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From Public Social Spending to Economic Growth: A Systematic Review of Human Capital, Investment, and Labor-Market Transmission Mechanisms

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ABSTRACT: This study systematically reviews how public social spending is translated into economic growth through human capital, investment, and labor-market mechanisms. A targeted scholarly metadata search covering 2020–2025 produced 70 DOI-bearing candidate articles published in journals screened within SJR quartiles Q1–Q4. After title/metadata screening, eligibility assessment, and methodological quality appraisal, 32 high- and moderate-quality studies were retained for the primary synthesis. The evidence was analyzed through systematic thematic coding and title-term bibliometric mapping. Four clusters emerged: health spending and growth/productivity (11 studies), education/public social spending and human capital (8), human capital and investment/FDI (8), and labor-market/unemployment transmission (5). The synthesis shows that public health and education expenditure is not uniformly growth-enhancing; its effects depend on whether spending is converted into usable human capital and whether institutional and productive conditions allow those capabilities to be utilized. Human capital emerges as both a direct productive asset and an absorptive capacity that raises the productivity of physical investment and foreign direct investment. Labor-market conditions complete the transmission chain because unemployment can leave accumulated skills underutilized and can generate persistent scarring. The review proposes the SHIL-Growth framework, in which Social spending builds Human capital, Human capital improves Investment absorption, Labor-market utilization converts productive capacity into realized output, and Growth results from the interaction of these stages. Institutional quality, development level, regional structure, and spending efficiency operate as boundary conditions. The main research gap is the scarcity of studies that estimate the complete transmission chain in an integrated empirical model.

1. INTRODUCTION

Public social spending is often justified on welfare grounds, yet its economic importance extends beyond the immediate provision of health and education services. Recent empirical studies show that health expenditure is associated with economic performance, productivity, and regional development, although the magnitude and direction of the relationship vary across countries and estimation strategies (Wang et al., 2022; Beylik et al., 2022; Odhiambo, 2021; Hu & Wang, 2024). A similar pattern appears in the education literature, where public expenditure and education quality are linked to growth only when fiscal inputs are translated into productive human capabilities (Vilella & Paredes, 2022; Shafuda & De, 2020; Suwandaru et al., 2021; Maneejuk & Yamaka, 2021). These findings imply that the relevant policy question is not simply whether governments should spend more on health and education, but how such spending is converted into productive capacity and sustained growth.

The conventional public-expenditure–growth literature frequently estimates direct relationships between government spending and output. However, recent evidence points to intermediate channels that complicate a simple fiscal multiplier interpretation. Health expenditure can operate through improved health status, life expectancy, labor productivity, and spatial spillovers, while its effects may also be conditional on institutional quality, development levels, and dynamic thresholds (Esen & Çelik Keçili, 2022; Alhassan et al., 2021; Ozyilmaz et al., 2022; Xu et al., 2022). Education expenditure likewise interacts with education quality, employment opportunities, physical capital, and long-run human-capital accumulation rather than producing an automatic growth dividend (Rambeli et al., 2021; Goczek et al., 2021; Ziberi et al., 2022; Bailey et al., 2021). A systematic synthesis therefore needs to move from isolated coefficients toward a transmission-mechanism perspective.

Human capital is the natural bridge between social expenditure and productive activity. Cross-country and regional studies increasingly suggest that the contribution of human capital is intertwined with foreign direct investment, trade openness, technological capability, and physical capital formation (Intisar et al., 2020; Dankyi et al., 2022; Rahman et al., 2023; Khan et al., 2023). In this view, human capital is not only a direct input into production; it is also an absorptive capacity that determines whether investment, technology, and external capital can be transformed into productivity gains. This distinction is important because an economy may receive investment without obtaining strong growth effects when the skills, health, and institutional capabilities required to use that investment productively remain weak.

Labor-market conditions add another layer to the transmission process. Regional and micro-level evidence shows that unemployment is associated with underutilized skills, lower employment prospects, persistent scarring, and economic losses after job displacement (Suparman & Muzakir, 2023; Cappelli et al., 2021; Shi & Di Stasio, 2022; Burdett et al., 2020). These findings suggest that accumulated human capital does not automatically become productive output: it must be absorbed into employment and matched with productive capital. Unemployment can therefore function as a bottleneck that weakens the growth return from previous public investments in health and education.

The empirical literature is also geographically and methodologically fragmented. Health-expenditure studies span OECD economies, emerging regions, developing countries, and subnational settings, while education and human-capital studies use time-series, panel, dynamic, instrumental-variable, threshold, and spatial approaches (Faruk et al., 2022; Celik et al., 2023; Selvanathan et al., 2021; Wang et al., 2022). Investment and human-capital research similarly varies across Asian, African, transition, and global samples, producing results that depend on income level, institutional conditions, and model specification (Intisar et al., 2020; Dankyi et al., 2022; Rahman et al., 2023; Khan et al., 2023). Rather than treating these differences as simple contradictions, a systematic review can interpret them as evidence that the transmission from social expenditure to growth is context dependent.

This study responds to that need by integrating four strands of evidence that are usually reviewed separately: public health expenditure, public education expenditure, human capital and investment, and labor-market or unemployment mechanisms. The review is designed to identify not only the dominant direction of empirical findings but also the pathways through which spending becomes productive capacity, the conditions that strengthen or weaken those pathways, and the gaps that remain between micro-level labor-market evidence and macro-level growth models. The analytical emphasis is therefore on mechanism, complementarity, and boundary conditions rather than on a simple count of positive and negative coefficients.

The review makes three contributions. First, it consolidates a quality-appraised corpus of recent studies published during 2020–2025 and organizes the evidence into four thematic clusters. Second, it combines systematic screening with title-term bibliometric mapping to show how the recent literature is structured conceptually. Third, it proposes an integrated Social Spending–Human Capital–Investment–Labor Market Growth, or SHIL-Growth, framework in which public social spending builds human capital, human capital increases the productivity and absorptive capacity of investment, labor-market conditions determine whether these capabilities are productively utilized, and institutional and regional conditions moderate the full transmission chain.

The remainder of the article is organized as follows. Section 2 sets out the review framework and research questions. Section 3 explains the search, screening, quality-appraisal, bibliometric, and synthesis procedures. Section 4 reports the descriptive, bibliometric, and thematic findings. Section 5 develops the integrated interpretation and the SHIL-Growth framework. Section 6 discusses theoretical, policy, and future-research implications, followed by limitations and conclusions.

