



International Journal of Financial Management and Economics

P-ISSN: 2617-9210
E-ISSN: 2617-9229
IJFME 2021; 4(2): 20-27
Received: 07-04-2021
Accepted: 09-05-2021

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Effect of foreign aid on private investment: The case of Japanese ODA in Sri Lanka

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Abstract

Does foreign aid promote private investment? This study aimed at answering the above question by exploring the Japanese ODA and private investment relationship for the period of 1971-2009. Sectoral distribution of Japanese ODA clearly indicated that over two-third of Japanese ODA channeled into economic and social infrastructures. Moreover, Japan has provided debt relief grants in a number of occasions thereby reducing the pressure on debt repayment requirements. This study employs both descriptive and regression techniques and data were extracted from national statistical agencies as well as from World Development Indicators. Accordingly, the responsiveness of private investment to Japanese ODA is relatively larger compared to that of the overall ODA. One per cent increase in Japanese ODA-to-GDP ratio leads to 1.03 increase in private gross fixed capital formation-to-GDP ratio. In contrast, one per cent increase in overall ODA leads to 0.44 increase in private gross fixed capital formation-to-GDP ratio. It could be postulate that this differential effect is due to two unique features related to Japanese ODA. First, Japanese ODA has largely funded economic and social infrastructures. Those projects may have largely relaxed bottlenecks for private investment in the economy. These quality infrastructures may have increased productivity and profitability of private ventures thereby stimulating private investments. Second, as the evaluation studies widely documented, majority of Japanese funded projects were implemented efficiently and effectively thereby achieving the status of 'satisfactory' and 'very satisfactory' scores. Hence, our results suggest that Japanese ODA contributed to growth and development in Sri Lanka by stimulating private investments.

Keywords: foreign aid, ODA, GDP

1. Introduction

According to development practitioners, Official Development Assistance (ODA) remains the most prominent development instrument for allocation of foreign aid with the aim of promoting prosperity in developing countries. This includes economic, political, and social development, and most significantly poverty alleviation. It is argued that most developing countries experience two gaps at any given point of time, namely (a) the gap between actual savings and desired level of investment, and (b) the gap between level of imports needed for a desired level of growth and foreign exchange earnings. The savings-investment gap is could be largely due to the low savings undertaken by both private and public sectors. It is assumed that private sector savings translate into private investment. Hence, low private sector savings indicate that private sector invest less than its potential capacity. According to new growth literature, public sector investment is complimentary in nature, thus, expanding and facilitating private sector investment activities in the economy. On the other hand, public sector finds it hard to generate sufficient tax revenue for meeting required social and capital expenditures; i.e. its runs a deficit in the current account. It is argued that ODA helps public sector to fill the savings-investment gap as well as economy to fill the gap between foreign exchange receipt and outlays. In addition to above channels, it is also argued that ODA encourage private sector savings/investment by removing structural bottlenecks, such as improving physical infrastructure and human capital, enhancing quality of institutions, and relaxing foreign exchange constraints for imports of capital goods. Nevertheless, limited attempts have been made in understanding the direction and the size of ODA impact on private investment in the developing country context.

The objective of this study is to examine the impact of ODA on private sector investment. In particular, it is expected to investigate this relationship in the context of Sri Lanka with special reference to Japanese ODA.

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The rationale for selecting Japanese ODA is largely due to the fact that Japan has mostly channeled its ODA on improving economic infrastructures, physical assets and human capital development.

The study is organized as follows. The second section briefly review relevant literature while econometric specification and data are discussed in section three. The section four deals with estimation and discussion while the last section makes some concluding remarks.

2. Brief Literature Survey

A number of studies, over the last four decades, have tested whether or not aid has a positive impact on economic growth in recipient countries, but without any consensus being reached (Burnside and Dollar, 2000, 2004; Collier and Dollar, 2004; Easterly *et al.*, 2004; Ranjan and Subramanian, 2008; Daalgard and Hansen, 2001; Daalgard *et al.*, 2004) ^[1, 2, 3, 7, 12, 4, 5]. Burnside and Dollar (2000, 2004) ^[1, 2] and Collier and Dollar (2004) ^[3] concluded that aid has a positive impact on growth in countries with 'good' economic policies. However, there are some studies which argue impact of aid on growth is insignificant irrespective of policy environment (Easterly *et al.*, 2004; Ranjan and Subramanian, 2008) ^[7, 12]. In contrast, Dalgaard and Hansen (2001) ^[4] and Daalgard, *et al.*, (2004) ^[5] argued that aid has a positive effect on growth and that this effect is not conditional on economic policy. Herzer and Grimm (2012) ^[9] argued that most of the above studies do not include investment in the estimated aid-growth relationship. The authors pointed out that the above exclusion prevents accounting for those effects of aid operating through investment.

