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Does Foreign Direct Investment Improve Healthcare Outcomes? A Panel Data Analysis of Emerging Economies

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Abstract

This paper asks whether foreign direct investment (FDI) improves 3healthcare outcomes in emerging economies. The question matters because many developing countries have opened their health and pharmaceutical sectors to foreign capital in the hope that investment will bring better facilities, technology, and healthier populations. The study builds a country-year panel of 38 emerging-market and developing economies observed from 2000 to 2023, drawing all variables from the World Bank World Development Indicators. Healthcare outcomes are measured by life expectancy at birth, infant mortality, under-five mortality, and maternal mortality. The main explanatory variable is FDI net inflows as a share of gross domestic product. The analysis controls for income, health spending, urbanisation, education, physician density, population, and trade openness and estimates a two-way fixed-effects panel model with country and year fixed effects. Post-estimation diagnostics detect heteroscedasticity, autocorrelation, and cross-sectional dependence, so the model is re-estimated with Driscoll-Kraay standard errors, which are robust to all three. The central finding is that FDI shows no statistically significant association with health outcomes at conventional levels. The result holds across an extensive robustness battery and survives the Driscoll-Kraay correction, under which FDI is significant only at the ten percent level. The paper reads this as weak evidence at most. It concludes that FDI, on its own, is not a reliable engine of better population health, and that this null result sits within a recognised pattern in the wider literature.

Keywords: *Foreign Direct Investment; Healthcare Outcomes; Emerging Economies; Panel Data; Fixed Effects; Driscoll-kraay*

1. Introduction

Foreign direct investment has become one of the most closely watched features of the global economy. When a firm from one country builds, buys, or expands a business in another country, that long-term flow of capital is recorded as FDI. For many emerging economies, attracting such investment has become a central goal of economic policy. Governments compete to offer tax breaks, special economic zones, and relaxed ownership rules in the hope that foreign money will follow.

The healthcare sector sits close to the centre of this story. Over the past two decades, foreign investors have entered the hospital, diagnostic, and pharmaceutical industries of many developing countries. Supporters of this trend argue that foreign capital brings more than money. It can bring modern equipment, new clinical techniques, management expertise, and training for local staff. If those benefits are real, then a country that attracts more FDI might also enjoy longer lives and fewer preventable deaths.

There is, however, a competing view. Critics worry that foreign investment in healthcare tends to concentrate in private, urban, and high-end facilities that serve wealthier patients. On this reading, FDI may raise the scale and sophistication of the health industry without improving the health of the wider population. It might even draw scarce doctors and nurses away from public hospitals and towards private ones. The two views cannot both be fully correct, and the balance between them is ultimately an empirical question.

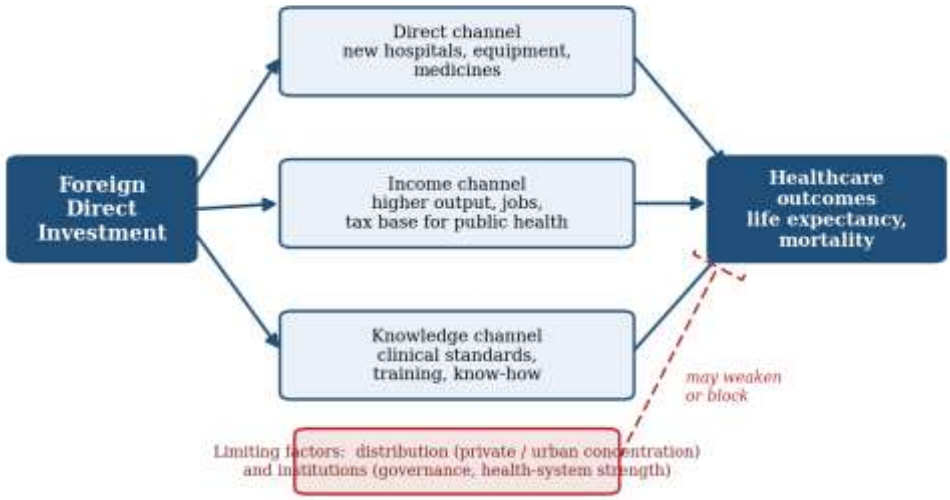


Figure 1. How foreign direct investment might affect population health. Three channels could carry a positive effect, while two limiting factors could weaken or block it. The paper tests whether a net effect appears in the data.

This paper takes up that question directly. It asks whether foreign direct investment improves healthcare outcomes in emerging economies. To answer it, the study assembles a panel of 38 emerging-market and developing economies observed each year from 2000 to 2023. It measures healthcare outcomes in four standard ways, namely life expectancy at birth, the infant mortality rate, the under-five mortality rate, and the maternal mortality ratio. The key explanatory variable is the size of FDI inflows relative to the economy.

The analysis holds constant the other forces that shape health, including income, health spending, urbanisation, education, physician density, population size, and trade openness. It then uses a panel method known as two-way fixed effects, which removes the influence of fixed national characteristics and of shocks that hit every country in a given year. Because macro panels often violate the assumptions behind ordinary standard errors, the model is also re-estimated with Driscoll-Kraay standard errors as a formal correction.

The paper makes three contributions. First, it brings recent data, running to 2023, to a question that older studies often examined with shorter samples. Second, it focuses on emerging economies as a group, rather than mixing them with rich countries whose health systems work very differently. Third, it reports its findings honestly, including a central result that turns out to be a non-finding. As the analysis shows, FDI has no statistically significant link to health outcomes at conventional levels once the proper controls are in place, and that result is itself informative.

The rest of the paper is organised as follows. Section 2 reviews the relevant literature. Section 3 sets out a theoretical framework. Section 4 describes the data and methodology. Section 5 presents the empirical findings. Section 6 reports the diagnostic tests and the correction they prompted. Section 7 concludes with policy implications, limitations, and directions for future research.

