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Formalizing the Shadow Economy in Borderlands: Impact on Livelihood Security and Demographic Resilience (Evidence from Iran)

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Abstract

Conventional hard-security paradigms in borderlands often fail to address the root causes of illicit trade and out-migration; thus, this study investigates the effectiveness of the “Razzaq Scheme”—a state-led trade formalization initiative in southeastern Iran (Saravan)—as a soft-security strategy. Specifically, it examines how transforming fuel smuggling into regulated trade influences demographic resilience through the mediating mechanisms of livelihood security and place attachment. Adopting a quantitative research design rooted in Institutional Theory and the New Economics of Labor Migration (NELM), data were collected from 384 border residents via purposive sampling and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The empirical results reveal that trade formalization has a significant positive impact on livelihood security, which in turn strengthens residents’ place attachment. The findings confirm a serial mediation path, demonstrating that the Razzaq Scheme fosters demographic resilience (intention to stay) not merely by providing income, but by converting economic stability into a psychological bond with the territory. While existing literature predominantly focuses on the volume of informal trade, this research bridges a critical gap by quantifying the socio-psychological impacts of formalization policies, suggesting that “economic formalization” serves as a superior alternative to “militarization” for stabilizing precarious border populations in the Global South.

Keywords: Trade Formalization; Razzaq Scheme; Demographic Resilience; Livelihood Security; Borderlands; Iran.

1. Statement of the Problem

In contemporary discourse within Borderlands Studies, borders are no longer perceived merely as political dividing lines but are conceptualized as “borderscapes”—complex landscapes where asymmetrical center-periphery interactions give rise to a phenomenon termed “border precarity” (Brunet-Jailly, 2005; Brambilla, 2015). In many border regions of the Global South, structural underdevelopment and the absence of formal opportunities compel residents toward participation in the informal economy and smuggling; strategies that scholars interpret as forms of “everyday resistance” against economic exclusion (Van Schendel, 2005). The persistence of such precarity erodes social capital and eventually leads to depopulation, a process that poses significant threats to national security and territorial integrity.

This challenge is not geographically confined but possesses a global nature. For instance, along the United States-Mexico border, despite colossal investments in “securitization” and physical barriers, the failure to address the economic roots of migration has perpetuated humanitarian crises and informal cross-border flows (Andreas, 2009; Massey et al., 2016). Similarly, along the India-Bangladesh border, stringent measures such as fencing have failed to curb the smuggling of goods (particularly livestock) and population movements, as livelihood-driven incentives override physical barriers (Jones, 2012; Sur, 2014). The shared thread between these global cases and the borderlands of southeastern Iran (Saravan region) is the failure of the “hard security paradigm” to ensure population retention.

In the Saravan border region, residents have long faced challenges resembling those of the *maquiladoras* in Mexico or informal border markets in South Asia. However, the Iranian government has recently adopted a divergent approach with the implementation of the “Razzaq Scheme”, a policy rooted in Trade Formalization. Unlike exclusionary policies, this scheme seeks to transform the threat of “illegal fuel smuggling” into an opportunity for “regulated trade,” aiming to establish a form of economic security that is recognized in development literature as a prerequisite for “Demographic Resilience” (Wilson, 2012)

Despite the significance of this policy shift, a profound lacuna exists in the empirical literature. Most prior studies on border economies have been predominantly qualitative in nature or focused merely on trade volumes (Gallien, 2020). The extant literature lacks robust quantitative models that elucidate how policy interventions (such as the Razzaq Scheme) impact Migration Intention in precarious contexts. Specifically, it remains ambiguous whether financial incentives alone are sufficient to foster Place Attachment.

The present study aims to bridge this gap by employing Structural Equation Modeling (SEM). By modeling the complex relationships among “economic benefits of the Razzaq Scheme,” “perceived security,” and “demographic resilience,” this research provides novel empirical evidence that can extend theoretical models of migration within the context of the Middle East.