Herzer and Grimm (2012) ^[9] argued that most previous studies implicitly assumed that ODA increases the public investment and only few studies examined the effect of aid on private investment in the recipient country. The existing literature on the effect of aid on private investment is inconclusive (Mosley, *et al.*, 1987; Mahadavi 1990s; Snyder, 1996; Hadkimichael *et al.*, 1995; Dollar and Easterly, 1999) ^[11, 13, 8, 6]. Some studies found the relationship is negative, for instance Mosley *et al.*, (1987) ^[11] and Snyder (1996) ^[13], while another set of studies found that there is a positive relationship between aid and private investment, for instance Hadkimichael *et al.*, (1995) ^[8]. Dollar and Easterly (1999) ^[6] found a positive relationship between aid and private investment in good economic policy environment. Nevertheless, the authors argued that foreign aid discourages private investment if policies are poor.

Extending the existing theoretical literature on foreign aid-private investment nexus, Herzer and Drimm (2012) ^[9] introduced a theoretical framework which captures the effect of foreign aid on private investment through several channels. The authors adopted the 'flexible-accelerator approach', which is widely used in explaining private investment behavior in developed country context, and it was modified to accommodate some particularities. According to 'flexible-accelerator model, private investment depends on expected aggregate demand, the cost of capital and labour, and the initial capital stock. Herzer and Drimm (2012) ^[9] modified the model by in cooperating number of particularities which are presence in developing country context. These included the presence of credit rationing, dependency on imported capital goods, likelihood of debt

overhand, macro-economic instability (mostly fueled by political instability), and relatively high level of public investment.

By accommodating these particularities, the author argue that aid may stimulate private investment by relaxing foreign exchange constraints, reducing the debt overhang, and increasing macro-economic stability. According to authors, these factors should raise positive expectations among entrepreneurs. More importantly, it is argued that if aid is used by the recipient government to finance public investment in education, research and development, and physical infrastructure, such investment may generate positive externalities for the private sector and thus increase the productivity of private investment. Aid may also eliminate a possible source of crowding out if it is used to finance public investment projects that would otherwise have been financed using scarce domestic financial resources. In addition, foreign aid can be used to reduce taxes, thereby reducing distortions in the economy and increasing the income of the private sector, which may then have a similar positive effect on private investment. However, the other side of the coin is that foreign aid may reduce private investment when the recipient government uses the aid to finance investment projects that would otherwise be undertaken by the private sector. Crowding-out effects may also occur when aid-financed public investment competes with private investment for scarce resources, such as skilled labour. Finally, high levels of aid over long periods of time can have substantial negative effects on private investment by weakening institutions and encouraging rent-seeking activities. Hence, foreign aid could affect private investment through several channels, and most important of which is aid-financed public investment. However, theoretically, the effect of aid on private investment is ambiguous thereby requiring empirical investigation.

3. Econometric Specification and Data

The analysis examine the long-run relationship between aid and private investment. In this section, the empirical model is presented along with data and data transformation techniques that are employed in estimating the model. Moreover, it is expected to discuss possible econometric issues that will be encountered in estimating the model.

This study considers the following bivariate relationship;

$$I_t = \beta_1 + \beta_2 t + \beta_3 A_t + \varepsilon_t \quad (1)$$

where I is the private investment to Gross Domestic Product (GDP) ratio, t is the time trend, and A stands for aid to GDP ratio, ε stands for the disturbance term, and finally β_s are the unknown population parameters that the model expected to estimate. In this model, β_3 can be interpreted as the long-run elasticity of private investment with respect to foreign aid, measuring the net long-run effect. In addition, this study specifically examines the effect of Japanese foreign aid on private investment. This relationship is examined by estimating the following model;

$$I_t = \beta_1 + \beta_2 t + \beta_3 J A_t + \varepsilon_t \quad (2)$$

In model (2), *JA* stands for the Japanese aid to GDP ratio. Data for the study are extracted from the World Development Indicators and External Resources Department data bases. Our sample period confines to 1965-2009 period since data for private investment is not available for the subsequent period.

