World Journal of Applied Economics (2026), 12(1): 21-41
doi: 10.22440/wjae.12.1.2

econworld
Research Article

Beyond GDP: Exploring the Growth–Subjective Well-Being Nexus in the Next Eleven Countries[a]

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Received: 23.01.2026; Revised: 29.03.2026; Accepted: 29.04.2026

Although economic growth is often regarded as the primary source of better living standards, the Easterlin Paradox suggests that higher income does not necessarily improve people's subjective well-being (SWB). This study, using a panel data framework with Driscoll–Kraay standard errors, investigates the relationship between growth and SWB in the Next Eleven (N-11) countries from 2009 to 2019, moving beyond traditional income-based measures of well-being, including unemployment, institutional quality, and economic complexity. The findings show that higher unemployment reduces life satisfaction, while better institutional quality enhances it. Real GDP per capita has no significant effect once these factors are taken into account, supporting the Easterlin Paradox. In addition to addressing the gap in growth literature on the association between economic complexity and SWB, which is found to be negative, a central contribution of the study is justifying the introduction of a "modernization tax", referring to the social costs that often accompany rapid structural change; as economies transform, people may face job shifts, skill mismatches, and greater uncertainty, which can lower life satisfaction. Overall, improving job conditions and strengthening institutions appear more important for well-being than simply increasing income in N-11 countries, consistent with the United Nations 2030 Agenda.

JEL codes: E24, D73, I31, O14, O11

Keywords: Subjective well-being; Easterlin Paradox; Sustainable development; Institutional quality; Economic complexity

1 Introduction

Welfare has traditionally been assessed using aggregate income measures such as gross domestic product (GDP). However, an expanding body of research demonstrates that material indicators alone are insufficient to capture overall welfare. Recent studies increasingly approach economic growth as a means rather than an end, consistent with the Sustainable Development Goals' (SDGs) emphasis on inclusive growth, decent work, and institutional quality. This conceptual shift has redirected attention toward subjective well-being (SWB)

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as a measure of welfare. SWB refers to how individuals experience and interpret their lives, encompassing affective states, such as happiness, as well as cognitive evaluations of life satisfaction. Within this framework, life satisfaction serves as a comprehensive and stable indicator of welfare by aggregating individuals' judgments across multiple life domains, making it particularly suitable for the analysis of relationships between long-run growth and well-being (Veenhoven, 2011).

A large share of the economics literature treats life satisfaction, happiness, and SWB as interchangeable concepts, particularly in macroeconomic contexts (Veenhoven & Dumludağ, 2015). Following this convention, the present study uses life satisfaction as the primary measure of SWB, as it offers a conceptually appropriate and empirically reliable framework for evaluating how income, unemployment, institutional quality, and economic complexity jointly determine welfare across countries.

When well-being is evaluated through individuals' subjective assessments, the assumption that economic growth automatically improves welfare becomes less convincing. Although higher income typically goes hand in hand with happiness at a given point in time, this relationship weakens substantially in the long-run. Easterlin (1974) demonstrates that sustained increases in GDP do not necessarily lead to lasting improvements in average happiness. This paradoxical situation was later named the Easterlin Paradox and constitutes the theoretical basis for exploring the nexus between growth and SWB. Easterlin (2003) attributes this pattern primarily to rising aspirations and hedonic adaptation, whereby improvements in material conditions are gradually offset as individuals adjust their expectations. The paradox and its mechanisms, such as social comparison and hedonic adaptation, are discussed in detail in Section 2.

Beyond income, labor market conditions, institutional quality, and structural transformation affect the evaluation of individual SWB; social and institutional conditions are at least as important as income in explaining cross-country differences in life satisfaction (Helliwell et al., 2020). For instance, unemployment diminishes life satisfaction by creating substantial psychological and social pressures, such as the loss of status and self-esteem, that often exceed the direct loss of income (Cimpoeru, 2023). Furthermore, high unemployment rates depress even those with jobs by intensifying perceived job insecurity and economic anxiety (Blanchflower, 2007). The effectiveness, fairness, and credibility, constituting institutional quality, of political and economic institutions shape individuals' sense of security and trust within society (North, 1990). Institutional deficiencies and corruption may significantly reduce SWB, with welfare losses surpassing the impact of major macroeconomic shocks (Li & An, 2020; Ciziceno & Travaglino, 2019; Jain et al., 2026; Gevindhi et al., 2026).

While the existing literature offers valuable insights at the global and cross-country level, much less is known about how the links between income, labor markets, institutions, and structural transformation operate in rapidly developing economies. Studies on emerging countries are fragmented and limited to single-country analyses. This gap is particularly evident in the Next Eleven (N-11) countries, a concept introduced by Goldman Sachs to describe the next set of highly populated countries beyond the BRICs, with the potential to rival the G7 in scale (Wilson & Stupnytska, 2007). These countries are: Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, Türkiye, the Republic of Korea, and Vietnam. As of 2024, the N-11 countries have a total population of approximately 1.63 billion, accounting for roughly 20% of the world's population, and their annual average GDP growth rate (3%) surpassed the global average (2.8%) between 2009 and 2019

(World Bank, 2026). The population size and growth rates reflect both the demographic and economic weight of the N-11 countries, and their high growth potential, rapid structural transformation, and persistent institutional constraints make these countries a particularly relevant setting for identifying what determines their SWB.

