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* Views expressed are those of the author and do not necessarily reflect official positions of De Nederlandsche Bank.

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Bidding with Confidence: The Effect of Financial and Economic Beliefs on Housing Markets*

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Abstract

This paper examines the role of consumer confidence in shaping housing market participation and transaction prices. We combine individual-level measures of consumer confidence with administrative housing transaction data for the Netherlands over the period 2006 to 2024, exploiting within-quarter cross-sectional variation in confidence observed prior to market entry. Consumer confidence is a strong predictor of participation on both sides of the housing market, with substantially larger effects for buyers than for sellers. Conditional on participation and accounting for endogenous selection, buyers with more positive expectations pay 2.2% higher transaction prices in supply-constrained markets, with effects increasing to 4.4% in the most constrained areas. In contrast, seller confidence has no economically meaningful impact on transaction prices. The findings identify two distinct channels through which expectations affect housing market outcomes: by influencing market participation decisions and, conditional on participation, by affecting buyers' willingness to pay. These results suggest that housing market dynamics are driven not only by valuation differences among active participants but also by confidence-induced selection into the market.

Keywords: Consumer Confidence, Expectations, Market Participation, Transaction Prices, Housing Markets **JEL codes:** C34, D12, D84, G40, R30.

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1 Introduction

Housing transactions are infrequent, highly leveraged, and involve the largest asset in most household portfolios. Entering the housing market therefore represents a discrete and largely irreversible decision, characterized by substantial transaction costs and infrequent adjustment opportunities. These features make housing decisions inherently forward-looking, requiring households to form expectations about future economic conditions and their own financial circumstances before deciding whether to transact and on what terms.

Recent work has shown that expectations translate into market outcomes (Bailey et al., 2018; Bottan and Perez-Truglia, 2025; Malmendier and Steiny Wellsjo, 2024). Which expectations are relevant for these decisions, however, may itself differ across households. A large literature shows that expectations vary systematically with personal experiences, extrapolation, tenure status, and age (see e.g., Kuchler and Zafar, 2019; Armona et al., 2019; Adelino et al., 2018; Hjalmarsson and Österholm, 2020). A single determinant is therefore unlikely to capture the full cross-sectional variation in beliefs (Kuchler et al., 2023). We argue that the same factors that shape beliefs can also shape which beliefs are relevant for economic decision-making. This suggests that focusing on any single expectation may provide only a partial view of how household beliefs translate into economic behavior.

We provide direct evidence on how households’ overall economic and financial beliefs relates to both market participation and transaction prices. We study this relationship through consumer confidence, which summarizes households’ assessments of both the economic climate and their own financial circumstances. This breadth makes it a natural proxy for the latent beliefs underlying decision making. Because all respondents answer the same set of questions, the measure is directly comparable across households while remaining agnostic about the specific expectations underlying each respondent’s assessment.

We measure individual consumer confidence using the consumer confidence survey administered by Statistics Netherlands (CBS). The nationally representative survey has been conducted monthly in its current form since 2003 (CBS, 2017). Although designed to measure aggregate consumer confidence, we exploit the underlying individual responses. We link survey respondents to residential property transactions between 2006 and 2024, allowing us to observe whether and when respondents subsequently buy or sell a home and the prices at which they transact. Because consumer confidence is measured before market entry, reported beliefs are predetermined with respect to subsequent transaction outcomes, allowing us to distinguish selection into participation from transaction prices conditional on participation.

Our empirical analysis is motivated by two stylized facts. First, housing transactions are disproportionately concentrated among households with higher consumer confidence. This pattern holds for both buyers and sellers and suggests that beliefs are strongly related to the decision to transact, motivating a focus on the extensive margin. Second, conditional on participation, buyers and sellers with consumer confidence above the contemporaneous average, transact at higher prices. This systematic relationship suggests that consumer confidence is associated not only with the decision to participate in the housing market, but also with the level of transaction prices conditional on participation.

We examine both the extensive and intensive margin using the Heckman (1979) sample selection model. In the first stage, we estimate whether consumer confidence predicts subsequent market entry. In the second stage, we estimate the relationship between consumer confidence and transaction prices while correcting for non-random selection into the transaction sample. Identification exploits cross-sectional differences in individual consumer confidence within the same quarter, measured before the transaction occurs.

The estimates from the selection model reveal that the odds of buying are 13.9% lower for negative respondents and 12.1% higher for positive respondents relative to those reporting neutral confidence in the same quarter. For sellers, the corresponding changes in the odds are a 3.4% decrease for negative respondents and a 9.7% increase for positive respondents. These estimates indicate that buyer participation responds on both the negative and positive margins, whereas seller participation is driven primarily by higher participation among positively confident homeowners.

Turning to transaction prices, in supply-constrained markets, buyers reporting positive confidence obtain transaction prices that are approximately 2.6% higher than those of buyers reporting neutral confidence, and 2.2% higher when accounting for the selection effect. The modest attenuation of the estimate indicates that selection explains only a small part of the observed relationship between consumer confidence and transaction prices. The effect strengthens as supply constraints tighten, reaching 4.4% in the most supply-constrained municipalities. By contrast, the estimated price effect for sellers is not statistically significant, whether or not the selection effect is taken into account. Transaction prices are thus linked to buyer confidence but not to seller confidence.

These results imply that housing market outcomes are jointly determined by selection into participation and differences in willingness to pay among participating buyers. Consumer confidence consequently affects the decision to buy or sell, but the transmission into transaction prices operates primarily through the buyer side. This is consistent with models

in which transaction prices are disproportionately influenced by the valuation of marginal buyers (Piazzesi and Schneider, 2009; Burnside et al., 2016; Van Dijk et al., 2020). Consequently, equilibrium prices may adjust not only through changes in buyers’ willingness to pay, but also through changes in market participation that alter the identity of the marginal buyer and seller.

1.1 Relation to Previous Literature and Contribution

This paper contributes to the literature linking stated beliefs to observed housing market behavior¹. This literature builds on the view that heterogeneous beliefs can shape economic outcomes (Harrison and Kreps, 1978; Burnside et al., 2016), a mechanism supported by extensive empirical evidence linking beliefs about various economic variables to economic behavior (Greenwood and Shleifer, 2014; Giglio et al., 2021; Armona et al., 2019; Malmendier and Steiny Wellsjo, 2024; Bailey et al., 2018). A large body of work studies the origins of this heterogeneity. Beliefs differ with personal experiences (Kuchler and Zafar, 2019), extrapolation (Armona et al., 2019; Case et al., 2012; Case and Shiller, 1989), tenure status (Adelino et al., 2018), and age (Hjalmarsson and Österholm, 2020). Accordingly, Kuchler et al. (2023) suggests that no single determinant may be sufficient to explain the full cross-sectional variation in household beliefs.

A growing literature links beliefs to realized housing market outcomes. Malmendier and Steiny Wellsjo (2024) show that experienced inflation increases the likelihood of homeownership across European households. Bottan and Perez-Truglia (2025) go beyond tenure choice by showing that sellers who receive more optimistic price signals are significantly more likely to delay or withdraw their listings. Much less evidence exists on the relation between beliefs and transaction prices. A key challenge is to observe both individual expectations and the corresponding individual transaction prices (Kuchler et al., 2023). Bailey et al. (2018) provide the closest evidence linking beliefs to transaction prices. Using geographically distant friends’ house price experiences as exogenous belief shifters, they show that exposure to friends’ housing market experiences increases both the probability of transacting and the prices paid by buyers and received by sellers. Using the same belief shifter, Bailey et al. (2019) show that pessimistic buyers make smaller down payments and take on more leverage.

Our paper advances this strand of the literature in two ways. First, we directly observe

¹Kuchler et al. (2023) provide an overview of recent research on expectations and individual housing market behavior.

predetermined individual beliefs from both buyers and sellers and link them to realized housing transactions. Second, this matched design allows us to distinguish between a selection channel, through which beliefs affect market entry, and a valuation channel, through which beliefs affect transaction prices conditional on entry.

This paper also relates to the literature that studies the joint determination of market participation and prices in housing markets. A large body of work models housing markets as search markets in which transaction prices depend on the balance between buyers and sellers. Early work by Wheaton (1990) shows that small changes in the arrival rates of buyers and sellers can have large effects on prices, implying that greater turnover is associated with higher prices. Consistent with this mechanism, Carrillo et al. (2015) show that housing market tightness, measured by the ratio of buyers to sellers, predicts subsequent house price appreciation. Beyond the balance between buyers and sellers, related work emphasizes that prices also depend on which households enter the market. Conditional on entry, Harding (2003), Kestens et al. (2006), and Steegmans and Hassink (2017) document that household characteristics such as income, wealth, and education systematically influence bargaining outcomes and observed prices. Andersen et al. (2022) show that loss aversion and reference dependence shape housing sale decisions and transaction outcomes. Piazzesi and Schneider (2009) and Burnside et al. (2016) develop models in which optimistic households disproportionately enter the housing market, so that prices reflect the willingness to pay of optimistic marginal buyers.

The implication is that if beliefs influence market entrance, observed price differences may reflect changes in the composition of marginal buyers rather than differences in behavior among participants. We provide direct empirical evidence for this mechanism by jointly estimating the effect of beliefs on market entry and, conditional on entry, on transaction prices. This allows us to distinguish belief-driven selection from differences in willingness to pay among active participants.

The remainder of the paper is structured as follows. Section 2 describes the consumer confidence survey, the transaction data, and the procedure used to link both at the individual level. It also presents the stylized facts introduced above. Section 3 introduces the empirical framework, consisting of a selection model and a hedonic pricing model. Section 4 presents the main empirical results, Section 5 discusses the findings, Section 6 reports the robustness analyses, and Section 7 concludes.

2 Data

The primary data sources are residential property transactions obtained from the Dutch land registry office and the Dutch consumer confidence survey between 2006 and 2024 from Statistics Netherlands (CBS, 2017).

2.1 Consumer Confidence Survey

The Dutch consumer confidence survey started annually in 1972 and has been held monthly since 1986 by CBS, with the primary objective to construct the national consumer confidence indicator. We use the underlying individual-level responses to the same set of questions that enter the aggregate indicator. This retains the standard measure of consumer confidence while allowing us to exploit cross-sectional heterogeneity across respondents. Each monthly wave follows a cross-sectional design on an annually renewed sampling frame to ensure representativeness of the Dutch population, and respondents are not followed over time. In each month, 2,150 individuals are invited to participate, of whom on average 920 respond (SD = 208). The response rate increases over time, due to improved contact procedures, e.g., digital surveys and follow-up reminders.

Column (1) of Table 1 reports the summary statistics for all respondents in the consumer confidence survey. We remove 1,793 responses (0.95%) from individuals who participated more than once to avoid dependence across observations and restrict the sample to the period between 2006 and 2022, the years for which all individual and household characteristics are available. This yields 182,369 unique respondents. Within this sample, 50,769 respondents purchase a property and 61,284 respondents sell a property at least once.

The consumer confidence measure is based on the average of five survey questions, each scored at -100, 0, or 100. This produces eleven possible values between -100 and 100 in increments of 20. The questions assess respondents' financial situation over the past and next twelve months, the economic climate over the past and next twelve months, and whether they consider it a favorable or unfavorable time to make major purchases. The resulting measure combines respondents' assessments of their own financial situation with their views on the broader economy. Additional details on the survey and the survey instrument are provided in Appendix A.1.

To categorize respondents as negative, neutral, or positive, we will consolidate the eleven categories that CBS considers in the consumer confidence measurement into three groups. Specifically, we construct a measure of *relative* consumer confidence. For each year-quarter,

individual confidence is demeaned by the cross-sectional mean of the same quarter. This transformation ensures that respondents reporting the same confidence level in markedly different macroeconomic environments are not assigned to the same category. For example, a score of 20 implies markedly different relative position when the quarterly average was -30 in March 2009 than when it was 24 in March 2017. The resulting demeaned distribution is then partitioned into tertiles, yielding three equally sized groups. For brevity, we refer to respondents reporting negative, neutral, and positive consumer confidence as negative, neutral, and positive respondents, respectively.

2.2 Housing Transaction Data

Column (2) of Table 1 reports the summary statistics for the housing transaction data. The data contain 3.3 million transactions between 2006 and 2024 and include information on transaction price and date, and property characteristics. The dataset consists of transactions of existing properties in which a natural person purchases a single property.

The transaction records are linked to administrative data to obtain information on the characteristics of both the buyer and the seller. We can determine information for both parties for approximately 2 million transactions, representing 66% of all transactions between 2006 and 2024. We exclude transactions with prices below the 1st or above the 99th percentile of the quarterly price distribution. Buyer characteristics are unavailable for 376,513 transactions and seller characteristics for 862,788 transactions, primarily reflecting properties sold by investors or social housing corporations. The household-level characteristics include income, wealth, and household size. Wealth is measured as total household assets minus total liabilities, where housing assets are valued using the administratively assessed property value and liabilities include outstanding mortgage debt. The individual-level characteristics include age, gender, and education. All variables have a measurement date of January 1 of the transaction year.

The corresponding summary statistics are presented in columns (3) and (4) of Table 1. We make two observations. First, the house characteristics of the sub-sample do not show any significant imbalance compared to those of the complete transaction dataset in column (2). Second, buyers and sellers differ systematically in their characteristics. Relative to sellers, buyers have higher average income and wealth, are more highly educated, and are younger on average.

Table 1: Summary Statistics

	Full datasets		Transaction data		Matched samples	
	(1) Respondents	(2) Transactions	(3) Buyers	(4) Sellers	(5) Buyers	(6) Sellers
<i>Consumer Confidence Survey</i>						
Consumer confidence (negative)	0.34	–	–	–	0.22	0.26
Consumer confidence (neutral)	0.33	–	–	–	0.30	0.31
Consumer confidence (positive)	0.33	–	–	–	0.48	0.43
<i>House characteristics</i>						
Transaction price	–	296,790	316,875		361,675	334,899
	–	(197,102)	(199,004)		(182,216)	(171,231)
House size	–	121.38	124.19		133.38	129.98
	–	(184.08)	(181.44)		(57.87)	(59.86)
Year of construction	–	1965.22	1,967.38		1970.31	1969.32
	–	(52.61)	(47.67)		(41.24)	(46.35)
Type (apartment)	–	0.29	0.25		0.21	0.20
Type (corner)	–	0.14	0.14		0.14	0.15
Type (semi-detached)	–	0.11	0.11		0.12	0.12
Type (chained)	–	0.34	0.37		0.34	0.38
Type (detached)	–	0.13	0.13		0.18	0.15
Located in four largest cities	–	0.14	0.12		0.10	0.11
Located in forty largest cities	–	0.31	0.32		0.31	0.30
<i>Individual and Household characteristics</i>						
Income	46,999	–	63,461	58,613	62,408	57,535
	(40,799)	–	(159,854)	(198,194)	(43,754)	(43,341)
Median income	40,353	–	49,997	46,250	55,587	50,093
Net wealth	244,121	–	359,833	378,999	293,952	281,356
	(492,560)	–	(2,707,479)	(3,290,194)	(655,020)	(796,877)
Median net wealth	124,604	–	88,144	130,739	131,800	168,029
Household size	2.42	–	2.42	2.47	2.67	2.61
	(1.28)	–	(1.20)	(1.27)	(1.19)	(1.25)
Mover	0.64	–	–	–	0.73	0.75
Gender	0.47	–	0.71	0.60	0.51	0.51
Age	55.76	–	49.69	58.54	53.89	61.66
	(15.73)	–	(14.01)	(16.00)	(14.47)	(15.99)
Education level (primary)	0.08	–	0.01	0.02	0.02	0.03
Education level (lower secondary)	0.25	–	0.04	0.04	0.11	0.17
Education level (upper secondary)	0.30	–	0.24	0.21	0.29	0.30
Education level (higher education)	0.27	–	0.21	0.18	0.38	0.37
Education level (university)	0.10	–	0.15	0.12	0.19	0.14
Education level (unknown)	0.00	–	0.36	0.43	0.00	0.00
Marital status (married)	0.62	–	–	–	0.54	0.63
Marital status (divorced)	0.08	–	–	–	0.07	0.08
Marital status (widowed)	0.10	–	–	–	0.03	0.08
Marital status (never married)	0.19	–	–	–	0.36	0.21
N	182,369	3,329,243	2,193,558		3,949	5,597

This table reports summary statistics for housing transactions, administrative records on household and individual characteristics, and data from the consumer confidence survey for the period 2006–2023. Standard deviations are reported in parentheses.

