

RESEARCH ARTICLE

Intertwined Policrises: Refugee Inflows, Natural Disasters, Financial Instability, and Housing Market Dynamics in Emerging Economies

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Abstract

This study investigates the combined socioeconomic impacts of overlapping global crises—including financial instability, ongoing wars, refugee inflows, and natural disasters—on emerging economies, with a focus on Türkiye. Using a mixed-methods approach merging perception surveys and econometric analyses, the paper examines how refugee-induced demographic shifts and the February 2023 earthquakes interacted to reshape housing market dynamics across eleven affected provinces. The findings reveal a double demand shock in Türkiye's housing market: refugee inflows and disaster displacement simultaneously reduced supply and increased demand, generating significant price surges and spatial fragmentation of housing price cointegration. Furthermore, global financial turbulence and inflation magnified affordability problems, while wars on the northern and southern borders of Türkiye created secondary migration pressures. Results show that while some cities (Adana, Gaziantep) demonstrated resilience due to robust infrastructure and labor mobility, others (Hatay, Kahramanmaraş, Adıyaman) experienced structural breaks and long-term divergence from regional housing price trends. The study contributes to the literature on crisis convergence by situating Türkiye's experience within the broader polycrisis framework, highlighting how financial, political, social, and environmental shocks interact to exacerbate vulnerabilities in urban systems. Policy recommendations emphasize the need for integrated crisis management, resilient housing finance, inclusive labor policies, regional burden sharing, and scaled social infrastructure investment.

Keywords: Refugees, Housing Market, Earthquake, Financial Crisis, Socioeconomy, Polycrisis

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Öz

Bu çalışma, finansal istikrarsızlık, süregiden savaşlar, mülteci akımları ve doğal afetlerin kesişiminden doğan küresel krizlerin yükselen ekonomiler üzerindeki bileşik etkilerini, Türkiye odağında incelemektedir. Algı anketleri ile ekonometrik analizleri birleştiren karma yöntem yaklaşımı, mülteci kaynaklı demografik kaymalar ile Şubat 2023 depremlerinin, etkilenen on bir ilde konut piyasası dinamiklerini nasıl yeniden şekillendirdiğini ortaya koymaktadır. Bulgular, Türkiye konut piyasasında “çifte talep şoku”na işaret etmektedir: mülteci girişi ve afet kaynaklı yerinden edilmeler eşzamanlı olarak arzı daraltıp talebi artırmış; bu da fiyatlarda belirgin sıçramalara ve konut fiyatlarının eşbütünleşmesinde mekânsal parçalanmaya yol açmıştır. Küresel finansal dalgalanma ve enflasyon erişilebilirlik sorunlarını ağırlaştırırken, Türkiye'nin kuzey ve güney sınırlarındaki savaşlar ikincil göç baskılarını artırmıştır. Sonuçlar, bazı kentlerin (Adana, Gaziantep) güçlü altyapı ve işgücü hareketliliği sayesinde dayanıklılık sergilediğini; diğerlerinde (Hatay, Kahramanmaraş, Adıyaman) yapısal kırılmalar ve bölgesel konut fiyatı eğilimlerinden uzun vadeli ayrılmalar yaşandığını göstermektedir. Çalışma, Türkiye deneyimini “polikrizi” çerçevesinde konumlandırarak, finansal, siyasal, toplumsal ve çevresel şokların kent sistemlerindeki kırılganlıkları nasıl bileşik biçimde derinleştirdiğini vurgulamaktadır. Politika önerileri; bütünsel kriz yönetimi, dayanıklı konut finansmanı, kapsayıcı işgücü politikaları, bölgesel yük paylaşımı ve ölçekli sosyal altyapı yatırımlarının gerekliliğinin altını çizmektedir.

Anahtar Kelimeler: Mülteciler, Konut Piyasası, Deprem, Finansal Kriz, Türk Telekom, Sosyoekonomi, Polikriz

Introduction

The early twenty-first century has been increasingly defined by what scholars and policymakers describe as a polycrisis—a convergence of multiple, overlapping shocks that interact in unpredictable ways and generate systemic vulnerabilities (Tooze, 2022). Helleiner (2024) defines polycrisis as a set of separate crises that interact in such a way that they, or their consequences, mutually intensify or reinforce one another.

A polycrisis refers to the concurrent unfolding of multiple catastrophic events, including wars, forced migration, pandemics, financial instability, and climate-induced disasters. In such situations, crises do not simply occur simultaneously; rather, they intensify one another's impacts, producing consequences that are greater than the sum of each individual crisis, similar to the resultant vector in physics.

The term "polycrisis" was first introduced by Edgar Morin and Anne Brigitte Kern in their 1999 book *"Homeland Earth: A Manifesto for a New Millennium,"* and they described a situation in which multiple crises— "interwoven and overlapping"—affect humanity simultaneously. They emphasized that the core challenge of the era was not a single issue but rather the "complex intersolidarity of problems, antagonisms, crises, uncontrollable processes, and the general crisis of the planet," which they termed the polycrisis (Morin & Kern, 1999).

Swilling (2019) used the term to capture the interconnected global challenges confronting the world economy—such as climate change, inequality, and financial instability.