Some of the studies covering N-11 countries are as follows: In Bangladesh, SWB is shaped not only by absolute income but also by relative income, local inequality, and institutional quality (Asadullah & Chaudhury, 2012). The Philippines exhibits similar dynamics, where institutional trust plays a more decisive role in shaping life satisfaction than income differences alone (Piosang & Grimes, 2022). In Türkiye, although higher absolute income contributes positively to life satisfaction, its marginal effect diminishes once relative income considerations, unemployment, and governance-related factors are incorporated, with corruption eroding social trust and fairness perceptions (Uluturk-Akman, 2021; Alkan & Çilesiz, 2023). A substantial body of foundational and recent research on the Turkish case further demonstrates that the explanatory power of absolute income is limited, while social comparisons embedded in the relative income hypothesis, future expectations, aspiration levels, and fairness perceptions emerge as central determinants of happiness (Caner, 2015; Dumludağ et al., 2016; Uğur, 2021; Erdoğdu, 2025; Kamilçelebi & Burger, 2025). At a more advanced stage of development, the Republic of Korea provides strong empirical evidence for the Easterlin Paradox: despite a sustained increase in income levels since the 1960s, Koreans are not particularly happy, largely due to high levels of distrust and a lack of transparency (Yee, 2024). In sum, labor market stability, institutional quality, and the ability to manage structural transformation emerge as decisive factors shaping well-being outcomes in those countries and motivate a comprehensive examination of the growth-well-being nexus in them beyond income-centered approaches.

Building on these insights, the primary objective of the study is to assess whether economic growth translates into higher life satisfaction in N-11 countries after accounting for key socioeconomic and structural factors, including unemployment, institutional quality (control of corruption), and economic complexity. The aim is to shed light on how the quality of growth, shaped by institutions, labor markets, and structural transformation, in addition to the income growth affects SWB. The analysis employs a Driscoll–Kraay robust estimation strategy and provides empirical evidence that labor market conditions and institutional quality are often more decisive for life satisfaction than increases in GDP. A further contribution of the study lies in integrating economic complexity as a structural determinant of SWB. While economic complexity drives growth and enhances export performance, its impact on life satisfaction remains relatively underexplored. The study conceptualizes a potential "modernization tax" as the social cost of rapid structural advancement, whereby adjustment pressures, reallocation in the labor market, and increased economic uncertainty may temporarily weaken life satisfaction during periods of accelerated transformation.

The remainder of the paper is organised as follows. Section 2 discusses the Easterlin Paradox, covering its original formulation, theoretical mechanisms, subsequent empirical extensions, and the counter-evidence. Section 3 reviews the relevant literature, and Section 4 outlines the data and empirical methodology. In Section 5, the estimation results are presented, and the findings are discussed in Section 6. Finally, Section 7 summarises the main conclusions and derives policy implications for the N-11 countries.

2 The Easterlin Paradox

In his seminal study, "Does Economic Growth Improve the Human Lot: Some Empirical Evidence", Easterlin (1974) posits that although a positive correlation between wealth and happiness is observable within a single nation, this connection disappears across countries or over time. This intriguing phenomenon is known as the Easterlin Paradox and serves as the theoretical cornerstone for exploring the nexus between growth and SWB.

Easterlin et al. (2010) argues that while happiness and income move together in the short term, long-term increases in real GDP per capita fail to raise life satisfaction not only in developed countries but also in rapidly developing and transition economies such as China and the post-socialist Eastern European nations. Easterlin & O'Connor (2022b) presents a similar pattern across Western, Northern, and Southern Europe between 1981 and 2018: cross-sectional data suggest a positive, whereas long-term time-series evidence reveals no systematic association between economic growth and well-being. The authors conclude that a generous welfare state is what truly matters, suggesting that the benefits of progress stem less from income growth and more from a supportive institutional and social framework.

Easterlin (2001) explains the paradox through a relative-income logic grounded in two psychological mechanisms: social comparison and hedonic adaptation (see also Easterlin, 2003; Easterlin & O'Connor, 2022a). The first mechanism, social comparison, refers to individuals' self-evaluations relative to others. People compare their income and well-being with those of their peers, neighbours, or colleagues. If their position is above the reference group, they tend to report higher happiness. This may be one of the primary factors explaining why, on average, richer individuals report higher happiness than poorer individuals in cross-sectional data. The second mechanism, hedonic adaptation, also known as the hedonic treadmill, focuses on individuals' comparisons of their current situation with their own past. Over time, people become accustomed to improved living standards, and thus their new standards of living become their new reference point. As incomes rise, so do aspirations, and SWB therefore remains largely constant over time (Easterlin, 2003).

The theoretical and empirical debate over whether income growth results in long-lasting well-being gains has been shaped by the Easterlin Paradox. Although the Paradox has been supported by many studies, some scholars argue that potential biases in Easterlin's data selection, particularly the exclusion of certain observations, may undermine the generalizability of the findings. Numerous studies suggest that SWB tends to increase with rising income over time (Hagerty & Veenhoven, 2003; Veenhoven & Hagerty, 2006; Veenhoven & Vergunst, 2014; Slag et al., 2019). Hagerty & Veenhoven (2003) suggests that the Easterlin Paradox may be an exception rather than the rule. Easterlin (2005, p. 429) replies to the authors by stating that "Instead of straining to feed the illusion that a focus on growth creates happiness, one needs to develop an empirically tested causal model that includes the life satisfaction derived from multiple sources, not just material goods, but also family life, health, work utility, and the like".

Subsequently, in a direct reply to Easterlin's (2005) critique, Veenhoven & Hagerty (2006) reinforces their findings using updated trend data: average happiness increased modestly in high-income countries and noticeably in some low-income countries over the long run. They introduce the "happy life years" concept, combining life satisfaction with longevity, and have shown substantial progress since the 1950s. This finding is inconsistent with the claim that economic growth yields no lasting gains in well-being. In a later, more comprehensive

study, Veenhoven & Vergunst (2014) observes that happiness has risen in approximately 62% of nations, and that this increase is significantly correlated with GDP growth. Slag et al. (2019) tests whether the Easterlin Paradox applies to South Korea for the 1980–2015 period, using multiple happiness measures. Their finding that people became happier over time across all measures directly contradicts Easterlin et al. (2010), which states that South Korea's rapid economic growth was not accompanied by rising happiness.

The debate remains unresolved, and this theoretical and empirical tension forms the analytical foundation for the present study. If the Easterlin Paradox is operative, income growth alone is insufficient to increase lasting well-being in the N-11 countries. In that case, factors such as labor market conditions, institutional quality, and structural transformation become more influential. Even if we accept the counter-evidence that growth raises happiness, the role of the aforementioned factors remains central, since the magnitude and durability of any income-happiness link depend on a broader developmental context in which growth is embedded.