2.3 Linking Individual Consumer Confidence to Transactions

In order to merge the transaction dataset with the consumer confidence survey, we must carefully align the timing of the survey response τ with the transaction date t . The

most relevant measure of consumer confidence is the one observed shortly before the buyer and seller reach agreement. Measuring confidence at this stage best isolates the effect of confidence on both the decision to transact and the negotiated price, while minimizing contamination from other events.

However, this raises two empirical challenges. First, the transaction date in our dataset corresponds to the transfer of ownership rather than the execution date. As a result, using survey responses too close to the transaction date t captures confidence after the buyer and seller have already reached agreement. To avoid measuring confidence during the time-to-close period, we exclude survey responses from the final two quarters before the transaction date and retain only observations with $t - \tau > 2$. The six-month cutoff ensures that we cover the average time-to-close estimated at 73 days in the Netherlands (Francke et al., 2026).

Second, few respondents are surveyed shortly before the two-quarter cutoff. To retain sufficient observations, we allow consumer confidence to be measured up to 10 quarters before the transaction date, imposing $t - \tau \leq 10$. This window balances relevance—by keeping the survey reasonably close to the transaction—and sample size. In Section 6.1, we show that the results are robust against alternative window sizes.

Combining both constraints, our final timing condition is: $2 < t - \tau \leq 10$. Applying this condition yields the *buyer sample* of 3,949 buyers (2.3% of all respondents) and the *seller sample* of 5,597 sellers (3.0% of all respondents) used in the analysis. We observe consumer confidence for both the buyer and the seller in 72 transactions, which therefore appear in both samples.

In addition, 2,888 buyers and 4,187 sellers are classified as movers. For buyers, this indicates ownership of a property at some point prior to the transaction date. For sellers, this indicates continued homeownership after the transaction date. The number of movers among sellers should therefore be interpreted as a lower bound, as the sample is truncated at the end of the observation period.

2.4 Sample Characteristics and Comparability

Columns (4) and (5) present summary statistics for the buyer and seller sample at transaction date t except for consumer confidence, which is measured at the survey response date τ . Compared to the full consumer confidence survey in column (1), we observe that the share of positive respondents is 14 percentage points higher in the buyer sample and 9 percentage points higher in seller sample, indicating that more optimistic individuals are more likely to transact a house. Differences in household and individual characteristics are expected, as the

full survey includes tenants. Notably, compared to all respondents, median wealth is lower among buyers and higher among sellers, consistent with sellers’ accumulated housing equity and 27% of buyers being first-time buyers. Median income is higher in both the buyer and seller sample.

We next compare the buyer and seller samples in columns (4) and (5) with the full transaction dataset in columns (2) and (3). The higher average prices partly reflect the larger average house size in the matched samples, yielding price-per-square-meter differences that are relatively modest: €2,580 in the transaction dataset with observed buyer and seller characteristics, €2,840 in the buyer sample, and €2,720 in the seller sample. In addition, both transaction prices and survey response rates increase over time, giving more weight to recent transactions. The year of construction and house type are similar across samples. The share of transactions located in the four largest cities (Amsterdam, Rotterdam, The Hague, and Utrecht) is 12% in the full dataset and slightly lower in the matched samples. For household characteristics, income is comparable while wealth is lower in the matched samples, and household size is slightly larger. Individual characteristics are broadly similar.

2.5 Stylized Facts

The survey and transaction data reveal two stylized facts on the relation between consumer confidence, market participation, and transaction prices among both buyers and sellers.

Stylized fact 1: *Housing transactions are disproportionately concentrated among households with higher consumer confidence.*

Figure 1 displays the empirical distribution of quarterly demeaned consumer confidence for all respondents (blue), the buyer sample (orange), and the seller sample (green) between 2006 and 2022. The distribution of consumer confidence in the buyer and seller samples is shifted to the right relative to the distribution of the full survey population, indicating systematically higher confidence among transacting households.

Consistent with this pattern, and using the three-category classification used in the main analysis, 48% of buyers and 43% of sellers report positive confidence, compared with 33% among all respondents. Conversely, 22% of buyers and 26% of sellers report negative confidence, compared with a 34% in among all respondents (see Table 1).

Stylized fact 2: *Among transacting households, higher consumer confidence is associated with higher transaction prices.*

Figure 2 plots transaction prices against consumer confidence. Panel A presents the buyer sample, and Panel B the seller sample. Both variables are expressed as deviations

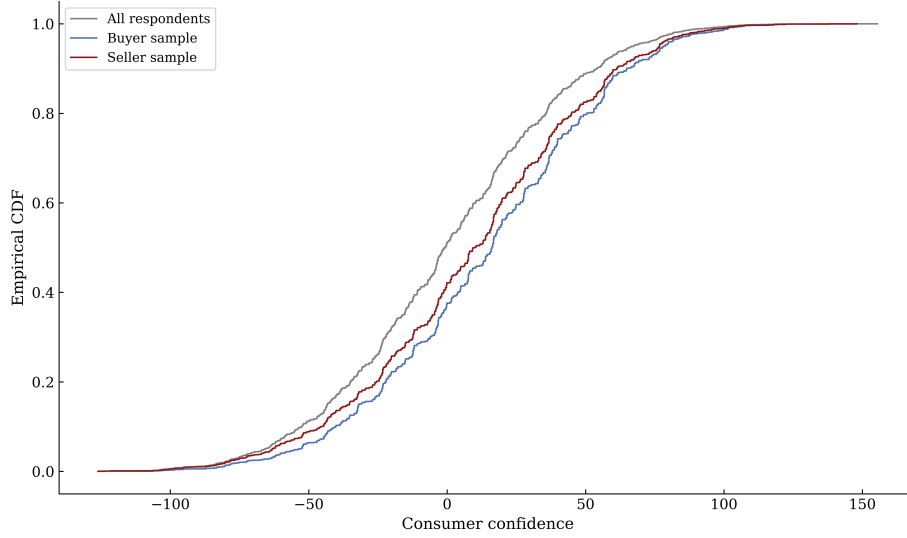


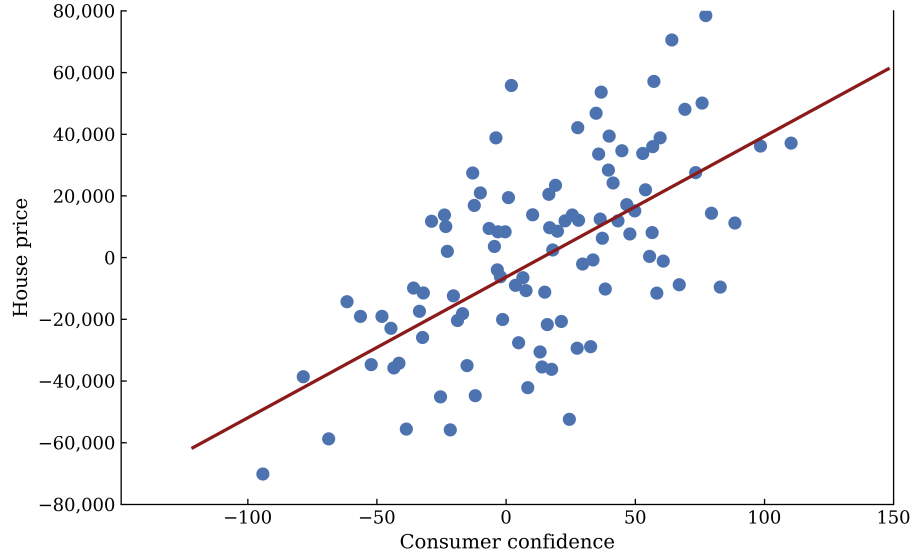
Figure 1: Empirical Distribution of Consumer Confidence. The figure plots the empirical cumulative distribution function of demeaned consumer confidence for all respondents (gray), the buyer sample (blue), and the seller sample (red) between 2006 and 2022

from their respective quarterly means, so the figure captures within-quarter cross-sectional variation. Each point represents the average transaction price within bins of consumer confidence, and the solid line reports the corresponding linear fit.

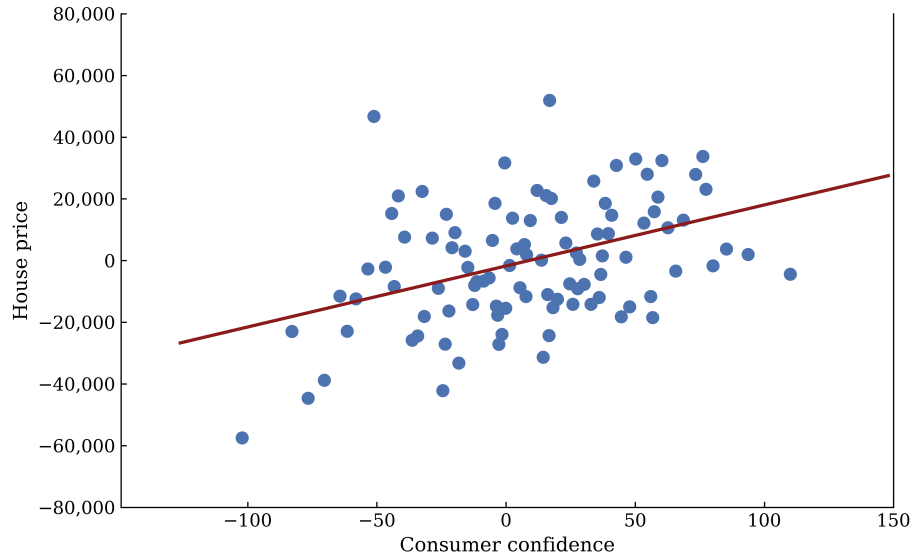
Panel A shows a clear positive association between consumer confidence and transaction prices in the buyer sample. The fitted line increases from approximately €-61,700 at the lower end of the confidence distribution to about €61,200 at the upper end. In most bins, transaction prices tend to be below the quarterly mean in bins where confidence falls below its quarterly mean, and above the quarterly mean in bins where confidence is above it, indicating a systematic relationship. The mass of observations is concentrated near the center of the distribution, suggesting that relatively few buyers exhibit extreme deviations in confidence.

Panel B displays a more nuanced pattern for the seller sample. A larger share of bins has average transaction prices close to the quarterly mean, indicating that variation in seller confidence is associated with relatively modest price differences. The fitted line increases from approximately €-26,700 to €27,500 across the support of confidence, implying a substantially flatter gradient than in Panel A. Nevertheless, bins below the mean confidence level are generally associated with below-average prices, and bins above the mean with above-average prices.

Consistent with these patterns, aggregating to the three confidence categories used in the



(A) Buyers



(B) Sellers

Figure 2: Demeaned Consumer Confidence and Transaction Prices. Panel A plots demeaned transaction prices against demeaned consumer confidence for the buyer sample, and Panel B for the seller sample. Both variables are expressed as deviations from their respective quarterly means. Points represent average transaction prices within 150 bins of consumer confidence, and the solid line shows the corresponding linear fit.

main analysis yields similar differences. Relative to buyers reporting neutral confidence, negative buyers transact at prices approximately €11,200 lower, while positive buyers transact at prices about €37,100 higher. For sellers, the corresponding differences are approximately

€1,700 lower and €10,000 higher, respectively, indicating a substantially weaker gradient across confidence categories.

Several considerations qualify these descriptive relationships. First, the associations are unconditional and do not account for observable household characteristics that may affect confidence, market participation, and transaction prices. Second, market participation and transaction prices are jointly determined, so the observed patterns may reflect differences in which households transact rather than differences in pricing behavior among active participants. Third, although confidence is measured relative to the quarterly average, cross-sectional differences may still reflect local market conditions or other factors correlated with both beliefs and outcomes.

3 Empirical Model

This section presents the empirical models to study the role of consumer confidence in housing market participation and transaction prices. We model the transaction process as a two-stage decision: agents first decide whether to participate in the market, and conditional on participation, prices are determined by supply and demand and analyzed within a hedonic pricing framework.

Figure 1 shows that buyers and sellers are disproportionately represented among respondents with higher levels of consumer confidence relative to non-participants, suggesting that confidence is systematically related to market entry. Motivated by this pattern, Section 3.1 presents a selection model that estimates the effect of individual confidence on the probability of participating in a housing transaction, conditional on observed respondent characteristics.

Figure 2 documents substantial differences in transaction prices across confidence categories, suggesting a relationship between confidence and realized prices. To formalize this relationship, Section 3.2 presents a hedonic pricing model augmented with buyer and seller characteristics. Identification in the price equation requires addressing two challenges: unobserved counterpart confidence and endogenous market participation. To isolate the effect of counterpart confidence, we exploit cross-municipality variation in housing supply constraints, which shifts price determination between buyers and sellers by altering the degree of competition on each side of the market. To account for endogenous participation, we include an Inverse-Mills ratio constructed from the estimated selection model.

Taken together, the selection and hedonic pricing models allow us to separately identify

the effect of consumer confidence on the extensive margin of market participation and on transaction prices conditional on participation. The following sections describe each model in detail and discuss the associated identification assumptions, with empirical results presented in Section 4.

3.1 Selection Model

The selection model examines whether consumer confidence impacts market participation, i.e. the extensive margin. If confidence affects participation, respondents reporting higher confidence should be more likely to enter the buyer or seller sample than otherwise similar respondents with lower confidence in the same quarter.

To illustrate, consider the Dutch housing market in the first quarter of 2018. The housing stock comprised approximately 7.7 million dwellings, of which 4.4 million were owner-occupied. As described in Section 2, the 3,825 respondents surveyed during this quarter are assumed to be representative of the population of potential buyers, while the 2,749 homeowners in the survey are assumed to be representative of potential sellers. Within the analysis window of $2 < t - \tau \leq 10$ quarters, a small fraction of respondents transact: 138 respondents (3.6%) purchase a property and 160 respondents (5.8%) sell a property. The selection model therefore assesses whether this transacting subset differs systematically from all eligible respondents within the same quarter.