2. Literature Review

The literature on the relationship between foreign direct investment and healthcare reveals two dominant but often opposing directions of inquiry. The first treats population health as a determinant of investment. Sinha and Bhattacharya (2026), studying 44 developing countries from 2000 to 2022 using two-way fixed-effects panel models, find that higher health expenditure and stronger institutional quality jointly attract greater FDI, with the effect strengthening as institutional quality improves. Makhmali and colleagues reinforce this view across six Middle Eastern and Central Asian economies from 1990 to 2023, finding that better population health raises a country's attractiveness to foreign investors by improving workforce productivity. A related study of 59 countries shows that stronger universal health coverage positively predicts FDI within the health sector, suggesting that investors treat robust healthcare systems as a signal of national stability rather than merely a target for capital.

Running in the opposite direction, other studies examine how FDI itself shapes health outcomes, with far more mixed results. Hasan and colleagues (2025), applying an Augmented Mean Group and Common Correlated Effects Mean Group approach across six South Asian countries from 2000 to 2020 using a constructed Health Quality Index, find that FDI and domestic health expenditure have no statistically significant direct effect on health quality.

In their results, foreign aid improves health quality while remittances are associated with worse outcomes. This is a notably mixed picture that stands apart from the more optimistic findings on the reverse causal pathway. Chaudhuri and Mukhopadhyay (2012) approach the question theoretically, modelling a three-sector economy and concluding that the welfare effects of FDI depend heavily on its composition. Capital diversified across sectors improves both human capital and social welfare, whereas investment concentrated narrowly in healthcare can raise human capital while paradoxically reducing aggregate welfare. A broader globalization study of 29 countries across six regions from 2000 to 2023 echoes this ambivalence, finding that economic and political globalization alongside healthcare expenditure improve life expectancy and reduce mortality, but with effects that vary considerably by region.

Threaded through both directions of this literature is the recurring theme of institutional quality and resilience as a moderating force. A study of 13 emerging economies from 1996 to 2023 finds that FDI alone can depress economic growth, but that strong governance reverses this effect, implying that weak institutions could similarly blunt or reverse any expected health gains from investment. This is reinforced by a study of 98 countries from 2000 to 2021 showing that epidemic outbreaks sharply reduce FDI inflows, and that countries with stronger healthcare workforces are more resilient to these shocks. The result suggests a feedback loop in which healthcare capacity protects investment, which could in turn reinforce healthcare capacity further. Two descriptive, India-specific papers relying on secondary and policy-report data rather than econometric modelling add a practical dimension to this picture. They argue that FDI has strong potential to expand hospital infrastructure and service quality in India's healthcare sector, but caution that this potential is conditional on supportive government policy, insurance coverage expansion, and public-private partnerships, without which the benefits of FDI may not translate into equitable healthcare access.

Taken together, this body of work suggests a relationship between FDI and health outcomes that is asymmetric, context-dependent, and frequently mediated by institutional quality. Health appears to more consistently attract FDI than FDI is shown to improve health, and the studies that do find positive health effects of FDI are often theoretical, region-specific, or contingent on governance and sectoral composition rather than universal. This asymmetry, and particularly the null FDI effect found by Hasan and colleagues (2025), situates the present study's own null finding for the effect of FDI on life expectancy within a broader and recognised pattern in the literature, rather than as an isolated or anomalous result.

3. Theoretical Framework

To interpret the empirical results, it helps to set out how foreign investment could, in principle, affect population health. The framework used here identifies three channels through which FDI might raise health outcomes, and two reasons why those channels may fail to operate at the national level. This structure gives the study clear expectations to test rather than a vague hope that investment is good for health.

The first channel is direct. When foreign firms invest in hospitals, clinics, or drug manufacturing, they add to the physical supply of healthcare. New facilities, modern equipment, and newer medicines can expand the volume and quality of care available. If this added capacity reaches a wide share of the population, it should show up in better national health indicators.

The second channel works through income. Foreign investment can raise national output and create employment, both directly and through links with local suppliers. Higher incomes allow households to afford better nutrition, cleaner housing, and more medical care, and they give governments a larger tax base to fund public health. The third channel works through knowledge. Foreign firms often bring clinical standards, management systems, and staff training that did not exist locally before, and these practices can spread to domestic providers and outlast the original investment. Over time, this diffusion of know-how may lift the general standard of care in the host country.

Against these channels stand two reasons for doubt. The first is the problem of distribution. If foreign investment concentrates in private, urban, and high-end facilities, its benefits may reach only wealthier patients while leaving the broad measures of population health untouched. National indicators such as infant mortality and life expectancy depend heavily on basic public health, sanitation, immunisation, and maternal care, which are largely funded and delivered by the state rather than by foreign investors. The second reason is the mediating role of institutions. As the literature stresses, the effect of FDI often depends on governance and the strength of the domestic health system. Where institutions are weak, the expected gains may be blunted or may fail to materialise at all.

This framework yields a clear pair of expectations. If the optimistic view holds, and the three channels dominate, the analysis should find a positive and significant association between FDI and health outcomes that

survives controls and fixed effects. If the sceptical view holds, and distribution and institutional limits dominate, the association should be weak, statistically insignificant, or confined to particular groups of countries or periods. The empirical sections test which expectation the data support.

4. Data and Methodology

4.1 Data and Sample

The study uses a country-year panel of 38 emerging-market and developing economies observed annually from 2000 to 2023. This gives a raw panel of 912 country-year observations. The countries span six World Bank regions, namely South Asia, East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, the Middle East and North Africa, and Sub-Saharan Africa. The sample was defined by income classification and was limited to countries with populations large enough to give reliable data. The full list of countries appears in the appendix.

