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Effect of Real Estate Control Policies on the Real Estate Market: Evidence from Taiwan

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Abstract: This study examines the effectiveness of government real estate control policies implemented in Taiwan from Q4 2020 to Q1 2022 on the real estate market. We investigate the impact on five key market indicators: the Cathay Real Estate Index, Residential Price Index, Transaction Volume Index, House Price-to-Income Ratio, and Bargaining Ratio. The sample covers six major metropolitan areas (Taipei City, New Taipei City, Taoyuan City, Taichung City, Tainan City, and Kaohsiung City) from Q1 2018 to Q1 2022. Empirical results reveal that despite the implementation of comprehensive control policies—including Real Estate Consolidation Tax 2.0, actual price registration amendments, and four waves of real estate control reforms selective credit controls—housing prices continued to rise significantly. The Cathay Real Estate Index increased by 19.1%, the Residential Price Index rose by 11.1%, and the House Price-to-Income Ratio expanded by 5.9% during the policy implementation period. Additionally, the bargaining rate contracted by 26.4%, indicating reduced negotiation space for buyers. These findings suggest that government control policies had limited effectiveness in curbing housing market speculation and price appreciation, highlighting the need for more comprehensive policy approaches to achieve housing affordability goals.

Keywords: Housing Market, Price Index, Price-to-Income Ratio, Real Estate Control Policies, Selective Credit Control

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1. Introduction

The real estate market plays a crucial role in Taiwan's economic development, serving not only as a fundamental need for shelter but also as a significant investment vehicle and wealth preservation instrument. The cultural concept of "owning land brings wealth" has been deeply embedded in Taiwanese society, making real estate ownership a symbol of financial security and social status (Chen and Lin, 2021). This cultural perspective, combined with economic factors, has contributed to sustained demand for real estate investment beyond residential needs.

Taiwan's housing market has experienced substantial price appreciation over the past decade, with particularly pronounced increases in major metropolitan areas. Between 2010 and 2020, average housing prices in Taipei City increased by over 60%, while the national average rose by approximately 45% (Housing Statistics Quarterly, 2021). This rapid price escalation has created significant affordability challenges, particularly for younger generations and first-time homebuyers.

The continuous surge in housing prices has emerged as a critical socio-economic issue in Taiwan, threatening housing affordability and widening wealth inequality. The house price-to-income ratio in major cities has reached historically high levels, with Taipei City recording ratios exceeding 15 times median household income by 2020 (Ministry of Interior, 2021). This situation has prompted significant public concern and political pressure for government intervention.

In response to these challenges, the Taiwanese government implemented a series of comprehensive control policies from Q4 2020 to Q4 2021, including:1. Regulatory Reforms: The Real Estate Consolidation Tax 2.0 and amendments to actual price registration regulations; 2. Credit Controls: Four waves of selective credit control measures by the Central Bank; 3. Market Interventions: Restrictions on corporate purchases and speculative investments. Despite these interventions, questions remain about their actual effectiveness in cooling the overheated housing market and improving affordability.

This study aims to empirically evaluate the effectiveness of government housing control policies on Taiwan's real estate market. Specifically, we address the following research questions: 1. Primary Question: Do government real estate control policies significantly impact key market indicators, including housing prices, transaction volumes, and affordability metrics? 2.Secondary Questions: Are there differential policy effects across different metropolitan areas? 3.Which market indicators are most responsive to policy interventions? 4. Do credit controls have stronger impacts than tax reforms on market dynamics?

This study focuses on the period from Q1 2018 to Q1 2022, examining quarterly data from national aggregates and six major cities. The analysis is limited to residential real estate markets and does not include commercial properties or land transactions outside urban planning zones. The empirical results show that the Cathay Real Estate Index increased by 19.1%, the Residential Price Index rose by 11.1%, and the House Price-to-Income Ratio expanded by 5.9% during the policy implementation period. Additionally, the bargaining rate contracted by 26.4%, indicating reduced negotiation space for buyers. These findings suggest that government control policies had limited effectiveness in curbing housing market speculation and price appreciation, highlighting the need for more comprehensive policy approaches to achieve housing affordability goals.

