



Journal of Enterprise Strategy & Management Innovation
Volume I, Issue 1, February 2026

<https://journal.ijhba.com/index.php/jesmi>
<https://slsipress.com>

Women's Empowerment and Enterprise Dynamism in the Philippines: A WDI-Based Index and Time-Series Evidence (2006–2022)

Norma Menez, PhD¹ and Ramon George O. Atento, PhD²

¹Lumina Foundation

²First Asia Institute of Technology and the Humanities, Tanauan, Batangas

Corresponding author: roatento@firstasia.edu.ph

Abstract

This study tests whether women's empowerment is associated with formal enterprise dynamism in the Philippines using annual World Development Indicators (WDI) data from 2006–2022 (N = 17). Enterprise dynamism is measured by new business density (new limited-liability firm registrations per 1,000 working-age people). Women's empowerment is operationalized as a composite Women's Empowerment Index (WEI) built from seven WDI indicators capturing women's economic participation and job quality, autonomy-related constraints, and institutional inclusion (constraint indicators reverse-coded). Using OLS time-series regression with HAC/Newey–West standard errors, WEI is positively associated with new business density in baseline models ($\beta = 0.061$, $p < .01$) and remains positive after conditioning on log GDP per capita and trade openness ($\beta = 0.159$, $p < .01$). Controlling for pandemic disruption yields a large negative 2020 shock ($\beta = -0.089$, $p < .01$) while the WEI association remains positive ($\beta = 0.132$, $p < .05$). Measurement robustness using a PCA-based WEI preserves a positive coefficient ($\beta = 0.123$, $p < .10$), whereas a one-year lag specification provides no evidence of delayed effects ($\beta = 0.002$, $p = .962$; N = 16). Overall, empowerment conditions co-move positively with formal firm entry in the Philippines, while causal interpretation remains limited by the single-country observational design.

Keywords: *women's empowerment; enterprise dynamism; new business density; formal firm entry; entrepreneurship; Philippines; World Development Indicators; time-series regression; HAC/Newey–West; gender inclusion*

1. Introduction

Women's empowerment has become a central concern in development and strategic governance because it reflects the extent to which half of a country's population can participate meaningfully in economic life, exercise agency over life-course decisions, and access institutions that shape opportunity. In practical terms, empowerment is not confined to an abstract social ideal; it is observable in concrete, measurable conditions such as women's labor-market participation and job quality, maternal health risks, adolescent fertility patterns, and representation in public decision-making. These conditions shape how economies mobilize talent, distribute productive roles, and create pathways for upward mobility.

In parallel, countries pursue enterprise growth and competitiveness by encouraging business formation, lowering barriers to entry, and improving the business environment. A standard macro

indicator that captures this dimension is new business density, which reflects the rate of newly registered limited-liability firms relative to the working-age population. While this indicator does not capture informal enterprise activity, it provides a consistent proxy for formal business entry and a country's capacity to generate new registered firms over time.

The link between women's empowerment and enterprise dynamism is theoretically plausible but empirically non-trivial. On one hand, empowerment may expand the effective pool of entrepreneurial and managerial talent by increasing women's participation in the labor force and strengthening pathways into stable employment. Improvements in job quality can support skills accumulation, professional networks, and income stability—conditions that may lower the threshold for business entry and formal registration. Reduced life-course constraints—such as lower adolescent fertility and improved maternal survival—may improve educational continuity and sustained labor-market



participation, strengthening the long-term capacity to build and manage enterprises. Greater representation of women in national decision-making may also signal a more inclusive institutional environment, potentially influencing governance quality and the policy infrastructure relevant to entrepreneurship.

On the other hand, empowerment indicators may co-move with broader modernization forces that also drive business entry, including economic development, market openness, urbanization, and institutional reform. In such settings, the association between empowerment and enterprise dynamism may reflect shared drivers rather than a direct causal pathway. Moreover, macro time-series relationships can be sensitive to shocks and discontinuities—most notably the pandemic-era period—when both labor-market conditions and business formation were disrupted. These realities motivate a design that is explicit about what can and cannot be inferred from country-level annual indicators.

Against this background, the present study investigates whether women’s empowerment is statistically associated with formal enterprise dynamism in the Philippines using annual macro indicators from the World Bank’s World Development Indicators (WDI) over 2006–2022. Women’s empowerment is operationalized as a composite index reflecting economic participation and job quality, autonomy-related constraints, and institutional inclusion. Enterprise dynamism is operationalized as new business density. The empirical approach estimates conditional associations using time-series regression with inference procedures appropriate for small-sample annual data, and it incorporates robustness checks to address measurement sensitivity, shock-year discontinuity, temporal ordering, and alternative macro controls. By doing so, the study provides evidence on whether empowerment conditions co-move with formal business entry in the Philippine context, offering a basis for strategic interpretation while maintaining appropriate caution regarding causal claims.

Objectives of the Study

General Objective

To determine whether women’s empowerment is statistically associated with formal enterprise dynamism in the Philippines using annual WDI indicators for 2006–2022.

Specific Objectives

1. To construct a multidimensional Women’s Empowerment Index (WEI) for the Philippines from annually available WDI indicators representing (a) economic participation and job quality, (b) autonomy-related constraints, and (c) institutional inclusion.
2. To estimate the association between the WEI and new business density (formal limited-liability firm registrations per 1,000 working-age population) using annual time-series regression with HAC/Newey–West inference.
3. To test whether the WEI–enterprise association is robust to baseline macro conditioning variables (log GDP per capita and trade openness) and to alternative controls (inflation and urbanization) under parsimonious specifications.
4. To account for pandemic-era disruption by incorporating a 2020 shock indicator and evaluating sensitivity of estimates.
5. To evaluate measurement and temporal-ordering robustness by estimating (a) a PCA-based WEI specification and (b) a lagged WEI specification.

2. Review of Related Literature

2.1 Female Labor Force Participation and Formal Business Formation

Research indicates that higher female labor force participation (FLFP) is influenced by complex factors including education, economic structure, social norms, and institutional settings, but direct evidence linking increased FLFP to formal business entry or new firm registrations is limited. Studies show that while rising education and economic growth can boost women’s participation in the labor market, persistent gender norms and limited access to formal employment opportunities often constrain women’s ability to enter or create formal businesses (Klasen, 2019; Klasen et al., 2020; Sahin, 2025). In many developing countries, women face barriers to formal sector jobs despite higher education levels, which may limit their capacity to start or register new firms formally (Sahin, 2025). Additionally, digital access and supportive policies are crucial for



enabling women's transition into formal employment and entrepreneurship (Badlani & Rami, 2025). Regional disparities and socio-cultural factors also play a significant role in shaping female participation in formal economic activities, with some areas showing stagnation despite educational gains (Assaad et al., 2020; Nursyamsiah et al., 2025). Overall, while higher FLFP can be associated with improved economic opportunities for women, the translation into increased formal business entry depends heavily on overcoming structural and social constraints (Klasen, 2019; Sahin, 2025).

The relationship between women's labor force participation and formal business formation remains underexplored in the Philippine context, yet several studies provide indirect evidence of the mechanisms through which female employment may influence entrepreneurial entry. Quinto and Atento (2025), in their analysis of four ASEAN economies (1999–2024), demonstrate that female labor force participation does not automatically translate into improved economic outcomes. Their within-country correlation approach reveals substantial heterogeneity: in Singapore, higher employment-to-population ratios (which include women) correlate negatively with child stunting ($r = -0.938, p < .001$), suggesting that when women's employment occurs within supportive institutional environments (childcare infrastructure, family-responsive policies), it generates broader developmental gains. Conversely, in Brunei, employment-to-population ratios correlated positively with stunting ($r = 0.901, p < .001$), which the authors interpret as reflecting maternal time trade-offs where employment expansion without complementary care systems may strain household well-being. This finding has implications for understanding female labor force participation and entrepreneurship: the translation of women's economic activity into formal business entry likely depends on enabling conditions—access to capital, childcare support, and institutional responsiveness—rather than participation rates alone.

The institutional conditions that facilitate the conversion of labor force participation into formal enterprise are further illuminated by Atento's (2025b) Philippine Diplomatic Credibility Framework. Although focused on foreign policy, the framework emphasizes that economic resilience—including the capacity of women to participate productively in markets—depends on governance integrity and institutional stability. Atento argues that the "economic 'open but shallow' characterization" applies to economies where

participation exists but lacks depth; by extension, female labor force participation may produce formal business entries only when supported by predictable regulatory environments, anti-corruption enforcement, and accessible business registration systems. The paper's emphasis on "converting domestic strength into external leverage" parallels the conversion of women's economic activity into formal entrepreneurship: participation is necessary but insufficient without institutional mechanisms that lower entry barriers.

Espelita and Atento's (2025) analysis of consumer behavior and feeder-school ecosystems introduces the Consumer-Centered Marketing Framework (CCMF), which traces how community values translate into institutional outcomes. While their focus is higher education marketing, the framework's logic applies to entrepreneurship: women's labor force participation generates economic agency and community visibility, which may, under supportive conditions, trigger entrepreneurial intentions. The study identifies five value domains—community belonging, creativity, excellence, leadership, and integrity—that shape decision-making. For women considering business entry, these values likely interact with labor market experience: exposure to formal employment may strengthen leadership identity and perceived competence, increasing the likelihood of formal business registration.

Atento, Quinto, Espelita, and Castañeda's (2025) dual outcomes framework for healthcare analytics offers a conceptual parallel: just as integrated analytics can produce simultaneous clinical and financial gains, integrated policy approaches that combine labor market participation with entrepreneurship support may produce dual gains in women's economic empowerment and business formation. The framework's emphasis on "organizational alignment as a moderator" translates to the national level: alignment between labor ministries, trade agencies, and gender equality mechanisms may amplify the effect of female participation on business registration.

2.2 Women in Wage and Salaried Employment and Entrepreneurial Transitions

Higher shares of women in wage and salaried employment do not straightforwardly increase formal entrepreneurship or new business registrations, as structural labor market segregation



and gendered employment experiences often limit women's access to entrepreneurship-relevant resources and opportunities. Women's perceptions of the ease of starting a business tend to be lower than men's, partly due to their positions in sex-segregated labor markets, which reduces their exposure to entrepreneurial career paths and industry opportunities (Tonoyan et al., 2020; Tonoyan et al., 2023). Institutional changes that lower barriers to entrepreneurship can increase female venture creation, especially among women in managerial roles, but may also lead to unintended consequences such as wider gender pay gaps for women remaining in wage employment (Castellaneta et al., 2020). The motherhood wage penalty further motivates some women, particularly those in higher-paying or managerial jobs, to pursue entrepreneurship as an alternative to wage work (Yang et al., 2023). Additionally, a larger informal sector correlates with fewer women engaging in formal entrepreneurship, suggesting that many women remain constrained by barriers that push them into informal work rather than formal business registration (DiRienzo & Das, 2021). Overall, while increased female wage employment can create conditions conducive to entrepreneurship for some women, persistent labor market segregation and social factors often limit the translation into higher formal business entry rates (Tonoyan et al., 2020; Castellaneta et al., 2020; DiRienzo & Das, 2021).

The share of women in wage and salaried employment represents a specific form of labor force participation—formal, contracted work with predictable income and employment protections. This employment type may differently affect entrepreneurial entry compared to informal or vulnerable employment. Quinto and Atento (2025) distinguish between employment-to-population ratios and the quality of employment in their ASEAN analysis. Their finding that employment correlates positively with stunting in contexts with weak care systems (Brunei, Malaysia, and marginally in the Philippines) suggests that wage and salaried employment, when examined in aggregate, may mask heterogeneity in employment quality. Women in wage employment typically have greater income stability, access to formal credit, and social protections—resources that could facilitate formal business registration. However, the study's correlation between reserves and employment-to-population in the Philippines ($r = -0.313$, $p = 0.127$) was not statistically significant, indicating that macroeconomic buffers alone do not determine employment quality or its developmental consequences.

The institutional mechanisms linking formal employment to entrepreneurship are suggested by Atento's (2025b) credibility framework, which emphasizes that "credibility abroad mirrors coherence at home." For women, coherence between labor market institutions and entrepreneurship support systems may determine whether wage employment serves as a pathway to business ownership. The paper's emphasis on "governance integrity" as foundational to economic resilience implies that women's wage employment can translate into business registration only when registration systems are transparent, accessible, and free from corruption.

Nona and Atento's (2025) analysis of Puregold's investment attractiveness, while focused on equity valuation, offers a methodological parallel: the study demonstrates how fundamental analysis (profitability, leverage, liquidity) can be integrated with behavioral signals to assess investment potential. For women considering business entry, wage employment provides observable "fundamentals"—savings capacity, credit history, business exposure—that function as inputs to entrepreneurial readiness. The study's decision matrix approach, which synthesizes multiple indicators into an "Attractive (Buy/Overweight)" classification, illustrates how multidimensional assessment might apply to evaluating women's entrepreneurial potential.

