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CATALYZING GROWTH: THE STRATEGIC FACTORS AND LEVERS BEHIND PUBLIC INVESTMENT MANAGEMENT

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Abstract

This article reviews the factors that influence Public Investment Management (PIM) and examines their critical role in long-term benefits of the governmental investments. They are essential for fueling demand, fostering innovation, and addressing market failures.

The article draws on a critical analysis of academic theories and institutional literature including Keynesian economics, Endogenous Growth Theory, Public Goods Theory, and Human Capital Theory and demonstrates the importance of public investments to generate multiplier effects and long-term productivity gains.

It also provides an examination of the PIM determinants, addressing strategic and operational dimensions. Key determinants analyzed include institutional capacity and governance, project appraisal and selection, risk management and uncertainty mitigation, procurement and contract management, political economy and technical capacity. The analysis identifies bottlenecks and enablers of the processes and the importance of these factors for achieving long-term impact.

Ultimately, the article discusses that the key determinants affect the efficiency, resilience and fairness of public investments and improving PIM effectiveness requires technical reforms and a systemic rethinking of the quality of its governance and delivery.

Keywords: Public Investment Management, institutional capacity, governance, policy coherence, public sector reform.

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1. Introduction

Public investments represent a modest part of capital formation in the European Union, despite its central role in fostering economic growth, social development, and welfare. According to Eurostat national accounts data, total gross fixed capital formation (public and private) amounted to approximately 22.2% of EU GDP in 2023 (Eurostat, 2024). Sectoral data for 2022 indicate that business investment represented about 13.6% of GDP, household and non-profit investment 6.1%, while public sector investment accounted for only 3.3% of GDP (Eurostat, 2024).

Over 2007–2023, public investments in EU countries fluctuated within a narrow band of roughly 2–4% of GDP, with most of the countries near the lower level (around 2-2.5%), and a smaller group approaching 3–4% where infrastructure priorities and supportive fiscal measures were constantly implemented. Relative to 2007 levels, Central and Eastern European countries, including Romania, Poland, Hungary, and Slovakia, recorded the largest increases in public investments shares (European Investment Bank, 2023, pp. 57–61). Overall, the evidence suggests that while aggregate investment ratios have remained broadly stable, the direct contribution of government investment has been limited.

The gap between the acknowledged importance of public investments and their relatively low fiscal prioritization motivates the study's core problem: how can public investments be better managed to generate sustainable public value? The question is particularly pre-eminent given the uneven empirical record across countries, where comparable investment efforts can achieve divergent outcomes in terms of asset quality, delivery performance, and long-term socioeconomic returns. The rationale for this study emerges from a recognized gap in the evidence base regarding the factors that systematically differentiate successful investment trajectories from those characterized by inefficiency, fragmentation, and limited impact.

This article is guided by three research questions: (1) What theoretical frameworks justify public investments?; (2) Which determinants (factors) condition the effectiveness of PIM?; and (3) How these determinants shape the capacity of public investments to support sustained economic growth, social equity, and environmental sustainability?

Methodologically, the research is organized on a structured literature review of peer-reviewed publications and institutional reports (e.g., from the OECD, World Bank, IMF), with a focus on sectors and contexts where investment dynamics and institutional reform agendas are especially salient.

The paper is structured as follows: chapter 2 describes the methodology of the literature review, chapter 3 outlines the theoretical and conceptual foundations that motivate public investments, chapter 4 analyses core factors for successful PIM, chapters 5 and 6 discuss policy implications of the key determinants for effective PIM and offer final conclusions and recommendations.

2. The research methodology

The purpose of this methodological design is to systematically collect, analyze, and synthesize relevant academic and institutional sources that address the importance of public investments and the critical factors influencing their successful management.

The guiding premise is that public investments cannot be evaluated solely through expenditure aggregates. Its developmental effects depend rather on factors like governance and administrative systems that translate fiscal allocations into productive assets and long-term public value.

Accordingly, building on this premise, the analysis is structured to address the research questions by focusing on (1) investigating the theoretical justifications for public investments; (2) analyzing the factors of Public Investment Management; (3) evaluating the empirical evidence on how various determinants (institutional quality, governance, project appraisal methods, risk management practices, procurement processes, political and institutional environments, and technical/managerial capacities) impact the outcomes of public investments.

This study uses a structured literature review to examine the determinants of effective PIM. Given heterogeneous evidence across theory, empirical, and institutional sources, it applies narrative and thematic synthesis rather than meta-analysis. Findings are structured around six core PIM determinants.

The review proceeds in three stages: (1) identifying the data sources; (2) defining inclusion and exclusion criteria; and (3) selecting, screening, and analyzing the relevant literature.

2.1. Data sources and the search strategy

A comprehensive and replicable search strategy was implemented in line with systematic review protocols. The review drew on peer-reviewed literature from major scholarly databases (Web of Science, Scopus, Clarivate, Google Scholar), and on policy-relevant institutional reports from the OECD, World Bank, IMF, and EIB. This mixed evidence base was selected to capture both theoretical and empirical research on PIM and its practical application in investment governance.

To mitigate normative bias, each institutional source was assessed using the Risk of Bias Table, and source types were explicitly differentiated in an Evidence Matrix. High impact journals in public finance, macroeconomics, infrastructure and governance were prioritized. No geographic filters were applied; studies were included based on relevance to PIM governance, regardless of country contexts.