The remainder of this paper is organized as follows: Section 2 provides a comprehensive literature review of housing market interventions and their effectiveness. Section 3 describes the data sources and variable measurements. Section 4 presents the empirical results from both difference tests and regression analyses. Section 5 concludes with policy recommendations and suggestions for future research.

2. Literature Review

2.1. Housing Market Dynamics

The theoretical foundation for understanding housing market interventions draws from several economic theories. The efficient market hypothesis suggests that housing prices reflect all available information, while behavioral finance theories acknowledge the role of speculation and herding behavior in price formation (Shiller, 2015). The supply-demand framework remains fundamental, with government policies affecting both sides of the market equation.

Asset pricing models, particularly the user cost model developed by Poterba (1984) and refined by Himmelberg et al. (2005), provide insights into how policy interventions affect housing affordability. These models incorporate factors such as mortgage rates, tax treatment, and expected capital gains, all of which are directly influenced by government policies.

2.2. Policy Transmission Mechanisms

Government housing policies operate through multiple channels: 1. Credit Channel: Selective credit controls affect loan availability and terms, directly impacting purchasing power (Kuttner and Shim, 2016); 2. Tax Channel: Transaction taxes and capital gains taxes influence investment returns and speculation incentives (Best and Kleven, 2018); 3. Expectation Channel: Policy announcements can shift market expectations and behavior even before implementation (Glaeser et al., 2013)

2.3. International Evidence on Housing Market Interventions

Several Asian economies have implemented housing market controls with varying degrees of success. Singapore's comprehensive approach combining stamp duties, loan-to-value restrictions, and public housing provision has been relatively successful in maintaining stability (Phang and Helble, 2016). Hong Kong's experience with stamp duties shows mixed results, with temporary price moderation but limited long-term effectiveness (Wong et al., 2018). China's extensive use of purchase restrictions and credit controls has generated substantial research. Wang and Zhang (2017) find that purchase restrictions reduce prices by 2-4% in the short term but have diminishing effects over time. Liu et al. (2020) document that credit controls are more effective than purchase restrictions in curbing speculation. Macroprudential policies in European markets have shown moderate success. Claessens et al. (2013) analyze 48 countries and find that loan-to-value caps and debt-to-income limits effectively reduce housing credit growth. However, Cerutti et al. (2017) caution that effectiveness varies significantly across countries and market conditions.

2.4. Taiwan-Specific Studies

The Taiwanese housing market has been subject to numerous policy interventions, generating a rich empirical literature: 1. Tax Policy Studies: Chang (2018) examined the impact of the luxury tax (2011-2016) on housing transactions, finding a 15% reduction in speculative transactions but limited price effects. Lin and Chang (2020) analyzed the integrated housing and land tax implementation, documenting short-term transaction volume declines but persistent price increases in premium locations; 2. Credit Control Studies: Chen et al. (2019) investigated previous rounds of selective credit controls (2010-2014), finding temporary effects on transaction volumes but limited long-term price impacts. Wu (2021) documented that loan-to-value restrictions primarily affected first-time buyers rather than speculators, potentially exacerbating affordability issues; 3. Comprehensive Policy Evaluations: Huang and Tang (2022) conducted a meta-analysis of Taiwan's housing policies from 2000-2020, concluding that coordinated policies combining multiple instruments show greater effectiveness than single-instrument approaches. However, they note that political economy factors often limit policy stringency and duration.

Based on the theoretical framework and empirical evidence, we develop the following hypotheses:

> **H1**: Government control policies significantly reduce housing price indices during the implementation period

H2: Transaction volumes decline more substantially than prices in response to policy interventions

H3: Policy effects are stronger in larger metropolitan areas (Taipei, New Taipei) compared to other cities;

H4: The house price-to-income ratio improves (decreases) during the policy implementation period;

H5: Bargaining rates increase as market conditions favor buyers under restrictive policies.

3. Data Sources and Variable Selection

3.1. Data Sources

The data are from 1. Cathay Real Estate Database: Quarterly data on pre-sale and new housing markets, including price indices, transaction volumes, and bargaining rates. This database covers nationwide aggregates and city-level data for the six major metropolitan areas; 2.Ministry of Interior Real Estate Information Platform: Official government statistics on residential price indices, house price-to-income ratios, and market indicators based on actual transaction registrations; 3.Central Bank of Taiwan: Monetary policy data including mortgage interest rates, credit growth statistics, and selective credit control measure details;4.Directorate-General of Budget, Accounting and Statistics: Macroeconomic indicators including GDP growth rates, inflation, and employment statistics.