3 Literature Review

SWB, a term often used as a synonym for happiness or life satisfaction, has attracted considerable attention across various disciplines such as psychology, sociology, and economics. Diener (2000) defines SWB as individuals' overall evaluations of their lives, consisting of both cognitive judgments, such as life satisfaction, and affective components, including positive and negative emotional states. The literature examining the relationship between income and SWB has largely been built on the Easterlin Paradox (Easterlin, 1974), which has been confirmed by numerous studies (e.g., Easterlin, 2003, 2006; Easterlin et al., 2010; Easterlin & O'Connor, 2022a). As discussed in the preceding section, the paradox is primarily explained through social comparison and hedonic adaptation. Clark et al. (2008) argues that hedonic adaptation and relative income concerns can substantially weaken the long-term gains in SWB associated with income growth, particularly once basic material needs are met.

Over time, as aggregate income rises, the benchmark against which people judge their own income also rises, and if the relative positions of individuals remain unchanged, the gains from higher own income are offset by rising reference incomes (Easterlin & O'Connor, 2022a). The influence of social comparison has been confirmed by several studies conducted across diverse countries and contexts (Bárcena-Martín et al., 2017; Oshio et al., 2011; Senik, 2009). Clark et al. (2008) argues that relative income and hedonic adaptation jointly explain both the positive cross-sectional relationship between income and happiness and its absence.

The association between income and SWB remains one of the most debated topics in happiness economics. Kahneman & Deaton (2010) finds that while life evaluation rises steadily with income, emotional well-being satiates at approximately $75,000 annual household income, beyond which higher income no longer reduces daily stress or enhances positive affect. This satiation hypothesis is challenged by Stevenson & Wolfers (2013), who reports that proportional increases in income are associated with similar well-being gains across all income levels with no sign of a plateau. Recent evidence from European country-level analyses reveals a consistent plateau, in which both life satisfaction and happiness cease to improve once household income exceeds a certain threshold (Muresan et al., 2020; Röck et al., 2026). Likewise, Matusiewicz (2025) demonstrates that, in highly developed European economies such as Norway and Switzerland, GDP growth beyond a certain threshold fails

to translate into proportional gains in life satisfaction, with diminishing returns becoming evident. Beyond the European context, recent cross-country evidence further clarifies the non-linear nature of the income-well-being relationship. Behera et al. (2024), in an analysis of 166 countries, finds that per capita income positively affects happiness in both developed and developing economies, but in developing economies, there is an inverted U-shaped relationship; increasing per capita income beyond a certain threshold is associated with declining happiness. These findings are particularly relevant to the N-11 countries, several of which lie within the income range where such non-linear dynamics are most likely to emerge. Oishi et al. (2022) demonstrates that income inequality moderates this relationship; in higher-inequality contexts, the income-happiness correlation strengthens as the well-being gap between income groups widens and social comparison pressures increase. These mixed findings collectively suggest that the income-well-being nexus is neither universal nor linear, but rather depends strongly on distributional, institutional, and contextual factors.

Given these limitations of income-centered models, the focus has increasingly shifted toward non-material determinants of well-being. A large body of empirical research provides evidence of a significant negative relationship between unemployment and well-being (Clark & Oswald, 1994; Cimpoeru, 2023; Easterlin & O'Connor, 2025). This is primarily because the trauma of unemployment extends beyond financial loss, including psychological distress and erosion of social status (Uğur & Durak, 2025). The welfare loss from joblessness persists even after controlling for income, highlighting the role of non-pecuniary costs (Winkelmann & Winkelmann, 1998). At the macro level, high unemployment fosters a "climate of fear" that reduces the well-being of even those still employed (Blanchflower, 2007). The welfare costs associated with unemployment are significantly larger than those linked to inflation, indicating that labor market stability is more critical for life satisfaction than price stability alone (Di Tella et al., 2001; Blanchflower et al., 2014).

While labor market conditions play a central role in shaping SWB across countries, a more structural dimension of development and economic complexity offers additional insights into its long-term evolution. The Economic Complexity Index (ECI) developed by Hidalgo & Hausmann (2009) captures the diversity and sophistication of productive capabilities embedded within an economy. Although the ECI is widely recognized as a crucial driver of long-term growth and income diversification, its direct implications for SWB remain relatively underexplored. From one perspective, greater economic complexity may enhance life satisfaction by fostering high-quality employment opportunities, technological upgrading, and innovation-driven growth. However, the transition toward more complex production structures may also generate adjustment costs associated with creative destruction. For instance, industrial upgrading may intensify labor market polarization and skill mismatches, increasing job insecurity among less adaptable workers. Moreover, the intensification of modern production systems may increase performance pressures and undermine work-life balance. Finally, rapid urbanization and labor reallocation may erode traditional social networks, potentially undermining SWB. While complexity generally improves quality of life, these gains depend heavily on a country's institutional capacity to manage structural shifts (Hassanein et al., 2024). This institutional conditionality is further reinforced by broader reviews of the literature. Greater complexity is generally associated with improvements in economic performance and development, yet its social impacts are often inconsistent and lack a clear theoretical framework (Ferraz et al., 2021). The authors emphasize that the existing economic complexity research has primarily focused on growth-oriented outcomes,

whereas implications for social sustainability, such as inequality, labor market dynamics, and individual well-being, have been addressed only indirectly and in a fragmented manner. This gap in the literature points to the possibility that increases in productive sophistication may create social tensions and transitional welfare losses, particularly when institutional capacity and labor market adjustment mechanisms fail to keep pace with the speed and intensity of structural transformation. Evidence from Morocco illustrates this asymmetry: while economic complexity bolsters human capital, innovation, and health, it often correlates with declines in environmental and governance standards (Boumahdi & Zaoujal, 2025). Such patterns confirm that structural advancements entail significant trade-offs, where productive gains can trigger social and institutional frictions. The global implications of these trade-offs are further clarified by a cross-country analysis of Hartmann et al. (2017); the social consequences of productive sophistication are critically shaped by institutional quality, such that economic complexity yields inclusive outcomes only when supported by effective institutions, whereas rising complexity in weak institutional environments may cause inequality and distributional tensions. The inclusion of the ECI in the present analysis is motivated by these considerations, as the N-11 countries are undergoing rapid structural transformations.