Database-specific Boolean search strings were tailored to indexing conventions. For example, in Scopus: 'Public Investment Management' or 'public capital management' and 'governance' or 'economic growth', and in Web of Science: 'government spending' and 'project appraisal' and 'risk management'.

Searches were conducted between November 2024 and May 2025, restricting results to peer-reviewed articles. The results of the review included literature published between

1954 and 2023, to trace the development of PIM from foundational theories to contemporary institutional and policy-driven approaches.

2.2. Inclusion and exclusion criteria

To ensure analytical relevance and rigor the review applied predefined inclusion and exclusion criteria. Included sources comprised peer-reviewed journal articles, books, and institutional reports focusing on PIM and their links to economic growth, governance, and fiscal policy. Priority was given to studies examining institutional arrangements, risk management, procurement, and project appraisal and evaluation, as well as empirical evidence, quantitative or qualitative, on public investments efficiency, effectiveness, and implications for fiscal sustainability.

Excluded materials comprised non-peer-reviewed publications, opinion pieces, and grey literature, except when issued by international organizations (e.g., OECD, World Bank, IMF). Studies centered on private investment without substantive engagement with PIM, or those citing PIM only superficially, were also removed.

Selection was refined iteratively to ensure alignment with the research questions. Institutional reports were included based on credibility, transparency, and cross-country comparability (World Bank, IMF, OECD, EIB). Methodological quality was assessed using a modified CASP checklist, rating confidence (high/medium/low) by research design clarity, evidentiary strength, data transparency, and relevance.

2.3. Screening and selection procedure

The search strategy produced an initial corpus of publications identified through systematic database queries using Boolean operators (AND/OR) and, where available, proximity logic. Search strings were adapted to each database's indexing features to combine core concepts such as Public Investment Management, efficiency, and institutional quality.

The initial search yielded approximately 150 records. Duplicate screening was conducted manually to enhance transparency and address metadata inconsistencies across databases. Titles, authorship, and publication identifiers were cross-checked, resulting in the removal of 20 duplicates and a set of 130 unique records. These were then subjected to title and abstract screening against the predefined inclusion and exclusion criteria. Following this stage, 57 studies were retained for full-text review and synthesis. Figure 1 presents the flow diagram documenting records identified, screened, excluded, and included, thereby supporting traceability of the multi-stage selection process.

For the retained studies, a structured data extraction protocol was applied to ensure consistent synthesis. Extracted variables included theoretical framework, methodological approach, country or regional focus, sectoral coverage (e.g., infrastructure, education), and the determinants of PIM effectiveness identified by each source. This facilitated thematic coding and enabled systematic comparison across policy contexts.

The final pool of 57 sources was classified by methodological type and sectoral focus to structure the synthesis. Empirical studies represented approximately 45% of the sample

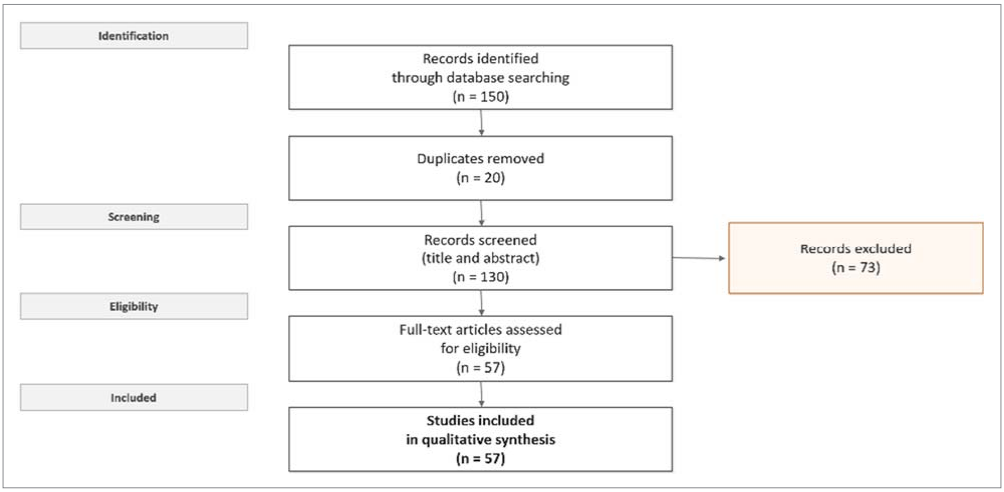

Figure 1: Flow diagram with the study selection process

Source: Own research

and employed quantitative and/or qualitative designs to assess public investment outcomes. Theoretical contributions accounted for 24% and provided conceptual models of public investment, governance, and growth dynamics. Comparative studies constituted 15%, examining cross-country or cross-institutional variation in PIM performance, while 16% applied mixed-methods approaches that integrated conceptual development with empirical validation. Sectorally, infrastructure was the most frequently analyzed domain (21 studies), followed by institutional governance (11), education (9), climate and sustainability (7), health (5), and multi-sectoral analyses (4). This distribution reflects the literature's dual emphasis on physical capital formation and the institutional systems that shape investment performance.

The synthesis integrated foundational theoretical perspectives with case-based evidence illustrating both effective and deficient PIM practices. Across the evidence base, recurrent determinants of PIM performance were identified and consolidated. The overarching analytical objective was to characterize how these interacting dimensions condition the ability of public investments to generate sustained economic growth while advancing social equity and environmental sustainability.

