 Summary and Research Gap**

Although the broader relationship between monetary policy and economic activity is well documented, fewer studies examine the sectoral transmission of ECB interest rate changes within small open economies. The existing literature provides useful theoretical and empirical foundations, yet country specific evidence remains necessary to better understand domestic adjustment mechanisms.

This dissertation seeks to address this gap by focusing explicitly on the interaction between ECB interest rate fluctuations and construction activity in Cyprus. Rather than assuming a uniform or immediate effect, the analysis explores the possibility of lagged responses and interaction with credit and housing market dynamics.

In doing so, the study aims to complement existing macro-level analyses with sector-specific evidence, contributing to a more nuanced understanding of monetary transmission in the euro area context.

Empirical studies focusing on construction activity generally find a negative relationship between higher interest rates and indicators of construction output, investment, or building permits. However, the magnitude, timing, and persistence of these effects vary considerably across countries and periods. This variation indicates that national economic characteristics, institutional frameworks, and sectoral structures play a critical role in shaping how construction activity responds to changes in financing conditions.

Despite the growing literature on monetary policy transmission and sectoral effects, evidence specifically on the construction sector in Cyprus remains limited. Most research focuses on aggregate macroeconomic outcomes or larger euro area economies, with relatively few studies examining sectoral responses in smaller open economies. This gap is especially important given the construction sector's key role in the Cypriot economy, its pronounced cyclical behaviour, and its strong dependence on external financing.

A focused empirical investigation is therefore necessary to examine the relationship between ECB interest rate changes and construction activity in Cyprus. By adopting a sectoral and country-specific perspective, this dissertation contributes new evidence to the literature, addressing an important gap for smaller economies. Theoretical considerations also suggest that sectoral responses to monetary policy are dynamic, persistent, and shaped by both realized outcomes and forward-looking investment decisions. Assessing the robustness of these relationships across alternative specifications provides a deeper understanding of the temporal dynamics underlying monetary policy transmission at the sectoral level.

## **2.5 Monetary Policy Transmission in Small Open Economies**

Monetary policy transmission may function differently in small open economies compared to larger, more diversified systems. In a monetary union such as the euro area, policy decisions are set centrally by the European Central Bank (ECB), while individual member states lack independent monetary tools. As a result, small economies must adjust to

externally determined interest rates, even when domestic conditions diverge from the euro area average (Peersman and Smets, 2003).

In these economies, the size of the domestic financial system, the structure of the banking sector, and reliance on external financing strongly influence how monetary shocks affect real activity. Changes in euro area interest rates can have amplified effects on credit conditions, investment decisions, and sectoral activity in smaller economies due to their narrower production base and higher exposure to capital flows (Mishkin, 2007). Interactions between financial cycles and real economic activity can further intensify these effects, especially in economies where credit plays a central role (Claessens, Kose, and Terrones, 2012).

Small open economies are particularly sensitive to external financial conditions. Integrated capital markets financial institutions mean that policy rate changes affect not only borrowing costs but also capital availability and investor sentiment. Sectors that depend heavily on credit, such as construction, may therefore experience stronger fluctuations following monetary tightening or accommodation (Lane, 2013).

The lack of exchange rate flexibility within a monetary union further limits adjustment options for small economies. Countries with independent currencies can use depreciation to offset restrictive monetary conditions, improving external competitiveness. In euro area member states, this channel is not available. Consequently, domestic sectors absorb monetary shocks primarily through changes in credit, investment, and output (De Grauwe, 2018).

Empirical evidence confirms that the transmission of common monetary policy is heterogeneous across euro area countries. Differences in banking structures, levels of indebtedness, and housing market characteristics create asymmetric effects of interest rate changes (Gertler and Karadi, 2015). Smaller economies with concentrated sectors, such as construction or tourism, often exhibit more pronounced cyclical responses than larger, diversified economies (Peersman and Smets, 2003).

For Cyprus, these dynamics are particularly relevant. The economy relies heavily on bank financing, and the construction sector plays a substantial role in overall activity. Investment

decisions in construction often depend on long-term borrowing, making the sector highly sensitive to euro area lending rates. Rising rates increase financing costs and reduce project feasibility, leading to contractions in both planned and realized construction activity.

Economies such as Cyprus, may also experience amplified confidence effects. Economic activity is closely tied to external demand, tourism, and foreign investment. Changes in European monetary conditions can shift expectations about growth prospects, reinforcing the direct impact of interest rates on investment decisions (Bernanke and Gertler, 1995).

The literature therefore suggests that monetary policy in small open economies operates through multiple interconnected channels: the interest rate channel, the credit channel, and the expectations channel. The strength of each channel depends on structural characteristics specific to the national economy. In countries where construction accounts for a significant share of GDP and employment, the sector functions as an important conduit through which monetary shocks influence overall economic performance.

A clear understanding of these mechanisms is important when assessing the impact is essential for interpreting the impact of ECB interest rate fluctuations on construction activity in Cyprus. Domestic construction patterns reflect not only internal economic conditions but also the broader euro area monetary environment. This makes Cyprus an instructive case for examining how common monetary policy interacts with sector-specific characteristics in a small open economy.

## **2.6 Construction and Real Estate as a Financial Accelerator**

The construction and real estate sector does not simply respond to changes in interest rates; it can amplify their impact on the economy. This concept is described in the literature through the financial accelerator mechanism (Bernanke, Gertler, and Gilchrist, 1999), which shows how financial conditions can intensify economic fluctuations.

Monetary policy affects not only the cost of borrowing but also credit availability and the value of collateral. Real estate is central to this process because property assets are commonly used as collateral for loans. When interest rates fall, borrowing becomes cheaper, and property prices often rise. Higher property values improve the financial position of

households and developers, making banks more willing to extend credit. Increased lending then supports additional construction activity.

Conversely, when monetary policy tightens, the process works in the opposite direction. Higher interest rates raise financing costs and may reduce property prices. As collateral values weaken, borrowing conditions tighten. Developers may struggle to secure funding, and households may postpone housing purchases. In this way, the initial monetary shock is reinforced through changes in balance sheets and credit availability (Kiyotaki and Moore, 1997).

Construction is particularly exposed to this mechanism for several reasons. It requires substantial upfront financing, relies heavily on bank lending, and projects involve significant sunk costs over long time horizons. Once a project is underway, it cannot easily be adjusted in response to sudden changes in financial conditions.

These features make construction highly sensitive to shifts in credit conditions. Even moderate interest rate increases can alter the viability of new developments. If expected returns are insufficient to cover higher financing costs, developers may delay or cancel planned investments. At the same time, higher mortgage rates reduce household demand for housing. The combined effect can lead to a noticeable contraction in construction activity. This pattern is consistent with evidence that housing and construction often lead business cycle fluctuations, with sectoral turning points frequently preceding broader economic slowdowns (Leamer, 2007).

Empirical research supports this view. Studies show that credit growth is closely linked to housing market cycles and that real estate sectors tend to display stronger fluctuations than many other parts of the economy (Iacoviello, 2005). This indicates that monetary policy transmission operates not only through direct borrowing costs but also through changes in credit supply and asset prices (Calza, Monacelli, and Stracca, 2013).

In Cyprus, this mechanism is particularly relevant. Construction and real estate account for a large share of economic activity, and the banking system plays a dominant role in financing both residential and commercial development. As a result, changes in euro area monetary policy are quickly transmitted to domestic lending conditions (Lane, 2013).

When financing conditions are favourable, construction activity can expand rapidly. Rising property prices strengthen collateral positions, banks increase lending, and new projects are initiated. When interest rates rise or lending standards tighten, the adjustment can be equally strong. Limited access to credit and weaker demand can lead to a decline in building permits and construction investment.

This framework also explains the difference between leading indicators and realised output. Building permits reflect investment intentions and react quickly to changes in expectations and financing conditions. Value added in construction represents projects already underway and adjusts more gradually. If the financial accelerator mechanism is present, monetary tightening is likely to affect permits first, with actual output following later.

Viewing construction as a sector that can amplify financial conditions provides a clearer interpretation of the empirical findings in this study. The negative relationship between interest rates and construction activity in Cyprus likely reflects not only higher borrowing costs but also changes in collateral values, lending behaviour, and expectations.

Understanding this amplification process is crucial when analysing construction dynamics in a small open economy, where bank-based financing and property markets play a central role in overall economic activity.

## **2.7 The Lagged Transmission of Monetary Policy to Construction**

Monetary policy does not affect the real economy immediately. Changes in interest rates take time to influence borrowing decisions, investment planning, and actual production. This delay is particularly pronounced in the construction sector, where investment decisions involve multiple stages and long adjustment periods (Woodford, 2003).

When the European Central Bank adjusts its policy rate, the impact on commercial bank lending rates is not always instantaneous. Banks may change their rates gradually depending on funding conditions, competition, and risk assessment. As a result, households and firms may only feel the full effect of a policy change after several months.

In construction, the transmission process is even slower. A typical project involves planning, licensing, financing approval, and construction phases. Even if borrowing costs rise today,

projects that have already secured funding may continue. At the same time, new projects are often postponed rather than cancelled immediately. This results in a gradual adjustment rather than an abrupt response.

Building permits illustrate this dynamic clearly. Permits reflect the intention to invest and can respond relatively quickly to changes in financing conditions. In contrast, value added in construction captures projects already underway and adjusts more slowly. Realised output therefore lags behind investment intentions.

Time lags in monetary transmission are well documented in the literature. Interest rate changes influence credit growth, investment, and output over several quarters rather than immediately. The length and strength of these lags vary across sectors, depending on financial structures and production characteristics (Christiano, Eichenbaum, and Evans, 1999).

