



Effects of Foreign Aid and Remittances Flows on Saving and Investment in Developing South Asia: Panel Data Study

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Abstract

In this study, we investigate the impact of remittances and foreign aid (official foreign assistance) on investment and saving in South Asian countries. We also analyze the comparative influence of remittances and foreign aid in stimulating saving and investment. We use a sample of five South Asian countries over the period 1985-2018 and employ OLS and 2SLS method to estimate the effect of remittance and foreign aid on saving and investment. The result reveals that remittance has a positive impact on saving but has no significant effect on investment and shows that foreign aid has no significant impact on saving but negatively influences investment. In line with our results, a rise in 10 percent of remittances in South Asia raises savings by 1.6 percent in the OLS estimates and by 1.7 percent when we use 2SLS. At the same time for a 10% increase in foreign aid decreases saving by 4.3% and 3.3%, respectively, in two methods. For the second regression, an increase in 10% remittances hamper investment by 1.3% and 1% for OLS and 2SLS, respectively. And for the analogous 10% increase in foreign aid decrease investment by 5.4% and 5.2%, respectively. However, if foreign aid is efficiently used, it can be an important complement to remittances by permitting households to overcome the minimum threshold level and they can use a bigger portion of their remittances for savings and investment motive.

Keywords: Remittance; Foreign aid; Migration; Saving; Investment; South Asia; Growth and development.

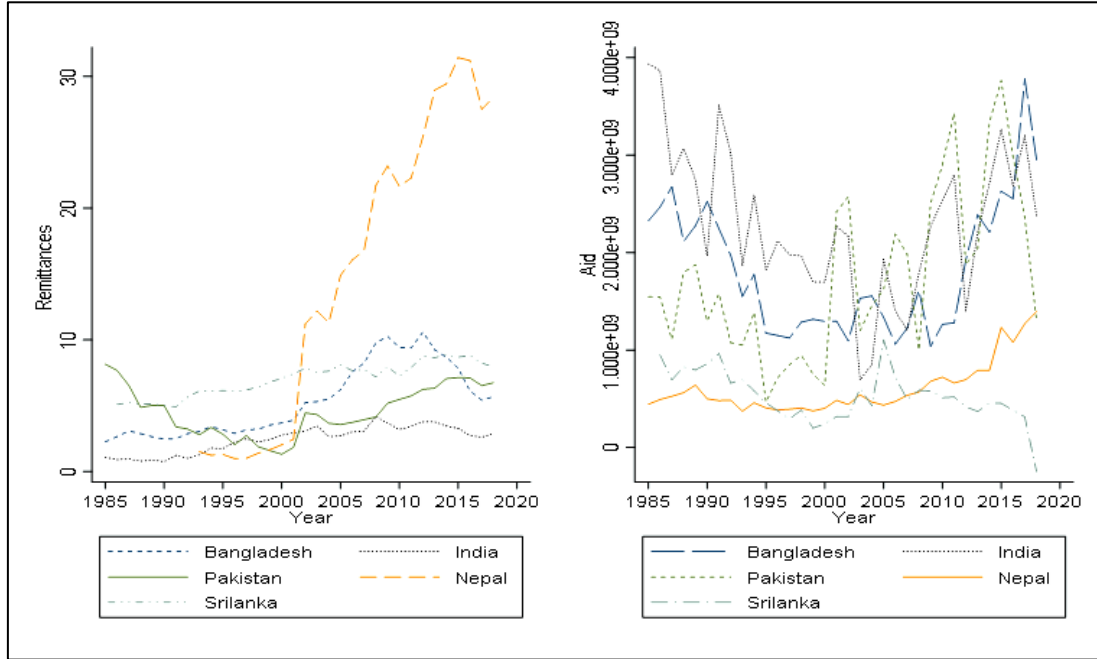
1. Introduction

For developing countries, remittances improve socio-economic determinators like living standards, housing, education, health care, poverty reduction, social security, and the recipient families' investment activities. It was found that 66% of remittances were used for consumption purpose and 34% was used for investment purpose in Bangladesh Hasan (2006), modified from De Bruyn and Kuddus (2005). Suppose we could find the percentage of remittance for a country to use for investment. We will be able to find the percentage of GDP generated by these remittances by using a simple formula.