2. REVIEW FRAMEWORK AND RESEARCH QUESTIONS

The review begins from the proposition that public social expenditure should be evaluated as an upstream investment rather than only as a current budgetary outlay. Health-spending studies connect fiscal effort with health status, productivity, and output, while education studies connect public expenditure with skill formation and longer-run growth (Wang et al., 2022; Beylik et al., 2022; Odhiambo, 2021; Hu & Wang, 2024). The link is nevertheless incomplete unless human capital can interact with complementary investment and productive employment. Studies that jointly analyze human capital, FDI, physical capital, and growth provide evidence that the productivity of capital depends on the capabilities available to absorb and use it (Intisar et al., 2020; Dankyi et al., 2022; Rahman et al., 2023; Khan et al., 2023).

A second proposition is that the transmission chain is conditional. Institutional quality, regional structure, income level, and threshold effects help explain why similar categories of expenditure do not generate identical growth outcomes across countries (Faruk et al., 2022; Celik et al., 2023; Selvanathan et al., 2021; Wang et al., 2022). Labor-market conditions are equally important because unemployment can prevent productive utilization of accumulated human capital and can generate persistent losses through scarring and skill depreciation (Suparman & Muzakir, 2023; Cappelli et al., 2021; Shi & Di Stasio, 2022; Burdett et al., 2020). These two propositions motivate a framework in which fiscal inputs, productive capabilities, investment, and employment are analyzed jointly.

Accordingly, the review addresses six research questions. RQ1 asks what patterns characterize the relationship between public health and education expenditure and economic growth. RQ2 asks how human capital transmits the effect of public social spending to growth. RQ3 asks how investment and FDI interact with human capital in shaping growth. RQ4 asks how unemployment and labor-market conditions strengthen or weaken the transmission of human capital into productive output. RQ5 asks which institutional, regional, development, and methodological conditions explain heterogeneous results. RQ6 asks what research gaps emerge from the combined evidence and how they can be integrated into a unified transmission framework.

RQ1. What patterns of evidence characterize the relationship between public health and education expenditure and economic growth?

RQ2. How does human capital transmit the effects of public social spending to economic growth?

RQ3. How do investment and foreign direct investment interact with human capital in shaping economic growth?

RQ4. How do unemployment and labor-market conditions strengthen or weaken the transmission of human capital into economic growth?

RQ5. Which institutional, regional, development, and methodological conditions explain heterogeneous findings across the literature?

RQ6. What research gaps emerge from the existing literature, and how can these findings be integrated into a unified transmission framework?

3. METHODOLOGY

This study used a systematic literature review design with a transparent identification, screening, eligibility, quality-appraisal, and synthesis process. The review window was limited to 2020–2025 so that the resulting corpus reflected recent empirical debates while remaining sufficiently broad to capture different economic contexts and estimation strategies. The unit of analysis was the peer-reviewed journal article. The final evidence base was restricted to studies with a DOI and to journals screened within SJR quartiles Q1–Q4 at the time of corpus construction.

The discovery stage used targeted scholarly metadata searches covering combinations of the following concepts: public health expenditure, public education expenditure, government spending, human capital, investment, foreign direct investment, unemployment, labor-market conditions, and economic growth. Discovery relied on OpenAlex-based scholarly metadata search and complementary academic search functionality, after which the candidate list was manually screened for topical relevance and journal quality. This procedure generated 70 candidate records. Because the review corpus was built from metadata discovery rather than from a single subscription database export, the search should be interpreted as a structured evidence-discovery strategy rather than as an exclusive Scopus-only query.

Table 1. Review protocol and operational criteria

Component	Operational decision	Purpose
Time window	2020–2025	Focus on recent evidence and methods.
Publication type	Peer-reviewed journal articles	Keep primary evidence central to the synthesis.
Journal quality	SJR Q1–Q4 at corpus-screening stage	Apply a minimum journal-quality filter.
Identifier	Unique DOI required	Support traceability and deduplication.
Core concepts	Health/education spending; human capital; investment/FDI; unemployment/labor market; economic growth	Define the integrated transmission scope.
Primary exclusions	Environmental-outcome dominance; non-target mechanisms; aggregate fiscal studies without social-sector linkage; narrow firm-only scope; secondary evidence	Maintain conceptual coherence.
Quality appraisal	Seven criteria, scored 0–2; High 11–14, Moderate 8–10, Low ≤ 7	Weight interpretive confidence.

Eligibility criteria were defined before the second screening stage. Included studies had to fall within 2020–2025, be journal articles, have a unique DOI, and address at least one substantive link within the target chain: public health or education spending, human capital, investment or physical capital, unemployment or labor-market conditions, and economic growth. Studies were excluded when environmental outcomes dominated the analysis, when the primary mechanism was outside the review scope, when only aggregate fiscal expenditure was analyzed without a social-sector or transmission component, when the analysis was narrowly firm-level without a credible macroeconomic bridge, or when the paper was secondary rather than primary evidence.

Screening proceeded in stages. All 70 records passed a duplicate-DOI check, with no duplicate DOI strings identified. Title and metadata screening excluded 23 records and retained 47 for closer eligibility assessment. Abstract/full-text eligibility screening removed 13 additional studies, leaving 34 studies. A screening-level methodological quality appraisal then identified 17 high-quality, 15 moderate-quality, and 2 low-quality studies. The two low-quality studies were retained only as contextual evidence and were removed from the primary synthesis, resulting in a final analytic corpus of 32 studies.