Construction projects often require bank approval, collateral evaluation, and regulatory procedures. Developers may also wait to observe market conditions before committing to large investments. Households similarly adjust their housing decisions gradually in response to higher mortgage rates.

These lags are crucial for empirical modelling. If interest rate effects unfold over time, analysing only contemporaneous relationships would underestimate the true impact. Including lagged variables captures delayed responses and provides a more accurate representation of the transmission process (Stock and Watson, 2015).

This perspective also explains differences between variables. Building permits react quickly because they reflect expectations and planning. Value added in construction responds more slowly because it reflects ongoing projects. Using lagged specifications is therefore consistent with both theory and sector-specific characteristics.

Recognising the delayed nature of monetary transmission strengthens the theoretical foundation for the empirical analysis. It clarifies why construction activity does not adjust immediately to interest rate changes and supports the modelling strategy adopted in this study.

The above discussion highlights that monetary transmission within interest-sensitive sectors is neither immediate nor uniform. In smaller open economies such as Cyprus, where construction activity plays a structurally important role, further country-level empirical investigation becomes necessary in order to better understand how these lagged dynamics materialise in practice.

### **3. Data and Methodology**

#### **3.1 Data and Sources**

The dataset used in this study consists of annual observations for Cyprus over the period 1997–2025. This timeframe was chosen to ensure data consistency across variables and to capture key phases of the Cypriot economy, including periods of growth, the global financial crisis, the subsequent recovery, and more recent economic developments.

Construction activity is measured using two complementary indicators: value added in the construction sector and building permits. Value added reflects the actual economic contribution of construction to the economy, while building permits capture future planned investment. Using both measures allows the study to account for both realised and anticipated construction activity, strengthening the robustness of the analysis.

All variables were obtained from reputable sources to ensure reliability. Data on value added, building permits, unemployment, and construction costs were drawn from national statistical authorities and Eurostat. The Economic Sentiment Indicator (ESI) was included to represent expectations and confidence, capturing macroeconomic perceptions that influence investment decisions in the construction sector.

Annual data are particularly appropriate for this study. Construction activity and related economic variables typically adjust gradually over time. Annual frequency allows the analysis to focus on longer-term trends and relationships. It also helps preserve degrees of freedom in the relatively limited time series, ensuring robust econometric estimation.

The dataset was carefully reviewed for missing values and consistency. Where necessary, variables were converted into real terms and expressed in logarithmic form, as explained in the following sections.

#### **3.2 Methodological Framework and Variable Section**

This section outlines the methodological framework of the study and explains the selection of variables used in the econometric analysis. The aim is to estimate the effects of

macroeconomic factors on construction activity in Cyprus, while ensuring that the models remain economically meaningful and consistent with established theory.

As noted earlier, construction activity is measured using two alternative dependent variables. The main specification employs value added in the construction sector, which captures realised economic output. A second specification uses building permits as the dependent variable, reflecting planned construction activity and serving as a robustness check. These indicators correspond to different stages of the construction process and provide complementary insights.

The choice of explanatory variables is guided by economic theory and prior empirical research on housing and construction markets. The model includes a limited number of core variables that capture the most relevant demand-side and supply-side factors affecting construction activity.

Interest rates (IR) are included to represent financing conditions. Construction is a capital-intensive sector that depends heavily on external borrowing. Higher interest rates increase financing costs and reduce credit demand, implying a negative relationship with construction activity. Conversely, lower interest rates are expected to stimulate investment and raise construction output.

Construction costs per square metre (CPMR) serve as a proxy for supply-side pressures. Rising costs are expected to reduce profitability and constrain activity, leading to a negative effect. This variable captures material and labour costs, as well as broader input price dynamics that affect construction firms.

The Economic Sentiment Indicator (ESI) is included to measure expectations and overall confidence in the economy. Construction investment is highly sensitive to future economic conditions. In this context, higher economic sentiment is expected to encourage construction activity, generating a positive relationship with the dependent variables.

Unemployment (UNR) is incorporated in models where building permits serve as the dependent variable. Labour market conditions influence household income, housing

demand, and investment sentiment. Higher unemployment generally reduces demand for new construction, resulting in fewer permits and a negative expected effect.

Lagged dependent variables are also included to capture persistence and dynamic adjustment in construction activity. Construction projects typically span multiple periods, and past levels of activity are likely to influence current outcomes. Including lagged terms allows the model to reflect these adjustment processes and reduces the risk of omitted dynamic effects.

Overall, the selected variables offer a parsimonious yet comprehensive representation of the key forces shaping construction activity in Cyprus. Their inclusion aligns with theoretical expectations and the empirical focus of the study, while avoiding over-parameterisation given the limited length of the dataset.

### **3.2.1 Expected Signs and Economic Intuition**

The selection of explanatory variables in the empirical models is guided not only by data availability but also by clear economic reasoning regarding their expected relationship with construction activity. Establishing these expectations in advance is essential for assessing whether the estimated results align with theory and for facilitating meaningful interpretation.

Interest rates are expected to have a negative effect on construction activity. Construction projects are capital-intensive and rely heavily on external financing. Higher interest rates increase borrowing costs, reduce credit demand, and raise the hurdle for investment decisions. As a result, rising interest rates are anticipated to discourage both realised construction output and planned activity, while lower rates are expected to stimulate investment in the sector.

Construction costs per square metre are also expected to exert a negative influence. Rising costs increase overall project expenditures, compress profit margins for developers, and raise final prices for households, thereby constraining construction activity.

Economic sentiment is anticipated to have a positive effect on construction. Investment in construction is forward-looking and sensitive to expectations about future economic conditions. Higher economic sentiment reflects greater confidence among firms and

households, encouraging long-term investments such as construction projects. Stronger sentiment is therefore expected to support both value added in construction and planned investment intentions.

Labour market conditions, captured through the unemployment rate, are expected to have a negative effect, particularly on building permits. Higher unemployment reduces household income prospects and increases uncertainty, lowering demand for housing and discouraging new construction plans. While the impact on realised output may be less immediate, the influence is more pronounced at the planning stage, where expectations of future demand play a key role.

Lagged dependent variables are included to account for persistence in construction activity. Projects often span multiple periods, and current activity is influenced by past investment decisions, ongoing work, and adjustment costs. A positive coefficient on the lagged dependent variable is for this reason expected, reflecting gradual adjustment rather than abrupt changes in output.

Finally, these expected signs are grounded in standard economic theory and reflect the structural characteristics of the construction sector. Comparing the estimated coefficients with these a priori expectations provides an important benchmark for evaluating the credibility and economic relevance of the results presented in subsequent chapters.

### **3.3 Econometric Model Strategy**

The model examines what drives construction activity in Cyprus. It remains simple, clear, and consistent with economic theory. Given the limited annual data, the focus is on robust and interpretable results rather than complex methods.

All main variables are expressed in logarithms. This makes the coefficients easy to interpret as percentage changes and helps reduce unusual variation in the data. Past construction activity is included because projects take time, and previous investments influence current output. Lagged terms capture this persistence effectively.

The analysis uses value added in construction to measure actual output, while building permits are employed to capture planned activity and test the robustness of results. Similar

indicators are never combined in the same model to avoid confusion and statistical issues. Only meaningful and theoretically consistent variables are retained to ensure the findings are reliable and economically sensible.

Ordinary Least Squares (OLS) is used as the estimation method. With a small dataset, it provides a practical and transparent approach. Dynamic elements through lagged variables reflect adjustment and momentum, and standard errors are corrected for heteroskedasticity and autocorrelation.

Major economic shocks are considered as well. Events such as the global financial crisis, domestic adjustments, and the COVID-19 pandemic likely affected construction activity. The model accounts for these through its dynamic structure and careful interpretation rather than rigid assumptions.

Overall, the approach balances theory, data limitations, and clarity. It is simple, robust, and provides a clear understanding of the factors that drive construction activity in Cyprus.

### **3.4 Limitations and Robustness Considerations**

The analysis has several limitations, which are important to keep in mind when interpreting the results. One key limitation is the frequency and length of the dataset. Using annual observations restricts the number of available data points and limits the complexity of the models that can be reliably estimated.

Time-series analysis also brings potential econometric challenges, such as heteroskedasticity, serial correlation, and parameter instability. While Ordinary Least Squares (OLS) provides consistent coefficient estimates under mild assumptions, violations of these assumptions can affect standard inference. To address this, the models use heteroskedasticity and autocorrelation consistent (HAC) standard errors, ensuring that the reported significance levels remain valid.

Robustness is evaluated through a dual-specification approach. The baseline model uses value added in construction to capture actual sector output. An alternative specification uses building permits as the dependent variable. This allows the analysis to distinguish between

determinants of realised output and planned construction activity, strengthening confidence in the findings.

Including lagged dependent variables further improves robustness. These terms account for the persistence and adjustment dynamics in construction, reducing the risk of omitted variable bias and enhancing the stability of the estimated coefficients.

Variable selection is guided by both statistical criteria and economic reasoning. Explanatory variables that contribute little or show theoretically inconsistent signs are excluded. This ensures the models remain intuitive and avoids overfitting.

Despite the limitations inherent in macroeconomic time-series data, the combination of parsimonious modeling, alternative specifications, and robustness checks provides confidence that the results reflect genuine and economically meaningful relationships.