4. Japanese ODA to Sri Lanka: Sectoral Distribution

Table 1 reports data on Japanese ODA to Sri Lanka during 1960-2019. Out of the total disbursed ODA, over 20 per cent channeled into power and energy while roads & bridges and ground transport sectors received 13.6 per cent and 13.1 per cent respectively. Moreover, telecommunication sector received over 4 per cent of the total disbursed Japanese ODA. Altogether, over two-third of Japanese ODA channeled into economic infrastructure. Japanese ODA also channeled into social infrastructure, in particular, for improving human capital stock of the country. Japanese ODA targeted education and health sector modernization. In the field of education, Japanese ODA assisted in enhancing technical education, such as Computing, agriculture, and other related technical areas at higher education institutions. For instance, the first-ever computing school at a university

was developed with Japanese ODA. In addition, over the years, a number of scholars both in the public and private sectors received short- and long-run training in Japanese universities and technical colleges. Japanese ODA also directed in improving private sector capacities. For instance, nearly 2.5 per cent of the total disbursed ODA channeled into private sector development. Similarly, water supply and sanitation sector also received a sizable share of total disbursed Japanese ODA during 1960-2019. More importantly, Japanese ODA supported the development initiatives in all the provinces in Sri Lanka and nearly 2 per cent of the total disbursed ODA channeled into rural development.

In the light of the theoretical framework, it could be expected that relatively higher concentration on physical and human capital improvement may certainly have contributed to the private sector growth in Sri Lanka. Physical infrastructure and poor human capital stock have been identified as some of the key growth bottlenecks in Sri Lanka (...). It could be expected that Japanese ODA assisted infrastructure and human capital development initiatives may have relaxed such constraints thereby encouraging private sector investment.

Table 1: Japanese ODA Disbursement by Sector: Cumulative of 1960-2019

Sector	US \$ Mn	Share
Agriculture	28.68	0.4
Air transport	171.26	2.5
Budget support	85.34	1.2
Environment	308.16	4.5
Finance, Insurance, etc	132.15	1.9
Ground transport	896.31	13.1
Health, education, & social welfare	46.89	0.7
Industrial development	32.58	0.5
Irrigation & related	282.30	4.1
Plantation	51.03	0.7
Ports & shipping	595.98	8.7
Power & energy	1,460.35	21.3
Private sector development	171.33	2.5
Rehabilitation	191.51	2.8
Roads, and bridges	931.51	13.6
Rural development	135.22	2.0
Telecommunication	311.97	4.6
Tourism & hottest industry	26.71	0.4
Tsunami rehabilitation	88.23	1.3
Water supply & sanitation	595.92	8.7
General	65.97	1.0
Other	242.39	3.5
Total	6,851.78	100

Source: External Resources Department, Ministry of Finance, Sri Lanka

One of the concerns over ODA is that it could eventually leads to higher debt repayment pressures thereby government requiring to tax private sector to acquire financial resources to make repayments. It is interesting to note the Japan has offered debt relief grants to Sri Lanka over the years thereby easing the pressure over debt

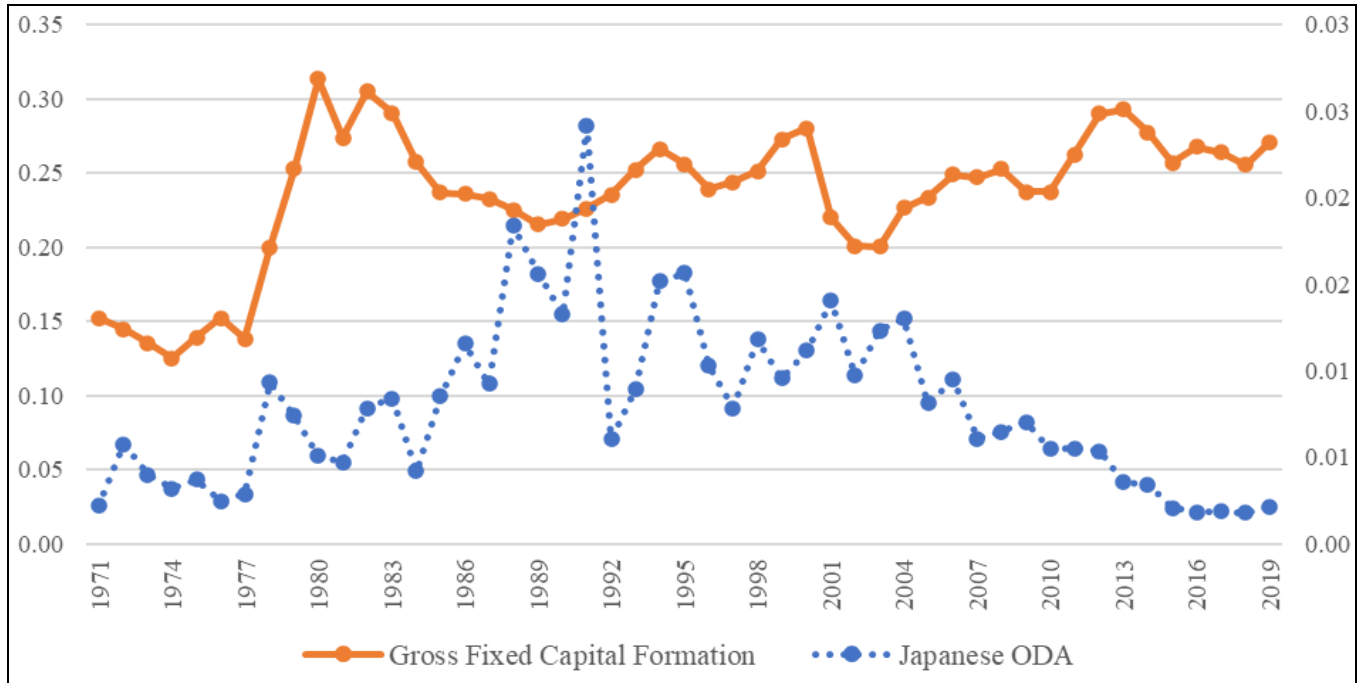
repayment. During 1984-2003, Japan offered debt relief grants in around 21 occasions. It could be expected that such interventions may have reduced the debt overhand concerns among private investors. According to the theoretical framework, debt overhang concerns among private investors could negatively affect investment.