All variables come from the World Bank World Development Indicators, which compiles data from the World Health Organization, United Nations agencies, and national statistical offices. Using a single, well-documented source keeps the definitions consistent across countries and years. The data were retrieved directly through the World Bank's data interface, which makes the process transparent and repeatable.

4.2 Variables

The study measures healthcare outcomes in four ways. Life expectancy at birth is the headline outcome, because it captures the overall health of a population in a single number. The infant mortality rate and the under-five mortality rate measure deaths among the youngest children, and both are sensitive to the quality of basic health services. The maternal mortality ratio measures deaths related to pregnancy and childbirth, and reflects the availability of skilled medical care. Life expectancy and infant mortality serve as the primary outcomes, while the two remaining measures are used for robustness.

The main explanatory variable is FDI net inflows measured as a share of gross domestic product. Scaling FDI by the size of the economy allows a fair comparison between large and small countries. The variable is fully populated across the sample, with no missing values.

The model includes a set of control variables chosen because they influence both FDI and health. Gross domestic product per capita, entered in logarithms, captures the level of income. Current health expenditure as a share of GDP captures how much a country spends on health. Urbanisation is measured by the urban share of the population, and education by the gross secondary school enrolment rate. Physician density is measured as doctors per 1,000 people. Population size, again in logarithms, controls for scale, and trade openness, measured as trade as a share of GDP, captures general integration with the world economy. Together these controls help ensure that any estimated effect of FDI is not simply capturing the broader process of development.

4.3 Empirical Strategy

The study uses panel regression because it can exploit both differences across countries and changes over time. The preferred model is a two-way fixed-effects specification. Country fixed effects absorb all fixed features of a country that do not change over the sample, such as geography, history, and long-standing institutions. Year fixed effects absorb shocks that hit every country in the same year, such as the global financial crisis or the coronavirus pandemic. What remains is the relationship between changes in FDI within a country and changes in that country's health outcomes, after common yearly shocks are removed. The baseline model can be written as follows:

$$Health_{it} = \beta_1 FDI_{it} + \beta_2 \ln(GDPpc)_{it} + \beta_3 HealthExp_{it} + \beta_4 Urban_{it} + \beta_5 Educ_{it} + \beta_6 \ln(Pop)_{it} + \beta_7 Trade_{it} + \alpha_i + \gamma_t + \varepsilon_{it}$$

In this equation, α_i is the country fixed effect, γ_t is the year fixed effect, and ε_{it} is the error term. The coefficient of interest is β_1, which measures how the health outcome moves with FDI once everything else is held constant.

The analysis proceeds in stages so that the reader can see how the estimated effect of FDI changes as the model becomes more demanding. It begins with pooled ordinary least squares, then adds country fixed effects, and then year fixed effects to reach the full two-way model. A random-effects version is also estimated and compared using a Hausman test. The model is then re-estimated with FDI lagged by one and two years, to allow for the possibility that investment affects health only after a delay. Finally, a set of post-estimation diagnostics is applied, and the model is re-estimated with Driscoll-Kraay standard errors in response to what those diagnostics reveal, as described in Section 6.

Before estimation, the data were checked for missing values and multicollinearity. The primary outcomes and the FDI variable have no missing values. Some controls, chiefly secondary school enrolment and physician density,

are missing for a number of country-years. Because the regression drops any row with a missing value on any included variable, the final estimation sample is 648 country-year observations. Variance inflation factors were computed for all regressors and were well below the usual threshold for concern, which indicates that multicollinearity does not distort the results.

5. Empirical Findings

5.1 Descriptive Statistics

Table 1 summarises the main variables. Life expectancy in the sample averages about 69 years and ranges from the high forties to the low eighties. This wide range reflects the diversity of the emerging economies studied. The infant mortality rate averages about 28 deaths per 1,000 live births, and the under-five rate averages about 38. FDI inflows average close to 3 percent of GDP, but vary a great deal, from small net outflows in some country-years to more than 30 percent of GDP in others. The spread in income, health spending, and urbanisation is similarly large. These patterns confirm that the sample contains genuine variation to study.

Table 1. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	N
Life expectancy (years)	69.23	7.28	46.58	81.17	912
Infant mortality (per 1,000)	27.87	21.06	3.70	94.90	912
Under-5 mortality (per 1,000)	37.78	33.55	4.30	177.30	912
Maternal mortality (per 100,000)	165.17	217.30	2.00	1168.00	912
FDI (% of GDP)	2.96	2.77	-2.76	31.23	912
GDP per capita (US$)	4662.64	3659.09	243.08	17410.38	912
Health expenditure (% GDP)	5.10	1.86	1.66	11.01	910
Urban population (%)	54.58	20.65	11.64	92.68	912
Secondary enrolment (% gross)	77.94	23.71	14.45	124.33	698
Physicians (per 1,000)	1.47	1.22	0.02	5.44	614
Trade (% of GDP)	65.58	33.75	20.60	220.41	856

Note: Statistics computed from the merged panel of 912 country-year observations. FDI can be negative when divestment exceeds new inflows.

The variation is easier to see in a set of descriptive charts. Figure 2 shows average life expectancy by region over the full period. Latin America and the Caribbean lead the sample at about 75 years, while Sub-Saharan Africa trails at about 60 years, a gap of some fifteen years across regions. Figure 3 breaks the same measure down to the country level, showing the ten highest and ten lowest countries by average life expectancy. Figure 4 tracks life expectancy over time and shows that every region improved steadily between 2000 and 2023, with a visible dip around 2020 that reflects the coronavirus pandemic. Figure 5 turns to the explanatory variable and shows average FDI inflows by region.