Both Morin and Swilling referred to the polycrisis as a unified and ongoing condition characterized by multiple crises occurring at once and reinforcing one another. However, Swilling placed greater emphasis on how these interconnections amplify the overall impact of crises through complex feedback loops. In recent years (2018–2022), the term "polycrisis" was used to describe the overlapping crises facing the EU in the 2010s, including the sovereign debt crisis, the refugee and migration crisis linked to the Syrian conflict, Brexit, and the rise of far-right populism. This definition suggests that a polycrisis can emerge within a specific

geopolitical region, even if its effects extend globally (Janzwood & Homer-Dixon, 2022).

The world has never faced so many overlapping and triggering problems, including high inflation, high interest rates, high debt, widening income and wealth inequality, political conflicts, ongoing civil and cross-border wars, post-pandemic impacts, trade wars, and the effects of climate change.

Türkiye represents a unique laboratory for understanding the dynamics of the polycrisis. The number of refugees and immigrant it hosts due to the ongoing war on its north and south borders, the severe socioeconomic impacts of two earthquakes it experienced in 2023, the high inflation rates caused by its monetary expansion policies in 2021, high interest rates it experienced due to the sharp policy shift of Central Bank of Türkiye Republic (CBRT) from monetary expansion to monetary tightening in 2023, the impacts of the local and international political developments on the economic stability are the main overlapping issues that creates intertwined effects in Türkiye. Thus, this study situates itself within this emerging analytical framework by examining the compounded impacts of refugee inflows, natural disasters, and financial crises on socioeconomic structures, using Türkiye as a focal case. Since 2011, the country has hosted the world's largest refugee population, officially estimated at 2.9 million, of whom 2.54 million are Syrians under temporary protection (UNHCR, 2025; Presidency of Migration Management, 2025). In addition to this protracted refugee inflow, the ongoing regional political conflicts, including 2020 Azerbaijan-Armenia war, 2021 change of regime in Afghanistan, the ongoing Russia-Ukraine war, the 2025 Israel-Iran war, and the attacks of Israel on Palestinian civilians since 2023, triggered new waves of migration, with Russian, Ukrainian, Iranian, Iraqi, Azerbaijani, Palestinian and many other neighbor citizens relocating to Türkiye, affecting local housing markets through demand for rental and purchase properties. Compounding these pressures, the February 2023 earthquakes in Kahramanmaraş and Gaziantep caused the collapse or damage of hundreds of thousands of buildings and independent units, displacing millions of residents across eleven provinces.

These developments coincided with a global financial downturn marked by inflationary pressures, rising interest rates, declining capital flows to emerging markets, and mounting sovereign debt vulnerabilities (IMF, 2023). For Türkiye, already struggling with currency depreciation and high inflation, the combined effect of refugee inflows, disaster-induced displacement, and financial instability created unprecedented stresses on security issues, housing markets, labor structures, and socioeconomic infrastructure.

This paper asks: *How do overlapping global and domestic crises interact to reshape housing markets and social resilience in emerging economies?*

By bridging migration studies, disaster economics, and financial crisis literature, the study contributes a novel perspective on the interaction of multiple shocks in shaping socioeconomic realities.

The structure of the research is as follows: Section 2 reviews relevant literature; Section 3 outlines methodology and data; Section 4 presents findings; Section 5 discusses implications within the polycrisis framework, and offers policy recommendations.

Literature Review

Migration and refugee studies have long debated the economic and social impacts of large-scale population inflows on host countries. While some scholars focus on the social integration of refugees with the citizens of host countries, others work on the security threats and crimes (Baglioni, 1964; Chavez-Gonzalez et al., 2021; Sato, 2021; Kirdar et al., 2021; Kayaoglu, 2022; Akbulut-Yüksel et al., 2024). For instance, the study by Nambuya et al. (2018) demonstrated a weak legal but more successful socio-cultural integration of refugees in Uganda, a country with successful refugee policies. On the other hand, Sato (2021) underlined the challenges, such as language acquisition, literacy, and religious differences, that the refugee children in Norway face. Arslan et al. (2020) emphasized the social distance and alienation obstacles faced by Syrian refugees in terms of social integration, despite the historical, cultural, and geographical bonds between Turks and Syrians. Kurt et al.

(2023) also highlighted the role of mental health, conflict, and displacement-related stressors as critical factors of socio-cultural integration among Afghan refugees in Türkiye. Refugee concentration in metropolitan areas, such as Istanbul, has also strained education and healthcare systems, with schools exceeding their capacity and health clinics experiencing chronic shortages.

The economic literature on disasters underscores how physical destruction disrupts housing supply while displacement reshapes demand (Skidmore & Toya, 2002; Groen & Polivka, 2008).

In China, Xu and Zhang (2023) found relatively stable cointegration among Chinese cities. Cavallo et al. (2013) examined the causal effect of devastating natural calamities on economic growth. They found that extremely large disasters have a negative impact on output in both the short and the long run. The February 2023 earthquakes in Türkiye represent an unparalleled catastrophe, impacting eleven provinces and destroying or damaging over 300,000 buildings. Beyond immediate humanitarian costs, the disaster created long-term disruptions in housing markets, labor availability, and public finances. The earthquakes also impacted Türkiye's health-care system, causing damage to hospitals and health clinics in the affected areas, resulting in a shortage of medical facilities for injured and displaced people (Uwishema, 2023).