Several methodological limitations should be acknowledged. First, the review relies exclusively on secondary sources and does not generate new primary evidence through interviews, surveys, or original statistical analysis. Second, language coverage was constrained to publications in English and, to a lesser extent, French and Romanian; while this supported accurate interpretation during screening and synthesis, it may have excluded relevant findings available in other languages. Third, although the review was designed without geographic filters, the accessible evidence base is weighted toward OECD and EU contexts, which may limit the transferability of conclusions to low-income or fragile settings.

Relatedly, research produced by regional think tanks or non-English institutions may be underrepresented due to database indexing constraints and language restrictions. Finally, despite systematic procedures, thematic coding necessarily involves interpretive judgment, which may influence the salience attributed to particular findings.

To enhance transparency, all included sources were catalogued in an evidence matrix capturing author(s), year, title, outlet, geographic focus, study design, and key findings. This matrix supported cross-study comparison, identification of dominant trends and gaps, and mapping of frequently cited determinants of effective PIM and their links to sustainability, equity, and institutional performance. In parallel, a qualitative risk-of-bias appraisal was conducted for each included source using a modified CASP checklist, assessing research design clarity, evidentiary strength, transparency of data and methods, peer-review status, institutional independence (for reports), and the coherence of conclusions. These assessments informed the weighting of evidence in the synthesis rather than acting as exclusion criteria; sources assessed as higher risk were interpreted cautiously and triangulated against more robust findings.

Finally, while protocol registration is increasingly expected for systematic reviews, this review was not formally registered (e.g., in PROSPERO). Nevertheless, key methodological steps were pre-specified and implemented in alignment with widely used systematic review reporting standards. Future extensions will consider protocol registration to further strengthen reproducibility and stakeholder confidence.

3. Theoretical foundations of public investments

Multiple threads of economic theory justify public investments in infrastructure, education, health, and other essential sectors by specifying the conditions under which public capital formation increases welfare, stabilizes macroeconomic outcomes, and supports long-term productivity. These frameworks converge on a common proposition: when markets underprovide socially valuable capital, because of demand shortfalls, externalities, public good characteristics, coordination failures, or institutional constraints, public investments can raise both aggregate performance and social outcomes.

The Keynesian approach to economics emphasizes the role of government spending in stimulating demand, particularly during economic downturns (Blinder and Solow, 1973, pp. 319–322; Ramey, 2011, pp. 680–682). Public investments in infrastructure and social programs can create jobs, boost consumer spending, and drive economic growth (Elmendorf and Sheiner, 2017, pp. 182–185; Romer and Romer, 2010, pp. 780–783). A core concept is the multiplier effect, where initial public expenditure leads to increased overall economic activity beyond the original investment (Hall, 2009, pp. 189–197; Batini, Eyraud and Weber, 2014, pp. 4–6; Aschauer, 1990, pp. 33–35).

The Endogenous Growth Theory (Romer, 1994, pp. 3–22;) argues that investments in human capital, innovation, and knowledge infrastructure drive long-term economic growth. Public investments in education, research, and technology enhance productivity

and foster innovation, leading to sustained economic development. Governments play a crucial role in funding sectors where private markets may underinvest, such as basic scientific research (Aghion and Howitt, 1992, pp. 323–330; Barro, 1997, pp. 25–28).

The Public Goods Theory (Samuelson, 1954, pp. 387–389) highlights that public goods are non-excludable and non-rivalrous, meaning their consumption by one individual does not reduce availability for others. Infrastructure, national defense, public health, and environmental protection require government investments because private firms may not find them profitable to provide. Thus, without public investments, many essential services would be underfunded or nonexistent (Stiglitz and Rosengard, 2015, pp. 120–127; Hayek, 1945, pp. 519–521; Cornes and Sandler, 1996, pp. 13–18).

Institutional economics further grounds the rationale for public investments by linking economic performance to the quality of formal and informal rules, including property rights, regulatory credibility, and enforcement capacity (North, 1990, pp. 107–112). Thus, public spending on governance systems and enabling infrastructure can reduce transaction costs, improve market functioning, and support private investments by strengthening predictability and accountability (Rodrik, 2004, pp. 31–34; Kaufmann, Kraay and Mastruzzi, 2009, pp. 4–7).

Human Capital Theory provides a micro-founded justification for public investments in education and health by emphasizing productivity effects at the individual and aggregate levels (Becker, 1994, pp. 15–16, 21). Because human capital accumulation generates externalities and intergenerational benefits, and because credit constraints can limit private investments, government provision and financing can improve both efficiency and equity by broadening access to skill and health formation (Hanushek and Woessmann, 2008, pp. 610–615; Psacharopoulos and Patrinos, 2004, pp. 120–123).

Theories of the 'Network Effects and Spillovers' emphasize that infrastructure and connectivity investments create economy-wide complementarities, raising returns across multiple sectors and locations (Aschauer, 1989a, pp. 177–183; Audretsch and Belitski, 2022, pp. 1344–1350). Infrastructure investments, such as roads, public transportation, and digital networks, generate positive externalities that benefit multiple sectors of the economy (Calderón and Servén, 2004, pp. 2–5, 20–22). Public investments create spillover effects, where improvements in one area led to broader economic and social benefits (Duflo and Pande, 2007, pp. 19–30). In this context, public investments may also 'crowd in' private investments by reducing costs, improving reliability, and expanding market opportunities (Aschauer, 1989b, pp. 177–181).

