When Does Compact Urban Development Attract High-Quality Foreign Direct Investment? A Configurational Analysis of Compact-Oriented Cities

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Abstract: This study investigates whether and under what conditions policy-driven compact urban development enhances a city's capacity to attract high-quality foreign direct investment (FDI). Moving beyond correlational accounts of density and investment, the paper conceptualizes compactness as a strategic urban policy intervention whose effects materialize through specific configurational pathways. Using Qualitative Comparative Analysis (QCA) across 25 compact-oriented cities in Vietnam and comparator regions, the study identifies multiple sufficient combinations linking compactness with human capital, agglomeration economies, accessibility, governance quality, land-market pressures, and environmental performance. The findings demonstrate that compactness alone is neither universally sufficient nor irrelevant; its effectiveness depends on conjunctural alignment with complementary structural and institutional conditions. By revealing asymmetric and equifinal causal patterns, the research advances urban–FDI theory and offers policy-relevant insights for cities seeking to leverage compact development to attract knowledge-intensive, value-adding, and sustainable investment.

Key words: *Compact city development, High-Quality foreign direct investment (FDI), Urban agglomeration and Human capital, Configurational causality, Qualitative comparative analysis (QCA)*

INTRODUCTION

Urban form and foreign direct investment (FDI) sit at the intersection of two of the most consequential processes shaping contemporary economic geography: rapid urbanization and the internationalization of production. Compact-city strategies policies that promote higher density, mixed land use, and transit-oriented development are advocated not only for environmental and social reasons but increasingly as instruments to enhance urban competitiveness and attract investment (Ahlfeldt & Pietrostefani, 2019; Uchida & Nelson, 2009). At the same time, multinational firms remain pivotal drivers of technological upgrading, employment quality, and integration into global value chains. This paper asks a focused and policy-relevant question: under what conditions does policy-driven urban compactness actually strengthen a city's capacity to attract high-quality FDI defined as investment that is knowledge-intensive, value-adding, and environmentally sustainable rather than merely coincide with it?

The empirical and theoretical literatures provide strong reasons to suspect a link, but they also point to important caveats. Agglomeration economics and new economic geography identify density, labor-market thickening, and proximity as engines of productivity and knowledge spillovers that should favor knowledge-seeking and service-oriented investment (Fujita, Krugman, & Venables, 1999; Woodward et al., 2016). Yet the observed relationship is heterogeneous: accessibility, institutional quality, housing and land costs, and sectoral requirements mediate

whether compactness becomes an asset or a liability (Hilber & Voicu, 2010; Dewita, 2018; Wang, 2022). Empirical work at national and city scales often conflates structural concentration with planned compactness, and faces persistent endogeneity problems since FDI itself reshapes urban form. These gaps suggest that simple correlations are insufficient for policy design: what matters are the mechanisms and the configurations of conditions that together produce desirable investment outcomes.

This paper positions itself to fill those gaps by combining configurational and case-based reasoning with comparative inference. Rather than treating compactness as a unidimensional predictor, I treat it as a policy-driven structural intervention whose effects emerge in conjunction with human capital, agglomeration economies, transport accessibility, regulatory quality, land-market conditions, and environmental performance. Methodologically, the study leverages Qualitative Comparative Analysis (QCA) implemented in TOSMANA to identify multiple causal configurations that are sufficient for attracting high-quality FDI, and complements set-theoretic inference with focused cross-city comparisons and in-depth case studies (e.g., Ho Chi Minh City and Hanoi) to trace mechanisms and temporal sequencing. This mixed design is deliberately tailored to the problem's configurational nature: it preserves the ability to identify multiple, asymmetric causal pathways while using triangulation to mitigate measurement and endogeneity concerns.

The specific research problem can be stated succinctly: does the implementation of compact-city policies causally affect the volume, composition, and qualitative characteristics of FDI at the city level, and if so, through which interacting conditions and spillover dynamics? To operationalize this question, the outcome of interest is **FDI_HIGH,** the city's capacity to attract knowledge-intensive, high value-added, and sustainable foreign investment while the causal conditions include COMPACT, HUMAN_CAP, AGGLOMERATION, TRANSPORT_ACCESS, REG_QUALITY, HIGH_LAND_COST, and ENV_QUALITY. The study asks not only whether compactness matters, but when it matters, for which sectors, and how governance and spatial-economic contexts alter its effects.

The paper proceeds as follows. After this introduction, I situate the argument within the international literature on compact urbanism and FDI and develop an integrated theoretical framework that links agglomeration economics, location theory, accessibility, and institutional moderation to expected outcomes. The methods section explains the focused-comparison logic, the QCA calibration strategy and case selection (Vietnamese and ASEAN comparator cities), and the complementary case-study and robustness checks, including DiD and synthetic-control supplements where appropriate. The results section presents the QCA solutions for both the presence and absence of high-quality FDI, interprets key configurations with reference to in-depth case evidence, and reports sensitivity analyses. The final sections synthesize findings into policy-relevant implications for compact-city planning and investment promotion, discuss limitations, and outline avenues for future research.

By reframing compactness as a policy intervention whose impact depends on specific, conjunctural conditions, this paper contributes to both urban economics and urban policy debates: it moves

beyond whether compactness correlates with investment to show how and under what configurations compact-city strategies can be harnessed to attract higher-quality, sustainable FDI.

LITERATURE REVIEW

The relationship between compact city development and foreign direct investment (FDI) has attracted growing scholarly attention within urban economics, international economics, and sustainable development studies, particularly in the context of accelerating globalization and rapid urbanization. As cities face increasing pressure from land scarcity, infrastructure overload, and environmental degradation, compact urban development has been promoted as a strategic planning paradigm aimed at improving land-use efficiency, reducing infrastructure costs, and enhancing sustainability outcomes. Simultaneously, FDI remains a central driver of urban economic transformation, technological upgrading, and integration into global value chains. This convergence has generated an important research question: whether, and through which mechanisms, compact urban forms shape the attraction, spatial distribution, sectoral composition, and quality of FDI. The existing literature offers valuable insights into this relationship, while also revealing significant heterogeneity, methodological challenges, and unresolved debates.

The dominant theoretical foundation linking compact urban development to FDI is agglomeration economics. High-density urban environments facilitate spatial proximity among firms, workers, consumers, and institutions, thereby reducing transaction costs, improving labor-market matching, and accelerating knowledge spillovers (Fujita, Krugman, & Venables, 1999). These agglomeration externalities enhance productivity and innovation, which are key determinants of multinational enterprises' location decisions. Empirical meta-analyses confirm that urban density exerts a statistically significant and positive effect on productivity and innovation outcomes, reinforcing the expectation that dense and compact cities possess structural advantages in attracting foreign firms (Ahlfeldt & Pietrostefani, 2019). Within this framework, compact city development strengthens the role of cities as strategic nodes in global production and knowledge networks, particularly for efficiency-seeking and asset-seeking FDI (Dunning, 1998).

Beyond density itself, the literature highlights accessibility and shared urban infrastructure as critical mediating channels. Compact cities are typically characterized by mixed land-use patterns, integrated public transport systems, and reduced spatial fragmentation, all of which enhance internal connectivity and functional efficiency. Studies on foreign firm location emphasize that multinational enterprises respond not only to market size but also to urban spatial configuration and transport accessibility (McDonald, 2011). Efficient mobility systems and short travel times lower coordination and monitoring costs and enable firms to exploit agglomeration benefits more effectively. From this perspective, compact urban form complements agglomeration economies by transforming spatial proximity into effective accessibility, particularly for service-oriented and knowledge-intensive FDI.

At the same time, a substantial body of research cautions against viewing compact city development as an unequivocal advantage for FDI attraction. Increased density is often accompanied by rising land and housing prices, congestion, and social displacement, especially in

rapidly growing cities with limited regulatory and planning capacity. These dynamics can erode cost competitiveness and reduce locational appeal for certain types of foreign investment. Empirical studies show that land-intensive manufacturing and large-scale logistics investments are particularly sensitive to land costs and thus tend to avoid dense urban cores, favoring peri-urban or peripheral locations instead (Woodward, Rolfe, Guimarães, & Doupnik, 2016). Compactness may therefore generate threshold effects, beyond which agglomeration benefits are offset by escalating costs, resulting in a nonlinear and sectorally differentiated relationship between urban form and FDI (Dewita, 2018).

Cross-country and macro-level empirical research generally supports a positive association between urbanization and FDI inflows. Panel data analyses indicate that countries with higher levels of urbanization tend to attract greater volumes of foreign investment, reflecting the role of cities as concentrations of infrastructure, labor, and demand (Bhattacharya, 2010). However, these studies also demonstrate that urbanization alone is insufficient to generate sustained FDI advantages. Institutional quality, infrastructure provision, and human capital endowments critically condition whether urban concentration translates into effective locational attractiveness. International efforts to standardize the measurement of urban concentration, such as the World Bank's Agglomeration Index, further reveal strong correlations between economic concentration, productivity, and investment potential (Uchida & Nelson, 2009). Nonetheless, such indicators typically capture observed concentration rather than compact city development as a policy-driven planning strategy, limiting their ability to directly inform compact city–FDI linkages.

More fine-grained insights emerge from city-level and subnational studies. Empirical evidence from rapidly urbanizing cities suggests that FDI locations do not always coincide with areas of highest density or accessibility, pointing to spatial mismatches between foreign investment patterns and urban spatial structure (Nguyen, Ho, & Nguyen, 2020). These findings underscore the importance of coordinated land-use and transport planning in realizing the potential benefits of compact development. Case studies from Vietnamese cities illustrate a bidirectional relationship in which FDI both responds to agglomeration advantages and actively reshapes urban form through increased demand for office space, expatriate housing, and high-end services (Nguyen, 2016). Similar dynamics have been observed in cities pursuing explicit compact city strategies linked to investment promotion, where gains in urban concentration coexist with mounting pressures on land markets and infrastructure systems (ERIA, 2018).