Ideally, participation probabilities would be estimated separately by quarter, comparing transacting respondents to all eligible respondents within the same quarter. In practice, the limited number of transactions yields insufficient within-quarter variation, leading to imprecise estimates. We therefore estimate a pooled logit model with year-quarter fixed effects to capture temporal variation in selection probabilities. We use a logit specification rather than a probit for ease of interpretation, as coefficients can be directly mapped into odds ratios, while both models yield qualitatively similar marginal effects under standard assumptions. The latent participation equation is given by:

$$I_{r\tau}^* = c'_{r\tau}\alpha_1 + w'_{r\tau}\alpha_2 + \eta_\tau + \theta_\iota + \omega_\kappa + u_{r\tau}, \quad (1)$$

where $I_{r\tau} = 1$ if respondent r transacted a property between 2 and 10 quarters after the survey date ($2 < t - \tau \leq 10$). For buyers, participation is defined relative to all survey respondents, whereas for sellers it is defined relative to other homeowners. This construction ensures that participation is evaluated relative to the appropriate pool of eligible non-

participants. The variable $c_{r\tau}$ denotes reported consumer confidence relative to mean in the same year–quarter, categorized as negative, neutral, and positive, with neutral as the omitted category. The corresponding coefficient vector α_1 therefore captures how the log odds of entering the housing market differ for respondents reporting negative or positive confidence relative to those reporting neutral confidence. The vector $w_{r\tau}$ contains household characteristics measured at January 1 in the year corresponding to response quarter τ , with coefficients α_2 .

The term η_τ denotes a year–quarter time fixed effect capturing aggregate time variation in participation probabilities. The term θ_ℓ denotes a location fixed effect for the household’s place of residence. It is measured at the COROP-region level with an average population of approximately 440,000 per region in 2023, roughly half the size of a U.S. metropolitan statistical area. The term ω_κ denotes a city-size category fixed effect defined by three categories: properties located in one of the four largest cities, in one of the next forty cities, or in a smaller municipality. We include COROP-region and city-size category fixed effects rather than municipality fixed effects because the number of observations per municipality in both the buyer and seller samples is insufficient to support reliable estimation. We assess sensitivity to the granularity of fixed effects in Section 6.3. The error term is given by $u_{r\tau}$.

3.2 Hedonic Pricing Model

We next examine whether consumer confidence is directly related to transaction prices, conditional on market participation. If confidence affects transaction prices, otherwise similar respondents with higher confidence should transact at different prices than respondents with lower confidence in the same quarter. To examine this relationship, we estimate a hedonic pricing model augmented with buyer and seller characteristics, including consumer confidence:

$$\log(p_{it}) = \underbrace{c'_{b\tau}\nu_b + z'_{bt}\delta_b}_{\text{buyer}} + \underbrace{c'_{s\tau}\nu_s + z'_{st}\delta_s}_{\text{seller}} + x'_{it}\beta + \eta_t + \theta_j + \omega_k + \epsilon_{it}. \quad (2)$$

Here, p_{it} is the transaction price of property i transacted in quarter t . The vector x_{it} contains property characteristics with corresponding coefficients β . The terms η_t , θ_j , and ω_k denote the year–quarter, COROP-region, and city-size category fixed effects, respectively, defined analogously to Equation (1), but measured at transaction date t and the location of the property j . In 95% of the seller sample and 75% of the buyer sample, respondents are surveyed and transact in the same COROP-region ($j = \iota$). The error term is ϵ_{it} .

Consumer confidence c_τ is measured at the response date τ . The associated coefficients

ν capture how transaction prices for properties bought or sold by respondents reporting negative or positive confidence differ from those for neutral respondents. The vector z_t contains household characteristics measured at January 1 of the corresponding transaction quarter t .

Incorporating buyer and seller characteristics is particularly relevant in our context because z_t includes variables such as wealth and income that directly reflect financial well-being. Controlling for these variables is necessary to isolate the effect of c_τ .

3.2.1 Counterpart Confidence

Data limitations prevent direct estimation of Equation (2) because buyer and seller confidence are jointly observed for only a limited number of transactions (see Section 2.3). That is why we estimate two separate specifications instead. First, we omit seller confidence ($c_{s\tau}$) and estimate the model using the buyer sample. Second, we omit buyer confidence ($c_{b\tau}$) and estimate the model using the seller sample.

This approach controls for average counterpart confidence within quarter t , COROP region j , and city-size category k . While we cannot control for individual deviations from this average, we further isolate the role of consumer confidence by exploiting variation in housing supply constraints. The underlying idea, following Carrillo et al. (2015), is that market tightness determines how transaction prices are formed. In supply-constrained markets, high tightness induces competition among buyers, and transaction prices are largely determined by marginal buyer willingness to pay. Buyer confidence therefore plays a central role in price formation. In unconstrained markets, buyer competition weakens and shifts price determination toward sellers' reservation values and their willingness to wait. Hence, seller confidence, by affecting willingness to wait and accept concessions, becomes more relevant for realized transaction prices.

We proxy housing supply constraints using the share of developed land, following Hilber and Vermeulen (2016) and its application to Dutch municipalities by Öztürk et al. (2018). The distribution is presented in Appendix B.1².

In the main results we interact consumer confidence with a dummy variable d_k , which equals 1 if the ratio of developed to total developable land is below the median across municipalities, indicating lower supply constraints, and zero otherwise. In Section 6.2, we test the sensitivity of the results to alternative thresholds than the median. This yields the

²Although this measure is constructed for 2018, it primarily captures long-run, structural constraints on housing supply and the time variation is negligible.

following specification:

$$\log(p_{it}) = c'_\tau \nu + d_k \zeta + d_k \times c'_\tau \xi + z'_{st} \delta_s + z'_{bt} \delta_b + x'_{it} \beta + \eta_t + \theta_j + \omega_k + \epsilon_{it}. \quad (3)$$

The coefficients ν reflect the price association in constrained municipalities $d_k = 0$, while the sum of the main ν and interaction ξ coefficients reflect the association in unconstrained municipalities $d_k = 1$. The coefficient ζ measures the direct price effect of a property located in an unconstrained municipality, relative to an unconstrained municipality, within the same COROP-region. Also note that while counterpart confidence is omitted, both the vector of individual and household characteristics for the buyer (z_{bt}) and seller (z_{st}) are retained. We estimate this equation separately for the buyer sample, using buyer confidence, and for the seller sample, using seller confidence.

3.2.2 Endogenous Selection

A second challenge is endogenous selection into market participation. The summary statistics in Table 1 reveal systematic differences between all survey respondents and only those who buy or sell within the analysis window. This suggests that unobserved factors—such as liquidity constraints, parental wealth, or exposure to regulatory changes—may jointly influence both the decision to buy or sell and the realized transaction price p_{it} . This concern is amplified by the fact that confidence is measured prior to the transaction, allowing for shocks to occur between the survey response date τ and the transaction date t . Correlation between unobservables in the participation and price equations would therefore induce selection bias in the estimated effect of consumer confidence on transaction prices.

To address endogenous participation, we rely on the probit version of Equation (1) to model the selection mechanism and correct for non-random participation through the implied the Inverse-Mills ratio (IMR) (Heckman, 1979). Identification may require exogenous variation that affect the probability of selection but not the transaction price (Cameron and Trivedi, 2005). Although the IMR is globally nonlinear by definition, it is often approximately linear over the range spanned by the data. Consequently, functional-form variation may provide insufficient identifying power because the IMR tends to be highly collinear with the regressors in the outcome equation.

We use marital status $m_{r\tau}$ as the exclusion restriction. Marital status is a natural shifter of market participation in this context, as household formation and dissolution are key drivers of housing demand and therefore strongly predict entry into the housing market.

At the same time, conditional on observed household characteristics, property characteristics, and location-time fixed effects, marital status is assumed not to directly affect the transaction price of a given property³.

Additional identifying variation is provided by the temporal structure of the data. Participation is modeled using predetermined household characteristics and confidence measured at τ , whereas the outcome equation conditions on characteristics measured at the transaction date t . The lag between τ and t helps separate participation shocks from contemporaneous price determination.

The remaining individual and household characteristics are collected in $w_{r\tau}^{(o)}$ and are included in the selection equation measured at the survey date τ and in the pricing equation measured at the transaction date t . The resulting selection equation is:

$$I_{r\tau}^* = c'_{r\tau}\alpha_1 + w_{r\tau}^{(o)'}\alpha_2 + m_{r\tau}\alpha_3 + \eta_\tau + \theta_\iota + \omega_\kappa + u_{r\tau}. \quad (4)$$

The IMR, used to correct for selection bias, is defined as $\hat{\lambda}_{r\tau} = \phi(\hat{z}_{r\tau}^*)/\Phi(\hat{z}_{r\tau}^*)$, where $\hat{z}_{r\tau}^*$ is the fitted value from the corresponding probit specification of Equation (4).

The Inverse-Mills ratio therefore corrects for selection on unobservables correlated with characteristics observed at τ , while shocks and innovations arising between τ and t are not part of the selection correction by construction. This ensures that the selection decision depends only on the respondent's information set $\mathcal{F}_\tau$ available at the time of the survey. Including realized covariates that belong to the future information set $\mathcal{F}_t$ would violate the exogeneity assumption, because such variables incorporate future innovations that are jointly determined with the outcome disturbance. The selection Equation (1) and the outcome Equation (3), augmented with the IMR, are estimated for both the buyer and seller sample.

4 Empirical Results

This section presents the main empirical findings. We first present results from the selection Equation (1) to assess whether consumer confidence predicts subsequent market entry in the buyer sample and the seller sample. We then present results from the outcome Equation (3) to examine whether consumer confidence affects realized transaction prices conditional on

³The IMR is robust across a range of alternative specifications of the selection equation. Omitting the exclusion restriction based on marital status, or augmenting the set of exclusion restrictions with changes in income, wealth, and household size between the response and transaction date; expectations regarding unemployment, inflation, and usefulness of saving over the next 12 months; and house purchase intentions in the next 24 months leaves the qualitative pattern of the IMR unchanged.

participation.

4.1 The Effect of Consumer Confidence on Market Participation

Table 2 reports estimation results from the selection model specified in Equation (1). Columns (1)–(4) progressively add regional fixed effects, respondent characteristics, and exclusion restrictions to a baseline specification that includes consumer confidence and year–quarter fixed effects. Panel A reports results for the buyer sample, and Panel B for the seller sample.

We focus on the coefficients on demeaned consumer confidence partitioned into negative, neutral, and positive tertiles. Based on the stylized facts in Section 2.5, we expect negative confidence to be associated with lower odds of subsequent market participation, while positive confidence is associated with higher odds of participation, between two and ten quarters after the survey response.

4.1.1 Buyer Participation

Column (1) reports a parsimonious specification including consumer confidence and year–quarter fixed effects. Identification comes from within-quarter deviations in individual confidence, implying that we abstract from aggregate confidence effects and that respondents are exposed to the same economic conditions. Relative to respondents reporting neutral confidence, negative respondents have 30.0% lower odds of transacting within the subsequent two to ten quarters, while positive respondents have 51.1% higher odds of doing so.

Column (2) adds COROP and city-size category fixed effects. The coefficients on confidence are essentially unchanged. The pseudo- R^2 is 4.5%, approximately one-third of the value observed in the buyer sample. This suggests that regional and city-size differences contribute little additional explanatory power for buyer participation and that the estimated relationship between confidence and market entry is not driven by geographic composition.

In column (3), we introduce respondent characteristics. Their inclusion substantially attenuates the estimated relationship between confidence and participation. The coefficients on negative and positive confidence decline to -13.8% and 12.1%, respectively. This decline is expected, as characteristics such as including income, education, and wealth influence both reported confidence and the probability of selection into the housing market.

Column (4) adds marital status to identify the selection correction, yielding our baseline specification. The marital status indicators are jointly significant (Wald $\chi^2(3) = 8.4$). The coefficients on negative and positive confidence remain largely unchanged, indicating that the identifying exclusion restriction has little effect on the estimated relationship between

Table 2: Consumer Confidence and Housing Market Participation

Dep. var: in sample (1/0)	(1)	(2)	(3)	(4)
Panel A: Buyer sample (mean = 2.135%)				
Consumer confidence (negative)	0.700*** (0.058)	0.699*** (0.058)	0.862*** (0.054)	0.861*** (0.054)
Consumer confidence (positive)	1.510*** (0.039)	1.481*** (0.040)	1.121*** (0.037)	1.121*** (0.037)
Wald	122.060***	107.414***	13.937***	14.086***
Observations	182,369	182,369	182,369	182,369
Pseudo R^2	0.044	0.051	0.124	0.124
Panel B: Seller sample (mean = 4.559%)				
Consumer confidence (negative)	0.916** (0.037)	0.920** (0.037)	0.966 (0.039)	0.966 (0.039)
Consumer confidence (positive)	1.217*** (0.028)	1.200*** (0.029)	1.096*** (0.029)	1.097*** (0.029)
Wald	41.113***	33.757***	7.135***	7.343***
Observations	117,032	117,032	117,032	117,032
Pseudo R^2	0.016	0.020	0.044	0.045
Included in all specifications				
Response quarter	Yes	Yes	Yes	Yes
COROP and city size		Yes	Yes	Yes
Respondent characteristics			Yes	Yes
Exclusion restrictions				Yes

This table reports the results from Equation (1). Panel (A) presents results for the buyer sample, Panel (B) for the seller sample. The dependent variable equals 1 for 3,949 transactions in the buyer sample and 5,597 transactions in the seller sample. Coefficients for positive and negative consumer confidence are interpreted relative to the neutral category. Household characteristics refer to wealth, income and household size for both the buyer and seller. Individual characteristics include gender, age, and education of respondent; and characteristics of the counterpart refer to the head of household and the highest attained education level in the household. Standard Errors are clustered at the COROP-region, and presented in parentheses. The Wald statistic tests the joint null hypothesis $\alpha_{1,neg} = \alpha_{1,pos} = 0$. Logit coefficients are interpreted as odds, calculated as $\exp(\hat{\alpha}_1)$, and reflect changes in the latent propensity to enter in a transaction. The fixed effects are quarter ($N = 64$), COROP-region ($N = 40$) and city-size ($N = 3$). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

consumer confidence and market participation. The results are qualitatively similar when the selection equation is estimated using a probit specification instead of logit. The full regression results are presented in Table C.1.

Translating the estimates from column (4) into marginal effects, the baseline participation rate for neutral buyers is 2.1%. Relative to this baseline, negative confidence is associated with a 0.26 percentage point lower probability of transacting (about 16.2%), while positive confidence is associated with a 0.25 percentage point higher probability (about 11.9%). The implied gap between positive and negative respondents is approximately 0.50 percentage points, corresponding to about a 27.4% higher participation probability for positive relative to negative buyers. Thus, even after conditioning on a rich set of respondent characteristics, variation in consumer confidence is an economically meaningful determinant of buyer participation.

4.1.2 Seller Participation

We next turn to the results for sellers in Panel B. Column (1) reveals that the association between consumer confidence and market participation is substantially weaker for sellers than for buyers. Relative to neutral respondents, negative respondents have 8.4% lower odds and positive respondents have 21.7% higher odds of selling, compared to 30.0% and 51.1%, respectively, in the buyer sample. Consistent with these smaller magnitudes, the corresponding Wald statistic is roughly one third of that observed in the buyer sample, and the pseudo- R^2 is lower.