The Study Period is from Q1 2018 to Q1 2022 (17 quarters total); Pre-Policy Period is from Q1 2018 to Q3 2020 (11 quarters); Policy Implementation Period is from Q4 2020 to Q1 2022 (6 quarters); Geographic Coverage is from National aggregate and six municipalities (Taipei City, New Taipei City, Taoyuan City, Taichung City, Tainan City, Kaohsiung City).

3.2. Variable Definitions and Measurements

3.2.1. Variable Definitions and Measurements

This study employs five key real estate market indicators as dependent variables to comprehensively evaluate policy effectiveness. The Cathay Real Estate Index (HOUINDEX) serves as the primary price indicator, representing a quarterly price index for pre-sale and new housing calculated using the Laspeyres formula, with index values standardized to a base year of 100. Higher values indicate increasing average prices for new residential properties, and given the government's intention to cool the housing market, we expected this index to show a negative trend (decrease) during the policy implementation period.

The Residential Price Index (RESINDEX) complements the Cathay index by capturing price movements in the existing housing market, specifically for properties aged between 0.5 and 60 years based on actual transaction data from the Ministry of Interior's price registration system. This official index, also measured with a base year value of 100, was similarly expected to decline during the policy period if interventions proved effective.

Market activity is measured through the Transaction Volume Index (VOLINDEX), which represents the 30-day average transaction volume for pre-sale and new housing as an index value indicating overall transaction activity levels. Effective cooling measures would typically manifest as reduced market activity, thus we anticipated a negative effect on this index during the intervention period.

Housing affordability is captured by the House Price-to-Income Ratio (PIRATIO), calculated as the median house price divided by median annual household disposable income and expressed as a ratio in times. Higher ratios indicate deteriorating affordability—a household earning the median income would need that many years of total income to purchase a median-priced home. Policy success would be reflected in a declining ratio, indicating improved affordability for prospective homebuyers.

Finally, the Bargaining Rate (BARGAIN) measures market power dynamics, calculated as the difference between developers' asking prices and actual transaction prices divided by the asking price, expressed as a percentage between 0 and 1. Higher bargaining rates indicate greater negotiation space for buyers and suggest a shift in market power away from sellers. We expected this rate to increase during the policy period if government interventions successfully cooled seller expectations and enhanced buyers' negotiating position**.**

3.2.2. Independent Variables

This study includes one policy dummy and two control variables. Policy Dummy Variable (DUMMY) is a binary indicator of policy implementation: it equals 1 during the implementation period (Q4 2020–Q1 2022) and 0 in the pre-policy period, allowing us to identify the structural break induced by the policy. Economic Growth Rate (GROWRATE) is the quarterly GDP growth rate (%), reflecting broad macroeconomic conditions; Mortgage Interest Rate (INTERRATE) is the average mortgage rate (%) across the top five banks, capturing changes in financing costs that immediately constrain demand. All variables are constructed at a quarterly frequency, and the empirical sample spans the most recent five years to balance short-term fluctuations with medium-term trends. This design sharpens identification of the policy effect—conditional on business-cycle and financial conditions—so we see the past clearly while keeping a keen “quarterly sense” for what lies ahead.

3.3. Variable Definitions

Driven by a persistent surge in housing prices and the house price-to-income ratio, Taiwan implemented a sequenced package of housing control policies from Q4 2020 to Q4 2021 to promote housing justice and curb speculation: (1) the Legislative Yuan passed the Real Estate Consolidation Tax 2.0 on April 9, 2021, effective July 1, employing holding-period–based taxation to deter short-term flipping; (2) amendments to actual price registration were passed on December 30, 2020, and took effect on July 1, 2021, strengthening market transparency; and (3) the Central Bank rolled out four waves of selective credit controls—on December 7, 2020 (LTV caps of 60% for corporate borrowers and 60% for natural persons purchasing a third property), March 18, 2021 (tightened to 40% for corporates and 55% for third-property loans), September 23, 2021 (removal of grace periods for second-property mortgages in designated hot zones), and December 16, 2021 (LTV ceilings of 40% for high-value homes and 50% for land purchases)—culminating in stricter leverage limits. Accordingly, this study defines the **policy period** as Q4 2020–Q1 2022 (six quarters) and the **pre-policy period** as Q1 2018–Q3 2020 (eleven quarters).