## 4. Empirical Results

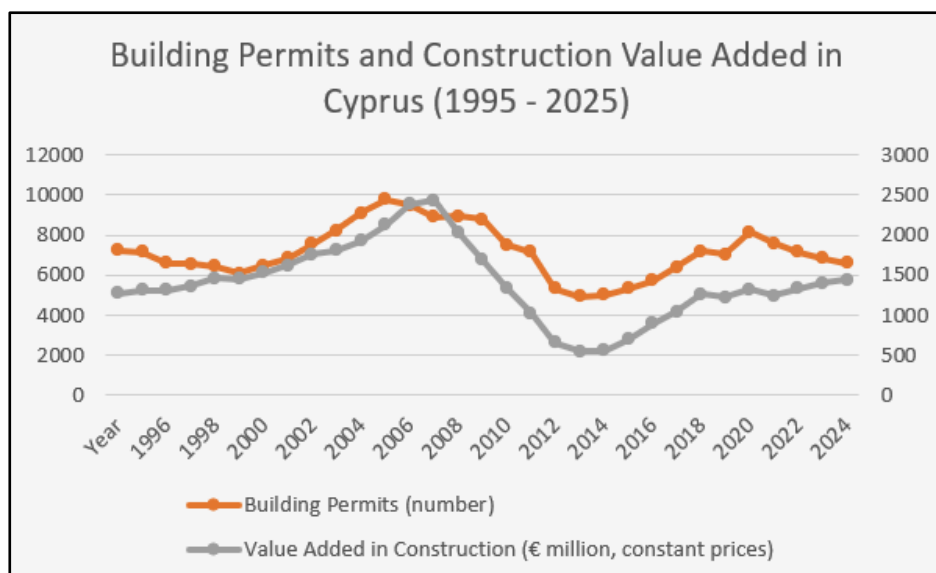
### 4.1 Econometric Analysis – Baseline Model Using Value Added in Construction

The baseline econometric model examines the impact of macroeconomic factors on construction activity in Cyprus. Construction activity is measured using the logarithm of value added in the construction sector (LNVAACONR), which reflects the sector’s real contribution to the economy over time.

The model is estimated using Ordinary Least Squares (OLS) for the period 1997–2025. All variables are expressed in logarithmic form. This allows the coefficients to be interpreted as elasticities and helps reduce potential heteroskedasticity in the data.

#### 4.1.1 Descriptive Analysis of Construction Value Added

Before presenting the econometric results, it is helpful to examine the time-series behaviour of value added in the construction sector. Figure 4.1 shows how the sector’s value added evolved in Cyprus over the sample period.



**Figure 1: Building Permits and Value Added in the Construction Sector in Cyprus (1995-2025)**

The series shows pronounced fluctuations linked to major economic developments. Up to 2007–2008, construction value added follows a strong upward trend, reflecting favourable macroeconomic conditions and rising investment activity. A clear structural break occurs around the global financial crisis, followed by a prolonged decline until about 2014. This period was marked by recessionary pressures and tight financing conditions in Cyprus.

From 2015 onwards, the series shows a gradual recovery and a change in trend, signalling renewed construction activity. A temporary disturbance appears around 2019–2020, corresponding to the COVID-19 pandemic, after which the sector demonstrates signs of partial stabilization.

#### **4.1.2 Model Specification**

The baseline model is specified as:

$$\ln(\text{VACONR}_t) = \beta_0 + \beta_1 \ln(\text{VACONR}_{t-1}) + \beta_2 \ln(\text{CPMR}_t) + \beta_3 \ln(\text{ESI}_t) + \beta_4 \ln(\text{IR}_t) + \varepsilon_t.$$

In this model,  $\ln(\text{VACONR}_t)$  is the logarithm of value added in construction. The lagged term,  $\ln(\text{VACONR}_{t-1})$ , captures persistence and gradual adjustment.  $\ln(\text{CPMR}_t)$  represents construction costs per square meter.  $\ln(\text{ESI}_t)$  measures economic sentiment.  $\ln(\text{IR}_t)$  denotes the interest rate.  $\varepsilon_t$  is the error term.

Using the lagged dependent variable accounts for inertia in construction activity. Expressing variables in logarithms allows coefficients to be interpreted as elasticities. The model captures both financial and cost factors, as well as confidence effects, on construction output in Cyprus.

#### **4.1.3 Estimation Results**

The estimation results of the baseline model are reported in Table 1.

Dependent Variable: LNVACONR				
Method: Least Squares				
Date: 01/26/26 Time: 19:15				
Sample (adjusted): 1997 2025				
Included observations: 29 after adjustments				
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNVACONR(-1)	0.981166	0.038558	25.44656	0.0000
LNESI	1.360070	0.158230	8.595499	0.0000
LNIR	-0.257270	0.062758	-4.099401	0.0004
LNCMPR	-0.146444	0.063389	-2.310237	0.0298
C	-4.760903	1.032480	-4.611131	0.0001
R-squared	0.980387	Mean dependent var	7.279036	
Adjusted R-squared	0.977119	S.D. dependent var	0.476910	
S.E. of regression	0.072140	Akaike info criterion	-2.264824	
Sum squared resid	0.124901	Schwarz criterion	-2.029083	
Log likelihood	37.83994	Hannan-Quinn criter.	-2.190993	
F-statistic	299.9251	Durbin-Watson stat	1.773546	
Prob(F-statistic)	0.000000	Wald F-statistic	339.6667	
Prob(Wald F-statistic)	0.000000			

**Table 1: OLS Estimation Results – Dependent Variable: LNVACONR**

The model shows an  $R^2$  of 0.98, indicating that the chosen variables explain nearly all the variation in construction value added. The adjusted  $R^2$  is similarly high, confirming the robustness of the specification despite including multiple regressors.

All coefficients have the expected signs. The lagged dependent variable is positive and highly significant, highlighting strong persistence and gradual adjustment in construction activity. The Economic Sentiment Indicator (ESI) is positive and statistically significant, reflecting the importance of confidence and expectations in driving construction investment.

The interest rate (IR) coefficient is negative and significant, showing that higher borrowing costs reduce construction activity. Construction cost per square meter (CPMR) also has a negative relationship with value added, indicating that rising costs constrain sector output.

Heteroskedasticity and autocorrelation consistent (HAC) standard errors were used. This accounts for potential deviations from classical OLS assumptions and ensures the reported significance is robust.

#### 4.1.4 Diagnostic Tests and Model Stability

Diagnostic tests were conducted to evaluate the adequacy and reliability of the baseline model.

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation at up to 1 lag			
F-statistic	0.294237	Prob. F(1,23)	0.5927
Obs*R-squared	0.366309	Prob. Chi-Square(1)	0.5450

**Table 2: Breusch – Godfrey Serial Correlation Test**

Serial correlation in the residuals was tested using the Breusch–Godfrey LM test. The results, shown in Table 2, indicate that there is no evidence of serial correlation. Both the F-statistic and Chi-square probability values are above conventional significance levels, so the null hypothesis of no serial correlation cannot be rejected.

Heteroskedasticity Test: White			
Null hypothesis: Homoskedasticity			
F-statistic	1.361296	Prob. F(14,14)	0.2858
Obs*R-squared	16.71861	Prob. Chi-Square(14)	0.2715
Scaled explained SS	15.32654	Prob. Chi-Square(14)	0.3562

**Table 3: White Test for Heteroskedasticity**

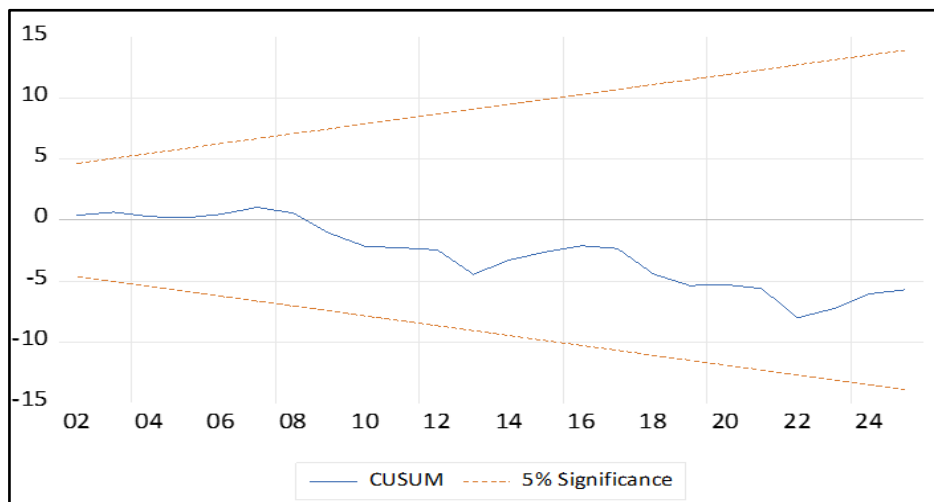
Heteroskedasticity was tested using the White test. As shown in Table 3, the results indicate no evidence of heteroskedasticity. The null hypothesis of constant error variance cannot be rejected, supporting the validity of the OLS estimates.