As in the buyer sample, adding COROP-region and city-size category fixed effects in column (2) leaves the coefficients roughly unchanged and yields only a marginal improvement in model fit. In contrast, the inclusion of respondent characteristics in column (3) substantially attenuates the estimated relationship between confidence and seller participation. The coefficient on negative confidence declines to -3.4% and becomes insignificant, while the coefficient on positive confidence declines to 9.6%. However, the joint significance of the confidence variables remains at the 1% level.

Column (4) adds marital status to identify the selection correction. The corresponding indicators are jointly significant (Wald $\chi^2(3) = 21.8$). Their inclusion leaves the confidence coefficients largely unchanged, and the joint significance of the confidence variables remains at the 1% level. The pseudo- R^2 remains modest at 4.5%, approximately a third of the value observed in the buyer sample. The full regression results are presented in Table C.1.

Translating the seller estimates from column (4) into marginal effects, the baseline participation rate under neutral confidence is 4.58%. Negative confidence is associated with a 0.14 percentage point lower probability of selling (about 3.3%), while positive confidence is associated with a 0.42 percentage point higher probability (about 9.3%). The implied gap between positive and negative sellers is 0.56 percentage points, corresponding to a 13.0% difference in participation. In contrast to the buyer sample, these effects are economically modest and statistically weaker, indicating that variation in reported confidence plays a more limited role in explaining seller participation.

4.2 The Effect of Consumer Confidence on Transaction Prices

We continue with the results for the pricing Equation (3) reported in Table 3. We focus on the coefficients on consumer confidence and its interactions with an indicator for supply-constrained markets. Based on the stylized facts in Section 2.5, we expect negative

respondents to transact at discounts and positive respondents to transact at premia relative to the neutral category, with these largest effects for buyers in supply-constrained markets and for sellers in supply-unconstrained markets.

4.2.1 Price Effect of Buyer Confidence

Column (1) reports the baseline where transaction prices are regressed on consumer confidence, controlling only for year-quarter fixed effects. Including year-quarter fixed effects restricts identification to cross-sectional variation in individual confidence within quarters, abstracting from aggregate confidence effects. Relative to buyers reporting neutral confidence within the same quarter, negative buyers purchase properties with transaction prices that are approximately 5.5% lower, whereas positive buyers purchase properties with prices that are 5.8% higher in supply-constrained markets. The corresponding estimates for unconstrained markets exhibit the same qualitative ordering across confidence categories.

Column (2) adds COROP-region and city-size category fixed effects, restricting comparisons to transactions within the same region, quarter, and city-size category. The estimated relationship between prices and confidence is largely unchanged, indicating that the baseline price effects are not driven by regional and city-size differences in prices or confidence. This finding mirrors the participation results in Section 3.1, where controlling for regional fixed effects similarly leaves the estimated confidence coefficients unaffected. In contrast, the coefficient on the unconstrained market dummy changes substantially, increasing from -2.0% to 8.5% . This indicates that the unconstrained market indicator primarily captures within-region differences in local housing markets.

Column (3) introduces controls for buyer characteristics. Their inclusion substantially attenuates the estimated price effects of confidence: the coefficient on negative confidence decreases to approximately -2.5% , while the coefficient on positive confidence declines to approximately 2.6% . This indicates that part of the unconditional relationship reflects differences in observable buyer characteristics, such as income, wealth, and education. Even after accounting for these characteristics, buyers with different levels of consumer confidence (high-low) sort into housing bundles that differ in value by approximately 5.1% , significant at the 5% level as indicated by the Wald tests.

Column (4) introduces controls for housing characteristics, shifting the analysis from differences in the value of the housing bundle purchased to differences in transaction prices for comparable properties. Their inclusion further attenuates the estimated price effects of negative confidence close to zero while the estimate for positive confidence remains similar

Table 3: Consumer Confidence and Transaction Prices

Dep. var: log(transaction price)	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Buyer Sample						
Consumer confidence (negative)	-0.055* (0.023)	-0.056** (0.021)	-0.025 (0.020)	0.006 (0.012)	0.002 (0.012)	0.008 (0.012)
Consumer confidence (positive)	0.058*** (0.018)	0.055*** (0.016)	0.026* (0.013)	0.025*** (0.009)	0.026*** (0.009)	0.022** (0.009)
Unconstrained market	-0.020 (0.038)	0.085** (0.033)	0.083** (0.027)	0.010 (0.024)	0.014 (0.023)	0.012 (0.023)
Consumer confidence (negative) $\times$ unconstrained	-0.016 (0.037)	-0.006 (0.035)	-0.035 (0.034)	-0.044** (0.019)	-0.043** (0.019)	-0.042** (0.019)
Consumer confidence (positive) $\times$ unconstrained	-0.016 (0.028)	-0.026 (0.027)	-0.024 (0.022)	-0.030 (0.019)	-0.040** (0.019)	-0.040** (0.019)
IMR						-0.095*** (0.024)
Wald (constrained)	27.868***	35.348***	9.045**	8.857**	9.238***	6.923**
Wald (unconstrained)	29.695***	17.539***	7.746**	5.440*	7.063**	4.870*
Observations	3,949	3,949	3,949	3,949	3,949	3,949
R^2	0.273	0.361	0.500	0.778	0.791	0.792
Panel B: Seller Sample						
Consumer confidence (negative)	-0.026 (0.017)	-0.016 (0.014)	-0.010 (0.013)	0.000 (0.010)	0.000 (0.009)	-0.002 (0.008)
Consumer confidence (positive)	0.016 (0.017)	0.009 (0.016)	-0.006 (0.016)	0.008 (0.011)	0.006 (0.010)	0.011 (0.010)
Unconstrained market	-0.025 (0.037)	0.078** (0.033)	0.058** (0.026)	-0.038 (0.024)	-0.032 (0.022)	-0.031 (0.022)
Consumer confidence (negative) $\times$ unconstrained	-0.013 (0.038)	0.003 (0.035)	0.008 (0.030)	-0.005 (0.018)	-0.008 (0.017)	-0.008 (0.017)
Consumer confidence (positive) $\times$ unconstrained	0.007 (0.031)	0.010 (0.030)	0.025 (0.027)	0.011 (0.017)	0.008 (0.015)	0.007 (0.015)
IMR						0.100*** (0.018)
Wald (constrained)	3.668	1.525	0.672	0.510	0.456	1.514
Wald (unconstrained)	3.496	0.982	0.877	2.237	2.085	3.112
Observations	5,597	5,597	5,597	5,597	5,597	5,597
R^2	0.256	0.350	0.484	0.765	0.786	0.787
Included in all specifications						
Transaction quarter	Yes	Yes	Yes	Yes	Yes	Yes
COROP and city size		Yes	Yes	Yes	Yes	Yes
Respondent characteristics			Yes	Yes	Yes	Yes
House characteristics				Yes	Yes	Yes
Counterpart characteristics					Yes	Yes

This table reports the results from Equation (3). Panel A presents results for the buyer sample, Panel B for the seller sample. The dependent variable is the log(transaction price). Coefficients for positive and negative consumer confidence are interpreted relative to the neutral category. The buyer sample includes 885 negative, 1,187 neutral and 1,877 positive respondents. The seller sample includes 885 negative, 1,187 neutral and 1,877 positive respondents. House characteristics include log(size), year of construction and property type. Household characteristics refer to wealth, income and household size for both the buyer and seller. Individual characteristics include gender, age, and education of respondent; and characteristics of the counterpart refer to the head of household and the highest attained education level in the household. Standard Errors are clustered at the COROP-region, and presented in parentheses. The Wald (constrained) statistic tests the joint null hypothesis $H_0^{(d=0)} : \nu_{\text{neg}} = \nu_{\text{pos}} = 0$. The Wald (unconstrained) statistic tests the joint null hypothesis $\nu_{\text{neg}} + \rho_{\text{neg}} = 0$ and $\nu_{\text{pos}} + \rho_{\text{pos}} = 0$. The fixed effects are quarter (N = 64), COROP-region (N = 40) and city-size (N = 3). *p<0.1; **p<0.05; ***p<0.01.

and becomes more precise. This attenuation suggests that the baseline price effects partly reflect sorting into different housing bundles by respondents with different confidence levels. Similarly, the coefficient on the unconstrained market dummy attenuates to approximately zero, indicating that the average price differences between constrained and unconstrained municipalities largely reflect differences in the housing stock. Conditional on housing characteristics, the remaining coefficients therefore capture differences in transaction prices for comparable properties. In column (5), we further add seller characteristics. The inclusion of these controls leaves the coefficient on positive confidence largely unchanged while the coefficient on negative confidence remains close to zero.

Column (6) accounts for endogenous selection into transactions by including the IMR. The estimated IMR is negative and statistically significant at the 1% level, indicating negative selection on unobservables into market participation. The coefficient on negative confidence increases to 0.8% and remains statistically insignificant, while the coefficient on positive confidence declines slightly to approximately 2.2%. As a result, the implied transaction price gap between negatively and positively confident buyers narrows from 2.4% to 1.4%, indicating that part of the price gap is driven by selection into participation. The interaction terms continue to indicate that the difference in transaction prices between negative and positive buyers remains similar across constrained (1.4%) and unconstrained (1.6%) markets, although the gap is primarily driven by positive respondents in constrained markets and by negative respondents in unconstrained markets.

The results reveal two distinct channels through which consumer confidence is associated with housing transactions. First, consumer confidence is associated with what households buy: even after conditioning on observable buyer characteristics, respondents with different levels of consumer confidence purchase housing bundles that differ systematically in value. Second, consumer confidence is associated with how much households pay: conditional on purchasing comparable properties, positive confidence is associated with higher transaction prices. Accounting for endogenous selection leaves this price premium largely unchanged, indicating that it reflects differences in willingness to pay among participating buyers rather than selection into the market. At the average transaction price in 2024 of €453,000, the estimated premium corresponds to approximately €10,000 relative to buyers reporting neutral confidence.

4.2.2 Price Effects of Seller Confidence

We next turn to the pricing results for sellers in Panel B. In contrast to the buyer sample, the evidence for seller confidence is considerably weaker. Columns(1)–(3) progressively add regional fixed effects and seller characteristics. Across all specifications, the confidence coefficients remain small and statistically insignificant. The coefficient on negative confidence attenuates from -2.6% to -1.0%, while the coefficient on positive confidence remains close to zero throughout. These results suggest that seller confidence is unrelated to the value of the housing bundles sold and that the limited association observed in the baseline specification is largely explained by regional and seller characteristics.

Columns (4)–(6) successively add housing characteristics, buyer characteristics, and the IMR. Across all specifications, the confidence coefficients remain small and statistically insignificant. The estimated IMR is positive and statistically significant, indicating positive selection on unobservables into market participation. However, accounting for endogenous selection leaves the estimated confidence coefficients virtually unchanged.

The results indicate that there is no evidence of a price effect of seller confidence. This means that there is no support for the hypothesis in Section 3.2.1 that seller-specific beliefs play a larger role in supply-unconstrained markets when competitive pressure is weaker. The full regression results are presented in Table C.3.

5 Economic interpretation of participation and price effects

As discussed in Section 2.1, consumer confidence reflects both perceived financial well-being *within* the household and expectations about the economic climate *outside* the household. In our empirical design, confidence is measured relative to the cross-sectional mean within each year–quarter, so identification comes from differences in relative confidence among households facing the same aggregate conditions. The results reveal that buyer confidence affects housing market outcomes both through participation decisions and, conditional on participation, through transaction prices. Seller confidence also affects subsequent market participation, although the effects are considerably weaker and do not extend to transaction prices.

The main implication of our findings is that observed turnover and transaction prices reflect the beliefs of active market participants rather than those of the broader population.

Market outcomes therefore adjust not only through changes in the willingness to pay of active buyers, but also through changes in which households choose to enter the market. The stronger participation response among buyers implies that changes in consumer confidence shift housing demand more than housing supply. Because buyer confidence also increases willingness to pay conditional on participation, both channels reinforce each other in shaping transaction prices.

5.1 Buyer Participation and Willingness to Pay

These findings are intuitive in the context of housing markets, where transactions are infrequent, highly leveraged, and involve the largest asset in a household portfolio. In such an environment, households must commit substantial financial resources while taking a view on both their own financial well-being and the broader economic climate. As a result, even modest differences in these views can lead households to make different decisions about whether to enter the housing market. Consistent with this interpretation, selection operates both through relatively pessimistic households delaying market entry and through relatively optimistic households being more likely to enter the market than households reporting confidence close to the quarterly average.

The same mechanisms that drive participation also imply that, conditional on participation, buyers with higher consumer confidence are willing to bid more aggressively. Confidence may affect transaction prices by shifting buyers' willingness to pay through two complementary channels. More favorable expectations about the broader economic climate increase the perceived value of housing as an investment. Stronger perceived financial well-being increases households' willingness to commit additional financial resources to a housing purchase. In supply-constrained markets, where buyers compete for a fixed stock of housing, these differences in willingness to pay translate directly into transaction prices.

Decomposing consumer confidence into its *financial well-being* and *economic climate* components provides additional insight into the mechanisms underlying the participation and price effects. To distinguish between these channels, we estimate the model separately for the two sub-indicators in Columns (1) and (2) of Table 4. The results reveal that lower participation among negative respondents is driven primarily by assessments of their own financial well-being, suggesting that households postpone housing transactions mainly in response to concerns about their own financial situation. By contrast, higher participation among positive respondents reflects both stronger perceived financial well-being and a more favorable assessment of the broader economic climate. Conditional on participation, how-

Table 4: Consumer Confidence Sub-Indicators

Panel A: Selection Model				
	Buyers		Sellers	
	Financial health	Economic climate	Financial health	Economic climate
Dep. var: in sample (1/0)	(1)	(2)	(3)	(4)
Negative	0.860*** (0.056)	0.971 (0.041)	0.958 (0.035)	0.976 (0.036)
Positive	1.117*** (0.040)	1.146** (0.054)	1.107*** (0.031)	1.042 (0.042)
Pseudo R^2	0.124	0.124	0.045	0.045
Observations	182,369	182,369	117,032	117,032
Panel B: Hedonic Pricing Model				
Dep. var: log(transaction price)	(1)	(2)	(3)	(4)
Negative	0.009 (0.015)	0.011 (0.009)	-0.009 (0.011)	0.011 (0.008)
Positive	0.003 (0.010)	0.023** (0.010)	0.012 (0.009)	0.010 (0.014)
Unconstrained market	0.017 (0.024)	-0.005 (0.021)	-0.032 (0.025)	-0.016 (0.022)
Negative $\times$ unconstrained	-0.050** (0.022)	-0.009 (0.013)	0.012 (0.016)	-0.043*** (0.015)
Positive $\times$ unconstrained	-0.041** (0.019)	-0.016 (0.018)	-0.003 (0.017)	-0.002 (0.017)
IMR	-0.094*** (0.024)	-0.094*** (0.023)	0.097*** (0.019)	0.093*** (0.020)
Observations	3,949	3,949	5,597	5,597
R^2	0.791	0.791	0.787	0.787

This table reports estimates of Equation (1) in Panel (A) and Equation (3) in Panel (B) replacing consumer confidence with replacing the aggregate consumer confidence measure with its two components. Columns (1) and (3) report estimates using the financial well-being measure, while columns (2) and (4) use the economic climate measure. The dependent variable equals one if the respondent enters the market in Panel (A) and the log of the transaction price in Panel (B). Coefficients on the positive and negative category are interpreted relative to the neutral category. The buyer sample includes 917 negative, 1,123 neutral and 1,909 positive respondents for the financial well-being measure, and 1,125 negative, 1,110 neutral, and 1,714 positive respondents for the economic climate measure. The seller sample includes 1,513 negative, 1,693 neutral, and 2,391 positive respondents for the financial well-being measure, 1,638 negative, 1,653 neutral, and 2,306 positive respondents for the economic climate measure. Control variables, fixed effects, and clustering are identical to the main specification. Standard errors are clustered at the COROP-region level and reported in parentheses. Logit coefficients are interpreted as odds, calculated as $\exp(\hat{\alpha}_1)$, and reflect changes in the latent propensity to enter in a transaction. *p<0.1; **p<0.05; ***p<0.01.

ever, the price premium is concentrated in the economic-climate component, suggesting that buyers' willingness to pay is shaped primarily by expectations about the broader economy.