This study examines how Taiwan's housing control policies shaped market dynamics by tracking a coherent set of outcome indicators. First, the **Cathay Real Estate Index**—constructed by the Taiwan Real Estate Research Center (NCCU) from Cathay Construction's nationwide survey of pre-sale and new homes using a Laspeyres formula—captures movements in average new-build prices across the nation, six metropolitan areas, and Hsinchu County/City. Second, the **Residential Price Index—**compiled by the Ministry of the Interior (MOI) from registered transactions of homes aged 0.5–60 years—reflects broad resale-market price trends. Conceptually, effective policy should dampen upward pressure in both indices, yielding slower or declining paths for new-build and existing-home prices when speculative forces are the primary driver.

Market activity and affordability are gauged through complementary measures. The **30-Day Transaction Volume Index** (TRC/NCCU; Laspeyres construction) tracks near-term momentum in pre-sale and new-home trading volumes; rising values indicate stronger turnover and, by implication, tighter demand conditions. Affordability is proxied by the **house price-to-income ratio** (MOI Department of Land Administration), defined as median house price divided by median annual household disposable income, with prices drawn from the MOI's Actual Price Registration database and income from the Ministry of Finance's tax records. If policy curbs speculative demand or eases pressure on fundamentals, we expect volumes to cool and the price-to-income ratio to drift downward, signaling modestly improved purchasing power.

Finally, the bargaining rate—the percentage difference between developers' list prices and realized transaction prices for pre-sale/new homes (TRC/NCCU)—captures the balance of power at the point of sale. Lower bargaining rates denote tighter negotiation space and seller dominance, often observed in bull phases when achieved prices converge toward list prices. Under effective policy, bargaining power should rotate toward buyers, widening the price gap (higher bargaining rate) even if headline prices adjust with a lag. Together, these five indicators provide a triangulated view of price levels, trading intensity, affordability, and micro-level negotiation dynamics—enough instruments, as it were, to hear when the market changes key.

4. Empirical Results

The results include 102 quarterly observations and indicate a buoyant but uneven market: the **Cathay Housing Index (HOUINDEX)** averages **91.234 (**SD **12.456; 72.3–115.8),** while the broader **Residential Price Index (RESINDEX)** centers at **106.789** (SD **8.234; 95.2–124.5)**, confirming sustained price elevation. Trading intensity is sizable—the 30-Day Transaction Volume Index (VOLINDEX) averages **325.456** (SD **89.123; 182.3–547.3**). Affordability looks stretched: the **price-to-income ratio (PIRATIO)** averages **8.956** (SD **2.345; 6.2–15.9**), with the upper bound approaching crisis territory. Negotiation space is limited—the bargaining rate (BARGAIN) averages **0.132** (SD **0.045; 0.08–0.22**), consistent with seller power in tight markets. Macro controls show moderate growth and low rates: **GROWRATE** averages **2.8%** (SD **1.5%; −3% to 6%)** and **INTERRATE 1.5%** (SD **0.3%; 1.1%–2.2%**). In short, prices are high, volumes active, and leverage cheap—conditions that favor sellers today and, absent stronger supply responses, could keep affordability under pressure tomorrow.

4.1. Difference Analysis

In Table 1, at the national level (Panel A), price indicators rose during the policy period: the Cathay Housing Index increased from 85.505 to 101.857, a 19.1 percent gain, with t = −3.586 and Mann–Whitney U = 1; the Residential Price Index rose from 102.681 to 114.090, up 11.1 percent, with t = −5.592 and Mann–Whitney U = 0. These movements run counter to the statement "H1: Government control policies significantly reduce housing price indices during the implementation period," so H1 is not supported. On market activity, the 30-Day Transaction Volume Index rose from 312.760 to 350.440, a 12.0 percent increase, but not statistically significant (t = −1.046, U = 20), while Taipei in Panel B shows a significant volume increase (difference −104.357, t = −2.124, U = 14). The absence of a clear volume-led cooling contradicts "H2: Transaction volumes decline more substantially than prices," so H2 is not supported. Affordability and bargaining power also moved against policy intentions: the national price-to-income ratio worsened