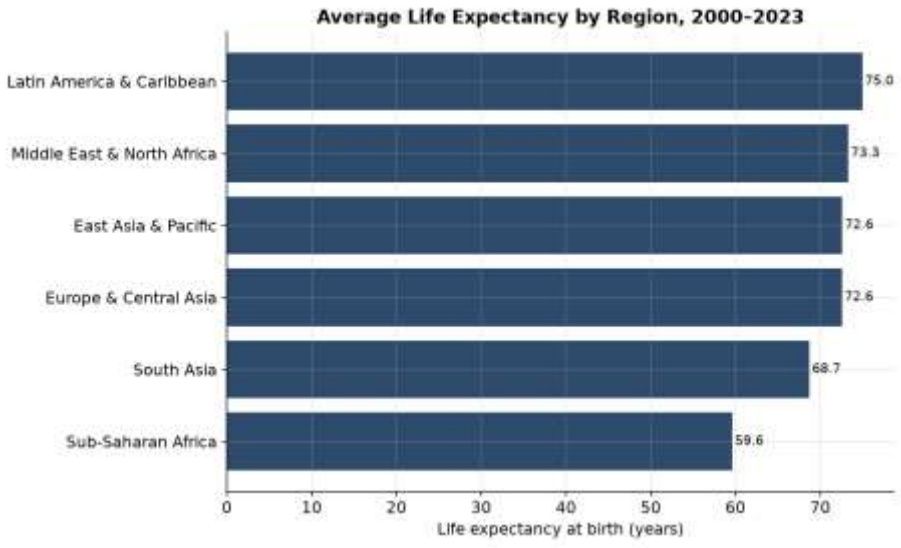


Figure 2. Average life expectancy at birth by region, 2000 to 2023. Regional averages across the sample countries.

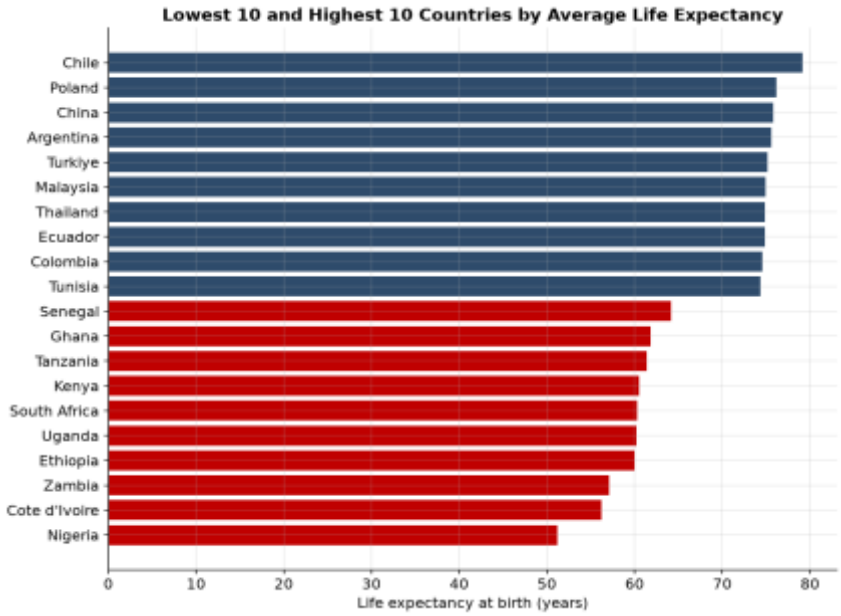


Figure 3. The ten highest and ten lowest countries by average life expectancy over the sample period.

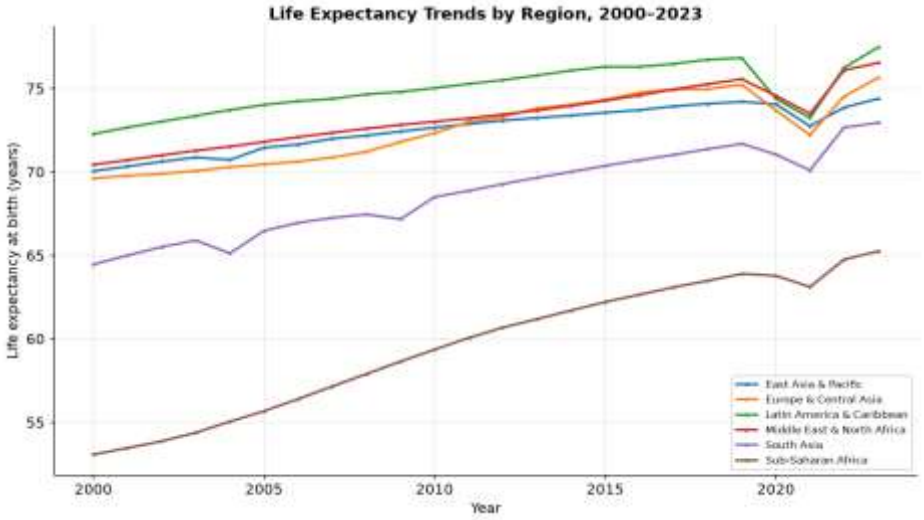


Figure 4. Life expectancy trends by region, 2000 to 2023. All regions rose over the period, with a dip around 2020.