Rao, Tian, and Atento's (2025) study of AI in education identifies a critical distinction between digital adoption and AI-adaptive adoption—a distinction that parallels the difference between wage employment and entrepreneurial capability. Institutions may be "digital" without being "AI-adaptive"; similarly, women may be employed without developing entrepreneurial capacity. The study's finding that respondents perceived AI as effective for engagement and feedback but only moderately effective for performance improvement (mean ≈ 3.33) suggests that capability development requires more than exposure—it requires structured support, mentorship, and institutional reinforcement.

2.3 Vulnerable Employment as a Constraint on Formal Business Entry

Higher female vulnerable employment—such as own-account work and contributing family labor, which are typically informal and unprotected—tends to be associated with lower rates of formal business entry and new firm registrations. A larger



informal sector implies more women working in vulnerable, informal jobs due to barriers like discrimination and limited access to formal markets, which reduces their participation in formal entrepreneurship (DiRienzo & Das, 2021). Informal employment often lacks benefits, legal protections, and official recognition, making it a poor substitute for formal business ownership or registration (Aronsson et al., 2023). Social norms and structural constraints also limit women's transition from vulnerable employment to formal entrepreneurship, as seen in contexts like Pakistan where low female labor force participation correlates with limited formal business involvement (Rauf, 2025). Digital financial inclusion can help overcome some barriers by easing financing constraints and providing information, especially for vulnerable women, but this does not fully offset the negative impact of high informal or vulnerable employment on formal entrepreneurship rates (Yang et al., 2022). Overall, higher shares of female vulnerable employment appear to reduce the likelihood of women entering or registering businesses formally due to economic, social, and institutional obstacles (Rauf, 2025; DiRienzo & Das, 2021; Aronsson et al., 2023).

Vulnerable employment—own-account work and contributing family work—represents a precarious form of economic participation that may constrain rather than enable formal business registration. The distinction between vulnerable employment and formal entrepreneurship is central to understanding how women's work relates to business formation. Quinto and Atento (2025) explicitly address vulnerable employment through their analysis of employment-to-population ratios and labor force participation. Their finding that employment correlates positively with stunting in weaker care systems implies that vulnerable employment—which often lacks the protections of wage work—may exacerbate rather than alleviate household constraints. The study's policy conclusion that "employment alone did not uniformly reduce undernutrition and sometimes correlated positively with stunting" directly supports the proposition that vulnerable employment may trap women in survival activities rather than enabling entrepreneurial accumulation.

The health professions education literature provides indirect evidence of how vulnerable employment patterns emerge. Bermido, Quinto, and Atento's (2025) thematic review of challenges in health professions education identifies "program viability vs licensure-driven quality pressures" as a structural tension. In contexts where formal

employment opportunities are limited, health professions graduates may enter vulnerable employment—underemployment, informal practice, or migration-related deskilling—rather than formal practice. The review's emphasis on "clinical placement scarcity and maldistribution" as structural bottlenecks suggests that vulnerable employment may result from system-level constraints rather than individual choice.

Atento et al.'s (2025a) analysis of global health workforce gaps provides more direct evidence: the study reports that while the Philippines has a large registered nurse base (roughly 900,000 to 1,000,000), only about half are active in practice. This "leakage" from formal employment into inactivity or migration-related vulnerable employment illustrates how training investments may not translate into formal economic participation. The study's finding that "migration intention and outward mobility indicators remain strong" (e.g., 36,400 Philippine-educated first-time NCLEX takers in 2023) suggests that vulnerable employment in the domestic context may be preferred over formal local employment due to wage differentials and working conditions.

Temporada et al.'s (2025) study of leptospirosis awareness in flood-prone Marikina communities, while focused on public health, demonstrates how vulnerable populations experience structural constraints. The finding that awareness varied significantly by educational attainment ($p = 0.002$) and barangay ($p = 0.025$) suggests that vulnerability is spatially and educationally concentrated. For women in vulnerable employment, similar patterns likely apply: lack of formal education and residence in disadvantaged communities may simultaneously increase vulnerable employment and reduce capacity for formal business registration.

The CCMF framework developed by Espelita and Atento (2025) offers a conceptual tool for understanding how vulnerable employment might be transformed. The framework's emphasis on "community values → consumer triggers → marketing design responses → institutional outcomes" suggests that interventions targeting vulnerable women entrepreneurs must begin with community-level understanding of values and constraints. The five value domains identified—belonging/safety, creativity, excellence, leadership, integrity—provide a vocabulary for designing programs that resonate with women in vulnerable



employment and support transitions to formal enterprise.

2.4 Adolescent Fertility as a Life-Course Determinant of Entrepreneurial Capacity

Lower adolescent fertility is linked to increased women's economic participation, which can subsequently enhance formal entrepreneurship and business entry. Reducing adolescent childbearing raises the likelihood of school completion and formal labor market participation, enabling women to access better employment opportunities and potentially pursue entrepreneurship (Finlay & Lee, 2018; Ferre et al., 2023). Early motherhood often leads women into low-quality informal jobs, limiting their economic empowerment and formal business engagement (Herrera et al., 2019). Programs improving reproductive health and contraceptive access support women's agency, education, and labor force involvement, which are critical pathways to formal economic activities including entrepreneurship (Finlay et al., 2025; Finlay & Lee, 2018). However, some interventions show modest or no direct effects on fertility or economic outcomes without addressing broader social and economic environments (Austrian et al., 2020). Overall, evidence suggests that policies reducing adolescent fertility contribute positively to women's formal economic participation and may increase formal business entry rates by improving education and labor market integration (Finlay & Lee, 2018; Ferre et al., 2023; Herrera et al., 2019).

Adolescent fertility represents a critical life-course event that may disrupt educational attainment, labor market entry, and subsequent entrepreneurial capacity. The relationship between early childbearing and women's economic outcomes operates through multiple channels: interrupted schooling, reduced labor market experience, and constrained access to capital and networks. Agang-Ang et al.'s (2025) study of gender differences in nutrition, lifestyle, and distress among dormitory medical students provides indirect evidence of how early life course disruptions affect later outcomes. While focused on medical students—a highly selected population—the study's finding that females reported higher stress and greater emotional exhaustion, while males showed higher depersonalization, suggests that gender-specific psychological burdens may accumulate across the life course. For adolescent mothers, these burdens are likely magnified: early childbearing compounds educational disruption with caregiving demands,

reducing capacity for both formal employment and entrepreneurship.

The study's correlation results among female students are particularly instructive: emotional exhaustion correlated positively with screen time ($r = 0.242, p = 0.001$), snacking ($r = 0.233, p = 0.002$), and BMI ($r = 0.197, p = 0.008$), while correlating negatively with sleep hours ($r = -0.236, p = 0.001$) and physical activity ($r = -0.186, p = 0.012$). These patterns illustrate how stress manifests in behaviors that may further constrain economic capacity. For adolescent mothers, such stress-behavior dynamics may create self-reinforcing cycles that limit entrepreneurial engagement.

Atento's (2025a) analysis of PSE valuation metrics and market efficiency introduces the concept of "sentiment impairment"—a condition where information is available but conviction to act remains limited. This concept applies to adolescent mothers considering entrepreneurship: even when opportunities exist and support programs are available, confidence impairment resulting from early life disruption may prevent business registration. The paper's conclusion that "the challenge is not informational opacity but the translation of knowledge into conviction" directly parallels the challenge facing adolescent mothers: knowledge of entrepreneurial opportunities exists, but conviction to pursue them may be undermined by accumulated disadvantage.

Quinto and Atento's (2025) ASEAN analysis provides macroeconomic context for understanding adolescent fertility's effects. The strong negative correlation between purchasing power parity (PPP) and child stunting in the Philippines ($r = -0.944, p < .001$) suggests that household economic resources are powerfully protective of child health. For adolescent mothers, limited household resources may simultaneously constrain child nutrition and entrepreneurial capacity. The study's finding that reserves correlated negatively with stunting in the Philippines ($r = -0.925, p < .001$) further emphasizes that macroeconomic buffers, when channeled appropriately, can improve child outcomes—potentially freeing mothers' time and resources for economic participation.

Bermido et al.'s (2025) review of health professions education identifies "Generation Z learning preferences and digital-era learning environments" as a contemporary challenge. For adolescent mothers, who are predominantly Gen Z or younger, digital learning environments could offer pathways to educational recovery and



entrepreneurial skill development. However, the review's emphasis on "curriculum–practice misalignment" suggests that even well-designed programs may fail if they do not connect to actual employment and entrepreneurship opportunities. The authors' call for "data-driven quality assurance and institutional decision-making" applies to adolescent mother support programs: without systematic tracking of outcomes, interventions may not achieve their intended effects.

The Narrative Health Analytics framework developed by Atento, Quinto, Espelita, and San Juan (2025) offers methodological guidance for understanding adolescent mothers' experiences. The framework's emphasis on treating patient narratives as systematically analyzable evidence suggests that adolescent mothers' stories—their educational disruptions, caregiving challenges, and entrepreneurial aspirations—can be translated into structured indicators that inform program design. The framework's insistence that "interpretability and cultural context are necessary conditions for responsible analytics" applies directly to adolescent mother research: quantitative analysis of fertility and entrepreneurship must be complemented by qualitative understanding of context-specific barriers and supports.

2.5 Women's Political Representation and Institutional Enablers of Entrepreneurship

Greater women's political representation, such as increased parliamentary seat share, is generally associated with positive impacts on economic growth and technological change, which can create a more conducive environment for entrepreneurship and new firm registrations. Women's political empowerment enhances the diversity of ideas and improves institutional selection mechanisms, potentially fostering entrepreneurship-related institutions and policies that support business formation (Dahlum et al., 2022). However, direct evidence linking women's political representation specifically to increased formal business entry or firm registrations is limited. Studies highlight that women entrepreneurs often use their entrepreneurial activities as platforms for political activism and social change, which may indirectly influence policy environments favorable to female entrepreneurship (Alkhaled, 2021; Lagrasta et al., 2024). Policy shifts toward neoliberal frameworks sometimes emphasize individual entrepreneurial success over collective feminist action, which can obscure structural barriers despite increased representation (Berglund et al., 2018). Overall, while women's

political empowerment contributes to economic and institutional improvements that could raise new firm registrations, the relationship is complex and mediated by cultural, social, and policy contexts (Dahlum et al., 2022; Alkhaled, 2021; Berglund et al., 2018).

Women's political representation may affect business formation through multiple mechanisms: policy signaling, institutional reform, resource allocation, and role model effects. The relationship between parliamentary representation and entrepreneurship operates through the quality and responsiveness of institutions that govern business registration, access to credit, and market participation. Atento's (2025b) Philippine Diplomatic Credibility Framework provides the most direct conceptual apparatus for understanding this relationship. The framework posits that diplomatic credibility is an endogenous outcome of three pillars: governance integrity, economic resilience, and strategic adaptability. Women's political representation contributes to governance integrity through improved accountability, reduced corruption, and policy responsiveness to women's economic constraints. The framework's ASEAN-6 benchmarking using Worldwide Governance Indicators (WGI) dimensions—voice and accountability, government effectiveness, regulatory quality, rule of law, control of corruption—provides measurable channels through which women's representation might affect business formation. The paper's conclusion that "credibility abroad mirrors coherence at home" implies that international perceptions of Philippine governance depend on domestic institutional quality, including gender-inclusive governance.

The dual outcomes framework of Atento, Quinto, Espelita, and Castañeda (2025) offers a complementary lens: just as healthcare organizations achieve both clinical and financial gains through integrated analytics, societies may achieve both gender equity and economic dynamism through integrated governance. The framework's process pathway—data integration → analytics capability → decision quality → dual outcomes—parallels how women's representation might improve policy analytics capability (gender-disaggregated data, women's policy expertise), decision quality (policies informed by women's lived experience), and dual outcomes (gender equity gains alongside business registration growth). The framework's emphasis on "organizational alignment as a moderator" suggests that representation alone is



insufficient; alignment between women legislators, executive agencies, and private sector institutions amplifies policy effects.

Bermido et al.'s (2025) review of health professions education, while focused on academic leadership, offers insights applicable to political leadership. The review's conclusion that "fragmented or single-domain interventions are unlikely to yield long-term improvement" applies to gender and entrepreneurship policy: isolated measures—quotas without institutional reform, entrepreneurship training without credit access—are unlikely to transform business registration rates. The authors' emphasis on "systems-oriented, data-informed leadership" parallels the governance approach required to translate women's representation into entrepreneurial outcomes.

Atento and Atento's (2025a) analysis of fundamentals predicting stock winners introduces methodological considerations relevant to studying representation and entrepreneurship. The study's rank-based approach, which classified firms into performance quintiles and used multinomial logistic regression to identify discriminators, demonstrates how categorical outcomes can be modeled when continuous relationships are unstable. For studying women's representation and business registration, similar approaches might be appropriate: countries could be classified into representation quintiles, and institutional characteristics compared across tiers. The study's finding that "cash-flow-based valuation (P/Cash) is the most consistent discriminator" suggests that in governance research, certain institutional characteristics (e.g., property rights protection, contract enforcement) may consistently discriminate high- from low-business-formation contexts.

