Does Foreign Aid Promote Foreign Direct Investment in Post-conflict Cambodia?

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Abstract: Post-conflict Cambodia has experienced a significant increase in foreign aid and foreign direct investment (FDI) inflows since the early 1990s. This paper investigates whether (aggregate, donor-specific, and sectoral-based disaggregate) foreign aid has any short- and long-run crowding-in effects on FDI inflows using autoregressive distributed lag (ARDL) bound test for cointegration over the 1992–2018 post-conflict period. Robust findings reveal that aggregate development aid and 'donor-specific' aid from Australia and United Nations Development Programme (UNDP) crowding-in FDI in the long run. Donor-specific aid from the EU, the US, Japan and France, and sectoral-based 'governance aid' and 'other aid' either have non-robust positive or no significant long-run effects on FDI. In the short run, however, only EU-aid and other-aid have crowding-in effects on FDI. Foreign development aid can catalyse FDI inflows in post-conflict Cambodia, especially in the long run.

Keywords: Foreign aid, sectoral aid, donors' specific aid, foreign direct investment, post-conflict Cambodia, ARDL
JEL classification: F21, F35, O53

1. Introduction

After the collapse of the *Khmer Rouge* genocidal regime in January 1979, Cambodia went through internal conflicts until the 1991 Paris Peace Agreement (PPA), which paved the way for the subsequent 1992–1993 involvement of the United Nations Transitional Authority of Cambodia (UNTAC) and its administration of the first post-conflict 1993 multiparty democratic election. Since then, post-conflict Cambodia has experienced significant increases in foreign aid and net FDI inflow.[1] World Bank's data shows that total net FDI inflows (in current US$) have surged from US$1.14 billion during 1992–2000 to US$5.37 billion in 2001–2010 before jumping to US$17.75

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[1] Post-conflict Cambodia is also one of the top 25 recipients of aid for trade (Lee & Ries, 2016).

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billion in 2011–2018.[2] During the same respective periods, Cambodia's net official development assistance and official aid also surged from US$2.9 billion to US$5.12 billion and increased to US$6.14 billion (see Figures 1–3).

Has aid been a catalyst for FDI inflow into post-conflict and emerging market Cambodia? Despite large inflows of both aid and FDI for three decades since PPA and UNTAC, there is hardly any systematic study to answer such a crucial policy-relevant question. The main contribution of this paper is our attempt to answer this question by investigating whether (aggregate, disaggregate sectoral, donor-specific bilateral and multilateral) foreign aid to post-conflict Cambodia has any short- and long-run crowding-in effects on the inflows of FDI over the 1992–2018 post-conflict period using the dynamic time-series modelling based on the autoregressive distributed lag (ARDL) bound testing approach.

Examining the aid–FDI nexus has important policy implications as long-term private foreign capital inflow has been viewed to not only bring needed capital – by filling in the saving-investment gaps in recipient countries – but also has the potential to spillover technology knowhows and productivity enhancement onto host economies, that in turn promotes long-term economic development. If foreign development assistance can spur FDI inflow, aid can promote aid-receiving developing countries' development process, especially post-conflict developing economies. Thus, the aid-effectiveness literature has recently debated whether foreign aid has a complementary or catalysing effect on FDI inflows.

Theoretically, foreign aid can have positive or negative effects on FDI, with the former working through infrastructure, finance, signalling and vanguard effects (Donaubauer et al., 2016; Garriga & Phillips, 2014; Kimura & Todo, 2010; Selaya & Sunesen, 2012) while the later operates via rent-seeking and Dutch disease effects (Arellano et al., 2009; Harms & Lutz, 2006). Due to these theoretical ambiguities, whether foreign aid attracts or deters FDI becomes an empirical question (Cassimon et al., 2013). So far, the emerging empirical literature on aid–FDI nexus has also been recorded with highly mixed findings with positive, negative and null results (Donaubauer, 2014; Donaubauer et al., 2016; Harms & Lutz, 2006; Janský, 2012; Kimura & Todo, 2010; Lee & Ries, 2016; Liao et al., 2020; Selaya & Sunesen, 2012; Tanaka & Tsubota, 2013; Yasin, 2005).

The mixed evidence is not peculiar to this emerging aid–FDI literature but also has been common to the general aid-effectiveness research, especially those focussing on whether foreign aid promotes political and socioeconomic development in the recipient countries. This comes despite most of the aid studies using macro-data from the same sources. Juselius et al. (2014) argued that such perplexing findings then implies that different choices of data transformation, econometric models, estimation methods, and endogeneity or exogeneity assumptions are the main reasons, which is also confirmed by Lof et al. (2015). Furthermore, most studies rely on cross-sectional and panel data

[2] UN Conference on Trade and Development (UNCTAD) data also shows values of greenfield FDI projects (i.e., an FDI in which a parent company creates a subsidiary in Cambodia by building its operations from the ground up) has more than double from US$10.58 billion in 2003–2010 to US$22.23 billion in 2011–2018.

(hence assuming homogeneity among countries)[3] to evaluate the aid effectiveness; while there is acutely limited research focussing on specific case studies of each individual aid-receiving country (see Juselius et al., 2014; Lof et al., 2015; Riddell, 2008). Given the prevalence of these conflicting findings, Riddell (2008) argued that country-specific contextual evidence provides the only reliable evidence on which to further evaluate aid effectiveness. In this study, we provide a deeper country contextual empirical insight using a time-series framework to study the dynamic short-run and long-run relationships between aid and FDI inflows for post-conflict Cambodia.

We argue that such dynamic modelling adds important insight by capturing the fact that large and more complex aid projects (e.g., public infrastructure projects) take many years to complete and be properly evaluated whether they are effective (Riddell, 2008), and that FDI is a long-term foreign investment.[4] Hence, their relationships, if any, may inherently be dynamic, involving long-run equilibrium and short-run deviation and adjustment to that equilibrium path (Banerjee et al., 1993). Time-series and cointegration analysis allow for the quantification of such dynamic short-run and long-run effects of aid on FDI – including dealing with the endogeneity problem – which is a more appropriate way to study the longer-term nature of both aid and FDI. To the best of our knowledge, our study is the first to provide insight into the nexus between (aggregate, sectoral, donor-specific bilateral and multilateral) aid and FDI from the time-series perspective for post-conflict Cambodia. Looking further at donor-specific bilateral and multilateral aid would add more insight into aid effectiveness in attracting the FDI inflow. This is because bilateral aid is more fragmented and politicised (Gehring et al., 2017; OECD, 2005) than multilateral aid (Gulrajani, 2016)[5] and that aid via multilateral agencies can increase the overall impact of aid in promoting development outcomes (Annen & Knack, 2018). Furthermore, this is to approximate, if any, the nuanced specific effects of these types of aid on FDI, as few recent studies also suggest the existence of donor-specific aid effect – the so-called vanguard effect – (Kimura & Todo, 2010), the positive signalling content of aid inflows and its impact on FDI in post-conflict countries (Garriga & Phillips, 2014), and the influence of bilateral and multilateral aid on FDI in African countries (Yasin, 2005).

We find differential and mixed effects of aggregate, sectoral, donor-specific and multilateral-specific aid on FDI in post-conflict Cambodia. In the long run, only aggregate aid, bilateral aid from Australia and multilateral UNDP aid have robust crowding-in

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[3] Juselius et al. (2014) used country-based time-series analysis on each of the 36 African countries and concluded that, even within this seemingly homogenous panel of countries, they are quite heterogeneous with respect to the transmission of aid on macro variables. This enforces the justification for a country case study undertaken by this study.

[4] Clemens et al. (2012) argued that one of the reasons that different aid-growth studies reach different conclusions is because they measured the effect of aggregate aid on contemporaneous growth, while many aid-funded projects would take longer to influence growth. This is likely the case for the aid–FDI research.

[5] Reviewing the literature on donors' strategic choices of aid allocation via bilateral versus multilateral aid channels, Gulrajani (2016, p. 6) suggested that "the advantages of multilateral channels derive from their ability to collectively organize, pool and advance common global causes, while bilateral channels are conduits for donor control, visibility and preferences."

effects on FDI inflows. The long-run positive effects of aid from the EU, US and Japan are fragile, i.e., not robust to alternative cointegrating estimators. In the short run, aggregate and economic aid have net crowding-out effects; while the US and UNDP aid have lagged crowding-out effect, but such effect disappears in the current period; and that the positive effect of 'governance aid' is short-life. Interestingly, we find that only EU aid and other aid (for social, educational and humanitarian purposes, and other types of aid that are not classified under economic and governance aid) have short-run crowding-in effects on FDI in post-conflict Cambodia. Our finding has important policy implications for aid effectiveness. In that, our finding suggests not only those aid into infrastructure development that complements productive factors (Selaya & Sunesen, 2012) but also aid inflow via multilateral channels like UNDP – that have the advantages of strengthening aid selectivity (e.g., to meet specific development needs) – can incentivise policy improvements in recipient countries (Annen & Knack, 2018) which in turn improve aid effectiveness in attracting the inflows of long-term private foreign capital into post-conflict Cambodia in the long run. This has the potential to improve the long-term development process.

2. Literature Review

Theoretically, there are several channels that aid can either foster or hinder FDI inflows (Asiedu et al., 2009; Cassimon et al., 2013; Donaubauer et al., 2016; Garriga & Phillips, 2014; Harms & Lutz, 2006; Kimura & Todo, 2010; Selaya & Sunesen, 2012). On the positive effects of aid, foreign aid makes the recipient country more attractive to FDI when: (1) it increases the stock of economic and social infrastructures through its public infrastructure financing leading to a further increase in the marginal product of private capital (MPK), the so-called infrastructure effects; (2) it improves recipient country's ability to finance the sustained outflows of profit repatriations from FDI; (3) to the extent that aid sufficiently improve recipient's institutional quality, it would further attract FDI; (4) it may have a vanguard effect when aid from a particular donor to a particular recipient country boost FDI from that same donor (but not from other donors); and (5) Garriga and Phillips (2014) argued that, in a post-conflict society with poor information, by giving (non-strategic) development aid to recipient country would also carry positive signal to investors (from the same donor country or other donors) on the donors' trust of local authority and thus convey a better (possibly low-risk) environment for FDI. In line with this signal effect, Asiedu et al. (2009) theoretically and empirically show that aid reduces the expropriation risk in low-income countries and sub-Saharan Africa.