Figure 1. Review selection and quality-appraisal flow

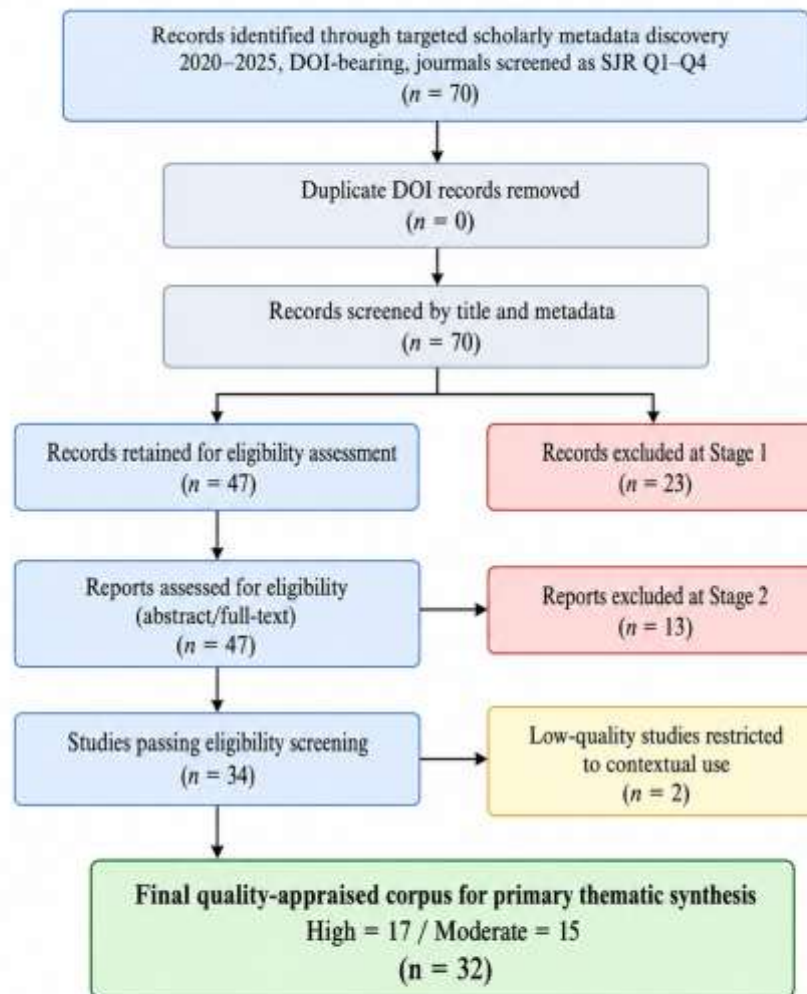


Figure 1. Review selection and quality-appraisal flow. The final primary synthesis contains 32 high- and moderate-quality studies.

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Methodological quality was assessed using seven criteria scored from 0 to 2: topical relevance, data or sample adequacy, methodological rigor, treatment of endogeneity or causal identification, robustness or sensitivity, explicit testing of transmission mechanisms, and breadth of external or contextual coverage. Total scores ranged from 0 to 14. Studies scoring 11–14 were categorized as high quality, those scoring 8–10 as moderate quality, and those scoring 7 or below as low quality. This appraisal was used to weight interpretation rather than to construct a formal meta-analytic effect size.

Bibliometric exploration focused on title-term co-occurrence because complete author-keyword fields were not consistently available in the screened RIS metadata. A controlled term dictionary was applied to study titles, and co-occurrence links were constructed when two terms appeared in the same title. Network, overlay, and density visualizations were then generated in VOSviewer-compatible form. This choice is reported explicitly because title-term mapping should not be interpreted as an author-keyword co-occurrence analysis. The bibliometric layer was used as a descriptive complement to, rather than a substitute for, the systematic thematic synthesis.

The thematic synthesis coded each included study by country or region, period, public-spending exposure, human-capital variable, investment or capital variable, labor-market variable, economic outcome, method, quality tier, direction of evidence, and transmission role. Studies were grouped into four clusters: health spending and growth or productivity; education or public social spending, human capital, and growth; human capital and investment or FDI; and labor-market or unemployment transmission. Contradictions were treated as theoretically informative heterogeneity when they could be linked to institutional, regional, development, or methodological conditions.

Table 2. Screening and quality-appraisal outcome

Stage	Records	Decision
Candidate corpus	70	Proceed to title/metadata screening
Duplicate DOI records	0	No removals
Excluded at Stage 1	23	Outside pathway/outcome/primary-study scope
Eligibility corpus	47	Abstract/full-text assessment
Excluded at Stage 2	13	Mechanism/outcome/scope mismatch
Passed eligibility	34	Methodological quality appraisal
Low-quality contextual studies	2	Restricted to contextual/sensitivity use
Final primary synthesis	32	17 High + 15 Moderate

4. Results

4.1 Study Profile and Bibliometric Structure

The final primary corpus contains 32 studies: 17 high-quality and 15 moderate-quality articles. Eleven studies belong to the health-spending cluster, eight to the education and public social-spending cluster, eight to the human-capital and investment or FDI cluster, and five to the labor-market or unemployment cluster. The evidence base is geographically diverse, spanning OECD and EU countries, Sub-Saharan Africa, MENA economies, ASEAN and Asian countries, ECOWAS, major world economies, individual developing countries, and subnational regional panels. The methodological mix includes ARDL and VECM approaches, panel estimators, Driscoll–Kraay standard errors, nonlinear and threshold models, 2SLS and instrumental-variable strategies, GMM, spatial models, quasi-experimental designs, and labor-market experiments.

The bibliometric title-term network shows that “economic growth” is the dominant hub, appearing in 27 of the 32 titles and recording a total link strength of 45. “Human capital” appears 11 times with a total link strength of 24, while “health expenditure” appears 10 times with a total link strength of 13. Unemployment appears five times, and both foreign direct investment and investment appear four times with total link strengths of 13. The network therefore mirrors the conceptual architecture of the review: growth occupies the center, human capital serves as the strongest cross-cluster connector, and the investment and unemployment terms sit on adjacent transmission paths.

The overlay map indicates that the core health-expenditure and economic-growth relationship is well established across the 2020–2025 window, while technological innovation and some investment-related terms appear more strongly in relatively recent studies. The density map likewise shows the greatest concentration around economic growth, human capital, and health expenditure, with secondary density around investment, FDI, education expenditure, and unemployment. These patterns support the thematic finding that recent research is moving from isolated fiscal-growth relationships toward a more interconnected view of human capital, capital absorption, and labor-market conditions.

Table 3. Final corpus by thematic cluster and methodological quality

Thematic cluster	Total	High quality	Moderate quality
Health spending → growth/productivity	11	6	5
Education/public social spending → human capital → growth	8	5	3
Human capital & investment/FDI → growth	8	4	4
Labor-market/unemployment transmission	5	2	3
Total	32	17	15

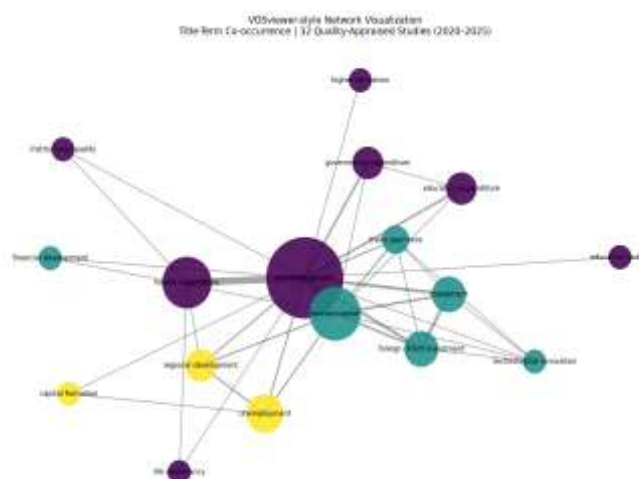


Figure 2. VOSviewer-compatible title-term co-occurrence network for the 32-study corpus.