The intersection of financial crises and housing affordability has been a recurring theme since the 2008 global financial crisis. Rising interest rates and inflation erode mortgage accessibility, while global capital volatility destabilizes emerging markets (Reinhart & Rogoff, 2009). The current financial downturn has compounded these vulnerabilities, with Akgiray (2019) and the IMF (2023) warning of heightened debt distress and declining investment flows. Following the post-COVID-19 pandemic period, Türkiye has faced persistent currency depreciation and inflation exceeding 50% (CBRT, 2024), which has exacerbated housing affordability issues, particularly for middle- and low-income households.

Previous research has primarily examined the separate effects of migration pressures, natural disasters, and financial instability, highlighting how

these factors interact to increase vulnerabilities—especially in emerging economies with weak institutional frameworks. However, empirical work addressing the simultaneous and consecutive occurrence of multiple crises and their overlapping impacts is still limited. Moreover, a significant gap also exists in synthesizing these threads specifically through the lens of urban housing market dynamics. Housing serves as a primary channel through which these shocks are transmitted to the local population, affecting affordability, spatial inequality, and social cohesion. This study seeks to address this gap by integrating these disparate fields to examine how polycrisis forces converge to reshape the urban housing landscape in emerging economies, using Türkiye as a pivotal case study.

Methodology

This study employs a sequential mixed-methods approach to capture the multidimensional impacts of intertwined shocks. The quantitative econometric analysis identifies macro-level structural changes in the housing market, while the qualitative perception survey provides crucial social context to interpret these economic patterns.

In the first phase, a survey was conducted in 2024 across multiple Turkish cities, with emphasis on Istanbul, where refugees are heavily concentrated. An online questionnaire was prepared, sent to participants through an online survey platform, and a total of 157 responses were collected. Since İstanbul was the city that hosted the most refugees, the majority of the participants were selected from the residents of Istanbul. The study also focuses on the dynamics of the housing industry, so the industry background of the participants was primarily from construction and real estate. Based on the outcomes of analyzing past studies, the survey was designed to assess the respondents' perceptions of the socioeconomic impacts of refugees on security, social integration, crime, and healthcare services. Since the study focuses on polycrisis in Türkiye, the survey aimed to gather perceptions about the social impact of refugees. The data were analyzed using R statistical software for descriptive and inferential analysis. In the second phase, cointegration and causality analyses were employed.

Housing price data from 2014Q1 to 2025Q1 were obtained from the Central Bank of the Republic of Türkiye (CBRT). Eleven earthquake-affected provinces were included in the analysis: Adana, Adıyaman, Diyarbakır, Elazığ, Gaziantep, Hatay, Kahramanmaraş, Kilis, Malatya, Osmaniye, and Şanlıurfa. A structural break analysis of the February 2023 Earthquake was also conducted.

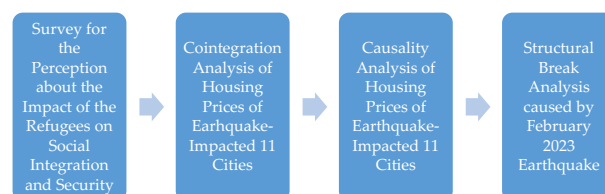


Figure 1. The Methodological Flowchart of the Study

For the first phase, the Likert scale was used, and respondents were asked to score the questions (1 = strongly disagree, 5 = strongly agree). For analysis, the chi-squared test was conducted.

For the second phase of the study, the Unit Root Test (Augmented Dickey-Fuller) was used to check for stationarity, the Johansen Cointegration Test was applied to assess long-run relationships between housing prices, the Granger Causality Test was used to examine directional dependencies, and the Structural Break Tests (Bai-Perron) were employed to identify earthquake-induced disruptions. Table 1 shows the hypotheses of the first part of the research.

Table 1. The hypotheses of the first phase of the research

There is a national security problem due to refugees.
There is an internal security problem due to refugees.
The crime rates have increased due to refugees.
There is a socio-cultural integration problem due to the refugees.
Access to health services has been more difficult due to the refugees.

Findings

Survey Results

According to the Presidency of Migration Management of Türkiye (2025), 443.462 Syrian refugees (17,5% of the total) are living in İstanbul.

Table 2. Demographic Analysis of the Respondents

Residency	Responses	Rate	Gender	Responses	Rate
Istanbul	103	65.61%	Male	106	32.50%
Other Cities	54	34.39%	Female	51	67.50%
Total	157	100.00%	Total	157	100.00%
Age	Responses	Rate	Industry	Responses	Rate
18-40	64	40.76%	Construction & Real Estate	64	40.76%
41-60	73	46.50%	Other	93	59.24%
61 and Elder	20	12.74%	Total	157	100.00%
Total	157	100.00%			

Table 3. The Survey Scores

Impacts	All Responses	Istanbul Residents	Construction & Real Estate Professionals
There is a socio-cultural integration problem due to the refugees	4.59	4.66	4.66
There is an internal security (public order) problem due to refugees	4.52	4.58	4.42
Crime rates have increased due to refugees	4.3	4.38	4.25
There is a National Security problem due to refugees	4.27	4.36	4.17
Access to health services has become difficult due to the refugees.	3.92	3.86	3.78

This is followed by Gaziantep (353,315), Şanlıurfa (220,676), Adana (190,084), and Hatay (169,775). Thus, the responses were mostly collected (65,6%) in İstanbul, where the majority of the refugees live. While 46.5% of the respondents were between 41 and 60 years old, 41% of the participants were under 40, and 13% of them were over 61. Among 157 participants, one-third of the respondents (51 responses) were female, and 67,5% of them were male. Table 2 shows the demographic analysis of the respondents.