5.2 The Limited Role of Confidence Among Sellers

Compared with buyers, seller confidence plays a more limited role in housing market outcomes. While more confident homeowners are significantly more likely to sell their property, we find no evidence that seller confidence affects transaction prices. This can be understood through frictions in the selling process and limited responsiveness to beliefs. Buyers can

search the market without committing to a transaction. For sellers, by contrast, obtaining an informative price signal typically requires listing the property, and delisting often entails brokerage fees, which limits the flexibility of entry and exit. In addition, sellers are typically less financially constrained than buyers and therefore less sensitive to fluctuations in confidence when timing their transactions.

The decomposition of consumer confidence reported in Columns (3) and (4) of Table 4 provides additional insight into this asymmetry. It shows that the participation effect is primarily associated with perceived financial well-being rather than assessments of the broader economic climate. This suggests that seller participation is influenced more by households' perceived financial circumstances than by expectations about the broader economy. This is consistent with the fact that most sellers also purchase another home. Expectations of a stronger economic climate increase both the expected selling price of the current home and the expected purchase price of the replacement home, partially offsetting the net benefit of delaying or accelerating a move.

Conditional on participation, features of the search and matching process further limit the role of seller confidence in pricing decisions. Most sellers are represented by real estate agents, who provide guidance on pricing and valuation. Once the property is listed, the seller's role is largely confined to deciding whether to accept an offer or extend the time on market. By contrast, buyers are not always represented by agents and typically engage more directly in the decision-making process. Because properties are heterogeneous, buyers must continuously assess their willingness to pay relative to financial capacity and patience in the search process. These differences are amplified by sealed-bid procedures, which are common and require buyers to submit offers within a limited window. As a result, consumer confidence is more likely to affect buyer bidding behavior than seller pricing decisions.

5.3 Sample Composition and Timing Incentives

Another explanation for our findings lies in heterogeneous timing incentives within the samples. In the buyer sample, 27% are first-time buyers, while 25% of sellers exit the market⁴. As a result, the seller sample consists primarily of movers, who change their housing exposure, combined with an exiting group with opposing timing incentives. Positively confident sellers who intend to exit have an incentive to postpone sales to benefit from further price increases, whereas movers are less sensitive to market timing, particularly when moving up

⁴The 25% share should be interpreted as an upper bound, as some sellers may purchase a property after the end of the sample period in 2024 and are therefore not observed as buyers.

the property ladder. By contrast, timing incentives between first-time buyers and movers in the buyer sample are more uniformly aligned, as both benefit from entering the market earlier when expecting future price increases. This heterogeneity is likely to attenuate the relationship between confidence and seller participation relative to the buyer sample.

These heterogeneous timing incentives do not operate in the same way for pricing decisions. In the buyer sample, consumer confidence may be expected to matter more for first-time buyers because they experience the largest increase in housing-market exposure. At the same time, movers typically have accumulated housing equity and greater financial flexibility, allowing them to translate confidence into higher willingness to pay more readily than first-time buyers, who face tighter financing constraints. For sellers, the prior is less clear. Both movers and exiting households have an incentive to maximize the sale price, suggesting similar confidence effects. On the other hand, exiting sellers may have greater flexibility in the timing of the sale because they do not need to coordinate the transaction with the purchase of another dwelling.

To explore these competing mechanisms, we stratify the sample into first-time buyers, moving buyers, sellers exiting homeownership, and moving sellers in Table 5. The estimated price effect of buyer confidence point in the same direction for both first-time buyers and movers, but are larger and more precisely estimated for movers. By contrast, seller confidence effects are concentrated among households exiting homeownership and are absent for movers. These findings are consistent with the competing mechanisms discussed above and highlight that the relationship between consumer confidence and transaction prices differs systematically across household types.

6 Robustness Analysis

We proceed with four robustness analyses. First, we assess the sensitivity of the results to the length of the window used to link survey responses to subsequent transactions by extending the baseline window. Second, we examine the role of the supply-constrained threshold by varying the cutoff used to classify municipalities. Third, we address concerns about unobserved local price dynamics by adopting an alternative specification that leverages the full universe of transactions. Fourth, we test the asymmetry between buyers and sellers across constrained and unconstrained markets by constructing alternative samples.

Table 5: Consumer Confidence and Transaction Prices by Buyer and Seller Type

	Buyers		Sellers	
	First-time buyers	Movers	Exit	Movers
Dep. var: log(transaction price)	(1)	(2)	(3)	(4)
Negative	0.010 (0.030)	0.010 (0.013)	0.008 (0.019)	-0.001 (0.011)
Positive	0.017 (0.022)	0.028*** (0.010)	0.046** (0.021)	0.001 (0.010)
Unconstrained market	0.034 (0.043)	0.005 (0.025)	-0.010 (0.025)	-0.038 (0.024)
Negative $\times$ unconstrained	-0.067 (0.046)	-0.031 (0.019)	0.005 (0.026)	-0.016 (0.018)
Positive $\times$ unconstrained	-0.100*** (0.037)	-0.024 (0.020)	-0.036 (0.036)	0.019 (0.018)
IMR	-0.094*** (0.024)	-0.094*** (0.023)	0.145*** (0.049)	0.071*** (0.023)
Observations	1,060	2,888	1,409	4,187
R^2	0.832	0.790	0.795	0.796

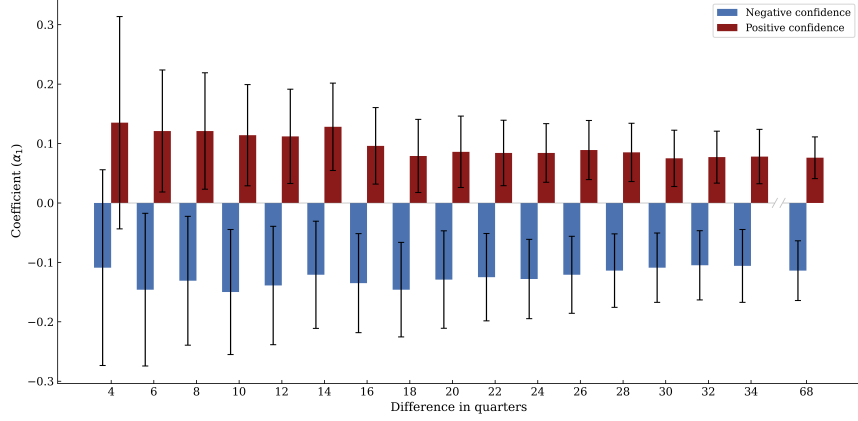
This table reports estimates of Equation (3). Columns (1) and (2) stratify the buyer sample into first-time buyers and movers, respectively. Columns (3) and (4) stratify the seller sample into sellers who exit the market and movers, respectively. The dependent variable is the logarithm of the transaction price. Coefficients on the negative and positive categories are interpreted relative to the neutral category. Column (1) includes 221 negative, 293 neutral, and 547 positive first-time buyers; Column (2) includes 664 negative, 894 neutral, and 1,330 positive moving buyers. Column (3) includes 489 negative, 457 neutral, and 464 positive sellers who exit the market; Column (4) includes 976 negative, 1,277 neutral, and 1,934 positive moving sellers. Control variables, fixed effects, and clustering are identical to the main specification. Standard errors are clustered at the COROP-region level and reported in parentheses.

*p<0.1; **p<0.05; ***p<0.01.

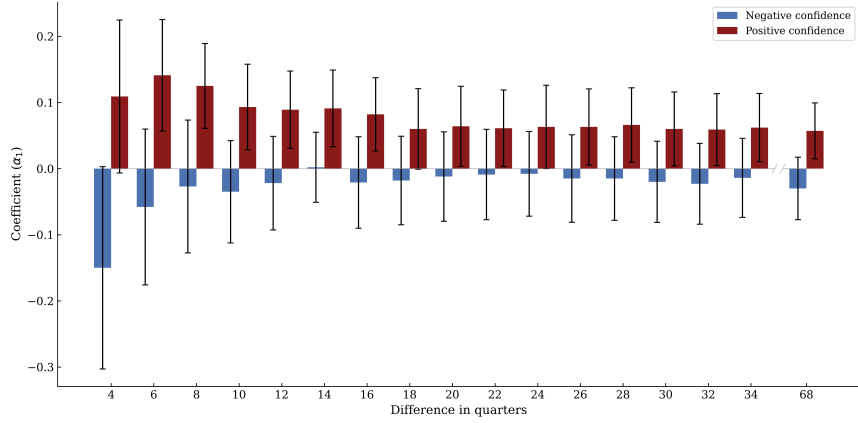
6.1 Sensitivity to the Timing of Confidence Measurement

In the baseline analysis, consumer confidence is measured between two and ten quarters prior to the transaction date, motivated in part by sample size considerations (see Section 2.3 for details on sample construction). This raises the concern that the estimated role of consumer confidence may depend on the specific window imposed. We therefore assess the sensitivity of the selection and pricing results by re-estimating the models over progressively wider analysis windows.

As in the baseline analysis, we exclude the two quarters immediately preceding the transaction to avoid capturing respondents who may have already committed to a purchase or sale decision. Starting from a window that links survey responses three to four quarters prior to the transaction, we expand the window in two-quarter increments up to the maximum horizon observed in the data. For each window, we re-estimate the selection model in Equation (1) and the hedonic pricing model in Equation (3) on the resulting sample.



(a) Buyer sample



(b) Seller sample

Figure 3: Consumer Confidence and Market Participation Across Measurement Windows. Equation (1) is estimated for analysis windows that expand in two-quarter increments omitting the first two quarters. The x -axis indicates the maximum allowable time difference in quarters between the survey response and the transaction date. The y -axis plots the estimated coefficients for positive and negative consumer confidence compared to the neutral category.

6.1.1 Confidence and Market Participation Across Windows

Figure 3 reports estimates from the selection model across progressively wider analysis windows. Panel A presents results for buyers and Panel B for sellers. The horizontal axis shows the upper bound of the window in quarters relative to the transaction date, and the vertical axis reports the estimated coefficients on consumer confidence.

For buyers, the estimated relationship between confidence and market participation is stable across window lengths. Extending the window up to 68 quarters yields coefficients

that remain similar in sign and statistical significance to those obtained in the baseline specification, although magnitudes attenuate modestly as the window expands. This implies that the cross-sectional ranking of confidence within a given response quarter remains informative about subsequent market participation even at longer horizons. This suggests, in turn, that the association between buyer confidence and participation is not driven by the specific timing of the survey response.

For sellers, the estimated effects are more sensitive to window length. As the window expands, the coefficient on negative confidence attenuates toward zero, while the coefficient on positive confidence declines but remains positive. Relative to buyers, seller participation appears more strongly related to confidence measured closer to the transaction date.

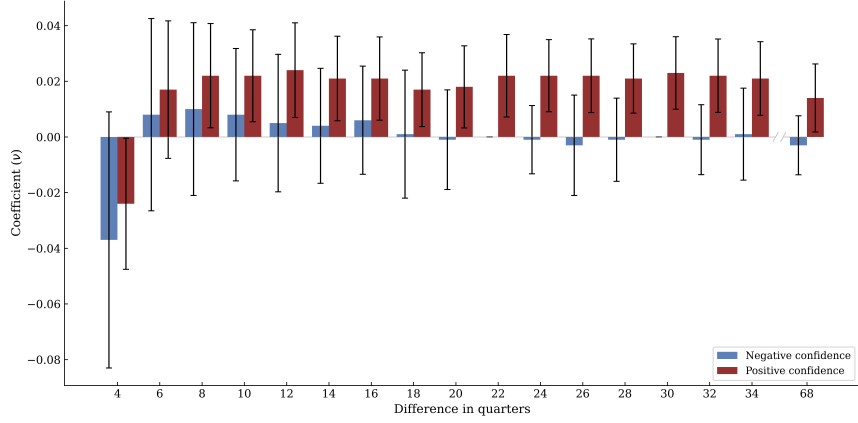
Figure B.3 also reports estimates from placebo specifications in which consumer confidence is measured after the transaction date. For both buyers and sellers, the relationship between confidence and market participation is substantially weaker in these post-transaction specifications relative to the ex-ante estimates. Moreover, the estimated coefficients attenuate more rapidly as the post-transaction window expands.

6.1.2 Confidence and Transaction Prices Across Windows

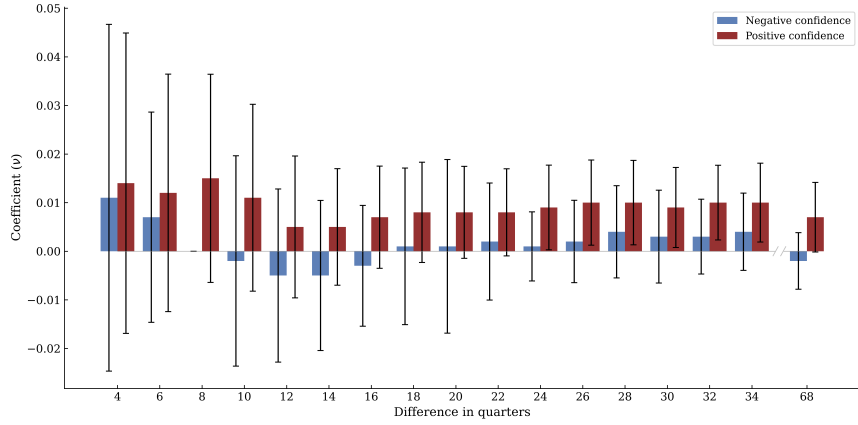
We next examine the sensitivity of the hedonic pricing results to the length of the analysis window. Figure 4 reports estimates of the effect of consumer confidence in supply-constrained markets from the hedonic pricing model, with Panel A for buyers and Panel B for sellers.

For buyers, the estimated coefficient on positive confidence is largest in magnitude in the window from four up to ten quarters and attenuates as the window expands. The coefficient on negative confidence is insignificantly different from zero across all windows. The only window that deviates from the baseline pattern is the narrowest window, in which negative confidence attains its largest magnitude and the coefficient on positive confidence turns negative. The coefficients in the remaining windows are consistent with those obtained in the baseline specification.