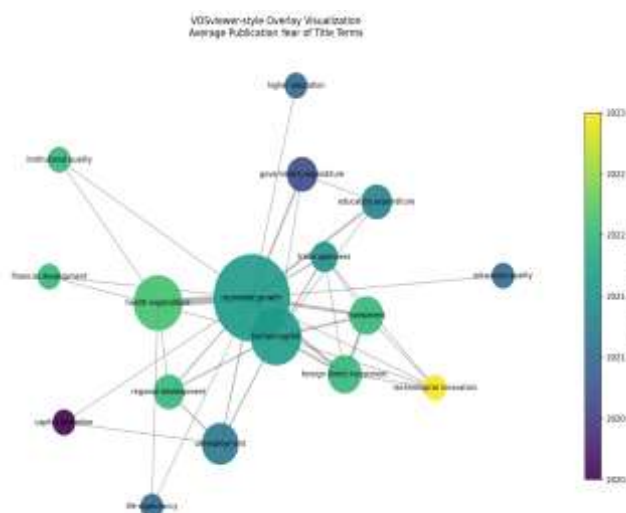


Figure 3. Overlay visualization of average publication year for title terms.

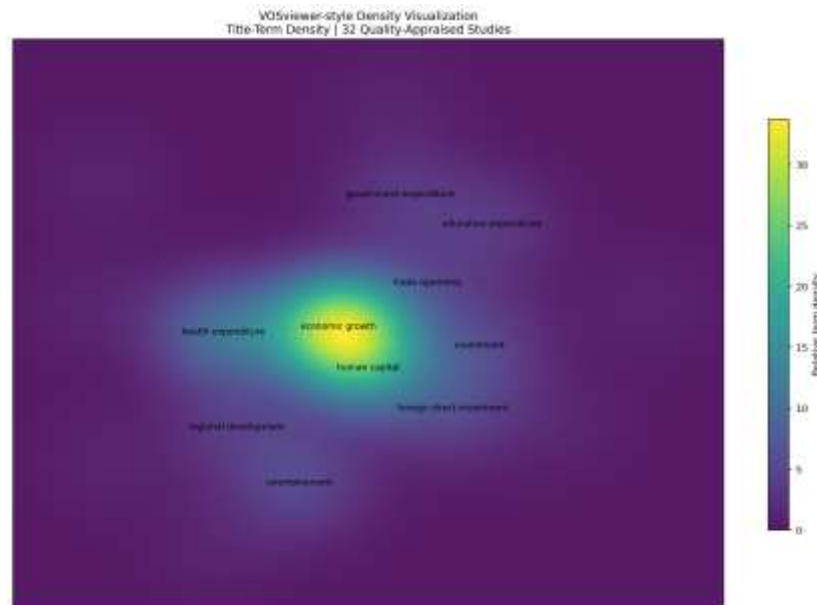


Figure 4. Density visualization of title-term concentration in the final corpus.

4.2 Public Health Expenditure and Economic Growth

The health-spending cluster provides broad support for a relationship between health expenditure and economic performance, but the evidence does not justify a universal linear effect. Cross-country and regional studies report associations between health expenditure, output, productivity, and development, while also showing differences across countries and model specifications (Wang et al., 2022; Beylik et al., 2022; Odhiambo, 2021; Hu & Wang, 2024). The strongest interpretation is therefore conditional: health spending can contribute to growth, but the size and even the detectability of the effect depend on the economic and institutional environment.

Dynamic evidence reinforces this conditional interpretation. Time-series and panel studies identify long-run relationships, short-run causal dynamics, and heterogeneous effects across national settings, while research on China explicitly distinguishes direct and indirect spatial effects (Esen & Çelik Keçili, 2022; Alhassan et al., 2021; Ozyilmaz et al., 2022; Xu et al., 2022). This matters for theory because a government health outlay can influence growth through several steps rather than through a single contemporaneous coefficient. Better health can expand effective labor supply, improve productivity, and enhance the capacity of households and firms to participate in productive activity.

Institutional and structural conditions are especially important in explaining divergent results. Evidence from MENA and OECD settings, sectoral public-expenditure models, and regional analyses indicates that governance, qualified labor, development level, and expenditure composition affect how health spending translates into economic outcomes (Faruk et al., 2022; Celik et al., 2023; Selvanathan et al., 2021; Wang et al., 2022). Thus, a higher budget allocation is not equivalent to a stronger growth effect. The relevant mechanism is the conversion of spending into health capital that is actually productive within the surrounding institutional and economic system.

The cluster also reveals a limitation in the current literature: many studies establish an expenditure–growth association but do not jointly estimate the full sequence from health spending to human capital, investment productivity, employment absorption, and growth. Even when indirect effects are analyzed, they often concern spatial spillovers or dynamic relationships rather than the complete social-investment transmission chain (Esen & Çelik Keçili, 2022; Alhassan et al., 2021; Ozyilmaz et al., 2022; Xu et al., 2022). This gap becomes important when the health-spending evidence is read alongside the human-capital and investment literature.

Taken together, the health evidence supports a “productive social infrastructure” interpretation. Public health expenditure is most plausibly growth-enhancing when it improves the health and reliability of the workforce, reduces productivity losses, and complements the physical and institutional conditions needed for productive investment. The implication is not that every

increase in health expenditure will raise GDP, but that health spending can form an upstream component of a wider productive-capacity system.

4.3 Education Expenditure, Human Capital, and Growth

The education cluster shows a similarly nuanced relationship. Public education expenditure and higher-education development are frequently associated with long-run growth and human-capital formation, yet the relationship varies across samples and empirical designs (Villela & Paredes, 2022; Shafuda & De, 2020; Suwandaru et al., 2021; Maneejuk & Yamaka, 2021). A central finding is that spending quantity alone is an incomplete measure of productive investment. What matters is whether expenditure improves the stock and quality of usable human capital.