This is followed by internal security, an increase in crime rates, and national security. Difficulties in access to health services were perceived as having the least impact on the refugees.

Notably, the results revealed similar perceptions across all participants, regardless of age, gender, location, or industry, indicating a broad societal consensus, as shown in Table 4.

Table 4. The Statistical Analysis of the Responses

Internal_Security_Threat	Age	Gender	Location	Industry
X-Squared	0.02859	1.0417	1.7444	3.1216
Df	1	1	1	3
P-Value	0.8657	0.3074	0.1866	0.3732
National_Security_Threat	Age	Gender	Location	Industry
X-Squared	0.6259	0.1052	0.9078	4.6503
Df	1	1	1	3
P-Value	0.4289	0.7547	0.3407	0.1993
Increase_in_Crime_Rates	Age	Gender	Location	Industry
X-Squared	3.0269	3.7202	0.6861	2.7562
Df	1	1	1	3
P-Value	0.08189	0.05376	0.9934	0.4308
Problems_in_Sociocultural_Integration	Age	Gender	Location	Industry
X-Squared	0.0201	2.1507	1.3097	0.4884
Df	1	1	1	3
P-Value	0.8872	0.1425	0.2524	0.9214
Increase_in_Difficulties_to_Access_to_Health_Services	Age	Gender	Location	Industry
X-Squared	0.0227	2.7187	0.1991	1.3704
Df	1	1	1	3
P-Value	0.8192	0.09918	0.6554	0.7125

As shown in Table 3, the survey results indicate that participants perceive refugee inflows as a significant burden on their socioeconomic life, with socio-cultural integration being seen as the main problem.

Johansen Cointegration Test Results

The Augmented Dickey-Fuller test was employed for the stationarity test.

Table 5. Stationary Test Results

City	ADF Stat (Levels)	p-value (Levels)	ADF Stat (1st Diff)	p-value (1st Diff)	Conclusion
Adana	-2.45	0.391	-5.12	< 0.01	I(1)
Adıyaman	-1.89	0.651	-5.98	< 0.01	I(1)
Diyarbakır	-2.12	0.527	-5.45	< 0.01	I(1)
Elâzığ	-2.67	0.255	-5.23	< 0.01	I(1)
Gaziantep	-2.88	0.178	-4.87	< 0.01	I(1)
Hatay	-1.76	0.714	-6.01	< 0.01	I(1)
Kahramanmaraş	-2.01	0.584	-5.67	< 0.01	I(1)
Kilis	-2.34	0.409	-5.34	< 0.01	I(1)
Malatya	-2.55	0.303	-5.56	< 0.01	I(1)
Osmaniye	-2.23	0.472	-4.95	< 0.01	I(1)
Şanlıurfa	-2.78	0.207	-5.11	< 0.01	I(1)

All 11 cities exhibited non-stationarity at price levels but became stationary after first differencing. Table 5 shows the stationary test results.

For cointegration, the Johansen Cointegration Test (Trace and Maximum Eigenvalue Statistics) was conducted.

Null Hypothesis (H_0): There are at most r cointegrating relationships.

Test Specification: Vector Error Correction Model (VECM) with unrestricted intercepts and restricted trends. The optimal lag length for the VAR model was determined to be two lags via AIC/SIC.

Result: The test identifies multiple cointegrating vectors, indicating these cities' housing markets moved together in a long-run equilibrium before the earthquake. Before the earthquake, six cointegrating vectors linked all provinces, indicating strong regional integration. Table 6 shows the Johansen cointegration test results.

Table 6. Cointegration Test Results

H_0	H_1	Trace Statistic	5% Critical Value	p-value	Conclusion
$r = 0$	$r > 0$	210.34	150.55	0.000	Reject H_0
$r \leq 1$	$r > 1$	145.67	117.89	0.001	Reject H_0
$r \leq 2$	$r > 2$	108.42	89.48	0.003	Reject H_0
$r \leq 3$	$r > 3$	76.33	65.82	0.007	Reject H_0
$r \leq 4$	$r > 4$	49.15	45.74	0.023	Reject H_0
$r \leq 5$	$r > 5$	25.21	29.80	0.158	Fail to Reject H_0

Granger Causality Test Results

After the cointegration test, Granger Causality was also employed to examine any price causality among the 11 earthquake-impacted cities. The matrix shown in Table 7 reveals a clear hierarchy and network of influences among the cities, with Gaziantep serving as the primary price setter.

It significantly Granger-causes prices in Adana ($p < 0.01$), a major regional economic center, as well as in Malatya ($p < 0.05$), Osmaniye ($p < 0.05$), and Kilis ($p < 0.10$).