Institutional quality is another key determinant of SWB, as they shape life satisfaction not only through economic outcomes but also by influencing individuals' perceptions of fairness, security, and trust. Institutions represent the "rules of the game" governing economic interactions by defining incentives, constraints, and property rights (North, 1990; Acemoglu et al., 2005). When these structures are undermined, particularly by corruption, the resulting economic uncertainty, erosion of social trust, and loss of institutional confidence significantly diminish individual perceptions of fairness and overall life satisfaction. This decline highlights the critical role of institutional structures, which have a systematic and substantial positive impact on individual well-being (Frey & Stutzer, 2000). Li & An (2020) utilizes data from 126 countries to highlight this negative effect, characterizing corruption as a pervasive social pollutant that substantially lowers average happiness. Their estimates show that even moderate increases in perceived corruption lead to welfare losses comparable to those associated with large increases in unemployment. The well-being effects of institutional quality vary systematically with a country's level of economic development. While corruption tends to be more strongly associated with lower life satisfaction in higher-income countries (Arvin & Lew, 2014), the broader influence of institutional quality on SWB differs across development stages, with economic–judicial institutions playing a larger role in poorer economies and governance-related institutions becoming more salient in advanced societies (Bjørnskov et al., 2010). Behera et al. (2024) finds a negative and statistically significant association with corruption and happiness in both developing and developed countries, which may reflect the greater variation in governance quality across less developed economies. Li & An (2020) further notes that in middle-income and developing economies, corruption can generate substantial psychological costs by eroding social trust and perceptions of justice, thereby weakening or even offsetting the well-being gains typically associated with income growth. These findings provide the analytical motivation for incorporating the Corruption Perceptions Index as a proxy for institutional quality in the present study, considering the substantial governance heterogeneity across the N-11 countries.

4 Data and Methodology

4.1 Data and Variables

The analysis utilizes a panel dataset covering the N-11 economies over the period 2009-2019. The sample comprising Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, the Philippines, Türkiye, the Republic of Korea, and Vietnam, is specifically selected to examine the post-global financial crisis era. By focusing on the interval between the 2008 financial crisis and the 2020 COVID-19 pandemic, the study captures stable structural trends while avoiding the distortions caused by extreme global volatility.

Life satisfaction (LS) serves as the dependent variable and a cognitive indicator of SWB, describing overall life evaluation rather than transient emotional states. Retrieved from Helliwell et al. (2020) and based on Gallup World Poll surveys, LS is measured using the Cantril Self-Anchoring Striving Scale. On this 0–10 'ladder-of-life' scale, respondents evaluate their current standing, providing a robust and internationally comparable measure of well-being (Easterlin, 2021). The primary explanatory variable, real GDP per capita ($lnGDPpc$), is expressed in constant 2021 international dollars and adjusted for purchasing power parity (PPP). Both GDP per capita and the unemployment rate, the latter serving as a proxy for labor market conditions, are drawn from the World Bank (2026). Economic structure is represented by the Economic Complexity Index (ECI), provided by the Harvard Growth Lab, which measures the diversity and sophistication of productive capabilities and serves as a proxy for structural transformation. Lastly, institutional quality is measured by the Corruption Perceptions Index (CPI) from Transparency International (2020), which captures cross-country variation in governance and institutional performance based on expert assessments, taking values ranging from 0 (highly corrupt) to 10 (very clean).

Table 1: Descriptive statistics (2009–2019)

Variable	Obs (N)	Mean	Std. dev.	Min	Max
LS	121	5.29	0.70	3.56	7.44
lnGDPpc	121	9.38	0.67	8.28	10.82
Unemployment	121	5.65	3.77	0.54	14.03
ECI	121	0.01	1.00	−1.73	2.28
Corruption	121	3.33	0.89	1.80	5.90

Table 1 presents the descriptive statistics of the variables used in the analysis based on annual country-level observations. Life satisfaction (LS) has a mean value of 5.3, with scores ranging from 3.6 to 7.4, indicating substantial heterogeneity in SWB across the sample. Real income level, proxied by the natural logarithm of GDP per capita ($lnGDPpc$), has a mean of 9.4, with values ranging from 8.3 to 10.8, highlighting notable differences in income levels across N-11 economies. The unemployment rate has a mean of 5.7%, with a minimum of 0.5% and a maximum of 14.0%, meaning labor market conditions display wide dispersion across the sample countries. The Economic Complexity Index (ECI) has a mean close to zero, as expected given its standardized construction, yet varies widely (-1.7 to 2.3), suggesting pronounced cross-country differences in productive sophistication. Finally, the corruption measure (CPI) averages 3.3 and ranges from 1.8 to 5.9, pointing to significant institutional variation. Overall, the descriptive statistics indicate substantial cross-sectional and temporal variation in all variables, justifying a panel approach that controls for unobserved country heterogeneity in the subsequent analysis.