The Blue Ocean Strategy case study by Teodosio et al. (2025) illustrates how institutional conditions affect SME competitiveness at the local level. While focused on a single family-owned enterprise, the study's use of ERRC Grid and Strategy Canvas tools demonstrates how businesses assess their competitive environment. For women entrepreneurs, political representation that improves local business environments—streamlined registration, reduced corruption, accessible credit programs—may shift strategy canvases, making formal entry more attractive relative to informal operation. The study's emphasis on "value innovation" as an escape from price-led competition suggests that institutional improvements enabling value differentiation may particularly benefit

women entrepreneurs, who often face capital constraints that limit price competition.

Finally, Atento and Atento's (2025b) global valuation dispersion study, while focused on equity markets, offers a cautionary note about cross-country comparison. The study's finding that valuation interpretation is "horizon-sensitive"—conclusions shift depending on whether 5-year, 10-year, or 20-year benchmarks are used—applies to research on women's representation and business formation. The relationship between representation and entrepreneurship may differ across time horizons: short-term effects may operate through policy signaling and resource allocation, while longer-term effects may operate through institutional culture change and intergenerational transmission. Researchers must specify theoretical horizons and select appropriate benchmarks accordingly.

2.6 Synthesis of the Literature

Across the five thematic domains, the literature converges on a core proposition: women's empowerment is best understood as a multidimensional capability bundle whose relationship to entrepreneurship is conditional—enabled or constrained by institutional quality, labor-market structure, and life-course constraints rather than determined by any single metric.

First, the evidence on female labor force participation (FLFP) emphasizes that participation levels alone are an incomplete predictor of women's economic agency and formal enterprise entry. Macro and comparative work shows that FLFP is shaped by education, economic structure, and norms, yet persistent gendered barriers can prevent women from translating labor-market presence into formal-sector advancement or formal business formation (Klasen, 2019; Klasen et al., 2020; Sahin, 2025). Enabling mechanisms—digital access, policy support, and institutional responsiveness—are repeatedly highlighted as necessary for participation to become economically transformative (Badlani & Rami, 2025; Assaad et al., 2020; Nursyamsiah et al., 2025). The ASEAN evidence presented by Quinto and Atento (2025) further reinforces this conditionality: employment expansion can coincide with improved welfare outcomes under supportive systems, but can also coincide with adverse household trade-offs when enabling care and institutional supports are weak. This implies that FLFP may be necessary but insufficient for formal



business entry; it functions more plausibly as a capacity precondition that requires complementary supports to convert into entrepreneurship.

Second, the literature on women in wage and salaried employment clarifies why “employment quality” is analytically distinct from employment quantity. Wage and salaried work can provide income stability, protections, and potentially improved access to credit and networks, but gendered labor-market segregation and lower perceived feasibility of business start-up can limit entrepreneurial transitions (Tonoyan et al., 2020; Tonoyan et al., 2023). Institutional reforms can increase venture creation among women, especially those with managerial exposure, yet the distributional consequences are complex (Castellaneta et al., 2020), and motherhood-related pay penalties can function as a push factor into entrepreneurship for some women (Yang et al., 2023). Cross-national evidence also indicates that large informal sectors tend to depress women’s participation in formal entrepreneurship (DiRienzo & Das, 2021), suggesting that even “formal employment” pathways operate within a wider institutional environment that can either facilitate or block formal business registration. The methodological parallels drawn from multidimensional decision frameworks (Nona & Atento, 2025) and capability-adaptation arguments (Rao, Tian, & Atento, 2025) underscore a broader synthesis point: exposure is not equivalent to capability; structured supports and institutional coherence are often required for wage employment to become an entrepreneurship pipeline.

Third, the literature on vulnerable employment is comparatively more consistent in direction: higher vulnerable employment—typically informal, unprotected, and low accumulation—tends to act as a constraint on formal enterprise entry (DiRienzo & Das, 2021; Aronsson et al., 2023; Rauf, 2025). Digital financial inclusion may mitigate financing constraints for vulnerable women but does not fully offset structural barriers (Yang et al., 2022). Complementary evidence from Philippine-linked analyses frames vulnerability as a system-level outcome—labor-market leakage, underemployment, and mobility pressures that weaken the translation of skills and participation into stable formal economic roles (Atento et al., 2025a; Bermido, Quinto, & Atento, 2025). The broader implication is that vulnerable employment is not merely “work”; it is frequently survival-oriented activity that limits capital accumulation,

legal visibility, and institutional access, thereby weakening formal business registration pathways.

Fourth, adolescent fertility emerges as a life-course determinant that shapes women’s later economic agency through schooling continuity, labor-market entry, and accumulated experience. Lower adolescent fertility is associated with improved education and formal participation, which can increase entrepreneurship potential (Finlay & Lee, 2018; Herrera et al., 2019; Ferre et al., 2023; Finlay et al., 2025). However, interventions may produce modest effects if broader structural conditions remain unchanged (Austrian et al., 2020), reinforcing the synthesis that empowerment mechanisms are embedded within wider environments. The additional discussions of stress, behavioral burdens, and “conviction impairment” further highlight how early disruption can constrain agency even when informational access exists (Agang-Ang et al., 2025; Atento, 2025a). Methodologically, the narrative-analytic approach suggests that quantitative fertility–enterprise models benefit from contextual interpretation rather than purely mechanical inference (Atento, Quinto, Espelita, & San Juan, 2025).

Fifth, the literature on women’s political representation suggests plausible institutional channels—policy signaling, accountability, regulatory quality, and resource allocation—that could improve entrepreneurship environments, though direct evidence linking representation to formal business entry remains limited (Dahlum et al., 2022; Alkhaled, 2021; Lagrasta et al., 2024; Berglund et al., 2018). The governance-centered arguments emphasize that institutional coherence and integrity condition whether representation becomes operationally meaningful for economic participation and enterprise formation (Atento, 2025b). Systems-oriented perspectives similarly indicate that fragmented interventions (e.g., quotas without institutional reform, training without credit access) are unlikely to yield durable enterprise outcomes (Bermido et al., 2025). Enterprise-level strategic tools and competitiveness frameworks imply that institutional improvements can shift the “attractiveness” of formal entry by changing the costs and benefits of operating formally (Teodosio et al., 2025). Horizon sensitivity arguments caution that representation effects may manifest differently across short and long time horizons, requiring explicit temporal modeling choices (Atento & Atento, 2025b).



Taken together, the literature supports an integrative synthesis: empowerment-related improvements can plausibly correlate with enterprise dynamism through a combination of labor-market inclusion and job quality, reduced life-course constraints, and institutional inclusion, but the empirical record is fragmented, often indirect, and frequently conditioned by broader modernization and governance processes (Klasen, 2019; Tonoyan et al., 2020; DiRienzo & Das, 2021; Finlay & Lee, 2018; Dahlum et al., 2022; Atento, 2025b; Quinto & Atento, 2025). This motivates a research design that operationalizes empowerment as a composite construct and evaluates its association with a concrete, comparable indicator of formal business entry.

2.7 Research Gaps

Despite a rich and growing literature, several gaps remain material for theory development and empirical testing—particularly for a Philippines-only, time-series examination of empowerment and formal enterprise entry.

First, direct empirical evidence linking women's empowerment dimensions to formal business entry or new firm registrations remains limited. Multiple studies describe plausible mechanisms through participation, job quality, or institutional change, yet the outcome variable is often informal entrepreneurship, self-employment broadly, or entrepreneurship intention rather than a standardized measure of formal new registrations (Klasen, 2019; Sahin, 2025; Tonoyan et al., 2020; Dahlum et al., 2022). This leaves an evidence gap regarding whether empowerment co-moves with formal enterprise dynamism as captured by business registration density.

Second, the literature frequently treats empowerment dimensions in isolation (e.g., participation only, fertility only, representation only), while the conceptual arguments emphasize interdependence and conditionality. Employment quantity, employment quality, vulnerability constraints, life-course transitions, and institutional inclusion plausibly operate together and may offset one another in empirical data (Tonoyan et al., 2023; DiRienzo & Das, 2021; Austrian et al., 2020; Quinto & Atento, 2025). There is a gap in studies that operationalize empowerment as a balanced multidimensional construct and test its association with enterprise outcomes.

Third, the Philippine context is underrepresented in direct tests of empowerment–

formal business entry linkages. Existing discussions provide conceptual and indirect mechanisms rooted in institutional responsiveness and governance integrity (Atento, 2025b), labor–welfare trade-offs under varying support systems (Quinto & Atento, 2025), and community/institutional value pathways (Espelita & Atento, 2025), but a Philippines-only empirical assessment using consistent annual indicators remains limited in the presented literature base.

Fourth, the literature provides limited guidance on temporal ordering in empowerment–enterprise relationships, particularly in short annual series where macro persistence and structural breaks are likely. Theoretical arguments often imply lags through schooling completion, labor-market transitions, and institutional change (Finlay & Lee, 2018; Ferre et al., 2023; Dahlum et al., 2022), yet many empirical designs do not explicitly test lag structures, especially under shock periods and high persistence. This gap supports explicit testing of lagged associations as a robustness check rather than assuming contemporaneous effects.

Fifth, shock-era discontinuities and system stressors—such as the pandemic period—are rarely integrated into empowerment–entrepreneurship models in a way that separates structural breaks from longer-run associations. The literature acknowledges that outcomes depend on enabling systems (Quinto & Atento, 2025) and health-system performance (Atento et al., 2025a), but empirical strategies often do not explicitly account for shock-year disruptions when linking empowerment to business entry. This motivates explicit shock controls when estimating annual associations.

Finally, there is limited methodological triangulation around empowerment measurement. Many studies rely on single indicators or conceptually similar proxies, while the literature itself implies measurement sensitivity and horizon dependence (Atento & Atento, 2025b). This supports the need for alternative index constructions (e.g., equal-weight composites versus PCA-based indices) to evaluate whether findings depend on a particular aggregation rule.

These gaps jointly justify the present study's empirical strategy: a Philippines-only annual time-series analysis that (a) operationalizes women's empowerment as a multidimensional index built from annually available indicators, (b) links empowerment to a standardized measure of formal business entry, and (c) subjects the main association to robustness tests that address measurement choice,



temporal ordering, shock-year discontinuity, and parsimonious alternative controls.

3. Methodology

3.1 Research Design

This study employed a quantitative, longitudinal time-series design using secondary macro-level indicators for the Philippines. The design tests whether changes in a composite measure of women's empowerment are statistically associated with changes in formal enterprise dynamism over time. The empirical strategy is explanatory and correlational, with robustness procedures intended to mitigate (not eliminate) simultaneity and omitted-variable concerns commonly arising in single-country time-series analyses.

3.2 Data Source and Study Period

All variables were drawn from the World Bank's World Development Indicators (WDI) database. The analysis focused on the Philippines and used an annual series spanning 2006–2022. The start year was determined by the availability of the dependent variable—new business density—which is derived from the World Bank's entrepreneurship registration sources and standardizes annual limited-liability firm registrations by working-age population.

3.3 Outcome Variable: Enterprise Dynamism (Dependent Variable)

Enterprise dynamism was operationalized using new business density (IC.BUS.NDNS.ZS), defined as the number of newly registered limited-liability firms per 1,000 working-age people (ages 15–64) per calendar year. This indicator is used as a proxy for formal business entry and captures annual “new registrations” rather than informal enterprise formation.

3.4 Women's Empowerment Measures and Operationalization (Independent Construct)

Women's empowerment was treated as a multi-dimensional capability bundle consistent with strategic and managerial interpretations of empowerment as expanded participation, improved job quality, reduced structural constraints on agency, and increased representation in public decision-making. Given the limits of any single measure, this study constructed a composite Women's Empowerment Index (WEI) from seven WDI indicators selected for (a) conceptual coverage and

(b) complete annual availability for 2006–2022, thereby avoiding imputation and preserving statistical power in a small-sample time-series setting.

Economic participation and job quality were captured through:

(1) Female labor force participation rate (SL.TLF.CACT.FE.ZS), reflecting women's labor-market inclusion;

(2) Wage and salaried workers, female (SL.EMP.WORK.FE.ZS), used as a proxy for more stable or formal employment arrangements;

(3) Vulnerable employment, female (SL.EMP.VULN.FE.ZS), capturing own-account and contributing family work as a share of female employment and treated as a labor-market precarity constraint; and

(4) Employers, female (SL.EMP.MPYR.FE.ZS), capturing women's employer status within female employment as a narrow indicator of higher-responsibility labor-market positioning and potential entrepreneurial scaling.

