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## **PUBLIC AND PRIVATE INVESTMENT AND ECONOMIC GROWTH: A REVIEW**

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### **ABSTRACT**

The paper survey the existing literature on the relative impacts of public and private investment on economic growth – in both developed and developing economies, highlighting the theoretical and empirical evidence. The review finds mixed and in some cases conflicting evidence on the relative contribution of public and private investment to economic growth owing to several factors which include; methodological approach adopted, characteristics of sample country chosen, proxy variables used, and the chosen sample period. While both public and private investment is generally found to be important to the economies' growth process, on balance, there is greater empirical support for a private investment-led economy. This review differs fundamentally from the previous studies in that it disentangles investment into public and private components and focuses on their relative impacts on economic growth. The previous reviews have not made such a distinction and have been focusing on the effect of only public investment on economic growth.

***Keywords:*** *Public Investment; Private Investment; Economic Growth*

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## 1. INTRODUCTION

While there is a general consensus among economists and policy makers that investment is crucial to economic progress, there is still no agreement about the relative importance of public and private investment components to economic growth. Knowledge about the component of investment that accelerates economic performance faster has an important policy implication in setting out the appropriate economic system that can best grow the economy. This means that it is not just the total investment that matters to the policy makers, but also how it is split between public investment (gross fixed capital formation by the central government, state enterprises and statutory instrument) and private investment (gross fixed capital formation undertaken by the private sector).

Although studies on the impact of investment on economic growth are extensive, most of these studies have focused on only public investment component or its subcomponents (see for example: Aschauer, 1989a; Munnell, 1990; Cullison, 1993; Wylie, 1996; Devarajan *et al.*, 1996; Rafael *et al.*, 1998; Ramirez and Nazmi, 2003; Pereira and Andraz, 2005; Roache, 2007). For the scanty empirical studies that have considered the relative importance of both public and private investment on economic growth, conflicting arguments and results have been reported (Crowder and Himarios, 1997; Khan and Kumar, 1997; Nazmi and Ramirez, 1997; Odedokun, 1997; Yang, 2006). The existing empirical studies on the subject matter shows that various studies have focused on different study periods, data sets, investment proxies, country and country groupings, as well as econometric methodological approaches in examining the relative importance of the roles played by public and private investment in the economic growth process – leading to a bag of mixed empirical results. The inconclusive nature of the results has made it difficult to provide policy recommendations that can be prescribed uniformly to all economies.

Against this backdrop, this study aims to provide a comprehensive review of the existing literature on the relative impacts of both public and private investment on economic growth. Naturally, the review highlights both the theoretical framework and empirical evidence on the subject matter. The study's main contribution lies in disentangling investment into its public and private components, and the examination of the relative importance of each component on economic growth. This addresses the shortfalls of most previous studies on the subject matter that focused on the effect of only public investment component to economic growth (see Sturm *et al.*, 1996; Romps and De Haan, 2005; Pereira and Andraz, 2013). Since the literature on both public and private investment and economic growth is limited, a good part of the literature reviewed in this paper is based on the empirical studies that focused only on

public investment and economic growth. This review has, however, gone a step further by adding the impact of private investment as well to the discussion.

The rest of the paper is organised as follows: section 2 reviews briefly the theoretical literature on the relative impact of public and private investment on economic growth, while section 3 reviews the empirical literature on the relative impacts of public and private investment on economic growth. Section 4 provides some concluding remarks.

## **2. PUBLIC AND PRIVATE INVESTMENT AND ECONOMIC GROWTH: A THEORETICAL FRAMEWORK**

The debate on the relative importance of public and private investment in the economic growth process has generally been centred on two somewhat distinct but related questions: (i) what is the differential impact of a unit amount spent on public and private investment on economic growth?; and (ii) does public investment expenditure substitute or complement private investment in the economic growth process? This entails that the relative impact of public and private investment on economic growth depends much on whether public investment crowds out or crowds in private investment in the economic growth process.