5. Estimation and Discussion

5.1 Descriptive Data Analysis

Figure 1 reports data on Japanese ODA and gross fixed capital formation (GFCF) during 1971-2019. In the figure left-axis depicts GFCF (as % of GDP) while the right-axis shows Japanese ODA-to-GDP ratio. The GFCF includes both public and private investment. According to figure1, Japanese ODA somewhat closely associated with the GFCF during 1971-2004, the period in which Japan had been Sri Lanka's major donor country. However, in subsequent

years, the two time series drifted away (see Figure 1). This is largely due to the entry of new donors, such as China and India, and they became, in particular China, the major donor countries. Prior to 2004, Japanese ODA accounted for a sizable share of the GFCF. The new donors countries started funding major public infrastructure projects during 2005-2019, and this shift widen the gap between the two series. In other words, new donors largely influence the GFCF trends during 1971-2019. In relative terms, the Japanese ODA to Sri Lanka also declined during 2005-2019.

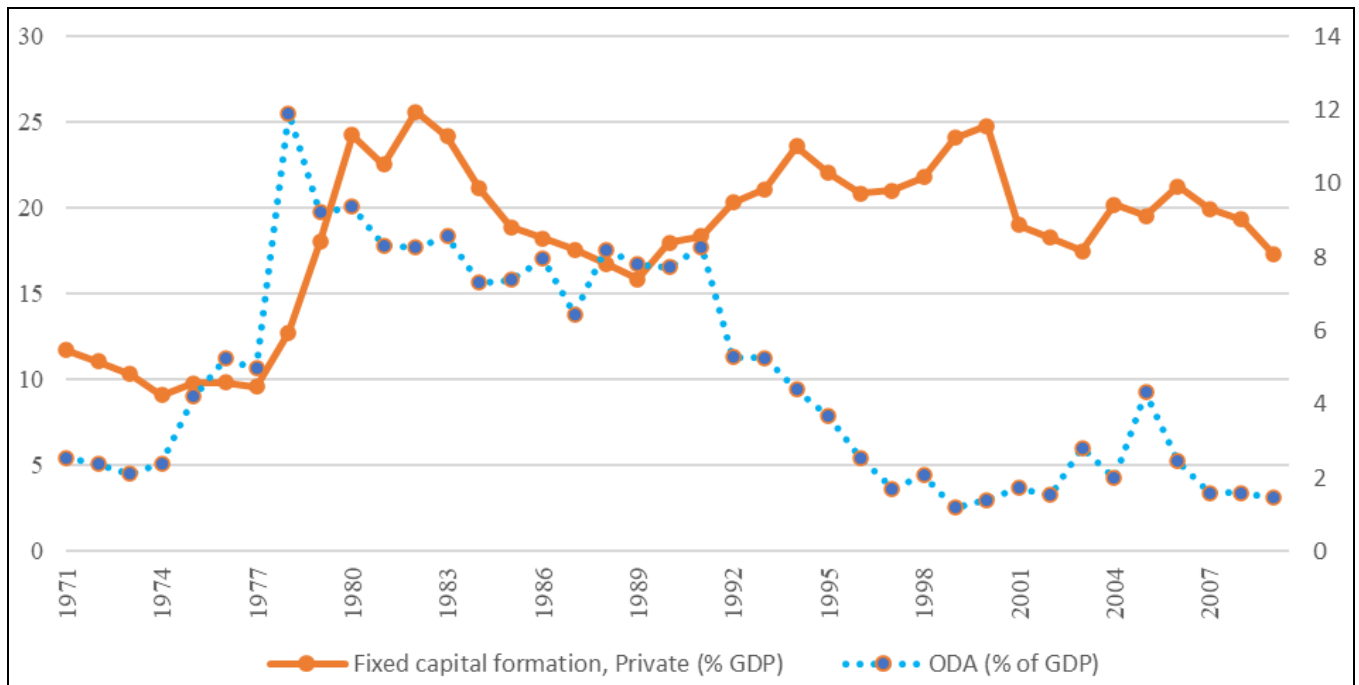


Note: Left-axis measures the GFCF (as a % of GDP) while right-axis depicts the Japanese ODA (as a % of GDP).
Source: External Resources Department, Ministry of Finance, Sri Lanka and World Development Indicators online database.

Fig 1: Japanese ODA vs. Gross Fixed Capital Formation: 1971-2019