Series: Residuals	
Sample	1997 2025
Observations	29
Mean	4.27e-16
Median	0.004219
Maximum	0.097777
Minimum	-0.177885
Std. Dev.	0.066789
Skewness	-0.985808
Kurtosis	3.676995
Jarque-Bera	5.250925
Probability	0.072406

**Table 4: Jarque – Bera Normality Test**

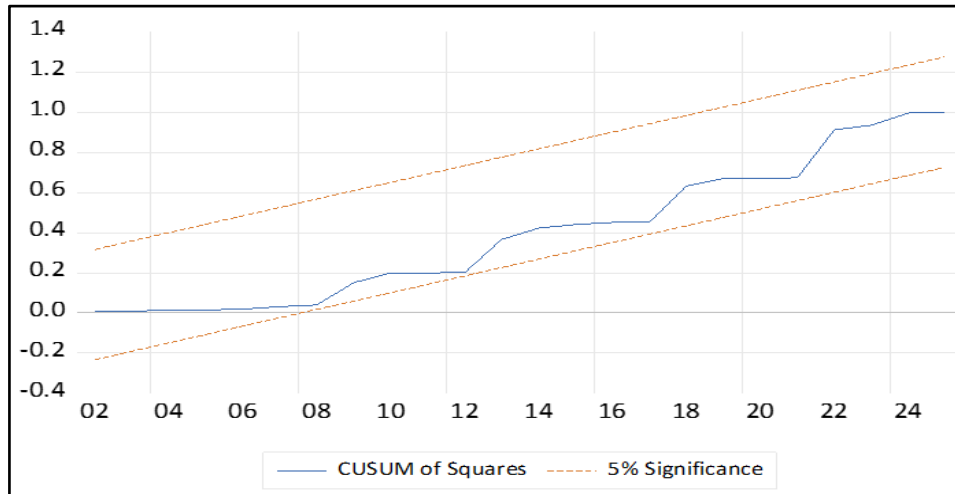
Normality of the residuals was assessed using the Jarque–Bera test. The results, presented in Table 4, show that the probability value exceeds the 5% significance level, suggesting that the residuals are approximately normally distributed. This outcome further supports the reliability of statistical inference based on the estimated model.

Model stability over time was subsequently examined using the CUSUM and CUSUM of Squares tests.



**Figure 2: CUSUM Test for Parameter Stability – Value Added Model**

In both tests, the cumulative residuals remain within the 5% significance bounds for the entire sample period. This indicates that the model’s parameters are stable and that the estimated coefficients are representative throughout the period under study.



**Figure 3: CUSUM of Squares Test for Parameter Stability – Value Added Model**

#### 4.1.5 Discussion

The baseline model shows that construction activity in Cyprus responds to financial conditions, cost developments, and economic sentiment. Its explanatory power, consistent coefficient signs, and reliable diagnostics confirm it as the main empirical specification of the study.

The model also serves as a benchmark for robustness analysis. Here, construction activity is measured using building permits to check whether the relationships hold under an alternative proxy.

## 4.2 Robustness model Using Buildings Permits

The robustness of the baseline results is examined using an alternative measure of construction activity. Instead of value added, the logarithm of building permits (LNBP) is used as the dependent variable. Building permits reflect the physical scale of construction and capture forward-looking investment decisions in the housing sector.

The model is re-estimated with building permits to determine whether the main findings remain stable and consistent across this alternative specification

### 4.2.1 Model Specification

The robustness model is estimated using Ordinary Least Squares (OLS) over the annual period 1997–2025. All variables are in logarithms, as in the baseline model. This allows coefficients to be interpreted as elasticities and ensures comparability across specifications.

The estimated equation is:

$$\ln(\text{BP}_t) = \alpha_0 + \alpha_1 \ln(\text{BP}_{t-1}) + \alpha_2 \ln(\text{CPMR}_t) + \alpha_3 \ln(\text{IR}_t) + \alpha_4 \ln(\text{UNR}_t) + u_t.$$

The dependent variable,  $\ln(\text{BP}_t)$  is the logarithm of building permits. The lagged term,  $\ln(\text{BP}_{t-1})$ , captures persistence and gradual adjustment.  $\ln(\text{CPMR}_t)$  represents construction costs per square meter.  $\ln(\text{IR}_t)$  denotes the interest rate.  $\ln(\text{UNR}_t)$  measures unemployment.  $u_t$  is the error term.

Including unemployment accounts for labour market conditions and broader economic uncertainty. Both factors are relevant for construction investment decisions.

### 4.2.2 Estimation Results

Table 5 shows that the robustness model performs well overall. The  $R^2$  is around 0.80, indicating that the selected variables explain a substantial share of the variation in building permits. The adjusted  $R^2$  is similarly high, confirming the reliability of the specification.

The estimated coefficients are theoretically consistent and economically meaningful. The lagged dependent variable is positive and highly significant, showing persistence in building

permit issuance and gradual adjustment in construction planning. The interest rate (IR) has a negative and significant effect, confirming that higher borrowing costs discourage new construction. Construction costs (CPMR) are negatively related to building permits, reflecting cost pressures that limit investment. Unemployment (UNR) also enters negatively and significantly, highlighting the adverse impact of weak labour markets and economic uncertainty on construction decisions.

As in the baseline model, heteroskedasticity and autocorrelation consistent (HAC) standard errors were used to ensure robust inference.

Dependent Variable: LNBP				
Method: Least Squares				
Date: 01/26/26 Time: 19:26				
Sample (adjusted): 1997 2025				
Included observations: 29 after adjustments				
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)				
Variable	Coefficient	Std. Error	t-Statistic Prob.	
LNBP(-1)	0.817858	0.090172	9.069985	0.0000
LNIR	-0.267111	0.053516	-4.991275	0.0000
LNCPMR	-0.192814	0.070834	-2.722072	0.0119
LNUNR	-0.131872	0.037238	-3.541314	0.0017
C	3.586288	0.653020	5.491847	0.0000
R-squared	0.883215	Mean dependent var	8.860995	
Adjusted R-squared	0.863751	S.D. dependent var	0.187497	
S.E. of regression	0.069209	Akaike info criterion	-2.347799	
Sum squared resid	0.114956	Schwarz criterion	-2.112058	
Log likelihood	39.04308	Hannan-Quinn criter.	-2.273968	
F-statistic	45.37665	Durbin-Watson stat	2.135695	
Prob(F-statistic)	0.000000	Wald F-statistic	86.51961	
Prob(Wald F-statistic)	0.000000			

**Table 5: OLS Estimation Results – Dependent Variable: LNBP**

### 4.2.3 Diagnostic Tests and Stability Analysis

A comprehensive set of diagnostic tests was carried out to assess the adequacy and reliability of the robustness model. The results are similar to those obtained for the baseline specification.

The Breusch–Godfrey test shows no evidence of serial correlation, as the null hypothesis of no autocorrelation cannot be rejected. The White test indicates the absence of heteroskedasticity, supporting the assumption of constant error variance. Normality of the residuals is confirmed by the Jarque–Bera test, with probability values above conventional significance levels.

The corresponding statistics are reported in Tables 6–8.

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation at up to 1 lag			
F-statistic	0.298511	Prob. F(1,23)	0.5901
Obs*R-squared	0.371561	Prob. Chi-Square(1)	0.5422

**Table 6: Breusch–Godfrey Serial Correlation Test – Building Permits Model**

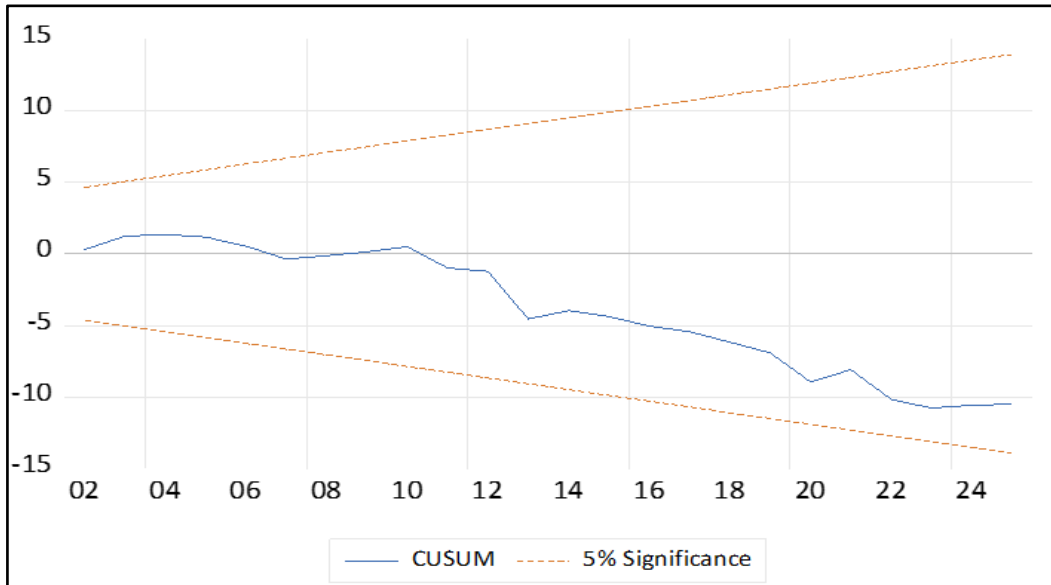
Heteroskedasticity Test: White			
Null hypothesis: Homoskedasticity			
F-statistic	8.447642	Prob. F(14,14)	0.0001
Obs*R-squared	25.93045	Prob. Chi-Square(14)	0.0264
Scaled explained SS	15.16375	Prob. Chi-Square(14)	0.3671

**Table 7: White Heteroskedasticity Test – Building Permits Model**

Series: Residuals	
Sample 1997 2025	
Observations 29	
Mean	1.07e-15
Median	0.005387
Maximum	0.108862
Minimum	-0.151347
Std. Dev.	0.064075
Skewness	-0.447580
Kurtosis	2.707655
Jarque-Bera	1.071522
Probability	0.585224