A strong consensus in the literature concerns sectoral heterogeneity and the notion of FDI quality. Knowledge-intensive services, finance, information and communication technologies, and research and development activities display a pronounced preference for dense, amenity-rich urban environments that facilitate interaction, learning, and innovation (Woodward et al., 2016). For these sectors, compact cities align closely with the characteristics associated with high-quality FDI, including higher value added, technological spillovers, and skilled employment. In contrast, traditional manufacturing FDI remains more footloose with respect to density and often prioritizes cost considerations over agglomeration benefits. More recently, scholars have linked compact urban development to sustainable and green FDI, arguing that cities combining compact form,

green infrastructure, and effective governance are better positioned to attract investment aligned with environmental, social, and governance standards (Yu, Majeed, & Liu, 2023). This emerging strand suggests an evolving interaction between urban form, sustainability agendas, and foreign investment behavior.

Methodologically, the compact city–FDI literature is confronted with persistent endogeneity and measurement challenges. FDI is both an outcome of urban structure and a driver of spatial transformation, complicating causal inference. To address this issue, studies have employed instrumental variables, quasi-natural experiments, and spatial econometric techniques, with mixed success (Hilber & Voicu, 2010). In addition, variations in how compactness and FDI quality are operationalized contribute to inconsistencies across findings. These methodological difficulties underpin an ongoing debate regarding the universality of compact city strategies as instruments for FDI attraction. A growing body of work argues that compactness generates positive investment outcomes only when embedded within coherent policy frameworks encompassing land regulation, housing affordability, transport investment, and industrial strategy (Wang, 2022).

Overall, the international literature suggests that compact city development can enhance a city's attractiveness to FDI, particularly to high-value, knowledge-intensive, and sustainable investment, through mechanisms associated with agglomeration economies, accessibility, and concentrated urban services. However, these effects are highly conditional and mediated by sectoral structure, institutional quality, and policy implementation. Significant research gaps remain, notably the scarcity of long-term comparative studies across developing cities that directly link planning-oriented compactness to changes in the composition and quality of FDI. Addressing these gaps is essential for advancing theoretical understanding and for informing urban development strategies that seek to reconcile compact city objectives with inclusive and investment-driven growth.

THEORETICAL FRAMEWORK

Urban compactness has long been associated with higher productivity, innovation, and the spatial concentration of advanced economic activities, yet robust causal evidence on whether *policy-driven* compact city development reshapes foreign direct investment (FDI) patterns at the city level remains limited, particularly in developing countries. Existing studies largely rely on cross-sectional correlations between density or agglomeration and FDI location, leaving unresolved the central causal question of whether the *implementation* of compact city policies such as transit-oriented development (TOD), zoning reforms toward mixed-use development, or density mandates around transport nodes systematically alters the scale, sectoral composition, and quality of FDI inflows. This gap is especially salient for developing-country cities, where rapid urbanization, institutional constraints, and uneven labor market development may fundamentally condition how compactness translates into economic outcomes. The core research problem therefore concerns whether, and through what mechanisms, the implementation of compact city policies causally influences total FDI inflows, reallocates FDI toward higher value-added sectors, and improves the qualitative characteristics of investment, including capital intensity, skilled employment creation, and environmentally sustainable ("green") projects.

The proposed theoretical framework integrates agglomeration economics, location theory, new economic geography, urban spatial structure theory, and institutional perspectives to explain how compact city policies may affect multinational firms' location decisions. From the perspective of agglomeration economics, increased urban density and functional mix generate localization and urbanization externalities knowledge spillovers, thicker and more specialized labor markets, and closer input–output linkages that raise firm-level productivity and reduce coordination and search costs (Ahlfeldt & Pietrostefani, 2019). These mechanisms are particularly relevant for knowledge-intensive and service-oriented FDI, which relies more heavily on face-to-face interactions, tacit knowledge exchange, and access to skilled labor than on land availability. Consequently, policy-induced compactness is expected to disproportionately attract FDI in advanced services, R&D, and regional headquarters rather than land-intensive manufacturing.

This logic aligns with the location component of Dunning's Ownership–Location–Internalization (OLI) framework, in which multinational enterprises select investment locations based on relative locational advantages, including market access, factor costs, agglomeration benefits, and institutional quality (Hilber & Voicu, 2010). Compact city policies directly modify these location-specific attributes by improving accessibility, intensifying labor pooling, and enhancing urban amenity and connectivity. By contrast, ownership and internalization advantages remain firm-specific, implying that observed changes in FDI patterns following compact policy implementation can be plausibly attributed to shifts in location advantages rather than to firm-level characteristics.

New economic geography further refines this argument by emphasizing the trade-off between centripetal forces that favor spatial concentration and centrifugal forces arising from congestion, rising land prices, and housing costs (Ahlfeldt & Pietrostefani, 2019). Compact city policies can strengthen centripetal forces by improving transport connectivity and functional integration, but they may also intensify centrifugal pressures through higher real estate prices. This framework predicts heterogeneous sectoral responses: while service and knowledge-intensive activities may tolerate or even prefer high-density environments, land- and space-intensive manufacturing FDI may be displaced to peripheral or neighboring cities. As a result, compactness is expected to reshape the *composition* of FDI rather than uniformly increase all forms of investment.

Urban spatial structure and accessibility theory highlights the role of travel time and connectivity as central transmission mechanisms linking compactness to firm performance. Improvements in accessibility measured through reduced travel times to central business districts, airports, ports, and transit hub slower transaction and coordination costs for firms and expand effective labor market catchment areas (Uchida et al., 2009; Wang, 2021). In compact, transit-oriented cities, such accessibility gains disproportionately benefit multinational enterprises engaged in headquarters functions, business services, finance, and R&D, where coordination across teams and regions is critical. Accessibility thus functions as a key mediating channel between compact city policies and FDI inflows.

Institutional and policy theory complements these economic mechanisms by emphasizing that compactness does not automatically translate into investment attractiveness. The effectiveness of compact city policies depends on local governance quality, planning capacity, land-use regulation,

and the speed and predictability of permitting processes (OECD, 2012; UN-Habitat, 2020). Cities with stronger institutions are more likely to convert density and mixed-use development into productive agglomeration rather than congestion or exclusionary housing markets. Institutional capacity therefore acts as a moderating factor, amplifying or dampening the impact of compact city policies on FDI outcomes.

Bringing these perspectives together, the theoretical framework conceptualizes compact city policy implementation as an exogenous intervention that alters urban form and accessibility, which in turn affects FDI through multiple channels. Positive channels operate through agglomeration economies and improved accessibility, increasing productivity and attractiveness for high-quality, knowledge-intensive FDI. A countervailing negative channel operates through rising land and housing costs, potentially deterring land-intensive or cost-sensitive investments. The net effect on total FDI, sectoral allocation, and investment quality depends on the relative strength of these channels and on local institutional conditions. Moreover, the framework allows for spatial spillovers, as changes in compactness and costs in one city may redistribute FDI toward or away from neighboring cities, consistent with spatial equilibrium dynamics (ERIA, 2019).

This integrated framework yields several testable expectations. The implementation of compact city policies is expected to increase total FDI inflows relative to pre-policy trends and comparable control cities, while simultaneously shifting FDI composition toward advanced services, R&D, and headquarters activities (Hilber & Voicu, 2010; Woodward et al., 2006). These effects should be mediated by improvements in accessibility and skilled labor density and attenuated by rising land and housing costs (Wang, 2021). The magnitude of the impact should be larger in cities with stronger governance capacity and deeper pools of skilled labor (OECD, 2012), and spatial spillovers may emerge as firms reallocate investment across urban systems rather than within isolated cities.

Overall, the proposed theoretical framework addresses a critical gap in the literature by explicitly linking *policy-driven* urban compactness to the causal dynamics of FDI location, composition, and quality. By integrating multiple strands of urban and international economics with institutional analysis, it provides a coherent basis for empirical strategies that move beyond correlation toward identification of mechanisms and spillover effects. In doing so, it offers both a contribution to academic debates on urban form and globalization and a foundation for evidence-based policy design in developing-country cities seeking to attract higher-quality FDI through compact city development.

RESEARCH METHOD

The credibility of any empirical claim linking compact urban development to the attraction of foreign direct investment (FDI) hinges decisively on the logic and rigor of case selection. In this research design, the objective is not to maximize the breadth of the sample but rather to secure strong, theory-informed contrasts through a focused-comparison strategy combined with purposive case studies and systematic triangulation. That combination preserves the inferential leverage of causal methods while capturing the contextual depth needed to unpack intervening

mechanisms. For empirical testing in the Vietnam context, candidate cities should satisfy three simultaneous criteria: (i) a demonstrable orientation toward compact-city policies and practices (expressed in comprehensive plans, transit-oriented development (TOD) initiatives, or pro-active measures to contain urban sprawl); (ii) a central role in the national FDI network (measured by historically large inflows, presence of high-value projects, or regional investment hubs); and (iii) sufficiently long and continuous time-series data on FDI and relevant covariates to support a several research designs. Applying these filters yields Hanoi and Ho Chi Minh City as the primary central cases both are the largest Vietnamese metropolitan areas, characterized by relatively high densities, explicit spatial restructuring policies oriented toward compactness and public-transport priorities, and persistent dominance in national FDI receipts. Da Nang is proposed as a medium-scale compact-oriented city whose strategy combines spatial concentration with quality-of-life and services positioning, offering contrast on scale and local economic structure. Haiphong and Can Tho serve as supplementary comparator cases that capture port-oriented and delta-regional city types respectively, and therefore help make visible heterogeneity in the compactness–FDI relationship across functional roles and geographic contexts within the country.