On the contrary, foreign aid also can substitute or crowd out private foreign capital flows. First, foreign aid can foster rent-seeking activities by incentivising private (and public) agents to compete for rents from inflows of aid hence displacing talents and efforts from productive activities, e.g., R&D and training (Cassimon et al., 2013). Consequently, this aid induced unproductive rent-seeking makes the aid recipient country less attractive to the FDI inflow (Harms & Lutz, 2006). Second, aid may induce a Dutch disease effect (Arellano et al., 2009). Large aid inflows appreciate domestic currency further, resulting in a resource movement (e.g., labour and capital) away from

tradeable sectors (consequently reducing its labour supply and increasing its wage) to non-tradeable (including aid) sectors hence reducing MPK and returns for foreign-own capital, leading to a reduction in FDI inflow (and output).

Reflecting these theoretical ambiguities, small existing empirical evidence on the aid–FDI nexus is also highly inconclusive. For instance, Harms and Lutz (2006) found no significant effect of aid on FDI, while Asiedu et al. (2009) found that aid directly crowds out FDI with some mitigation effect of aid on risks to FDI. Donaubauer (2014) showed that aid reduced FDI in developing countries, while Liao et al. (2020), focussing on aid-recipient countries along the Belt and Road Initiative, also recorded adverse effects. However, Yasin (2005) found a positive effect of bilateral aid (but there was no effect of multilateral aid) on FDI in sub-Saharan African countries, while Janský (2012), using a global sample, found no causal effect of aid on FDI. Kimura and Todo (2010) also recorded no significant aid effect on FDI. Nevertheless, when they further examined whether aid from a particular donor country can draw in FDI solely from that same donor to that specific aid recipient country, they found a vanguard effect only for Japan, a major Development Assistant Committee (DAC) country. Furthermore, studies focussing on sectoral aid tended to find that such aid directed towards complementary factors of production (e.g., financing public infrastructure and human capital projects) increases FDI (Donaubauer et al., 2016; Selaya & Sunesen, 2012). Focussing on aid for trade, mostly directed towards financing infrastructure development and building the productive capacity of the recipient developing countries, Lee and Ries (2016) also found that aggregate bilateral aid for trade (including those from top five donors, i.e., the United States, Japan, France, Germany and Great Britain) promotes greenfield investment in the recipient countries. Their finding also confirms Kimura and Todo's (2010) study that Japan has the largest investment creation effects.

In the context of post-conflict Cambodia, generally, there are mixed findings on aid's effectiveness in promoting political and socioeconomic development.[6] For the aid–FDI nexus, Tanaka and Tsubota (2013) is the only existing study on post-conflict Cambodia. They used 2011 Cambodia Economic Census data to examine whether aid for road infrastructure had any influence on the location entry of foreign firms and found no evidence of such an aid effect on foreign firms' (and domestic firms') entry across communes. Unlike Tanaka and Tsubota (2013), we rely on time-series analysis to examine the post-conflict period since 1991 PPA. As we have argued in the preceding section that the relationship between foreign aid and FDI may be inherently dynamic, where long-term aid projects (e.g., road infrastructure and social and human capital development projects) may take longer time to provide full benefits and positive signal to investors of the potential high MPK, long-term international investment inflow may also take time to respond to the changes in domestic economic conditions including foreign aid inflows. So far – since the PPA and the subsequent large inflows of both foreign aid and FDI over three decades – there is no empirical study at the macro

[6] For instance, Sothan (2018) found that aid promotes economic growth in the short run but harms it in the long run. Ear (2007) argued that aid would reduce governance quality, while others (Askarov & Doucouliagos, 2015; Slesman, 2021) showed that foreign aid (both in aggregate and across sectors) in fact promotes good governance and democratic political institutions in post-conflict Cambodia.

level over the post-conflict period to comprehensively and systematically quantify the dynamic short-run and long-run relationships that capture not only the FDI-impacts of aggregate aid but also the disaggregate aid classified into purpose-based 'governance aid', 'economic aid', 'other social and humanitarian aid', 'donor-specific aid' and 'multilateral aid'. This paper aims to empirically fill this important policy relevant research gap.

3. Empirical Model, Methodology and Data

3.1 Empirical Model and Methodology

To investigate the dynamic short- and long-run relationships between foreign aid and FDI inflows in post-conflict Cambodia, we express FDI as a function of foreign aid and the controls of real GDP and trade openness in the following parsimonious double-log linear empirical model specification:[7]

$$\ln FDI_t = \beta_0 + \beta_1 \ln AID_t + \beta_2 \ln RGDP_t + \beta_3 \ln OPEN_t + u_t \quad (1)$$

where $\ln FDI_t$ is a natural log of FDI per capita; $\ln AID_t$ is a natural log of real net bilateral aid per capita (NBAPC); $\ln RGDP_t$ is a natural log of real GDP; $\ln OPEN_t$ is a natural log of trade as a percentage of GDP; and u_t is the normally distributed residual term. $\ln RGDP_t$ and $\ln OPEN_t$ are included to capture the local market size and economic openness, respectively. With small observations, this specification can be considered a data feasible specification. It is conventional that when the variables are nonstationary, an ordinary least squares (OLS) estimation of Eq. (1) will produce spurious results. Through unit root tests, we check for their stationary property (and find that they are a mixture of I(0) and I(1), see Table 1).[8] Thus, Equation (1) is expressed in the ARDL framework that links the long-run relationship (lagged level variables) with short-run dynamics (lagged first differenced variables) through the following unrestricted error correction model (UECM):

$$\begin{aligned}\Delta \ln FDI_t = {} & \alpha_0 + \alpha_1 \ln FDI_{t-1} + \alpha_2 \ln AID_{t-1} + \alpha_3 \ln RGDPPC_{t-1} + \alpha_4 \ln OPEN_{t-1} + \\ & \sum_{i=1}^{p} \gamma_i \Delta \ln FDI_{t-i} + \sum_{j=0}^{q} \lambda_j \Delta \ln AID_{t-j} + \sum_{k=0}^{r} \delta_k \Delta \ln RGDPPC_{t-k} + \\ & \sum_{m=0}^{s} \varphi_m \Delta \ln OPEN_{t-m} + \theta CRISIS_t + \varepsilon_t \end{aligned} \quad (2)$$

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[7] Log-linear specification is also the most preferred specification (and logarithmic data transformation) when studying aid effectiveness (Juselius et al., 2014).

[8] It should be noted that, although the dependent variable should be I(1) (while independent variables can be a mixture of I(0) and I(1)), it is also valid for it to be an I(0) if the null of no-cointegration is rejected and the coefficient on the (negative-signed) lagged error correction term (ECT) is statistically significant (see the theoretical analysis in EViews, 2017a). In Table 1, there is a mixed finding on the order of integration for $\ln FDI_t$ because ADF and KPSS unit root tests report $\ln FDI_t$ to be I(0) while the alternative PP test shows I(1). We show below that the nulls of ARDL bound test and negative-signed coefficient on ECT are rejected at the conventional level, hence confirming the validity of the existence of a cointegrating relationship between the level variables even if $\ln FDI_t$ turns out to be an I(0).

with Δ being the first-difference operator and ε_t being a residual term. We included dummy variable $CRISIS_t$ to capture the 1997–1998 Asian financial crisis and the 2007–2008 global financial crisis.[9] Equation (2) forms an ARDL(p, q, r, s) model, where the long-run elasticities can be derived by dividing the one-lagged explanatory variable by the coefficient of the one-lagged dependent variable (and multiplied by a negative sign) – i.e., $\beta_1 = -(\alpha_2/\alpha_1)$ – and the short-run effects can be captured by the coefficients on the first-differenced variables (Asteriou & Hall, 2007).

The ARDL bound testing procedure is employed to examine the existence of cointegration among the variables (Farooq et al., 2013; Law, 2008; Slesman, 2021). It has several advantages. First, it does not require that all variables be integrated in the same order, though it cannot handle the I(2) variable (Pesaran et al., 2001). Second, with sufficient lag structure (i.e., sufficient dynamics) that can be determined using Akaike information criteria (AIC),[10] it can satisfactorily correct for serial correlation in the residuals and hence endogeneity problems (Pesaran & Shin, 1998). Lastly, this approach has better finite sample properties than the traditional cointegration approaches, making it more appropriate for our study, which uses a small sample to test for the existence of a long-run relationship between variables (Pesaran et al., 2001). Not only that but if cointegration exists, Pesaran and Shin (1998) showed that OLS estimators for short-run and long-run coefficients within the ARDL framework would be consistent and super-consistent, respectively.

Thus, via the ARDL bound test, if a unique cointegration exists, the error correction model can be used to gauge the speed of adjustment from short-run disequilibrium to long-run equilibrium without losing long-run information (Ahmad & Du, 2017). We can then estimate the dynamic of short-run effects and speed of adjustment by expressing Eq. (2) into a (restricted) error correction model where the lagged-level variables are equivalently expressed into its lagged error correction term (ECT_{t-1}) – tying the long-run relationship to its short-run dynamic adjustment:

$$\Delta \ln FDI_t = \sum_{i=1}^{p} \gamma_i \Delta \ln FDI_{t-i} + \sum_{j=0}^{q} \lambda_j \Delta \ln AID_{t-j} + \sum_{k=0}^{r} \delta_i \Delta \ln RGDP_{t-k} + \sum_{m=0}^{s} \varphi_m \Delta \ln OPEN_{t-m} + \theta CRISIS_t + \sigma(\ln FDI_{t-1} - \alpha_0 - \alpha_1 \ln AID_{t-1} - \alpha_2 \ln RGDP_{t-1} - \alpha_3 \ln OPEN_{t-1}) + \varepsilon_t$$

It can be further transformed into Equation (3):

$$\Delta \ln FDI_t = \sum_{i=1}^{p} \gamma_i \Delta \ln FDI_{t-i} + \sum_{j=0}^{q} \lambda_j \Delta \ln AID_{t-j} + \sum_{k=0}^{r} \delta_k \Delta \ln RGDP_{t-k} + \sum_{m=0}^{s} \varphi_m \Delta \ln OPEN_{t-m} + \theta CRISIS_t + \sigma ECT_{t-1} + \varepsilon_t \quad (3)$$

where the error correction coefficient $\sigma < 0$. Equation (3) expresses the short-run deviations between $\ln FDI_{t-1}$ and its long-run equilibrium value, and σ is the adjustment

[9] The nonzero components of the dummy variable, CRISIS, are expected to vanish asymptotically (see Pesaran et al., 2001, p. 307 and footnote 17).