Autonomy-related constraints were captured through:

(5) Adolescent fertility rate (SP.ADO.TFRT), reflecting early fertility patterns that can restrict educational and labor-market continuity; and

(6) Maternal mortality ratio (SH.STA.MMRT), reflecting maternal health risk and health-system capacity relevant to sustained participation.

Representation in decision-making was captured through:

(7) Proportion of seats held by women in national parliaments (SG.GEN.PARL.ZS), used as an institutional inclusion proxy signaling women's descriptive participation in governance.

To ensure conceptual consistency, indicators that reflect constraints—SL.EMP.VULN.FE.ZS, SP.ADO.TFRT, and SH.STA.MMRT—were treated as negatively oriented dimensions and were reverse-coded during index construction so that higher WEI values uniformly represent higher empowerment.

Indicators with insufficient coverage or discontinuities within 2006–2022 (e.g., series with



sparse observations or multiple missing years) were excluded from the core WEI to preserve a balanced annual time series and avoid mechanically reducing statistical power.

3.5 Construction of the Women's Empowerment Index (WEI)

Two versions of the WEI were constructed to strengthen inference through measurement robustness.

(a) Equal-weight z-score index (primary WEI). Each of the seven component indicators was standardized over 2006–2022:

$$z(X_{k,t}) = \frac{X_{k,t} - \bar{X}_k}{S_k}$$

Constraint indicators (vulnerable employment, adolescent fertility, maternal mortality) were reverse-coded by multiplying their standardized values by -1 , such that higher values consistently represent greater empowerment. The primary WEI was computed as the simple average:

$$WEI_t = \frac{1}{7} \sum_{k=1}^7 z^*(X_{k,t})$$

where $z^*(X_{k,t})$ denotes the standardized indicator after sign harmonization.

(b) PCA-based index (robustness WEI). Principal component analysis (PCA) was performed on the standardized, sign-harmonized indicators to extract the first principal component as an alternative empowerment index. The component sign was adjusted, where necessary, so that higher values correspond to higher empowerment. This PCA-based WEI was used only for robustness checks.

3.6 Control Variables

To reduce confounding from macroeconomic conditions that plausibly influence both business entry and gender-related outcomes, the baseline regression included a parsimonious set of controls suitable for a 17-observation annual series.

First, GDP per capita (constant 2015 US\$) ($NY.GDP.PCAP.KD$) was included as a development-level proxy and entered as a natural logarithm to reduce skewness and facilitate semi-elastic interpretation. Second, trade as a percentage

of GDP ($NE.TRD.GNFS.ZS$) was included as an openness proxy capturing external exposure and macro conditions affecting private-sector activity. Two additional controls—inflation ($FP.CPI.TOTL.ZG$) and urban population share ($SP.URB.TOTL.IN.ZS$)—were reserved for robustness checks rather than the baseline specification to avoid over-parameterization.

3.7 Data Treatment and Statistical Analysis

Data preparation and alignment. WDI indicators were aligned by calendar year and restricted to 2006–2022 to maintain a balanced annual series with complete coverage of the dependent variable. All series were screened for missing values, discontinuities, and implausible outliers. Variables with insufficient coverage were excluded from the core WEI and retained only, if at all, for descriptive discussion.

Transformations and scaling. GDP per capita was log-transformed. Percentage variables were retained in their native units. WEI components were standardized prior to aggregation to ensure comparability across scales.

Baseline regression specification. The primary empirical model estimated the association between enterprise dynamism and women's empowerment with a parsimonious control set:

$$\begin{aligned} IC.BUS.NDNS.ZS_t &= \alpha + \beta WEI_t \\ &+ \gamma \ln(NY.GDP.PCAP.KD_t) \\ &+ \delta NE.TRD.GNFS.ZS_t + \varepsilon_t \end{aligned}$$

Because annual macro time series commonly exhibit heteroskedasticity and serial correlation, inference was based on heteroskedasticity- and autocorrelation-consistent (HAC/Newey–West) standard errors. Coefficients were interpreted as conditional associations rather than causal effects.

3.8 Diagnostics and Robustness Checks

Diagnostics were applied to strengthen credibility in a small-sample time-series setting. First, descriptive trend inspection was used to identify co-movements, breaks, and atypical years. Second, stationarity assessment (e.g., augmented Dickey–Fuller-type procedures and autocorrelation inspection) guided whether modeling in levels was reasonable and whether supplementary differenced specifications were warranted. Third, influence and leverage diagnostics were reviewed to ensure results



were not driven disproportionately by single-year observations.

Robustness checks included: (a) re-estimation using the PCA-based WEI; (b) alternative control sets adding inflation and/or urbanization one at a time; (c) inclusion of a 2020 indicator to account for pandemic-era disruptions; and (d) lagged specifications (e.g., WEI_{t-1}) to examine temporal ordering and reduce contemporaneous simultaneity concerns.

3.9 Ethical Considerations

The study relied exclusively on publicly available, aggregated secondary data and did not involve human subjects, personal identifiers, or primary data collection. Formal ethics board review was not required. Transparency was supported through documentation of indicator codes, transformations, and index-construction rules.

3.10 Research Hypotheses

Consistent with the study's strategic framing, women's empowerment is treated as a multidimensional capability bundle that expands the effective labor and entrepreneurial supply, improves job quality and stability, reduces life-course constraints on participation, and strengthens institutional inclusion. These mechanisms are expected to be associated with higher levels of formal enterprise entry captured by new business density.

H1 (Primary hypothesis). Women's empowerment, as measured by the composite WEI, is positively associated with enterprise dynamism in the Philippines, as measured by new business density (IC.BUS.NDNS.ZS), controlling for macroeconomic conditions.

H1a (Economic participation and job quality dimension). Higher female labor-market inclusion and job quality—reflected in higher SL.TLF.CACT.FE.ZS, higher SL.EMP.WORK.FE.ZS, and lower SL.EMP.MPYR.FE.ZS—are positively associated with new business density.

H1b (Autonomy constraint dimension). Lower constraints on women's life-course participation—proxied by lower SP.ADO.TFRT and lower SH.STA.MMRT—are positively associated with new business density.

H1c (Institutional inclusion dimension). Higher women's parliamentary seat share (SG.GEN.PARL.ZS) is positively associated with new business density.

H2 (Temporal ordering / lagged effect robustness). Increases in women's empowerment exhibit a lagged positive association with enterprise dynamism; that is, higher WEI_{t-1} is positively associated with new business density in year t .

H3 (Measurement robustness). The positive association between women's empowerment and enterprise dynamism is robust to alternative WEI construction, such that results remain directionally consistent when using the PCA-based WEI instead of the equal-weight z-score WEI.

4. Results and Discussion

4.1 Descriptive Statistics and Temporal Patterns (Philippines, 2006–2022)

This section summarizes the distributional properties and time-path behavior of the study variables over the balanced annual window 2006–2022 ($N = 17$), aligned to the availability of the dependent variable, new business density (IC.BUS.NDNS.ZS). In addition to descriptive statistics (Table 1), the section highlights salient trend breaks relevant to interpretation of the empowerment–enterprise relationship.

4.1.1 Enterprise Dynamism (New Business Density)

New business density (IC.BUS.NDNS.ZS) averaged 0.282 (SD = 0.056) over the study period, with values ranging from 0.202 (minimum in 2009) to 0.361 (maximum in 2017). The time path exhibits three notable phases. First, relatively low business-entry density is observed in 2006–2010, reaching a trough in 2009–2010 (≈ 0.202). Second, a sustained expansion occurs during 2011–2017, culminating in the period maximum in 2017 (0.361). Third, a marked contraction is evident around the pandemic-era window: the series drops from 0.311 (2019) to 0.212 (2020) and remains depressed in 2021 (0.211) before rebounding strongly in 2022 (0.343), approaching pre-shock levels though still below the 2017 peak. Overall, the dependent variable demonstrates meaningful year-to-year variation sufficient for time-series association testing with the empowerment index.



4.1.2 Women's Empowerment Index (WEI) and Its Components

The primary Women's Empowerment Index (WEI) is a standardized composite (WEI_z), and by construction its mean over 2006–2022 is approximately 0, with a standard deviation of 0.526. The index ranges from –0.833 (2006) to 0.845 (2018). Substantively, the WEI exhibits a gradual improvement from below-period-average values in 2006–2014, crosses into above-average territory around 2015, and peaks in 2018, followed by a decline in 2020–2021 and a rebound in 2022 (0.659). This pattern is consistent with a longer-run improvement in empowerment-related conditions combined with a temporary disruption in the early 2020s.

Component indicators clarify where the upward movement in the WEI is concentrated:

Female labor force participation (SL.TLF.CACT.FE.ZS) averaged 47.32% (SD = 1.96), with a notable decline in 2020 (42.68%) and a sharp rebound to the period maximum in 2022 (50.38%).

Female wage and salaried employment share (SL.EMP.WORK.FE.ZS) averaged 55.61% (SD = 3.47) and increased materially over time, rising from 50.10% (2006) to a peak of 60.48% (2019), consistent with improvements in employment formality/stability within female employment.

Female vulnerable employment share (SL.EMP.VULN.FE.ZS) averaged 42.16% (SD = 3.37) and declined over the window, falling from 47.42% (2006) to a minimum of 37.35% (2019), indicating a reduction in employment precarity (and therefore contributing positively to the WEI after reverse-coding).

Female employers share (SL.EMP.MPYR.FE.ZS) averaged 2.23% (SD = 0.24) and trended downward overall, from 2.54% (2007) to 1.85% (2022). This is analytically important because it suggests that improvements in job quality/formality do not automatically translate into higher female “employer status” shares, potentially reflecting structural shifts in enterprise composition or barriers to scaling.

Adolescent fertility (SP.ADO.TFRT) averaged 49.55 (SD = 9.96) and declined sharply from a high of 61.60 (2010) to a low of 32.16 (2022), consistent with reduced autonomy constraints over

time (contributing positively to WEI after reverse-coding).

Maternal mortality (SH.STA.MMRT) averaged 109.41 (SD = 17.66), improved to a minimum of 86 (2017), but spiked to 153 (2021), consistent with a shock period in health-system outcomes that is relevant for interpreting the 2020–2021 weakening in the WEI.

Women's parliamentary representation (SG.GEN.PARL.ZS) averaged 25.12% (SD = 4.17), increasing from 15.25% (2006) to a peak of 29.79% (2016) and stabilizing thereafter in the high-20% range (e.g., 27.33% in 2022).

Taken together, the descriptive evidence indicates that the empowerment index is driven primarily by longer-run improvements in (i) employment formality/job quality, (ii) reduced adolescent fertility, and (iii) increased political representation, while the pandemic-era window is characterized by a deterioration in some empowerment-relevant constraints (notably maternal mortality) and a concurrent collapse in new business density.

4.1.3 Macro Context Controls (Baseline)

Over 2006–2022, logged GDP per capita (ln_gdppc) increased steadily, corresponding to GDP per capita (constant 2015 US\$) rising from 2,110 (2006) to 3,578 (2022). Trade openness (NE.TRD.GNFS.ZS) averaged 65.02% of GDP (SD = 7.01), ranging from 80.85% (2006) to 55.82% (2013) and ending at 72.43% (2022). Inflation (FP.CPI.TOTL.ZG) averaged 3.72% (SD = 1.84), with a high of 8.26% (2008) and a low of 0.67% (2015). Urbanization (SP.URB.TOTL.IN.ZS) increased monotonically from 41.83% (2006) to 54.79% (2022). These controls provide the macroeconomic context for interpreting the empowerment–enterprise relationship and are used parsimoniously in the baseline model due to the small sample size. (See Table 1, Figure 1)

4.2 Correlation Structure (Pearson *r*; Philippines, 2006–2022)

Table 2 reports the Pearson correlation matrix for the dependent variable, the Women's Empowerment Index (WEI), the seven empowerment components, and the macro controls over 2006–2022 (N = 17). Correlations are presented as preliminary association evidence and are not interpreted as causal, particularly given the single-

country time-series context and the likelihood of common trending among macro indicators.

4.2.1 Correlations involving enterprise dynamism (DV)

New business density (IC.BUS.NDNS.ZS) shows a moderate positive correlation with the composite empowerment index (WEI_z) ($r = 0.579$, $p < .05$), consistent with the study's primary expectation that improvements in empowerment-related capabilities co-move with formal business entry.

Among empowerment components, new business density is positively associated with:

- Women in parliament (SG.GEN.PARL.ZS): $r = 0.530$, $p < .05$
- Wage & salaried employment share (female) (SL.EMP.WORK.FE.ZS): $r = 0.425$, $p < .10$
- Female labor force participation (SL.TLF.CACT.FE.ZS): $r = 0.397$, ns

New business density is negatively associated with:

- Maternal mortality (SH.STA.MMRT): $r = -0.606$, $p < .01$, indicating that deterioration in maternal health conditions aligns with lower formal business entry (notably relevant in the 2020–2021 window).
- Female vulnerable employment (SL.EMP.VULN.FE.ZS): $r = -0.412$, ns
- Female employers share (SL.EMP.MPYR.FE.ZS): $r = -0.353$, ns (a pattern suggesting that the employer-status share may not track the same direction as other empowerment components, potentially reflecting compositional shifts in employment and enterprise structure).