Public investment spending can facilitate new private capital formation and hence spur economic growth through its impact on private sector economic activity (Eberts and Fogarty, 1987; Merriman, 1990; Berndt and Hanson, 1992; Wang, 2005). Public investment in infrastructural projects such as in education, power generation and transmission, airports, highways, roads, water supply and sewerage systems often increases the marginal productivity of private capital. The availability of these core infrastructures reduces the cost facing private sector firms. This arrangement creates an enabling environment for higher new private sector capital formation and output growth.

The catalytic effect of infrastructure public investment spending on private sector capital formation can alternatively be taken in terms of cost adjustment, as postulated by Turnovsky (1996). The presence of a well-developed public infrastructure would reduce the private firms' business start-up cost. For example, the presence of a railway network can reduce the transport cost of heavy equipment that may be needed to set up a new factory. The private firm can continue to draw from this advantage beyond factory setting by lowering its marginal unit production cost through the rail transportation of bulky raw materials and output, for instance. As argued by Cohen and Paul (2004), this reduction in unit production cost and the resultant enhanced marginal productivity of private capital can be substantial in large economies.

Public investment can also stand in the growth path of private investment and retards economic growth rates when: (i) it is debt-financed; (ii) it produces goods and services that compete with the private sector; and (iii) it is focused in industries that are highly subsidized and yet inefficient (Devarajan *et al.*, 1996). The hypothesis on crowding out effect underscores the case for the privatisation of state enterprises in such sectors and the creation of a market economy.

When the increase in public sector investment is financed by borrowing from the external and internal financial markets, it can ultimately reduce the level of private sector capital formation (Khan and Kumar, 1997). The public investment debt financing can stifle private investment growth through three channels. These are: (i) debt servicing that would follow may involve future tax increases that may reduce the expected return on new private capital; (ii) debt servicing would also crowd out the investible resources that could be made available to the new private sector bankable projects; and lastly, (iii) as Serven and Solimano (1993) pointed out, debt servicing in the future presents uncertainty to the private sector about policies that may be implemented to raise finances – this would dampen new capital formation. Thus, debt financed public investment increases the cost of capital and reduces the expected after-tax rate of return on private capital. This slows down the new private sector capital growth rate and the economic growth rate.

According to Khan and Kumar (1997), public investment can also crowd out private investment when it produces goods and services that compete with the private sector. This is especially so when the State actively participates in commercial sector projects where the private sector is known to be more efficient and has a higher and increasing marginal productivity than its counterpart. This economic arrangement would choke private investment growth through its displacement in the product market (Khan and Kumar, 1997).

Related to the State participation in commercial sectors, is when it undertakes projects in industries where it is subsidized and inefficient. The perennial losses that are usually a characteristic of such projects entail that the State would continue to offer subsidies to keep them afloat. This diverts investible resources away from economic activities that are more efficient and productive and resultantly retard economic growth (Nazmi and Ramirez, 1997).

On balance, while there is no clear-cut theoretical relationship between public and private investment and economic growth, the net effect of the two components of investment on economic growth remains an empirical question. If on one hand, the substitution effect of public investment on private investment outweighs the complementarity effect, economic growth rate will retard. However, on the other hand, if the complementarity effect is greater than the substitution effect, economic growth rate will accelerate.

### **3. PUBLIC AND PRIVATE INVESTMENT AND ECONOMIC GROWTH: AN EMPIRICAL REVIEW**

#### **3.1. EMPIRICAL EVIDENCE AT THE DEVELOPED COUNTRIES' LEVEL**

This section reviews empirical evidence on the impact of public and private investment on economic growth, with a specific focus on the developed economies. It is, however, important to note that the overwhelming majority of the empirical studies were conducted at the USA and European countries level. Hence, this review has followed the same approach.