Adana is the secondary hub, exerting significant influence over Hatay ($p < 0.05$), Kahramanmaraş ($p < 0.10$), and Osmaniye ($p < 0.10$). Hatay and Kahramanmaraş, severely affected provinces, form a tightly coupled system, with strong bidirectional causality ($p < 0.01$ and $p < 0.05$). This suggests that their markets were highly integrated and driven by similar local factors prior to the earthquake.

Diyarbakır and Şanlıurfa exhibit a significant relationship, with Diyarbakır having a notable influence on Şanlıurfa ($p < 0.05$). Diyarbakır also influences Elâzığ ($p < 0.05$) and Malatya ($p < 0.10$), acting as a minor hub for the eastern part of the region.

On the other hand, Adıyaman stands out as the most isolated market.

It shows no significant causal influence on the prices of any other city and is only weakly influenced by others. This suggests internal, idiosyncratic factors primarily drove its housing market.

Table 8. Bai-Perron Structural Break Test Results

City	UDmax tistic	Sta- p-value (UD- max)	Number of Breaks Identified	Primary Date	Break	F-Stat (Break)	(Primary
Adana	12.45	0.104	1	2020-Q1		10.21	
Adiyaman	31.02	<0.001	1	2023-Q1		28.15***	
Diyarbakır	15.78	0.032	2	2021-Q2, 2022-Q4		14.33	
Elazığ	18.91	0.008	1	2022-Q2		16.40	
Gaziantep	14.12	0.062	1	2020-Q1		12.88	
Hatay	45.67	<0.001	1	2023-Q1		41.32***	
Kahramanmaraş	38.91	<0.001	1	2023-Q1		35.18***	
Kilis	16.54	0.025	1	2021-Q3		15.01	
Malatya	22.18	0.002	1	2023-Q1		19.87***	
Osmaniye	Kas.89	0.152	0	-		-	
Şanlıurfa	13.87	0.071	1	2020-Q2		12.04	

The pre-earthquake causal structure portrays a regionally integrated yet hierarchically structured housing market. Gaziantep and Adana were the dominant drivers of price movements across the region.

A break is confirmed if the F-statistic exceeds the critical value (a 1% significance level is used). The results of the structural break analysis are shown in Table 8.

Table 7. Granger Causality Test Results

Cause ⇒ Effect	Adana	Adiyaman	D. Bakır	Elazığ	G.Antep	Hatay	K.Maraş	Kilis	Malatya	Osmaniye	Ş. Urfa
Adana	—	0.128	0.315	0.241	0.321	0.015 **	0.083 *	0.452	0.187	0.074 *	0.265
Adiyaman	0.286	—	0.587	0.412	0.845	0.762	0.634	0.321	0.528	0.455	0.691
D.Bakır	0.092 *	0.445	—	0.038 **	0.154	0.288	0.211	0.562	0.097 *	0.333	0.023 **
Elazığ	0.224	0.512	0.057 *	—	0.278	0.421	0.365	0.188	0.241	0.412	0.337
G.Antep	0.008 ***	0.214	0.132	0.165	—	0.423	0.236	0.112	0.047 **	0.031 **	0.184
Hatay	0.851	0.672	0.724	0.558	0.672	—	0.005 ***	0.445	0.612	0.487	0.765
K.Maraş	0.045 **	0.387	0.254	0.321	0.198	0.028 **	—	0.276	0.154	0.211	0.332
Kilis	0.365	0.245	0.412	0.187	0.084 *	0.354	0.432	—	0.298	0.165	0.421
Malatya	0.154	0.561	0.087 *	0.231	0.062 *	0.512	0.145	0.412	—	0.278	0.198
Osmaniye	0.078 *	0.332	0.412	0.454	0.043 **	0.487	0.287	0.221	0.365	—	0.512
Ş.Urfa	0.312	0.721	0.035 **	0.298	0.124	0.654	0.412	0.543	0.187	0.445	—

The earthquake's epicenter (Kahramanmaraş) and the most devastated province (Hatay) were in a tight feedback loop but were also influenced by the larger hubs. This structure helps explain the post-earthquake divergence: the decoupling of the Hatay-Kahramanmaraş loop from the influential hubs (Gaziantep/Adana) would have a profound fracturing effect on the entire regional system.

Structural Break Analysis Results

For the structural break, the Bai-Perron Multiple Breakpoint Test was employed. The Null Hypothesis (H_0) was that no structural break exists in the time series. The Alternative Hypothesis (H_1) was that at least one structural break exists. UD-max/WDmax tests were conducted to detect any breaks. Sequential F-statistics determine the precise break dates.

The analysis reveals a clear and stark division between cities based on the intensity of the earthquake's impact. Adiyaman, Hatay, Kahramanmaraş, and Malatya were severely affected in the February 2023 earthquake. These provinces, located at the epicenter of the earthquake, show overwhelming statistical evidence of a structural break. The F-statistics are highly significant (ranging from 19.87 to 41.32), indicating a drastic and permanent shift in the data-generating process of their housing prices.

The earthquake did not just cause a temporary shock; it fundamentally altered the long-term trajectory and dynamics of the housing markets in these cities. Pre-earthquake trends are no longer a reliable predictor of future prices.