[10] AIC and Schwarz information criterion (BIC) differs with the penalty terms used to panelise model when additional parameters are being added to the model – i.e., BIC uses a factor of ln(*n*) while AIC uses 2, where *n* is the number of observations. Hence, for $n > 7$, BIC places greater penalty than AIC. When compared to BIC, AIC performs better in finite samples (Vrieze, 2012).

coefficient, measuring the speed (or how much) of adjustment to long-run equilibrium would be (take place) each year (Asteriou & Hall, 2007; Pesaran & Shin, 1998; Pesaran et al., 2001). To have a stable system whereby any disequilibrium in the short run will eventually be corrected to restore equilibrium, σ must be $-2 < \sigma < 0$, with $-1 < \sigma < 0$ being convergence without oscillatory trajectories (no fluctuation above and below an equilibrium value) (see De la Fuente, 2000; EViews, 2017a,b; Slesman, 2021).[11] ECT_{t-1}, therefore, would correct $\ln FDI_{t-1}$ back into equilibrium long-run value.

There are two basic steps in estimating the short-run and long-run effects. First, the optimum lag order of p, q, r and s are determined with Akaike information criteria (AIC) in our estimation of the ARDL model using OLS criteria. Standard diagnostic tests, e.g., normality, residual serial correlation, heteroscedasticity, model misspecification and model stability (cumulative sum, CUSUM and CUSUM Squared, CUSUMSQ) tests, are conducted to check whether the chosen model is well-specified. In the second step, the bound test is then conducted on the well-specified model to determine the existence of a cointegrating relationship between the level variables. This bound test is a restriction test on the null hypothesis (H_0) of no cointegrating or long-run relationship. We use Narayan's (2005) generated lower critical bound (LCB) and upper critical bound (UCB) critical bounds values for use in a small sample.

If the cointegration tests confirm the existence of cointegration among variables, we further estimate this single cointegration vector to obtain the long-run coefficients. To ensure that any long-run effects uncovered using ARDL estimation are robust, we complement with the estimators of Phillips and Hansen's (1990) fully modified OLS (FMOLS), Stock and Watson's (1993) dynamic OLS (DOLS), and Park's (1992) canonical cointegrating regression (CCR). FMOLS, DOLS and CCR can account for problems of endogeneity, small sample bias and serial correlation arising from a cointegration relationship. Thus, our study effectively considers issues identified by Juselius et al. (2014) – including a more appropriate logarithmic data transformation, econometric models and methods that deal with the endogeneity problem – in our attempt to quantify the aid–FDI nexus in post-conflict Cambodia. Using these alternative and more robust estimators would also provide a simple way to gauge the robustness of the long-run effects of foreign aid on FDI. A simple criterion is that if most of these estimators produce similar results, the finding would be regarded as robust.

3.2 Data and Measurement

Although foreign aid data is available since 1980, the FDI data is only available since 1992, the start of the 1992–1993 UNTAC mission that saw large inflows of foreign aid to help post-conflict Cambodia's socioeconomic reconstruction and democratic political transition. Due to this, our study covers a smaller sample of the post-conflict periods

[11] There are four possible types of dynamic paths implied by σ namely: (i) Oscillatory path (fluctuates above and below some value) when $-2 < \sigma < -1$; (ii) non-oscillatory path when $\sigma < -2$; (iii) convergence (stability) when $-2 < \sigma < 0$, where $-1 < \sigma < 0$ being convergence without oscillatory trajectories; and (iv) divergence (instability) when $\sigma \leq -2$ or $\sigma \geq 0$ (see Slesman (2021) and a more detail explanation in De la Fuente (2000, Chapters 9–11) and EViews (2017a,b)).

from 1992 to 2018. This pre-COVID-19 sample also excludes the COVID-19 period that roughly started in late 2019. FDI per capita is taken from the *World Development Indicators* (WDI).[12] Foreign aid inflow per capita (AID) is measured using standard per capita net bilateral aid flows from DAC donors (WDI) and then converted into a constant 2010 US$ using the US consumer price index (with 2010 as base year) taken from the IMF's *International Financial Statistics*. In addition to this aggregate AID, we also computed sectoral aid inflows, namely governance, economic and other social-humanitarian aid, following the classification in Jones and Tarp (2016)[13] but from a more recently released database of the AidData Core Research Release version 3.1 (see Tierney et al., 2011),[14] and converted the numbers into per capita values in constant 2010 US$ (see Slesman, 2021). Governance aid includes those aid projects and funding related to the government and civil society and support for NGOs. Economic aid includes assistance for transport and storage; communication; energy generation and supply; banking and financial services; business; agriculture, forestry, and fishery; industry, mining, and construction; trade policy, regulation, and tourism. Other aid includes education, health, food, environmental protection, debt, and other humanitarian and relief-related aid.

In addition to AID and sectoral aid, this study also looks at donor-specific aid inflows from Cambodia's major donors and main signatories to the PPA including the US (USAID), Japan (JAID), Australia (AUSAID), France (FAID), EU (EUAID), as well as multilateral aid through the United Nations Development Programme (UNDPAID) to Cambodia to investigate their influence on FDI. These aid data are also converted into per capita values in constant 2010 US$ (WDI). Since we do not have sufficiently long time-series data on the sources of FDI inflow (or country-based FDI inflows into post-conflict Cambodia), we believe this donor-specific analysis may provide some partial insight into donor-specific aid effects on FDI, if any. For the controlled variable real GDP (RGDP), we obtained the data from the UN Statistics collected in the Quality of Governance (QoG) database (Teorell et al., 2023) and then converted it into constant 2010 US$. Figures 1, 2 and 3 depict the trend in per capita FDI and aid inflows.

Furthermore, as discussed in the preceding section, we now check the stationary property of all variables using the standard unit root tests. Table 1 reports the outcomes of these unit root tests. There is a mixture of I(0) and I(1) variables. For the case of FDI, the ADF and KPSS tests suggest I(0), while the PP test suggests I(1). Similar cases like this were also recorded for other variables except $\ln AID_t$, $\ln AUSAID_t$, and $\ln RGDP_t$ which were found uniformly to be I(1) variables while that of $\ln UNDPAID_t$ to be an I(0). Thus, the outcome of a mix of I(0) and I(1) validate the use of the ARDL model to examine the short-run dynamic and long-run relationship between foreign aid and FDI in post-conflict Cambodia.

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[12] The sectoral FDI inflows data, e.g., FDI into textile or mining industry, is unavailable, so we cannot specifically examine the influence of aggregate, sectoral, donor-specific bilateral or multilateral aid on this sectoral FDI.

[13] We follow Jones and Tarp (2016, p. 280) in employing 2-digit and purpose codes as reported in their Table C3.

[14] Available at http://aiddata.org

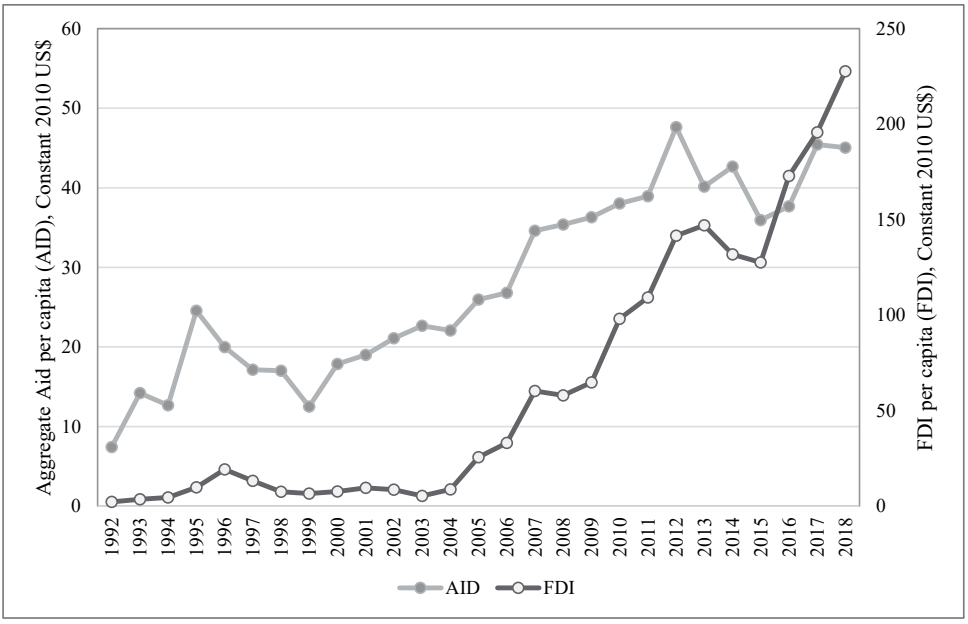

Figure 1. AID and FDI in post-conflict Cambodia
Source: Authors' preparation.