The pioneering empirical study on the impact of public and private investment on economic growth can be traced to the works of Aschauer (1989a, 1989b). In the empirical study, Aschauer (1989a) examined the impact of public investment in non-military infrastructure on productivity and GDP growth in the USA during the period 1949 to 1985. Using an aggregate production function approach, he found that economic public infrastructure has a significant positive impact on productivity and economic growth with a coefficient of 0.4. He also reported the complementarity between public and private capital which suggested that public investment enhanced the contribution of private investment to economic growth. The conclusion that can be made from Aschauer's (1989a, 1989b) empirical studies is that public investment played a very significant role in the USA economy for the period 1949 to 1985. Aschauer's empirical findings were later confirmed by Munnell (1990, 1992), who also reported that the aggregate output increased by 1.4% for every 10% rise in economic infrastructure public investment for the US economy.

Although the empirical findings by Aschauer (1989a, 1989b) and later Munnell (1990, 1992) were theoretically consistent, the magnitudes of the impact of public investment on economic growth were taken with high doubt by many economists (Jorgenson, 1991; Tatom, 1991; Gramlich, 1994). Subsequent empirical studies challenged the Aschauer's findings basing on the inherent econometric problems that gave rise to high elasticities (see Tatom, 1991; Eisner, 1991; Aaron, 1990; Finn, 1993).

The first econometric problem arose from the non-stationarity of the data used. The sample period used by the earlier studies on the USA economy spanned from the 1950s to the early 1980s. During this period, public capital, private investment and output co-moved, which complicates the causality of both public and private investment and economic growth (Romps and De Haan, 2005; Pereira and Andraz, 2013). Studies that followed corrected on this non-stationarity problem by using the first difference data and reported elasticities which were lower than earlier reported. For example, Aaron (1990)

reported output elasticity of 0.09 while Finn (1993) found 0.16 with respect to public capital.

Other studies, after correcting for the non-stationarity problem, reported no significant elasticity estimates of national output with respect to public investment (Tatom, 1991; Hulten and Schwab, 1991a, 1991b; Harmatuck, 1996). The use of the first differenced series was, however, also contested on empirical ground in that it gives rise to implausible elasticities of output with respect to public and private investment (Evans and Karras, 1994; Sturm and De Haan, 1995).

Other empirical studies pointed out the problem of misspecification in the earlier studies that arose due to the omission of some important variables. In this regard, several studies re-estimated Aschauer's production function model with other variables added that included energy prices (Ram and Ramsey, 1989), exchange rate yen/dollar (Aaron, 1990) and a dummy variable for oil stock (Hulten and Schwab, 1991a; 1991b). In this spirit, the empirical literature finally evolved to the use of both translog cost function and translog profit functions and the resultant reported elasticities of output with respect to public capital were significantly lower than earlier reported (see Lynde and Richmond, 1991, 1993; Lynde, 1992; Vijverberg *et al.*, 1997).

A third problem with Aschauer's and Munnell's work and other earlier studies was the direction of causality between output and capital. The earlier studies could not rule out the possibility that the causality may run from growth to capital, that is, high income generating demand for public and private projects. Subsequent empirical studies that sought to address the problem of the reverse causality estimated a four variable vector autoregressive (VAR) model with public capital, private capital, labour and capital as all endogenous variables (Cullison, 1993; McMillin and Smyth, 1994; Batina, 1998; Crowder and Himarios, 1997; Pereira, 2000, 2001a, 2001b). These studies in general, indeed reported that output influences both public and private investment; and that public capital compliments private capital in the long run.

In particular, Pereira (2000) reported that public investment crowded in private investment in the long run, and its impact on output was significant at 7.8% rate of return – the estimate that was smaller by at least threefold than earlier reported by Aschauer (1989a). After disaggregating public investment into various components, Pereira (2000) concluded that all types of public capital crowded in private investment. While all types of public investment were positively significant in explaining economic growth, core infrastructure investment in gas and electricity facilities, transport system, water supply and sewerage systems was found to have higher marginal returns.