At the regional level, a carefully chosen set of ASEAN cities constitutes a compact-reference panel that balances exemplars, transition cases, and counterpoints. Singapore functions as the high-density, strongly regulated benchmark: its stringent land-use controls, elevated densities, and comprehensive public-transport network form an international reference standard for how compactness can co-exist with high-quality, knowledge-intensive FDI. Bangkok and Kuala Lumpur are included as large regional agglomerations undergoing transitions from expansionary models toward TOD and more compact forms; they therefore permit cross-national comparisons of policy sequencing and institutional variation that are relevant for Vietnam's own trajectory. Jakarta characterized by super-sized sprawl and entrenched low-density expansion acts as a critical contrast to illuminate boundary conditions under which compactness is less likely to translate into FDI gains. Beyond ASEAN, selected mature compact-city examples such as Seoul, Tokyo, or Barcelona are positioned as theoretical referents rather than as additional units in a quantitative sample; their role is to strengthen mechanism-based interpretation and to support external validation of inferred causal pathways without diluting internal comparability.

Methodologically, the focused-comparison strategy operationalizes a controlled contrast between a limited number of treated cities those that have implemented or intensified compactness-oriented interventions and matched comparison cities that are similar on pre-treatment socio-economic and structural covariates but experienced either lower or later intervention intensity. This limited-sample design is deliberately compatible with DiD estimation: fewer, well-matched comparisons reduce the risk that divergent institutional and contextual factors will swamp the parallel-trends assumption. Where feasible, matching on pre-treatment trends and covariates, placebo tests, and sensitivity analyses (including synthetic-control supplements) should be used to probe robustness. Importantly, the research pairs these quantitative contrasts with in-depth case studies of core cities (Hanoi, Ho Chi Minh City, Da Nang, and Singapore) to unpack the micro-mechanisms that aggregate analyses cannot observe directly.

Triangulation is achieved by integrating multiple data sources and methods. Statistical FDI series and firm-level information provide the primary quantitative backbone. These are complemented by systematic textual analyses of master plans, TOD project documents, and regulatory instruments; by reports from investment-promotion agencies and international organizations; and by semi-structured interviews with municipal planners, investment officials, and representatives of multinational firms. Such triangulation supports both construct validity ensuring that the compactness construct reflects policy and practice and the identification of mediating channels, which we hypothesize include enhanced accessibility, concentration of skilled labor, lowered spatial transaction costs, and an improved urban investment image.

This combined design balances the competing demands of causal inference, contextual richness, and external relevance. Focused comparison preserves statistical rigor by narrowing the counterfactual universe to plausible matches; purposive case studies illuminate mechanism and temporal sequencing; and triangulation raises confidence in the validity and transferability of findings. Together, these elements produce a coherent empirical strategy capable of delivering persuasive, policy-relevant evidence on whether, how, and under what conditions compact urban development strengthens a city's capacity to attract higher-quality FDI in Vietnam, within ASEAN, and when interpreted against international benchmarks.

The selection of cases in a Qualitative Comparative Analysis (QCA) of compact urban development and high-quality foreign direct investment (FDI) must be grounded in a clearly articulated population logic, configurational diversity, and methodological compatibility with set-theoretic techniques and software such as TOSMANA. Unlike statistical approaches that prioritize representativeness, QCA requires cases that are theoretically meaningful, causally relevant, and sufficiently diverse to allow the identification of multiple causal pathways, asymmetry, and conjunctural effects (Ragin, 2008; Rihoux & Ragin, 2009). In the context of this study, the population of cases is therefore defined not as cities in general, but as compact-oriented cities that are structurally exposed to both the opportunities and constraints associated with dense urban forms and foreign direct investment.

Compact-oriented cities are understood as urban areas that either explicitly adopt compact city strategies or exhibit empirically documented characteristics of compactness, such as high population and employment density, mixed land use, strong agglomeration economies, and reliance on public or mass transit systems (OECD, 2012; UN-Habitat, 2020; Wang, 2021). This conceptual delimitation is essential, as the mechanisms linking urban form to FDI are theorized to operate primarily through agglomeration economies, accessibility, human capital concentration, and regulatory coordination, rather than through size alone (Ahlfeldt & Pietrostefani, 2019; Uchida et al., 2009). Consequently, only cities that simultaneously demonstrate a compact development orientation, a non-trivial engagement with FDI, and sufficient data availability for the calibration of all conditions and the outcome are included. These conditions comprise compactness, human capital, agglomeration, transport accessibility, regulatory quality, high land costs, and the attraction of high-quality FDI, all of which are well established in the literature as relevant to firm

location decisions and urban economic performance (Hilber & Voicu, 2010; Woodward et al., 2006; Yu et al., 2020).

The logic of case selection follows a diversity-oriented strategy rather than a best-case or success-biased approach. QCA is explicitly designed to uncover equifinality, meaning that the same outcome may arise from different combinations of conditions, as well as causal asymmetry, whereby the absence of an outcome is not explained by the mere inverse of the conditions that produce success (Ragin, 2008; Schneider & Wagemann, 2012). For this reason, the sample deliberately includes cities that display high, medium, and relatively low performance in attracting high-quality FDI. This variation is particularly important in the study of compact cities, where density and agglomeration can generate both positive externalities, such as productivity gains and knowledge spillovers, and negative externalities, such as congestion, high land prices, and social displacement (Ahlfeldt & Pietrostefani, 2019; Dewita, 2018). Including cases where compactness does not translate into strong FDI performance enables a more rigorous assessment of the conditions under which compact urban form becomes an asset rather than a constraint.

From a methodological perspective, the chosen sample size is intentionally limited to a small-to-intermediate range of approximately 27 to 35 cases. This range is widely recognized as optimal for QCA applications using software such as TOSMANA, as it allows for sufficient configurational diversity while minimizing the risk of limited diversity and excessively complex truth tables (Rihoux & Ragin, 2009; Schneider & Wagemann, 2012). A sample of this size facilitates meaningful Boolean minimization and interpretation of results, while still capturing substantial heterogeneity across institutional contexts, income levels, and stages of urban and economic development.

To further enhance configurational diversity, the case set is structured to include global advanced compact cities, emerging Asian compact cities, and transitional or ASEAN compact cities. Advanced global cities such as Singapore, Hong Kong, Tokyo, or major European compact cities serve as benchmark cases with very high levels of compactness, sophisticated transport systems, and strong human capital bases, but they nonetheless differ in regulatory regimes, land market structures, and sectoral compositions of FDI. Emerging Asian cities, including major Chinese, Korean, Taiwanese, and Southeast Asian metropolitan areas, are characterized by rapid densification and FDI-led growth, yet exhibit substantial variation in regulatory quality, human capital formation, and infrastructure effectiveness, making them particularly valuable for detecting alternative causal configurations (Bhattacharya, 2014; McDonald, 2016). Transitional and secondary compact cities in ASEAN countries play a critical role as analytically demanding cases, where moderate compactness and uneven FDI outcomes allow for stringent testing of necessity and sufficiency claims and help to avoid a global-city bias that would otherwise limit the external validity of the findings (ERIA, 2019; Nguyen, 2018).

An additional advantage of this case selection strategy lies in its practical feasibility. All selected cities have accessible data from international organizations such as the World Bank, OECD, UN-Habitat, and fDi Intelligence, as well as from national statistical offices and city-level open data platforms. This ensures that all conditions and the outcome can be calibrated in a transparent and

consistent manner, a prerequisite for robust QCA results. Moreover, the focus on city-level or metropolitan-level data aligns well with existing empirical studies on agglomeration, FDI location, and compact urban development, thereby strengthening the theoretical coherence between the literature and the empirical design (Hilber & Voicu, 2010; Yu et al., 2020).

In sum, the proposed case selection strategy is theoretically justified, methodologically sound, and technically appropriate for QCA implemented through TOSMANA (See Annex 1 and Annex 2 for detail). By restricting the population to compact-oriented cities, embracing configurational diversity in performance and context, and maintaining an analytically manageable sample size, the study is well positioned to uncover multiple causal pathways linking compact urban form, institutional and economic conditions, and the attraction of high-quality foreign direct investment, without imposing linear or symmetric assumptions that are inconsistent with the complex realities of urban development and global investment dynamics.

This study selects 25 cities that represent different forms of compact urban development across Vietnam, ASEAN, East Asia, and Europe (See Annex 2). The cases are purposively chosen to ensure sufficient variation in urban compactness, human capital, agglomeration economies, transport accessibility, regulatory quality, and land costs, while remaining comparable in terms of data availability for dichotomous-set calibration. This case selection strategy enables the application of QCA to identify multiple causal configurations leading to high-quality FDI attraction.

RESEARCH RESULTS

Construction of QCA model

FDI_HIGH is the outcome variable representing the capacity of a city or locality to attract high-quality foreign direct investment (FDI) over a given period. Unlike conventional approaches that measure FDI primarily through total registered capital or the number of projects, FDI_HIGH emphasizes the *qualitative composition* and *structural characteristics* of FDI inflows. Specifically, it captures the extent to which FDI is oriented toward high value-added and knowledge-intensive activities, such as advanced services, high-technology manufacturing, research and development (R&D), information and communication technologies (ICT), financial services, regional headquarters, and/or environmentally sustainable and ESG-oriented investment projects (green FDI).

Table 1: Truetable of Minimal Boolean Reduction

ID	COMPACT	HUMAN_CAP	AGGLOMERATION	TRANSPORT_ACCESS	REG_QUALITY	HIGH_LAND_COST	ENV_QUALITY	FDI_HIGH
Singapore,Tokyo,Seoul,Zurich,Copenhagen,Stockholm,Vienna,Amsterdam,Paris,Barcelona,Hong Kong,Shenzhen,Taipei,Osaka	1	1	1	1	1	0	1	1
Shanghai	1	1	1	1	0	0	1	1
Bangkok,Kuala Lumpur,Jakarta,Manila,Hai Phong,Can Tho,Penang	0	0	0	0	0	1	0	0

Hanoi	0	0	0	0	0	0	0	0
Ho Chi Minh City	1	1	1	0	0	0	0	1
Da Nang	0	0	0	0	0	1	1	0

Source: TOSMANA's analysis

Within the QCA framework, FDI_HIGH is conceptualized as a set in which localities exhibiting a strong concentration of knowledge-intensive, high value-added FDI with significant spillover effects display a high degree of set membership. Conversely, localities that predominantly attract land-intensive, labor-intensive, or low value-added FDI are characterized by a low degree of set membership. Conceptualizing FDI_HIGH in this manner allows for a more nuanced capture of the complex and asymmetric causal relationships between compact urban development and the ability of cities to attract high-quality FDI.