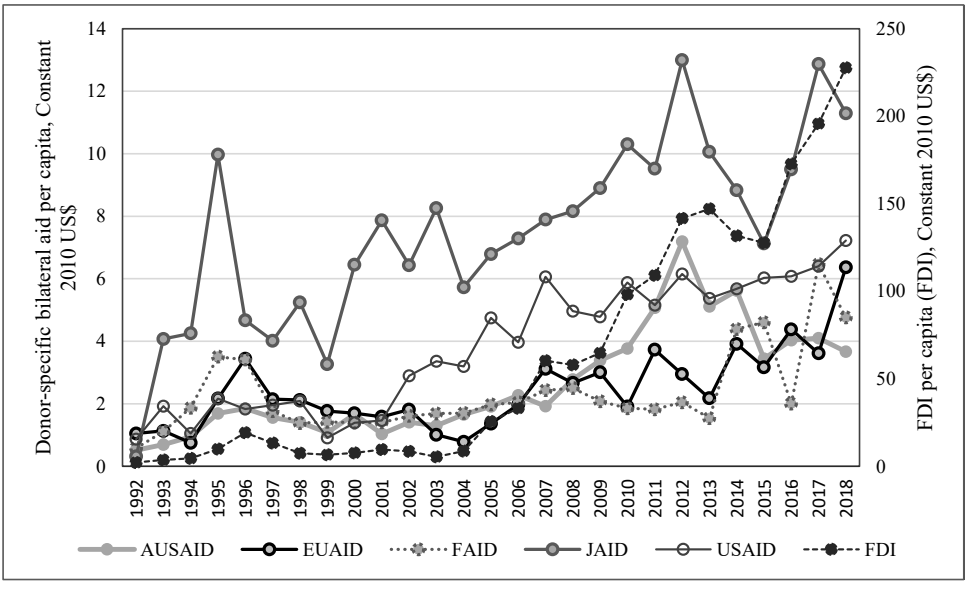

Figure 2. Donor-specific bilateral aid and FDI in post-conflict Cambodia
Source: Authors' preparation.

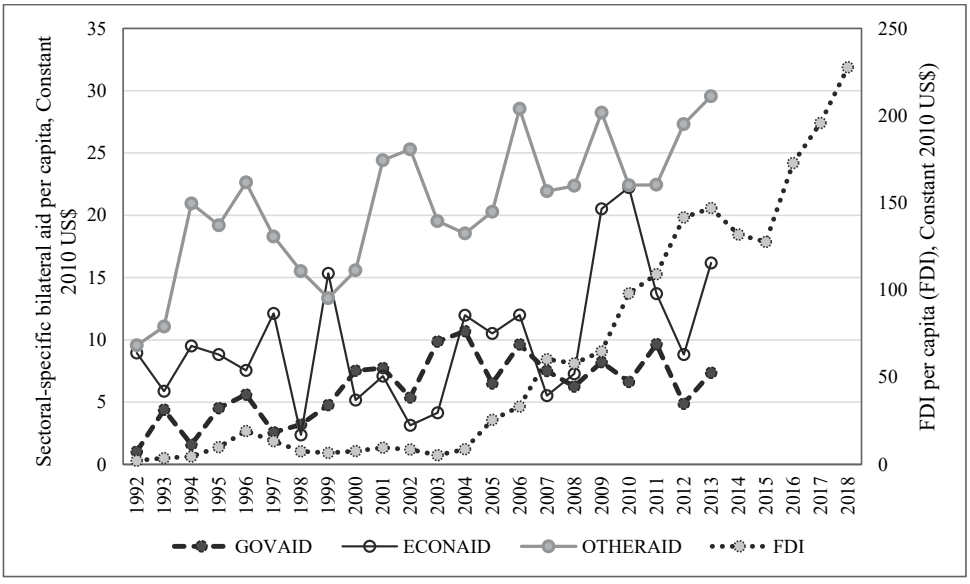

Figure 3. Sectoral-specific bilateral aid and FDI in post-conflict Cambodia
Source: Authors' preparation.

Table 1. Unit root tests

	Augmented Dickey-Fuller (ADF) test		Phillips and Perron (PP) test		Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test		Result
	Level	First difference	Level	First difference	Level	First difference	
lnFDI_t	−4.370**	−3.520*	−2.152	−3.324*	0.0849	0.0656	$I(0)$ / $I(1)$
lnAID_t	−1.986	−5.554***	−2.571	−5.514***	0.6183**	0.1150	$I(1)$
ln$GOVAID_t$	−3.408*	−6.382***	−3.560**	−10.096***	0.5992**	0.0982	$I(0)$ / $I(1)$
ln$ECONAID_t$	−1.961	−9.273***	−4.664***	−23.136***	0.4959**	0.1428	$I(0)$ / $I(1)$
ln$OTHERAID_t$	−3.160	−4.694***	−3.459*	−7.436***	0.5273**	0.1479	$I(0)$ / $I(1)$
ln$EUAID_t$	−3.238*	−7.637***	−3.238*	−8.120***	0.5083**	0.3457	$I(0)$
ln$USAID_t$	−3.548*	−5.399***	−3.146	−7.750***	0.6937**	0.3214	$I(0)$ / $I(1)$
ln$JAID_t$	−8.488***	−3.621**	−1.611	−6.744***	0.4944**	0.2517	$I(0)$ / $I(1)$
ln$AUSAID_t$	−1.967	−6.448***	−2.288	−6.450***	0.6692**	0.1022	$I(1)$
ln$UNDPAID_t$	−3.231*	−4.968***	−3.232*	−4.828***	0.1346	0.2871	$I(0)$
ln$FAID_t$	−4.003**	−13.932***	−4.251***	−13.199***	0.4202*	0.1011	$I(0)$ / $I(1)$
lnGDP_t	−2.273	−5.469***	−2.273	−5.442***	0.7601***	0.0945	$I(1)$
ln$OPEN_t$	−8.773***	−9.768***	−6.866***	−11.373***	0.4170*	0.3193	$I(0)$ / $I(1)$

Notes: ***, ** and * indicate significance level at 1%, 5% and 10% respectively. ADF and PP tests have the null hypothesis of a unit root or non-stationary, while KPSS test's null hypothesis is *stationary*.

Table 2. ARDL bound test

	Dependent variable: ln FDI_t			
	Model 1: ln AID_t	Model 2: ln AID_t = ln $GOVAID_t$	Model 3: ln AID_t = ln $ECONAID_t$	Model 4: ln AID_t = ln $OTHERAID_t$
Panel A. ARDL bound test				
ARDL bounds test (F-stat.)	11.1884***	4.6229**	12.5789***	9.9366***
Optimal lag length (AIC)	ARDL(3,4,4,4)[a]	ARDL(2,2,0,2)	ARDL(3,3,3,1)	ARDL(1,2,3,3)
Diagnostic tests				
χ^2 *NORMAL* (*p*-value)	0.0284 (0.9858)	1.6545 (0.4372)	1.3361 (0.5136)	0.4870 (0.7838)
χ^2 *SERIAL* (*p*-value)	20.6517 (0.0000)***	4.1221 (0.1273)	4.5459 (0.1030)	2.4751 (0.2901)
χ^2 *WHITE* (*p*-value)	22.3160 (0.2688)	7.5577 (0.6719)	14.4755 (0.4149)	11.9175 (0.5344)
χ^2 *RAMSEY* (*p*-value)	1.1617 (0.3938)	0.0657 (0.8041)	0.0909 (0.7827)	0.4193 (0.5526)
CUSUM	Stable	Stable	Stable	Stable
CUSUMSQ	Stable	Stable	Stable	Stable
F-statistics (*p*-value)	98.99 (0.0000)***	31.44 (0.0000)***	113.02 (0.0000)***	64.84 (0.0001)***
R^2	0.9883	0.9721	0.9974	0.9941

Notes: Finite sample bounds F critical values are obtained from Narayan (2005) with n = 30 for 1% (lower bound value = 5.155 & upper bound value = 6.265), 5% (lower bound value = 3.538 & upper bound value = 4.428) and 10% (lower bound value = 2.915 & upper bound value = 3.695) significant levels. The ARDL models are estimated with restricted constant (Case II). Optimal lag length is determined by Akaike information criteria (AIC).

[a] The model is estimated with Newey-West correction on the variance-covariance matrix to account for serial correlation and heteroscedasticity in the residuals as it either suffers from serial correlation (indicated by LM test, i.e., χ^2 SERIAL test) or non-constant variance (White test) or both.

***, ** and * indicate significance level at 1%, 5% and 10% respectively.

4. Empirical Findings and Discussions

Table 2 reports the main results from the ARDL bound tests for the existence of a cointegration relationship between foreign aid, in aggregate and across sectors, and FDI in post-conflict Cambodia. First and foremost, we note that the diagnostic tests of all models – aggregate aid (Model 1), governance aid (Model 2), economic aid (Model 3) and other aid (Model 4) – show that they are well-specified.[15] ARDL-bound tests conducted on these well-specified models show that no-cointegration nulls are rejected at the conventional levels of at least 5%. These confirm that the foreign aid in aggregate and sectoral aid (governance, economic and other aid) inflows (and real GDP and trade openness) have a long-run relationship with FDI inflows. As specified in Equation (3), equilibrium relationships imply that there are short-run dynamics between FDI and the regressors, with any disequilibrium in FDI values being corrected over time, which is captured by ECT (the speed of adjustment), until the equilibrium value is restored. Table 3 reports the results for these short-run dynamics. It shows the estimated coefficients on the lagged-one ECT are negative and statistically significant at the 1% level. Its smaller coefficient size, $\hat{\sigma}(\in -2 < \hat{\sigma} < 0)$, suggests that the speeds of adjustments are quite fast across aggregate and sectoral aid models:[16] it would take less than a year to completely adjust any disequilibrium in FDI values through the oscillation path (from the previous year) back to a long-run equilibrium path. Hence, the short-run deviation is less persistent.

Coefficient assessments on the short-run effects of the controlled variables across the four models show that generally higher (growth rate of) FDI inflows in the previous year ($\Delta \ln FDI_{t-1}$) increase the current FDI growth rates. The results for the real GDP (a measure of local market size), particularly in Models 1, 3 and 4, are generally positive and statistically significant at a 5% level, indicating that the growing domestic market size in post-conflict Cambodia are generally conducive for the growth of FDI inflows in the short run. This is, however, not the case for trade openness which mainly records net negative and statistically significant effects on FDI inflows. This may be in line with a trade substitution effect, especially on the horizontal (or market-seeking) FDI (Kimino et al., 2007), where foreign firms seek to serve local markets by operating their subsidiary (e.g., constructing new plants) to 'jump the tariff or trade restrictions' are less likely to do so in the host country with more open trade as they can instead export their

[15] Model 1 suffers from serial correlation. Hence, we re-estimate it with Newey-West corrected variance-covariance matrix. In our subsequent estimations, we would do this correction for any model that violates no-residual serial correlation and homoscedastic assumptions.