However, there are other subsequent follow-up empirical studies that support in general the importance of public investment or its various components to output. For example, Fisher (1997), after a review of 15 regional studies for the period 1985 to 1995, concluded that the significance of highway facilities to economic growth was noted in 10 studies which were mostly based on the USA.

Mitnik and Newman (2001) estimated the dynamic effect of public investment on economic growth in VAR framework focusing on the six industrialized economies, including the U.S.A. They concluded that public investment is important to economic growth and that the decrease in its spending could be harmful to growth.

Later in 2006, Yang (2006) undertook a comparative empirical study on the relationship between public and private investment on economic growth for the USA and Japan. Using the Generalized Method of Moments (GMM) for the Japanese economic data and the Ordinary Least Squares (OLS) for the USA data, both public and private investment were found to be important to the Japanese economic growth process. However, for the USA economy, private investment contributed more to economic growth than does public investment. Though the time period used was different for the USA economy, the reported empirical results were in contrast to the Aschauer (1989a) findings.

There are other numerous studies based on non-USA economies that assessed the impact of public and private investment on economic growth. Denny and Guiomard (1997), after specifying the Cobb Douglas and an autoregressive function for the data running from 1951 to 1994 of the Ireland economy, reported a significant transport capital coefficient of 0.92 to output. Such a high elasticity was, nevertheless doubted on econometric grounds that the model could have been mis-specified.

For the Netherlands economy, Sturm *et al.* (1999) assessed the impact of economic infrastructure public investment to economic growth for the period 1853 to 1953. The VAR Granger causality test was employed and they reported the significance of public infrastructure to economic growth. After decomposing public infrastructure as basic (such as drainage, roads, harbours and railroads) and complementary (such as electricity, gas, water supply), they concluded that the core infrastructure has a long positive impact on economic growth while the complementary public infrastructure has a short-term positive impact. Surprisingly, they reported no relationship between public infrastructure and machinery, meaning that there was no indirect impact of public investment through private investment on economic growth.

Later, Lighthart (2000) for the Portuguese economy studied the impact of public capital on growth using annual data running from 1965 to 1995 in the

general production function approach. Output elasticity with respect to public investment of 0.20 was reported. The output elasticity with respect to private investment was higher at 0.37 and to labour was the highest at 0.67.

Aubyn and Afonso (2008) assessed the macroeconomic returns of public and private investment using the VAR framework for a sample of European countries, plus Japan, Canada and the United States. Their empirical results showed that while both public and private investment positively affect output for the economies reviewed, the complementarity effect of public investment on private investment varied across countries. Table 1 provides the summary of the empirical studies on public and private investment and economic growth that are based on developed economies.

**Table 1:** Empirical studies based on developed economies

Author (s)	Region/Country and sample period	Model Specification	Conclusion
Aaron (1990)	USA 1951-1985	Cobb Douglas	Public capital had a positive impact on output.
Aschauer (1989a)	USA 1949-1985	Cobb Douglas	Public investment is beneficial to economic growth process.
Aubyn and Afonso (2008)	Sample of European countries plus Japan, Canada and USA	Vector Autoregressive (VAR)	Both public and private investments are crucial to growth.
Batina (1998)	USA 1948-1993	Cobb Douglas	Output growth responded differently to the various proxies of public and private investment.
Crowder and Himarios (1997)	USA 1947-1989	Vector Error Correction Model (VECM)	Public capital is more important to economic growth than private investment.
Cullison (1993)	USA 1961-1991	VAR	Public investment in education is more important to growth than in physical capital.
Evans and Karras (1994)	USA 1970-1986	Cobb Douglas	Public capital exerts negative impact on output.
Lighthart (2000)	Portugal 1965-1995	Cobb Douglas	Public capital had positive and significant impact on output.
Lynde (1992)	USA 1958-1988	Cobb Douglas	Profit increases with respect to public capital increases.
Lynde and Richmond (1991)	USA 1958-1989	Translog cost function	Public investment important in cost saving and it complements private capital.
Lynde and Richmond (1993)	USA 1958-1989	Translog profit function	Public capital significant to output growth and productivity.
Munnell (1990)	7 OECD countries 1963-1988	Cobb Douglas	Public investment in core infrastructure is crucial to growth