COMPACT is a conditional variable capturing the degree of compact urban development of a city or locality over a specified period. This variable conceptualizes compactness as a spatial development model characterized by high density, efficient land use, and functional integration, as opposed to dispersed urban expansion or urban sprawl. Substantively, COMPACT reflects the convergence of several key attributes, including high population and employment density, a large share of built-up land, a high degree of mixed land use integrating residential, commercial, and office functions, and an urban spatial structure that ensures strong accessibility and/or polycentricity.

Within the QCA framework, COMPACT is approached as a *set* representing the extent to which a locality embodies the logic of compact urban development. Cities characterized by high density combined with efficient public transport connectivity, diverse urban functions, and short spatial distances exhibit a high degree of membership in the COMPACT set. In contrast, cities developing in a sprawling manner, heavily dependent on private transportation and marked by rigid functional zoning, display low levels of set membership. Conceptualizing COMPACT in this way enables analysis of compact urban development not as an isolated factor, but as a structural condition embedded in different causal configurations that lead to, or fail to lead to, the attraction of high-quality FDI.

HUMAN_CAP is a conditional variable reflecting the availability and quality of human capital in a city or locality over a specified period. This variable conceptualizes human capital not merely in terms of labor supply size, but primarily as the stock of skills, knowledge, and innovative capacity embodied in the local workforce. It encompasses educational attainment, professional and technical skills, R&D capabilities, and the capacity of workers to adapt to new technologies. HUMAN_CAP is particularly relevant to talent-seeking and knowledge-seeking forms of FDI, which depend heavily on the presence of highly skilled labor, higher education institutions, research organizations, and a functioning innovation ecosystem.

Within the QCA framework, HUMAN_CAP is conceptualized as a *set* representing the extent to which a locality concentrates high-quality human capital conditions. Cities characterized by a high share of highly educated workers, high densities of students and researchers, substantial R&D expenditure, and a strong ability to attract and retain talent exhibit high degrees of membership in

the HUMAN_CAP set. In contrast, localities that rely predominantly on low-skilled labor, exhibit limited skill upgrading, or lack effective university–industry linkages display low levels of set membership. This approach enables the analysis of high-quality human capital as a critical but non-sufficient condition, whose effects materialize only within specific causal configurations, in combination with compact urban development, infrastructure, and institutional quality, in shaping the attraction of high-quality FDI.

AGGLOMERATION is a conditional variable capturing the degree of economic agglomeration economies in a city or locality over a given period. This variable conceptualizes agglomeration advantages as the spatial concentration of firms, specialized labor, suppliers, and supporting services, which collectively reduce transaction costs, enhance coordination efficiency, and facilitate knowledge spillovers. AGGLOMERATION is particularly critical for knowledge-intensive FDI activities, such as advanced services, high-technology industries, R&D, finance, and creative industries, all of which depend strongly on dense interaction networks and a well-developed business ecosystem.

Within the QCA framework, AGGLOMERATION is conceptualized as a *set* representing the extent to which a locality embodies economic agglomeration advantages. Cities characterized by high firm density, the presence of industrial or sectoral clusters, specialized supplier and support service networks, and strong intensity of economic interaction and innovation exhibit high degrees of membership in the AGGLOMERATION set. In contrast, localities with fragmented economic structures, weak value-chain linkages, and limited knowledge spillovers display low levels of set membership. This conceptualization allows AGGLOMERATION to be analyzed as a key intermediary condition that amplifies or moderates the effects of compact urban development and high-quality human capital on the attraction of high-quality FDI across different causal configurations.

TRANSPORT_ACCESS is a conditional variable reflecting the level of transport connectivity and accessibility of a city or locality over a specified period. This variable conceptualizes transport connectivity not only in terms of physical infrastructure provision, but also in terms of the effectiveness of access to socio-economic space, including public transport systems, multimodal connectivity, and the extent to which travel time for labor, goods, and services is reduced. TRANSPORT_ACCESS plays a pivotal role in lowering transaction costs, enhancing productivity, and expanding market reach, thereby increasing the attractiveness of a locality to foreign investors.

Within the QCA framework, TRANSPORT_ACCESS is conceptualized as a *set* representing the degree to which a locality achieves effective transport accessibility. Cities characterized by well-developed public transport networks, high levels of connectivity between central areas and key functional zones, and seamless links to logistics nodes, seaports, airports, and major economic corridors exhibit high degrees of membership in the TRANSPORT_ACCESS set. In contrast, localities with underdeveloped transport infrastructure, recurrent congestion, or heavy dependence on private vehicles display low levels of set membership. This approach allows TRANSPORT_ACCESS to be treated as a supportive and enabling condition that enhances the

effectiveness of compact urban development and agglomeration advantages within causal configurations leading to the attraction of high-quality FDI.

REG_QUALITY is a conditional variable capturing the quality of urban governance and the effectiveness of the regulatory and institutional framework in a locality over a given period. This variable conceptualizes governance and regulation not merely in terms of the formal existence of policies, but primarily in terms of their transparency, consistency, predictability, and effectiveness of implementation, particularly with respect to investment regulation, spatial planning, land use, construction, and business operations. REG_QUALITY is especially critical for foreign investors, as time-related costs, institutional risks, and policy uncertainty are key determinants of investment decisions, particularly for long-term and high value-added FDI.

Within the QCA framework, REG_QUALITY is conceptualized as a *set* representing the extent to which a locality possesses an investment-friendly yet effective governance and regulatory system. Cities characterized by clear and coherent planning frameworks, streamlined administrative procedures, one-stop-shop mechanisms for investment, short licensing times, and strong policy coordination capacity across public agencies exhibit high degrees of membership in the REG_QUALITY set. In contrast, localities marked by overlapping regulations, cumbersome procedures, inconsistent enforcement, or high legal and regulatory risks display low levels of set membership. This conceptualization allows REG_QUALITY to be treated as a decisive differentiating condition, helping to explain why cities with similar levels of compactness and infrastructure may nevertheless exhibit markedly different outcomes in attracting high-quality FDI across different causal configurations.

HIGH_LAND_COST is a conditional variable reflecting the extent of high land and housing costs in a city or locality over a given period. This variable conceptualizes land costs not merely in terms of absolute land prices or rental rates, but more importantly as the overall spatial cost burden borne by firms and workers in establishing and sustaining economic activities. HIGH_LAND_COST is particularly salient in the context of compact urban development, where higher densities are often accompanied by upward pressure on land and housing prices, potentially undermining local attractiveness for FDI projects that are land-intensive or highly cost-sensitive.

Within the QCA framework, HIGH_LAND_COST is conceptualized as a *set* in which localities with land prices, commercial rents, and housing costs that are high relative to productivity levels and average incomes exhibit high degrees of membership in the HIGH_LAND_COST set. Conversely, localities that maintain land and housing costs within tolerable ranges for firms and labor display low levels of set membership. In analyses of high-quality FDI attraction, this condition is frequently operationalized in its negated form (¬HIGH_LAND_COST), representing contexts in which spatial costs are not excessively high. This approach enables the identification of land costs as a constraining condition that can neutralize the advantages derived from compact urban development, infrastructure, and human capital within specific causal configurations, particularly for high-technology manufacturing FDI or investment activities with substantial spatial requirements.

QCA analysis

A. Implementation of the first procedure: Minimal Boolean Reduction without Logical Remainders for positive concentration city development (Outcome = 1)

The first-stage qualitative comparative analysis applies a minimal Boolean reduction without logical remainders to identify empirically observed configurations associated with high levels of foreign direct investment (FDI). Using the binary-calibrated dataset provided, the outcome of interest is high FDI presence (FDI_HIGH = 1), while the causal conditions include urban compactness, human capital, agglomeration economies, transport accessibility, regulatory quality, high land costs, and environmental quality. Consistent with a conservative QCA strategy, the analysis deliberately excludes logical remainders, thereby ensuring that all solution terms are derived strictly from observed cases rather than counterfactual assumptions.

COMPACT * HUMAN_CAP * AGGLOMERATION * TRANSPORT_ACCESS * high_land_cost * ENV_QUALITY +	COMPACT * HUMAN_CAP * AGGLOMERATION * transport_access * reg_quality * high_land_cost * env_quality
(Singapore,Tokyo,Seoul,Zurich,Copenhagen,Stockholm, Vienna,Amsterdam,Paris,Barcelona,Hong Kong,Shenzhen,Taipei,Osaka+Shanghai)	(Ho Chi Minh City)

We can re-write as follows:

1/ (COMPACT * HUMAN_CAP * AGGLOMERATION * TRANSPORT_ACCESS * HIGH_LAND_COST * ENV_QUALITY) (Singapore, Tokyo, Seoul, Zurich, Copenhagen, Stockholm, Vienna, Amsterdam, Paris, Barcelona, Hong Kong, Shenzhen, Taipei, Osaka, Shanghai) → high FDI presence [formula 1]

2/ COMPACT * HUMAN_CAP * AGGLOMERATION * transport_access * reg_quality * high_land_cost * env_quality (Ho Chi Minh City) → high FDI presence [formula 2]

The minimal solution yields two sufficient configurations leading to high FDI. The first and empirically dominant configuration combines urban compactness, strong human capital, pronounced agglomeration economies, good transport accessibility, high land costs, and high environmental quality. This conjunctural pattern accounts for the majority of high-FDI cases in the sample, including major global and regional cities such as Singapore, Tokyo, Seoul, Zurich, Copenhagen, Stockholm, Vienna, Amsterdam, Paris, Barcelona, Hong Kong, Shenzhen, Taipei, Osaka, and Shanghai. The recurrence of this configuration across a large and diverse set of cities suggests a robust structural pathway to FDI attraction. In this pathway, compact urban form facilitates spatial efficiency and interaction, human capital enhances productivity and innovation potential, and agglomeration economies generate cumulative advantages for firms. Transport

accessibility reinforces these effects by reducing transaction and logistics costs, while high land costs signal intense competition for central locations and reflect strong demand in economically vibrant urban cores. Environmental quality complements these factors by enhancing urban liveability, which is increasingly valued by multinational firms and skilled labor alike.