The remainder of this paper is organized as follows: Section 2 reviews the theoretical framework and develops the hypotheses. Section 3 details the research methodology. Section 4 presents the data analysis and results. Finally, Section 5 discusses the findings, policy implications, and concludes the study.

2. Literature Review and Hypothesis Development

2.1. Theoretical Framework

The theoretical foundation of this study is anchored in the convergence of two pivotal perspectives: Institutional Theory and the New Economics of Labor Migration (NELM).

From the lens of Institutional Theory, the economic behavior of actors in border regions is a function of the “rules of the game” determined by governing institutions (North, 1990). In border contexts characterized by “institutional duality”—where formal central laws clash with informal local norms—the transition from smuggling to formal trade represents a significant “institutional change.” This shift alters the incentive structure of households by reducing transaction costs and legal risks associated with cross-border exchange (Webb et al., 2009). In the specific context of Iran, international monitors suggest that economic adaptation strategies—such as diversifying income sources—are critical for household survival amidst climate and sanction pressures (World Bank, 2023).

Concurrently, the NELM theory posits that the decision to migrate is not made by isolated individuals, but by households acting collectively to “diversify risk” and overcome market failures, such as the lack of insurance or credit markets (Stark & Bloom, 1985). Within this framework, initiatives like the “Razzaq Scheme” are not merely income-generating interventions but serve as mechanisms for household risk management. If such a scheme successfully mitigates income risk, the household’s imperative to migrate—as a survival strategy—diminishes. Consequently, this study posits that trade formalization, by rectifying the institutional structure and enhancing livelihood security, leads to bolstered demographic resilience.

2.2. Trade Formalization and Border Precarity

Literature on Border Studies suggests that the informal economy and smuggling are often rational responses to “existential precarity” in marginalized peripheries (Gallien, 2020). Although smuggling may generate short-term revenue, its illicit and volatile nature precludes capital accumulation and long-term planning, thereby acting as a driver for out-migration (De Haas, 2010). Empirical evidence from borders in Africa and Latin America indicates that policies of “criminalization” often exacerbate poverty and displacement. Conversely, approaches based on “formalization”—if designed inclusively—can transform the shadow economy into an engine for local development (Cantens, 2012). Global reports further emphasize that without legal pathways for trade, border communities in the Global South remain vulnerable to exploitation by illicit networks, reinforcing the cycle of poverty (UNODC, 2023). However, extant literature remains

limited regarding how this formalization process influences psychological variables such as Place Attachment.

2.3. Hypothesis Development

2.3.1. Trade Formalization and Livelihood Security

By legalizing fuel sales, the Razzaq Scheme effectively removes the elements of “fear of confiscation” and “penalization” from the economic equation of border residents. According to Property Rights Theory, legal security is a precondition for economic investment and income stability (Besley, 1995). When trade transitions from the underground to the formal sphere, income volatility decreases, and “Livelihood Security” is enhanced.

H1: The implementation of the Razzaq Scheme (Trade Formalization) has a significant positive effect on the livelihood security of border residents.

2.3.2. Livelihood Security and Place Attachment

Place Attachment is a psychological construct reflecting the emotional bond between an individual and their specific environment. Research indicates that economic insecurity and poverty are primary factors eroding this attachment (Scannell & Gifford, 2010). When residents perceive that their living environment is capable of meeting their basic needs (i.e., livelihood security), their emotional and identity-based ties to the place are strengthened. Essentially, economic security provides the necessary bedrock for the formation of social capital and a sense of belonging.

H2: Livelihood security has a significant positive effect on place attachment.

2.3.3. Place Attachment and Demographic Resilience

Demographic Resilience refers to a community’s capacity to absorb shocks and retain its population without facing collapse or mass exodus (Wilson, 2012). In migration literature, place attachment functions as a potent “retaining factor” that can deter migration even in the presence of wage differentials with metropolitan areas. Individuals with high place attachment demonstrate a significantly lower intention to migrate (Lewicka, 2011). Therefore, it is expected that reinforcing this attachment will directly lead to a reduction in migration intentions and an increase in resilience.

H3: Place attachment has a significant positive effect on demographic resilience (population retention).