Table 2: Life Satisfaction Scores: N-11 Countries (2009–2019)

Country	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Avg
Bangladesh	5.08	4.86	4.99	4.72	4.66	4.64	4.63	4.56	4.31	4.50	5.11	4.73
Egypt	5.07	4.67	4.17	4.20	3.56	4.88	4.76	4.56	3.93	4.00	4.33	4.38
Indonesia	5.47	5.46	5.17	5.37	5.29	5.60	5.04	5.14	5.10	5.34	5.35	5.30
Iran	5.01	4.89	4.77	4.61	5.14	4.68	4.75	4.65	4.72	4.28	5.01	4.77
Mexico	6.96	6.80	6.91	7.32	7.44	6.68	6.24	6.82	6.41	6.55	6.43	6.78
Nigeria	4.98	4.76	5.13	5.49	4.82	4.88	4.93	5.22	5.32	5.25	4.27	5.00
Pakistan	5.21	5.79	5.27	5.13	5.14	5.44	4.82	5.55	5.83	5.47	4.44	5.28
Philippines	4.88	4.94	4.99	5.00	4.98	5.31	5.55	5.43	5.59	5.87	6.27	5.35
Rep. of Korea	5.65	6.12	6.95	6.00	5.96	5.80	5.78	5.97	5.87	5.84	5.90	5.99
Türkiye	5.21	5.49	5.27	5.31	4.89	5.58	5.51	5.33	5.61	5.19	4.87	5.30
Vietnam	5.30	5.30	5.77	5.54	5.02	5.08	5.08	5.06	5.17	5.30	5.47	5.28

Table 2 presents the trend of life satisfaction scores across N-11 countries over the period 2009–2019, based on the Cantril ladder scale ranging from 0 to 10. Considerable variation is observed both across countries and over time, with Mexico consistently recording the highest scores and Egypt among the lowest. Notably, the Philippines displays a clear upward trend over the period, while Nigeria and Türkiye exhibit a modest decline. The period averages suggest that most N-11 countries cluster in the 4.5–6.0 range, indicating moderate levels of SWB, with Mexico standing as a clear outlier on the higher end.

4.2 Econometric Model Specification

To investigate the impact of GDP per capita on life satisfaction once labor market, structural and institutional factors are controlled for, the model is:

$$LS_{it} = \alpha + \beta_1\, lnGDPpc_{it} + \beta_2\, Unemployment_{it} + \beta_3\, ECI_{it} + \beta_4\, Corruption_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

where LS_{it} denotes the average life satisfaction score for country i at time t; $lnGDPpc_{it}$ represents the natural logarithm of real GDP per capita (PPP, constant 2021 international \$); $Unemployment_{it}$ is the unemployment rate; ECI_{it} is the Economic Complexity Index; $Corruption_{it}$ denotes the Corruption Perception Index; μ_i captures unobserved country-specific effects (e.g., culture, geography), and ε_{it} is the idiosyncratic error term.

The model adopts a semi-logarithmic specification in which real GDP per capita enters in natural logarithm form while life satisfaction and all other explanatory variables remain in their original scales. This functional form choice is grounded in diminishing marginal utility of income principle: as income rises, each additional unit contributes less to SWB, meaning that proportional rather than absolute changes in income are the economically meaningful unit of comparison across countries at different stages of development. An identical increase in GDP per capita may represent a substantial gain for Bangladesh but a marginal one for the Republic of Korea; expressing income in logarithmic form ensures that equal proportional changes are compared consistently across the sample. Empirically, this specification aligns with the well-documented finding that life satisfaction rises approximately linearly with the logarithm of income both within and across countries (Kahneman & Deaton, 2010; Sacks et al., 2012; Stevenson & Wolfers, 2013), making the level-log form the dominant functional choice in cross-country well-being research. Accordingly, the β_1 coefficient is interpreted as the change in life satisfaction associated with a 1% increase in real GDP per capita.

4.3 Diagnostic Tests

Since the N-11 economies are interconnected through trade linkages, capital flows, and shared exposure to global shocks, ignoring cross-sectional dependence in the error structure can lead to inconsistent estimates and invalid statistical inference (Sarafidis & Wansbeek, 2012; Pesaran, 2015). To address this issue, Pesaran's (2015) CD test is applied to each variable prior to estimation. Table 3 presents the results. The findings reveal strong cross-sectional dependence for life satisfaction, income, unemployment, and institutional quality, implying that these variables co-move across the N-11 countries and are likely influenced by common global or regional shocks. In contrast, the Economic Complexity Index (ECI) does not exhibit statistically significant dependence at conventional levels. This implies that economic complexity is driven by idiosyncratic structural factors and country-specific productive capabilities rather than external global trends.

Table 3: Pesaran (2015) cross-sectional dependence test results

Variable	CD Statistic	p-value
LS	24.50***	0.00
lnGDPpc	24.60***	0.00
Unemployment	23.50***	0.00
Corruption	24.45***	0.00
ECI	-1.49	0.14

Notes: H_0 : weak cross-sectional dependence. *** denotes significance at the 1% level.

Before proceeding to estimation, a series of diagnostic tests are conducted to assess serial correlation, heteroskedasticity, and the appropriateness of the fixed-effects specification. Table 4 summarizes the model-level diagnostic tests that inform the choice of estimation strategy.

Table 4: Diagnostic tests results

Test	Null Hypothesis	Test Statistic	p-value
Wooldridge test for autocorrelation	No first-order autocorrelation	$F = 23.25$	0.000***
Modified Wald test for heteroskedasticity	Groupwise homoskedasticity	$\chi^2 = 41.83$	0.000***
Hausman test (FE vs. RE)	RE estimator is consistent	$\chi^2 = 22.80$	0.001***

Notes: *** denotes statistical significance at the 1% level.

The Wooldridge (2002) tests results confirm the presence of first-order serial correlation, as the null hypothesis of no autocorrelation is significantly rejected ($F = 23.25$, $p < 0.01$). Furthermore, the Modified Wald test rejects homoskedasticity ($\chi^2 = 41.83$, $p < 0.01$), indicating groupwise heteroskedasticity across countries. The Hausman (1978) tests strongly rejects the null hypothesis that the RE estimator is consistent ($\chi^2 = 22.80$, $p < 0.01$), indicating that unobserved country-specific effects are correlated with the explanatory variables. Accordingly, the fixed-effects (FE) model is adopted as the preferred specification.

To ensure valid statistical inference in the presence of the previously identified cross-sectional dependence, serial correlation, and heteroskedasticity, all estimates are reported with Driscoll–Kraay standard errors.