With macro controls, new business density correlates positively with:

- Log GDP per capita (\ln_gdppc): $r = 0.449$, $p < .10$
- Urban population share (SP.URB.TOTL.IN.ZS): $r = 0.444$, $p < .10$

Trade openness and inflation show weaker correlations with new business density in this window (both statistically non-significant).

4.2.2 Internal structure of the WEI and multicollinearity implications

The WEI exhibits very high correlations with some component indicators and macro trend proxies, reflecting the intentional construction of the index as a composite of co-moving empowerment-related series:

- WEI with wage & salaried female employment: $r = 0.938$, $p < .001$
- WEI with female vulnerable employment: $r = -0.941$, $p < .001$
- WEI with women in parliament: $r = 0.880$, $p < .001$
- WEI with log GDP per capita: $r = 0.942$, $p < .001$
- WEI with urbanization: $r = 0.893$, $p < .001$

These magnitudes imply that empowerment improvements and macroeconomic development/structural change are strongly intertwined in the Philippines over 2006–2022. Consequently, the regression strategy in subsequent sections remains parsimonious (limited controls and HAC inference) to reduce over-parameterization and avoid unstable estimates in a 17-observation time series. For interpretation, the WEI is treated as an ecosystem capability bundle that co-evolves with development factors rather than as a purely exogenous driver.

4.3 Baseline Regression Results (HAC/Newey–West)

This section estimates the association between women's empowerment and enterprise dynamism in the Philippines using annual data for 2006–2022. The dependent variable is new business density (IC.BUS.NDNS.ZS). Models are estimated using OLS with heteroskedasticity- and autocorrelation-consistent (HAC/Newey–West) standard errors ($\maxlag = 1$), consistent with annual macro time-series practice in small samples. Results are reported in Table 3.



4.3.1 Baseline association between empowerment and enterprise dynamism

Model 1 provides the bivariate baseline. The Women's Empowerment Index (WEI_z) is positively and statistically significantly associated with new business density ($\beta = 0.0614$, $p < .01$; $R^2 = 0.335$; $N = 17$). Substantively, this indicates that years with higher empowerment index values tend to coincide with higher rates of formal business entry.

4.3.2 Baseline model with macro controls

Model 2 adds the baseline controls (log GDP per capita and trade openness). The estimated association between women's empowerment and new business density remains positive and statistically significant ($\beta = 0.1587$, $p < .01$; $R^2 = 0.454$; $N = 17$). The GDP per capita coefficient is negative in this specification ($\beta = -0.2994$, $p < .05$), which is plausibly attributable to strong shared trending and collinearity between WEI and development proxies in a short time series; accordingly, the control coefficients are treated as conditioning variables rather than causal parameters, and interpretation focuses on the stability of the WEI–enterprise association.

4.3.3 Accounting for the pandemic shock

Model 3 introduces a 2020 dummy to isolate the pandemic-era discontinuity in formal enterprise entry. The 2020 shock is large and negative ($\beta = -0.0885$, $p < .01$), consistent with the pronounced collapse in business density observed in descriptive trends. Importantly, the WEI coefficient remains positive and statistically significant ($\beta = 0.1321$, $p < .05$; $R^2 = 0.581$; $N = 17$), indicating that the empowerment–enterprise association persists after explicitly controlling for the pandemic shock.

4.3.4 Temporal ordering and measurement robustness

Model 4 tests a lagged empowerment specification (WEI_{t-1}) alongside controls and the 2020 dummy. The lagged WEI effect is not statistically significant ($\beta = 0.0017$, $p = .962$; $N = 16$), suggesting that within this short annual window the relationship is more contemporaneous than lagged (or that lag effects are difficult to detect with limited observations and high persistence).

Model 5 replaces the equal-weight WEI with the PCA-based WEI (z-scored). The PCA-based index remains positively associated with new business density at marginal significance ($\beta =$

0.1233 , $p < .10$; $R^2 = 0.518$; $N = 17$), supporting measurement robustness in direction, though with reduced precision relative to the primary index.

4.4 Robustness Tests (H2–H3)

Robustness tests were conducted to evaluate whether the empowerment–enterprise association is sensitive to (a) alternative empowerment measurement, (b) temporal ordering via lag structures, (c) explicit pandemic shock controls, and (d) alternative macro controls under small-sample constraints ($N = 17$ annual observations). All estimates use HAC/Newey–West standard errors (maxlag = 1 unless otherwise specified). Results are reported in Table 4.

4.4.1 Pandemic shock control (reaffirmation)

Model R1 re-estimates the baseline controlled specification with an explicit 2020 dummy. The pandemic shock is large and negative ($\beta = -0.0885$, $p < .01$), consistent with the sharp decline in formal business entry in 2020–2021. Importantly, the empowerment coefficient remains positive and statistically significant ($\beta = 0.1321$, $p < .05$), indicating that the WEI–enterprise association persists after conditioning on the 2020 discontinuity.

4.4.2 Alternative control specifications (inflation and urbanization)

To test whether results are driven by omitted macro context, alternative controls were added one-at-a-time and jointly, consistent with degrees-of-freedom constraints.

- a. Inflation added (R2): The WEI coefficient remains positive and significant ($\beta = 0.1281$, $p < .05$). The 2020 dummy remains strongly negative ($\beta = -0.0896$, $p < .01$).
- b. Urbanization added (R3): The WEI coefficient remains positive and stronger ($\beta = 0.1637$, $p < .01$), while the 2020 dummy remains negative ($\beta = -0.1073$, $p < .01$).
- c. Inflation + urbanization added (R4): The WEI coefficient remains positive and significant ($\beta = 0.1627$, $p < .05$), and the 2020 dummy remains strongly negative ($\beta = -0.1073$, $p < .01$).

Overall, the positive WEI association is not eliminated by adding macro controls that capture nominal instability (inflation) or structural change

(urbanization). This supports the stability of the empowerment–enterprise relationship under reasonable alternative conditioning sets.

4.4.3 Temporal ordering test (lagged empowerment; H2)

Model R5 estimates the baseline controls with lagged empowerment (WEI_{t-1}) and the 2020 dummy. The lagged WEI coefficient is not statistically significant ($\beta = 0.0017$, $p = .962$; $N = 16$). In this dataset, the observable association appears primarily contemporaneous rather than lagged, or lagged effects are not detectable given strong persistence and the limited annual sample size. Therefore, H2 is not supported under the one-year lag specification.

4.4.4 Measurement robustness test (PCA-based WEI; H3)

Model R6 replaces the equal-weight WEI with the PCA-based empowerment index (z-scored). The PCA-based index remains positively associated with new business density at marginal significance ($\beta = 0.1233$, $p < .10$), consistent in direction with the primary index. While precision is lower, the directional consistency supports the interpretation that results are not purely an artifact of the equal-weight aggregation rule. Thus, H3 is supported in direction, with weaker statistical strength relative to the primary WEI.

4.4.5 HAC sensitivity (maxlag specification)

Model R7 re-estimates the baseline R1 model using HAC maxlag = 2. The WEI coefficient remains positive and statistically significant ($\beta = 0.1321$, $p < .05$) and the 2020 dummy remains strongly negative ($\beta = -0.0885$, $p < .01$). This indicates that the principal conclusions are not sensitive to a modest change in the HAC lag structure.

4.5 Discussion of Findings

This section interprets the empirical results in light of the study’s strategic framing: women’s empowerment as an ecosystem capability bundle that is plausibly linked to formal enterprise entry (new business density). The discussion is organized around the tested hypotheses (H1–H3), the observed shock dynamics during 2020–2021, and the implications for enterprise strategy and management innovation.

4.5.1 Primary relationship: WEI and enterprise dynamism (H1)

Across the baseline and controlled specifications, the Women’s Empowerment Index (WEI) exhibits a positive and statistically meaningful association with new business density. This pattern holds in the bivariate model and remains positive after conditioning on development level and openness proxies, and after explicitly controlling for the 2020 shock. Interpreted conservatively, the result indicates that years characterized by stronger empowerment conditions tend to coincide with higher levels of formal business entry in the Philippines.

From a strategic management perspective, this aligns with a capability-based interpretation of entrepreneurship: empowerment improvements can expand the “effective supply” of entrepreneurial and managerial talent by increasing women’s participation in the labor market, improving job quality (greater wage/salaried work and reduced vulnerable employment), and strengthening institutional inclusion. In this view, empowerment does not merely represent a social goal; it also functions as an enabling condition for enterprise ecosystem dynamism—potentially by widening the pool of viable founders and professional operators, improving household resilience and planning horizons, and strengthening the legitimacy and reach of inclusion-oriented policies that can reduce frictions in economic participation.

At the same time, the results should not be overstated as causal. In a single-country annual time series, empowerment and enterprise entry can move together because both are influenced by broader modernization forces (structural transformation, institutional reforms, and macroeconomic cycles). Accordingly, the defensible claim is co-movement consistent with the theory, not definitive causation.

4.5.2 Interpreting the empowerment bundle: what appears to matter most

The correlation structure suggests that WEI is strongly aligned with (i) employment formality/stability, (ii) reduced adolescent fertility, and (iii) women’s political representation, while the employer-status share among women behaves differently (tending downward across the window). Strategically, this matters because it implies that the empowerment–enterprise relationship may be driven more by broad participation and quality-of-work shifts than by a direct increase in women



categorized as “employers” within employment statistics.

One plausible interpretation is that empowerment primarily strengthens enterprise dynamism through human-capital accumulation and workforce readiness—a mechanism consistent with enterprise formation and formalization ecosystems—rather than through a simple increase in “women employers share.” In other words, the short-run effect may emerge as: more stable work histories, better employability, stronger networks, and improved institutional inclusion, which collectively lower the friction costs of firm entry and compliance—even if the “employer” share does not rise contemporaneously.

A counter-interpretation is also plausible: the employer-share series may decline because of structural shifts in labor markets (e.g., expansion of wage employment, larger firms, or BPO/service sector growth), which can reduce the share of people classified as employers even while entrepreneurship and formal firm registration increase. This would mean the composition of enterprise dynamism may be shifting toward formal registrations and corporate scaling rather than small “employer status” changes within employment surveys.

4.5.3 The pandemic shock and resilience of the association

The 2020 dummy is consistently large and negative in the regressions, matching the descriptive collapse in new business density in 2020–2021 and the documented disruptions to labor markets and social systems. Importantly, the WEI coefficient remains positive after adding the shock control. This is consistent with a resilience interpretation: empowerment conditions may relate not only to “growth-time dynamism” but also to how quickly enterprise entry recovers after system-wide disruptions.

However, this interpretation should be tempered. The pandemic shock is multidimensional and may have affected both the measurement of enterprise registration and the underlying behavior of entrepreneurs. The post-2020 rebound could reflect policy responses, delayed registrations, regulatory adjustments, or sectoral reallocation—mechanisms not directly observed in WDI. Thus, the best-supported inference is that the empowerment–enterprise association is not purely an artifact of the 2020 collapse, rather than a definitive resilience causal channel.

4.5.4 Temporal ordering: why the lag test did not support H2

The lagged WEI model does not produce a statistically detectable effect. There are several non-mutually exclusive reasons why the one-year lag relationship may fail in this setting:

- a. High persistence and trend co-movement. Many empowerment and development indicators are strongly trending; year-to-year changes may be small relative to the long-run trend, limiting the statistical detectability of lag effects in a short series.
- b. Contemporaneous adjustment. The relevant mechanisms (formalization decisions, registration surges, compliance timing) may react within-year or contemporaneously rather than with a clean one-year lag.
- c. Shock contamination. The 2020–2021 period introduces a structural break; lag structures can become unstable when shocks affect both the predictors and the outcome.
- d. Small-sample power. With $N \approx 16$ for lagged models, the test is statistically underpowered.

Thus, the empirical record here supports a contemporaneous association more clearly than a lagged one. This does not falsify the idea of delayed effects in principle; it indicates that a simple one-year lag structure is not well identified in this dataset.

4.5.5 Measurement robustness: PCA WEI supports direction (H3)

Replacing the equal-weight WEI with a PCA-based empowerment index preserves a positive coefficient with weaker statistical precision. This matters because it implies that the main finding is not dependent on a single arbitrary weighting rule. In practical terms, empowerment appears to behave as a coherent latent construct in this window—yet the specific measurement approach affects statistical strength, which is expected given the small sample and high collinearity among macro indicators.