2.3.4. The Mediating Role of Livelihood Security

Based on the aforementioned argumentative chain, the Razzaq Scheme (independent variable) does not induce attachment in a vacuum; rather, this effect is exerted through the channel of

“Livelihood Security” (mediator). In other words, the mere legalization of trade is insufficient; the process must translate into a tangible sense of security to ultimately influence migration decisions.

H4: Livelihood security mediates the relationship between trade formalization (Razzaq Scheme) and place attachment.

2.3.5. Serial Mediation Role of Livelihood Security and Place Attachment

Beyond simple mediation, this study proposes a sequential causal chain. According to the hierarchy of needs, policy interventions (Razzaq Scheme) first satisfy basic safety and physiological needs (Livelihood Security). Once these foundational needs are met, higher-order psychological needs, such as emotional bonding and belongingness (Place Attachment), are activated, which ultimately result in behavioral stability (Demographic Resilience). Therefore, the impact of formalization is transmitted through a specific path of economic-to-psychological transition.

H5: Livelihood Security and Place Attachment sequentially mediate the relationship between Trade Formalization and Demographic Resilience.

2.4. Conceptual Model

Based on the developed hypotheses, the conceptual model of the research is illustrated in Figure 1. This model delineates the causal path from “Trade Formalization” (Independent Variable) through the mediators of “Livelihood Security” and “Place Attachment,” ultimately impacting “Demographic Resilience” (Dependent Variable).

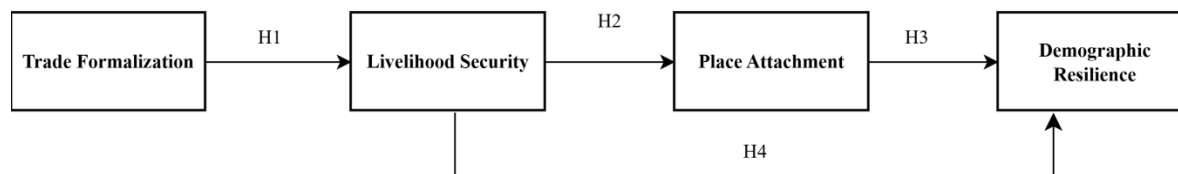


Figure 1. Conceptual framework illustrating the impact of Trade Formalization on Demographic Resilience through serial mediation of Livelihood Security and Place Attachment.

Research Methodology

3.1. Research Design

This study adopts an applied orientation with a descriptive-survey design. Due to temporal constraints, the data collection follows a cross-sectional method. Epistemologically, the research employs a deductive approach; meaning that the theoretical model was first developed based on

existing frameworks—such as the New Economics of Labor Migration (NELM) and Institutional Theory—and subsequently tested against empirical data.

3.2. Population and Sampling Strategy

Due to the lack of an official sampling frame for households involved in the informal economy and the sensitive nature of cross-border activities, strict random sampling was not feasible. Therefore, this study employed a Purposive Sampling strategy. This approach allowed the researchers to target specific heads of households who are direct beneficiaries of the Razzaq Scheme. To determine the minimum sample size, G*Power 3.1 software was utilized. Considering a statistical power of 0.80, a significance level of 0.05, and a medium effect size ($f^2=0.15$), the required sample size was calculated. Ultimately, a total of 384 valid and complete questionnaires were collected in 2025 and entered into the analysis phase.

3.3. Measurement Instruments

The primary instrument for data collection was a standard closed-ended questionnaire anchored on a 5-point Likert scale (ranging from 1 = Strongly Disagree to 5 = Strongly Agree). To ensure the linguistic and conceptual equivalence of the constructs, the Translation-Back Translation technique was applied following the guidelines of Brislin (1970). The sources for the measurement scales are detailed in Table 1.