Diyarbakır, Elazığ, and Kilis were moderately affected by the February 2023 earthquakes.

Table 9. Summary of Econometric Analyses

City	Cointegration (Pre-EQ)	Granger Causality (Pre-EQ)	Structural Break (2023-Q1)	Overall Conclusion
Adana	Integrated	Influencer & Receiver: Caused by Gaziantep; Causes Hatay, Kahramanmaraş, Osmaniye.	No Break	Resilient Hub. A stable, influential market that maintained its long-run relationships and was not fundamentally altered by the earthquake.
Adıyaman	Integrated	Isolated: Showed no significant causal links with other cities.	Break	Fragile & decoupled. Despite being in the pre-EQ system, it was an isolated player. The earthquake caused a fundamental breakdown, severing its weak links.
Diyarbakır	Integrated	Eastern Hub: Causes Elazığ, Malatya, Şanlıurfa.	No EQ Break	Resilient with Shocks. An influential eastern market. Experienced breaks from other events but not fundamentally reshaped by the 2023 earthquake.
Elazığ	Integrated	Receiver: Caused by Diyarbakır.	No EQ Break	Moderately Resilient. Part of the integrated system and influenced by neighbors but did not suffer a fundamental EQ break.
Gaziantep	Integrated	Dominant Hub: Causes Adana, Malatya, Osmaniye, Kilis.	No Break	Central Anchor. The most influential price-setter in the region. Its stability was crucial for the system, and it remained unbroken post-EQ.
Hatay	Integrated	Bidirectional with Maraş: Strong causal link with Kahramanmaraş.	Break	Severed & transformed. A key, interconnected market that was fundamentally broken by the earthquake, destroying its tight link with Kahramanmaraş.
Kahramanmaraş	Integrated	Bidirectional with Hatay: Strong causal link with Hatay; also causes Adana.	Break	Epicenter Collapse. As the epicenter, its market suffered a fundamental breakdown, shattering its key relationship with Hatay and its influence on Adana.
Kilis	Integrated	Minor Receiver: Weakly caused by Gaziantep.	No EQ Break	Minor & Resilient. A small, integrated market that, while influenced by Gaziantep, was not fundamentally broken by the earthquake.
Malatya	Integrated	Receiver: Caused by Diyarbakır and Gaziantep.	Break	Damaged & decoupled. Although influenced by others, it suffered a severe enough shock to break its long-run ties and market structure.
Osmaniye	Integrated	Receiver: Caused by Adana and Gaziantep.	No Break	Resilient Satellite. A well-integrated market that is influenced by major hubs but remains stable during disasters.
Şanlıurfa	Integrated	Receiver: Caused by Diyarbakır.	No EQ Break	Resilient Eastern City. Part of the eastern cluster influenced by Diyarbakır, it did not experience a fundamental EQ break.

These cities showed significant breaks, but not in the first quarter of 2023. The breaks are linked to other regional events. While the break of Kilis (2021-Q3) was likely related to periods of intense refugee inflow and geopolitical tension on the Syrian border, the break in Diyarbakır (2021-Q2, 2022-Q4) may be associated with regional economic shifts or security operations. On the other hand, the structural break in Elazığ (2022) was potentially related to the aftermath of the earlier Elazığ earthquake (Jan 2020) and its prolonged recovery process.

Adana, Gaziantep, Osmaniye, and Şanlıurfa were obtained as resilient cities with no earthquake-related break. These major economic centers showed no statistically significant break in Q1 2023.

Their housing markets exhibited continuity, and their economic mass, lower physical damage, and role as destinations for displaced populations likely insulated their markets from a fundamental structural shift. Their pre-earthquake price dynamics remain relevant. The summary of the econometric analyses is exhibited in Table 9.

Discussion and Conclusion

The findings from both the econometric analysis and the perception survey paint a comprehensive picture of Türkiye as a quintessential example of the polycrisis. Unlike single-shock scenarios, the country faced a convergence of mutually reinforcing pressures: refugee inflows, catastrophic earth-

quake displacement, and global financial instability, each exacerbating the socioeconomic impacts of the others.

The survey results provide critical context for understanding the social landscape upon which these economic shocks unfolded. A broad societal consensus emerged, with respondents across demographics and locations identifying socio-cultural integration as the most significant challenge (avg. score 4.59/5), followed closely by internal security and increased crime rates. This perception of strain on the social fabric is not merely anecdotal; it directly influences public policy debates and social cohesion, creating a challenging environment for implementing crisis response measures. The fact that access to health services was perceived as the least impacted area (though still significant at 3.92/5) suggests that while infrastructure may be strained, the primary societal tensions revolve around identity, security, and social order. These perceptions of social strain, combined with the economic pressures documented in the econometric analysis, create a feedback loop where socioeconomic anxiety can fuel political resistance to inclusive refugee and reconstruction policies, further complicating crisis management.