It is long a debatable issue among economists and specialists whether foreign assistance and remittances contribute to saving and investment of the receiver country. Many empirical works have been done to build a connection between foreign aid, saving, and investment in developing and underdeveloped countries in the last couple of years. The results are impure and vary depending on micro and macro-level data, sample, and econometric model used by the researchers. Remittances have a positive influence on long-run economic growth in most of the countries studied but have an ambiguous effect in the short-run. Also, workers' remittances take care to lower poverty (Ekanayake and Moslares, 2019). Remittances assist a country in financing investment, stepping up the pace of capital formation, and encourage economic growth (Sinha *et al.*, 2019).

Official foreign assistance is also an important source for foreign capital inflow. Weisskopf (1972), Gupta and Islam (1983) found that the effect of aid on savings in developing and underdeveloped countries is significantly negative. Hadjimichael *et al.* (1995), argue considering Sub-Saharan Africa (SSA), the impact of foreign aid is negative for savings but ambiguous for investment. Mosley *et al.* (1987), was failed to find a significant relationship. These varieties are maybe from data sources, statistical techniques, or regional variations. Foreign aid has a significantly positive role in saving, investment, and growth of the receiver country (John Loxley and Harry A. Sackey).

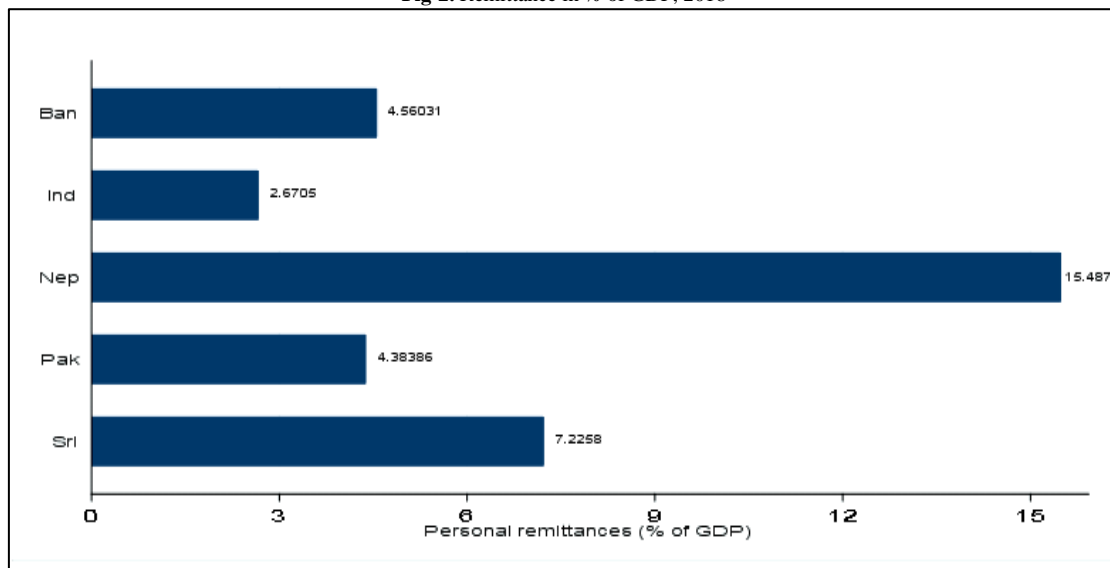
Fig-1. Graphical representation of the trend of remittance and aid



Remittance is an influential source of foreign capital for many developing countries. World Bank (2019c) shows that remittance inflows to the developing world were US\$583 billion in 2017 and US\$624.5 billion in 2018. Remittances transmitted by migrants from developing countries have followed a steady positive upward trend from 1985 to 2018, above fig.1 showing that remittance from 1985 to 2018 follows a specific pattern for the South Asian countries, but foreign aid is not following any particular trend.

Asian developing countries are recognized as the highest receiver of remittances, and the region has also been consistently doing well in receiving foreign assistance inflows.

Fig-2. Remittance in % of GDP, 2018



Above fig.2 is showing the earning of remittance for south Asian countries as a percentage of GDP. Foreign remittance covers a big part of GDP for these countries.