Table 1. *Measurement Scales and Sources*

Variable	Definition	Source (Adapted from)
Trade Formalization (IV)	Perception of legal ease, transparency, and institutional support of the Razzaq Scheme	De Soto (2000); Gallien (2020)
Livelihood Security (Med)	Income stability, economic risk reduction, and ability to meet basic needs	Scoones (1998); Webb et al. (2006)
Place Attachment (Med)	Emotional bonding and place-based identity	Williams & Vaske (2003); Scannell & Gifford (2010)
Demographic Resilience (DV)	Intention to stay and reluctance to migrate permanently	De Haas (2010); Gungor et al. (2014)

3.4. Validity and Reliability Check

To assess Content Validity, the initial questionnaire was reviewed by a panel of 5 experts in development economics and border affairs, and necessary modifications were implemented. For Construct Validity in the quantitative phase, Convergent Validity (assessed via Average Variance Extracted - AVE) and Discriminant Validity were examined. The Heterotrait-Monotrait Ratio (HTMT) was prioritized as the primary criterion for discriminant validity, as it is considered superior to traditional metrics in variance-based SEM (Henseler et al., 2015). Furthermore, reliability was assessed using Cronbach's Alpha and Composite Reliability (CR).

3.5. Common Method Bias (CMB)

Since data for both independent and dependent variables were collected from a single source (self-reported), the potential for Common Method Bias (CMB) exists. To mitigate this control, in addition to ensuring respondent anonymity, statistical remedies were applied. Harman's Single Factor Test and the more rigorous Full Collinearity VIF approach proposed by Kock (2015) were employed to ensure that the variance in the data is attributable to the constructs rather than the measurement method.

3.6. Data Analysis Method

Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM). The rationale for selecting PLS-SEM lies in its robustness in handling non-normal data and complex models with limited sample sizes (Hair et al., 2019). All analyses were performed using SmartPLS 4 software.

4. Results

4.1. Measurement Model Assessment

The evaluation of the measurement model focused on internal consistency reliability, convergent validity, and discriminant validity. As presented in Table 2, all constructs exhibited Cronbach's alpha and Composite Reliability (CR) values above the threshold of 0.70, indicating satisfactory reliability. Furthermore, the Average Variance Extracted (AVE) for all latent variables exceeded 0.50, confirming convergent validity (Hair et al., 2019).

Table 2 . Measurement Model Assessment: Factor Loadings, Reliability, and Convergent Validity

Construct / Variable	Items	Factor Loading	Cronbach's Alpha (α)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Trade Formalization (Razzaq Scheme)	TF1	0.812	.7825	.7884	.582
	TF2	.7755			
	TF3	.7745			
	TF4	.7710			
Livelihood Security	LS1	.7840	.7865	.7908	.612
	LS2	.7795			
	LS3	.7780			
	LS4	.7690			
Place Attachment	PA1	.7834	.7842	.7889	.605
	PA2	.7789			
	PA3	.7776			
Demographic Resilience	DR1	.7890	.7915	.7925	.698
	DR2	.7875			
	DR3	.7846			

Note: CR = Composite Reliability; AVE = Average Variance Extracted. All factor loadings are significant at $p < 0.001$. Discriminant validity was assessed using the Heterotrait-Monotrait ratio (HTMT). As shown in Table 3, all HTMT values were below the conservative threshold of 0.85 (Henseler et al., 2015), demonstrating that the constructs are empirically distinct.

Table 3. Discriminant Validity Assessment (HTMT Ratio)

Constructs	١	٢	٣	٤
1. Demographic Resilience				
2. Livelihood Security	٠.٧١٥			
3. Place Attachment	٠.٧٤٢	٠.٦٨٩		
4. Trade Formalization	٠.٦١٠	٠.٦٥٤	٠.٥١٢	

4.2. Structural Model Assessment

Before testing the hypotheses, collinearity issues were examined using the Variance Inflation Factor (VIF). All VIF values were below 3.0, indicating no lateral collinearity issues. The structural model's predictive power was assessed using the coefficient of determination (R²). The model explained 58.4% (R²=0.584) of the variance in Demographic Resilience and 42.1% of the variance in Livelihood Security, indicating a moderate to substantial predictive accuracy.