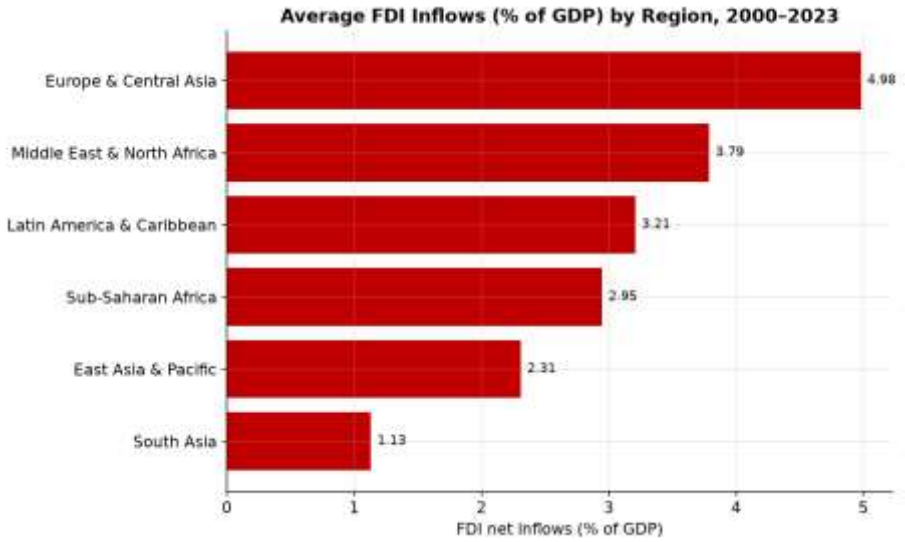


Figure 5. Average FDI inflows as a share of GDP by region, 2000 to 2023.

Two points stand out when the health charts are read alongside the FDI chart, and both foreshadow the formal results. The region with the highest average FDI, Europe and Central Asia, is not the region with the highest life expectancy, which is Latin America and the Caribbean. The region with the lowest average FDI, South Asia, is not the region with the lowest life expectancy, which is Sub-Saharan Africa. The regional rankings for investment and for health do not line up. This is only a descriptive observation, based on simple averages rather than a controlled model, but it is the first hint that the link between FDI and health may be weaker than the optimistic view expects.

5.2 Main Results

Table 2 presents the central results, with life expectancy as the dependent variable. The columns move from the simplest model to the most demanding. In the pooled model, which ignores the panel structure, FDI carries a small positive coefficient that is not statistically significant. Income, education, and other controls behave as expected, with richer and better-educated countries showing higher life expectancy.

The picture changes once fixed effects are added. In the model with country fixed effects, the FDI coefficient turns negative and becomes statistically significant. This might, at first glance, look like evidence that FDI harms health. That reading would be premature. When year fixed effects are added to form the full two-way model, which is the preferred specification, the FDI coefficient remains negative but is no longer statistically significant. Once shocks common to all countries in a given year are removed, the apparent effect of FDI disappears. The coefficient is small, at about negative 0.03, and cannot be distinguished from zero. This is the paper's headline result.

Table 2. Main Estimation Sequence (Dependent Variable: Life Expectancy at Birth)

Variable	(1) Pooled OLS	(2) Country FE	(3) Two-way FE (Main)	(4) Lagged FDI (t-1)
FDI (% GDP)	0.0323	-0.0771***	-0.0280	-0.0253
	(0.1194)	*(0.0247)*	*(0.0338)*	*(0.0356)*
ln GDP per capita	3.2339***	4.1308***	0.9264	0.4073
	(0.9029)	*(1.1619)*	*(2.7761)*	*(3.0002)*
Health exp. (% GDP)	-0.2479	0.0379	-0.2226	-0.2295
	(0.5535)	*(0.2493)*	*(0.2289)*	*(0.2312)*
Urban pop. (%)	0.0370	0.0067	0.0067	0.0127
	(0.0531)	*(0.0400)*	*(0.0413)*	*(0.0418)*
Secondary enrol. (%)	0.0659**	0.0164	0.0101	0.0118
	(0.0263)	*(0.0221)*	*(0.0220)*	*(0.0217)*
ln Population	0.4720	8.3494***	4.1412	3.7647
	(0.4374)	*(2.0865)*	*(3.2138)*	*(3.1468)*
Constant	28.4350**	-114.5800***	-10.8980	-0.2956
	(11.6050)	*(33.5800)*	*(72.5440)*	*(72.5900)*
Observations	648	648	648	648
R-squared	0.582	0.637	0.075	(within)
Country FE	No	Yes	Yes	Yes
Year FE	No	No	Yes	Yes

*Note: Standard errors clustered at the country level in parentheses. *** p<0.01, ** p<0.05, * p<0.10. The two-way fixed-effects model in column (3) is the preferred specification.*

The lagged models in the final column tell the same story. Allowing FDI one year, or two years, to work its way through to health outcomes does not change the conclusion. The lagged coefficients are small, negative, and statistically insignificant. There is no sign of a delayed benefit that a contemporaneous model might have missed.

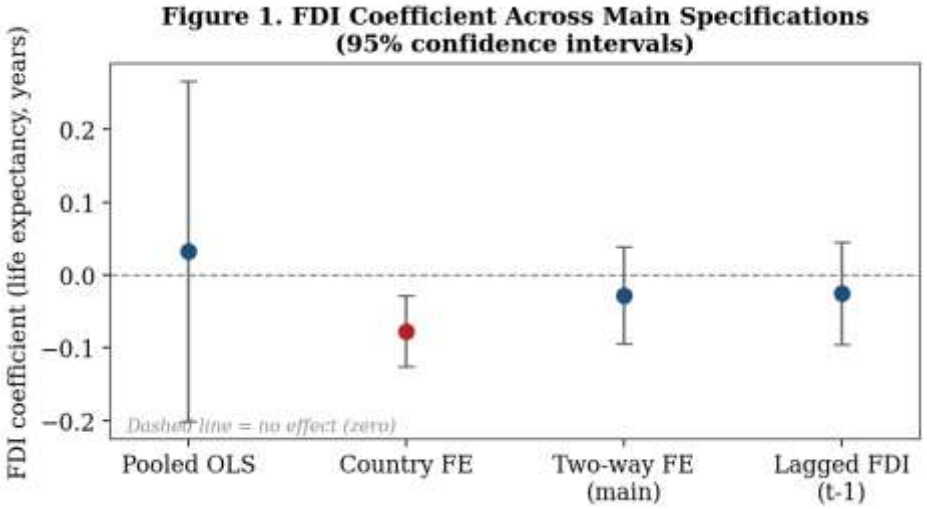


Figure 6. The FDI coefficient on life expectancy across the four main specifications, with 95% confidence intervals. Only the country fixed-effects estimate excludes zero; adding year fixed effects to form the main model returns the interval across zero.