Theories on Sustainability and Climate Change Economics highlight the need for public investments in green energy, sustainable infrastructure, and climate resilience (Stern, 2014, pp. 1–2). Market failures, such as the underpricing of environmental externalities, necessitate government intervention to promote sustainable development (Dasgupta, 2008, pp. 150–159; Stern and Stiglitz, 2017, pp. 5–8).

While these theories provide coherent justifications, empirical evidence on growth effects is context-dependent and sometimes mixed. Some studies identify strong positive

impacts of public investments on output, while others find modest associations or effects concentrated in the short run (Warner, 2014, p. 62). Evidence for the United States suggests sizable growth effects in early estimates (Aschauer, 1989a, pp. 177–180, 189–190), with later work reporting positive but smaller impacts (Sturm and de Haan, 1995, pp. 67–70). International evidence indicates that effects can be significant in advanced economies in both the short and long term (Batini, Eyraud and Weber, 2014, pp. 84–88) and positive in low-income contexts over short to medium horizons (Furceri and Li, 2017, pp. 5–7). Other findings point to strong short-run impacts with limited long-run effects (Groote, Jacobs and Sturm, 1999, pp. 233–251) and suggest that large-scale investment may not generate durable growth beyond its short-term demand stimulus when efficiency and implementation constraints bind (Warner, 2014, pp. 17–20; Aschauer, 1990, pp. 39–42).

Overall, the theoretical literature justifies public investments through stabilization objectives, correction of market failures, accumulation of human and knowledge capital, exploitation of spillovers and network complementarities, institutional strengthening, and mitigation of environmental externalities. These benefits, however, are contingent on the quality of investments selection, execution, and governance, implying that strong management is integral to converting theoretical gains into realized economic, social, and environmental returns.

4. Determinants of Public Investment Management effectiveness and their implications for growth, equity, and sustainability

This review applies an analytical framework in which PIM 'effectiveness' is treated as the capacity of the public sector to convert budgetary allocations into high-quality, timely, and durable public capital over the full investment lifecycle. Thus, the determinants operate as system constraints and enabling conditions that shape performance at three critical nodes: (1) allocative efficiency (selecting projects with the highest social returns and strategic relevance); (2) operational efficiency (delivering assets to standard, on schedule, and within cost); and (3) lifecycle performance (maintaining, adapting, and governing assets so that benefits persist). These nodes constitute the transmission channels through which determinants influence development outcomes: sustained economic growth materializes when public capital raises productivity and supports complementary private activity; social equity improves when investment choices and delivery systems expand reliable access to services across groups and territories; and environmental sustainability is strengthened when appraisal, implementation, and lifecycle management incorporate long-run resilience and environmental externalities.

The literature treats PIM effectiveness as a function of institutional, technical, and political constraints that shape how public resources are translated into productive and durable assets. Identifying these determinants is analytically and operationally important because weaknesses in PIM, manifested in poor project selection, cost overruns, delays, and corruption, reduce the 'quality of public investment' and erode the economic and social

returns to spending (Chakraborty and Dabla-Norris, 2011, pp. 15–19; Dabla-Norris *et al.*, 2011, pp. 7–21). Conversely, stronger PIM frameworks improve efficiency, transparency, and accountability, enabling governments to maximize fiscal multipliers while preserving fiscal sustainability and credibility (Berg *et al.*, 2012, pp. 17–21). These governance and capability conditions also shape distributional outcomes by affecting the quality and reach of public services and infrastructure, which are closely linked to equity and income distribution (Calderón and Servén, 2004, pp. 2–5, 20–22). More broadly, the literature emphasizes that sound PIM improves decision-making, allocative efficiency, risk mitigation, alignment with public priorities, and alignment to international standards (Dabla-Norris *et al.*, 2011, pp. 7–21; Grigoli and Mills, 2014, pp. 13–16; OECD, 2023, pp. 6–9, 15–18).

Across theoretical and empirical work, six determinants recur as core conditioning factors (Kim, Fallov and Groom, 2020, pp. 41–47): (1) institutional capacity and governance; (2) project appraisal and selection; (3) risk management and uncertainty; (4) procurement and contract management; (5) political economy and institutional environment; and (6) technical and managerial capacity. These determinants are analytically distinct but mutually reinforcing: deficiencies in any one can undermine performance across the investment cycle.

4.1. Institutional capacity and governance

Institutional capacity and governance shape the integrity and coherence of the entire investment cycle: planning, budgeting, appraisal, procurement, implementation, and ex post oversight. The literature associates stronger governance with lower misallocation and higher investment efficiency, primarily through clearer rules, accountability, and systematic processes (Chakraborty and Dabla-Norris, 2011, pp. 24–26; Dabla-Norris *et al.*, 2011, pp. 7–21; Rajaram *et al.*, 2010, pp. 18–21). Institutional capacity, defined as the ability to design, implement, and monitor policies and projects effectively, includes human resources, technical expertise, regulatory frameworks, and organizational systems (Rajaram *et al.*, 2010, p. 3). Governance arrangements specify decision rights, control mechanisms, and transparency requirements, which reduce opportunities for corruption and mitigate persistent implementation failures such as cost overruns and delays (Dabla-Norris *et al.*, 2011, pp. 7–21).