The second configuration shares the same core conditions but additionally includes high regulatory quality. This configuration is empirically associated solely with Ho Chi Minh City. Its emergence as a single-case pathway indicates that, within this particular urban and national context, regulatory quality operates as an additional enabling condition for translating compactness, human capital, agglomeration, and accessibility into high FDI outcomes. Substantively, this suggests that while structural urban and economic characteristics may align Ho Chi Minh City with global FDI-attracting cities, the effectiveness of this alignment depends more strongly on institutional and regulatory performance than in more mature global cities. The presence of regulatory quality in this pathway therefore points to functional substitution and contextual specificity, both central concepts in configurational analysis.

Across both solution terms, the repeated appearance of compactness, human capital, agglomeration, transport accessibility, high land costs, and environmental quality indicates that these conditions constitute a stable core configuration associated with high FDI in the observed sample. Importantly, none of these conditions alone is interpreted as sufficient; rather, their causal relevance emerges only through conjunction, underscoring the configurational and non-linear logic of QCA. The results thus lend strong support to theoretical arguments emphasizing that FDI attraction is shaped by interacting urban, economic, and environmental factors rather than by isolated policy instruments.

Methodologically, the absence of simplifying assumptions confirms that the reported solution does not rely on unobserved logical remainders. This strengthens internal validity and enhances confidence that the identified configurations reflect actual empirical regularities rather than model-imposed simplifications. At the same time, the conservative nature of this approach implies that the solution may be less parsimonious than those obtained with the inclusion of remainders, and it may underrepresent theoretically plausible but empirically unobserved combinations. The presence of a single-case solution term further suggests the need for careful interpretation and subsequent robustness checks.

Overall, the minimal Boolean reduction without logical remainders reveals a clear and substantively meaningful configurational pattern linking compact urban development, human and agglomerative capacities, accessibility, land market pressures, and environmental quality to high FDI outcomes. Regulatory quality emerges as a context-dependent amplifier rather than a universally necessary condition. These findings not only contribute to the comparative urban and FDI literature by highlighting multiple sufficient pathways but also demonstrate the analytical value of QCA for capturing complexity, equifinality, and conditional causation in cross-city investment dynamics.

B. Implementation of the second procedure: Minimal Boolean Reduction without Logical Remainders for negative outcome

The second-stage qualitative comparative analysis applies a minimal Boolean reduction without logical remainders to explain the **negative outcome**, namely the absence of high foreign direct investment (FDI_HIGH = 0). Using the same binary-calibrated dataset and set of causal conditions as in the positive-outcome analysis, this procedure focuses on configurations empirically associated with low or weak FDI attraction. As before, logical remainders are excluded, ensuring that all solution terms are derived strictly from observed cases and that no counterfactual assumptions are introduced.

compact * human_cap * agglomeration * transport_access * reg_quality * env_quality +	compact * human_cap * agglomeration * transport_access * reg_quality * HIGH_LAND_COST
(Bangkok,Kuala Lumpur,Jakarta,Manila,Hai Phong,Can Tho,Penang+Hanoi)	(Bangkok,Kuala Lumpur,Jakarta,Manila,Hai Phong,Can Tho,Penang+Da Nang)

We can re-write as follows:

3/ compact * human_cap * agglomeration * transport_access * reg_quality * env_quality (Bangkok,Kuala Lumpur,Jakarta,Manila,Hai Phong,Can Tho,Penang+Hanoi → absence of high foreign direct investmen (FDI_HIGH = 0) [formula 3]
4/ compact * human_cap * agglomeration * transport_access * reg_quality * HIGH_LAND_COST (Bangkok,Kuala Lumpur,Jakarta,Manila,Hai Phong,Can Tho,Penang+Da Nang) → absence of high foreign direct investmen (FDI_HIGH = 0) [formula 4]

The minimal solution for the negative outcome identifies two sufficient configurations leading to the absence of high FDI. Both configurations are characterized primarily by the absence of key structural and institutional conditions that were central in the positive-outcome analysis. The first configuration consists of the joint absence of urban compactness, human capital, agglomeration economies, transport accessibility, regulatory quality, and environmental quality. This configuration is empirically associated with Bangkok, Kuala Lumpur, Jakarta, Manila, Hai Phong, Can Tho, Penang, and Hanoi. The repeated occurrence of this configuration across multiple cities indicates a stable pathway to low FDI in which weak urban structure, limited human capital endowment, lack of agglomeration dynamics, poor accessibility, weak regulatory performance, and low environmental quality jointly undermine FDI attractiveness.
The second configuration likewise combines the absence of urban compactness, human capital, agglomeration economies, transport accessibility, and regulatory quality, but differs by the presence of high land costs alongside the absence of environmental quality. This pathway is empirically linked to Bangkok, Kuala Lumpur, Jakarta, Manila, Hai Phong, Can Tho, Penang, and Da Nang. Substantively, this configuration suggests a particularly unfavorable scenario for FDI attraction: cities face high land costs without compensating advantages in productivity, accessibility, governance, or environmental quality. In such contexts, land scarcity or high prices

do not signal economic vitality, as observed in global FDI hubs, but instead constitute an additional barrier to investment.

Across both solution terms, a striking pattern emerges. The absence of compact urban form, human capital, agglomeration economies, transport access, and regulatory quality appears as a shared core of the negative outcome. This reinforces the configurational insight that low FDI is not driven by a single deficiency but by the simultaneous absence of multiple reinforcing conditions. Environmental quality and high land costs operate as differentiating features between the two pathways, suggesting limited functional substitution at the lower end of the FDI spectrum. Notably, regulatory quality is consistently absent in both configurations, highlighting its central role as a missing but critical enabling condition in low-FDI cities.

From a theoretical perspective, these results mirror and complement the findings for the positive outcome. Whereas high FDI emerges from dense configurations of mutually reinforcing urban, economic, and institutional assets, low FDI results from configurations marked by cumulative structural and institutional deficits. The presence of high land costs in one negative pathway underscores the importance of contextual interpretation within QCA: the same condition may contribute to different outcomes depending on how it combines with other factors. High land costs function as a positive signal only when embedded within a broader configuration of productivity, accessibility, and governance; when isolated from these advantages, they intensify investment deterrence.

Methodologically, the absence of simplifying assumptions confirms that the negative-outcome solution reflects purely empirical regularities observed in the dataset. This strengthens confidence in the causal relevance of the identified configurations while also implying a conservative estimation strategy. As with the positive-outcome analysis, the concentration of several cities within overlapping configurations suggests robustness, but the partial overlap of cases across the two terms also highlights the asymmetric logic of QCA: the causes of the absence of an outcome are not simply the mirror image of the causes of its presence.

Overall, the minimal Boolean reduction without logical remainders for the negative outcome demonstrates that low FDI is systematically associated with configurations characterized by weak urban compactness, limited human capital, absent agglomeration economies, poor transport accessibility, and deficient regulatory quality. Environmental quality and land cost conditions further shape these pathways, reinforcing the notion that FDI attraction and non-attraction follow distinct and asymmetric configurational logics. These findings strengthen the argument that urban and investment policies must be conceived holistically, as piecemeal improvements in isolated dimensions are unlikely to reverse entrenched low-FDI trajectories in the absence of broader structural transformation.

C. Implementation of the first procedure: Minimal Boolean Reduction with Logical Remainders for positive outcome

The third stage of the qualitative comparative analysis applies a minimal Boolean reduction with the inclusion of logical remainder**s** to explain the presence of high foreign direct investment (FDI_HIGH = 1). This procedure differs fundamentally from the conservative analyses reported

earlier by allowing counterfactual reasoning through simplifying assumptions. Logical remainders, understood as empirically unobserved but logically possible configurations of causal conditions, are incorporated to achieve maximum parsimony. As a result, the solution reflects not only observed regularities but also theoretically admissible causal inferences under the assumption that unobserved configurations would behave consistently with the observed cases.

COMPACT (Singapore,Tokyo,Seoul,Zurich,Copenhagen,Stockholm,Vienna,Amsterdam,Paris, Barcelona,Hong Kong,Shenzhen,Taipei,Osaka+Shanghai+Ho Chi Minh City) → presence of high foreign direct investment (FDI_HIGH = 1) [formula 5]

When logical remainders are permitted, the minimal solution for the positive outcome collapses dramatically into a single-condition expression: **COMPACT**. Urban compactness alone emerges as a sufficient condition for high FDI in the dataset. This parsimonious solution covers all observed cases with high FDI, including Singapore, Tokyo, Seoul, Zurich, Copenhagen, Stockholm, Vienna, Amsterdam, Paris, Barcelona, Hong Kong, Shenzhen, Taipei, Osaka, Shanghai, and Ho Chi Minh City. The inclusion of Ho Chi Minh City, despite its weaker performance on several other conditions, highlights the strong simplifying power introduced by counterfactual reasoning.