Theoretically, as discussed in the literature section, it is expected that there is a close association between the foreign aid and private investment. Figure 2 depicts the relationship between total ODA and private investment during 1971-2009. The private investment, specifically private GFCF to GDP, data available for Sri Lanka only for the period of 1971-2009. Neither the domestic data sources nor the World Development Indicators database report data on private investment during post-2009. Hence, Figure shows the association between foreign aid and private investment during 1971-2009. The total ODA received by Sri Lanka and the private investment closely associated during 1971-1991. However, it is not clear to what extent

there foreign aid influenced/motivated the private investment. In particular, with the opening of the economy in 1977, a number of bi-lateral and multi-lateral organizations started funding major public investment programmes and newly enacted trade and investment policies also encourage both domestic and foreign investments. Hence, it is quite unclear to what extent ODA promoted the private investment. Nevertheless, large scale public investment projects may certainly have encourage some private investment during post-1977 period. Since early 1990s, total ODA to GDP ratio declined significantly partly due to the completion of large-scale public funded development projects.

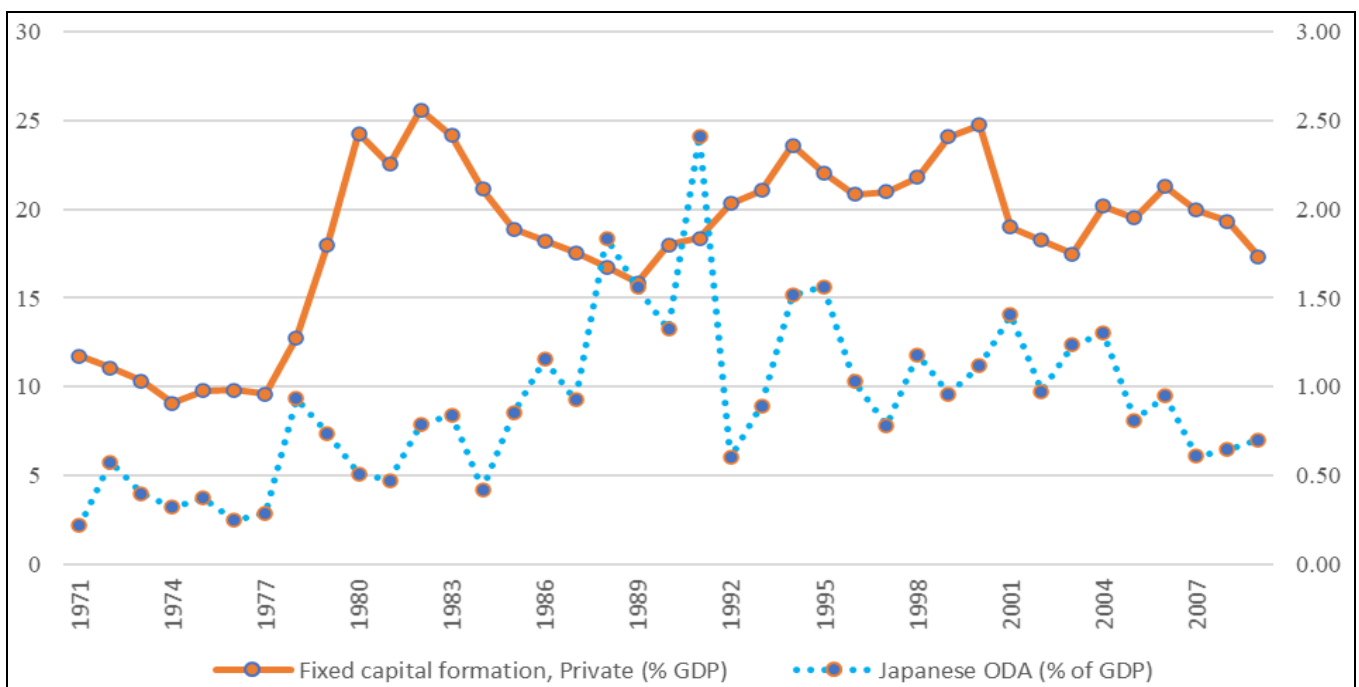


Note: Left-axis measures the private GFCF (as a % GDP) while right-axis depicts the ODA (as a % of GDP). Source: External Resources Department, Ministry of Finance, Sri Lanka and World Development Indicators online database.