5 Estimation Results

Following the methodology of Hoechle (2007), this study employs Driscoll–Kraay standard errors to address potential issues of cross-sectional dependence and autocorrelation, which are common in macroeconomic happiness panels.

Table 5: Determinants of life satisfaction in the Next Eleven countries (2009–2019)

LS	Coefficient	DK Std. Err.	t-value	p-value
lnGDPpc	−0.138	(0.206)	−0.67	0.518
Unemployment	−0.073	(0.020)	−3.71	0.004***
ECI	−0.263	(0.097)	−2.72	0.021**
Corruption	0.111	(0.048)	2.30	0.044**
Constant	6.624*	(1.891)	3.50	0.006***
Obs (N)	121	R^2 (within)	0.091	

Notes: The dependent variable is life satisfaction, LS. Table 1 provides information for variable definitions. All models are estimated using fixed effects with Driscoll–Kraay standard errors (reported in parentheses), which are robust to cross-sectional dependence, serial correlation, and heteroskedasticity. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5 presents the fixed-effects estimation results with Driscoll–Kraay standard errors for the Next Eleven countries over the period 2009 and 2019. The coefficient on real GDP per capita is negative but statistically insignificant, indicating that income has no independent effect on life satisfaction after controlling for the remaining covariates. This result suggests that higher average income levels alone are insufficient to improve national well-being, lending support to an Easterlin-type interpretation in the N-11 context. Unemployment has a statistically significant and negative effect on life satisfaction. Specifically, a one percentage point (pp) increase in the unemployment rate causes a 0.073 pp decline in the Cantril ladder score, highlighting the substantial non-pecuniary costs of joblessness. This finding reinforces the view that labor market insecurity represents one of the most powerful determinants of SWB, extending beyond the direct loss of income. The Economic complexity is found to be negatively and significantly related to life satisfaction. This pattern is consistent with the notion of a "modernization tax", whereby periods of intensified structural upgrading and productive sophistication may create short-to-medium-term adjustment costs. Such costs are likely to arise from labor reallocation, skill mismatches, and increased performance pressures, which can temporarily weaken SWB during phases of rapid transformation. Finally, institutional quality (higher CPI scores indicating lower perceived corruption) is positively and significantly related to life satisfaction, highlighting the role of governance and credibility in shaping welfare outcomes. Taken together, these findings indicate that in rapidly developing economies, SWB is shaped less by income growth alone and more by the quality of labor market conditions, institutional environments, and the capacity to manage structural change.

6 Discussion of Results

This section interprets the empirical findings reported in Section 5 in the context of existing theoretical and empirical research, comparing the results with recent studies across both developed and developing economies. Figure 1 provides a conceptual overview of the analytical framework, mapping the four determinants examined in this study to their respective channels of influence on life satisfaction, and situating the overall findings within the Easterlin Paradox debate. These determinants are the insignificance of GDP per capita,

the negative effect of unemployment, the negative association between economic complexity and life satisfaction, and the positive role of institutional quality.

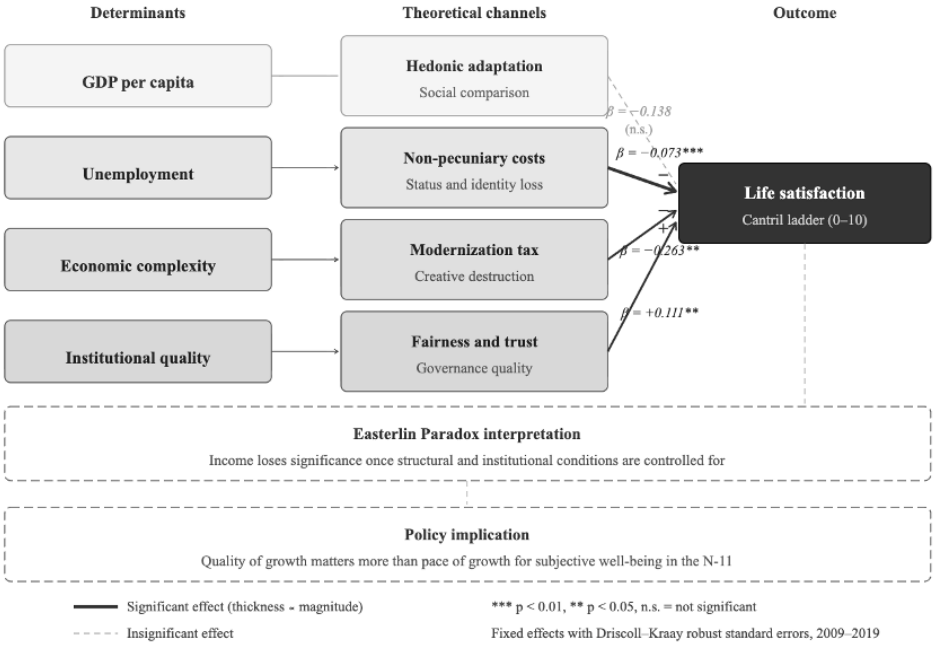

Figure 1: Conceptual framework: Determinants of life satisfaction in the N-11 countries

6.1 Income Growth and the Easterlin Paradox in the N-11 Context

The finding that real GDP per capita has no statistically significant effect on life satisfaction after controlling for unemployment, institutional quality, and economic complexity is the central result of the analysis. This outcome is consistent with the core prediction of the Easterlin Paradox, that income growth does not translate into lasting improvements in average happiness when non-material factors are accounted for (Easterlin, 1974; Easterlin & O'Connor, 2022a). The result is consistent with Easterlin et al. (2010), who demonstrates that sustained GDP growth in China, South Korea, and post-socialist Eastern European countries failed to produce corresponding long-run gains in life satisfaction. The findings are also consistent with Easterlin & O'Connor (2022b), who finds no significant long-term happiness trend across Western, Northern, and Southern Europe between 1981 and 2018 despite considerable economic expansion.