[16] Coefficient $\hat{\sigma}$ on ECT_{t-1} is also known as adjustment coefficient (Asteriou & Hall, 2007, p. 314), so that the larger the coefficient the faster the adjustment from short-run disequilibrium toward long-run equilibrium that would take place within the period, say a year if the data point is annual. Furthermore, our findings conform with $\hat{\sigma}(\in -2 < \hat{\sigma} < 0)$ implying that the dynamic path is stable (i.e., convergent) as mentioned earlier. It follows, for example, that if $\hat{\sigma} = -0.5$ means 50% of the adjustment takes place in each period (implies that it takes two years – i.e., =|1/–0.5| – to fully adjust), while $\hat{\sigma} = -1$ suggests a 100% or instantaneous and full adjustment occur within the period (see detail in Asteriou & Hall, 2007). In our case, it would take about 0.65 year (=|1/–1.5271|), 0.83 year (=|1/–1.1980|), 0.96 year (=|1/–1.0404|), and 0.69 year (=|1/–1.4567|) in the AID, GOVAID, ECONAID, and OTHERAID models respectively, for a complete adjustment from the short-run disequilibrium to the long-run equilibrium path for FDI inflows.

Table 3. Foreign aid and FDI in Cambodia: Short run dynamics

	Dependent variable: $\Delta \ln FDI_t$			
	Model 1: $\Delta \ln AID_t$	Model 2: $\Delta \ln AID_t = \Delta \ln GOVAID_t$	Model 3: $\Delta \ln AID_t = \Delta \ln ECONAID_t$	Model 4: $\Delta \ln AID_t = \Delta \ln OTHERAID_t$
ECT_{t-1}	−1.5271 (0.0014)***	−1.1980 (0.0003)***	−1.0404 (0.0004)***	−1.4567 (0.0002)***
$\Delta \ln FDI_{t-1}$	0.5511 (0.0075)***	0.6173 (0.0011)***	−0.1380 (0.1436)	–
$\Delta \ln FDI_{t-2}$	0.0871 (0.4376)	–	−0.5029 (0.0058)***	–
$\Delta \ln FDI_{t-3}$	–	–	–	–
$\Delta \ln AID_t$	2.1804 (0.0035)***	−0.2613 (0.1577)	0.3672 (0.0015)***	1.0188 (0.0068)***
$\Delta \ln AID_{t-1}$	−2.8160 (0.0026)***	0.4241 (0.0105)**	−1.0173 (0.0015)***	1.4993 (0.0011)***
$\Delta \ln AID_{t-2}$	−3.2539 (0.0023)***	–	−0.4810 (0.0025)***	–
$\Delta \ln AID_{t-3}$	−2.2598 (0.0028)***	–	–	–
$\Delta \ln RGDP_t$	1.0282 (0.1633)	–	2.7056 (0.0018)***	7.0950 (0.0001)***
$\Delta \ln RGDP_{t-1}$	0.8277 (0.2082)	–	0.9880 (0.1008)	2.2302 (0.0154)**
$\Delta \ln RGDP_{t-2}$	2.7962 (0.0097)***	–	3.3329 (0.0026)***	2.0985 (0.0150)**
$\Delta \ln RGDP_{t-3}$	0.8997 (0.1888)	–	–	–
$\Delta \ln OPEN_t$	−1.2243 (0.0389)**	−1.3311 (0.0437)**	−1.8874 (0.0029)***	−2.0696 (0.0029)***
$\Delta \ln OPEN_{t-1}$	0.4661 (0.2798)	−0.9128 (0.0113)**	–	0.2376 (0.5591)
$\Delta \ln OPEN_{t-2}$	0.4319 (0.3174)	–	–	−2.2471 (0.0008)***
$\Delta \ln OPEN_{t-3}$	1.0058 (0.0088)***	–	–	–
Crisis	0.1925 (0.0970)*	0.1441 (0.3301)	0.1094 (0.2240)	0.4661 (0.0140)**

Notes: *p*-values are in parentheses. ***, ** and * indicate significance level at 1%, 5% and 10% respectively.

products to Cambodia (see Asiedu, 2002).[17] Thus, a higher degree of trade openness may reduce FDI in the short run.

For our focal variables – i.e., the foreign aid in aggregate and across sectors – Table 3 shows for Model 1 that although the current increase in (growth rate of) aggregate aid promotes FDI, its past changes reduce FDI. Overall, there are net adverse short-run effects of aggregate aid on FDI. Similarly, sectoral economic aid (Model 3) also shows a net negative short-run effect due to significant past negative effects. This may be in line with World Bank's (2002) suggestion that aid seemed to have a positive effect on private flows in the concurrent period but with negative lag effects. One possible explanation is that – within this short-run dynamics – past growth in aggregate and economic aid may have resulted in unproductive rent-seeking activities (Kimura & Todo, 2010) and that some sectoral economic aid projects into capital investments may directly compete with private foreign and domestic investments hence crowd them out (Selaya & Sunesen, 2012). Nevertheless, the current effect turns positive as some long-

[17] This may be a conjecture, as we use aggregate FDI data and, hence, cannot isolate different types of FDI inflows. It may be the case only when most of the FDI inflows into post-conflict Cambodia are market-seeking FDI.

term aid projects into complementary factors (that private actors have no incentive to undertake) – i.e., infrastructure effects (Kimura & Todo, 2010; Lee & Ries, 2016) – may have now been completed and become dominant, raising the private capital's productivity, i.e., MPK. However, the net effect remains negative due to larger past crowding-out effects outweighing the current crowding-in effects.

Interestingly, further finding shows that only governance aid (Model 2) and other aid supporting social sectors' funding, including education, health and other social and humanitarian projects (Model 4) show statistically significant short-run net positive effects on FDI inflows. In the short run, governance aid may promote good governance (Slesman, 2021) – hence reducing rent-seeking activities – but such effect is short-lived (i.e., becomes statistically insignificant in the current period). At the same time, other aid for social and humanitarian projects may enhance the critical skills and productivity of domestic labour in post-conflict Cambodia (after emerging from a genocidal regime, war and conflict). Thus, in the short run, social sector aid, e.g., health and educational aid, and to a lesser extent governance aid, appear to be crowding-in FDI inflow while the aggregate and economic aid have a net crowding-out effect.

Turning to the long-run effects of aggregate and sectoral aid on FDI, we report the findings in Table 4. Firstly, we noted that the positive-signed coefficient on real GDP is statistically significant and is highly robust across all models, while the negative-signed coefficient on trade is not. This finding (and the short-run positive effects of GDP reported in Table 3) implies that increased market size draws in FDI inflow into post-conflict Cambodia in both the short and long run, corroborating the extant literature. However, for the case of trade effect in the long run, there is weak evidence on the trade displacement effects on inflows of FDI (especially those of the horizontal FDI), in line with recent studies (e.g., Garriga & Phillips, 2014) that control for trade in their investigation of aid–FDI nexus in post-conflict developing countries.

The long-run positive impact of foreign aid is only confirmed to be positive and relatively robust for aggregate aid (Model 1) – as estimated using ARDL, FMOLS and CCR estimators. A 1% increase in per capita foreign development aid to post-conflict Cambodia would be associated with a 2–3% increase in the net inflows of FDI in the long run. This is indeed a significant impact. This may align with a theoretical proposition on the importance of aid compositions in aggregate aid (Selaya & Sunesen, 2012), as there might be opposing effects on FDI coming from aid for physical capital improvements (crowd-out) and aid into public infrastructure (that complements domestic and foreign private capitals, hence crowd them in). We postulate that though such opposing effects produce a net short-run crowding-out effect, over the long run, there is a net crowding-in effect (World Bank, 2002).[18] Two possible explanations for this long-run result.

First, in the long run, more long-term infrastructure projects may have been completed (hence dominate the 'crowding out effect' of aid in physical capital), thus

[18] World Bank (2002) also argued that short-run net adverse effects are consistent with complementary long-run effects, as private flows tend to be procyclical while official flows are countercyclical. However, in the long run, aid may improve the recipient countries' structural, policy and institutional environment that draw in FDI.

Table 4. Foreign aid and FDI in Cambodia: Long run elasticities

	Model 1: ln AID_t				Model 2: ln AID_t = ln$GOVAID_t$			
	ARDL	FMOLS	DOLS	CCR	ARDL	FMOLS	DOLS	CCR
ln AID_t	3.2878**	1.6305***	0.8084	1.9384***	−0.7988	−0.5009	−1.2422	−0.8582
	(0.0213)	(0.0082)	(0.4894)	(0.0043)	(0.2694)	(0.2098)	(0.2961)	(0.1745)
ln $RGDP_t$	0.2317	0.9469***	1.3904**	0.7694***	1.8540***	1.8645***	1.7872***	1.7457***
	(0.5703)	(0.0021)	(0.0237)	(0.0080)	(0.0000)	(0.0000)	(0.0001)	(0.0000)
ln $OPEN_t$	−1.5606**	−0.8990**	−1.9900**	−0.6711**	−0.6521	−0.4778	−1.0126	0.5033
	(0.0472)	(0.0396)	(0.0274)	(0.0200)	(0.5113)	(0.5243)	(0.5464)	(0.4387)
Intercept	−5.5109	−19.1200***	−21.7000**	−17.2000***	−33.9600***	−35.4500***	−30.4100***	−36.7300***
	(0.2887)	(0.0001)	(0.0131)	(0.0013)	(0.0000)	(0.0000)	(0.0070)	(0.0000)
R^2	–	0.9494	0.9669	0.9438	–	0.9197	0.9698	0.8656
	Model 3: ln AID_t = ln $ECONAID_t$				Model 4: ln AID_t = ln $OTHERAID_t$			
	ARDL	FMOLS	DOLS	CCR	ARDL	FMOLS	DOLS	CCR
ln AID_t	2.0150**	0.1861	0.8432	0.3440	−0.3209	0.9458	−1.2174	1.2190
	(0.0445)	(0.4784)	(0.1598)	(0.3863)	(0.4226)	(0.1929)	(0.6240)	(0.1740)
ln $RGDP_t$	0.6840	1.7645***	1.2779**	1.5284***	1.8825***	1.6860***	2.0172***	1.5116***
	(0.1753)	(0.0000)	(0.0103)	(0.0001)	(0.0000)	(0.0000)	(0.0042)	(0.0000)
ln $OPEN_t$	−0.2900	−0.9013	−1.2513	−0.1564	−3.214***	−1.1431*	−2.4305**	−0.6145
	(0.5374)	(0.1794)	(0.1577)	(0.6514)	(0.0000)	(0.0844)	(0.0466)	(0.1392)
Intercept	−15.6100*	−32.5400***	−21.6800***	−31.0900***	−23.6900***	−32.1400***	−27.4200***	−31.5400***
	(0.0596)	(0.0000)	(0.0025)	(0.0000)	(0.0000)	(0.0000)	(0.0072)	(0.0000)
R^2	–	0.9188	0.9838	0.8910	–	0.9274	0.9596	0.9057