Author (s)	Region/Country and sample period	Model Specification	Conclusion
Pereira (2001a)	USA 34 observations	VAR	Public investment stimulates private investment and growth.
Pereira (2001b)	11 countries 1960-1990	VAR	Public investment spurs private sector output.
Ram and Ramsey (1989)	USA 1949-1985	Cobb Douglas	Total public capital is significant to output.
Sturm <i>et al.</i> , (1996)	Netherlands 1853-1913	VAR	Public investment is significantly important to output growth.
Tatom (1991)	USA 1949-1989	Cobb Douglas	Public capital not important to economic growth.
Vijverberg <i>et al.</i> , (1997)	USA 1958-1989	Cobb Douglas	The results were inconclusive owing to the presence of multicollinearity.
Yang (2006)	USA Japan 1957-1997	Cobb Douglas	Public and private investments are equally important for the Japanese economy while private investment contributes more to growth than public investment for the U.S.A economy.

### 3.2. EMPIRICAL EVIDENCE AT DEVELOPING COUNTRIES LEVEL

Empirical studies on the impact of public and private investment on economic growth based on the developing economies have been brought to the limelight by the work of Khan and Reinhart (1989). They used a typical neo-classical production function and separated aggregate investment into private and public components for a cross section sample of 24 developing economies. The empirical results reported overwhelmingly supported the importance of private investment more than public investment in the developing economies growth process. This echoed the call for developing economies to restrict public investment to the core economic infrastructural activities and the promotion of private investment as the engine of economic growth in a market economy. Khan and Reinhart's empirical results were also confirmed by other earlier studies that followed which included, Serven and Solimano (1989), Coutinho and Gallo (1991) and Ramirez (1996).

Later, Khan and Kumar (1997) questioned the robustness of the empirical conclusions of the earlier studies on the grounds that they used a small sample of developing countries and a limited time period. The authors re-examined the relative contribution of public and private investment to economic growth with an expanded sample of 95 developing economies over the period 1970 to 1990. Their empirical results confirmed the earlier findings that while both

public and private investments are important to the growth process, private investment exerts a higher impact than its counterpart to economic growth. Taking account of the analysis of the rate of return, they found out that private investment had higher returns than public investment, which had increased over time. This implied that during the sample period, public investment promoted private investment growth. Ghura (1997) also reported the same empirical evidence that while both components of investment are crucial, it is private investment that has accelerated economic growth more than public investment for the Cameroonian economy.

In the same year, Odedokun (1997) examined the relative effects of public and private investment on economic efficiency and growth for developing countries for an equivalent sample period as is in Khan and Kumar (1997), but from a smaller sample of 48 economies. He employed a modified production function framework and reported that infrastructural public investment promotes private investment. The crowding in effect of public investment was more pronounced in the long run than in the short run. In contrast, non-infrastructural public investment was found to stifle private investment growth and economic growth. The crowding out of public investment was also reported by Nazmi and Ramirez (1997) for the Mexican economy.

Ghali (1998) applied the dynamic vector error correction mechanism to assess the relative impact of public and private capital formation on the Tunisian economic growth. Using the annual data of 1963 to 1993 in a modified production function approach, he reported that in the short run public investment negatively affects private investment and has no impact on economic growth. In the long run, public investment was found to negatively affect both private investment and economic growth. The crowding-out effect of public investment came as no surprise to the Tunisian economy since its expansion was driven by inefficient and heavily subsidized State-owned enterprises in manufacturing, agriculture, banking and financial services and energy. It also crowded out private investment through its internal debt financing mechanism (Ghali, 1998). The empirical results have a simple policy implication that in order to accelerate economic growth in Tunisia, public investment has to be rationalized.