This determinant affects outcomes through both allocative and operational channels. It improves project selection discipline and strengthens lifecycle oversight, including maintenance and asset management, which shape the durability of investment benefits (Calderón and Servén, 2004, pp. 20–22; Warner, 2014, pp. 17–20). The literature also highlights that coordination failures and fragmented responsibilities across agencies reduce efficiency and can lead to duplication and incoherent investment portfolios. Improved coordination supports consistent strategy and better integration of planning, budgeting, and implementation (Chakraborty and Dabla-Norris, 2011, p. 16). Learning mechanisms matter as well: feedback from evaluation can improve future selection and execution (Shah and Shen, 2007, p. 18).

– Strong institutional capacity raises the probability that public investments translate into productivity-enhancing capital rather than fiscal leakage, thereby supporting sustained economic growth through higher returns to public spending. It also strengthens fiscal credibility and reduces waste, which preserves fiscal space for continued investment and social spending (Berg *et al.*, 2012, pp. 17–21).
– Equity outcomes depend on whether governance systems ensure fair access, reliable delivery, and consistent quality of services and infrastructure across territories and social groups (Calderón and Servén, 2004, pp. 2–5, 20–22).
– Sustainability is similarly conditioned by governance quality because resilient and low-carbon infrastructure requires consistent standards, monitoring, and lifecycle maintenance rather than one-off project completion (Warner, 2014, pp. 17–20).

Where institutions are weak, even well-funded programs can produce limited long-run benefits because assets deteriorate or fail to serve intended beneficiaries. In short, governance and capacity function as 'enabling constraints' that determine whether investment contributes to durable, inclusive, and sustainable development.

4.2. Project appraisal and selection

Project appraisal and selection are central determinants because they govern the entry point into the public capital stock: poorly selected projects generate low social returns regardless of execution quality. The literature emphasizes rigorous feasibility analysis, cost–benefit analysis, and strategic alignment as safeguards against 'white elephant' investments and politically driven choices (Aschauer, 1989, p. 191; Munnell, 1990, pp. 11–15; Kim, Fallov and Groom, 2020, pp. 57–85).

The literature stresses objectivity and discipline in selection through standardized metrics and independent review, which reduce optimism bias and political distortion (Rajaram *et al.*, 2010, p. 20; International Monetary Fund, 2015, pp. 19–21). Appraisal is further described as iterative, with ex post evaluation informing future project design and screening (Rajaram *et al.*, 2010, p. 6). Finally, appraisal effectiveness is constrained by analytic capacity and data availability.

– Appraisal and selection shape growth primarily by steering scarce fiscal resources toward projects with higher net social returns and stronger productivity effects, and away from low-value projects that absorb capital without durable output gains (Aschauer, 1989a, pp. 189–190; Munnell, 1990, pp. 11–15).
– They shape equity because selection criteria and strategic alignment determine whether investments expand access to services (e.g., transport connectivity, education facilities) for underserved populations or disproportionately benefit already advantaged groups (Calderón and Servén, 2004, p. 21).
– Sustainability hinges on whether appraisal internalizes environmental and climate risks, assesses long-run resilience, and avoids lock-in to carbon-intensive or fragile infrastructure portfolios.

Independent reviews and standardized metrics are particularly important where political incentives might privilege visibility over long-term welfare (International Monetary Fund, 2015, pp. 19–21). Moreover, iterative appraisal with learning loops improves intertemporal efficiency by progressively refining forecasting, cost estimation, and risk screening (Rajaram *et al.*, 2010, p. 6). In effect, these determinant conditions whether public investment is developmentally transformative or merely expansionary in the short run.

4.3. Risk management and uncertainty

Risk management is a determinant because public investments face long horizons and exposure to macroeconomic shocks, political disruptions, and implementation risks. Integrating uncertainty into PIM supports better decisions and adaptive strategies, particularly under instability (Rajaram *et al.*, 2010, pp. 4–8; Hillson and Murray-Webster, 2017, pp. 3–7; Allen, Hemming and Potter, 2013, pp. 312–318). The literature distinguishes risks that are intrinsic from those reducible through information and forecasting, underscoring the role of data and analytical tools (Rajaram *et al.*, 2010, p. 6; Grigoli and Mills, 2014, pp. 13–16). Weak risk management amplifies cost and schedule overruns and increases the probability that projects fail to deliver intended outcomes (Rajaram *et al.*, 2010, p. 6). Appraisal frameworks that incorporate sensitivity testing, scenario planning, and social/environmental risk screening can reduce downstream failures (Chakraborty and Dabla-Norris, 2011, pp. 5–8).

The literature highlights methods such as risk-adjusted discount rates (Rajaram *et al.*, 2010) and real options analysis (Weitzman, 1998, pp. 191–192), alongside contingency planning, monitoring, and feedback loops from ex post evaluation (Rajaram *et al.*, 2010).

- Risk management conditions growth by reducing implementation volatility, cost overruns, delays, and scope creep, that erode productivity impacts and weaken fiscal multipliers (Rajaram *et al.*, 2010, pp. 4–8; Allen, Hemming and Potter, 2013, pp. 312–318).
- It supports equity when risk identification includes distribution-sensitive factors (e.g., social opposition, resettlement risks, unequal exposure to service interruptions), helping prevent projects from imposing disproportionate burdens on vulnerable communities (Chakraborty and Dabla-Norris, 2011, pp. 5–8).
- Sustainability is directly linked to uncertainty management because climate and disaster risks require scenario planning and resilient design choices that protect long-term asset performance under changing conditions.