Notes: Dependent variable is ln FDI_t. *P*-values are in parentheses. ***, ** and * indicate significance level at 1%, 5% and 10% respectively. FMOLS: Fully modified ordinary least square; DOLS: Dynamic ordinary least square; and CCR: Canonical cointegrating regression.

lowering operating costs to foreign firms and increasing MPK. In other words, fluctuations in aid inflows (e.g., for long-term socioeconomic infrastructure aid projects) may have lowered their prospect and viability in the short run, reducing investors' expectation of falling operating costs (and boosting MPK) in post-conflict Cambodia.[19] However, over the long term, the completed long-term infrastructure aid projects, especially to the complementary factors of production that generally work to remove barriers to foreign capital (e.g., reducing the operating and transaction costs, and increasing the productivity of capital), may have increased the inflows of FDI (Donaubauer et al., 2016; Selaya & Sunesen, 2012) to post-conflict Cambodia.

Another possible explanation is that large inflows of foreign aid since 1991-PPA and the 1992-1993 UNTAC may have provided a positive signal and information to foreign investors (in an otherwise information-poor post-conflict environment) that may lead to a crowding-in effect over the long run (Garriga & Phillips, 2014). Over time, such signals and information about the local business environment such as on the skill levels of labour, condition of infrastructure, bureaucratic quality, explicit and implicit business rules, and government regulation may become more accessible to firms and government agencies of the donors' countries through their engagement in aid activities funded by their governments (Kimura & Todo, 2010). As FDI inflow in post-conflict Cambodia is relatively new, such understanding may enable foreign firms to gain sufficient knowledge (in a shorter time frame) to venture with their subsidiary (e.g., constructing new plants). Garriga and Phillips (2014) argued that significant (nonstrategic) aid being allocated would signal donors' trust in the local authority, regardless of whether or not aid has achieved its intended objectives, which, in turn, signals a better environment (and accessibility of post-conflict Cambodian markets) for FDI inflows.

Surprisingly, for sectoral aid, we find either a non-robust statistical evidence (e.g., in Model 3, the positive coefficient on economic aid is only positive and significant at a 5% level in ARDL estimation) or the absence of long-run effects on FDI inflows (e.g., Models 2 and 4 for governance and other social–humanitarian aids respectively).[20] Thus, governance and other aid do not seem to relate to FDI inflows in the long run, although other studies (Jones & Tarp, 2016; Slesman, 2021) found that they matter for the development of political institutions in post-conflict Cambodia.

4.1 Cambodia's Major Bilateral and Multilateral Aid Donors

We further examine the impacts of aid from Cambodia's major bilateral and multilateral donors, namely the EU, the US, Japan, Australia and France, and aid via UNDP. Table 5 reports bound tests for the existence of cointegration between FDI and the regressors, while Table 6 summarises the short-run effects of EUAID, USAID, JAID, AUSAID, FAID and UNDPAID. Firstly, the outcomes of the bound tests on the well-specified ARDL models for each bilateral and multilateral aid donor reported in Table 5 confirm the existence

[19] Gnangnon (2021) showed that aid volatility increases volatility in the inflow of FDI.

[20] This might possibly be due to small sample size.

of cointegrating relationships between FDI and regressors in each model (i.e., the null of no-cointegration is rejected at least at 10% level). Like the aggregate and sectoral aid, donors specific bilateral and multilateral aid (and real GDP and trade openness) also appear to be the driving forces explaining the stable long-run variations in the level of FDI inflows in post-conflict Cambodia.

Interestingly, Table 6 shows that the speed of adjustment, implied by the coefficient σ on the ECT_{t-1}, from short-run deviations towards long-run equilibrium path for these donors' specific aid is relatively slower than that of the aggregate and sectoral aid. In that, about 36.2%, 57.1%, 78.3%, 74.2%, 86.3%, and 169.4% of the adjustments take place within a year are recorded respectively for EUAID, USAID, JAID, AUSAID, FAID and UNDPAID models. Hence, respectively, it would take 2.8, 1.8, 1.3, 1.3, 1.2, and 0.6 years for any short-run disequilibrium to be eliminated and restored long-run equilibrium

Table 5. Donor-specific aid: ARDL bound test

	Dependent variable: ln FDI_t					
	ln AID_t = ln $EUAID_t$	ln AID_t = ln $USAID_t$	ln AID_t = ln $JAID_t$	ln AID_t = ln $AUSAID_t$	ln AID_t = ln $FAID_t$	ln AID_t = ln $UNDPAID_t$
Panel A. ARDL bound test						
ARDL bounds test (F-stat.)	3.7330*	8.8873***	4.5270**	3.9157*	3.6215*	21.7485***
Optimal lag length (AIC)	ARDL (1,2,0,0)[a]	ARDL (2,3,3,0)[a]	ARDL (2,0,0,0)	ARDL (1,1,3,0)	ARDL (2,2,0,0)	ARDL (3,3,3,1)[a]
Diagnostic tests						
χ^2 NORMAL (p-value)	0.2288 (0.8918)	3.2267 (0.1992)	1.3499 (0.5091)	3.3320 (0.1889)	0.3142 (0.8546)	0.5502 (0.7594)
χ^2 SERIAL (p-value)	6.4466** (0.0398)	7.3107** (0.0259)	2.8032 (0.2462)	3.8212 (0.1480)	1.7741 (0.4119)	10.3285*** (0.0057)
χ^2 WHITE (p-value)	2.2995 (0.9414)	12.6132 (0.5572)	4.0633 (0.6681)	6.7187 (0.6664)	4.2643 (0.8325)	10.1576 (0.7506)
χ^2 RAMSEY (p-value)	3.3178* (0.0623)	1.2621 (0.2938)	2.0365 (0.1629)	3.7352* (0.0724)	4.0403* (0.0628)	0.4620 (0.5158)
CUSUM	Stable	Stable	Stable	Stable	Stable	Stable
CUSUMSQ	Stable	Stable	Stable	Stable	Stable	Stable
F-statistics (p-value)	87.1598*** (0.0000)	69.8730*** (0.0000)	88.8778*** (0.0000)	90.0826*** (0.0000)	60.1655*** (0.0000)	205.55*** (0.0000)
R^2	0.9713	0.9908	0.9673	0.9806	0.9678	0.9968

Notes: See Notes in Table 2.

[a] The Model is estimated with Newey-West correction on the variance-covariance matrix to account for serial correlation and heteroscedasticity in the residuals as it either suffers from serial correlation (indicated by LM test, i.e., χ^2 SERIAL test) or non-constant variance (White test) or both.

***, ** and * indicate significance level at 1%, 5% and 10% respectively.

Table 6. Donor-specific foreign aid and FDI in Cambodia: Short run dynamics

	Dependent variable: ln FDI_t					
	ln AID_t = ln $EUAID_t$	ln AID_t = ln $USAID_t$	ln AID_t = ln $JAID_t$	ln AID_t = ln $AUSAID_t$	ln AID_t = ln $FAID_t$	ln AID_t = ln $UNDPAID_t$
ECT_{t-1}	−0.3617*** (0.0002)	−0.5707*** (0.0001)	−0.7825*** (0.0001)	−0.7420*** (0.0001)	−0.8634*** (0.0002)	−1.6942*** (0.0000)
Δln FDI_{t-1}	–	–	0.4401*** (0.0027)	–	0.4949*** (0.0037)	0.5974*** (0.0000)
Δln FDI_{t-2}	–	–	–	–	–	0.3268*** (0.0067)
Δln FDI_{t-3}	–	–	–	–	–	–
Δln AID_t	0.3150** (0.0245)	0.2233 (0.1533)	–	0.2901 (0.1074)	−0.0802 (0.5747)	−0.1082 (0.1897)
Δln AID_{t-1}	0.2363** (0.0339)	−0.7066*** (0.0015)	–	–	−0.1100 (0.4605)	−0.8271*** (0.0000)
Δln AID_{t-2}	–	−0.3726** (0.0202)	–	–	–	−0.6746*** (0.0000)
Δln AID_{t-3}	–	–	–	–	–	–
Δln $RGDP_t$	–	4.8580*** (0.0001)	–	3.1706*** (0.0001)	–	3.3161*** (0.0000)
Δln $RGDP_{t-1}$	–	1.2910 (0.1372)	–	1.4353* (0.0545)	–	−0.6087 (0.1876)
Δln $RGDP_{t-2}$	–	3.3174*** (0.0039)	–	0.5379 (0.3063)	–	1.6318*** (0.0010)
Δln $RGDP_{t-3}$	–	–	–	–	–	–
Δln $OPEN_t$	–	−1.2166** (0.0467)	–	–	–	−0.7259** (0.0374)
Δln $OPEN_{t-1}$	–	0.6882 (0.2465)	–	–	–	–
Δln $OPEN_{t-2}$	–	−0.7905** (0.0142)	–	–	–	–
Δln $OPEN_{t-3}$	–	–	–	–	–	–
Crisis	0.0176 (0.8937)	−0.3162** (0.0171)	0.0924 (0.5340)	0.1024 (0.5100)	0.0542 (0.7248)	−0.0835 (0.2985)

Notes: p-values are in parentheses.