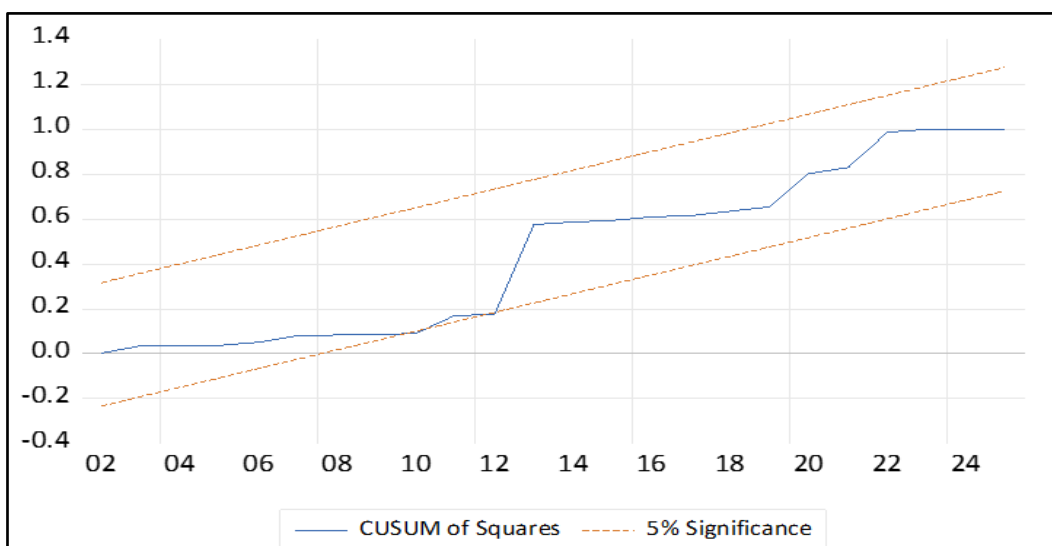
**Table 8: Jarque–Bera Normality Test – Building Permits Model**

Model stability over time was also assessed using the CUSUM and CUSUM of Squares tests. The graphs in Figures 4 and 5 show that the cumulative residuals stay within the 5% significance bounds throughout the sample period.



**Figure 4: CUSUM Test for Parameter Stability – Building Permits Model**

The table demonstrates the stability of the estimated coefficients and reinforces the reliability of the robustness specification.



**Figure 5: CUSUM of Squares Test for Parameter Stability – Building Permits Model**

#### **4.2.4 Discussion**

The robustness model strongly supports the baseline findings. Even with an alternative proxy for construction activity, the main macroeconomic determinants interest rates, construction costs and broader economic conditions, have effects consistent in both sign and economic interpretation with those in the value added model.

The consistency of results across specifications reinforces confidence in the study's conclusions and shows that the identified relationships are not sensitive to the choice of construction activity measure.

## **5. Discussion of Empirical Findings**

### **5.1 Interpretation of Baseline Model Results**

The baseline econometric model estimates construction activity using value added. The aim is not to repeat the coefficients, but to interpret the results in economic terms and link them to the functioning of the market.

The lagged dependent variable is positive and statistically significant. This reflects persistence in construction activity, showing that developments in the sector evolve gradually over time. Construction output depends not only on current economic conditions but also on past activity, reflecting the multi-period nature of projects, adjustment costs, and investment inertia. This pattern aligns with the structure of the construction industry.

Economic sentiment also has a positive and significant effect. This highlights the role of expectations and confidence in shaping investment decisions. When sentiment improves, firms and households are more willing to undertake long-term commitments, raising construction activity. Psychological and informational factors thus complement traditional economic fundamentals.

Interest rates show a negative and significant relationship with construction value added. Higher rates increase borrowing costs and reduce the affordability of construction projects. Given the capital-intensive nature of the sector, financing conditions strongly influence activity. This finding suggests that monetary conditions are a key channel through which macroeconomic developments affect construction in Cyprus.

Construction costs per square meter also have a negative effect. Rising costs reduce profitability and can delay or discourage new projects, especially in periods of uncertainty. This reflects supply-side constraints and shows that cost dynamics play a crucial role in shaping construction output. The negative association reinforces the importance of cost management and efficiency in the sector.

Overall, the baseline model shows a construction sector influenced by dynamic persistence, financial conditions, cost pressures, and economic sentiment. The coefficient signs and

significance are consistent with theory, lending credibility to the specification. The model's high explanatory power suggests that it captures the main factors driving construction activity in Cyprus.

These results provide a foundation for the robustness analysis. In the next section, building permits are used as an alternative measure of construction activity. This allows a comparison between realised output and planned investment intentions.

## **5.2 Robustness Analysis: Building Permits Model**

This section examines the robustness of the baseline findings by using building permits as an alternative measure of construction activity. While value added reflects realised output, building permits capture planned construction and investment intentions. Comparing the two allows us to see whether the macroeconomic determinants identified in the baseline model remain relevant at an earlier stage of the investment process.

The building permits model shows similar coefficient signs. Interest rates remain negative and statistically significant, highlighting the importance of financing conditions even during the planning stage. Higher borrowing costs discourage the issuance of new permits, suggesting that monetary conditions influence construction decisions before projects are realised.

Construction costs per square meter also show a negative relationship with permits. Rising costs not only constrain realised output but also affect expectations and investment plans. When construction becomes more expensive, developers and households are more cautious, reducing the number of permits issued.

Labour market conditions, measured by unemployment, emerge as an additional determinant in the permits model. The negative relationship reflects weaker demand and greater uncertainty in the housing market. Higher unemployment reduces household income prospects and confidence, discouraging new construction plans. This effect is stronger in the permits model than in the value added specification, highlighting the forward-looking nature of investment decisions.

To sum up, the building permits model supports the robustness of the baseline findings while providing complementary insights. Both specifications consistently show the influence of financial conditions and cost pressures. Using building permits as an alternative dependent variable demonstrates that the core results are not driven by the choice of construction proxy.

The consistency across both measures strengthens confidence in the empirical findings and provides a solid foundation for discussing construction dynamics in Cyprus.

### **5.3 Implications for the Construction Sector in Cyprus**

The empirical evidence highlights the vulnerability of the construction sector to changes in financing conditions. Given the structural characteristics of the Cypriot construction sector, which is closely linked to investment dynamics and financing availability, the findings highlight the importance of macroeconomic stability for sectoral performance. By identifying the factors that systematically influence construction activity, the analysis provides a clearer understanding of how the sector adjusts to shifts in economic conditions and policy constraints.

Interest rates play a significant role as a transmission channel for the stability of construction activity. The consistently negative effect observed across model specifications suggests that the sector is particularly sensitive to changes in borrowing conditions. Given the capital-intensive nature of construction projects, higher financing costs can constrain investment and delay project initiation. Although monetary policy is set at the EU level, the results indicate that periods of monetary tightening may disproportionately affect national construction activity. This underscores the need for complementary domestic measures to mitigate financing constraints during restrictive phases.

Construction costs emerge as another key factor influencing construction activity. Rising costs per square metre are associated with lower levels of construction output and fewer building permits, showing that cost pressures affect both realised activity and future investment plans. These findings highlight the importance of policies aimed at improving efficiency in the construction process, addressing regulatory bottlenecks, and enhancing productivity. Measures that contain costs may also support housing affordability, which remains a central concern in Cyprus.

Economic sentiment also plays an important role. The positive relationship between sentiment and construction value added reflects the forward-looking nature of investment decisions. Confidence and expectations about future economic conditions influence the willingness of firms and households to commit resources to long-term projects. Stable and predictable economic policies can indirectly support construction activity by reducing uncertainty and fostering a climate of confidence.

Labour market conditions, particularly unemployment, are relevant for planned construction activity, as seen in building permit issuance. Higher unemployment is associated with fewer permits, indicating weaker demand and greater uncertainty about future income and investment conditions. Policies that support employment and income stability may therefore provide indirect benefits for the construction and housing markets.

From an investment perspective, these findings offer a clearer basis for assessing market conditions. By showing how interest rates, construction costs, and economic sentiment interact, the results help market participants anticipate changes in construction activity and adjust their strategies accordingly. This evidence contributes not only to academic understanding but also to informed, forward-looking decision-making within the construction sector.

Overall, the results indicate that construction activity in Cyprus is shaped by the combined influence of financial conditions, cost dynamics, and macroeconomic confidence. Recognising these interdependencies is essential for designing policies and strategies that support sustainable development in the construction and housing markets.

## **5.4 Transmission Channels and Construction Market Dynamics**

Construction activity in Cyprus responds to a mix of financial, economic, and cost-related factors, all working together. Decisions in the sector are shaped not by single signals, but by the combined evolution of financing conditions, expectations for the future, and changes in costs. The models capture these interactions and show how broader macroeconomic developments affect the construction sector.

Financing conditions are a major channel. Construction projects require high upfront capital, long planning, and delayed returns, making them sensitive to borrowing costs. When interest rates rise, debt burdens increase, minimum profitability thresholds rise, and leveraged investment becomes less attractive. The negative relationship between interest rates and construction activity in both model specifications shows that the sector is vulnerable during periods of monetary tightening.

Interest rates also influence expectations about demand, income growth, and overall stability. Rising rates may signal slower economic growth or weaker property demand. Developers and households respond cautiously, since construction decisions are mostly irreversible once projects start. As a result, monetary policy changes affect activity both through financing costs and by shaping expectations.

Economic sentiment forms another important channel. Confidence drives construction investment because projects rely on expectations of future market conditions. Higher sentiment reduces uncertainty and encourages risk-taking, even when costs are rising moderately. When sentiment falls, investment can contract quickly as developers delay or cancel projects. This shows that qualitative measures of confidence matter alongside financial indicators.

Cost dynamics also affect construction activity. Rising costs from materials, labour, or regulations, directly reduce project viability. Higher costs compress profit margins and limit the number of feasible projects, especially in a small market like Cyprus. When high costs occur alongside tight financing, their combined effect can sharply reduce activity and deepen cyclical downturns.

These channels interact to explain the sector's cyclical nature. Expansions usually combine favourable financing, positive sentiment, and manageable costs, creating an environment for sustained investment. Downturns often combine tighter monetary conditions, weaker confidence, and rising costs, leading to rapid declines in activity. The effects reinforce each other over the business cycle rather than acting independently.