Finally, continuous monitoring and ex post learning increase institutional capacity to manage future shocks, thereby improving the durability of investment benefits (Rajaram *et al.*, 2010). Where these practices are absent, investment outcomes can be systematically biased toward optimism and short-run delivery rather than resilient long-run performance.

4.4. Procurement and contract management

Procurement and contract management determine value for money and execution discipline. The literature links weak procurement to collusion, corruption, cost escalation, and quality degradation, which directly reduce the productivity of public capital and can exacerbate inequality if services fail or are unevenly delivered (Chakraborty and Dabla-Norris, 2011, pp. 15–19). Integrating procurements into the full investment cycle improves results by aligning contracting with appraisal assumptions, budgeting constraints, and performance monitoring (Rajaram *et al.*, 2010, pp. 18–21; World Bank, 2017, pp. 10–15; Kim, Fallov and Groom, 2020, pp. 128–134; OECD, 2015, pp. 3–6). Transparent and competitive tendering is emphasized as a core anti-corruption mechanism (Chakraborty and Dabla-Norris, 2011, p. 18). Contract design matters as well: performance incentives, penalties, and risk-sharing provisions can reduce implementation drift and improve delivery reliability (Chakraborty and Dabla-Norris, 2011, pp. 5–8). Digital tools (e-procurement and monitoring systems) are frequently presented as enabling transparency and control, especially where administrative capacity is limited (Chakraborty and Dabla-Norris, 2011, pp. 15–19).

- Procurement and contract management shape growth by determining whether public investment purchases real productivity-enhancing quality at reasonable cost or instead converts budgetary allocations into inflated prices and underperforming assets (Chakraborty and Dabla-Norris, 2011, pp. 15–19).
- They shape equity because procurement failures often translate into inferior service quality and reduced coverage, effects that disproportionately harm lower-income groups reliant on public infrastructure and services.
- Sustainability depends on whether contracts embed lifecycle requirements, quality standards, and enforceable performance provisions that protect durability and resilience over time (Rajaram *et al.*, 2010, pp. 18–21; World Bank, 2017, pp. 10–15; Kim, Fallov and Groom, 2020, pp. 128–134; OECD, 2015, pp. 3–6).

In short, procurement is a pivotal implementation determinant that conditions whether investment creates durable public value or dissipates through leakage and poor quality.

4.5. Political economy and institutional environment

Political economy conditions shape whether PIM rules are applied credibly or overridden by short-term incentives. The literature associates political pressures and policy volatility with lower investment efficiency and weaker long-term returns (North, 1990, pp. 107–112; Campos and Pradhan,1996, pp. 8–11). Electoral cycles can bias choices toward visible, short-term projects rather than those with higher long-run productivity or sustainability payoffs (Keefer and Knack, 2007, pp. 568–570). Corruption and weak accountability are consistently linked to poorer infrastructure quality and lower investment efficiency (Keefer and Knack, 2007, pp. 568–570; Chakraborty and Dabla-Norris, 2011, pp. 15–19). Conversely, stronger fiscal and governance institutions correlate with better infrastructure

and service delivery outcomes (Dabla-Norris *et al.*, 2011, pp. 7–21), and weak institutional quality is associated with lower returns to public capital (Calderón and Servén, 2004, pp. 20–22). The literature therefore treats political economy not as a background condition but as a determinant that conditions the feasibility and credibility of PIM reforms and, by extension, the capacity of public investment to deliver sustained growth and inclusive outcomes.

- Political economy shapes growth by influencing whether investment portfolios are selected for long-term productivity or for short-term political visibility, a mechanism that can depress average returns to public capital (Keefer and Knack, 2007, pp. 568–570).
- It shapes equity because rent-seeking and patronage can skew investments toward politically connected constituencies, weakening universal service delivery and amplifying territorial disparities (Calderón and Servén, 2004, pp. 20–22).
- Sustainability is vulnerable to the same incentive problems: projects with long payback horizons, particularly resilience and low-carbon investments, are more likely to be underprioritized when governance is weak and political discount rates are high.

Where political economy constraints dominate, reforms may remain formalistic, and investment outcomes may converge to short-run stimulus rather than long-run transformation. Hence, political economy factors are central to explaining cross-country heterogeneity in investment effectiveness under similar expenditure levels.

4.6. Technical and managerial capacity

Technical and managerial capacity is a proximate determinant of execution quality, particularly for complex infrastructure and multi-stakeholder projects. The literature emphasizes that skills, systems, and organizational arrangements shape appraisal accuracy, implementation discipline, monitoring quality, and maintenance outcomes (Rajaram *et al.*, 2010, pp. 4–8; Pritchett and Woolcock, 2004, pp. 200–205; World Bank, 2017, pp. 10–15; Kim, Fallov and Groom, 2020, pp. 167–188, 213–227). Capacity constraints generate persistent inefficiencies, like errors in appraisal, weak supervision, and slow corrective action, thereby reducing the developmental returns to public capital (Chakraborty and Dabla-Norris, 2011, pp. 15–19). Information systems and data management tools strengthen transparency and performance control, improving accountability and enabling timely interventions (Dabla-Norris *et al.*, 2011, pp. 7-21; Chakraborty and Dabla-Norris, 2011, p. 15). Organizational structure and leadership matter as coordination devices that align planning, budgeting, procurement, and delivery functions (Rajaram *et al.*, 2010). Finally, adaptive capacity and innovation are increasingly important under uncertainty and technological change. Methods that increase flexibility can improve resilience and long-term performance (Gollier, 2013, pp. 1–16, 131–167).