The important part of foreign capital foreign aid, and remittance has a significant role in the domestic economy. For South Asian countries, these two foreign capital inflows are remarkable. In this paper, we investigate whether remittances augment savings and investment in South Asian countries. We like to compare the effectiveness of remittances and foreign aid in stimulating savings and investment in the region.

2. Literature Survey

On the ongoing debate on migration, remittances, and development, researchers and policymakers argue that remittances have a significant impact on the development of the receiver economies. Before the 80s, there is no positive literature on the effectiveness of remittance on development. Most of the concerns argued that remittances are mainly used for non-productive purposes like the consumption of goods and services. Rempel and Lobdell (1978) argue that remittances are mainly employed for daily consumption needs. Lipton (1980), shows that

purchases of consumer goods absorb about 90% of remittances earned. Massey (1987) argue that 68 to 86% of the Mexican migrants' remittances are used for consumption. Ekanayake and Moslares (2019) find that migrant workers' earning have a positive impact on long-run economic growth in most Latin American countries. Still, the result is ambiguous in the short-run. They also provide the opinion that workers' remittances tend to lower poverty rates in Latin America. They employ panel least squares and panel fully-modified least squares (FMOLS) methods. They also employ the Autoregressive Distributed Lag (ARDL-ECM) approach to cointegration analysis for short-run and long-run results. Sinha *et al.* (2019), use data from 1981 to 2015 to find the effect of FDI and remittances on real effective exchange rates and GDP in Asian developing countries. They employ the dynamic panel GMM technique to overcome the endogeneity issue, and findings show that both inflows of FDI and remittances have a significant positive influence on exchange rates and GDP. Also, find that remittances have greater influence due to steady inflows. John Loxley and Harry A. Sackey use a sample consisting of 40 member countries of the African Union and estimate fixed-effects growth models. Their finding is positive and statistically significant for the effectiveness of foreign aid on economic growth. They argue that aid increases investment, which is a major catalyst in the aid-growth relationship. They also argue that aid also has an impact on the saving-investment nexus and concludes that aid matters for the regions' growth. Giuliano and Ruiz-Arranz (2009) find that remittance has a significantly positive effect on growth and financial development but has an adverse impact on countries with more established financial sectors. They employed a sample of 100 developing countries for the period from 1975 to 2002. The results they find are both from ordinary least squares (OLS) and System Generalized Method of Moments (SGMM) regressions. Aggarwal *et al.* (2011) find that remittance inflows have a remarkable effect on financial development that leads to economic growth. Barajas *et al.* (2009) argue that remittances are the sources to raise the quantity of the inflows of funds in the banking channel, which will influence the financial sector development. The remitted money sent by the migrant workers becomes one of the essential sources of financial capital (Fajnzylber and Humberto, 2008). Remittances lessen the financial obstacle in the recipient economies; investments will also increase (Pradhan *et al.*, 2008). These findings are supporting the transmission of impact from remittance flows to economic development. Lartey (2007) also shows that capital inflow in the form of FDI and aid also causes real exchange rate appreciation in some of the Sub-Saharan African countries. Lim and Walter (2015) inquire about the economic importance of remittances inflows to 13 countries in the Caribbean region and Common Market (CARICOM), using data from 1975 and 2010. The survey was unable to get any supportive evidence for a long-run association between remittances and GDP per capita in the region. They concluded that the remittances inflows to the Caribbean are mostly employed to finance consumption demand rather than investing in growth-boosting projects. Ndikumana and Verick (2007) and Macias and Massa (2009) show that evidence indicating that there has been an increase in the different types of capital inflows in Africa since the 1990s in the form of FDI, foreign aid, equity, and bond flows. At the same time, cross border bank flow activity grew significantly (Macias and Massa, 2009). Even though there has been a rise in capital inflows to African countries, Ndikumana and Verick (2007) find that their effect on investment, economic growth, and alleviation of poverty is still an issue of great concern. Forget (Kapingura, 2018) employs the panel cointegration test and the dynamic ordinary least square method (DOLS) for Southern Africa Development Region (SADC) region. The result reveals that there is a significant positive relationship between domestic saving, investment, FDI, and remittances. These findings indicate that FDI and remittances help in overcoming the limits on the domestic capital formation in the SADC region by permitting a rate of investment generated by domestic savings. Kakhkharov (2018) also found a positive impact of remittance on financial development in the receiver country. Tests conducted by León-Ledesma and Piracha (2003) for 11 countries of Central and Eastern Europe and Drinkwater (2003) on 20 developing countries show that remittances contribute remarkably in raising the level of investment in their receiving economies.