A comparison of fixed effects and random effects was carried out using a Hausman test. The test returned a statistic of 4.89 with a p-value of 0.77. Because this p-value is far above the usual 0.05 threshold, the test does not reject the random-effects model. This is worth stating plainly, because macro panels often favour fixed effects, and this sample does not clearly do so. The two-way fixed-effects model is still reported as the main specification, since it makes the most conservative demands on the data, but the choice does not drive the result. The insignificance of FDI is present in both approaches.

5.3 Robustness

The central result survives a wide range of checks, summarised in Table 3. The model was first re-estimated with the three alternative health outcomes. For infant mortality, under-five mortality, and maternal mortality, the FDI coefficient is again statistically insignificant, and the signs are not even consistent across the three. The model was then re-estimated six times, each time dropping one region from the sample. The FDI coefficient stays small, negative, and insignificant in every case. A more demanding jackknife check dropped each of the 38 countries one at a time and re-estimated the model for every exclusion. Across all 38 runs, the coefficient stayed within a narrow band and never approached statistical significance.

Two further checks deserve mention. Adding and removing the physician-density control, which is the variable with the most missing data, does not change the conclusion. The one check that stands out is the sub-period split. When the sample is divided at 2010, the earlier period shows no significant effect, but the later period, from 2010 to 2023, shows a small negative coefficient that is marginally significant, with a p-value just under 0.05. This is the only significant FDI coefficient anywhere in the robustness battery, and it is best treated as a question for further study rather than a firm result.

Table 3. Summary of Robustness Checks (Coefficient on FDI)

Check	FDI coefficient	p-value	Significant?
Alternative outcome: infant mortality	0.1056	0.176	No
Alternative outcome: under-5 mortality	0.0560	0.711	No
Alternative outcome: maternal mortality	-0.1617	0.900	No
Drop Latin America & Caribbean	-0.0173	0.639	No
Drop South Asia	-0.0223	0.524	No
Drop Europe & Central Asia	-0.0311	0.432	No
Drop East Asia & Pacific	-0.0068	0.837	No
Drop Sub-Saharan Africa	-0.0581	0.124	No
Drop Middle East & North Africa	-0.0259	0.472	No
Jackknife (mean across 38 runs)	-0.0285	0.416	No
With physicians control	-0.0248	—	No
Without physicians control	-0.0280	—	No
Sub-period 2000–2009	-0.0195	0.280	No
Sub-period 2010–2023	-0.0420	0.047	Yes (p<0.05)

Note: Each row re-estimates the two-way fixed-effects model. The outcome is life expectancy unless the row states otherwise. The alternative-FDI-measure check could not be run because the source series was unavailable at the time of data collection.

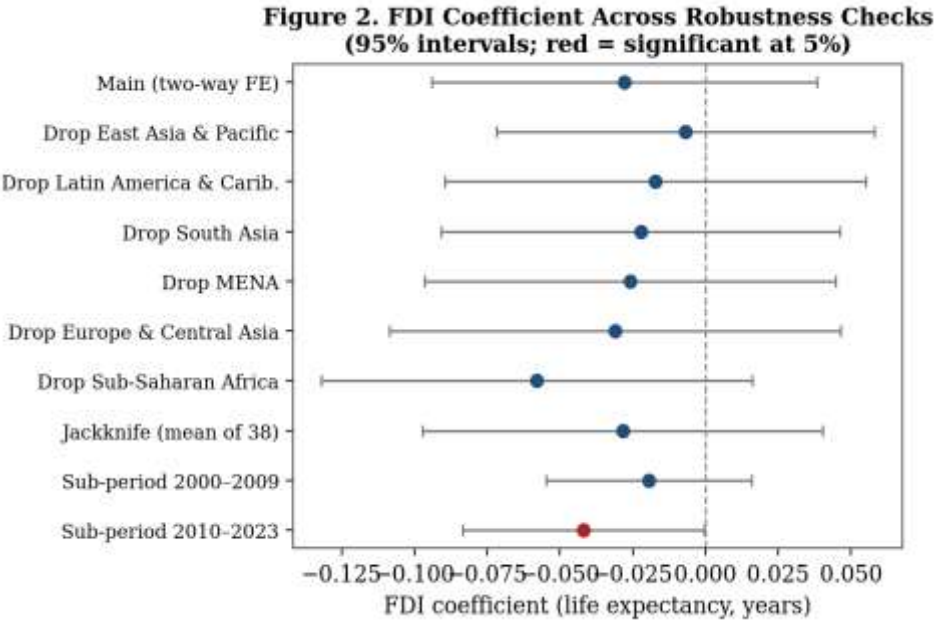


Figure 7. The FDI coefficient on life expectancy across the robustness checks, with 95% confidence intervals. Almost every interval crosses the zero line, and only the 2010 to 2023 sub-period reaches significance at the five percent level. Confidence intervals are computed from the reported coefficients and p-values.

6. Diagnostic Tests and Standard-Error Correction

A responsible panel study does not stop at estimating coefficients. It also checks whether the assumptions behind the reported standard errors actually hold. If those assumptions fail, the coefficients can still be sound while the standard errors, and therefore the p-values, become unreliable. This section reports three formal diagnostic tests applied to the residuals of the main two-way fixed-effects model, explains what each result means, and describes the correction taken in response.