- Technical and managerial capacity affects growth by determining whether projects are delivered to standard, on time, and within cost – conditions that govern whether public capital translates into higher productivity rather than stranded or deteriorating assets (Rajaram *et al.*, 2010, pp. 4–8).

– It affects equity because weak delivery capacity often leads to uneven implementation, lower service quality, and slower rollout in disadvantaged areas, undermining inclusive access to public goods.
– Sustainability depends on the ability to integrate modern data systems, monitoring, and adaptive practices that support lifecycle management, resilience upgrades, and continuous performance improvement (Dabla-Norris *et al.*, 2011, pp. 7–21). Capacity for innovation matters when investment environments change, including through climate risks and technological shifts, and flexibility-enhancing methods can increase project robustness (Gollier, 2013, pp. 1–16, 131–167).

The literature also cautions that capability constraints are not solved only by formal reforms; they require learning-by-doing, incentives, and organizational practices that make new processes operational (Pritchett and Woolcock, 2004, pp. 200–205). Thus, technical and managerial capacity is a key mediator between reform design and realized developmental outcomes.

Taken together, these determinants explain why similar spending levels can yield divergent outcomes across countries and sectors. Strong institutions and governance reduce leakage and strengthen selection, thereby increasing the probability that investment raises productivity and crowds in private activity (Aschauer, 1989b). Rigorous appraisal and selection improve allocative efficiency and can embed distributional and sustainability objectives into investment choices (Calderón and Servén, 2004, p. 21). Robust risk management and procurement reduce implementation failures and improve asset quality, protecting fiscal space and enhancing resilience (Rajaram *et al.*, 2010, pp. 4–8; Allen, Hemming and Potter, 2013, pp. 312–318). Political economy conditions determine whether rules are credibly applied or distorted by short-term incentives (Keefer and Knack, 2007, pp. 568–570; North, 1990, pp. 107–112). Finally, technical and managerial capacity is the operational channel through which reform designs translate into performance (Pritchett and Woolcock, 2004, pp. 200–205). The literature therefore supports a central conclusion: PIM determinants do not merely affect efficiency; they condition the capacity of public investments to generate sustained growth, broaden access and equity in public service delivery, and deliver durable, resilient assets consistent with long-term sustainability objectives.

5. Conclusions

This article synthesizes evidence on PIM to answer three research questions concerning (1) the theoretical justifications for public investment; (2) the determinants that condition PIM effectiveness; and (3) the pathways through which these determinants shape the ability of public investment to deliver sustained economic growth, social equity, and environmental sustainability. The review positions public investment as a domain where macroeconomic effects depend critically on public administration capacity, institutional design, procedural integrity, and strategic coordination.

5.1. Theoretical frameworks justifying public investments

The review indicates that public investments is justified by complementary theoretical traditions that explain why markets may underprovide socially valuable capital and why the state has a strategic role in correcting these gaps. Four core conclusions emerge: (1) public investment can raise long-run productivity by supporting innovation, infrastructure, and education; (2) it enables provision of public goods that private actors do not supply efficiently; (3) it builds human capital, improving welfare and economic performance; and (4) its effectiveness is conditional on institutional quality, credible rules, and policy coherence. Accordingly, public investment should be treated as a strategic policy instrument whose developmental impact depends on disciplined governance and implementation.

5.2. Determinants conditioning PIM effectiveness

The review identifies six interrelated determinants that consistently condition whether public resources are converted into high-quality public assets and services. First, institutional capacity and bureaucratic capability shape implementation reliability and coordination, particularly in complex, multi-agency investment systems. Second, strategic planning and appraisal frameworks, such as rigorous ex ante analysis, improve allocative efficiency and reduce politically motivated project selection. Third, transparent procurement and oversight mechanisms reduce leakage and strengthen accountability, including through digital tools and independent audit functions. Fourth, legal and regulatory frameworks provide procedural constraints that reduce discretion and create compliance incentives across the investment cycle. Fifth, risk management systems and feedback mechanisms increase resilience to uncertainty and improve adaptive performance. Sixth, political economy dynamics, such as electoral cycles and patronage, can distort priorities unless counterbalanced by credible governance reforms and institutional checks. A central conclusion is that these determinants do not operate independently: appraisal discipline, procurement integrity, and risk controls are rarely effective without institutional capacity and rule-based governance.

5.3. How determinants shape growth, equity, and sustainability outcomes

The review finds that determinants condition outcomes through three pathways: allocative efficiency (choosing high-return projects), operational efficiency (delivering on time and to standard), and lifecycle performance (maintenance and adaptation). Where these determinants are strong, public capital accumulation is more likely to yield sustained growth and productivity gains. Equity outcomes improve when investments expand access to education, health, and mobility, reducing regional and income disparities. Sustainability outcomes depend on credible governance that supports green investment choices and effective implementation, enabling mitigation and resilience while supporting an inclusive transition. Conversely, weak institutions, politicized spending, and low absorptive capacity can compress returns, generate fiscal stress, and limit public value even at high spending levels.