Fig 2: Official Development Assistance and Private Investment

During 1991-2009, private investment more or less stay at same level while the ODA, relative to GDP, declined gradually till 1998 and stayed around 2 per cent of GDP in subsequent years. Taken the full sample period, the

association between total ODA and private investment seems somewhat weaker. This relationship will further be investigated by employing a regression framework in the next section.



Note: Left-axis measures the private GFCF (as a % GDP) while right-axis depicts the Japanese ODA (as a % of GDP). Source: External Resources Department, Ministry of Finance, Sri Lanka and World Development Indicators online database.

Fig 3: Japanese ODA and Private Investment

As discussed in the previous section, one of the unique feature in Japanese ODA is that it funds economic and social infrastructure in recipient countries. Limited availability of economic and social infrastructures often discourages private sector investment. According the theoretical framework, ODA funded public investment on

economic and social infrastructures complements private investment.

Figure 3 depicts the relationship between Japanese ODA and private investment during 1971-2009. The behavior of the two time series indicates that there is a positive correlation between Japanese ODA and private investment

(both variables are measured relative to GDP). Apparently, it seems that the relationship is visible with some time lag rather than a contemporary one. As discussed earlier, over 65 per cent of Japanese ODA channeled into economic and social infrastructures. Such public funded investments may have encouraged private investment through relaxing infrastructure and human capital bottlenecks in the economy.

The relationship between Japanese ODA and private investment is further examined by employing correlation analysis (see Table 2). The correlation coefficient between Japanese ODA and private investment is positive and moderately high (0.315). However, it is noticeable that Japanese ODA is much influential on private investment

with some time lag. In other words, lag-relationship is much stronger (0.37) than the contemporary relationship (0.31). It suggests that private investments pick up subsequent to the public investment funded by Japanese ODA. In contrast, the relationship between total ODA, received through various bi-lateral and multilateral sources, is weakly associated with both private and public investment. Association between Japanese ODA and Gross Fixed Capital formation (GFCF) is positive (0.26) and, it is also visible that relationship is quite strong between lagged-Japanese ODA and GFCF. Interestingly, correlation coefficient between Japanese ODA and GFCF is stronger (0.27) than the correlation between GFCF and total ODA (0.22).

Table 2: Correlation Matrix

	Gross fixed capital formation, private sector	Japanese ODA (% of GDP)	Japanese ODA (% of GDP) Lag 1	Gross fixed capital formation (% of GDP)	Total ODA (% of GDP)
Japanese ODA (% of GDP)	0.315				
Japanese ODA (% of GDP) Lag 1	0.369	0.484			
Gross fixed capital formation (% of GDP)	0.956	0.265	0.274		
Total ODA (% of GDP)	0.026	0.118	-0.075	0.221	
GDP growth	0.213	0.175	0.067	0.214	0.045

Source: Author's calculation

5.2 Effect of Overall ODA on Private Investment

Table 3 reports estimated results relating to regression eq. 1 which examines the relationship between total ODA, received by Sri Lanka, and the private investment. The dependent variable is gross fixed capital formation of the private sector and it is measured relative to GDP. The estimated coefficient of ODA in Model 1 and Model 2 is not significant, however, the estimated coefficient is positive and statistically significant at 5 per cent level of significance in Model 3 and Model 4. Model 1 and Model 2 seriously suffers from autocorrelation, as suggested by Durbin-Watson test statistics. To rectify the issue of autocorrelation, Model 3 is included the lag of the dependent variable, private investment, as an independent variable. This inclusion greatly improved the model performance and address the issue of autocorrelation as reflected through the Durbin-Watson statistic (1.85). More importantly, the estimated coefficient of ODA turns positive statistically significant implying that ODA promote private investment [0.240 (s.e. 0.102)]. Model 4 is included, in addition to the variables in Model 3, the time trend variable to capture private investment related behavior over time. Nevertheless, the estimated coefficient of time trend is statistically significant implying that time-dependent behavior is absent in private investment.