For the Gambian economy, Beddies (1999) examined the variables that influenced economic growth for the sample period 1964 to 1998. Using the production function approach that typifies the increasing returns to scale of the endogenous growth, private investment was found to exert a large and significant impact on economic growth. Increases in public investment were equally reported to be important in boosting output for the Gambian economy.

Mallick (2002) investigated the determinants of long term growth over the period 1950 to 1995 for the Indian economy. Using the VAR framework, the author found that while both public and private investment were statistically significant in contributing to economic growth, public investment was more important in promoting private investment growth.

Ramirez and Nazmi (2003) investigated the impact of public investment on economic growth over the period 1983 to 1993 for the nine major Latin American economies. They reported that both public and private investments are important in contributing to economic growth. In agreement with the endogenous growth theory, public investment in healthcare and education was found to stimulate private capital formation and accelerate economic growth.

For the selected highly indebted poor countries (HIPCs), Belloc and Verto-va (2004) assessed empirically the impact of private and public investment on economic growth in a dynamic econometric procedure. The authors reported that public investment had a positive significant impact on economic growth and that it also promotes private investment. Their results implied that while both public and private investment is significant to the economic growth of HIPCs, public investment was more important during the sample period. The empirical results can be justified in the context of the infrastructure gap that the HIPCs still have to fill in order to catch up with the developed economies.

A year later, Erden and Holcombe (2005) assessed the relationship that exists between public and private investment in the economic growth of developing countries. From the sample period of 1980 to 1997, the authors reported that public investment complements private investment in the growth process. More precisely, a 10% increase in public investment was associated with a 2% growth in private investment.

Bèdia (2007) for the Côte d' Ivoire economy assessed the relative effect of public and private investment over the period 1969 to 2001. The empirical study was based on the modified Cobb Douglas production function in the autoregressive distributed lag (ARDL) error correction mechanism. The empirical results showed that private investment spurred economic growth more than public investment in the short run, while in the long run, the opposite was reported. The empirical evidence implied that while both types of investment are important to the growth of the Côte d' Ivoire economy, the efficiency of public investment in the short run and private investment in the long run can be improved.

A year later, Samake (2008) in the Benin economic setting, examined the relationship between public and private investment and economic growth. In a VAR framework with data spanning from 1965 to 2005, the author reported that both public and private investment were important in the Beninian eco-

conomic growth process. Evidence of public investment crowding in effect on private investment was also reported.

Sahoo *et al.* (2010) investigated the role of infrastructure in promoting GDP growth using the Chinese economy data from 1975 to 2007. They reported that in general both public and private investment have played crucial roles in shaping the recent Chinese high economic growth rates. More specifically, the high growth rates have been driven by the State enabled high physical core infrastructure investment. This entailed that public investment played the crucial complementary role in the Chinese economic growth process during the review period.

Two years later, Phetsavong and Ichihashi (2012) examined the impact of public and private investment on economic growth for the sample of 15 developing Asian economies. Using the panel data from 1984 to 2009, private domestic investment had the higher contribution to economic growth than public investment. The empirical evidence also showed that low public investment promoted private investment, but when it exceeded a certain threshold, it had a crowding-out effect.

Hague (2013) examined the effect of public and private investment on economic growth for the Bangladesh economy. Both public and private investments were reported to be significant in the short run and long run. The empirical results implied that public and private investment impacted positively on the Bangladesh economy. Overall, private investment was reported to be more significant than public investment in the economic growth process. Table 2 gives a summary of empirical studies on public and private investment and economic growth that are based on developing countries.

**Table 2:** Empirical studies based on developing countries

Author (s)	Region/Country and sample period	Model Specification	Conclusion
Beddies (1999)	Gambia 1964 to 1998	Cobb Douglas	The impact on growth of private investment is more than public investment.
Bèdia (2007)	Côte d’Ivoire 1969-2011	Cobb Douglas	Public investment contributed more to economic growth than private investment in the long run.
Belloc and Vertova (2004)	Selected HIPC	Cobb Douglas	Public investment is more important than private investment in growth process.