Substantively, this result suggests that once logically possible but empirically unobserved configurations are taken into account, urban compactness can be interpreted as the dominant causal driver of high FDI. The extensive list of simplifying assumptions61 in totalindicates that the solution assumes that compact cities would attract high FDI regardless of the specific values of human capital, agglomeration economies, transport accessibility, regulatory quality, land costs, or environmental quality. In QCA terms, these other conditions are treated as causally irrelevant once compactness is present, not because the data demonstrate this directly, but because no observed case contradicts this inference.

UMAN_CAP (Singapore,Tokyo,Seoul,Zurich,Copenhagen,Stockholm,Vienna,Amsterdam,Paris ,Barcelona,Hong Kong,Shenzhen,Taipei,Osaka+Shanghai+Ho Chi Minh City) → presence of high foreign direct investment (FDI_HIGH = 1) [formula 6]

Parallel reductions identify HUMAN_CAP and AGGLOMERATION as alternative single-condition sufficient solutions for the same set of positive FDI cases. Like compactness, both human capital and agglomeration economies independently cover all high-FDI cities when logical remainders are introduced. Each of these single-factor solutions is supported by the same number of simplifying assumptions (61), reflecting a high level of counterfactual dependency. Taken together, these findings indicate a strong degree of equifinality under permissive assumptions: high FDI can be explained by compactness alone, or by human capital alone, or by agglomeration alone, depending on how unobserved configurations are theoretically resolved.

AGGLOMERATION (Singapore,Tokyo,Seoul,Zurich,Copenhagen,Stockholm,Vienna,Amsterdam,Paris,Barcelona,Hong Kong,Shenzhen ,Taipei,Osaka + Shanghai+ Ho Chi Minh City) → presence of high foreign direct investment (FDI_HIGH = 1) [formula 7]

From a theoretical perspective, these results align closely with dominant strands of urban economics and international business theory. Compact urban form is often associated with density-driven productivity gains, intensified knowledge spillovers, and reduced transaction costs, all of which are attractive to multinational firms. Similarly, high levels of human capital and strong agglomeration economies are widely recognized as core determinants of FDI location choice. The analysis with logical remainders thus reinforces the centrality of these structural conditions by showing that, under minimal contradictory evidence, each can function as a standalone sufficient cause.

However, the extreme parsimony of the solution also highlights the trade-off between explanatory simplicity and empirical grounding. The large number of simplifying assumptions signals that the results rely heavily on counterfactual reasoning rather than on directly observed diversity. While methodologically legitimate within the QCA framework, this approach substantially weakens causal specificity. It becomes impossible to distinguish empirically whether compactness, human capital, or agglomeration is more causally central, or whether their effects are conditional on institutional, infrastructural, or environmental factors. In contrast to the conservative solutions without logical remainders, conjunctural causation largely disappears once counterfactuals are introduced.

Importantly, the asymmetry of causation remains intact. Compactness, human capital, or agglomeration may each be sufficient for high FDI under permissive assumptions, but their absence does not necessarily imply low FDI. This reinforces a core principle of QCA: the causes of the presence of an outcome cannot be inferred by simply reversing the causes of its absence. The logical-remainder solution therefore complements, rather than replaces, the conservative analyses by clarifying the upper bound of causal simplification supported by the data.

Overall, the minimal Boolean reduction with logical remainders reveals that high FDI can be parsimoniously explained by a single dominant structural condition once counterfactual assumptions are allowed. Compact urban development, human capital endowment, and agglomeration economies emerge as theoretically powerful and interchangeable sufficient explanations. At the same time, the reliance on a large number of simplifying assumptions underscores the importance of interpreting these results cautiously and in conjunction with more restrictive solutions. For substantive inference and policy relevance, the findings suggest that while compactness and related structural assets are foundational, their real-world effectiveness in attracting FDI is most credibly understood as part of broader, empirically grounded configurations rather than as isolated determinants.

D. Implementation of the second procedure: Minimal Boolean Reduction with Logical Remainders for negative outcome

The fourth stage of the analysis applies the minimal Boolean reduction with logical remainders to explain the *absence* of high foreign direct investment (FDI_HIGH = 0). As in the previous stage for the positive outcome, this procedure allows the inclusion of empirically unobserved but logically possible configurations in order to derive the most parsimonious explanation. The aim

here is to identify the simplest sufficient conditions for low FDI under permissive counterfactual assumptions, while fully preserving the principle of causal asymmetry that underpins Qualitative Comparative Analysis.

compact (Bangkok,Kuala Lumpur,Jakarta,Manila,Hai Phong,Can Tho,Penang+Hanoi+Da Nang) → *absence* of high foreign direct investment (FDI_HIGH = 0) [formula 8]

When logical remainders are incorporated, the solution for the negative outcome collapses to single-condition expressions. The most parsimonious solution identifies the absence of urban compactness (compact) as sufficient for low FDI. This solution covers all observed low-FDI cases, including Bangkok, Kuala Lumpur, Jakarta, Manila, Hai Phong, Can Tho, Penang, Hanoi, and Da Nang. The result implies that, under the assumption that unobserved configurations behave consistently with observed patterns, non-compact urban form alone is enough to account for weak FDI performance, regardless of the configuration of other structural, institutional, or environmental conditions.

The solution relies on a large number of simplifying assumptions, totaling 61, which assume that cities lacking compactness would systematically fail to attract high FDI even when other favorable conditions such as human capital, agglomeration, transport accessibility, regulatory quality, or environmental quality are present. These counterfactuals are not contradicted by the observed data and therefore are admissible within the QCA framework, but they substantially increase the theoretical content of the explanation. As with the positive-outcome analysis, the extreme parsimony of the result is achieved at the cost of strong assumptions about unobserved cases.

human_cap (Bangkok,Kuala Lumpur,Jakarta,Manila,Hai Phong,Can Tho,Penang+Hanoi+Da Nang) → *absence* of high foreign direct investment (FDI_HIGH = 0) [formula 9]

In parallel, the analysis identifies human_cap and agglomerationthat is, the absence of human capital and the absence of agglomeration economiesas alternative single-condition sufficient explanations for low FDI. Each of these conditions independently covers the same set of negative outcome cases under an identical number of simplifying assumptions. This means that, once logical remainders are permitted, low FDI can be explained by non-compact urban form alone, or by weak human capital alone, or by a lack of agglomeration alone. The presence of multiple equally parsimonious solutions reflects a high degree of equifinality and indicates that the data do not provide sufficient leverage to empirically discriminate among these structural deficits when counterfactual reasoning is fully exploited.

agglomeration (Bangkok,Kuala Lumpur,Jakarta,Manila,Hai Phong,Can Tho,Penang+Hanoi+Da Nang) → *absence* of high foreign direct investment (FDI_HIGH = 0) [formula 10]

From a substantive perspective, these results mirror and reinforce the findings obtained for the positive outcome, but in an asymmetric manner. Just as compactness, human capital, or

agglomeration can individually explain high FDI under permissive assumptions, their absence can likewise explain low FDI. This symmetry at the level of parsimony should not be mistaken for causal symmetry, however. The conservative solutions without logical remainders demonstrated that, in the observed data, low FDI is associated with specific conjunctural configurations rather than single missing attributes. The logical-remainder solution instead defines the upper bound of simplification that the data allow.

The policy interpretation of these findings must therefore be cautious. Taken literally, the results would suggest that non-compact urban development constitutes a fundamental barrier to FDI, such that improvements in other domains cannot compensate for it. Similarly, deficits in human capital or agglomeration alone would be sufficient to undermine FDI attraction. While these interpretations are theoretically plausible and consistent with core arguments in urban economics and economic geography, they are not directly demonstrated by observed diversity in the sample. Rather, they depend heavily on counterfactual assumptions.

Methodologically, the fourth-stage analysis underscores the analytical value of comparing conservative and permissive QCA solutions. The logical-remainder solution clarifies the dominant structural dimensions underlying low FDIurban form, human capital, and agglomerationby stripping away conjunctural complexity. At the same time, the large number of simplifying assumptions signals that real-world causation is likely more configurational and conditional than this minimal expression suggests. Consequently, the results should be interpreted as identifying necessary structural foundations for avoiding persistently low FDI, rather than as asserting monocausal explanations. In combination with the earlier stages, this final analysis highlights both the power and the limits of maximal parsimony in set-theoretic causal inference.

Synthesis and policy implications

The combined results from the four QCA procedures provide a coherent and theoretically rich synthesis of how urban form, structural capacities, and institutional conditions jointly shape foreign direct investment outcomes. Taken together, the analyses demonstrate that FDI attraction and non-attraction follow asymmetric, configurational logics, and that policy-relevant insights emerge most clearly when conservative (no logical remainders) and permissive (with logical remainders) solutions are interpreted in conjunction rather than in isolation

A closer examination of Ho Chi Minh City (HCMC), triangulated with benchmark compact–FDI cities such as Singapore, Seoul, Tokyo, Shenzhen, and Amsterdam, provides deeper insight into the configurational logic identified by the QCA results and helps bridge abstract set-theoretic findings with concrete urban political–economic dynamics. HCMC represents a analytically critical case: it achieves high FDI despite the partial absence of several conditions that characterize mature global cities, making it a strategically informative “deviant but plausible” case for synthesis and policy interpretation.

From a compact city perspective, HCMC exhibits a form of functional compactness rather than fully institutionalized compact urbanism. High-density mixed-use development, intense street-level economic activity, and strong spatial proximity between production, services, and labor

markets generate de facto agglomeration effects, even though formal transport accessibility and environmental quality lag behind global benchmarks. This contrasts with cities such as Singapore or Tokyo, where compactness is not only morphological but also institutionally engineered through integrated land-use planning, mass transit systems, and environmental regulation. The triangulation suggests that compactness operates in degrees and forms: in HCMC it emerges organically through density and proximity, while in leading global cities it is actively curated through long-term planning and governance capacity.