6.1 The Three Tests

The first test is the Breusch-Pagan test for heteroscedasticity. Heteroscedasticity means that the spread of the errors is not constant across observations. The test returned a statistic of 24.50 with a p-value of 0.001, which rejects the null hypothesis of constant error spread. Heteroscedasticity is therefore present.

The second test is the Wooldridge test for first-order autocorrelation in panel data. Autocorrelation means that the error in one year is related to the error in the next year within the same country. The test returned a statistic of 6.91 with a p-value below 0.001, which rejects the null hypothesis of no autocorrelation. Serial correlation is therefore present.

The third test is the Pesaran cross-sectional dependence test. Cross-sectional dependence means that the errors are correlated across countries, often because countries respond together to common global forces. The test returned a statistic of negative 2.08 with a p-value of 0.038, which rejects the null hypothesis of cross-sectional independence at the five percent level. Cross-sectional dependence is therefore present.

Table 4. Post-Regression Diagnostic Tests

Test	What it checks	Statistic	p-value
Breusch-Pagan	Heteroscedasticity (unequal error spread)	24.4994	0.0009
Wooldridge	First-order autocorrelation (errors correlated year to year)	6.9098	0.0000
Pesaran CD	Cross-sectional dependence (errors correlated across countries)	-2.0796	0.0376

Note: All three tests are applied to the residuals of the main two-way fixed-effects model (Table 2, column 3). Each rejects its null hypothesis at the 5% level.

6.2 Interpretation and the Measure Taken

All three tests rejected their null hypotheses. In plain terms, the errors of the main model are unequal in spread, correlated over time within countries, and correlated across countries. This combination is common in country-level macro panels and is not a sign of a coding error or a flawed model. It does, however, mean that the country-clustered standard errors reported in Table 2 are not fully reliable, because clustering by country addresses the first two problems but not cross-sectional dependence.

The standard and widely accepted response to this situation is to re-estimate the model using Driscoll-Kraay standard errors. These standard errors are robust to heteroscedasticity, to autocorrelation, and to cross-sectional dependence at the same time. Importantly, this correction changes only the standard errors and the p-values. It does not change the estimated coefficients, because the size of the relationship is a separate matter from the precision with which it is measured. The measure taken, therefore, was to keep the same two-way fixed-effects model and recompute its standard errors using the Driscoll-Kraay method.

6.3 Results After Correction

Table 5 reports the main model with both the original clustered standard errors and the corrected Driscoll-Kraay standard errors side by side. The coefficient on FDI is unchanged at negative 0.028. Under the original clustered standard errors its p-value was 0.407. Under the corrected Driscoll-Kraay standard errors its p-value falls to 0.077. This means that FDI remains statistically insignificant at the conventional five percent level, though it now reaches significance at the more lenient ten percent level. The headline conclusion is unchanged. There is no strong or reliable relationship between FDI and life expectancy, and the most that can be said is that a weak negative signal appears under one correction.

Table 5. Main Model with Clustered and Driscoll-Kraay Standard Errors

Variable	Coefficient	Clustered SE	Clustered p	D-K SE	D-K p
FDI (% GDP)	-0.0280	0.0338	0.4068	0.0158	0.0772
ln GDP per capita	0.9264	2.7761	0.7387	0.7796	0.2352
Health exp. (% GDP)	-0.2226	0.2289	0.3312	0.1108	0.0450
Urban pop. (%)	0.0067	0.0413	0.8706	0.0153	0.6593
Secondary enrol. (%)	0.0101	0.0220	0.6451	0.0044	0.0213
ln Population	4.1412	3.2138	0.1981	1.0991	0.0002
Trade (% GDP)	0.0094	0.0122	0.4412	0.0056	0.0940
Constant	-10.8983	72.5436	0.8806	24.1861	0.6524

Note: Dependent variable is life expectancy at birth. Coefficients are identical across the two columns of standard errors by construction; only the standard errors and p-values differ. D-K denotes Driscoll-Kraay.

One secondary observation is worth a brief mention. Two of the control variables, health expenditure and secondary school enrolment, become statistically significant under the Driscoll-Kraay standard errors where they were not under the clustered ones. This reflects the greater precision of the corrected standard errors for those variables. It is not central to the research question, which concerns FDI, but it is reported here for completeness and honesty.

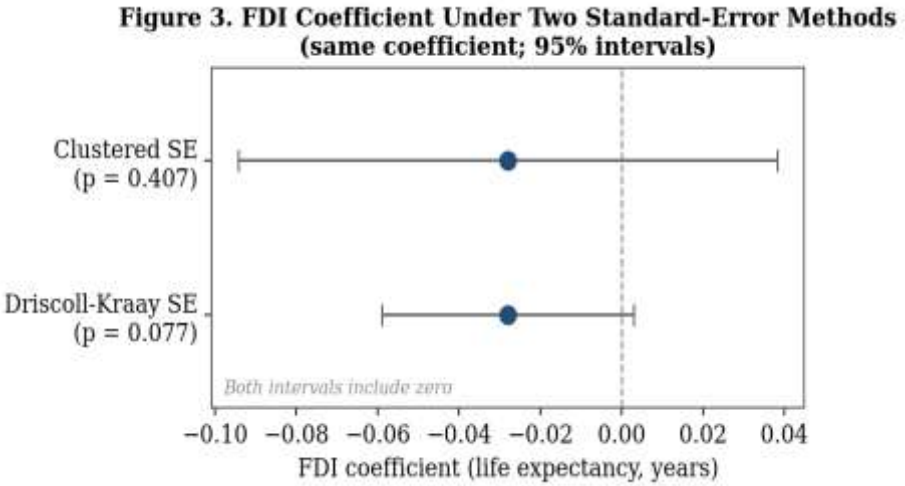


Figure 8. The FDI coefficient on life expectancy under clustered and Driscoll-Kraay standard errors, with 95% confidence intervals. The coefficient is identical; only its precision changes. Both intervals include zero, though the Driscoll-Kraay interval only just does, consistent with its p-value of 0.077.