Comparing value added and building permits highlights the timing of these effects. Value added reflects realised output and incorporates inertia from ongoing projects. Building

permits capture investment intentions earlier, making them more sensitive to expectations and financing conditions. The consistency of results across both measures shows that macroeconomic factors influence both current production and future pipelines.

This framework illustrates the construction sector's vulnerability to macroeconomic shocks. With monetary policy set at the euro area level, Cypriot construction is exposed to decisions that may not match local conditions. Understanding how external monetary impulses interact with domestic market characteristics is key to explaining investment behaviour and sectoral outcomes.

By looking at financing, sentiment, and costs together, the analysis clarifies how macroeconomic fluctuations move through the sector and shape patterns of expansion and contraction over time.

## **5.5 Synthesis of Empirical Insights and Broader Economic Interpretation**

The collection of data and the findings from the baseline model and the robustness specification provide a clear picture of how construction activity in Cyprus responds to macroeconomic conditions. The analysis does not highlight isolated effects. Instead, it shows a stable configuration of relationships that persists across alternative measures of construction activity and different model specifications. This perspective shifts attention from individual coefficients to the broader economic mechanisms shaping construction dynamics over time.

A central result concerns financial conditions. Across both specifications, interest rates have a systematic and economically meaningful influence on construction outcomes, affecting realised output as well as future investment intentions. This consistency shows that monetary conditions shape construction behaviour at multiple stages, from initial planning decisions to project implementation and completion.

At the same time, financial variables alone do not fully explain construction dynamics. Economic sentiment plays an important complementary role, capturing expectations and confidence effects that are not reflected in interest rates or cost indicators. The positive association between sentiment and construction activity suggests that investment decisions

are forward-looking and shaped by perceptions of future economic conditions, not just current financing constraints. The interaction between objective financial conditions and subjective expectations helps explain the pronounced volatility of construction activity during periods of heightened uncertainty.

Cost dynamics add another layer to this interpretation by highlighting supply-side constraints and profitability considerations. Rising construction costs reduce the range of viable projects and amplify the contractionary impact of unfavourable financing conditions. Construction activity is therefore shaped by the interaction of demand-side forces whose operating through income, credit availability, and expectations linked to input costs and production constraints.

These findings should be interpreted in the context of the Cypriot economy. As a small open economy operating under a common monetary policy, Cyprus does not directly control interest rate policy. Changes in euro area rates can have significant domestic effects, even when local conditions differ from those in the euro area. Given its cyclical nature and reliance on external financing, the construction sector is particularly exposed to these externally driven monetary impulses.

The synthesis of empirical insights indicates that construction activity in Cyprus is governed by interconnected mechanisms linking financial conditions, expectations, and cost structures. These mechanisms operate consistently across alternative indicators of construction activity and help explain both the sector's cyclical volatility and its sensitivity to macroeconomic shocks. By integrating these elements, the analysis provides a coherent framework for understanding construction market behaviour and sets a clear basis for the policy and strategic implications discussed in the concluding chapter.

## **6. Conclusions, Implications and Future Research**

### **6.1 Overview and Summary of the Study**

The purpose of this dissertation was to examine whether fluctuations in ECB interest rates influence construction activity in Cyprus and to assess the magnitude and timing of this relationship. Given the structural importance of the construction sector for the Cypriot economy and its close linkage to credit conditions, the investigation aimed to provide empirical evidence on the transmission mechanism between monetary policy and real economic activity within a small open economy.

The study was grounded on an econometric framework designed to capture the dynamic interaction between interest rate movements and construction-related indicators. By employing multiple model specifications, the research sought to identify not only the existence of a relationship but also the speed and direction of adjustment. In doing so, the dissertation contributes to the literature by offering country-specific evidence for Cyprus, where sectoral sensitivities to monetary policy may differ from those observed at the aggregate euro area level.

Construction in Cyprus has displayed cyclical behaviour over recent decades, reflecting both domestic economic developments and external shocks. Periods of rapid expansion have often been followed by sharp contractions, particularly around the global financial crisis, the subsequent adjustment period, and more recent episodes of heightened uncertainty.

Financial conditions, represented by interest rates, shape borrowing costs and credit availability. Cost pressures, proxied by construction costs per square metre, capture supply side constraints faced by developers. Economic sentiment reflects expectations and confidence in investment decisions. In the robustness specification, labour market conditions, proxied by the unemployment rate, illustrate how demand-side factors interact with financial conditions to influence construction outcomes.

The model incorporates a lagged dependent variable to account for persistence and gradual adjustment in the sector. This dynamic behaviour aligns with the multi-period nature of construction projects, where past activity continues to influence current outcomes.

Empirical results show that construction activity is closely linked to financial conditions, cost pressures, and economic sentiment. The baseline model indicates high persistence in construction value added, alongside negative effects from higher interest rates and rising construction costs, and a positive influence of economic sentiment. The robustness analysis confirms similar coefficient signs using building permits and highlights that construction planning decisions are particularly sensitive to labour market conditions.

The consistency of these findings provides a strong foundation for understanding construction dynamics in Cyprus. The study offers an empirically grounded assessment of the macroeconomic factors influencing both realised and planned construction activity. These insights support the discussion of policy implications, market considerations, and future research directions presented in the following sections.

## **6.2 Summary and Interpretation of Empirical Findings**

The econometric results indicate that interest rate movements are associated with measurable changes in construction-related indicators. However, the effect does not appear to be immediate. The findings suggest a gradual transmission process, reflecting the time required for changes in borrowing costs to affect bank lending behaviour, developer planning decisions, and household financing conditions.

The analysis further demonstrates that interest rates do not operate in isolation. Broader macroeconomic conditions, housing demand, credit availability, and structural characteristics of the domestic market also influence construction dynamics. The results therefore support a multi-channel transmission mechanism in which monetary variables interact with real economic fundamentals rather than acting as a single dominant driver.

Financial conditions emerge as a key determinant in all models. The consistently negative relationship between interest rates and construction indicators highlights the sector's sensitivity to borrowing costs. Construction projects require substantial upfront financing, so changes in monetary conditions directly affect investment feasibility. Higher interest rates discourage new activity, while lower rates support construction through improved affordability and credit access. These results confirm that monetary policy influences the real economy through the construction sector.

Cost dynamics also play a crucial role. Rising construction costs per square metre reduce both value added and building permits. Higher costs compress developers' profitability and increase final prices for consumers, discouraging new investment and delaying project initiation. In this sense, cost pressures act as a supply side constraint on realised output and as a deterrent to future construction plans, reinforcing downturns during periods of rising costs.

Economic sentiment has a positive effect on construction activity, particularly in the baseline model using value added. This underscores the importance of expectations and confidence in investment decisions. Because construction is forward-looking, improvements in sentiment increase the willingness of firms and households to commit resources to long-term projects. Conversely, pessimism or uncertainty can suppress activity, even when financial conditions remain favourable.

Labour market conditions, captured by the unemployment rate in the building permits model, highlight the demand-side dimension. Higher unemployment reduces income prospects and confidence among households, dampening demand for new housing and construction projects. This effect is more pronounced at the planning stage, where expectations about future employment and income are decisive. The distinction between realised output and planned activity is therefore crucial to understanding how macroeconomic conditions influence the sector at different stages of investment.

Construction activity in Cyprus is shaped by the interaction of demand-side and supply-side forces operating through financial conditions, expectations, and costs. The consistency of coefficient signs across alternative specifications, together with their statistical significance, reinforces confidence in the robustness of the results. It suggests that the estimated relationships are economically meaningful rather than specific to a particular model.

The analysis also shows the value of using multiple proxies for construction activity. While value added reflects realised output, building permits capture forward-looking investment intentions. The persistence of key macroeconomic determinants across both measures suggests that the identified relationships are structural rather than indicator-specific.

In conclusion, the study provides a comprehensive interpretation of how construction activity in Cyprus responds to macroeconomic conditions. By highlighting persistence, financing costs, construction costs, economic sentiment, and labour market conditions, the analysis offers a nuanced understanding of the mechanisms driving sector fluctuations. These insights provide a coherent foundation for the policy and market implications discussed in the following section.

### **6.3 Policy Implications**

Housing and construction are central to the Cypriot economy, contributing significantly to growth, employment, and investment activity. The results of this study provide insights into how monetary conditions, cost pressures, and economic sentiment shape sectoral dynamics over time, offering a strong foundation for policy and market considerations.

The findings carry important implications for policymakers. Although ECB monetary policy is formulated at the euro area level, its sectoral effects are not necessarily uniform across member states. In a relatively small and real estate-oriented economy such as Cyprus, changes in financing conditions may generate more pronounced adjustments compared to larger and more diversified economies.

This suggests that national authorities should closely monitor sectoral developments during periods of monetary tightening. Complementary macroprudential tools may be required to mitigate excessive volatility in credit and real estate markets, particularly when external monetary conditions shift rapidly.

Cost pressures also play a critical role. Rising construction costs per square metre affect current production and future investment decisions. Higher costs reduce developer profitability and can delay project initiation, while also impacting housing affordability for consumers. Measures aimed at improving efficiency and reducing administrative delays could help mitigate cost pressures. Cost containment measures, alongside supply-side improvements, are therefore essential to maintain both sectoral stability and access to affordable housing.

Economic sentiment reinforces these effects. Positive sentiment encourages firms and households to undertake long-term projects, even when financing conditions are moderately restrictive. Conversely, uncertainty and pessimism can suppress investment despite favourable borrowing costs. This highlights the importance of policy credibility, stable macroeconomic conditions, and transparent regulatory frameworks. Clear communication of policy objectives reduces uncertainty and supports investment planning, demonstrating that confidence and expectations are as influential as financial constraints.