4.5.6 *Alternative explanations and how to interpret them fairly*

A balanced interpretation requires taking seriously alternative explanations:

- a. Development-driven co-movement: Empowerment and enterprise entry may both rise with modernization (education expansion, urbanization, digitization, policy reforms). In this view, empowerment is partly a marker of development rather than a driver.
- b. Policy endogeneity: Periods of stronger enterprise policy (ease of doing business, digital registration) could simultaneously improve enterprise entry and correlate with empowerment-related improvements, producing a spurious relationship.
- c. Measurement boundaries: New business density captures formal limited-liability registrations, not informal microenterprise formation; empowerment may influence informal entrepreneurship differently.

Even if the observed association partly reflects broader modernization, women's empowerment remains strategically informative. When empowerment tracks institutional upgrading, it can serve as a leading indicator of ecosystem quality and inclusion, capturing changes in the human-capital and governance conditions that support enterprise entry and scaling.

4.5.7 *Implications for enterprise strategy and management innovation*

Several practical implications follow—stated as implications consistent with evidence, not as deterministic prescriptions:

- a. Talent pipeline and entrepreneurial capacity. Firms and ecosystem builders benefit from treating women's empowerment indicators as a proxy for expanding talent pools, managerial readiness, and potential founder supply.
- b. Formalization and compliance design. If empowerment conditions co-move with formal enterprise entry, policy and platform innovations that reduce compliance friction (registration simplification, digital inclusion,

accessible advisory services) may have larger payoffs in periods/areas where empowerment is rising.

- c. Resilience-oriented inclusion. The pandemic-era shock suggests enterprise ecosystems are vulnerable to systemic disruptions; empowerment-related capabilities (health system performance, participation continuity) may matter for recovery dynamics.
- d. Avoiding simplistic “women employers share” narratives. The downward movement in female employer share alongside improvements in other empowerment dimensions implies that empowerment may initially manifest as better job quality and participation rather than immediate increases in employer classification. Strategy should not equate empowerment exclusively with counts of female employers.

4.5.8 *Synthesis*

Overall, the findings provide consistent evidence that women's empowerment—measured as a multidimensional index—co-moves positively with formal enterprise entry in the Philippines from 2006 to 2022, and this relationship is robust to a pandemic shock control and alternative macro controls. The lag test does not support a simple one-year delayed effect, suggesting contemporaneous association and/or limited statistical power.

This study contributes empirical evidence that women's empowerment, operationalized as a multidimensional index, is systematically associated with formal enterprise entry, supporting its interpretation as a strategic correlate of enterprise dynamism while acknowledging limits on causal inference

5. Conclusions and Recommendations

5.1 *Conclusions*

Using annual Philippines-only indicators from the World Bank's World Development Indicators for 2006–2022 (N = 17), this study examined whether women's empowerment—operationalized as a multidimensional index—was associated with formal enterprise dynamism measured through new business density. Several conclusions follow from the empirical evidence.



First, women's empowerment is positively associated with formal enterprise entry in the Philippines. Across baseline specifications, higher values of the Women's Empowerment Index (WEI) co-move with higher new business density, and this relationship remains statistically meaningful after conditioning on macro controls and employing HAC/Newey–West inference. This supports the interpretation that empowerment-related improvements—capturing labor-market inclusion and job-quality shifts, reduced autonomy constraints, and stronger representation—are aligned with periods of greater formal business entry.

Second, the 2020 shock represents a substantial and statistically distinct disruption to enterprise entry. Controlling for a 2020 dummy yields a consistently negative effect, consistent with the observed contraction in new business density during the pandemic-era period. Importantly, the WEI coefficient remains positive under this control, indicating that the empowerment–enterprise association is not merely an artifact of the pandemic discontinuity.

Third, the relationship is robust in direction to an alternative empowerment measurement approach. Substituting a PCA-derived empowerment index produces a positive coefficient with weaker statistical precision, supporting the claim that the main directional inference does not depend entirely on equal-weight aggregation.

Fourth, a simple one-year lag structure does not yield evidence of a lagged empowerment effect on enterprise entry in this dataset. The lagged WEI specification is not statistically significant, implying that the observed relationship is more contemporaneous in this short annual series, or that lagged effects are difficult to identify under strong persistence, structural breaks, and limited sample size.

Overall, the evidence supports a cautious but meaningful conclusion: women's empowerment behaves as a measurable correlate of formal enterprise dynamism in the Philippines during 2006–2022, while causal claims and precise mechanism identification remain constrained by the observational single-country time-series design.

5.2 Recommendations

Recommendations are framed for three actor groups: (a) public-sector ecosystem builders, (b) private firms and industry groups, and (c) research

and monitoring stakeholders. They are stated as feasible actions consistent with the evidence and the limits of inference.

5.2.1 For public-sector ecosystem builders and policy implementers

Treat women's empowerment indicators as enterprise ecosystem signals. Incorporate a compact empowerment dashboard (female labor force participation; female wage/salaried share; female vulnerable employment; adolescent fertility; maternal mortality; women in parliament) into entrepreneurship monitoring to track whether enterprise policies are operating under enabling or constraining inclusion conditions.

Reduce formalization frictions targeted to women's participation constraints. Expand digitized registration and compliance pathways with design features that reduce time and mobility constraints (e.g., simplified online registration, low-documentation onboarding, accessible advisory services), recognizing that empowerment-related capability expansion may translate into enterprise entry when transaction costs are lowered.

Strengthen maternal health resilience as an economic enabler. The spike in maternal mortality during 2021 coincided with depressed enterprise entry; resilience-oriented investment in maternal health continuity should be treated as a capability-preserving intervention rather than a sector-isolated health program.

Avoid narrow “employer-share” targets as the sole empowerment–enterprise metric. Given the observed decline in female employer share alongside improvements in other empowerment dimensions, enterprise development programs should track multiple empowerment channels rather than rely on employer-share shifts as the primary success indicator.

5.2.2 For private firms, MSME support institutions, and industry associations

Build women-centered entrepreneurial capability pipelines. Align hiring, training, and supplier development programs to strengthen women's progression into roles that build enterprise-relevant skills (operations leadership, financial management, compliance, procurement), recognizing that empowerment may manifest first through job quality and stable employment trajectories.



Support formalization and scaling pathways for women-led micro and small firms. Provide bundled support—bookkeeping, regulatory compliance assistance, market access—so that enterprise entry is not limited to informal activity and can translate into formal registration.

Adopt shock-aware continuity practices. The pandemic-era break suggests that enterprise entry is vulnerable to systemic shocks; firms and associations can reduce fragility by supporting flexible work arrangements, continuity planning, and health-related risk mitigation that sustains labor participation and operational stability.

5.2.3 For research and monitoring stakeholders

Institutionalize annual empowerment–enterprise tracking. Re-estimate the models as new WDI data become available, and monitor whether post-2022 patterns sustain the rebound dynamics.

Extend measurement beyond formal limited-liability registrations. Complement WDI new business density with domestic measures of MSME formation and informal entrepreneurship to test whether empowerment relates differently to informal vs. formal enterprise activity.

Use richer identification strategies when feasible. Future work should consider subnational data, policy discontinuities, or instrumental approaches to improve causal identification beyond the correlational time-series setting.

5.3 Implications

5.3.1 Theoretical implications

The results support a capability-oriented interpretation of empowerment as a multidimensional construct with relevance to enterprise outcomes. Empowerment indicators do not function merely as social development endpoints; they appear empirically intertwined with the institutional and human-capital conditions under which formal enterprise entry expands. At the same time, the non-significant lag test indicates that in annual macro series, empowerment–enterprise linkages may be primarily contemporaneous, or that lag structures require longer samples and models that handle persistence and structural breaks more explicitly.

5.3.2 Managerial and strategic implications

For enterprise strategy and management innovation, the findings imply that empowerment

metrics can be treated as ecosystem-level signals for enterprise dynamism and inclusion conditions. Managers and ecosystem actors may interpret improvements in women’s labor-market inclusion, job quality, and autonomy constraints as part of the broader enabling environment for enterprise entry and formalization. Conversely, disruptions to key constraints—such as maternal health deterioration—should be viewed as potential threats to ecosystem capability and, indirectly, to enterprise dynamism.

5.3.3 Policy and ecosystem implications

The stable negative effect for the 2020 shock reinforces that enterprise entry is sensitive to systemic disruptions and that resilience-enhancing interventions may have indirect enterprise benefits. Policies that reduce formalization frictions and improve continuity of empowerment-related capabilities (particularly labor participation stability and health-system resilience) are likely to be complementary rather than competing objectives.

5.3.4 Methodological implications

Methodologically, the study demonstrates a feasible approach for operationalizing empowerment as an index using WDI series in a single-country time-series setting. However, the strong correlations between empowerment indices and development proxies underscore the importance of parsimonious modeling, HAC inference, and explicit robustness testing. Future studies would benefit from longer time windows, higher-frequency data, or designs that provide stronger leverage on causal identification and mechanism testing.

6. References

- Agang-Ang, G., Quinto, L., Kim, Y., Eustaquio, J. C., De Vera, R. K., Crisologo, J., Lavallo, D. K., De Jesus, A., Dela Cruz, K., Dela Cruz, M., Espiritu, A., Faustino, R., Francisco, D., Garcia, L., Gersaniva, J., Gomez, J., Gonzalez, P., Hilario, P., Hipolito, R., ... & Yabut, S. (2025). Gender differences in nutrition, lifestyle, and distress among dormitory medical students: A cross-sectional study. *International Journal of Health & Business Analytics*, 1(1). <https://doi.org/10.65166/xngg1k50>
- Alkhaled, S. (2021). Women's entrepreneurship in Saudi Arabia: Feminist solidarity and political



- activism in disguise? *Gender, Work & Organization*. <https://doi.org/10.1111/gwao.12626>
- Aronsson, A., Vidaurre-Teixidó, P., Jensen, M., Solhaug, S., & McNamara, C. (2023). The health consequences of informal employment among female workers and their children: A systematic review. *Globalization and Health*, 19. <https://doi.org/10.1186/s12992-023-00958-1>
- Assaad, R., Hendy, R., Lassassi, M., & Yassin, S. (2020). Explaining the MENA paradox: Rising educational attainment, yet stagnant female labor force participation. *Political Economy: Government Expenditures & Related Policies eJournal*. <https://doi.org/10.4054/demres.202043.28>
- Atento, R. G. (2025a). Valuation metrics, market efficiency, and investor sentiment: A descriptive analysis of Philippine Stock Exchange-listed firms. *International Journal of Health & Business Analytics*, 1(1). <https://doi.org/10.65166/6kbeat87>
- Atento, R. G. (2025b). The credibility imperative 2025: Governance integrity, economic resilience, and strategic adaptability in Philippine diplomacy. *International Journal of Health and Business Analytics*, 1(2). <https://doi.org/10.65166/6amaz997>
- Atento, R. G. O., & Atento, A. G. B. (2025a). Which fundamentals differentiate Philippine stock winners from laggards? A rank-based multinomial analysis of 2025 price appreciation. *International Journal of Health and Business Analytics*, 1(2), 1–18. <https://doi.org/10.65166/n7t3ew73>
- Atento, R. G., & Atento, A. G. (2025b). Global equity valuation dispersion: Evidence from P/E benchmarks, percentile positioning, and trend margins. *International Journal of Health and Business Analytics*, 1(2). <https://doi.org/10.65166/2pd5k207>
- Atento, R. G., & Espelita, C. A. M. H. (2025). From community voice to marketing strategy: The feeder-school ecosystem as basis for a consumer-centered marketing framework. *International Journal of Health and Business Analytics*. <https://doi.org/10.65166/mt4em434>
- Atento, R. G., Quinto, L., Espelita, C. A. M., & Castaneda, C. (2025). Integrating business and health analytics: A conceptual framework for dual outcomes in healthcare. *International Journal of Health & Business Analytics*, 1(1). <https://doi.org/10.65166/04pdc866>
- Atento, R. G. O., Quinto, L. F., & Espelita, C. A. M. H. (2025a). Bridging global health workforce gaps 2050: A multilevel analysis of global demand, Philippine supply fragilities, and competency alignment. *International Journal of Health and Business Analytics*, 1(2), 1–30. <https://doi.org/10.65166/kgbpey79>
- Atento, R. G. O., Quinto, L. F., Espelita, C. A. M., & San Juan, F. M. (2025). Narrative health analytics: Integrating empathy, data, and ethics in patient-centered healthcare. *International Journal of Health and Business Analytics*, 1(2), 1–33. <https://doi.org/10.65166/yxgx8e59>
- Austrian, K., Soler-Hampejsek, E., Behrman, J., Digitale, J., Hachonda, N., Bweupe, M., & Hewett, P. (2020). The impact of the Adolescent Girls Empowerment Program (AGEP) on short and long term social, economic, education and fertility outcomes: A cluster randomized controlled trial in Zambia. *BMC Public Health*, 20. <https://doi.org/10.1186/s12889-020-08468-0>
- Badlani, M., & Rami, G. (2025). Quantifying the digital divide: A mixed-method analysis of socio-economic determinants, Educational Employment Mismatch Index (EEMI), and female labor force participation in India (2017–2024). *JPAIR Multidisciplinary Research*. <https://doi.org/10.7719/jpair.v6i1.963>
- Berglund, K., Ahl, H., Petterson, K., & Tillmar, M. (2018). Women's entrepreneurship, neoliberalism and economic justice in the postfeminist era: A discourse analysis of policy change in Sweden. *Gender, Work &*