Author (s)	Region/Country and sample period	Model Specification	Conclusion
Coutinho and Gallo (1991)	33 developing economies 1970-1988	Cobb Douglas	Private investment spurs growth more than public investment.
Erden and Holcombe (2005)	Sample of developing economies 1980-1997	Standard investment model	Public investment complements private investment.
Ghali (1998)	Tunisia 1963-1993	VECM	Public investment retards economic growth.
Ghura (1997)	Cameroon 1963-1996	Cobb Douglas	Private investment plays more significant role in growth process than public investment.
Hague (2013)	Bangladesh 1972-2011	Cobb Douglas	Private investment is more important than public investment in growth.
Khan and Kumar (1997)	95 developing countries 1970-1990	Cobb Douglas	Private investment accelerates growth more than public investment.
Khan and Reinhart (1989)	24 developing economies	Neoclassical production function	Private investment is more efficient in growth process than public investment.
Mallick (2002)	India 1950-1993	VAR	Public investment is more important to growth than private investment.
Nazmi and Ramirez (1997)	Mexico	Modified neoclassical production function	Both public and private investment has identical impacts on economic growth while public investment stifles private investment.
Odedokun 1997	48 developing countries	Modified production function	Non- infrastructural public investment stifles private investment.
Ramirez (1996)	Mexico and Chile 1940-1992	Linear growth Model	While both public and private investments exert positive significant impact on growth, a complementarity relationship was reported.
Ramirez and Nazmi (2003)	9 major Latin American economies 1983-1993	Cobb Douglas	Both public and private investments are important to growth.
Sahoo <i>et al.</i> , (2010)	China 1975-2007	Cobb Douglas	Both public and private investments are important with public investment playing a complementary role in growth.
Serven and Salimano (1989)	Cross-section of developing economies	Private investment models	Private investment is superior to growth than public investment.

## 4. CONCLUSION

In this paper, we have reviewed the theoretical and empirical literature on the relative importance of public and private investment on economic growth for developed and developing countries. The review finds mixed and in some cases conflicting evidence on the relative importance of the roles played by the components of investment in the growth process. Nevertheless, there are some clear general observations worth mentioning, which are: (i) in developed countries, public investment is important to economic growth; particularly when focused in basic infrastructures that stimulate private investment. (ii) in developing countries, both public and private investment are important to economic growth. However, a great number of empirical studies suggest that private investment is more important than public investment in economic growth for developing countries. It is important to note that the relative contribution to economic growth of public and private investment varied across countries owing to the methodological approach adopted, the characteristics of sample countries chosen, the proxy variables used to measure public and private investment, and data and sample period chosen, among other factors. While both components of investment are crucial to economic growth, on balance, this study finds support for the private-investment-led-growth to dominate for both developed and developing countries.

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## JAVNE I PRIVATNE INVESTICIJE I EKONOMSKI RAST: PREGLED

### SAŽETAK RADA:

Rad proučava dostupnu literaturu o relativnom utjecaju javnih i privatnih investicija na ekonomski rast u razvijenim zemljama kao i u zemljama u razvoju s naglaskom na teorijske i empirijske dokaze. U radu se pokazuju različiti i u nekim slučajevima sukobljeni dokazi relativnog doprinosa javnih i privatnih investicija ekonomskom rastu pod utjecajem nekoliko različitih faktora koji uključuju: metodološki pristup, karakteristike uzorka- zemalja koje su proučavane, korištene proxy varijable u mjerenjima te proučavano razdoblje. Iako su i javne i privatne investicije važne za ekonomski rast veća je empirijska podrška za private investicije. Ovaj pregled razlikuje se od prethodnih studija u tome što investicije razlaže na javne i privatne komponente te se fokusira na njihov relativni utjecaj na ekonomski rast dok su se prijašnji pregledi fokusirali isključivo na utjecaj javnih investicija na ekonomski rast.

*Ključne riječi: javne investicije; private investicije; ekonomski rast*