However, the finding should be interpreted with nuance. The insignificance of GDP per capita in this study does not imply that income is irrelevant to well-being, but rather that its explanatory power is absorbed by the structural and institutional variables once these are included in the model. This interpretation is supported by recent cross-country evidence. Röck et al. (2026), using EU-SILC data and kink regressions, finds a satiation point for both life satisfaction and happiness at approximately €30,000 in equalized disposable household income, beyond which further income gains yield no additional well-being. Similarly, Matusiewicz (2025) shows that in European countries with the highest GDP per capita, further economic growth is associated with stagnant or even declining life satisfaction. Given that

the N-11 group includes the Republic of Korea, whose income levels are comparable to those of many European economies, and several middle-income countries approaching the transition zone, the absence of a significant income effect is empirically plausible. Within the N-11 sample, Türkiye offers a particularly informative case: a substantial body of evidence consistently shows that, although absolute income exerts a positive effect on happiness, this effect is markedly attenuated once social comparisons, future expectations, aspiration levels, and fairness perceptions are taken into account (Caner, 2015; Dumludağ et al., 2016; Uğur, 2021; Erdoğdu, 2025; Kamilçelebi & Burger, 2025). This pattern reinforces the central finding of the present study, namely that the income–well-being relationship in N-11 economies is shaped less by the absolute level of income than by the relative, institutional, and structural conditions in which it is embedded.

6.2 Unemployment and the Non-Pecuniary Costs of Joblessness

Unemployment emerges as the strongest and most statistically significant determinant of life satisfaction in the N-11 sample. When unemployment increases by one pp, the Cantril ladder score declines by 0.073 points. This finding is robust to the inclusion of all other covariates and is consistent with a substantial body of prior research establishing the severe non-pecuniary costs of joblessness.

The results corroborate the findings of Clark & Oswald (1994), Winkelmann & Winkelmann (1998), Blanchflower (2007) and Di Tella et al. (2001), who argue that unemployment reduces SWB far beyond what can be explained by income loss alone. More recently, Cimpoeru (2023) confirms the negative impact of unemployment on happiness using European panel data, while Behera et al. (2024) demonstrates that unemployment's negative effect on SWB is robust across quantile distributions in both developed and developing countries.

The finding for the unemployment coefficient is notably larger than that for GDP per capita, which is smaller in magnitude and statistically insignificant. This relative ordering is consistent with Di Tella et al. (2001) and Blanchflower et al. (2014), who find that the welfare cost of a one pp rise in unemployment is several times greater than that of equivalent changes in inflation or output. For the N-11 countries, many of which are characterised by high informality, limited unemployment insurance, and weak social safety nets, the psychological and social costs of joblessness are likely amplified, as unemployed individuals face not only income loss but also the erosion of social status, identity, and community ties in the absence of formal support structures (Uğur & Durak, 2025).

6.3 Economic Complexity and the Modernization Tax

The negative link between Economic Complexity Index and life satisfaction ($\beta = -0.26$, $p < 0.05$) constitutes one of the most novel findings of this study and supports the conceptualisation of a "modernization tax", the short- to medium-term social cost of rapid structural upgrading. This finding is consistent with Boumahdi & Zaoujal (2025), who provides regional evidence that economic complexity bolsters human capital and innovation but also correlates with declining governance and environmental standards.

The "modernization tax" interpretation also connects to the broader literature on the social costs of structural transformation in the scope of creative destruction, central to Schumpeterian growth theory, implies that the transition to more complex production structures necessarily displaces workers, renders existing skills obsolete, and disrupts established economic relationships. Hassanein et al. (2024) demonstrates that the synergetic effect

of economic complexity and governance on quality of life is conditional on institutional thresholds, suggesting that the welfare consequences of structural upgrading are not uniformly positive but depend critically on the accompanying policy environment. In the N-11 context, where structural transformation is rapid but institutional adjustment mechanisms often lag, the negative coefficient on ECI plausibly captures these transitional welfare losses. Importantly, this finding does not imply that economic complexity is undesirable in the long run; rather, it highlights that the well-being gains from productive sophistication are realised only when adequate institutional, social, and labor market policies are in place to manage the adjustment process.

6.4 Institutional Quality and the Governance Channel

The positive and statistically significant relationship between institutional quality (CPI) and life satisfaction ($\beta = 0.11$, $p < 0.05$) confirms the importance of governance in shaping well-being. This finding is strongly supported by the existing literature. Li & An (2020), using data from 126 countries, characterises corruption as a "social pollutant" that substantially lowers average happiness, with welfare losses comparable to those associated with large increases in unemployment. Ciziceno & Travaglino (2019) demonstrates that corruption affects life satisfaction indirectly through the erosion of institutional trust, suggesting that the governance–well-being link operates not only through economic channels but also through perceptions of fairness and social justice.

The result is also consistent with the development-stage heterogeneity documented in the literature. According to Bjørnskov et al. (2010), the way institutional quality affects SWB differs across development stages, with economic and judicial institutions playing a larger role in poorer economies and governance-related institutions becoming more salient in advanced societies. Behera et al. (2024) provides complementary evidence, finding that corruption is negative and statistically significant for happiness in developing countries but not in developed ones. The significant CPI coefficient likely captures the substantial governance variation within the sample, which includes countries with a wide range of development levels, from Bangladesh and Nigeria to Türkiye and the Republic of Korea, reinforcing the view that institutional quality is a binding constraint on SWB in many of these economies.

6.5 Synthesis: Beyond GDP in the N-11

Taken together, the four findings form a coherent picture of the growth-well-being nexus in the N-11 countries. Income growth, while essential for absolute material improvement, proves insufficient as an independent driver of life satisfaction once the structural and institutional conditions of development are accounted for. Instead, the quality of development, captured by labor market stability, institutional integrity, and the capacity to manage structural transformation, appears far more decisive. This pattern is consistent with the broader shift in development economics from output maximization toward multidimensional well-being frameworks, as reflected in the World Happiness Report (Helliwell et al., 2020) and the United Nations 2030 Agenda.