Human capital and agglomeration economies provide the second layer of triangulation. HCMC does not yet match the advanced skill intensity of cities like Seoul or Amsterdam; however, it compensates through labor scale, demographic structure, and learning-based upgrading embedded in global value chains. FDI into manufacturing, logistics, and increasingly services has created cumulative learning effects, reinforcing agglomeration dynamics even in the absence of universally high human-capital indicators. Shenzhen offers a particularly relevant comparison: in its early FDI-driven phase, human capital levels were uneven, but dense industrial clustering and rapid skill formation through firm-level learning produced a self-reinforcing trajectory. The comparison indicates that agglomeration can precede, rather than merely reflect, advanced human capital, especially in late-industrializing urban contexts.

Regulatory quality further differentiates HCMC from established compact–FDI cities while clarifying its role as a conditional enabler rather than a primary driver. In Singapore or Zurich, regulatory quality is deeply institutionalized and thus invisible as a distinguishing causal factor. In HCMC, by contrast, regulatory reforms, investment facilitation, and special economic governance arrangements have played a leveraging role, allowing existing compactness and agglomeration advantages to translate into realized FDI. This supports the QCA finding that regulatory quality appears in some but not all high-FDI configurations, and that its causal relevance is context-dependent rather than universal.

Land cost dynamics offer another critical triangulation point. In global compact cities, high land costs function as a market signal of productivity, accessibility, and institutional credibility. HCMC shows early signs of this mechanism, but with greater volatility and risk. Rising land prices in core districts reflect investor confidence and agglomeration pressure, yet peripheral fragmentation and infrastructure gaps prevent land markets from fully internalizing productivity gains. The comparison underscores a key policy risk identified in the negative-outcome configurations: high land costs divorced from transport access and environmental quality can undermine, rather than reinforce, FDI attractiveness. HCMC currently sits at a threshold where policy choices will determine whether land costs evolve into a productivity signal or become a structural bottleneck.

Environmental quality and transport accessibility represent the most salient divergence between HCMC and leading compact–FDI cities. In Singapore, Tokyo, and Stockholm, environmental regulation and transit-oriented development actively sustain compactness and agglomeration over time. HCMC's weaker performance on these dimensions explains why its high FDI outcome emerges only under specific configurations and does not generalize across all cities with similar density profiles. The triangulation reinforces the configurational insight that compactness alone is

not self-sustaining; without complementary investments in mobility and environmental management, its long-term contribution to FDI is fragile.

Synthesizing these comparisons, Ho Chi Minh City can be understood as an intermediate compact–FDI city, where density-driven agglomeration and selective regulatory facilitation compensate for incomplete infrastructure and environmental conditions. Its trajectory resembles an early-stage version of Shenzhen more than a mature global city like Singapore. This positioning aligns closely with the QCA results: HCMC appears in the positive outcome under conservative solutions only through a specific configuration, while in permissive solutions it is absorbed into the broader compactness-based explanation. The empirical case thus validates the methodological insight that permissive solutions identify structural potential, whereas conservative solutions capture realized, context-bound causation.

From a policy standpoint, the triangulation yields several strategic implications. First, HCMC's experience suggests that compactness-led FDI attraction can precede full institutional maturity, but only temporarily. Second, upgrading transport accessibility and environmental quality is not merely a quality-of-life agenda; it is essential for stabilizing agglomeration benefits and preventing reversal into low-FDI configurations. Third, regulatory reforms should continue to function as catalytic complements rather than substitutes for structural urban investment. Finally, the comparison with global compact–FDI cities highlights the importance of transitioning from organic density to managed compactness, where planning, governance, and infrastructure progressively align with market-driven agglomeration.

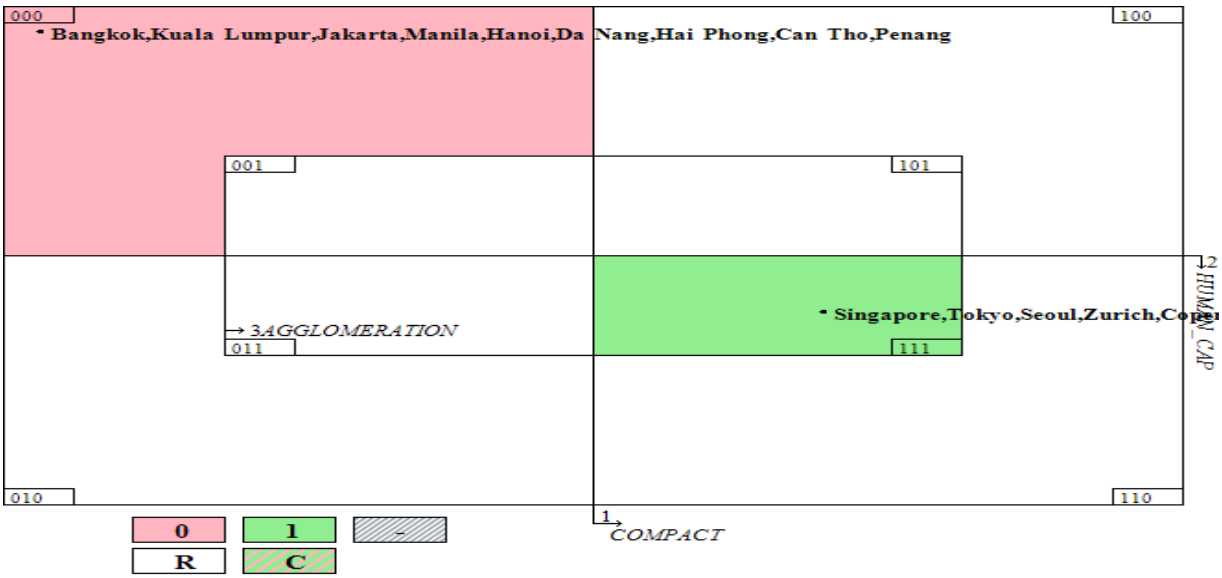
Overall, the triangulated analysis of Ho Chi Minh City strengthens the central conclusion of the study: FDI attraction in cities is best explained through a configurational and dynamic lens. Compactness, human capital, and agglomeration form the structural core, but their effectiveness depends on how they are sequenced, institutionalized, and reinforced over time. Ho Chi Minh City illustrates both the opportunities and the vulnerabilities of partial compactness, offering a compelling empirical bridge between late-developing cities and established global FDI hubs.

Across the conservative solutions without logical remainders, a clear structural asymmetry is evident. High FDI is not associated with any single condition in isolation but instead with a dense core configuration that repeatedly combines urban compactness, human capital, agglomeration economies, transport accessibility, environmental quality, andimportantlyhigh land costs as a signal of intense economic demand. Regulatory quality, while not universally present, appears as a context-dependent amplifier, particularly in late-developing or institutionally transitional cities such as Ho Chi Minh City. This finding reinforces the notion that FDI attraction is fundamentally conjunctural: foreign investors respond not to marginal improvements in single policy domains, but to mutually reinforcing urban, economic, and governance conditions that together reduce uncertainty, enhance productivity, and support long-term locational commitment.

The conservative negative-outcome analysis further strengthens this interpretation by showing that low FDI is likewise configurational, arising from the simultaneous absence of compactness, human capital, agglomeration, accessibility, and regulatory quality (see Figure 1). Here, the policy lesson is particularly sharp: deficits compound rather than offset one another. Notably, high land costs

reappear in one negative pathway, but with a reversed meaning. When disconnected from productivity-enhancing conditions and institutional quality, high land costs act as a pure deterrent rather than as a signal of economic vitality. This underscores a central insight of set-theoretic analysis: the causal meaning of a condition is relational, not intrinsic.

Figure 1: Venn Diagram Corresponding to Table 1 (TOSMANA)



The analyses that incorporate logical remainders clarify the structural foundations underlying these patterns by defining the upper bound of causal simplification supported by the data. When counterfactual reasoning is permitted, compactness, human capital, and agglomeration each emerge as single-condition sufficient explanations for both high and low FDI, depending on whether they are present or absent. While these solutions rely heavily on simplifying assumptions and should not be read as empirically grounded monocausal explanations, they are theoretically illuminating. They reveal that urban compactness, skills, and agglomeration constitute the irreducible structural dimensions around which more complex configurations are built. In this sense, the permissive solutions do not contradict the conservative ones; rather, they identify the deep causal axes that structure the observed conjunctural patterns.

From a policy perspective, the synthesis of all four procedures leads to several important implications. First, sequencing and complementarity matter more than isolated interventions. Policies aimed solely at improving regulatory quality, transport infrastructure, or environmental amenities are unlikely to generate sustained FDI inflows unless they are embedded within a broader strategy that promotes compact urban development, skill accumulation, and agglomeration dynamics. This is especially relevant for emerging cities that attempt to compete for FDI by offering regulatory or fiscal incentives without addressing underlying urban and human-capital constraints.

Second, the findings caution against simplistic interpretations of land markets. High land costs should not be treated as either inherently positive or negative. Instead, policy should focus on ensuring that rising land values are accompanied by productivity gains, accessibility, and environmental quality. Where land costs rise in the absence of these conditions, they can lock cities into low-FDI equilibria by discouraging both domestic upgrading and foreign entry.

Third, regulatory quality emerges as a conditional lever rather than a universal driver. In mature global cities with deeply embedded agglomeration economies, regulatory quality may be taken as given by investors and therefore does not appear as a differentiating factor. In contrast, in transitional contexts, improvements in regulatory transparency and predictability can decisively enable existing structural assets to translate into FDI. This suggests that governance reforms are most effective when aligned with, rather than substituted for, structural urban and economic development.

Finally, the strong asymmetry between the causal paths to high and low FDI implies that policy failure cannot be inferred by simply reversing policy success factors. Avoiding low FDI requires eliminating cumulative deficits across multiple domains, while achieving high FDI requires building dense complementarities. This has important implications for evaluation: incremental improvements may prevent deterioration, but they are unlikely to be sufficient for transformational change unless they alter the underlying configuration.