According to Model 4, one per cent increase in ODA-to-GDP ratio leads to 0.34 per cent increase in private GFCF to GDP ratio. In terms of elasticity, responsiveness of private investment to ODA is less than 1 implying overall ODA is relatively poor in encouraging private investment. Nevertheless, positive and statistically significant coefficient of ODA implies, as the theoretical framework postulates, ODA encourages private investment. The channels through which such effect is operational is not quite clear. Nevertheless, it is highly probable that ODA funded public investment compliment private investment since the successive government financed a number of economic and social infrastructures through ODA funds. In addition to ODA variable, the estimated coefficients of both GDP growth and level of the previous period private investment (represent by the lag of private GFCF) are positive and statistically significant. Current level of private investment is strongly correlate with its immediately the previous period investment. This shows that investment decisions are persistent over the time. Similarly, previous period economic performance, in terms of GDP growth, positively related with the private sector investment decisions. Higher the level of economic performance in the previous period, faster the growth of private investment in subsequent period.

Table 3: Effect of ODA on Private Investment

Dependent Variable: Gross fixed capital formation, private (as a % of GDP)				
Variable	Model 1	Model 2	Model 2	Model 4
Total ODA (as % of GDP) [lag1]	0.323	0.307	0.240**	0.343**
	(0.252)	(0.250)	(0.102)	(0.130)
GDP growth [lag1]		0.483	0.492***	0.440**
		(0.386)	(0.158)	(0.161)
Gross fixed capital formation, private (as a % of GDP) [lag1]			0.853***	0.775***
			(0.0643)	(0.0883)
Time trend				0.0551
				(0.0431)
Constant	16.94***	14.71***	-0.676	-0.626

	(1.438)	(2.278)	(1.486)	(1.473)
Observations	38	38	38	38
Durbin Watson (DW) statistic	0.24	0.26	1.85	1.79
R-squared	0.044	0.085	0.852	0.859

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 4: Effect of Japanese ODA on Private Investment

Dependent Variable: Gross fixed capital formation, private (as a % of GDP)				
Variable	Model 1	Model 2	Model 2	Model 4
Japan ODA (as % of GDP) [lag1]	3.555**	3.712**	0.793*	1.030*
	(1.492)	(1.465)	(0.412)	(0.542)
GDP growth [lag1]		0.571	0.525***	0.556***
		(0.363)	(0.167)	(0.171)
Gross fixed capital formation, private (% of GDP) [lag1]			0.833***	0.870***
			(0.0727)	(0.0846)
Time trend				-0.0340
				(0.0386)
Constant	15.26***	12.40***	-0.00317	-0.366
	(1.536)	(2.363)	(1.535)	(1.594)
Observations	38	38	38	38
Durbin Watson (DW) statistic	0.42	0.45	1.68	1.80
R-squared	0.136	0.193	0.834	0.838

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

5.3 Effect of Japanese ODA on Private Investment

Table 4 reports the regression results related to regression eq. 2. The regression eq. 2 examines the effect of Japanese ODA on private investment. The rationale for this examination is two-folds. First, over two-third of Japanese ODA has channeled into development of economic and social infrastructures during 1960-2019. Second, a previous study found that Japanese ODA positively relates with growth of GDP, per capita income, and industrial output in Sri Lanka. Taken together these and the predication of the theoretical framework, which postulates public investment complements private investment, it could reasonably be expected that Japanese ODA may positively relates with the private investment in Sri Lanka.

In model 1, only the Japanese ODA (as a lag term) enters into the model as the single explanatory variable. Additionally, growth of GDP enters into the Model 2. One of the major issue of both Model 1 & 2 is that the models suffer from autocorrelation. The presence of autocorrelation makes it difficult to use t-statistics for hypothesis test. Hence, Model 3 is included the past private investment amount as an explanatory variable. This inclusion greatly enhanced the model performance. For instance, R^2 , which measures the explanatory power of the model, increased from 0.19 to 0.83 and Durbin-Watson statistic, whose value around 2 implies that the model does not suffers from the problem of serial correlation, increased from 0.65 to 1.68. Additionally, time trend variable is included to Model 4 to accounts for any time-dependent behavior in private investment.

The estimated coefficient of Japanese ODA is positive, [1.03. (s.e. 0.542)], and statistically significant at 10 per cent level of significance. The result implies that Japanese ODA has promoted private investment in Sri Lanka during the study period. As discussed in previous sections, a greater majority of Japanese ODA funded projects focused in developing/improving economic infrastructures such as roads, ports & airports, energy, telecommunication, and water supply. Similarly, Japanese ODA funded key development activities in education and health sectors. In particularly, Japanese ODA is unique in providing new

technology to a number of sectors. These projects, as found in one of the previous study, were implemented successfully achieving ‘satisfactory’ or ‘very satisfactory’ scores in impact evaluation studies. Japanese ODA projects, hence, relaxed key bottlenecks, in terms of poor infrastructure and human resources, to private sector investment. As a result, private investment picked up in Sri Lanka thereby, as found in a previous study, contributing to economic growth and development.