Finally, the review indicates an evolution in the literature from a primary focus on macroeconomic impact toward a more governance-centered understanding of investment performance. Academic studies emphasize theory-building and causal estimation, while institutional reports contribute operational diagnostics and benchmarking. Together, they support a policy-relevant conclusion: improving PIM determinants is a necessary condition for public investments to reliably deliver sustained growth, social equity, and environmental sustainability.

6. Policy recommendations for sustainable investment governance

Building on the reviewed evidence, the following recommendations translate the identified determinants of PIM effectiveness into institutional design choices that can strengthen the developmental returns of public investments. The emphasis is on formalizing credible commitment mechanisms, reducing discretionary allocation, and improving lifecycle performance under capacity and risk constraints.

6.1. Institutionalize medium-term investment programming within binding fiscal frameworks

Public investments programming should be embedded in legally grounded medium-term fiscal arrangements that integrate multi-year commitment ceilings, project prioritization rules, and explicit safeguards for operation and maintenance expenditures. The literature indicates that the effectiveness of public investments increases when capital spending is integrated into credible medium-term fiscal planning rather than treated as episodic or politically contingent expenditure (Dabla-Norris *et al.* 2011, pp. 7–21; International Monetary Fund, 2015, pp. 20–22). Such institutionalization reduces funding volatility, strengthens time-based discipline, and enhances the coherence of the investment portfolio over the lifecycle of assets.

6.2. Codify standardized appraisal and selection through mandatory procedural 'gates'

To strengthen allocative efficiency and limit politically motivated project entry, appraisal and selection should be governed by mandatory, standardized methodologies applied consistently across sectors. Evidence supports the adoption of formal stage-based decision points, covering concept development, feasibility assessment, and implementation readiness, supported by cost–benefit analysis and systematic social and environmental screening for major projects (Rajaram *et al.* 2010, pp. 4–8; Chakraborty and Dabla-Norris, 2011, pp. 13–19; International Monetary Fund, 2015, pp. 19–21). The purpose is not procedural formalism but the creation of verifiable decision trails and comparable criteria that reduce discretion and improve accountability.

6.3. Align investment ambition with administrative capacity and systematic risk exposure

Investment strategies should be calibrated to the absorptive capacity of implementing institutions and to the risk profile of sectors and project types. The literature cautions that scaling investment volumes in low-capacity settings increases the likelihood of delays, cost overruns, and diminished developmental effects (Warner, 2014, pp. 17–20). In parallel, appraisal systems should incorporate uncertainty-aware approaches, particularly in contexts exposed to fiscal and climate volatility, through risk-adjusted valuation and decision rules that recognize the irreversibility and long horizons of public capital (Gollier, 2013, pp. 1–16, 131–167). This alignment strengthens resilience and improves the expected value-for-money of public investment under uncertainty.

6.4. Strengthen transparency, integrity, and independent assurance across the investment cycle

The reviewed evidence supports transparency and external scrutiny as structural safeguards against leakage, cost escalation, and opportunistic renegotiation. Institutional reforms should prioritize disclosure of project information, digital procurement systems, and independent oversight mechanisms as components of an integrity architecture that enhances predictability and constrains discretionary behavior (OECD, 2023, pp. 6–9, 15–18; North, 1990, pp. 107–112; Hillson and Murray-Webster, 2017, pp. 3–7). In this framing, transparency is treated as a governance technology that increases accountability and improves public trust, rather than as a purely informational objective.

6.5. Consolidate multi-level coordination through formalized mandates and performance-aligned incentives

Where public investments are implemented across tiers of government, coordination mechanisms require formalization to reduce duplication, ensure portfolio coherence, and address spatial disparities. The literature links coordinated investment decision-making to stronger returns and improved territorial equity (Calderón and Servén, 2004, pp. 20–22). Cross-government arrangements should therefore be supported by shared indicators, harmonized information systems, and incentive-compatible fiscal relations that strengthen accountability for delivery and maintenance (OECD, 2019, pp. 62–72; Shah and Shen, 2007, pp. 18–22). The objective is to align subnational investment choices with national priorities while preserving implementation flexibility.

6.6. Anchor public investments in long-horizon strategies that internalize sustainability and intergenerational welfare

Public investments should be situated within long-term development strategies that explicitly incorporate environmental externalities, intergenerational equity, and inclusion objectives. The literature emphasizes that forward-looking investment frameworks and credible long-horizon policy signals reduce uncertainty, support innovation, and improve

alignment between public capital formation and systemic transitions in energy, mobility, and urban development (Gollier, 2013, pp. 1–16, 131–167; Dasgupta, 2008, pp. 150–159; Stern and Stiglitz, 2017, pp. 5–8). Such anchoring increases the probability that short-term expenditure decisions cumulatively generate durable and sustainable development trajectories.

These recommendations imply that public investments performance should be treated primarily as an institutional and administrative problem: the developmental impact of capital spending is mediated by the credibility of fiscal frameworks, the rigor of project selection, the effectiveness of procurement and oversight, the capacity to manage risk, and the coordination of delivery across government. Strengthening these determinants increases the likelihood that public investments generate sustained productivity gains, reduces distributional disparities through reliable service delivery, and supports environmental sustainability through resilient and transition-consistent capital formation.

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