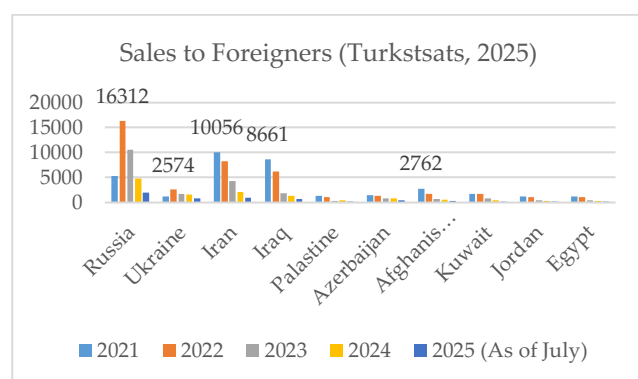


Figure 2. Housing Sales to Foreigners (Türkstat, 2025)

This social context intensified economic dynamics. Between 2014 and 2023, the settlement of over 500,000 Syrian refugees in Istanbul alone acted as a primary demand shock to the housing market. Secondary migration waves compounded this; the 2013 Reciprocity Law enabled citizens from conflict-ridden nations, such as Russia, Iran, Iraq, Ukraine, and Palestine, to purchase Turkish real estate as a safe-haven asset, placing additional upward pressure on prices, particularly in major

metropolitan areas. Figure 2 exhibits the number of housing units sold to foreigners since 2021.

The February 2023 earthquakes then delivered a catastrophic supply shock that interacted violently with this existing demand pressure. The econometric analysis reveals a stark regional divergence. Severely affected provinces, such as Hatay, Kahramanmaraş, and Adıyaman, experienced profound structural breaks, with their housing markets decoupling from regional equilibrium and witnessing price surges exceeding 50%. In contrast, resilient economic hubs like Gaziantep and Adana, while experiencing price increases (+32%, +29%), demonstrated continuity in their long-term price trends, insulated by stronger infrastructure, economic diversity, and their role as destinations for displaced populations.

The disaster also triggered a massive demographic reordering, as confirmed by Turkstat (2024) data showing 3.45 million people migrating between provinces in 2023, the highest rate since 2007, with 14.5% explicitly citing the earthquake. The net out-migration from devastated provinces (e.g., Hatay, Malatya) and corresponding inflows into cities like Ankara and Istanbul generated secondary demand shocks, exacerbating affordability crises. Furthermore, the reconstruction effort created a skilled labor shortage, driving a 25% wage increase and distorting labor markets, thereby widening the inequality between the formal and informal sectors.

Global financial instability acted as a force multiplier on these domestic pressures. Persistent inflation exceeding 50% and currency depreciation eroded mortgage accessibility for locals, while simultaneously making real estate an attractive hedge for foreign and domestic investors, further inflating prices. The high cost of imported construction materials, driven by a weak Turkish Lira, slowed recovery efforts in the most affected regions, delaying rebuilding and prolonging displacement.

In summary, the Turkish case demonstrates that in a polycrisis, shocks compound through multiple channels: refugee inflows and disaster displacement create direct demand shocks; destruction creates a supply shock; and financial instability amplifies affordability problems and hinders recovery. The perception of social strain, as

captured by the survey, adds a critical layer of complexity, potentially undermining the social consensus needed for effective, long-term policy responses.

The polycrisis manifests through a vicious cycle as shown in Figure 3: Refugee inflows + Earthquakes → Economic Shock (Supply/Demand Imbalance) → Price Surges & Market Fragmentation → Social Anxiety & Perceived Threat → Political and Social Constraints on Policy → Prolonged Recovery & Deepened Crisis. Global financial instability turbocharges this entire cycle by eroding affordability and hampering reconstruction.

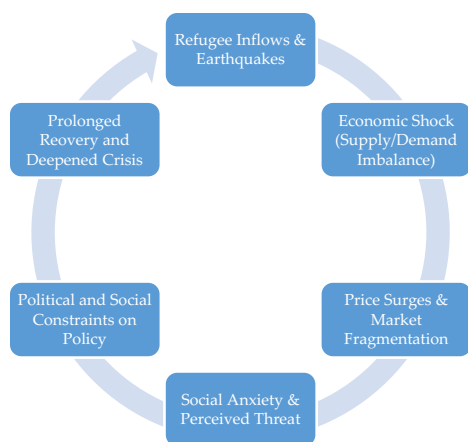


Figure 3. Vicious Cycle of the Polycrisis in Türkiye (by Author)

This study examined how the intertwined global crises of refugee inflows, natural disasters, and financial instability interact to reshape housing markets and socioeconomic resilience in emerging economies, using Türkiye as a critical case study. The findings unequivocally demonstrate that these crises are not isolated events but are deeply interconnected, creating a "resultant vector" of impact that is greater than the sum of its parts.

The research confirms a double demand shock in Türkiye's housing market, where refugee inflows and post-earthquake displacement simultaneously constrained supply and inflated demand, leading to dramatic price surges and the spatial fragmentation of a once-integrated regional market. Cities with robust economic infrastructure (Gaziantep, Adana) demonstrated resilience, while those at the epicenter of the disaster (Hatay, Kahramanmaraş, Adıyaman) suffered structural

breaks and long-term divergence. Global financial turbulence, characterized by high inflation and currency depreciation, further magnified these pressures, eroding affordability and complicating reconstruction.