7. Conclusion

This paper asked whether foreign direct investment improves healthcare outcomes in emerging economies. Using a panel of 38 countries observed from 2000 to 2023, and a two-way fixed-effects approach, it found no statistically significant link between FDI and four standard measures of population health at conventional levels. The result proved robust to alternative outcomes, to the exclusion of individual regions and countries, and to the treatment of missing data. It also survived a formal correction for heteroscedasticity, autocorrelation, and cross-sectional dependence through Driscoll-Kraay standard errors, under which FDI reached significance only at the ten percent level. The overall message is that FDI, on its own, is not a dependable route to better health in these economies. This finding aligns with the more sceptical strand of the literature, and in particular with the null result reported by Hasan and colleagues (2025) for South Asia.

7.1 Policy Implications

The findings carry a practical lesson for policymakers. Attracting foreign investment can be a sensible economic goal, but it should not be treated as a health policy in disguise. Governments that hope to raise life expectancy and reduce child and maternal deaths are unlikely to reach those goals simply by opening the health sector to foreign capital. The forces that move these outcomes, such as public health programmes, sanitation, immunisation, and access to primary care, depend far more on domestic policy and public spending than on the level of FDI. The theoretical framework in this paper helps explain why. If foreign investment concentrates in private and urban facilities, and if its effects are mediated by the strength of domestic institutions, then broad national health indicators may simply not respond to it.

This does not mean that foreign investment in healthcare is undesirable. It may still bring useful technology, expand capacity, and raise standards in particular facilities. The point is narrower. If the aim is to improve the health of the whole population, FDI should be seen as a possible complement to strong public health systems, not as a substitute for them. Policies that channel or encourage foreign investment toward underserved areas and basic services, rather than only toward high-end urban care, and that pair it with supportive governance, may be more likely to produce broad health gains.

7.2 Limitations

Several limitations should be kept in mind. First, the study uses aggregate FDI rather than health-sector FDI. Investment specifically in hospitals and pharmaceuticals might matter more than total inflows, but consistent cross-country data on sector-level FDI are not widely available. Second, the health outcomes are broad national measures. They may miss improvements in the quality or availability of specific services that FDI could support. Third, one planned robustness check, using an alternative measure of FDI in absolute dollar terms, could not be completed because the source series was unavailable at the time of data collection. Fourth, and most fundamentally, the analysis identifies associations rather than clean causal effects, since reverse causation and unobserved factors cannot be entirely ruled out. The literature makes clear that health often attracts FDI, which is precisely the kind of reverse pathway that a study of this design cannot fully close.

7.3 Scope for Future Research

These limitations point to a clear agenda for future work. The most valuable next step would be to gather data on FDI directed specifically at the health and pharmaceutical sectors, and to test whether such targeted investment has effects that total FDI does not. Researchers could also pair national outcomes with more detailed measures, such as the number of hospital beds, the availability of specific treatments, or health outcomes broken down by region and income group. Given the strong role of institutions in the literature, a promising direction would be to test whether the effect of FDI on health depends on the quality of governance, by adding an interaction between FDI and an institutional-quality measure. A further step would be to use an instrumental-variable strategy, or a natural experiment such as a change in ownership rules, to move closer to a causal answer. Finally, the marginally significant result in the recent period suggests that a focused study of the years since 2010 could be especially informative.

In closing, the study offers a modest but useful contribution. It shows, with recent data and careful methods, that the hoped-for link between foreign investment and better health does not appear at the national level in emerging economies. That negative result steers attention back toward the domestic policies and public services that do the most to keep populations healthy, and it sets out a path for research that could sharpen the answer further.

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Appendix. Country Sample

The 38 countries in the sample, with their ISO-3 codes and World Bank regions, are listed in Table A1.

Table A1. Countries in the Sample

Country	ISO-3 Code	Region
India	IND	South Asia
Pakistan	PAK	South Asia
Bangladesh	BGD	South Asia
Sri Lanka	LKA	South Asia
China	CHN	East Asia & Pacific
Indonesia	IDN	East Asia & Pacific
Philippines	PHL	East Asia & Pacific
Thailand	THA	East Asia & Pacific
Vietnam	VNM	East Asia & Pacific
Malaysia	MYS	East Asia & Pacific
Turkey	TUR	Europe & Central Asia
Poland	POL	Europe & Central Asia

Country	ISO-3 Code	Region
Romania	ROU	Europe & Central Asia
Bulgaria	BGR	Europe & Central Asia
Kazakhstan	KAZ	Europe & Central Asia
Ukraine	UKR	Europe & Central Asia
Brazil	BRA	Latin America & Caribbean
Mexico	MEX	Latin America & Caribbean
Argentina	ARG	Latin America & Caribbean
Chile	CHL	Latin America & Caribbean
Colombia	COL	Latin America & Caribbean
Peru	PER	Latin America & Caribbean
Ecuador	ECU	Latin America & Caribbean
Egypt	EGY	Middle East & North Africa
Morocco	MAR	Middle East & North Africa
Tunisia	TUN	Middle East & North Africa
Jordan	JOR	Middle East & North Africa
Iran	IRN	Middle East & North Africa
South Africa	ZAF	Sub-Saharan Africa
Nigeria	NGA	Sub-Saharan Africa
Kenya	KEN	Sub-Saharan Africa
Ghana	GHA	Sub-Saharan Africa
Ethiopia	ETH	Sub-Saharan Africa
Tanzania	TZA	Sub-Saharan Africa
Uganda	UGA	Sub-Saharan Africa
Senegal	SEN	Sub-Saharan Africa
Cote d'Ivoire	CIV	Sub-Saharan Africa
Zambia	ZMB	Sub-Saharan Africa

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