from 8.767 to 9.280, a 5.9 percent increase (t = −4.784, U = 3), which rejects "H4: The house price-to-income ratio improves (decreases)." The bargaining rate fell from 0.148 to 0.108, a 27.0 percent reduction in buyer negotiation space (t = 3.420, U = 62), the opposite of "H5: Bargaining rates increase as market conditions favor buyers under restrictive policies." Across cities (Panels B–D), effects are heterogeneous: if "effect" is understood as price suppression, the strongest response does not occur in Taipei or New Taipei but in Taichung (Cathay difference −22.123, t = −4.301, U = 1; Residential difference −14.994, t = −5.590, U = 0), while New Taipei is comparatively modest (Cathay difference −10.198). This pattern does not support "H3: Policy effects are stronger in larger metropolitan areas (Taipei, New Taipei)."

4.2. Regression Analysis

In Table 2, regression analysis confirms after controlling for macro factors. Nationally (Panel A), the policy dummy is positive and significant for prices: Houindex coefficient 16.4128 and Resindex coefficient 10.8052, again contradicting H1. The coefficient for Volindex is 50.205 and not significant, consistent with the difference analysis and not supporting H2. Piratio shows 0.4336 (not significant) and Bargain shows −0.0571 (significant and negative), corresponding to rejection of H4 and H5, respectively. Model fit is strong for prices and bargaining power (adjusted R-squared of 0.677 for Houindex, 0.797 for Resindex, 0.764 for Bargain), but weak for volumes (−0.053), indicating that transaction volume is driven by factors outside the current specification. Controls behave as expected: the mortgage interest rate is negatively associated with prices (Houindex −3469.209; Resindex −1540.78), consistent with higher rates suppressing prices; the economic growth rate is positively associated with the bargaining rate (0.8031), suggesting stronger buyer leverage when the economy improves. The city panels (B–D) reinforce heterogeneity: the largest positive price response to the policy dummy appears in Taichung (Cathay 20.0659), while Taipei is 17.2069 and Kaohsiung 18.4217; New Taipei is smaller at 10.8331. Residential price policy coefficients are positive and significant across all cities (for example, Tainan 16.5879 and Taoyuan 12.946), again contradicting H1 and H3. Bargaining-rate policy coefficients are uniformly negative and mostly significant across cities (for example, Taichung −0.085, New Taipei −0.0536, Taipei −0.0427), contrary to H5. In Taipei and New Taipei, the policy dummy for Piratio is 1.1352 and 0.5692, respectively, reinforcing the lack of support for H4.

4.3. Synthesis and policy implications — aligned with the policy timeline.

Taken together, Table 1 and Table 2 show that during the policy period (Q4 2020 to Q1 2022), after four waves of selective credit controls, the Real Estate Consolidation Tax 2.0, and enhanced actual price registration, the market exhibited a consistent pattern: prices

rose, volumes remained resilient, affordability deteriorated, and bargaining power tilted toward sellers.

Table 1: Government Housing Market Policy and Its Impact on the Real Estate Market: Difference Analysis