The results suggest that, for rapidly developing economies, the conventional policy prescription of maximizing GDP growth is insufficient and potentially misleading as a strategy for well-being. A one pp reduction in unemployment generates a substantially larger well-being gain than a proportional increase in income, whereas improvements in institutional quality yield direct well-being gains independent of economic performance. At the

same time, the "modernization tax" finding cautions that the pursuit of greater productive sophistication, while essential for long-term competitiveness, must be accompanied by complementary social policies to avoid transitional welfare losses that undermine public support for structural reform.

7 Conclusions and Policy Implications

This study examines the nexus between growth and subjective well-being (SWB) in the Next Eleven (N-11) countries over the period 2009–2019, providing an empirical assessment of how structural and institutional factors shape life satisfaction in rapidly developing economies. The findings support the Easterlin Paradox, demonstrating that once non-material and structural determinants are taken into account, economic growth alone does not ensure improvements in life satisfaction. Instead, the quality of growth, reflected in labor market stability and institutional integrity, emerges as far more decisive drivers of SWB. These results are in line with the broader shift in development economics, where the emphasis has increasingly moved away from maximizing output growth toward fostering inclusive development supported by effective institutions and social cohesion.

A central contribution of this study lies in the conceptualization and empirical validation of the "modernization tax". The analysis reveals that higher economic complexity is associated with lower life satisfaction in the baseline specification, suggesting that rapid structural transformation and industrial upgrading may entail substantial social and psychological adjustment costs. These costs likely stem from labor reallocation, skill mismatches, intensified work demands, and the gradual erosion of traditional social safety nets. While economic complexity remains essential for long-term growth and competitiveness, the findings indicate that its short- to medium-term welfare effects may be negative when institutional and labor market adjustment mechanisms fail to keep pace with the speed of structural change.

From a policy perspective, the results underscore the need for a more balanced development strategy in the Next Eleven (N-11) countries and point to several concrete priorities. First, labor market stability emerges as a critical priority, as unemployment consistently has the strongest negative effect on life satisfaction, outweighing the influence of income growth. Active labor market policies should be prioritized alongside conventional growth-oriented strategies. Specifically, targeted employment programs, vocational training systems aligned with industrial upgrading trajectories, and the establishment or strengthening of unemployment insurance mechanisms represent essential instruments for translating macroeconomic stability into tangible welfare gains. In the N-11 context, where labor markets are characterized by high informality and limited social safety nets, these measures are particularly urgent. Second, mitigating the social costs of the "modernization tax" requires that industrial and innovation policies be complemented by robust social protection systems. As economies move toward more complex production structures, governments should invest in reskilling and lifelong learning initiatives, portable social benefits that are not tied to specific employers or sectors, and targeted support for workers displaced during periods of structural transformation. The experience of the N-11 countries suggests that the welfare costs of structural upgrading are not inevitable but rather contingent on the adequacy of accompanying institutional and social policy frameworks. Third, strengthening institutional quality, particularly through reducing corruption and enhancing transparency, appears essential not only for economic efficiency but also as a direct channel for improving societal

SWB. The significant positive relationship between the Corruption Perceptions Index and life satisfaction indicates that governance improvements yield direct welfare gains beyond their indirect economic effects. Actionable pathways for the N-11 countries include enhancing judicial transparency, strengthening public procurement accountability, and investing in e-governance infrastructure to reduce discretionary bureaucratic interactions that foster corruption. These reforms should be embedded within broader institutional strengthening agendas that build citizen trust and perceptions of fairness. Overall, these policy recommendations are consistent with the United Nations 2030 Agenda and the Sustainable Development Goals' emphasis on inclusive growth, decent work, and strong institutions.

Despite its contributions, this study has several caveats that should be acknowledged. First, the analysis covers the period 2009–2019, which deliberately excludes the post-COVID-19 era to avoid pandemic-induced distortions in the estimation of structural relationships. While this methodological choice ensures the identification of stable long-run patterns between the global financial crisis and the onset of the pandemic, it limits the generalizability of the findings to a period preceding a major global shock that fundamentally altered labor markets, institutional trust, and SWB worldwide. Future research should extend the dataset to cover the post-pandemic period, enabling a comparative assessment of whether the determinants of life satisfaction identified in this study, particularly the "modernization tax" and institutional quality effects, have intensified, weakened, or structurally shifted in the post-COVID-19 era. A pre- and post-pandemic comparative framework would be especially valuable for understanding how exogenous health and economic shocks interact with the structural vulnerabilities characteristic of the N-11 economies. Second, the study relies on country-level aggregate data, which precludes the identification of individual-level heterogeneity in the determinants of SWB. Aggregation may mask important within-country variation across income groups, age cohorts, gender, and urban-rural divides. For instance, the "modernization tax" may disproportionately affect lower-skilled workers or older cohorts who face greater adjustment costs during structural transformation, while younger, higher-skilled populations may benefit from the opportunities created by increasing economic complexity. Future studies employing micro-level survey data for the N-11 countries would allow for a more granular analysis of how structural transformation and institutional quality differentially affect various population segments, thereby providing a richer understanding of the distributional dimensions of the growth–well-being nexus. Third, institutional quality is captured solely through the Corruption Perceptions Index (CPI), which reflects expert assessments and perceptions rather than citizens' direct experiences with institutional performance. This single-dimensional proxy may not fully capture the broader institutional environment, including rule of law, regulatory quality, government effectiveness, and voice and accountability. Future research could incorporate composite governance indicators, such as the Worldwide Governance Indicators (WGI) developed by the World Bank, to provide a more comprehensive and multidimensional assessment of how different institutional dimensions shape SWB in developing economies. Additionally, exploring interaction effects between institutional quality and economic complexity would further clarify the conditions under which structural transformation yields inclusive welfare outcomes.

Notwithstanding these limitations, the present study contributes to the growing body of evidence that challenges income-centered models of development and highlights the critical importance of labor market conditions, institutional quality, and the management of structural transformation for SWB in rapidly developing economies.

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