The distinction between fiscal input and human-capital output is visible in studies that combine education spending with capital formation, employment, quality indicators, or long-run self-sufficiency outcomes (Rambeli et al., 2021; Goczek et al., 2021; Ziberi et al., 2022; Bailey et al., 2021). These studies imply that the growth return to education depends on what the education system produces and whether those capabilities are matched with productive opportunities. Education expenditure can therefore have weak or delayed effects when the economy lacks complementary capital, when educational quality is low, or when educated workers remain underemployed.

The evidence also suggests that the relationship may change between the short and long run. Time-series and panel studies find that education expenditure can have different dynamic effects depending on specification, while cross-country research emphasizes quality and human-capital accumulation rather than simple enrollment or budget measures (Villela & Paredes, 2022; Shafuda & De, 2020; Suwandaru et al., 2021; Maneejuk & Yamaka, 2021). This heterogeneity is analytically useful because it shifts attention from “how much is spent” to “how effectively expenditure becomes productive capability.”

A further contribution of the education literature is its connection to labor-market conditions. Studies that incorporate employment, educated unemployment, or long-run economic self-sufficiency show that human-capital formation is only one stage of the growth process (Rambeli et al., 2021; Goczek et al., 2021; Ziberi et al., 2022; Bailey et al., 2021). The next stage is productive absorption. An education system can increase measured human capital without producing a proportional growth return if the labor market cannot create or match jobs that use those skills.

The education cluster therefore supports a two-part mechanism. First, public spending must generate high-quality human capital. Second, that human capital must be combined with investment and employment. This interpretation provides the first bridge from social expenditure to the investment and labor-market clusters.

4.4 Human Capital, Investment, and Foreign Direct Investment

The investment cluster provides the strongest evidence that human capital should be treated as an absorptive capacity rather than as a standalone production input. Comparative studies show that human capital, FDI, technological capability, trade openness, and physical investment jointly shape economic performance across emerging, developing, and cross-country samples (Intisar et al., 2020; Dankyi et al., 2022; Rahman et al., 2023; Khan et al., 2023). This body of evidence suggests that the productivity of investment depends partly on whether firms and workers can absorb technologies, organizational practices, and knowledge embodied in new capital.

The complementarity is particularly relevant for developing economies seeking to use FDI as a growth strategy. Evidence from ECOWAS, Bangladesh, broad international samples, and Asian economies indicates that investment-related growth effects vary with human-capital conditions and the wider economic environment (Intisar et al., 2020; Dankyi et al., 2022; Rahman et al., 2023; Khan et al., 2023). FDI may increase the stock of capital, but its contribution to domestic productivity is likely to be weaker when local skills, education, and technological capabilities are insufficient to absorb spillovers.

Broader growth models also reinforce the interaction between human resources and capital accumulation. Studies combining human resources, capital formation, FDI, labor, and growth show that physical and human capital should not be interpreted as substitutes (Nguyen, 2022; Pasara & Garidzirai, 2020; Rahman & Alam, 2021; Sarker & Khan, 2020). Instead, the two forms of capital can be mutually reinforcing: investment provides productive opportunities, while human capital determines the extent to which those opportunities are efficiently used.

The cluster exposes an important upstream gap. Most investment studies begin with human capital as an existing stock and ask how it interacts with FDI or physical capital; they rarely trace that human capital back to public health and education spending.

Conversely, many social-spending studies stop at growth or human-development outcomes and do not examine how improved human capital changes the productivity of private and foreign investment (Villela & Paredes, 2022; Shafuda & De, 2020; Suwandaru et al., 2021; Maneejuk & Yamaka, 2021). The separation of these literatures leaves a missing link that an integrated review can make explicit.

The combined evidence supports a sequential interpretation: public social spending can create capabilities; those capabilities increase absorptive capacity; absorptive capacity raises the productivity of investment; and productive investment contributes to growth. This sequence is the core of the “I” component in the SHIL-Growth framework.

4.5 Labor-Market and Unemployment Transmission

The labor-market cluster shows why human-capital accumulation is not sufficient by itself. Macro-regional studies link unemployment and human capital to economic growth, while labor-market research demonstrates that unemployment can reduce subsequent job prospects, weaken regional resilience, and generate persistent economic losses (Suparman & Muzakir, 2023; Cappelli et al., 2021; Shi & Di Stasio, 2022; Burdett et al., 2020). The common implication is that skills have economic value only when they are productively used.

Unemployment can weaken the social-spending transmission chain in at least two ways. First, it reduces current utilization of human capital because educated and healthy workers are not matched to productive employment. Second, prolonged unemployment can create scarring through deteriorating employability, weaker job matching, and cumulative labor-market disadvantage (Suparman & Muzakir, 2023; Cappelli et al., 2021; Shi & Di Stasio, 2022; Burdett et al., 2020). The effect is therefore both a flow problem—unused labor today—and a stock problem—potential depreciation of human capital over time.

Education also moderates unemployment outcomes, indicating that the quality and level of human capital can influence the severity of scarring and the probability of re-employment (Suparman & Muzakir, 2023; Cappelli et al., 2021; Shi & Di Stasio, 2022; Burdett et al., 2020). At the regional level, technological and human capital contribute to unemployment resistance, suggesting that productive structure determines whether shocks translate into persistent labor-market damage. This evidence connects the labor market to the investment channel: regions with stronger productive capital and better skills are more capable of absorbing workers.

The literature is nevertheless unbalanced. Micro-level unemployment studies often provide stronger identification of scarring and job-loss costs than macro-level studies provide for the aggregate growth consequences of those scars (Suparman & Muzakir, 2023; Cappelli et al., 2021; Shi & Di Stasio, 2022; Burdett et al., 2020). Conversely, macro growth models frequently include unemployment as a control variable without modeling the process by which unemployment erodes or underutilizes human capital. Bridging those levels is one of the clearest research opportunities identified by this review.

The labor-market cluster therefore supplies the missing “utilization” stage in the social-investment narrative. Human capital and physical investment create potential productive capacity, but employment determines whether that capacity becomes realized output. Unemployment is consequently more than a labor-market outcome; it is a transmission bottleneck.