When we exclude the first four quarters prior to the transaction—rather than two as in the baseline—the estimated price premium for positive buyers increases to 3.7% (s.e. = 0.013), compared to 2.2% in the baseline specification. The corresponding participation effect is similar in magnitude to that in the baseline specification. In Section 2.3, we argued that confidence measured shortly before agreement—excluding the time-to-close period—would be most informative. The stronger effects obtained when excluding the first four quarters suggest that this restriction may not be sufficient. Given the average time-to-close of 73



(a) Buyer sample



(b) Seller sample

Figure 4: Consumer Confidence and Transaction Prices Across Measurement Windows. Equation (3) is estimated for analysis windows that expand in two-quarter increments omitting the first two quarters. The x -axis indicates the maximum allowable time difference in quarters between the survey response and the transaction date. The y -axis plots the estimated coefficients for positive and negative consumer confidence compared to the neutral category.

days, the pattern is unlikely to reflect mechanical dating alone. Instead, confidence measured within the two to four quarter window may already reflect beliefs formed while respondents are actively searching for housing, whereas confidence observed further in advance more cleanly captures *ex ante* expectations.

For sellers, the estimated effect of negative and positive confidence is considerably noisier than in the buyer sample. The coefficient on positive confidence remains modestly positive across most windows, whereas the coefficient on negative confidence fluctuates around zero.

Figure B.4 reports estimates from placebo specifications in which confidence is measured

after the transaction date. For buyers, coefficients on both positive and negative confidence are statistically insignificant across nearly all post-transaction windows. Estimates for the first window are imprecise, consistent with confidence measured close after the transaction date partly reflecting revised expectations in response to the transaction outcome. For sellers, we similarly find no significant relation between confidence and transaction prices. The coefficients on positive confidence reverse sign relative to the ex-ante specifications and attenuate as the post-transaction window expands.

Taken together, the placebo results from the selection model (Figure B.3) and the hedonic pricing model (Figure B.4) indicate that consumer confidence measured after the transaction reflects different underlying mechanisms than ex-ante confidence. This reinforces the importance of measuring confidence prior to the transaction when assessing its role in market participation and price formation.

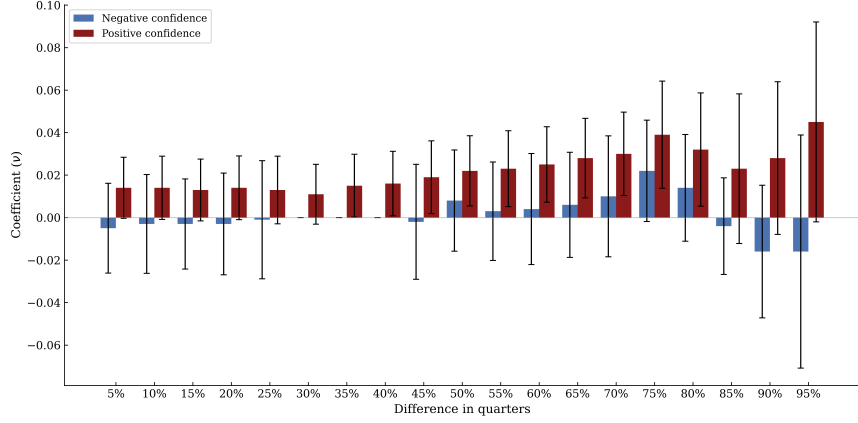
6.2 Sensitivity to the Supply Constraint Threshold

The supply constraint indicator in the main results uses the median share of developed land as the threshold, classifying half of the municipalities above 15.5% as supply-constrained and the other half as supply-unconstrained. However, the distribution is strongly right-skewed, with developed land shares ranging from 6% to 77% (see Figure B.1). This implies that municipalities with relatively modest land development shares are classified supply-constrained.

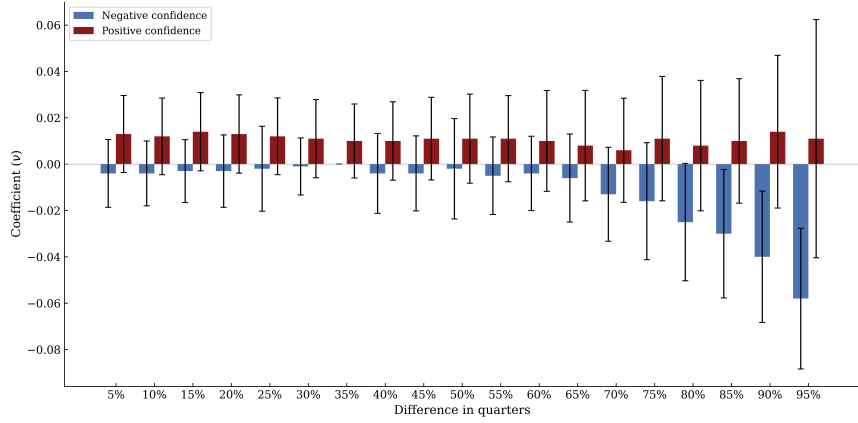
To assess sensitivity of the results to this choice, we re-estimate the hedonic pricing model, as given by Equation (3), using alternative thresholds defined at 5% increments of the developed-land-share distribution. At the upper end of this range, only the most constrained municipalities such as Amsterdam and The Hague are classified as supply-constrained.

Figure 5 presents the estimated coefficients on consumer confidence in municipalities classified as supply-constrained under each threshold. Panel A reports the results for buyers, and Panel B for sellers. The horizontal axis shows the quantile used to define the supply-constrained threshold, while the vertical axis reports the estimated coefficient on consumer confidence in constrained markets.

The results show that the effect of positive confidence in supply-constrained markets increases as the threshold becomes tighter, reaching a price effect of 4.4% when only the most constrained 5% of municipalities are classified as supply-constrained. The only exception is the 85% and 90% threshold, for which the estimated effect is somewhat smaller. In the seller sample, the coefficient on positive confidence remains relatively stable across thresholds,



(a) Buyer sample



(b) Seller sample

Figure 5: Consumer Confidence and Transaction Prices Across Supply Constraint Thresholds. The figure reports estimates of Equation (3) using alternative thresholds to define supply-constrained municipalities. The x -axis shows the quantile of the developed-land share used as the threshold for the supply-constraint indicator. The y -axis plots the estimated coefficients on consumer confidence in supply-constrained markets.

whereas the estimated effect of negative confidence becomes progressively more negative as the definition of supply constraints becomes more restrictive. These results indicate that the magnitude of the price effect varies with the extent of supply constraints, with the largest effects observed in the most tightly constrained municipalities.

6.3 Residual Prices Using the Full Transaction Sample

The limited sample size of the buyer and seller samples precludes the inclusion of granular municipality-by-month fixed effects in the pricing analysis. Consequently, the estimated rela-

tionship between consumer confidence and transaction prices may partly reflect unobserved local price dynamics not absorbed by COROP-region, city-size category and year-quarter fixed effects. To address this concern, we implement a two-step robustness exercise that leverages the full universe of housing transactions to include more granular location fixed effects.

First, we take the residuals from the hedonic pricing model in Equation (2), estimated based on 2,053,706 transactions for which buyer and seller characteristics are known, leaving out the confidence measure and replacing COROP-region and year-quarter fixed effects with municipality-by-month fixed effects. This results in 86,640 cells, with a median of 15 transactions per cell. Second, we examine whether consumer confidence explains the residual component of prices in the buyer and seller samples. This approach conditions out municipality-specific price levels and local time variation, allowing us to assess whether confidence is related to price variation orthogonal to local price dynamics.

The results from the second-stage pricing regressions are reported in Appendix Table C.4. Overall, the estimated patterns are similar from those obtained in the baseline specifications.

For buyers in column (1), positive confidence continues to be associated with higher transaction prices. The estimated effect is at 2.0% slightly lower in magnitude compared to the baseline specification. Moreover, the Inverse-Mills ratio does not seem to affect prices once local price dynamics are conditioned out.

For sellers in column (2), the estimated price premium associated with positive consumer confidence is 1.1%, identical to the estimate obtained in the baseline specification. Neither estimate is statistically significant. The coefficient on the Inverse-Mills ratio is similar in magnitude and statistical significance to that in the baseline specification. Overall, the results indicate that the main findings are robust to controlling for highly granular municipality-by-month price dynamics estimated using the full transaction sample.

6.4 Results Across Alternative Samples

The main pricing specifications rely on the assumption that buyer confidence is most responsive in supply-constrained markets, while seller confidence is most responsive in supply-unconstrained markets. Motivated by this hypothesis, we consider three complementary samples. First, we combine buyers in supply-constrained markets with sellers in supply-unconstrained markets. Second, we pool buyers and sellers into a single sample, which addresses the possibility that buyers and sellers assort on confidence such that either measure

may proxy for confidence at the transaction-pair level. Third, we estimate a placebo specification combining sellers in supply-constrained markets with buyers in supply-unconstrained markets, where confidence is not expected to have a strong effect on prices.

The estimation results of the selection model are reported in Panel A, and those of the hedonic pricing model in Panel B, both in Appendix Table C.5. For sellers, the comparison group consists of other homeowners, while for buyers the comparison group consists of all survey respondents. This construction ensures that participation is evaluated relative to the appropriate pool of eligible non-participants. Consistent with the baseline analysis, the results in Panel A show that consumer confidence is strongly associated with market participation across all samples.

Panel B reports the corresponding pricing results. Column (1), which combines buyers in constrained markets with sellers in unconstrained markets, yields a statistically significant premium of approximately 2.6% for positive confidence, consistent with the baseline finding that buyer confidence in constrained markets exhibits the strongest price effects. Column (2) pools buyers and sellers and reveals a 1.2% price premium for positive respondents. One explanation could be that confidence primarily affects prices in supply-constrained markets, largely independent of whether it is measured on the buyer or seller side. Column (3), shows no statistically significant effect of consumer confidence on transaction prices.

7 Conclusion

This paper studies the relation between consumer confidence, market participation, and transaction prices in housing markets. We document that consumer confidence strongly predicts entry on both sides of the housing market. Among potential buyers, differences in confidence strongly influence the decision to purchase a home, consistent with homeownership representing a large, highly leveraged, and largely irreversible financial commitment. Among homeowners, consumer confidence also influences the decision to sell, although the response is considerably weaker. This suggests that beliefs play a more limited role in the decision to sell than to buy.

The asymmetry extends to the price margin. Conditional on participation, positively confident buyers pay higher transaction prices, whereas seller confidence has no economically meaningful effect on prices. The buyer price premium ranges between 2.2% and 4.4% (depending on the specification) and persists after controlling for housing characteristics, participant attributes, and endogenous selection into market participation. This indicates

that consumer confidence influences buyers' willingness to pay for comparable properties in addition to influencing which buyers participate or which properties are transacted.

An implication of our results is that observed outcomes reflect confidence-driven selection into participation by both buyers and sellers. This implies that consumer confidence among market participants differ systematically from those of the broader population. Conditional on participation, however, the willingness to pay of the marginal buyer responds to consumer confidence. Consequently, heterogeneity in consumer confidence affects housing market outcomes through both the composition of market participants and the willingness to pay of the marginal buyer, even when housing characteristics, buyer and seller attributes, and selection into the market are held constant. More broadly, the results highlight the importance of distinguishing between the beliefs of market participants and those of the overall population when studying housing market dynamics.

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A Appendix

A.1 The Dutch Consumer Confidence Survey

The Dutch consumer confidence survey asks respondents about the economic situation in the Netherlands and their own financial circumstances. The consumer confidence measure is constructed from five core questions in the survey. The questions are recorded on either three- or five-point Likert scales, with an additional “don’t know” option. An English translation of the survey instrument, presented in the original question order, is reported in Section A.1.1; the original Dutch questionnaire is available from Statistics Netherlands⁵.

CBS defines three indicators based on these responses. Individual responses are first mapped into a numerical scale: negative responses (i.e., “deteriorated” or “unfavorable”) are assigned a value of -100 , neutral responses (i.e., “remained the same” or “don’t know”) are assigned a value of 0 , and positive responses (i.e., “improved” or “favorable”) are assigned a value of 100 . The *willingness to consume* indicator is the average of Q1, Q2, and Q9. The *economic climate* indicator is the average of Q3 and Q4. *Consumer confidence* is defined as the average across all five questions.

A.1.1 Survey Instrument

Q3 What is your opinion of the general economic situation in the Netherlands over the past 12 months?

It has:

1. Improved a lot
2. Improved somewhat
3. Remained the same
4. Deteriorated somewhat
5. Deteriorated a lot

Don't know

⁵<https://www.cbs.nl/nl-nl/achtergrond/2017/16/vragenlijst-cco-2017>

Q4 What do you expect for the general economic situation in the Netherlands over the next 12 months?

It will:

1. Improve a lot
2. Improve somewhat
3. Remain the same
4. Deteriorate somewhat
5. Deteriorate a lot

Don't know

[Questions omitted for brevity]

Q1 What is your opinion of the financial situation of your household over the past 12 months?

It has:

1. Improved a lot
2. Improved somewhat
3. Remained the same
4. Deteriorated somewhat
5. Deteriorated a lot

Don't know

[Questions omitted for brevity]

Q2 What do you expect for the financial situation of your household over the next 12 months?

It will:

1. Improve a lot
2. Improve somewhat
3. Remain the same
4. Deteriorate somewhat
5. Deteriorate a lot

Don't know

Q9 Considering the general economic situation, do you think it is a favorable or unfavorable time for major purchases, such as furniture, electronics, etc.?

1. A favorable time
2. Neither a favorable nor an unfavorable time
3. An unfavorable time

Don't know

[Questions omitted for brevity]

B Additional Figures

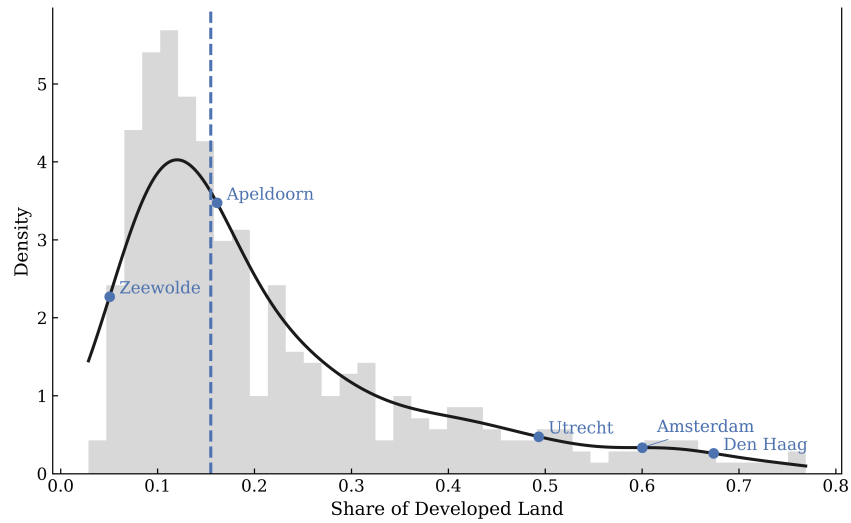


Figure B.1: Distribution of Developed Land Shares. This figure shows the distribution of developed land shares across municipalities. The dashed vertical line indicates the median developed land share. The supply-constraint indicator equals one if the developed land share is above the median.