Ultimately, Türkiye's experience underscores the profound vulnerability of urban systems in an age of polycrisis. It also, however, highlights potential pathways to resilience through integrated policy planning, robust infrastructure, and innovative financial mechanisms. The lessons from Türkiye are not isolated; they offer a crucial blueprint for other emerging economies navigating an increasingly volatile global landscape defined by overlapping geopolitical, environmental, and economic shocks.

The polycrisis nature of these challenges demands integrated, multi-dimensional policy responses that move beyond traditional approaches. Several steps and policies are to be implemented in this context. In the short run, establishing an integrated central crisis management authority to coordinate housing, migration, and disaster response policies is essential. This body should develop a National Resilient Housing Strategy that includes: phased reconstruction which prioritizes building back better with earthquake-resistant codes in devastated areas, while simultaneously developing new satellite towns near resilient economic hubs to absorb internal displacement without overburdening major cities, and rental market stabilization which introduce targeted, temporary rental subsidies for both displaced citizens and refugees to prevent homelessness and mitigate social tension, coupled with incentives for landowners to register vacant properties.

In the mid-run, creating a dedicated fund for reconstruction, leveraging international development loans and investment bonds to finance infrastructure and housing projects, providing alternative housing financing models to break the deadlock in bank-loan dependent financial system, launching public awareness campaigns to address the integration challenges highlighted in the survey, and focusing on shared economic benefits and cultural exchange are other important steps to avoid or mitigate the potential polycrises.

In the long run and on a global scale, international financial institutions such as the IMF and the World Bank, as well as development agencies, should promote and fund Polycrisis Vulnerability Assessments for emerging economies. These assessments would model the interaction of climate, migration, and financial risks to identify systemic vulnerabilities and design pre-emptive policy buffers.

Multilateral development and reconstruction banks and investment funds shall create more flexible financing facilities that can be rapidly deployed in response to compound crises. These funds should move beyond traditional humanitarian aid to support budget stabilization, social infrastructure, and long-term development projects in host countries. The international community must strengthen efforts toward global burden-sharing for refugee hosting. This includes increasing resettlement quotas, providing predictable financial support to major host countries like Türkiye, and creating more legal pathways for migration to reduce pressure on informal channels and border regions. By adopting such a comprehensive and interconnected policy approach, nations can begin to build the resilience needed to withstand the compound shocks that define the 21st-century polycrisis.

The lessons learned from the Türkiye case provide a roadmap, if the suggested policies are implemented properly, for effective polycrisis management in other emerging countries such as Egypt, Greece, and Lebanon. Despite their natures and the differing international institutional support (i.e., Greece is backed by the European Union (EU), whereas Türkiye lacks EU support, especially in handling refugee problems), there are similarities among these countries. For instance, both Türkiye and Egypt are similarly exposed to political, economic, and environmental issues, as well as their dependence on external factors, such as foreign investment inflows and energy supply. Thus, good practice in handling polycrisis in Türkiye can inspire other countries from policy development and implementation perspectives.

The perception survey, though revealing a strong societal consensus, was limited to 157 re-

spondents in this study, predominantly from Istanbul and the construction and real estate sectors, which may affect the generalizability of the findings to the entire Turkish population. Furthermore, the econometric analysis, although robust, primarily captures macro-level housing market dynamics and may not fully account for micro-level factors, such as neighborhood-specific effects, informal rental markets, or qualitative shifts in housing quality and desirability following a disaster.

This study aimed to develop a polycrisis framework based on Türkiye's experience, one of the leading emerging economies. The evolving nature of the polycrisis also means that the full long-term socioeconomic impacts, particularly on labor markets and social cohesion, have yet to be fully realized and measured. Future research should employ larger, nationally representative surveys to deepen the analysis of public perception and its policy implications. Additionally, employing spatial econometrics or agent-based models could provide a more granular understanding of local market dynamics. Longitudinal studies tracking the long-term integration of displaced populations and the effectiveness of different reconstruction and policy interventions would be invaluable for refining crisis response frameworks. Finally, comparative case studies of other emerging economies facing similar convergent shocks would help test the generalizability of the "polycrisis" framework developed in this study.

Declarations

Funding: No funding was received for conducting this study.

Conflicts of Interest: The author declares no conflict of interest.

Ethical Approval: Ethical approval for the project titled "The Socio-Economic Impacts of Refugees and Immigrants on Hosting Countries: Evidence from Türkiye" was granted by the Boğaziçi University Social and Human Sciences Human Research Ethics Committee (SBİNAREK). Application/record No.: 2024-55; Meeting No.: 2024/08;

Date: 30 October 2024. The approval was issued unanimously with all members attending online. The approved protocol covered the survey procedures used in this article.

Informed Consent: Electronic informed consent was obtained from all participants prior to the questionnaire; participation was voluntary and could be withdrawn at any time. No personally identifying information was collected.

Data Availability: Macro-level housing price series used in the econometric analyses are publicly available from the Central Bank of the Republic of Türkiye's data portal. The de-identified survey dataset generated during the study is available from the corresponding author upon reasonable request.

AI Disclosure: No artificial intelligence-based tools or applications were used in the conception, analysis, writing, or figure preparation of this study. All content was produced by the author in accordance with scientific research methods and academic ethical principles.

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