It is interesting to note that the estimated coefficient of Japanese ODA implies that every 1 per cent increase in Japanese ODA-to-GDP ratio leads to more than 1 per cent increase in private GFCF-GDP ratio. In other words, responsiveness of private investment to Japanese ODA is relatively larger compared to that of the total ODA. This result implies that Japanese ODA is effective in promoting private investments compared to ODA received the rest of the sources. As argued, technologically improved economic and social infrastructures financed by Japanese ODA and effective implementation of projects could be the reasons for this enhanced effect of private investment. Hence, it could be argued that one of the channels through which Japanese ODA affects growth and development in Sri Lanka is through the promotion of private investment.

As in the case of our previous findings, both immediately the past period GDP growth and private investment positively relate with the subsequent private investment levels. It is interesting to note that responsiveness of private investment to its past period investment level is around 0.8 and that indicates the investors tend to coordinate their investment decisions rather than taking ad-hoc decisions. The past economic performance is also critical in encouraging private investors to investment in future periods.

6. Conclusion

In one of the previous study, it was found that Japanese ODA positively relates with the growth of GDP, per capita income, and industrial output in Sri Lanka. However, it did not make attempt to examine the channels through which Japanese ODA affect growth and development. There can

be few channels, such as promotion of private investment, improvement of productivity, and expansion of exports, through which Japanese ODA enhanced growth and development in a recipient country. In filling this knowledge gap, this study examined the effect of ODA on private investment in Sri Lanka with special reference to Japanese ODA. Theoretical framework, developed by Herzer and Drimm (2012) ^[9], argued that there are several channels through which ODA could stimulate private investment. In the context of Japanese ODA, the highly probable channels may be the one that work through the ODA funded public investment on economic and social infrastructures. The theoretical framework argued that if aid is used by the recipient government to finance public investment in physical infrastructure, education, research & development, such investment may generate positive externalities for the private sector and thus increase the level and the productivity of private investment. In summary, it implies that ODA funded public investment could compliment private investment. Through the lens of these theoretical prediction, this study examined the Japanese ODA and private investment relationship for the period of 1971-2009. Unavailability of data on private investment prevents us from extending this study period to recent years. The data for the study was extracted from the Department of External Resources, Ministry of Finance, Sri Lanka and World Development Indicators online database. Descriptive analysis was followed by regression analyses to examine the effects of overall ODA and Japanese ODA on private investment.

Sectoral distribution of Japanese ODA clearly indicated that over two-third of Japanese ODA channeled into economic and social infrastructures. Economic infrastructures included ground transport, road & bridges, ports & shipping, airports, power & energy, and telecommunication. Social infrastructure included water & sanitation, education, health, and environment. In addition, rural development and private sector development related projects were also financed through Japanese ODA. More importantly, Japanese ODA channeled into almost all the provinces in Sri Lanka. Moreover, Japan has provided debt relief grants in a number of occasions thereby reducing the pressure on debt repayment requirements.

Descriptive analysis clearly indicated that there is a strong positive relationship between Japanese ODA and private investment in Sri Lanka. Correlation coefficient between Japanese ODA and private investment is around 0.37, and effects of Japanese ODA on private investment operates with some time lag. In contrast, the relationship between overall ODA and private investment is relatively weaker. This clearly indicates that Japanese ODA's effect on private investment is relatively stronger. This finding is reaffirmed by the regression results. Accordingly, the responsiveness of private investment to Japanese ODA is relatively larger compared to that of the overall ODA. One per cent increase in Japanese ODA-to-GDP ratio leads to 1.03 increase in private gross fixed capital formation-to-GDP ratio. In contrast, one per cent increase in overall ODA leads to 0.44 increase in private gross fixed capital formation-to-GDP ratio. It could be postulate that this differential effect is due to two unique features related to Japanese ODA. First, Japanese ODA has largely funded economic and social infrastructures. Those projects may have largely relaxed bottlenecks for private investment in the economy. These

quality infrastructures may have increased productivity and profitability of private ventures thereby stimulating private investments. Second, as the evaluation studies widely documented, majority of Japanese funded projects were implemented efficiently and effectively thereby achieving the status of 'satisfactory' and 'very satisfactory' scores. Hence, our results suggest that Japanese ODA contributed to growth and development in Sri Lanka by stimulating private investments.

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