4.6 Explaining Heterogeneity Across Studies

The review does not interpret mixed findings as evidence that public social spending is economically irrelevant. Instead, the combined evidence suggests four sources of heterogeneity. First, institutional quality and spending effectiveness influence whether fiscal resources become productive services and capabilities (Faruk et al., 2022; Celik et al., 2023; Selvanathan et al., 2021; Wang et al., 2022). Second, development level and existing productive capacity influence how health, education, and investment interact (Intisar et al., 2020; Dankyi et al., 2022; Rahman et al., 2023; Khan et al., 2023). Third, labor-market structure determines whether accumulated skills are absorbed into productive employment (Suparman & Muzakir, 2023; Cappelli et al., 2021; Shi & Di Stasio, 2022; Burdett et al., 2020). Fourth, methodological design affects the type of relationship that can be detected.

Methodological heterogeneity is substantial. Some studies estimate dynamic association and long-run equilibrium, others use panel estimators with corrected standard errors, and others employ threshold, instrumental-variable, spatial, or quasi-experimental strategies (Esen & Çelik Keçili, 2022; Alhassan et al., 2021; Ozyilmaz et al., 2022; Xu et al., 2022). Consequently, apparently different empirical results may reflect different estimands rather than direct contradictions. A short-run ARDL

coefficient, a long-run panel relationship, a spatial spillover, and an IV estimate of a specific policy pathway answer related but not identical questions.

The education literature illustrates this problem especially clearly. Studies focusing on expenditure levels, education quality, long-run human-capital outcomes, and employment conditions can reach different conclusions because they measure different stages of the same productive process (Villela & Paredes, 2022; Shafuda & De, 2020; Suwandaru et al., 2021; Maneejuk & Yamaka, 2021). The investment literature shows a similar pattern, because the observed effect of FDI varies with human capital, trade openness, technology, and country context (Intisar et al., 2020; Dankyi et al., 2022; Rahman et al., 2023; Khan et al., 2023). A transmission framework can therefore reconcile part of the empirical heterogeneity by locating each result at a different point in the causal chain.

The synthesis thus favors conditional propositions over universal ones. Health spending is most likely to support growth when it creates effective health capital; education spending is most likely to support growth when it produces usable skills; investment is most productive when human capital can absorb it; and human capital generates realized output when labor markets can employ it. These conditions provide the foundation for the integrated discussion.

Table 4. Integrated thematic synthesis and principal research gaps

Cluster	Dominant mechanism	Main heterogeneity	Principal gap
Health spending	Health capital → productivity/output	Income group, institutional quality, thresholds, spatial effects	Limited integrated testing of health → human capital → investment/employment → growth
Education spending	Spending/quality → human capital → productivity	Short vs long run, spending quality, educated unemployment	Need stronger mediation and spending-efficiency identification
Human capital & investment	Human capital as absorptive capacity for FDI/physical capital	Income, trade, technology, development conditions	Upstream link from public social spending to investment absorption remains fragmented
Labor market	Employment absorption vs unemployment scarring	Regional resilience, education moderation, micro–macro differences	Weak bridge between micro scarring and aggregate growth

5. DISCUSSION

The first major implication of the review is that the traditional direct public-spending–growth question is too narrow. The health and education literature contains substantial evidence of growth-related effects, but those effects vary with human-capital formation, productivity, institutional conditions, and complementary inputs (Wang et al., 2022; Beylik et al., 2022; Odhiambo, 2021; Hu & Wang, 2024). The more useful analytical question is therefore how public spending becomes productive economic capacity. This reframing shifts the unit of explanation from an isolated fiscal coefficient to a sequence of transformations.

Human capital is the central transformation in that sequence. Public health and education expenditure can improve the capabilities of individuals and the quality of the workforce, but empirical evidence indicates that the growth return depends on whether those capabilities are economically usable (Villela & Paredes, 2022; Shafuda & De, 2020; Suwandaru et al., 2021; Maneejuk & Yamaka, 2021). Human capital should therefore be interpreted as both an outcome of social expenditure and an input into subsequent productive processes. This dual position explains why human-capital variables connect the social-spending, investment, and labor-market literatures.

The second major implication is that human capital functions as absorptive capacity for investment. FDI and physical capital provide technology, equipment, organizational knowledge, and production opportunities, but their productivity varies with the skills and capabilities available in the host economy (Intisar et al., 2020; Dankyi et al., 2022; Rahman et al., 2023; Khan et al., 2023). This complementarity helps explain why investment alone does not guarantee convergence or sustained growth. It also

suggests that policies designed to attract investment should be evaluated jointly with policies that strengthen education, health, and workforce capabilities.

The third implication is the importance of labor-market absorption. Unemployment and job displacement reduce the utilization of existing human capital and can create persistent losses that extend beyond the period of non-employment (Suparman & Muzakir, 2023; Cappelli et al., 2021; Shi & Di Stasio, 2022; Burdett et al., 2020). A growth model that stops at human-capital formation therefore risks overstating the economic return to social spending. Productive employment is the mechanism that converts human capability into realized output.

These three insights combine into the SHIL-Growth framework. The framework proposes a sequential core in which Social spending supports Human capital, Human capital increases the productivity and absorptive capacity of Investment, Investment and human capital are converted into output through Labor-market absorption, and the resulting productive activity generates economic Growth. The sequence is not mechanically linear. Institutional quality, development level, regional structure, and spending efficiency act as boundary conditions, while unemployment can interrupt the chain by reducing utilization and creating human-capital scarring.

The framework also explains why prior literature appears fragmented. Health studies often estimate the first link, education studies estimate the formation of capabilities, investment studies begin from the stock of human capital, and labor studies analyze the consequences of unemployment without tracing them back to public social investment (Esen & Çelik Keçili, 2022; Alhassan et al., 2021; Ozyilmaz et al., 2022; Xu et al., 2022). When these literatures are combined, they form a coherent mechanism rather than four unrelated research areas. This synthesis is the principal conceptual contribution of the review.

The SHIL-Growth framework does not claim that every empirical relationship is causal or that the transmission sequence has been fully estimated in any single study. Its purpose is integrative: it identifies where evidence is strong, where evidence is indirect, and where future empirical work is most needed. In particular, the framework reveals that the least-developed part of the literature is not the existence of separate spending, human-capital, investment, and unemployment relationships, but the simultaneous estimation of the full transmission chain.