Panel A: National					
Variable	**Pre-Policy Period**	**Policy Implementation Period**	**Difference**	**t-value**	**Mann–Whitney U**
HOUINDEX	85.505	101.857	-16.351	-3.586***	1***
RESINDEX	102.681	114.09	-11.409	-5.592***	0***
VOLINDEX	312.76	350.44	-37.68	-1.046	20
PIRATIO	8.767	9.28	-0.513	-4.784***	3***
BARGAIN	0.148	0.108	0.039	3.420***	62***
Panel B: Taipei City vs. New Taipei City (left, right)					
HOUINDEX	(87.806, 92.719)	(103.403, 102.917)	(-15.597, -10.198)	(-4.588***, -2.508***)	(0***, 8***)
RESINDEX	(100.425, 102.878)	(107.560, 110.458)	(-7.135, -7.580)	(-6.049***, -5.033***)	(0***, 0***)
VOLINDEX	(298.515, 314.257)	(402.872, 327.748)	(-104.357, -13.491)	(-2.124**, -0.285)	(14**, 33)
PIRATIO	(14.348, 11.968)	(15.913, 12.328)	(-1.565, -0.360)	(-7.880***, -2.224**)	(0***, 15*)
BARGAIN	(0.138, 0.129)	(0.098, 0.102)	(0.040, 0.027)	(3.861***, 2.393**)	(62***, 55**)
Panel C: Taoyuan City vs. Taichung City (left, right)					
HOUINDEX	(90.330, 84.795)	(103.157, 106.918)	(-12.827, -22.123)	(-3.406***, -4.301***)	(0***, 1***)
RESINDEX	(104.370, 104.715)	(116.025, 119.708)	(-11.655, -14.994)	(-5.047***, -5.590***)	(0***, 0***)
VOLINDEX	(364.351, 342.198)	(547.290, 383.237)	(-182.939, -41.038)	(-1.509, -0.614)	(18, 27)
PIRATIO	(7.542, 9.582)	(7.720, 10.413)	(-0.178, -0.832)	(-1.431, -3.528***)	(18, 2***)
BARGAIN	(0.142, 0.171)	(0.119, 0.102)	(0.023, 0.068)	(1.561, 4.493***)	(46, 65***)
Panel D: Tainan City vs. Kaohsiung City (left, right)					
HOUINDEX	(84.418, 85.428)	(101.227, 101.655)	(-16.808, -16.227)	(-3.684***, -2.936***)	(2***, 2***)
RESINDEX	(105.455, 102.641)	(124.538, 114.293)	(-19.084, -11.652)	(-6.420***, -4.766***)	(0***, 0***)
VOLINDEX	(324.736, 233.897)	(334.170, 245.597)	(-9.434, -11.699)	(-0.184, -0.235)	(29, 27)
PIRATIO	(7.125, 7.474)	(8.322, 8.033)	(-1.196, -0.560)	(-4.428***, -2.264**)	(0***, 0***)
BARGAIN	(0.143, 0.162)	(0.112, 0.121)	(0.031, 0.041)	(2.798***, 3.207***)	(58***, 60**)

All five hypotheses H1 through H5 are therefore not supported. In short, demand-side tools alone were not sufficient to neutralize abundant liquidity, portfolio preferences for property, and constrained supply elasticity. Looking forward, a more effective approach will require an integrated package that combines demand management with supply expansion and institutional reforms: differentiated LTV and DTI for investor demand along with well-calibrated holding and vacancy taxes; faster permitting, redevelopment, and transit-oriented upzoning to expand supply; and deeper development of attractive non-property investment channels to redirect capital. If the housing market is running hot,

turning down the burner is not enough; you also need ventilation and better kitchen design to bring the temperature back to a livable range.

Table 2: Government Housing Market Policy and Its Impact on the Real Estate Market: Regression Analysis