3. Data and Methodology

The primary source of data is The World Development Indicators, 2019 of the World Bank.

We exclude some countries for data unavailability for some concerned variables. Here we employ 5 out of the eight South Asian countries to estimate saving and investment equations.

IMF defined remittances as the sum of workers' remittances, compensation of employees, and migrants' transfer. But there is some confusion in remittances recording, which may hamper the comparability and reliability of data to estimate. Export income, tourism receipts, and deposits of non-resident is the source of misclassifications.

Here we use an unbalanced panel because there are some missing data for some variables for specific years. Our objective is to estimate the impact of remittance and foreign aid on saving and investment in South Asian countries. We use annual data for the periods 1985-2018. Our concern is to find two econometric relationships among the variable. These are a. the relationship between migrants' remittances, foreign aid and savings, and 2) the relationship between migrants' remittances, foreign aid, and domestic investment in South Asia. Economic theory helps us to find the variables that determine saving and investment. We can use either a fixed-effect or random-effect model. The Hausman test allows us to choose the fixed effect model. The inclusion of country-specific effects in the model helps us to consider possible heteroscedasticity of data and unobservable characteristics of countries. Allowing country fixed effects, we estimate our model with the ordinary least square method (OLS). We solve the problem of heteroscedasticity by white's test.

However, economic theory tells us that there is a possibility of GDP per capita to endogenous with both saving and investment variables. In these circumstances, our estimated results by OLS may be biased. The prevalence of such causality indicates a strong possibility of a correlation between the control variable and the disturbance and breach of the assumptions of the linear regression model. This problem is called endogeneity bias. To resolve the

difficulty, we use the Two-Stage Least Squares (2SLS) instrumental variables method. We search for variables strongly correlated with the endogenous variable but uncorrelated with the error term. Here the main concern is to discover good instruments. Here we use an internal instrument that is the lag values of the explanatory variables that are endogenous. The two periods lag value of the endogenous variable could be a good instrument here. Then, we re-estimate our model with the IV method (2SLS) and use GDP per capita lagged two periods as an instrument. There are also chances for remittances and saving to be correlated; we use the residual series collected from the estimation of the saving-remittances equation as a proxy of saving variable; this solves our correlation problem between remittances and saving and between income per capita and saving. We control for unobservable country features by using country-specific fixed effects.

4. Theoretical Model

4.1. Remittances, Aid and Savings in South Asia

To find the relationship between remittances, foreign aid and savings, we estimate the following equation:

$$GS_{it} = \beta_0 + \beta_1 GDPPC_{it} + \beta_2 REMIT_{it} + \beta_3 AID_{it} + \beta_4 DEP INT_{it} + \beta_5 INFLAT_{it} + \alpha_i + \varepsilon_{it}$$

Where GS_{it} is saving of country i at the time t . Variables that determine saving are Gross Domestic Product Per Capita, GDPPC (Serven and Solimano, 1993; Wai and Wong, 1982), Deposit interest rate, DEP INT (Greene and Villanueva, 1991), Inflation, INFLAT (Fischer, 1993). Here we include two foreign capital flows variable. These are remittances, REMIT and foreign aid, AID. α_i is the country specific fixed effect and ε is the disturbance term.

4.2. Remittances, Aid and Investment in South Asia

To investigate the relationship between remittances, foreign aid and investment, we should estimate the following equation:

$$INV_{it} = \beta_0 + \beta_1 GDPPC_{it} + \beta_2 REMIT_{it} + \beta_3 AID_{it} + \beta_4 LEND INT_{it} + \beta_5 OPEN_{it} + \beta_6 GS_{it} + \alpha_i + \varepsilon_{it}$$

Where INV is investment of country i at the time t . Economic variables that determine Investment are Gross Domestic Product per capita, GDPPC (Serven and Solimano, 1993; Wai and Wong, 1982), lending interest rate, LEND INT (Greene and Villanueva, 1991), trade openness, OPEN (Levine and Renelt, 1992), savings, GS (Feldstein and Horioka, 1980). Here we include two foreign capital flows variable. These are remittances, REMIT And foreign aid, AID. α_i is the country specific fixed effect and ε is the disturbance term.