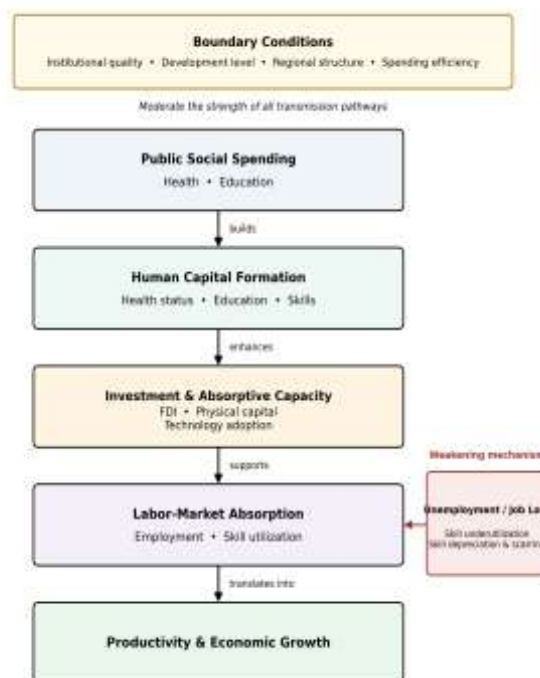


Figure 5. Proposed SHIL-Growth framework. Public social spending builds human capital, strengthens investment absorptive capacity, and supports labor-market absorption, which translates into productivity and economic growth. Institutional quality, development level, regional structure, and spending efficiency moderate the transmission pathway, while unemployment and job loss weaken productive utilization through skill underutilization and human-capital scarring.

6. IMPLICATIONS AND FUTURE RESEARCH AGENDA

Theoretical implications follow directly from the integrated mechanism. Public expenditure on health and education should be modeled as productive social investment whose economic return depends on capability formation and subsequent utilization, rather than as homogeneous government consumption (Villela & Paredes, 2022; Shafuda & De, 2020; Suwandaru et al., 2021; Maneejuk & Yamaka, 2021). Human capital should likewise be modeled not only as an additive production input but as a complementary factor that changes the productivity of FDI and physical capital (Intisar et al., 2020; Dankyi et al., 2022; Rahman et al., 2023; Khan et al., 2023). Finally, unemployment should be incorporated as a mechanism that affects both current utilization and the future stock of productive capability (Suparman & Muzakir, 2023; Cappelli et al., 2021; Shi & Di Stasio, 2022; Burdett et al., 2020).

For policy, the evidence argues against evaluating health and education budgets solely by expenditure shares. Spending effectiveness depends on whether services improve health, education quality, and usable skills, and whether the productive economy can absorb those improvements (Wang et al., 2022; Beylik et al., 2022; Odhiambo, 2021; Hu & Wang, 2024). Governments should therefore connect social-sector budgeting with investment policy, industrial development, and employment creation rather than managing these domains as separate policy silos. A rise in education spending may have a weak growth return if educated workers remain unemployed, just as FDI may have a weak domestic spillover when the workforce lacks complementary capabilities.

The evidence also supports differentiated policy design. Institutional quality and regional productive structure help explain why similar spending levels can produce different outcomes (Faruk et al., 2022; Celik et al., 2023; Selvanathan et al., 2021; Wang et al., 2022). Regions with weak administrative capacity may need to improve expenditure efficiency before expanding budgets, while regions with adequate human capital but weak private investment may need policies that connect skills to firms, infrastructure, and finance. Conversely, regions with high investment but persistent unemployment may need stronger matching, training, and labor-market institutions.

Future research should test the SHIL sequence directly. Longitudinal regional panels, spatial models, dynamic structural equations, mediation designs, and credible instrumental-variable strategies could estimate the pathways from social expenditure to human capital, from human capital to investment productivity, and from productive capacity to employment and growth. Researchers should also test nonlinearities, because the literature suggests that minimum levels of institutional quality, skills, or complementary capital may be necessary before spending produces a measurable growth payoff.

A second research priority is to connect micro-level labor-market scarring to macroeconomic growth. Administrative employment histories and firm-worker data can identify skill depreciation and re-employment effects, while regional macro data can measure whether persistent unemployment reduces the realized return to public education and health spending. Linking those levels would provide a much stronger test of the labor-market bottleneck proposed in this review.

A third priority is comparative research in geographically fragmented, peripheral, or archipelagic economies. The current corpus contains substantial cross-country and regional diversity but relatively little explicit analysis of spatial isolation, service-delivery costs, and fragmented labor markets. Such contexts are theoretically important because the conversion of social spending into human capital and employment may be especially sensitive to infrastructure, mobility, and regional investment patterns.

Table 5. Priority agenda for future empirical research

Priority	Recommended empirical focus	Suitable designs
Integrated transmission	Estimate public spending → human capital → investment/productivity → employment → growth in one model	Dynamic panel mediation, structural equations, 2SLS/GMM, recursive systems
Thresholds and institutions	Identify minimum institutional, human-capital, or investment conditions for spending effectiveness	Panel threshold, interaction models, nonlinear ARDL

Priority	Recommended empirical focus	Suitable designs
Spatial heterogeneity	Test regional spillovers and geographically fragmented economies	Spatial panel models, multilevel regional panels
Micro–macro labor bridge	Link unemployment scarring and skill depreciation to aggregate output	Matched employer–employee data linked to regional macro panels
Spending quality	Distinguish budget size from efficiency, service quality, and outcomes	Efficiency frontier + panel growth models; outcome-based fiscal measures

7. LIMITATIONS

This review has several limitations. First, the candidate corpus was assembled through targeted scholarly metadata discovery and then filtered by DOI and SJR status; it was not generated from a single subscription-database search export. For a final journal submission, the search should ideally be replicated in Scopus and/or Web of Science using the documented concept blocks so that database-specific coverage can be reported explicitly. Second, the bibliometric analysis uses title-term co-occurrence because consistent author-keyword metadata were not available for every included record. The resulting maps are therefore useful for conceptual structure but should not be described as author-keyword maps.

Third, the methodological quality appraisal is a structured screening-level assessment rather than a design-specific risk-of-bias instrument. The review therefore distinguishes high and moderate methodological confidence without converting quality scores into statistical weights. Fourth, the study synthesizes heterogeneous econometric designs and outcomes, which makes a conventional pooled meta-analysis inappropriate without additional harmonization of effect measures. The contribution is consequently a systematic qualitative and mechanism-oriented synthesis.

Finally, the SHIL-Growth framework is an integrative inference from the combined literature. No claim is made that all links have been jointly estimated in one empirical model. This limitation is also the main research opportunity: future studies can test the complete chain and determine where the proposed transmission mechanism holds, where it fails, and which boundary conditions are most important.