- Organization. <https://doi.org/10.1111/gwao.12269>
- Bermido, C. M., Quinto, L. F., & Atento, R. G. O. (2025). A qualitative thematic review of contemporary challenges affecting health professions education: Implications for higher education leadership. *International Journal of Health and Business Analytics*, 1(2). <https://doi.org/10.65166/vfm5w791>
- Castellaneta, F., Conti, R., & Kacperczyk, A. (2020). The (un)intended consequences of institutions lowering barriers to entrepreneurship: The impact on female workers. *Southern Medical Journal*, 41, 1274-1304. <https://doi.org/10.1002/smj.3133>
- Dahlum, S., Knutsen, C., & Mechkova, V. (2022). Women's political empowerment and economic growth. *World Development*. <https://doi.org/10.1016/j.worlddev.2022.105822>
- Dela Costa, V., & Atento, R. G. O. (2025). Financial performance and market viability of Globe Telecom, Inc.: An integrated fundamental-technical analysis. *International Journal of Health & Business Analytics*, 1(1). <https://doi.org/10.65166/v5x9d097>
- Del Mundo, F., & Atento, R. G. O. (2025). Fundamental and technical indicator analysis of San Miguel Corporation: Financial performance, market behavior, and investment evaluation. *International Journal of Health & Business Analytics*, 1(2), 1-25. <https://doi.org/10.65166/6vdtp816>
- Diaz, L. K. R., Cheng, M. I. D., Espeja, R., Frayre, D. D. Q., Gammad, J. B., Hilario, J. A. B., Manalo, N. A. C., Santos, C. A. T., Tan, L. M. B., & Quinto, L. F. (2025). In-vitro anticoagulant and thrombolytic properties of crude *Aspergillus terreus* extract. *International Journal of Health & Business Analytics*, 1(2). <https://doi.org/10.65166/60zfnq09>
- DiRienzo, C., & Das, J. (2021). Formal female entrepreneurship and the shadow economy. *Journal of Economics and Behavioral Studies*, 13(5). [https://doi.org/10.22610/jebs.v13i5\(j\).322](https://doi.org/10.22610/jebs.v13i5(j).322)
- Espelita, C. A. M., Atento, R. G., Rao, L. J., & Tian, Y. (2025). Understanding monetary policy: Student awareness, perceptions, and financial behaviors in the Philippine context. *International Journal of Health & Business Analytics*, 1(1). <https://doi.org/10.65166/f7eayj47>
- Ferre, Z., Triunfo, P., & Antón, J. (2023). The short- and long-term determinants of fertility in Uruguay. *Demographic Research*, 51. <https://doi.org/10.4054/demres.2024.51.10107167>
- Finlay, J., Gulaid, M., Mibenge, C., Madise, N., Doodoo, N., Stover, J., Weinberger, M., O'Brien, M., & Zimmermann, M. (2025). Contraception to women's economic empowerment: A narrative review. *World Development*, 196. <https://doi.org/10.1016/j.worlddev.2025.107167>
- Finlay, J., & Lee, M. (2018). Identifying causal effects of reproductive health improvements on women's economic empowerment through the Population Poverty Research Initiative. *The Milbank Quarterly*, 96, 300-322. <https://doi.org/10.1111/1468-0009.12326>
- Herrera, C., Sahn, D., & Villa, K. (2019). Teen fertility and female employment outcomes: Evidence from Madagascar. *Journal of African Economies*. <https://doi.org/10.1093/jae/ejy024>
- Klasen, S. (2019). What explains uneven female labor force participation levels and trends in developing countries? *The World Bank Research Observer*. <https://doi.org/10.1093/wbro/lkz005>
- Klasen, S., Le, T., Pieters, J., & Silva, M. (2020). What drives female labour force participation? Comparable micro-level evidence from eight developing and emerging economies. *The Journal of Development Studies*, 57, 417-442. <https://doi.org/10.1080/00220388.2020.1790533>



- Lagrasta, F., Scozzi, B., & Pontrandolfo, P. (2024). Feminisms and entrepreneurship: A systematic literature review investigating a troubled connection. *International Entrepreneurship and Management Journal*, 20, 3081–3112. <https://doi.org/10.1007/s11365-024-00977-3>
- Laxamana, A. E., Ching, M. W., Tencomnao, T., Laxamana, M. P. N. O., & Prasanth, M. I. (2025). Anti-aging potential of crude methanolic extract from *Cocos nucifera* embryo using *Caenorhabditis elegans* as model organism. *International Journal of Health & Business Analytics*, 1(2), 1–15. <https://doi.org/10.65166/3x45j279>
- Mangubat, M. M., & Atento, R. G. O. (2025). Integrated fundamental–technical evaluation of Jollibee Foods Corporation: Financial performance, market behavior, and investment outlook. *International Journal of Health and Business Analytics*. <https://doi.org/10.65166/azkk2x82>
- Morcilla, J. S., Al Bozom, I., Adham, A., Murshed, K., & Quinto, L. F. (2025). Investigation of an appropriate decalcifying agent for bone biopsy specimens submitted for histomorphologic analyses and immunohistochemical studies. *International Journal of Health & Business Analytics*, 1(2), 1–14. <https://doi.org/10.65166/y1s38453>
- Nacino, G. E., & Basit, S. A. (2025). Microplastics, bacterial isolates, and antimicrobial resistance profiles in *Decapterus macrosoma* from Cavite, Philippines. *International Journal of Health & Business Analytics*, 1(2). <https://doi.org/10.65166/bevs3330>
- Nona, R. G., & Atento, R. G. (2025). Integrating fundamentals and technicals: Investment attractiveness of Puregold Price Club, Inc. *International Journal of Health & Business Analytics*, 1(1). <https://doi.org/10.65166/e0y0mb43>
- Nursyamsiah, T., Arshad, M., Idris, Z., & Salleh, S. (2025). What drives female labour force participation in Indonesia? A systematic literature review. *e-Bangi Journal of Social Science and Humanities*, 22*(3). <https://doi.org/10.17576/ebangi.2025.2203.27>
- Quinto, L., & Atento, R. G. (2025). Economic growth and developmental equity in four ASEAN economies: Linking macroeconomic trends to employment and child nutrition (1999–2024). *International Journal of Health & Business Analytics*, 1(1). <https://doi.org/10.65166/nq75nv94>
- Rao, L., Tian, Y., & Atento, R. G. O. (2025). Adoption and perceived effectiveness of AI in education: Personalization, outcomes, and equity. *International Journal of Health & Business Analytics*, 1(1). <https://doi.org/10.65166/qgq89291>
- Rauf, S. (2025). Exploring the causes and consequences of women's limited economic participation in Pakistan. *International Journal of Social Science & Entrepreneurship*, 5(1). <https://doi.org/10.58622/ijssse.v5i1.348>
- Sahin, B. (2025). Structural, social, and ecological dimensions of female labor force participation: A Bayesian analysis across national contexts. *Land*, 14(9), 1793. <https://doi.org/10.3390/land14091793>
- Temporada, K., Quinto, L., Tarraya, D. A., Sison, F. C., Marfil, J. F., Ramirez, C., & Ng, W. J. (2025). Awareness and preventive practices on leptospirosis in flood-prone communities of Marikina City, Philippines. *International Journal of Health & Business Analytics*, 1(1). <https://doi.org/10.65166/x71zvx65>
- Teodosio, G. M., Atento, R. G., Boa, R. A., Malijan, A., Malolos, Q. A., Merciales, P. A., & Ricablanca, P. J. (2025). Creating a blue ocean for family-owned SMEs: Value innovation, digital transformation, and sustainability in the case of Ivan Color Paint Center. *International Journal of Health & Business Analytics*, 1(2). <https://doi.org/10.65166/x4kqce91>
- Tonoyan, V., Strohmeier, R., & Jennings, J. (2020). Gender gaps in perceived start-up ease: Implications of sex-based labor market segregation for entrepreneurship across 22 European countries. *Administrative Science*



Quarterly, 65, 181–

225. <https://doi.org/10.1177/00018392198358>

67

Tonoyan, V., Strohmeyer, R., & Jennings, J. (2023). Sex-based labour market segregation and women's perceptions of entrepreneurship. *Open Access*

Government. <https://doi.org/10.56367/oag->

[039-10764](https://doi.org/10.56367/oag-039-10764)

Yang, T., Kacperczyk, A., & Naldi, L. (2023). The motherhood wage penalty and female entrepreneurship. *Organization*

Science. <https://doi.org/10.1287/orsc.2023.165>

7

Yang, X., Huang, Y., & Gao, M. (2022). Can digital financial inclusion promote female entrepreneurship? Evidence and mechanisms. *The North American Journal of Economics and*

Finance. <https://doi.org/10.1016/j.najef.2022.>

[101800](https://doi.org/10.1016/j.najef.2022.101800)

Ylagan, H. M., Aguirre, K. A. G. C., Briones, L. A., Briones, P. N. P., Canapi, C. V. T., Corpuz, K. M. R., Esmelo, A. J. M., Ganacial, V. J. M., Gasid, K. M. M., Ledesma, A. F. P., Marasigan, K. V. O., Miraples, M. B., Santos, E. G. D., Valdez, J. F. L., & Quinto, L. F.

(2025). Post-rehabilitation heavy metal contamination analysis of kangkong (*Ipomoea aquatica*) cultivated in the Pasig River Waterway, Manggahan

Floodway. *International Journal of Health & Business Analytics*,

1(2). <https://doi.org/10.65166/xf4mm102>

7. Tables and Figures

Table 1. Descriptive statistics (mean, SD, min, max) for new business density, WEI, component indicators, and controls (2006–2022).

Variable	Mean	SD	Min (Year)	Max (Year)
New business density (IC.BUS.NDNS.ZS)	0.282	0.056	0.202 (2009)	0.361 (2017)
WEI (z-score composite, WEI_z)	0.000	0.526	-0.833 (2006)	0.845 (2018)
Female labor force participation (SL.TLF.CACT.FE.ZS)	47.316	1.961	42.676 (2020)	50.380 (2022)
Wage & salaried, female (SL.EMP.WORK.FE.ZS)	55.609	3.467	50.101 (2006)	60.485 (2019)
Vulnerable employment, female (SL.EMP.VULN.FE.ZS)	42.161	3.372	37.349 (2019)	47.423 (2006)
Employers, female (SL.EMP.MPYR.FE.ZS)	2.230	0.244	1.848 (2022)	2.545 (2007)
Adolescent fertility (SP.ADO.TFRT)	49.549	9.955	32.161 (2022)	61.604 (2010)
Maternal mortality (SH.STA.MMRT)	109.412	17.657	86 (2017)	153 (2021)
Women in parliament (SG.GEN.PARL.ZS)	25.116	4.174	15.254 (2006)	29.795 (2016)
Log GDP per capita (ln_gdppc)	7.929	0.182	7.655 (2006)	8.182 (2022)
Trade (% GDP) (NE.TRD.GNFS.ZS)	65.016	7.009	55.825 (2013)	80.851 (2006)
Inflation (CPI, %) (FP.CPI.TOTL.ZG)	3.718	1.838	0.674 (2015)	8.260 (2008)
Urban population (%) (SP.URB.TOTL.IN.ZS)	49.241	4.515	41.831 (2006)	54.790 (2022)

Figure 1. Time trends of new business density (IC.BUS.NDNS.ZS, left axis) and Women’s Empowerment Index (WEI_z, right axis), Philippines, 2006–2022. The WEI is a standardized composite of seven WDI indicators with constraint series reverse-coded; higher values indicate higher empowerment.