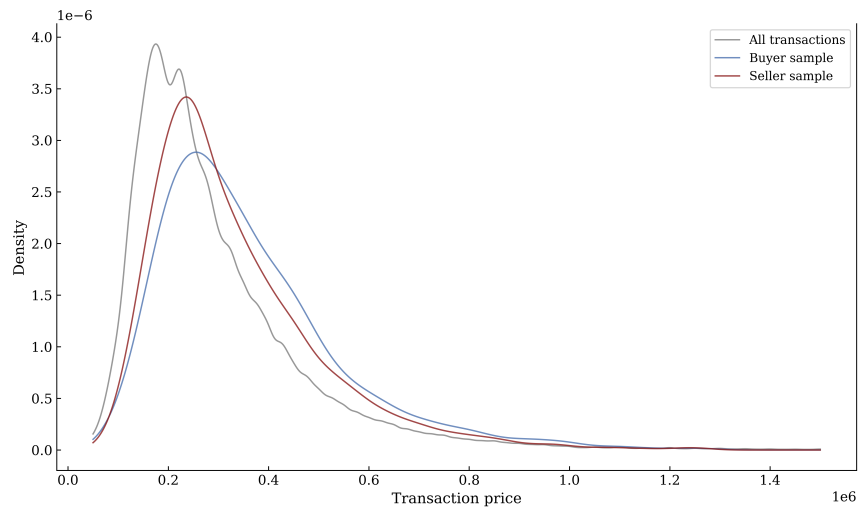
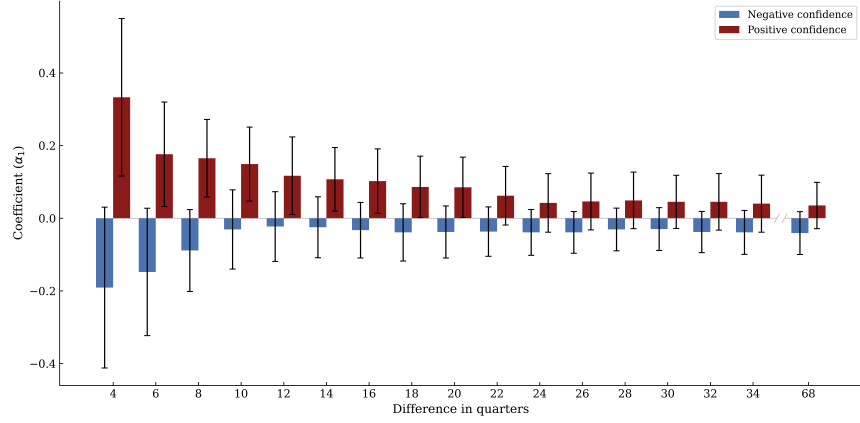
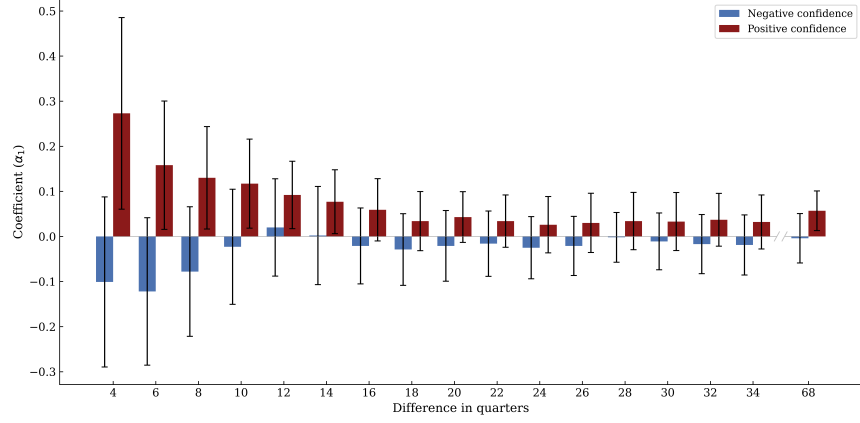


Figure B.2: Distribution of Transaction Prices. The figure shows the distribution of transaction prices for all transactions (gray), the buyer sample (blue), and the seller sample (red).

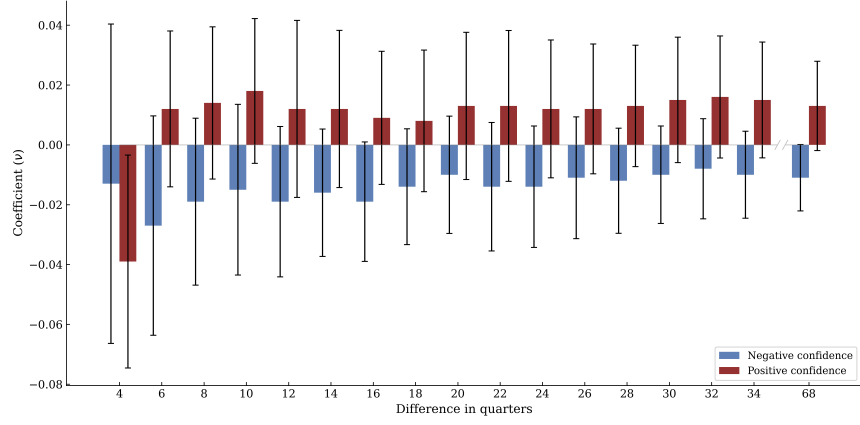


(a) Buyer sample

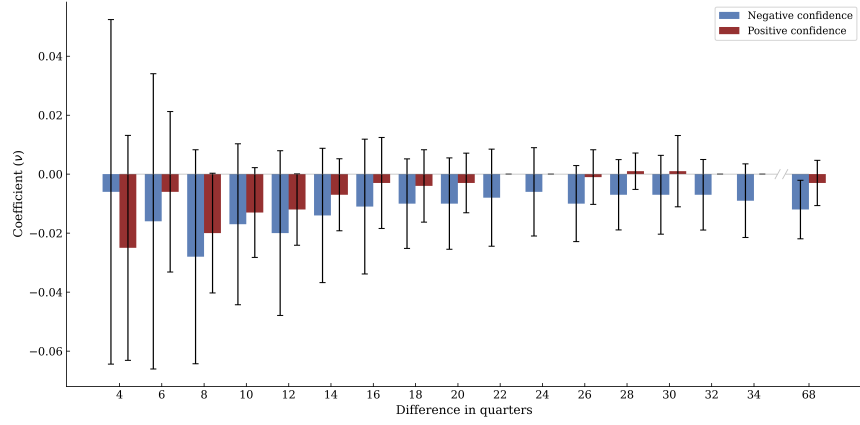


(b) Seller sample

Figure B.3: Market Participation and Post-Transaction Confidence. Equation (1) is estimated for analysis windows that expand in two-quarter increments omitting the first two quarters. The x -axis indicates the maximum allowable time difference in quarters between the survey response and the transaction date. The y -axis plots the estimated coefficients for positive and negative consumer confidence compared to the neutral category.



(a) Buyer sample



(b) Seller sample

Figure B.4: Transaction Prices and Post-Transaction Confidence. Equation (3) is estimated for analysis windows that expand in two-quarter increments omitting the first two quarters. The x -axis indicates the maximum allowable time difference in quarters between the survey response and the transaction date. The y -axis plots the estimated coefficients for positive and negative consumer confidence compared to the neutral category.

C Additional Tables

Table C.1: Consumer Confidence and Housing Market Participation: Full Selection Model Results

Dep. var: in sample (1/0)	(1)	(2)
Sample	Buyer sample (mean = 2.135%)	Seller sample (mean = 4.559%)
Consumer confidence (negative)	0.861*** (0.054)	0.966 (0.039)
Consumer confidence (positive)	1.121*** (0.037)	1.097*** (0.029)
Marital status (divorced)	1.297*** (0.062)	1.287*** (0.058)
Marital status (widowed)	1.467*** (0.097)	1.514*** (0.064)
Marital status (never married)	1.045 (0.058)	0.903** (0.049)
Household income (20,000–30,000)	2.075*** (0.113)	0.909 (0.075)
Household income (30,000–40,000)	2.915*** (0.113)	0.952 (0.078)
Household income (40,000–50,000)	3.254*** (0.109)	0.936 (0.066)
Household income (50,000–60,000)	3.743*** (0.099)	0.959 (0.080)
Household income (60,000–70,000)	3.819*** (0.105)	1.070 (0.083)
Household income (70,000–80,000)	3.597*** (0.130)	1.121 (0.090)
Household income (80,000–90,000)	3.819*** (0.145)	1.099 (0.086)
Household income (90,000–100,000)	3.935*** (0.183)	1.229** (0.096)
Household income ($\geq 100,000$)	4.759*** (0.130)	1.218* (0.101)
Net household wealth (0,000–10,000)	1.095 (0.059)	0.968 (0.077)
Net household wealth (10,000–25,000)	1.183*** (0.045)	0.902* (0.054)
Net household wealth (25,000–50,000)	1.145** (0.061)	0.846*** (0.054)
Net household wealth (50,000–100,000)	0.976 (0.057)	0.707*** (0.045)
Net household wealth (100,000–200,000)	0.953 (0.059)	0.647*** (0.043)
Net household wealth ($\geq 200,000$)	1.069 (0.058)	0.550*** (0.036)
Gender (female)	1.151*** (0.038)	0.992 (0.027)
Education level (lower secondary)	1.215 (0.129)	0.985 (0.090)
Education level (upper secondary)	1.582*** (0.129)	1.084 (0.089)
Education level (higher education)	1.943*** (0.124)	1.261*** (0.081)
Education level (university)	2.034*** (0.125)	1.206** (0.086)
Age (35–44)	0.552*** (0.046)	0.674*** (0.051)
Age (45–54)	0.284*** (0.053)	0.414*** (0.053)
Age (55–64)	0.181*** (0.093)	0.357*** (0.062)
Age (65–74)	0.135*** (0.079)	0.386*** (0.069)
Age (≥ 75)	0.060*** (0.105)	0.424*** (0.083)
Household size (2)	1.052 (0.063)	0.913* (0.050)
Household size (3)	0.770*** (0.061)	0.782*** (0.070)
Household size (4)	0.642*** (0.071)	0.690*** (0.055)
Household size (5)	0.664*** (0.115)	0.666*** (0.068)
Household size (6)	0.670** (0.180)	0.607*** (0.120)
Wald	14.086***	7.343***
Observations	182,369	117,032

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Dep. var: in sample (1/0) Sample	(1) Buyer sample (mean = 2.135%)	(2) Seller sample (mean = 34.559%)
Pseudo R^2	0.124	0.045
Response quarter	Yes	Yes
COROP and city size	Yes	Yes
Respondent characteristics	Yes	Yes
Exclusion restrictions	Yes	Yes

This table reports the full results from Equation (1). Column (1) corresponds to Column (4) in Panel A of Table 2 (buyer sample), and Column (2) to Column (4) in Panel B of Table 2 (seller sample). All specifications, variable definitions, and fixed effects are identical to those in the main table. Standard Errors are clustered at the COROP-region, and presented in parentheses. The Wald statistic tests the joint null hypothesis $\alpha_{1,neg} = \alpha_{1,pos} = 0$. Logit coefficients are interpreted as odds, calculated as $\exp(\hat{\alpha}_1)$, and reflect changes in the latent propensity to enter in a transaction. The fixed effects are quarter ($N = 64$), COROP-region ($N = 40$) and city-size ($N = 3$). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table C.2: Consumer Confidence and Transaction Prices: Full Results for the Buyer Sample

Dep. var: log(transaction price)	(1)	(2)
Consumer confidence (negative)	0.002 (0.012)	0.008 (0.012)
Consumer confidence (positive)	0.026*** (0.009)	0.022** (0.009)
Unconstrained market	0.014 (0.023)	0.014 (0.023)
Consumer confidence (negative) $\times$ unconstrained	-0.043** (0.019)	-0.042** (0.019)
Consumer confidence (positive) $\times$ unconstrained	-0.040** (0.019)	-0.040** (0.019)
IMR		-0.095*** (0.024)
<i>House characteristics</i>		
Log(size)	0.553*** (0.027)	0.551*** (0.027)
Year of construction (1906–1929)	-0.016 (0.025)	-0.018 (0.025)
Year of construction (1930–1944)	0.006 (0.026)	0.005 (0.026)
Year of construction (1945–1959)	-0.048* (0.027)	-0.048* (0.026)
Year of construction (1960–1969)	-0.132*** (0.032)	-0.133*** (0.031)
Year of construction (1970–1979)	-0.103*** (0.028)	-0.103*** (0.027)
Year of construction (1980–1989)	-0.059* (0.034)	-0.060* (0.033)
Year of construction (1990–1999)	0.016 (0.029)	0.015 (0.028)
Year of construction (≥ 2000)	0.073** (0.034)	0.070** (0.034)
House type (corner)	0.101*** (0.021)	0.098*** (0.022)
House type (semi-detached)	0.153*** (0.025)	0.152*** (0.025)
House type (chained)	0.053*** (0.019)	0.052** (0.019)
House type (detached)	0.278*** (0.025)	0.278*** (0.025)
<i>Respondent characteristics (buyer)</i>		
Household income (20,000–30,000)	0.049* (0.025)	0.043* (0.025)
Household income (30,000–40,000)	0.025 (0.024)	0.012 (0.024)

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Dep. var: log(transaction price)	(1)	(2)
Household income (40,000–50,000)	0.067*** (0.021)	0.050** (0.020)
Household income (50,000–60,000)	0.064*** (0.023)	0.045** (0.022)
Household income (60,000–70,000)	0.088*** (0.023)	0.070*** (0.022)
Household income (70,000–80,000)	0.081*** (0.024)	0.064*** (0.023)
Household income (80,000–90,000)	0.109*** (0.028)	0.092*** (0.027)
Household income (90,000–100,000)	0.128*** (0.029)	0.109*** (0.028)
Household income ($\geq 100,000$)	0.107*** (0.029)	0.086*** (0.028)
Net household wealth (0–10,000)	-0.035 (0.024)	-0.035 (0.023)
Net household wealth (10,000–25,000)	-0.024 (0.016)	-0.026 (0.016)
Net household wealth (25,000–50,000)	0.008 (0.011)	0.004 (0.011)
Net household wealth (50,000–100,000)	0.032** (0.015)	0.031* (0.015)
Net household wealth (100,000–200,000)	0.050*** (0.016)	0.050*** (0.016)
Net household wealth ($\geq 200,000$)	0.073*** (0.016)	0.072*** (0.016)
Household size (2)	0.051*** (0.013)	0.051*** (0.013)
Household size (3)	0.036** (0.015)	0.041*** (0.015)
Household size (4)	0.057*** (0.014)	0.068*** (0.015)
Household size (5)	0.034 (0.021)	0.048** (0.021)
Household size (6)	0.010 (0.033)	0.020 (0.034)
Gender (male)	0.016** (0.007)	0.021*** (0.008)
Age (35–44)	0.020 (0.017)	0.025 (0.017)
Age (45–54)	0.033 (0.020)	0.059*** (0.018)
Age (55–64)	0.018 (0.017)	0.065*** (0.017)
Age (65–74)	0.033 (0.020)	0.095*** (0.023)
Age (≥ 75)	0.085*** (0.022)	0.161*** (0.024)
Education level (lower secondary)	-4.53×10^{-6} (0.023)	-0.007 (0.024)
Education level (higher secondary)	0.011 (0.023)	-0.004 (0.024)
Education level (higher education)	0.059** (0.025)	0.034 (0.027)
Education level (university)	0.116*** (0.024)	0.087*** (0.026)
<i>Counterpart characteristics (seller)</i>		
Household income (20,000–30,000)	0.029 (0.017)	0.028 (0.018)
Household income (30,000–40,000)	0.055*** (0.019)	0.053*** (0.019)
Household income (40,000–50,000)	0.077*** (0.021)	0.076*** (0.021)
Household income (50,000–60,000)	0.075*** (0.022)	0.074*** (0.022)
Household income (60,000–70,000)	0.099*** (0.021)	0.098*** (0.021)
Household income (70,000–80,000)	0.101*** (0.018)	0.100*** (0.018)
Household income (80,000–90,000)	0.129*** (0.025)	0.129*** (0.025)
Household income (90,000–100,000)	0.113*** (0.028)	0.113*** (0.028)
Household income ($\geq 100,000$)	0.146*** (0.024)	0.145*** (0.024)
Net household wealth (0–10,000)	-0.040 (0.032)	-0.037 (0.031)
Net household wealth (10,000–25,000)	-0.025 (0.021)	-0.025 (0.021)
Net household wealth (25,000–50,000)	-0.022 (0.016)	-0.023 (0.016)
Net household wealth (50,000–100,000)	0.008 (0.012)	0.009 (0.013)
Net household wealth (100,000–200,000)	0.028** (0.013)	0.027** (0.013)
Net household wealth ($\geq 200,000$)	0.058*** (0.012)	0.058*** (0.012)
Household size (2)	-0.011 (0.008)	-0.012 (0.008)