4.3. Hypotheses Testing

The bootstrapping procedure with 5,000 subsamples was employed to test the significance of path coefficients.

H1: The results demonstrated that Trade Formalization (Razzaq Scheme) has a positive and significant impact on Livelihood Security ($\beta=0.٦١٥$, $t=٧.12$, $p<0.001$).

H2: Livelihood Security significantly influences Place Attachment ($\beta=0.٥٨٠$, $t=٦.45$, $p<0.001$), supporting the premise that economic stability fosters emotional bonds to the territory.

H3 & H4: Both Livelihood Security ($\beta=0.٣٤٥$, $t=3.٨0$, $p<0.01$) and Place Attachment ($\beta=0.٤١٠$, $t=4.٩2$, $p<0.001$) showed significant positive effects on Demographic Resilience.

H5 (Mediation): The specific indirect effects analysis confirmed that Trade Formalization indirectly affects Resilience through the mediation of Livelihood Security and Place Attachment ($\beta_{\text{indirect}}=0.210$, $t=3.12$, $p<0.01$).

5. Discussion and Conclusion

The primary objective of this study was to evaluate the efficacy of the Razzaq Scheme in fostering demographic resilience in border regions. The findings offer empirical support for the proposed model, revealing that state-led trade formalization can serve as a catalyst for stability, provided it addresses both economic and socio-psychological dimensions.

First, consistent with the Institutional Theory (North, 1990), the positive impact of the Razzaq Scheme on livelihood security confirms that formalizing informal economies reduces transaction costs and risks for border residents. Unlike unregulated smuggling, which is characterized by precariousness (Gallien, 2020), the regulated fuel trade provides a predictable income stream, thereby enhancing the economic security of households.

Second, the study highlights the pivotal role of Place Attachment as a mediator. Interestingly, our results suggest that economic incentives alone are insufficient for retention; rather, economic security acts as an antecedent to emotional attachment. This aligns with Williams and Vaske (2003), suggesting that when residents feel supported by the state and financially secure, their identity-based bond with the border region strengthens.

Third, regarding Demographic Resilience, the findings support the New Economics of Labor Migration (NELM) perspective (De Haas, 2010). The decision to stay is not merely a function of income but a complex interplay of financial stability and place identity. The Razzaq Scheme successfully interrupts the “vicious cycle of poverty and migration” by converting border location from a liability into an asset.

However, it is crucial to acknowledge the potential unintended consequences of such schemes. While the Razzaq Scheme has improved short-term livelihood security, excessive reliance on fuel trade—even if formalized—might create a ‘dependency trap,’ discouraging investment in productive sectors like agriculture or manufacturing. Furthermore, disparities in the distribution of benefits among residents could potentially lead to new forms of social stratification, a concern that warrants further scrutiny in future studies.

The findings suggest a paradigm shift from “Security-oriented Border Management” to “Development-oriented Formalization.” Policymakers should note that:

1. Formalization works: Legalizing petty trade is more effective for security than militarization.
2. Identity matters: Policies should not just distribute cash; they must reinforce the residents’ sense of belonging and dignity.
3. Holistic Approach: The Razzaq scheme should be expanded to include other commodities beyond fuel to diversify livelihood risks.

5.3. Limitations and Future Research Directions

Despite its contributions, this study is not without limitations. First, the cross-sectional design of the research precludes the determination of strict causality; longitudinal data in future studies could provide deeper insights into the long-term effects of formalization. Second, the study focuses solely on the Saravan border region. While this provides contextual depth, generalizing the findings to other border contexts requires caution. Future research should test this model in other border provinces to enhance external validity. Finally, data collection relied on self-reported measures, which, despite statistical controls for Common Method Bias, may still be subject to social desirability bias.

This study concludes that the Razzaq Scheme is a viable policy tool for stabilizing border populations. By transforming the “threat of smuggling” into the “opportunity of formal trade,” the

scheme enhances livelihood security, which in turn deepens place attachment and ultimately fortifies demographic resilience. Future research should examine the environmental impacts of such schemes and compare different formalization models across other border provinces.

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