In sum, the synthesis of conservative and permissive QCA results demonstrates that foreign direct investment is best understood as the outcome of configurational urban political economy, where compactness, human capital, and agglomeration form the structural core, and transport, environmental, and regulatory conditions shape context-specific pathways. For policymakers, the key message is that FDI strategies must be holistic, sequenced, and spatially grounded. Attempts to shortcut structural development through isolated reforms may produce temporary gains, but sustainable FDI attraction depends on building and maintaining the full configuration of mutually reinforcing conditions identified in this analysis.

CONCLUSIONS

This paper set out to answer a focused and policy-relevant question: does the implementation of compact-city policies causally affect a city's ability to attract high-quality FDI defined as knowledge-intensive, value-adding, and environmentally sustainable investment and if so, through which interacting conditions and mechanisms? To address this problem the study combined a configurational set-theoretic approach (QCA implemented in TOSMANA) with focused cross-city comparisons and in-depth case triangulation, using a deliberately diverse sample of compact-oriented cities and Vietnamese comparator cases.

The analyses produce three interrelated findings. First, high-quality FDI is best explained as the product of a conjunctural configuration rather than a single causal factor: conservative QCA solutions (without logical remainders) identify a recurring core combination compact urban form together with strong human capital, agglomeration economies, effective transport accessibility,

elevated land-market pressure, and high environmental quality as sufficient for high FDI in the observed sample. Regulatory quality appears as an important but context-dependent amplifier (notably in transitional cases such as Ho Chi Minh City). Second, the absence of high-quality FDI likewise follows a configurational logic: cumulative deficits across compactness, skills, agglomeration, accessibility, and regulatory quality form stable pathways to weak FDI outcomes; isolated high land costs without productivity and governance complements can exacerbate deterrence. Third, permissive QCA solutions that include logical remainders highlight deeper structural axes compactness, human capital, and agglomeration as core dimensions whose presence or absence largely structures the configurational space, but these parsimonious results rest on strong counterfactual assumptions and therefore complement rather than displace the more empirically grounded conjunctural findings.

From these results follow several concise, policy-relevant takeaways:

- Treat compactness as a structural platform, not a standalone policy: compact-city measures increase the likelihood of attracting high-quality FDI only when combined with investments in skills, agglomerative linkages, and transport accessibility.
- Prioritize sequencing and complementarity. Regulatory reforms, transport upgrades, environmental management, and housing/land-market measures should be coordinated so that gains in one domain are reinforced rather than offset by deficits in another.
- Manage land markets deliberately. Rising land values can signal productivity and attract investors only when they co-occur with accessibility, human-capital depth, and institutional reliability; otherwise, high land costs become a barrier.
- Use regulatory improvement as a catalyst in transitional contexts. In cities with emergent compactness and agglomeration (e.g., HCMC), clearer, predictable, and faster regulatory processes help unlock latent structural advantages.
- Design evaluation and promotion strategies around configurational diagnostics rather than single indicators: city investment strategies should diagnose which elements of the favorable configuration are missing and target bundles of interventions accordingly.

In closing, this study reframes the compactness–FDI relationship from a question of correlation to one of conditional causation: compact urban development creates potential, but that potential is realized only within particular institutional, infrastructural, and human-capital configurations. Policymakers seeking sustained, high-quality FDI should therefore pursue holistic, sequenced strategies that build and stabilize the full configuration of mutually reinforcing conditions identified here. Future research should expand longitudinal and firm-level evidence to better trace temporal sequencing, test spillover dynamics across neighboring cities, and evaluate policy experiments that deliberately manipulate individual elements of the configuration

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Annex 1: Outcome and Conditional Variables for QCA Analysis of High-Quality FDI Attraction

Variable	Explanation
FDI_HIGH	FDI_HIGH represents the capacity of a city or locality to attract high-quality foreign direct investment (FDI) over a given period. Unlike conventional measures based on total registered capital or the number of projects, this variable emphasizes the qualitative composition and structural characteristics of FDI inflows. It captures the extent to which FDI is oriented toward high value-added and knowledge-intensive activities, such as high-technology manufacturing, advanced producer services, research and development (R&D), information and communication technologies (ICT), financial services, regional headquarters, and environmentally sustainable or ESG-oriented investment ("green FDI"). Within the QCA framework, FDI_HIGH is conceptualized as a set: localities with a strong concentration of knowledge-intensive and high value-added FDI, generating significant spillover effects, exhibit high degrees of set membership, while those dominated by labor-intensive, land-intensive, or low value-added FDI exhibit low membership.
COMPACT	COMPACT captures the degree of compact urban development of a city or locality over a specified period. It conceptualizes compactness as a spatial development model characterized by high density, efficient land use, functional integration, and strong accessibility, in contrast to dispersed urban expansion or urban sprawl. Substantively, this variable reflects high population and employment density, a large share of built-up land, mixed land use integrating residential, commercial, and office functions, and urban spatial structures that support short distances and/or polycentricity. In QCA terms, cities that combine high density with efficient public transport and diverse urban functions display high membership in the COMPACT set, while sprawling, car-dependent, and rigidly zoned cities show low membership.
HUMAN_CAP	HUMAN_CAP reflects the availability and quality of human capital in a city or locality. Rather than measuring labor quantity alone, it focuses on the stock of skills, education, knowledge, and innovative capacity embedded in the local workforce. This includes educational attainment, technical and professional skills, R&D capabilities, and the ability to adapt to new technologies. HUMAN_CAP is particularly relevant for talent-seeking and knowledge-seeking FDI. Within the QCA framework, cities with a high share of highly educated workers, dense concentrations of students and researchers, substantial R&D activity, and strong talent attraction and retention exhibit high set membership, whereas cities relying predominantly on low-skilled labor exhibit low membership.
AGGLOMERATION	AGGLOMERATION captures the degree of economic agglomeration economies within a city or locality. It reflects the spatial concentration of firms, specialized labor, suppliers, and supporting services, which collectively reduce transaction costs, enhance coordination efficiency, and facilitate knowledge spillovers. This condition is especially important for knowledge-intensive FDI in advanced services, high-technology manufacturing, finance, and creative industries. In QCA terms, cities characterized by high firm density, the presence of strong industrial or sectoral clusters, dense supplier networks, and intense economic interaction exhibit high membership in the AGGLOMERATION set, while fragmented and weakly connected local economies show low membership.
TRANSPORT_ACCESS	TRANSPORT_ACCESS reflects the level of transport connectivity and accessibility of a city or locality. It goes beyond infrastructure provision to emphasize effective

	access to socio-economic space, including the quality of public transport, multimodal connectivity, and reductions in travel time for workers, goods, and services. High membership in the TRANSPORT_ACCESS set characterizes cities with well-developed public transport systems, strong connectivity between key functional zones, and efficient links to airports, seaports, logistics hubs, and major economic corridors. Low membership is associated with underdeveloped infrastructure, congestion, and heavy reliance on private vehicles.
REG_QUALITY	REG_QUALITY captures the quality of urban governance and the effectiveness of the regulatory and institutional environment. It emphasizes transparency, consistency, predictability, and effectiveness of policy implementation, particularly in areas relevant to foreign investors such as investment procedures, spatial planning, land use, construction, and business regulation. In the QCA framework, cities with clear and coherent planning frameworks, streamlined administrative procedures, short licensing times, and effective policy coordination exhibit high membership in the REG_QUALITY set, while those characterized by regulatory overlap, bureaucratic complexity, and institutional uncertainty display low membership.
HIGH_LAND_COST	HIGH_LAND_COST reflects the extent to which land and housing costs impose a high spatial cost burden on firms and workers in a city or locality. This variable conceptualizes land costs relative to productivity levels and average incomes rather than in absolute terms. In compact cities, high density may generate upward pressure on land and housing prices, potentially undermining attractiveness for cost-sensitive or land-intensive FDI. Within the QCA framework, localities with land prices, commercial rents, and housing costs that are high relative to economic fundamentals exhibit high membership in the HIGH_LAND_COST set. In many analyses of high-quality FDI, this condition is also examined in its negated form (¬HIGH_LAND_COST), representing contexts in which spatial costs do not excessively constrain investment decisions.

Annex 2: Scoring of compact cities and FDI relationship

ID	FDI_HIGH	COMPACT	HUMAN CAP	AGGLOMERATION	TRANSPORT ACCESS	REG QUALITY	HIGH_LAND COST	ENV QUALITY
Singapore	95	95	95	98	95	98	30	72
Tokyo	92	97	92	96	94	90	32	70
Seoul	88	92	90	90	92	88	28	62
Zurich	82	85	88	85	88	95	35	86
Copenhagen	80	88	85	82	90	92	45	88
Stockholm	78	85	82	80	88	90	50	84
Vienna	75	80	80	78	85	88	48	80
Amsterdam	78	82	83	85	88	87	38	78
Paris	80	85	88	90	90	85	40	65
Barcelona	74	80	78	75	82	80	55	75
Hong Kong	90	98	92	95	96	92	25	62
Shanghai	85	90	85	92	90	75	45	60
Shenzhen	88	88	85	90	88	78	48	64
Taipei	76	85	80	78	85	80	42	66
Bangkok	70	70	68	72	78	65	65	45
Kuala Lumpur	68	72	70	70	75	70	62	55
Jakarta	65	65	65	70	68	55	70	38
Manila	62	68	63	65	70	55	75	36
Hanoi	60	78	75	72	68	60	55	25
Ho Chi Minh City	72	80	78	78	70	62	52	30
Da Nang	58	70	65	60	68	65	80	58
Hai Phong	62	68	65	65	70	60	85	50
Can Tho	45	60	55	50	60	55	90	52
Penang	66	72	70	68	72	75	60	54
Osaka	80	88	85	82	90	88	40	68