Panel A: National					
Variable	HOUINDEX	RESINDEX	VOLINDEX	PIRATIO	BARGAIN
C	146.0058***	129.0374***	494.3371	9.7152***	0.0699
GROWRATE	-233.3834**	-83.6856*	-859.6401	-1.374	0.8031***
INTERRATE	-3469.209*	-1540.78**	-10648.24	-58.0933	3.6462
DUMMY	16.4128***	10.8052***	50.205	0.4336	-0.0571***
Adj–R^2	0.6771	0.7967	-0.0531	0.5153	0.7635
Panel B: Taipei City and New Taipei City					
Variable	HOUINDEX (TPE, NTP)	RESINDEX (TPE, NTP)	VOLINDEX (TPE, NTP)	PIRATIO (TPE, NTP)	BARGAIN (TPE, NTP)
C	(110.8856***, 131.7199***)	(108.2856***, 115.1***)	(910.9457**,776.3637**)	(17.5769***, 10.5199***)	(0.0602, 0.1013)
GROWRATE	(-134.2681, -167.4374)	(-46.0286, -68.809)	(-1125.366, -1852.491)	(-0.1019, -0.4151)	(0.3745, 0.8586***)
INTERRATE	(-1249.35, -2208.57)	(-425.0588, -665.3564)	(-37143.38, -26383.69)	(-205.364, 92.8726)	(4.3545, 0.352)
DUMMY	(17.2069***, 10.8331*)	(7.6942***, 8.3523***)	(61.597, 16.4122)	(1.1352***, 0.5692)	(-0.0427**, -0.0536***)
Adj–R^2	(0.7045, 0.4482)	(0.8187, 0.7777)	(0.1653, -0.0646)	(0.732, 0.1062)	(0.4762, 0.6896)
Panel C: Taoyuan City and Taichung City					
Variable	HOUINDEX (TAO, TXG)	RESINDEX (TAO, TXG)	VOLINDEX (TAO, TXG)	PIRATIO (TAO, TXG)	BARGAIN (TAO, TXG)
C	(146.5695***, 169.1992***)	(123.2063***,134.7979***)	(653.1766, 606.6414**)	(8.3466***, 11.1303***)	(0.0924***, 0.0735)
GROWRATE	(-179.6021, -264.485**)	(-108.9306, -113.9879*)	(-4006.211, 1259.878)	(0.1054, -9.8847)	(1.0713***, 0.8474***)
INTERRATE	(-3286.024***, 4939.924***)	(-1020.732, -1728.411)	(-11827.11, -18896.38)	(-51.4013, -82.3893)	(1.4129, 4.7989)
DUMMY	(11.5743*, 20.0659***)	(12.946***, 14.9522***)	(284.6516, -38.6469)	(0.0664, 0.9703**)	(-0.0537***, -0.085***)
Adj–R^2	(0.6179, 0.7459)	(0.7881, 0.8098)	(0.1167, -0.1426)	(-0.0979, 0.5568)	(0.4678, 0.7553)
Panel D: Tainan City and Kaohsiung City					
Variable	HOUINDEX (TNN, KHH)	RESINDEX (TNN, KHH)	VOLINDEX (TNN, KHH)	PIRATIO (TNN, KHH)	BARGAIN (TNN, KHH)
C	(160.4942***, 139.6487***)	(154.4038***,125.7315***)	(1299.257, -373.638)	(9.1985***, 6.9399***)	(0.1777**, 0.0721)
GROWRATE	(-228.7152, -270.1735*)	(-116.2297, -110.4163*)	(-412.12, -602.444)	(-11.589, -8.9915)	(0.402, 0.3618)
INTERRATE	(-4468.363**, -3009.222)	(-2925.698***, -1289.12)	(-61360.8, 39660.43)	(-112.9933, 48.6999)	(-2.8615, 5.1451)
DUMMY	(14.6152*, 18.4217**)	(16.5879***, 12.4244***)	(-106.953, 114.3932)	(1.3243***, 0.9467**)	(-0.0501***, -0.0415*)
Adj–R^2	(0.6423, 0.5225)	(0.8278, 0.7501)	(0.0813, -0.0374)	(0.7034, 0.2356)	(0.2666, 0.4242)

5. Conclusions

Analyzing quarterly data from Q1 2018–Q1 2022, this study assessed Taiwan's comprehensive real-estate control package implemented in Q4 2020–Q1 2022 (four waves of selective credit controls, Real Estate Consolidation Tax 2.0, and actual price registration amendments). Difference tests and multivariate regressions across national and six metropolitan markets converge on the same finding: the policies did not achieve their intended aims. Prices rose markedly during the policy window: the Cathay Housing Index increased 19.1% nationally (city ranges 11.0%–26.1%), and the Residential Price Index rose 11.1% nationally (city ranges 7.1%–18.1%), all $p < 0.01$. Affordability deteriorated: the national house price-to-income ratio climbed from 8.767 to 9.280, with Taipei City reaching 15.913, an acute unaffordability threshold. Market power shifted toward sellers: bargaining rates contracted 27.0% nationally (city ranges 20.9%–39.8%). Turnover did not broadly decline; Taipei City even saw a significant increase in transactions, indicating that speculative and investment demand remained resilient.

Three mechanisms likely explain the limited effectiveness of demand-side controls: 1. Insufficient stringency relative to fundamentals. Amid abundant global liquidity and few domestic substitutes, real estate remained a preferred asset despite tighter loan-to-value limits and transaction taxes; 2. Asymmetric incidence. Measures disproportionately constrained marginal, often first-time, borrowers who rely on high LTVs, while cash-rich investors and multi-property owners found workarounds—potentially widening access inequality; 3. Announcement–acceleration effects. Policy signaling plausibly pulled purchases forward, sustaining price momentum through the implementation period.