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Dep. var: log(transaction price)	(1)	(2)
Household size (3)	0.008 (0.015)	0.007 (0.015)
Household size (4)	0.001 (0.014)	0.0007 (0.015)
Household size (5)	-0.001 (0.021)	-0.002 (0.021)
Household size (6)	-0.061** (0.024)	-0.062** (0.024)
Gender (male)	0.010 (0.010)	0.011 (0.009)
Age (35–44)	-0.040** (0.020)	-0.041** (0.019)
Age (45–54)	-0.016 (0.021)	-0.017 (0.021)
Age (55–64)	-0.017 (0.018)	-0.019 (0.018)
Age (65–74)	0.004 (0.020)	0.001 (0.019)
Age (≥ 75)	0.018 (0.019)	0.016 (0.019)
Education level (lower secondary)	-0.014 (0.047)	-0.015 (0.047)
Education level (higher secondary)	0.005 (0.035)	0.002 (0.035)
Education level (higher education)	0.040 (0.036)	0.036 (0.036)
Education level (university)	0.070* (0.040)	0.067 (0.040)
Education level (unknown)	0.036 (0.037)	0.034 (0.037)
Wald (constrained)	9.238***	6.923**
Wald (unconstrained)	7.063**	4.870*
Observations	3,949	3,949
Pseudo R^2	0.791	0.792
Transaction quarter	Yes	Yes
COROP and city size	Yes	Yes
House characteristics	Yes	Yes
Buyer and seller characteristics	Yes	Yes

This table reports the full results from Equation (3). Column (1) and (2) correspond to Column (4) and (5) in Panel B of Table 3. All specifications, variable definitions, and fixed effects are identical to those in the main table. Year of construction is defined relative to properties built before 1906; house type relative to apartments; household income relative to the 0–20,000 category; net household wealth relative to households with negative wealth; household size relative to single-person households; age relative to the 0–34 category; and education level relative to individuals with primary education only. Counterpart characteristics refer to the head of household. The Wald (constrained) statistic tests the joint null hypothesis $H_0^{(d=0)} : \nu_{\text{neg}} = \nu_{\text{pos}} = 0$. The Wald (unconstrained) statistic tests the joint null hypothesis $\nu_{\text{neg}} + \rho_{\text{neg}} = 0$ and $\nu_{\text{pos}} + \rho_{\text{pos}} = 0$. The fixed effects are quarter ($N = 64$), COROP-region ($N = 40$) and city-size ($N = 3$). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table C.3: Consumer Confidence and Transaction Prices: Full Results for the Seller Sample

Dep. var: log(transaction price)	(1)	(2)
Consumer confidence (negative)	0.000 (0.009)	-0.002 (0.008)
Consumer confidence (positive)	0.006 (0.010)	0.011 (0.010)
Unconstrained market	-0.032 (0.022)	-0.031 (0.022)
Consumer confidence (negative) $\times$ unconstrained market	-0.008 (0.017)	-0.008 (0.017)
Consumer confidence (positive) $\times$ unconstrained market	0.008 (0.015)	0.007 (0.015)
IMR		0.100*** (0.018)
<i>House characteristics</i>		
Log(size)	0.486*** (0.027)	0.485*** (0.027)
Year of construction (1906–1929)	-0.041* (0.023)	-0.040* (0.023)
Year of construction (1930–1944)	-0.041 (0.027)	-0.040 (0.026)
Year of construction (1945–1959)	-0.108*** (0.039)	-0.108*** (0.038)
Year of construction (1960–1969)	-0.147*** (0.041)	-0.147*** (0.041)
Year of construction (1970–1979)	-0.115*** (0.040)	-0.115*** (0.040)
Year of construction (1980–1989)	-0.088** (0.041)	-0.088** (0.040)
Year of construction (1990–1999)	-0.002 (0.037)	-0.002 (0.037)
Year of construction (≥ 2000)	0.033 (0.051)	0.032 (0.050)
House type (corner)	0.140*** (0.023)	0.139*** (0.023)
House type (semi-detached)	0.231*** (0.025)	0.230*** (0.026)
House type (chained)	0.098*** (0.020)	0.098*** (0.020)
House type (detached)	0.353*** (0.035)	0.352*** (0.035)
<i>Respondent characteristics (seller)</i>		
Household income (20,000–30,000)	0.005 (0.016)	0.002 (0.016)
Household income (30,000–40,000)	0.022 (0.018)	0.021 (0.018)
Household income (40,000–50,000)	0.045*** (0.016)	0.044*** (0.016)
Household income (50,000–60,000)	0.044*** (0.015)	0.042*** (0.015)
Household income (60,000–70,000)	0.064*** (0.019)	0.064*** (0.019)
Household income (70,000–80,000)	0.079*** (0.022)	0.079*** (0.021)
Household income (80,000–90,000)	0.072*** (0.021)	0.072*** (0.022)
Household income (90,000–100,000)	0.112*** (0.017)	0.114*** (0.017)
Household income ($\geq 100,000$)	0.113*** (0.022)	0.115*** (0.021)
Net household wealth (0–10,000)	0.004 (0.021)	0.005 (0.021)
Net household wealth (10,000–25,000)	-0.035* (0.020)	-0.034 (0.020)
Net household wealth (25,000–50,000)	-0.006 (0.016)	-0.006 (0.016)
Net household wealth (50,000–100,000)	0.0001 (0.014)	-0.004 (0.014)
Net household wealth (100,000–200,000)	0.012 (0.010)	0.004 (0.010)
Net household wealth ($\geq 200,000$)	0.069*** (0.010)	0.056*** (0.010)
Household size (2)	0.022*** (0.008)	0.014* (0.008)
Household size (3)	0.005 (0.012)	-0.005 (0.011)
Household size (4)	0.030** (0.013)	0.013 (0.013)
Household size (5)	0.019 (0.017)	0.0007 (0.015)
Household size (6)	-0.008 (0.030)	-0.027 (0.033)
Gender (male)	0.011 (0.007)	0.012* (0.007)

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Dep. var: log(transaction price)	(1)	(2)
Age (35–44)	-0.003 (0.019)	-0.007 (0.018)
Age (45–54)	-0.021 (0.018)	-0.039** (0.018)
Age (55–64)	-0.002 (0.018)	-0.036** (0.017)
Age (65–74)	0.023 (0.018)	-0.019 (0.017)
Age (≥ 75)	0.024 (0.021)	-0.016 (0.019)
Education level (lower secondary)	0.010 (0.020)	0.007 (0.020)
Education level (higher secondary)	0.026 (0.019)	0.025 (0.019)
Education level (higher education)	0.067*** (0.021)	0.074*** (0.021)
Education level (university)	0.107*** (0.021)	0.112*** (0.021)
<i>Counterpart characteristics (buyer)</i>		
Household income (20,000–30,000)	0.016 (0.016)	0.016 (0.016)
Household income (30,000–40,000)	0.041** (0.016)	0.041** (0.017)
Household income (40,000–50,000)	0.052*** (0.017)	0.051*** (0.017)
Household income (50,000–60,000)	0.063*** (0.019)	0.062*** (0.019)
Household income (60,000–70,000)	0.082*** (0.016)	0.081*** (0.016)
Household income (70,000–80,000)	0.106*** (0.023)	0.105*** (0.022)
Household income (80,000–90,000)	0.087*** (0.023)	0.086*** (0.023)
Household income (90,000–100,000)	0.085*** (0.025)	0.084*** (0.025)
Household income ($\geq 100,000$)	0.094*** (0.019)	0.093*** (0.019)
Net household wealth (0–10,000)	-0.030*** (0.009)	-0.029*** (0.009)
Net household wealth (10,000–25,000)	0.013 (0.012)	0.014 (0.012)
Net household wealth (25,000–50,000)	0.010 (0.013)	0.010 (0.013)
Net household wealth (50,000–100,000)	0.030** (0.011)	0.029** (0.011)
Net household wealth (100,000–200,000)	0.028*** (0.010)	0.028*** (0.010)
Net household wealth ($\geq 200,000$)	0.057*** (0.011)	0.057*** (0.011)
Household size (2)	0.028*** (0.009)	0.029*** (0.009)
Household size (3)	0.048*** (0.011)	0.048*** (0.011)
Household size (4)	0.051*** (0.012)	0.051*** (0.012)
Household size (5)	0.051** (0.020)	0.049** (0.020)
Household size (6)	-0.007 (0.030)	-0.007 (0.031)
Gender (male)	-0.005 (0.006)	-0.005 (0.006)
Age (35–44)	0.037*** (0.010)	0.038*** (0.010)
Age (45–54)	0.063*** (0.013)	0.064*** (0.013)
Age (55–64)	0.078*** (0.013)	0.078*** (0.013)
Age (65–74)	0.089*** (0.018)	0.089*** (0.018)
Age (≥ 75)	0.149*** (0.018)	0.149*** (0.018)
Education level (lower secondary)	-0.010 (0.023)	-0.012 (0.023)
Education level (higher secondary)	0.017 (0.022)	0.016 (0.022)
Education level (higher education)	0.064*** (0.019)	0.062*** (0.019)
Education level (university)	0.129*** (0.024)	0.127*** (0.024)
Education level (unknown)	0.044** (0.021)	0.042** (0.021)
Wald (constrained)	0.456	1.514
Wald (unconstrained)	2.085	3.112
Observations	5,597	5,597
Pseudo R^2	0.786	0.787

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Dep. var: log(transaction price)	(1)	(2)
Transaction quarter	Yes	Yes
COROP and city size	Yes	Yes
House characteristics	Yes	Yes
Buyer and seller characteristics	Yes	Yes

This table reports the full results from Equation (3). Column (1) and (2) correspond to Column (4) and (5) in Panel B of Table 3. All specifications, variable definitions, and fixed effects are identical to those in the main table. Year of construction is defined relative to properties built before 1906; house type relative to apartments; household income relative to the 0–20,000 category; net household wealth relative to households with negative wealth; household size relative to single-person households; age relative to the 0–34 category; and education level relative to individuals with primary education only. Counterpart characteristics refer to the head of household. The Wald (constrained) statistic tests the joint null hypothesis $H_0^{(d=0)} : \nu_{\text{neg}} = \nu_{\text{pos}} = 0$. The Wald (unconstrained) statistic tests the joint null hypothesis $\nu_{\text{neg}} + \rho_{\text{neg}} = 0$ and $\nu_{\text{pos}} + \rho_{\text{pos}} = 0$. The fixed effects are quarter ($N = 64$), COROP-region ($N = 40$) and city-size ($N = 3$). * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table C.4: Consumer Confidence and Residual Transaction Prices

Dep. var: residual price	(1)	(2)
Consumer confidence (negative)	0.005 (0.011)	0.009 (0.008)
Consumer confidence (positive)	0.020** (0.009)	0.011 (0.008)
Unconstrained market	0.036*** (0.013)	0.007 (0.010)
Consumer confidence (negative) $\times$ unconstrained	-0.025 (0.019)	-0.013 (0.015)
Consumer confidence (positive) $\times$ unconstrained	-0.029* (0.016)	0.001 (0.014)
IMR	-0.005(0.009)	0.027** (0.011)
Intercept	0.001 (0.020)	-0.059** (0.007)
Observations	3,944	5,595
R^2	0.003	0.003

This table reports estimates from the second-stage pricing equation. The dependent variable is the residual from Equation 2, estimated excluding consumer confidence and including 86.640 municipality-by-month fixed effects. The median number of transactions per cell is 15; 2,386 singleton observations are excluded from the estimation. The second-stage regression relates this residual to consumer confidence and the Inverse-Mills ratio obtained from the first-stage selection model. Coefficients on positive and negative consumer confidence are interpreted relative to the neutral category. The buyer sample in column (1) includes 939 negative, 1,313 neutral, and 1,932 positive respondents; the seller sample in column (2) includes 1,402 negative, 1,672 neutral, and 2,362 positive respondents. Standard errors are reported in parentheses. All specifications include quarter ($N = 64$), COROP-region ($N = 40$), and city-size ($N = 3$) fixed effects. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table C.5: Confidence, Market Participation, and Transaction Prices Across Alternative Samples

Panel A: Selection Model			
Dep. var: in sample (1/0)	(1)	(2)	(3)
Consumer confidence (negative)	0.875** (0.055)	0.915*** (0.037)	0.895*** (0.043)
Consumer confidence (positive)	1.137*** (0.036)	1.135*** (0.027)	1.085** (0.034)
Pseudo R^2	0.131	0.077	0.083
Observations	123,786	182,369	123,004
Panel B: Hedonic Pricing Model			
Dep. var: log(transaction price)	(1)	(2)	(3)
Consumer confidence (negative)	0.004 (0.009)	0.005 (0.007)	-0.006 (0.009)
Consumer confidence (positive)	0.026*** (0.007)	0.012*** (0.006)	0.006 (0.007)
Unconstrained market		-0.014 (0.022)	
Consumer confidence (negative) $\times$ unconstrained		-0.022 (0.013)	
Consumer confidence (positive) $\times$ unconstrained		-0.016 (0.014)	
IMR	-0.048*** (0.013)	-0.072*** (0.015)	-0.049** (0.022)
observations	4,210	9,528	5,002
R^2	0.800	0.784	0.781

This table reports estimates of Equation 1 in Panel (A) and Equation 3 in Panel (B). The dependent variable equals one if the respondent enters the market in Panel (A) and the log of the transaction price in Panel (B). Coefficients on positive and negative consumer confidence are interpreted relative to the neutral category. Column (1) includes 2,723 buyers in constrained markets and 1,487 sellers in unconstrained markets (995 negative, 1,267 neutral, and 1,948 positive respondents). Column (2) includes 3,949 buyers in unconstrained markets and 5,579 sellers in constrained markets (2,304 negative, 2,734 neutral, and 4,490 positive). Column (3) includes 3,412 sellers and 992 unique buyers (1,119 negative, 1,357 neutral, and 1,928 positive). Control variables, fixed effects, and clustering are identical to the main specification. Standard errors are clustered at the COROP-region level and reported in parentheses. Logit coefficients are interpreted as odds, calculated as $\exp(\hat{\alpha}_1)$, and reflect changes in the latent propensity to enter in a transaction. *p<0.1; **p<0.05; ***p<0.01.

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