Labour market conditions further shape construction activity, particularly at the planning stage. Higher unemployment correlates with fewer building permits, reflecting weaker income prospects and reduced confidence among households. Measures that enhance employment stability and income security can indirectly support demand for new projects, reinforcing planning and investment activity. The results show that expectations about future labour market conditions strongly influence investment decisions, emphasizing the need to consider both realised output and forward-looking indicators when evaluating sectoral performance.

These findings highlight the interdependence of financial conditions, cost pressures, economic sentiment, and labour markets. Construction activity does not respond to a single factor but to the combined influence of multiple macroeconomic signals. Tight financing conditions, rising costs, and negative sentiment often amplify each other, intensifying cyclical fluctuations in the sector. Policies that address these interlinked factors are more likely to stabilize activity and mitigate pronounced swings, creating a more resilient market environment.

From a practical perspective, understanding these dynamics provides valuable guidance for investors, developers, and policymakers. Anticipating how interest rates, cost pressures, confidence, and labour market conditions interact allows for better investment decisions and risk management. Coordinated strategies that address both supply and demand constraints can foster predictability and stability, supporting long term sector development. This integrated perspective offers a comprehensive framework for understanding construction market behaviour in Cyprus and underpins the policy and strategic recommendations discussed in the following section.

## **6.4 Implications for Investors, Developers and Market Participants**

Outside the immediate scope of current policy, the outcomes of this study are directly relevant for investors, developers, and other stakeholders operating in Cyprus's construction and housing markets. The analysis highlights how construction activity responds to key macroeconomic variables, providing a framework for evaluating market conditions, anticipating risks, and making informed investment decisions. Understanding these relationships is particularly important in a small, open economy where sectoral activity is sensitive to both domestic conditions and external shocks.

Financing conditions emerge as a central determinant of investment feasibility. Across both realised construction output and planned activity, higher interest rates consistently exert a negative effect. This indicates that borrowing costs serve as a critical transmission channel between monetary policy and construction decisions. Periods of low interest rates enhance project viability by reducing financing expenses and enabling the use of leverage, while rising rates increase financial risk and necessitate more cautious approaches to project selection, capital allocation, and timing. For long-horizon projects, which require substantial upfront investment and extended execution periods, exposure to shifts in borrowing costs is particularly pronounced. Consequently, market participants need to closely monitor changes in the interest rate environment to align investment strategies with prevailing financing conditions.

Cost pressures represent another vital factor influencing construction activity. The negative relationship between construction costs per square metre and both realised and planned activity demonstrates that rising input prices can significantly reduce profitability and limit the number of feasible projects. Developers and investors must therefore prioritize accurate cost forecasting, careful budgeting, and efficiency improvements. In periods of elevated construction costs, phased investment strategies, meticulous project selection, and careful scheduling become essential to safeguard returns. Moreover, policies that streamline regulatory procedures, reduce administrative delays, and improve construction productivity can help mitigate cost pressures and indirectly support both sectoral stability and housing affordability, which remains a central concern in Cyprus.

Economic sentiment shapes expectations and influences long-term investment decisions. The positive association between sentiment and construction activity highlights the forward-looking nature of investment decisions. Developers and households do not respond solely to current conditions. They also take into account expectations regarding future demand, income growth, and broader macroeconomic stability. When confidence is high, projects are more likely to proceed, even in the presence of moderate cost or financing constraints. Pessimistic sentiment or uncertainty can delay or reduce planned investment, regardless of favourable financial conditions. For market participants, monitoring economic sentiment provides early signals of potential turning points, enabling better timing of investments and risk management decisions.

Labour market conditions also exert a significant influence, particularly in shaping future housing demand. Higher unemployment reduces prospective demand and increases uncertainty, discouraging the initiation of new construction projects. The negative relationship between unemployment and building permits in the robustness model suggests that labour market expectations play a strong role at the planning stage. Developers and investors need to account for both current employment trends and projected income stability when assessing the viability of new projects. Policies that strengthen employment prospects and support income stability can therefore generate indirect benefits for the construction sector by boosting confidence and demand among households and investors.

Overall, the findings show that construction activity is influenced by multiple macroeconomic forces operating in combination rather than in isolation. Financing conditions, cost pressures, economic sentiment, and labour market developments collectively shape the environment in which investment decisions are made. Tight monetary conditions, rising costs, and negative sentiment can reinforce one another, amplifying cyclical fluctuations and potentially prolonging downturns. Low interest rates, manageable costs, positive sentiment, and stable employment prospects can create a supportive environment for sustained investment. Recognizing these interdependencies is critical for market participants seeking to anticipate changes, manage risk, and optimize timing and resource allocation.

For investors and developers, the results underline the importance of incorporating monetary cycle expectations into strategic decision-making. Construction activity responds to financing conditions with a lag, meaning that forward-looking assessment of interest rate trends can be crucial for project timing, capital allocation, and risk management.

Market participants should also recognise that sectoral performance reflects a combination of financial variables and broader economic fundamentals. Relying solely on short-term monetary signals may therefore lead to incomplete assessments of market dynamics.

In conclusion, success in the Cypriot construction sector depends not on any single factor but on an integrated understanding of the broader macroeconomic environment. Interest rates, construction costs, economic sentiment, and labour market conditions jointly define the constraints and opportunities faced by developers and investors. Market participants who systematically account for these interrelated influences are better positioned to anticipate fluctuations, respond proactively, and sustain activity across the construction cycle. The empirical evidence presented in this study therefore offers a solid foundation for informed investment strategies and serves as a basis for the policy considerations discussed in the subsequent chapter.

## **6.5 Limitations of the Study**

The results of the study should be interpreted with careful consideration of certain methodological and data-related constraints. Acknowledging these boundaries is important to understand the reliability and scope of the conclusions and to frame the evidence within the broader context of construction activity in Cyprus.

Certain limitations should be acknowledged. Data constraints, particularly regarding sample length and structural disruptions during crisis periods, may influence long-run estimations. In addition, although the econometric models employed are appropriate for the research objective, they cannot fully capture potential nonlinear dynamics or behavioural shifts under extreme economic conditions.

Another limitation stems from potential two-way relationships between the explanatory variables and construction activity. Despite the inclusion of lagged dependent variables and

robust standard errors, some factors may simultaneously respond to developments within the construction sector. For example, economic sentiment can influence investment decisions, but changes in construction activity may also affect labour markets, local incomes, or housing supply, which in turn shape expectations. As such, the coefficients estimated in the models should be interpreted as reflecting associations rather than strict causal effects.

Measurement challenges also affect the interpretation of the results. Key variables, such as construction costs per square metre and indices of economic sentiment, serve as proxies for more complex underlying phenomena. These indicators capture important dimensions but cannot account for all influences that affect construction decisions, including firm-level cost management practices or local variations in project complexity. Similarly, building permits measure planned activity rather than completed output, and discrepancies may arise between intended and realised construction projects. These factors imply that the selected indicators provide a partial representation of construction activity rather than a complete picture.

The selection of explanatory variables inevitably imposes certain constraints. The models therefore concentrate on a small set of key macroeconomic drivers: financial conditions, cost pressures, and overall economic sentiment. In a separate robustness specification, labour market conditions are added to test whether the results remain stable, while keeping the framework clear and parsimonious. Nevertheless, other influences, such as demographic trends, regulatory changes, foreign investment flows, or credit market conditions, may also shape construction dynamics. Their exclusion does not invalidate the findings, but it highlights that certain effects remain unexplored. Future analyses could incorporate these factors to provide a more nuanced understanding of sectoral behaviour.

Finally, the conclusions are specific to the Cypriot context and the period under examination. The structural characteristics of the domestic construction market, the country's position within the euro area, and episodes of major economic disruption—such as the global financial crisis and the COVID-19 pandemic—affect how the sector responds to macroeconomic conditions. The relationships observed in this study may therefore differ in other countries or during periods with different economic or institutional settings.

These constraints do not diminish the value of the empirical work but provide a framework for interpreting the results cautiously. Recognising the limitations ensures that conclusions remain realistic and context-sensitive. Moreover, these considerations point to opportunities for future research, including the use of higher-frequency data, the exploration of additional explanatory factors, and the application of methods capable of capturing causal effects. Such approaches could enrich understanding of construction sector dynamics and provide more targeted guidance for policy and investment decisions in Cyprus.

## **6.6 Policy Trade – offs and Sectoral Vulnerabilities**

The results also highlight potential trade-offs associated with monetary tightening. While higher interest rates may be necessary to address inflationary pressures at the euro area level, they may simultaneously exert contractionary effects on interest-sensitive sectors such as construction.

In economies where real estate activity represents a significant component of economic output, these sectoral adjustments may create vulnerabilities if not carefully monitored. Balancing price stability objectives with financial stability considerations remains a central challenge for policymakers.

While higher interest rates may be necessary to contain inflationary pressures, they simultaneously increase borrowing costs and reduce incentives for new construction. For a small open economy such as Cyprus, which has no direct influence over euro area monetary decisions, this trade-off is particularly stark. Domestic construction activity may slow sharply even when local economic fundamentals are supportive.

These dynamics amplify the sector's exposure to external monetary shocks. Unlike industries with shorter production cycles or lower capital intensity, construction projects are difficult to adjust once initiated. Interest rate hikes can therefore trigger abrupt declines in project approvals, while existing projects continue under less favourable financial conditions. This asymmetry intensifies cyclical swings and adds volatility to the sector.

Periods of monetary tightening also coincide with heightened housing affordability challenges. Rising financing costs, coupled with increasing construction expenses, constrain

the ability of developers to deliver projects at accessible prices. This structural tension highlights the limits of monetary policy in addressing housing outcomes, especially in a small economy with rigid supply adjustments.