8. CONCLUSION

This systematic review synthesizes recent evidence on the relationship between public social spending and economic growth through human capital, investment, and labor-market mechanisms. The health-spending literature generally supports a growth-related role for public health investment, but the effects are heterogeneous and conditional on institutional, structural, and methodological context (Wang et al., 2022; Beylik et al., 2022; Odhiambo, 2021; Hu & Wang, 2024). The education literature similarly shows that expenditure is most economically valuable when it produces high-quality and usable human capital rather than when budget size rises in isolation (Villela & Paredes, 2022; Shafuda & De, 2020; Suwandaru et al., 2021; Maneejuk & Yamaka, 2021).

The strongest cross-cluster insight is the complementary role of human capital. Human capital not only contributes directly to productive capacity but also influences how effectively FDI, physical capital, technology, and trade opportunities are absorbed (Intisar et al., 2020; Dankyi et al., 2022; Rahman et al., 2023; Khan et al., 2023). The labor-market literature adds the final step by showing that unemployment can leave capabilities unused and can generate persistent scarring and economic loss (Suparman & Muzakir, 2023; Cappelli et al., 2021; Shi & Di Stasio, 2022; Burdett et al., 2020). Economic growth is therefore better understood as the outcome of a connected transmission system rather than as the direct response to a single category of spending.

The proposed SHIL-Growth framework captures that system: social spending builds human capital; human capital increases investment absorptive capacity; investment and human capabilities must be absorbed through productive employment; and the realized interaction produces growth. Institutional quality, development level, regional structure, and spending efficiency condition every stage, while unemployment can weaken the chain. The main research frontier is now to estimate this integrated mechanism directly and to identify the conditions under which social spending becomes durable productive capacity.

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Appendix A. Included Studies in the Final 32-Article Synthesis

The appendix summarizes the screened high- and moderate-quality corpus used in the primary thematic synthesis. Quality labels are based on the seven-criterion screening-level appraisal described in Section 3.

Citation	Context	Method	Synthesis cluster	Quality
Villela et al. (2022)	Honduras	Instrumental variables / 2SLS	Education/public social spending → human capital → growth	High
Ziberi et al. (2022)	North Macedonia	2SLS / instrumental-variable analysis	Education/public social spending → human capital → growth	High
Suwandaru et al. (2021)	Indonesia	ARDL / Cobb–Douglas growth specification	Education/public social spending → human capital → growth	Moderate
Maneejuk et al. (2021)	ASEAN-5	Panel / kink-regression approaches	Education/public social spending → human capital → growth	High
Rambeli et al. (2021)	Malaysia	VECM / causality analysis	Education/public social spending → human capital → growth	Moderate
Goczek et al. (2021)	Cross-country	Dynamic panel / robustness modelling	Education/public social spending → human capital → growth	High
Bailey et al. (2021)	United States	Quasi-experimental policy rollout / eligibility designs	Education/public social spending → human capital → growth	High
Shafuda et al. (2020)	Namibia	Time-series econometric analysis	Education/public social spending → human capital → growth	Moderate
Hu et al. (2024)	33 OECD countries	Dynamic panel threshold model	Health spending → growth / productivity	High
Celik et al. (2023)	22 OECD countries	Nonlinear unit-root / convergence tests	Health spending → growth / productivity	High

Citation	Context	Method	Synthesis cluster	Quality
Wang et al. (2022)	China / regional	Non-parametric additive model	Health spending → growth / productivity	Moderate
Esen et al. (2022)	Türkiye	Johansen cointegration, VECM / Granger causality	Health spending → growth / productivity	Moderate
Beylik et al. (2022)	21 OECD countries	Panel regression with Driscoll–Kraay standard errors	Health spending → growth / productivity	Moderate
Ozyilmaz et al. (2022)	27 EU countries	Panel Fourier Toda–Yamamoto causality + regression models	Health spending → growth / productivity	High
Xu et al. (2022)	31 provinces, China	Spatial panel / direct–indirect effects	Health spending → growth / productivity	High
Faruk et al. (2022)	MENA countries	Panel OLS / FMOLS / DOLS + causality	Health spending → growth / productivity	High
Odhiambo, Nicholas M. (2021)	Sub-Saharan Africa	Panel error-correction / Granger-causality analysis	Health spending → growth / productivity	High
Alhassan et al. (2021)	Nigeria	ARDL and Granger causality	Health spending → growth / productivity	Moderate
Selvanathan et al. (2021)	Sri Lanka	ARDL / sectoral expenditure analysis	Health spending → growth / productivity	Moderate
Rahman et al. (2023)	Bangladesh	Dynamic ARDL simulation	Human capital & investment / FDI → growth	Moderate
Khan et al. (2023)	98 countries	Two-step system GMM / panel analysis	Human capital & investment / FDI → growth	High
Nguyen, Thi Anh Nhu (2022)	25 transition countries	OLS / fixed effects / two-step GMM	Human capital & investment / FDI → growth	High
Dankyi et al. (2022)	ECOWAS	Panel analysis by income group	Human capital & investment / FDI → growth	Moderate

Citation	Context	Method	Synthesis cluster	Quality
Gruzina et al. (2021)	Cross-country / development-cycle analysis	Modified MRW / Cobb–Douglas and decomposition measures	Human capital & investment / FDI → growth	Moderate
Rahman et al. (2021)	World's 20 largest economies	Panel ARDL / pooled-mean-group and causality tests	Human capital & investment / FDI → growth	High
Intisar et al. (2020)	19 Asian countries	FMOLS / DOLS + panel causality	Human capital & investment / FDI → growth	High
Sarker et al. (2020)	Bangladesh	Augmented ARDL bounds test + causality	Human capital & investment / FDI → growth	Moderate
Suparman et al. (2023)	32 provinces, Indonesia	Panel CEM/FEM/REM regression	Labor-market / unemployment transmission	Moderate
Shi et al. (2022)	Norway and German-speaking Switzerland	Factorial survey / employer hiring experiment	Labor-market / unemployment transmission	High
Cappelli et al. (2021)	248 EU regions	Regional econometric analysis	Labor-market / unemployment transmission	Moderate
Pasara et al. (2020)	South Africa	VAR / Granger-causality framework	Labor-market / unemployment transmission	Moderate
Burdett et al. (2020)	Germany	Structural equilibrium model / indirect inference	Labor-market / unemployment transmission	High