***, ** and * indicate significance level at 1%, 5% and 10% respectively.

value of FDI. Hence, the short-run deviation is more persistent. We also note that the patterns of short-run results for (robust positive effect of) real GDP and (displacement effects of) trade openness align with the finding of the aggregate and sectoral aids.

Furthermore, the short-run results on bilateral and multilateral aid are also in line with the mixed findings recorded for aggregate and sectoral aid. Notably, it shows that past inflows of USAID and UNDPAID crowd out FDI, but such effects fade away (turn insignificant) in the current period. While JAID, AUSAID and FAID have no significant impact on FDI. The only bilateral aid that has a positive short-run effect is EUAID. The positive EUAID effects on FDI inflows may be due to the infrastructure effects (including the EU's tariff-free 'EBA' – Everything but Arm – trade scheme that makes Cambodia a destination for foreign firms seeking to serve the European markets, mainly textile goods).[21] These fragmented findings on the short-run effects of bilateral aid (which may also reflect the fragmentation in donors' motives, strategies and priorities) were also recorded by a recent study looking at their influences on democratic political institutions in post-conflict Cambodia (see Slesman, 2021).

We now assess the long-run effects of aid from these bilateral and multilateral donors on FDI inflows. Table 7 summarises the results. The findings show that only AUSAID and UNDPAID have positive, robust and statistically significant long-run effects on FDI inflows as estimated by ARDL, FMOLS, DOLS and CCR. Though EUAID, USAID and JAID also show positive results, they are not robust to alternative estimators. Thus, in the long run, AUSAID[22] and multilateral aid inflows within the framework of UNDP (UNDPAID) have a clearer crowding-in effect on FDI inflows in post-conflict Cambodia.

The effectiveness of UNDPAID in the long run is in line with Gulrajani's (2016) summary of literature on the relative effectiveness of multilateral aid that are due to several factors. First, aid recipients' perception of aid inflow through multilateral agencies, including the UN, is significantly more favourable than bilateral channels.[23] Second, aid through multilateral channels are less politicised than via bilateral (which can be easily captured by vested interests) as multilateral agencies possess a higher degree of autonomy from states that control and fund them, hence minimising political capture. Furthermore, aid through multilateral channels is less fragmented than bilateral channels as it usually has regional or sectoral mandates – hence possessing geographical specialisation – in managing aid. Lastly, aid via multilateral channels is more selective in its targets than bilateral – that is based more on rational criteria of development needs, e.g., poverty reduction and good governance, e.g., fighting corruption. Thus, the multilateral aid, e.g., through UNDP, have great potential to attract FDI inflows to post-conflict Cambodia.

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[21] EU is Cambodia's largest trading partner, accounting for 45% of Cambodian exports in 2018.

[22] We computed the share of AUSAID's sectoral distribution from available AidData over 1991–2013. The numbers showed that 98% of aid went to education (14.5%), health (27.8%), infrastructure (20.3%) and agriculture (35.7%).

[23] Based on an extensive survey conducted by AidData on 6,750 development policymakers and practitioners in 126 low- and middle-income countries in which participants from host-countries institutions rate multilaterals to be higher performing than bilateral across three dimensions namely usefulness of advice, agenda-setting influence and helpfulness in implementation (Gulrajani, 2016, pp. 11–12).

Table 7. Donor-specific foreign aid and FDI in Cambodia: Long run elasticities

	EU-NBAPC (EUAID): ln AID_t = ln $EUAID_t$				US-NBAPC (USAID): ln AID_t = ln $USAID_t$			
	ARDL	FMOLS	DOLS	CCR	ARDL	FMOLS	DOLS	CCR
ln AID_t	−0.7240 (0.5740)	0.5968** (0.0145)	0.6473 (0.2998)	0.6562** (0.0100)	0.5249* (0.0986)	0.3536 (0.3703)	0.0595 (0.9241)	0.4036 (0.3732)
ln $RGDP_t$	1.8367*** (0.0054)	1.2787*** (0.0000)	1.3821*** (0.0006)	1.2041*** (0.0000)	1.2990*** (0.0000)	1.4115*** (0.0000)	1.7075*** (0.0011)	1.2776*** (0.0003)
ln $OPEN_t$	−0.5646 (0.5487)	−0.2494 (0.5617)	−0.9768 (0.2487)	0.0091 (0.9633)	−1.6646*** (0.0004)	−0.8058 (0.1517)	−2.0292** (0.0217)	−0.2503 (0.3834)
Intercept	−34.7300*** (0.0031)	−24.7800*** (0.0000)	−24.0700*** (0.0002)	−24.3600*** (0.0000)	−19.0200*** (0.0006)	−25.1300*** (0.0002)	−26.1200*** (0.0043)	−24.7800*** (0.0008)
R^2	–	0.9550	0.9776	0.9516	–	0.9381	0.9659	0.9278
	Japan-NBAPC (JAID): ln AID_t = ln $JAID_t$				Australia-NBAPC (AUSAID): ln AID_t = ln $AUSAID_t$			
	ARDL	FMOLS	DOLS	CCR	ARDL	FMOLS	DOLS	CCR
ln AID_t	0.1781 (0.5938)	0.4152 (0.3322)	−0.2747 (0.7676)	0.7343** (0.0367)	0.9601*** (0.0039)	0.7806** (0.0116)	0.9903** (0.0418)	0.9195*** (0.0046)
ln $RGDP_t$	1.6183*** (0.0000)	1.5511*** (0.0000)	1.8391*** (0.0001)	1.4204*** (0.0000)	1.0288*** (0.0003)	1.1435*** (0.0000)	1.0328** (0.0116)	0.9825*** (0.0001)
ln $OPEN_t$	−1.1266** (0.0185)	−1.1565** (0.0282)	−2.1699** (0.0170)	−1.0135** (0.0426)	−1.1816** (0.0162)	−0.7273* (0.0782)	−2.2853*** (0.0076)	−0.3181 (0.1400)
Intercept	−28.2700*** (0.0000)	−27.0400*** (0.0000)	−27.8900*** (0.0008)	−25.3900*** (0.0000)	−15.6600*** (0.0026)	−19.6500*** (0.0001)	−10.7300 (0.1429)	−18.0600*** (0.0007)
R^2	–	0.9358	0.9654	0.9297	–	0.9579	0.9785	0.9539

Table 7. Continued

	France-NBAPC (FAID): ln AID_t = ln $FAID_t$				UNDP: ln AID_t = ln $UNDPAID_t$			
	ARDL	FMOLS	DOLS	CCR	ARDL	FMOLS	DOLS	CCR
ln AID_t	0.0491 (0.8911)	0.2327 (0.4345)	−0.2541 (0.5839)	0.3907 (0.2120)	0.6782*** (0.0000)	0.6360*** (0.0002)	0.5465** (0.0436)	0.6399*** (0.0000)
ln $RGDP_t$	1.6633*** (0.0000)	1.5905*** (0.0000)	1.8660*** (0.0000)	1.4537*** (0.0000)	1.6098*** (0.0000)	1.6399*** (0.0000)	1.6598*** (0.0000)	1.6240*** (0.0000)
ln $OPEN_t$	−1.1496** (0.0330)	−0.8079 (0.1479)	−2.5473*** (0.0081)	−0.2899 (0.3029)	−0.0404 (0.8432)	0.0763 (0.8335)	−0.5743 (0.4775)	0.1248 (0.3992)
Intercept	−28.8500*** (0.0000)	−28.9200*** (0.0000)	−27.1500*** (0.0000)	−28.3900*** (0.0001)	−32.5200*** (0.0000)	−33.4900*** (0.0000)	−31.4400*** (0.0000)	−33.35*** (0.0000)
R^2	–	0.9378	0.9692	0.9299	–	0.9536	0.9765	0.9534

Notes: Dependent variable is ln FDI_t. *P*-values are in parentheses. ***, ** and * indicate significance level at 1%, 5% and 10% respectively. FMOLS: Fully modified ordinary least square; DOLS: Dynamic ordinary least square; CCR: Canonical cointegrating regression.

5. Conclusion

A small strand of aid effectiveness literature has ventured beyond the intended consequences of aid to look at whether aid complements long-term foreign capital inflows. This study is motivated by the absence of empirical insight on whether foreign aid – in aggregate, sectoral and donor-specific – can be a catalyst for FDI inflows into post-conflict Cambodia over the short and long run. Using a time-series-based ARDL model (and FMOLS, DOLS and CCR long-run estimators) and data over the 1992–2018 post-conflict period – where large inflows of both aid and FDI are observed – we show that, generally, aggregate foreign aid promotes FDI inflows in the long run. Robust findings on donor-specific aid reveal that only Australian bilateral aid and UNDP aid promote FDI inflows. In contrast, the same long-run positive effects from the EU, US and Japan and economic–sectoral aid to the economic sector are not robust across alternative long-run estimators.

In the short run, we find both crowding-in and crowding-out effects. Crowding-in effects are recorded only for EU and other–sectoral aid. In contrast, positive current impacts of aggregate and sectoral–economic aid are dampened by past adverse effects, yielding a net overall negative impact. Interestingly, governance aid is found to complement FDI inflows in the past but disappears in the current period (i.e., it has a lagged crowding-in effect). Likewise, US and UNDP aid reduced FDI in the past, but such effects also disappear in the current period. We find no evidence of the short-run effect of bilateral aid from Australia, Japan and France.

Thus, foreign aid in general, donor specific Australian bilateral aid, and multilateral aid via UNDP in specific show clear evidence that they promote FDI inflows into Cambodia in the long run – supporting aid effectiveness in attracting long-term private foreign capital inflow in post-conflict Cambodia. Good development partnerships with the international community, more targeted aid to public infrastructure, and minimising barriers to FDI inflows are essential to attract the inflows of FDI into post-conflict Cambodia and potentially promote long-term economic development.