Addressing housing supply requires more than demand side interventions. Policies aimed at reducing supply side bottlenecks, such as streamlining planning procedures, enhancing infrastructure provision, and alleviating input constraints can increase the responsiveness of the sector and mitigate the adverse effects of restrictive financial conditions. By improving flexibility and efficiency, such measures can help stabilise housing supply even when borrowing costs rise.

Investment timing becomes a critical strategic consideration in this environment. Developers adjust project pipelines in response to both interest rates and economic sentiment, prioritising flexibility and risk management. While such decisions are rational on an individual basis, they reinforce the cyclical nature of the sector, contributing to synchronised booms and sharp contractions that amplify volatility.

The persistence observed in construction activity underlines the lasting impact of decisions made during expansionary periods. This emphasises the importance of careful financial planning and prudent leverage, particularly in Cyprus, where the construction sector plays a central role in broader economic performance.

Expectations and confidence further shape sector outcomes. Economic sentiment strongly influences how investors and households perceive policy measures. In uncertain environments, even modest interest rate hikes can trigger disproportionately large declines in construction activity as market participants reassess risk and postpone investment. This behavioural response complicates policy trade offs, as the effects of monetary tightening depend not only on policy magnitude but also on prevailing expectations and market psychology.

Given these dynamics, complementary measures are essential to reduce the adverse effects of external monetary shocks. While national authorities cannot directly alter euro area rates, they can influence transmission channels through targeted fiscal incentives, regulatory adjustments, and housing policies. Supporting access to financing, improving planning

efficiency, and addressing structural bottlenecks can reduce the sensitivity of construction activity to external shocks, stabilising investment and protecting the housing market.

Construction activity in Cyprus operates under constrained monetary autonomy and high exposure to external forces. Without careful planning and policy support, profitable projects can quickly become unviable, underscoring the importance of a coordinated approach that considers financing, costs, and expectations simultaneously.

## **6.7 Directions for Future Research**

Future research could extend the present analysis by incorporating alternative identification strategies for monetary shocks, exploring nonlinear or regime-switching specifications, or expanding the dataset as additional observations become available. Comparative analysis with other small euro area economies could further enhance understanding of cross-country heterogeneity in monetary transmission.

Applying more sophisticated econometric techniques represents another opportunity. Beyond OLS with dynamic components, models such as vector autoregressions (VAR), error correction frameworks, or autoregressive distributed lag (ARDL) approaches could examine the interplay between macroeconomic variables and construction outcomes in greater depth. These methods would allow researchers to distinguish between immediate fluctuations and long-term effects, offering a clearer picture of the persistence and cyclicity observed in the sector.

Expanding the range of explanatory variables could also enhance the analysis. Elements such as credit availability, foreign investment flows, regulatory shifts, or demographic changes may influence construction activity alongside interest rates, costs, and sentiment. Including these factors would help identify additional channels through which macroeconomic conditions affect the sector, while testing whether the relationships established in the current study remain stable under broader specifications.

Disaggregating construction activity offers further potential for insight. Analysing residential versus non-residential projects, or public versus private investment, could uncover segment-specific responses to macroeconomic and policy developments. This

distinction would provide practical guidance for policymakers and investors, allowing targeted strategies for areas of the sector that are more vulnerable to shocks or financing constraints.

Comparative analysis with other small open economies or euro area countries could deepen understanding of structural features and country-specific factors. Such comparisons would help distinguish which dynamics are unique to Cyprus and which reflect broader patterns in small, open economies, offering lessons for policy design and sectoral risk management.

Finally, expanding the study to include regional variation, project scale, or sustainability considerations could enrich the analysis of construction dynamics. These dimensions may influence both investment decisions and longer-term market outcomes, shedding light on the factors that drive efficiency, affordability, and resilience within the sector.

Exploring these avenues would strengthen the empirical framework, provide more nuanced insights into sector behaviour, and inform more targeted policy and investment strategies in Cyprus. By addressing data limitations, refining methodological approaches, and examining additional dimensions of construction activity, future research can build a more detailed understanding of how macroeconomic conditions shape investment decisions and sectoral performance.

## **6.8 Concluding Remarks**

This study presented supports the view that ECB interest rate fluctuations constitute an important determinant of construction activity in Cyprus, primarily through credit and housing market channels. However, this relationship operates within a broader macroeconomic environment in which multiple interacting factors shape sectoral outcomes.

Construction activity in Cyprus exhibits pronounced persistence and is highly sensitive to macroeconomic fluctuations. Interest rates emerge as a critical determinant, influencing both the feasibility of ongoing projects and the timing of future investments. Rising financing costs can delay project initiation and reduce overall sectoral output, while lower rates facilitate access to credit and support investment growth. Cost pressures, reflected in construction costs per square meter, similarly constrain both realised and planned activity,

highlighting the importance of efficiency, productivity, and supply-side measures in supporting the sector. Economic sentiment further interacts with these channels, shaping expectations and investment behaviour by signalling confidence or caution to developers and households. Labour market conditions, particularly unemployment, influence planned construction decisions, emphasizing the role of demand-side factors in addition to financing and cost considerations.

A key strength of this study lies in the dual approach to measuring construction activity. By considering both value added and building permits, the analysis captures the full spectrum of sectoral behaviour. The consistency of coefficient signs across these alternative measures demonstrates the structural nature of the relationships identified, confirming that financing conditions, cost pressures, and economic sentiment jointly govern construction dynamics rather than being artefacts of a particular specification. This insight underscores the need for policymakers and market participants to adopt a holistic perspective when assessing sectoral performance and planning interventions.

These dynamics are particularly significant in the context of Cyprus as a small open economy. With limited control over euro area monetary policy, domestic construction activity is exposed to externally driven interest rate shocks, which can interact with cost pressures and sentiment to amplify cyclical volatility. The analysis shows that the sector's long planning horizons and capital intensity magnify the effects of these macroeconomic fluctuations, creating a structural sensitivity that requires careful attention in both policy formulation and investment strategy. Complementary domestic measures such as streamlining planning procedures, enhancing access to financing, and improving cost efficiency can help mitigate these vulnerabilities and support a more stable, resilient construction sector.

Outside the realm of policy, the findings carry direct implications for investors, developers, and market participants. Understanding how financing conditions, input costs, labour market prospects, and sentiment interact enables more informed decision-making, better risk management, and strategic project timing. By anticipating the effects of macroeconomic shifts on both current and planned construction activity, stakeholders can position

themselves to navigate cyclical fluctuations effectively and capitalise on periods of opportunity.

Ultimately, the construction sector in Cyprus operates at the intersection of opportunity, risk, and economic interdependence. The empirical evidence presented in this study illuminates the channels through which macroeconomic forces transmit into sectoral outcomes, offering a nuanced understanding of both realised and forward-looking activity. For policymakers, the study provides guidance on how to support stability and sustainable growth through coordinated interventions. For investors and developers, it highlights the importance of integrating financial, cost, and sentiment indicators into strategic planning. The construction sector is more than a reflection of economic activity. Its a driver of economic development, employment, and investment. Building a resilient, dynamic, and forward-looking construction market in Cyprus requires recognising the interdependencies revealed in this analysis and acting decisively to align policy, market behaviour, and long-term economic objectives.

This is particularly relevant in the case of Cyprus, where the construction sector emerges from this analysis not merely as a passive barometer of economic conditions, but as a dynamic engine where financing, costs, sentiment, and labour interact to shape both immediate outcomes and future trajectories.. It underscores that sustainable growth in construction and by extension, the broader economy depends on a coordinated understanding of policy, market forces, and investor behaviour. For Cyprus, this insight is especially vital: harnessing the sector's potential requires foresight, strategic planning, and the recognition that the interplay between macroeconomic forces and sectoral dynamics is as much an opportunity as it is a challenge. In this light, the dissertation leaves a clear message: informed, forward looking action can transform vulnerability into advantage, positioning the construction sector as a cornerstone of economic stability and long-term prosperity.

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## **Appendix A: Data Sources and Variable Definitions**

This appendix explains the data used in the study, including what each variable represents, where the data come from, and how they were processed. All variables are expressed in natural logarithms unless noted otherwise. The analysis uses annual data throughout.

### **Dependent Variables**

Construction Value Added (LNVACONR): Measures the real value added in the construction sector at constant prices. The data come from the Statistical Service of Cyprus (CYSTAT). Values were converted to natural logarithms.

Building Permits (LNBP): Represents the number of building permits issued each year. Data are from CYSTAT and also expressed in natural logarithms.

### **Explanatory Variables**

Interest Rates (LNIR): Long-term interest rates on loans to non-financial corporations. Sources include the Central Bank of Cyprus (CBC) and the European Central Bank (ECB). The variable is log-transformed and measured annually.

Construction Costs (LNCPMR): Construction cost index per square metre, from CYSTAT, expressed in natural logarithms.

Economic Sentiment Index (LNEI): Annual Economic Sentiment Indicator, obtained from the European Commission and Eurostat, transformed using natural logarithms.

Unemployment Rate (LNUNR): Annual unemployment rate in Cyprus, from CYSTAT, expressed in natural logarithms.

### **Dynamic Specification**

Some models include lagged values of the dependant variables to capture persistence over time. These lags are based on the annual observations.

## **Sample Period**

The data cover the period 1997 to 2025, depending on availability for each variable. All series were aligned to make sure the estimation sample is consistent.

## **Data Treatment**

All variables were converted to natural logarithms before analysis. This makes the estimated coefficients easier to interpret as elasticities and helps reduce potential heteroskedasticity in the macroeconomic data.

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