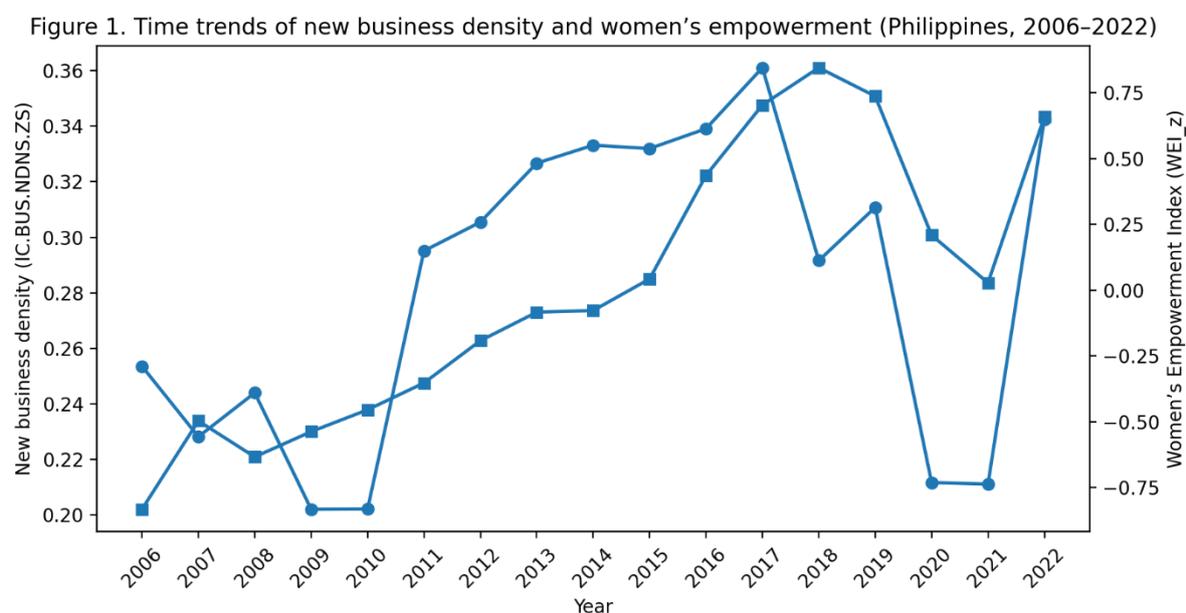


Table 2. Correlation Matrix

Correlation matrix (Pearson r; lower triangle) for key study variables, Philippines, 2006–2022.

No.	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1	New business density	1.000												
2	Women's Empowerment Index (WEI_z)	0.579**	1.000											
3	Female labor force participation (%)	0.397	-0.252	1.000										
4	Wage & salaried employment, female (%)	0.425*	0.938***	-0.448*	1.000									
5	Vulnerable employment, female (%)	-0.412	-0.941***	0.473*	-0.998***	1.000								
6	Employers, female (%)	-0.353	-0.314	-0.168	-0.416*	0.355	1.000							
7	Adolescent fertility rate	-0.052	-0.658***	0.515**	-0.730***	0.726***	0.346	1.000						
8	Maternal mortality ratio	-0.606***	-0.724***	0.024	-0.570**	0.562**	0.332	0.237	1.000					
9	Women in parliament (%)	0.530**	0.880***	-0.271	0.919***	-0.908***	-0.506**	-0.519**	-0.577**	1.000				
10	Log GDP per capita	0.449*	0.942***	-0.339	0.975***	-0.967***	-0.479*	-0.804***	-0.549**	0.890***	1.000			
11	Trade (% of GDP)	-0.129	-0.007	-0.034	-0.166	0.132	0.527**	-0.261	0.084	-0.397	-0.077	1.000		
12	Inflation (CPI, %)	-0.282	-0.303	0.081	-0.388	0.371	0.382	0.016	0.304	-0.468*	-0.283	0.470*	1.000	
13	Urban population (%)	0.444*	0.893***	-0.333	0.967***	-0.951***	-0.589**	-0.751***	-0.526**	0.919***	0.977***	-0.251	-0.362	1.000

Note. *** $p < .01$, ** $p < .05$, * $p < .10$. (See below for p-values)

	1	2	3	4	5	6	7	8	9	10	11	12	13
New business density (1)		0.0149	0.1143	0.0887	0.1006	0.1647	0.8439	0.0099	0.0286	0.0708	0.6227	0.2725	0.0743
Women's Empowerment Index (WEI_z) (2)	0.0149		0.3300	0.0000	0.0000	0.2190	0.0041	0.0010	0.0000	0.0000	0.9799	0.2371	0.0000
Female labor force participation (%) (3)	0.1143	0.3300		0.0713	0.0553	0.5183	0.0346	0.9258	0.2922	0.1837	0.8975	0.7564	0.1918
Wage & salaried employment, female (%) (4)	0.0887	0.0000	0.0713		0.0000	0.0968	0.0009	0.0169	0.0000	0.0000	0.5254	0.1243	0.0000
Vulnerable employment, female (%) (5)	0.1006	0.0000	0.0553	0.0000		0.1618	0.0010	0.0189	0.0000	0.0000	0.6134	0.1429	0.0000
Employers, female (%) (6)	0.1647	0.2190	0.5183	0.0968	0.1618		0.1733	0.1926	0.0381	0.0517	0.0296	0.1301	0.0129
Adolescent fertility rate (7)	0.8439	0.0041	0.0346	0.0009	0.0010	0.1733		0.3589	0.0330	0.0001	0.3107	0.9528	0.0005
Maternal mortality ratio (8)	0.0099	0.0010	0.9258	0.0169	0.0189	0.1926	0.3589		0.0153	0.0224	0.7474	0.2348	0.0303
Women in parliament (%) (9)	0.0286	0.0000	0.2922	0.0000	0.0000	0.0381	0.0330	0.0153		0.0000	0.1150	0.0579	0.0000
Log GDP per capita (10)	0.0708	0.0000	0.1837	0.0000	0.0000	0.0517	0.0001	0.0224	0.0000		0.7689	0.2703	0.0000
Trade (% of GDP) (11)	0.6227	0.9799	0.8975	0.5254	0.6134	0.0296	0.3107	0.7474	0.1150	0.7689		0.0569	0.3313
Inflation (CPI, %) (12)	0.2725	0.2371	0.7564	0.1243	0.1429	0.1301	0.9528	0.2348	0.0579	0.2703	0.0569		0.1532
Urban population (%) (13)	0.0743	0.0000	0.1918	0.0000	0.0000	0.0129	0.0005	0.0303	0.0000	0.0000	0.3313	0.1532	

Table 3. HAC (Newey–West) regressions predicting new business density (Philippines, 2006–2022).

	M1	M2	M3	M4	M5
WEI (z-score)	0.0614***(0.0158)	0.1587***(0.0486)	0.1321**(0.0557)		
WEI (z-score), t-1				0.0017(0.0352)	
WEI (PCA), z-score					0.1233*(0.0658)
Log GDP per capita		-0.2994**(0.1469)	-0.2052(0.1578)	0.1952(0.1289)	-0.4865(0.3641)
Trade (% of GDP)		-0.0015(0.0016)	-0.0021(0.0015)	-0.0032**(0.0015)	-0.0005(0.0014)
2020 dummy			-0.0885***(0.0189)	-0.1238***(0.0226)	-0.2058***(0.0465)
Constant	0.2818***(0.0130)	2.7564***(1.1627)	2.0531(1.2610)	-1.0555(0.9907)	4.1851(2.8561)
N		17	17	17	16
R ²	0.335	0.454	0.581	0.465	0.518
Adj. R ²	0.291	0.328	0.441	0.271	0.357



Model 1 details

	coef	se_HAC	t	p
const	0.281772	0.013049	21.59385	2.1E-103
WEI_z	0.061353	0.015807	3.881322	0.000104

Model 2 details

	coef	se_HAC	t	p
const	2.756447	1.162676	2.370778	0.017751
WEI_z	0.158674	0.0486	3.264921	0.001095
ln_gdppc	-0.29944	0.146877	-2.03874	0.041476
NE.TRD.GNFS.ZS	-0.00154	0.001558	-0.99082	0.321774

Model 3 details

	coef	se_HAC	t	p
const	2.05308	1.261005	1.62813	0.103497
WEI_z	0.132122	0.055723	2.371044	0.017738
ln_gdppc	-0.20519	0.157786	-1.30044	0.19345
NE.TRD.GNFS.ZS	-0.00214	0.001519	-1.4082	0.159072
D2020	-0.08855	0.018925	-4.67887	2.88E-06

Model 4 details

	coef	se_HAC	t	p
const	-1.05554	0.990675	-1.06548	0.286659
WEI_z_lag1	0.001677	0.035213	0.04763	0.962011
ln_gdppc	0.195207	0.128928	1.514084	0.130004
NE.TRD.GNFS.ZS	-0.00319	0.00145	-2.20008	0.027801
D2020	-0.12383	0.022627	-5.47262	4.43E-08

Model 5 details

	coef	se_HAC	t	p
const	4.185087	2.85606	1.465336	0.142829
WEI_pca1_z	0.123293	0.06576	1.874889	0.060808
ln_gdppc	-0.48646	0.364105	-1.33604	0.181537
NE.TRD.GNFS.ZS	-0.00052	0.00142	-0.36874	0.712321
D2020	-0.20583	0.046468	-4.4294	9.45E-06

Table 4. Robustness regressions (HAC/Newey–West) predicting new business density under alternative controls, lag structures, and empowerment measurement (Philippines, 2006–2022).

	R1	R2	R3	R4	R5	R6	R7
			0.1637**				
WEI (z-score)	0.1321** (0.0557)	0.1281** (0.0604)	* (0.0613)	0.1627** (0.0676)			0.1321** (0.0533)
WEI (z-score), $\hat{\tau}^1$					0.0017		
WEI (PCA), z-score						0.1233*	
Log GDP per capita	-0.2052	-0.1983	-	-	0.1952	-0.4865	-0.2052
Trade (% of GDP)	-0.0021	-0.0019	0.0009	0.0009	-	-0.0005	-0.0021
Inflation (CPI, %)		-0.0018		-0.0004			
Urban population (%)			0.0290**	0.0288**			
2020 dummy	-	-	-	-	-	-	-
Constant	2.0531	1.9907	6.5853**	6.5438**	-1.0555	4.1851	2.0531*
N		17	17	17	17	16	17
R \hat{A}^2		0.581	0.583	0.638	0.638	0.465	0.518
Adj. R \hat{A}^2		0.441	0.393	0.473	0.421	0.271	0.357
HAC maxlag		1	1	1	1	1	1
							2

Note. HAC/Newey–West standard errors in parentheses. *** $p < .01$, ** $p < .05$, * $p < .10$.

R1 Details

	coef	se_HAC	t	p
const	2.05308	1.261005	1.62813	0.103497
WEI_z	0.132122	0.055723	2.371044	0.017738
ln_gdppc	-0.20519	0.157786	-1.30044	0.19345
NE.TRD.GNFS.ZS	-0.00214	0.001519	-1.4082	0.159072
D2020	-0.08855	0.018925	-4.67887	2.88E-06

R2 Details

	coef	se_HAC	t	p
const	1.99071	1.317133	1.511397	0.130687
WEI_z	0.128075	0.060399	2.120477	0.033966
ln_gdppc	-0.1983	0.164071	-1.20863	0.226807
NE.TRD.GNFS.ZS	-0.00192	0.001522	-1.2611	0.207273
FP.CPI.TOTL.ZG	-0.00177	0.004337	-0.40788	0.683361
D2020	-0.08957	0.019287	-4.64404	3.42E-06



R3 Details

	coef	se_HAC	t	p
const	6.585295	2.536182	2.596539	0.009417
WEI_z	0.163674	0.061254	2.672067	0.007539
ln_gdppc	-0.98148	0.405323	-2.42148	0.015458
NE.TRD.GNFS.ZS	0.000854	0.002029	0.420798	0.673903
SP.URB.TOTL.IN.ZS	0.029031	0.013345	2.175321	0.029606
D2020	-0.10725	0.019932	-5.38107	7.4E-08

R4 Details

	coef	se_HAC	t	p
const	6.543763	2.64459	2.474396	0.013346
WEI_z	0.162666	0.067615	2.405764	0.016139
ln_gdppc	-0.97512	0.419074	-2.32685	0.019973
NE.TRD.GNFS.ZS	0.000879	0.002	0.439273	0.660464
FP.CPI.TOTL.ZG	-0.00035	0.005303	-0.0664	0.94706
SP.URB.TOTL.IN.ZS	0.028844	0.013363	2.158534	0.030886
D2020	-0.10734	0.020338	-5.27767	1.31E-07

R5 Details

	coef	se_HAC	t	p
const	-1.05554	0.990675	-1.06548	0.286659
WEI_z_lag1	0.001677	0.035213	0.04763	0.962011
ln_gdppc	0.195207	0.128928	1.514084	0.130004
NE.TRD.GNFS.ZS	-0.00319	0.00145	-2.20008	0.027801
D2020	-0.12383	0.022627	-5.47262	4.43E-08

R6 Details

	coef	se_HAC	t	p
const	4.185087	2.85606	1.465336	0.142829
WEI_pca1_z	0.123293	0.06576	1.874889	0.060808
ln_gdppc	-0.48646	0.364105	-1.33604	0.181537
NE.TRD.GNFS.ZS	-0.00052	0.00142	-0.36874	0.712321
D2020	-0.20583	0.046468	-4.4294	9.45E-06



R7 Details

	coef	se_HAC	t	p
const	2.05308	1.217541	1.68625	0.091748
WEI_z	0.132122	0.053268	2.480314	0.013127
ln_gdppc	-0.20519	0.15225	-1.34773	0.177745
NE.TRD.GNFS.ZS	-0.00214	0.001537	-1.39242	0.163794
D2020	-0.08855	0.019562	-4.52657	5.99E-06