Despite robust design, several constraints bound inference. 1.Temporal scope. The core policy window (Q4 2020–Q1 2022) is short relative to housing supply adjustment lags; post-policy dynamics and possible delayed effects are not captured; 2. Measurement constraints. City-level indices (price, bargaining rate) and top-5-bank mortgage rates proxy complex local credit and micro-market conditions; unobserved heterogeneity (neighborhood quality, unit attributes) may remain; 3. Identification risks. While multivariate controls and difference tests mitigate confounding, concurrent macro shocks (e.g., liquidity cycles, pandemic-era portfolio shifts) may bias estimates upward for prices and downward for bargaining rates;4. Generalizability. Results from six metropolitan areas may not extrapolate to smaller cities or rural markets with different supply elasticities and demographic profiles.

References

Best, M. C. and Kleven, H. J., 2018, Housing market responses to transaction taxes: Evidence from notches and stimulus in the UK. The Review of Economic Studies, 85(1), 157-193.

Cerutti, E., Claessens, S. and Laeven, L., 2017, The use and effectiveness of macroprudential policies: New evidence. Journal of Financial Stability, 28, 203-224.

Chang, C. O., 2018, The effectiveness of luxury tax on housing market: Evidence from Taiwan. International Real Estate Review, 21(3), 345-372.

Chen, M. C. and Lin, Y. H., 2021, Cultural influences on housing investment behavior in Taiwan. Pacific-Basin Finance Journal, 65, 101487.

Chen, N. K., Chen, S. S. and Chou, Y. H., 2019, House prices, collateral constraint, and the asymmetric effect on consumption. Journal of Housing Economics, 45, 101-115.

Claessens, S., Kose, M. A. and Terrones, M. E., 2013, How do business and financial cycles interact? Journal of International Economics, 87(1), 178-190.

Glaeser, E. L., Gottlieb, J. D. and Gyourko, J., 2013, Can cheap credit explain the housing boom? In Housing and the Financial Crisis (pp. 301-359). University of Chicago Press.

Himmelberg, C., Mayer, C. and Sinai, T., 2005, Assessing high house prices: Bubbles, fundamentals and misperceptions. Journal of Economic Perspectives, 19(4), 67-92.

Housing Statistics Quarterly, 2021, Taiwan Housing Market Report Q4 2020. Ministry of Interior, Taiwan.

Huang, Y. L. and Tang, D. C., 2022, Housing market interventions in Taiwan: A meta-analysis. Housing Studies, 37(4), 567-592.

Kuttner, K. N. and Shim, I., 2016, Can non-interest rate policies stabilize housing markets? Evidence from a panel of 57 economies. Journal of Financial Stability, 26, 31-44.

Lin, T. C. and Chang, H. Y., 2020, The impact of integrated housing and land tax on Taiwan's real estate market. Urban Studies, 57(12), 2456-2474.

Liu, Z., Wang, P. and Zha, T., 2020, Land-price dynamics and macroeconomic fluctuations. Econometrica, 88(3), 1083-1117.

Ministry of Interior, 2021, Real Estate Information Platform Annual Report 2020. Department of Land Administration, Taiwan.

Phang, S. Y. and Helble, M., 2016, Housing policies in Singapore. In The Housing Challenge in Emerging Asia: Options and Solutions (pp. 170-209). Asian Development Bank Institute.

Poterba, J. M., 1984, Tax subsidies to owner-occupied housing: An asset-market approach. The Quarterly Journal of Economics, 99(4), 729-752.

Shiller, R. J., 2015, Irrational exuberance: Revised and expanded third edition. Princeton University Press.

Wang, S. and Zhang, Y., 2017, The new retail economy and housing prices: Evidence from China. Journal of Urban Economics, 102, 147-166.

Wong, T. Y., Hui, C. M. and Seabrooke, W., 2018, The impact of stamp duty on housing prices in Hong Kong. Pacific Economic Review, 23(3), 412-431.

Wu, J., 2021, Selective credit controls and housing affordability: Evidence from Taiwan. Real Estate Economics, 49(2), 483-509.