References

Ahmad, N., & Du, L. (2017). Effects of energy production and CO2 emissions on economic growth in Iran: ARDL approach. *Energy, 123*, 521–537. https://doi.org/10.1016/j.energy.2017.01.144

Annen, K., & Knack, S. (2018). On the delegation of aid implementation to multilateral agencies. *Journal of Development Economics, 133*, 295–305. https://doi.org/10.1016/j.jdeveco.2018.02.007

Arellano, C., Bulíř, A., Lane, T., & Lipschitz, L. (2009). The dynamic implications of foreign aid and its variability. *Journal of Development Economics, 88*(1), 87–102. https://doi.org/10.1016/j.jdeveco.2008.01.005

Asiedu, E. (2002). On the determinants of foreign direct investment to developing countries: Is Africa different? *World Development, 30*(1), 107–119. https://doi.org/10.1016/S0305-750X(01)00100-0

Asiedu, E., Jin, Y., & Nandwa, B. (2009). Does foreign aid mitigate the adverse effect of expropriation risk on foreign direct investment? *Journal of International Economics, 78*(2), 268–275. https://doi.org/10.1016/j.jinteco.2009.03.004

Asteriou, D., & Hall, S.G. (2007). *Applied econometrics: A modern approach using EViews and Microfit* (revised edition), Palgrave Macmillan.

Askarov, Z., & Doucouliagos, H. (2015). Aid and institutions in transition economies. *European Journal of Political Economy, 38*, 55–70. https://doi.org/10.1016/j.ejpoleco.2015.01.001

Banerjee, A., Dolado, J.J., Galbraith, J.W., & Hendry, D. (1993). *Co-integration, error correction, and the econometric analysis of non-stationary data*. Oxford University Press. https://doi.org/10.1093/0198288107.001.0001

Cassimon, D., Essers, D., Renard, R., & Verbeke, K. (2013). Aid flows. In G. Caprio (ed.), *The evidence and impact of financial globalization* (pp. 81–102). Academic Press.

Clemens, M.A., Radelet, S., Bhavnani, R.R., & Bazzi, S. (2012). Counting chickens when they hatch: Timing and the effects of aid on growth. *Economic Journal, 122*(561), 590–617. https://doi.org/10.1111/j.1468-0297.2011.02482.x

De la Fuente, A. (2000). *Mathematical methods and models for economists*. Cambridge University Press. https://doi.org/10.1017/CBO9780511810756

Donaubauer, J. (2014). Does foreign aid really attract foreign investors? New evidence from panel cointegration. *Applied Economics Letters, 21*(15), 1094–1098. https://doi.org/10.1080/13504851. 2014.909570

Donaubauer, J., Meyer, B., & Nunnenkamp, P. (2016). Aid, infrastructure, and FDI: Assessing the transmission channel with a new index of infrastructure. *World Development, 78*, 230–245. https://doi.org/10.1016/j.worlddev.2015.10.015

Ear, S. (2007). The political economy of aid and governance in Cambodia. *Asian Journal of Political Science, 15*(1), 68–96. https://doi.org/10.1080/02185370701315624

EViews. (2017a). *AutoRegressive distributed lag (ARDL) estimation. Part 1 – Theory*. https://blog.eviews.com/2017/04/autoregressive-distributed-lag-ardl.html

EViews. (2017b). *AutoRegressive distributed lag (ARDL) estimation. Part 2 – Inference*. https://blog.eviews.com/2017/05/autoregressive-distributed-lag-ardl_8.html.

Farooq, A., Shahbaz, M., Arouri, M., & Teulon, F. (2013). Does corruption impede economic growth in Pakistan? *Economic Modelling, 35*, 622–633. https://doi.org/10.1016/j.econmod.2013.08.019

Garriga, A.C., & Phillips, B.J. (2014). Foreign aid as a signal to investors: Predicting FDI in post-conflict countries. *Journal of Conflict Resolution, 58*(2), 280–306. https://doi.org/10.1177/0022002712467937

Gnangnon, S.K. (2021). Effect of volatility of development aid on volatility of foreign direct investment inflows. *Review of International Business and Strategy, 31*(2), 196–216. https://doi.org/10.1108/RIBS-04-2020-0051

Gehring, K., Michaelowa, K., Dreher, A., & Spörri, F. (2017). Aid fragmentation and effectiveness: What do we really know? *World Development, 99*, 320–334. https://doi.org/10.1016/j.worlddev.2017.05.019

Gulrajani, N. (2016). *Bilateral versus multilateral aid channels: Strategic choices for donors.* Overseas Development Institute. https://cdn.odi.org/media/documents/10492.pdf

Harms, P., & Lutz, M. (2006). Aid, governance and private foreign investment: Some puzzling findings for the 1990s. *Economic Journal, 116*(513), 773–790. https://doi.org/10.1111/j.1468-0297.2006.01111.x

Janský, P. (2012). Aid and foreign direct investment: Substitutes, complements or neither? *International Journal of Trade and Global Markets, 5*(2), 119–132. https://doi.org/10.1504/IJTGM.2012.048528

Jones, S., & Tarp, F. (2016). Does foreign aid harm political institutions? *Journal of Development Economics, 118*, 266–281. https://doi.org/10.1016/j.jdeveco.2015.09.004

Juselius, K., Møller, N.F., & Tarp, F. (2014). The long-run impact of foreign aid in 36 African countries: Insights from multivariate time series analysis. *Oxford Bulletin of Economics and Statistics, 76*(2), 153–184. https://doi.org/10.1111/obes.12012

Kimino, S., Saal, D.S., & Driffield, N. (2007). Macro determinants of FDI inflows to Japan: An analysis of source country characteristics. *World Economy, 30*(3), 446–469. https://doi.org/10.1111/j.1467-9701.2007.01001.x

Kimura, H., & Todo, Y. (2010). Is foreign aid a vanguard of foreign direct investment? A gravity-equation approach. *World Development, 38*(4), 482–497. https://doi.org/10.1016/j.worlddev.2009.10.005

Law, S.H. (2008). Does a country's openness to trade and capital accounts lead to financial development? Evidence from Malaysia. *Asian Economic Journal, 22*(2), 161–177. https://doi.org/10.1111/j.1467-8381.2008.00273.x

Lee, H.H., & Ries, J. (2016). Aid for trade and greenfield investment. *World Development, 84*, 206–218. https://doi.org/10.1016/j.worlddev.2016.03.010

Liao, H., Chi, Y., & Zhang, J. (2020). Impact of international development aid on FDI along the Belt and Road. *China Economic Review, 61*, Article 101448. https://doi.org/10.1016/j.chieco.2020.101448

Lof, M., Mekasha, T.J., & Tarp, F. (2015). Aid and income: Another time-series perspective. *World Development, 69*, 19–30. https://doi.org/10.1016/j.worlddev.2013.12.015

Narayan, P.K. (2005). The saving and investment nexus for China: Evidence from cointegration tests. *Applied Economics, 37*(17), 1979–1990. https://doi.org/10.1080/00036840500278103

OECD (2005). *Paris Declaration on Aid Effectiveness: Ownership, Harmonisation, Alignment, Results, and Mutual Accountability*. https://www.oecd.org/dac/effectiveness/ 34428351.pdf

Park, J.Y. (1992). Canonical cointegrating regressions. *Econometrica, 60*(1), 119–143. https://doi.org/10.2307/2951679

Pesaran, M.H., & Shin, Y. (1998). An autoregressive distributed-lag modelling approach to cointegration analysis. In S. Strøm (Ed.), *Econometrics and economic theory in the 20th century: The Ragnar Frisch Centennial Symposium* (Econometric Society Monographs). Cambridge University Press.

Pesaran, M.H., Shin, Y., & Smith, R.J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289–326. https://doi.org/10.1002/jae.616

Phillips, P.C.B., & Hansen, B.E. (1990). Statistical inference in instrumental variables regression with I(1) processes. *Review of Economic Studies, 57*(1), 99–125. https://doi.org/10.2307/2297545

Riddell, R.C. (2008). *Does foreign aid really work?* Oxford University Press.

Selaya, P., & Sunesen, E.R. (2012). Does foreign aid increase foreign direct investment? *World Development, 40*(11), 2155–2176. https://doi.org/10.1016/j.worlddev.2012.06.001

Slesman, L. (2021). Does foreign aid promote democratic institutions in post-conflict Cambodia? Evidence from ARDL bounds testing approach. *Singapore Economic Review*, in press. https://doi.org/10.1142/S0217590821500429

Sothan, S. (2018). Foreign aid and economic growth: Evidence from Cambodia. *Journal of International Trade & Economic Development, 27*(2), 168–183. https://doi.org/10.1080/09638199.2017.1349167

Stock, J.H., & Watson, M.W. (1993). A simple estimator of cointegrating vectors in higher order integrated systems. *Econometrica*, *61*(4), 783–820. https://doi.org/10.2307/2951763

Tanaka, K., & Tsubota, K. (2013). Does aid for roads attract foreign or domestic firms? Evidence from Cambodia. *The Developing Economies, 51*(4), 388–401. https://doi.org/10.1111/deve.12027

Teorell, J., Sundström, K., Holmberg, S., Rothstein, B., Pachon, N.A., Dalli, C.M., & Meijers, Y. (2023). *The quality of government standard dataset, version Jan23*. University of Gothenburg: The Quality of Government Institute. https://doi.org/10.18157/qogstdjan23

Tierney, M.J., Nielson, D.L., Hawkins, D.G., Roberts, J.T., Findley, M.G., Powers, R.M., Parks, B., Wilson, S.E., & Hicks, R.L. (2011). More dollars than sense: Refining our knowledge of development finance using AidData. *World Development, 39*(11), 1891–1906. https://doi.org/10.1016/j.worlddev. 2011.07.029

Vrieze, S.I. (2012). Model selection and psychological theory: A discussion of the differences between the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). *Psychological Methods, 17*(2), 228–243. https://doi.org/10.1037/a0027127

World Bank. (2002). *Global development finance 2002 vol 1: Financing the poorest countries*. https://doi.org/10.1596/0-8213-5085-4

Yasin, M. (2005). Official development assistance and foreign direct investment flows to Sub-Saharan Africa. *African Development Review, 17*(1), 23–40. https://doi.org/10.1111/j.1017-6772.2005.00105.x