5. Estimation Results

The results of the two methods are very similar. Here estimated result for GDP per capita is unusually affecting saving showing by the 2SLS method. GDPPC was positively affecting saving in the OLS method and also positively influencing investment for both methods but not significantly. The deposit interest rate is unusually and insignificantly affecting savings. The inflation rate is negative insignificant to explain saving for the south Asian countries.

Table-1. Impact of Remittances, Foreign Aid on Gross Savings

| Variable | OLS (Fixed Effects) | 2SLS (Fixed Effects) |
|-----------------------------------|------------------------|-------------------------|
| Dependent Variable: Gross Savings | | |
| Cons. | 17.76*** | 18.85*** |
| REM | 1.611*** (0.000) | 1.707*** (0.000) |
| AID | -4.31 (0.447) | -3.37 (0.556) |
| GDPPC | 0.0000864 (0.905) | -0.000966 (0.216) |
| DIR | -0.00730 (0.894) | -0.0393 (0.482) |
| INF | -0.101 (0.234) | -0.128 (0.134) |
| Observation | 99 | 99 |
| R-sq. | 0.547 | |
| Adj. R-sq. | 0.512 | |

Notes: P-values in parentheses, *, **, *** respectively significant at 10%, 5%, and 1% level

For the investment equation, gross saving is going in line with our prior expectations at a 1 percent level of significance. The lending interest rate is also consistent with our prior expectations but not significant. Migrants' remittances have positive coefficients at the 1 percent level for saving, but foreign aid has an insignificant negative result for both the two specifications of the tests. From the estimation result of the investment, equation remittances are not significantly affecting investment for both of the tests, but foreign aid hampers investment significantly at 10 percent level.

Table-2. Impact of Remittances, Foreign Aid on Investment

| Variable Dependent Variable: Investment | OLS Fixed Effects | 2SLS Fixed Effects |
|--|----------------------|-----------------------|
| Cons. | 9.869*** (0.000) | 9.922*** (0.000) |
| REM | -0.130 (0.374) | -0.105 (0.476) |
| AID | -5.42* (0.061) | -5.21* (0.071) |
| LIR | -0.0120 (0.640) | -0.0161 (0.535) |
| GS | 0.534*** (0.000) | 0.542*** (0.000) |
| GDPPC | 0.000595 (0.137) | 0.000278 (0.542) |
| Observation | 134 | 134 |
| R-sq. | 0.672 | |
| Adj. R-sq. | 0.651 | |

Notes: P-values in parentheses, *, **, *** respectively significant at 10%, 5%, and 1% level

According to our results, an increase of 10% in remittances in south Asia increases savings by 1.6% in the OLS estimates and by 1.7% when we use 2SLS. At the same time for a 10% increase in foreign aid decreases saving by 4.3% and 3.3%, respectively.

For the second regression, an increase in 10% remittances hamper investment by 1.3% and 1% for OLS and 2SLS, respectively. These estimated results are very far from our prior theory though insignificant. And for the same 10% increase in foreign aid decrease investment by 5.4% and 5.2%, respectively.

In line with [Baldé \(2009\)](#), we also find that foreign aid is unable to promote saving investment and economic growth in South Asia. Here the most remarkable result is that though some part of the remittances goes for saving but not sufficient to promote investment and growth.

6. Comparative Analysis of Remittances and Aid Effectiveness

Projects like school, roads, highway, and infrastructure, etc. are accomplished by using foreign aid. Usually, the protection and sustainability of such projects are given by the local governments. Spending on staff, equipment, and maintenance cost of such infrastructure may increase government consumption spending. This may cause public savings and hence national savings to reduce.

[Burnside and David \(2000\)](#), [Easterly \(2003\)](#), [Clemens et al. \(2004\)](#) identified weak economic policies, lack of democracy, and the lack of incentives as the reason for low or no effectiveness of foreign aid. Under such a weak institutional and political situation, foreign aid will not be effective. Receiver countries sometimes take unwise development policies to get benefits from foreign aid or to select for more assistance for the next years. [James \(1999-2002\)](#) described this situation as "Samaritan's dilemma" where foreign assistance reduces the incentive and effort of the receiver country. World Bank identified a lack of good governance as the main reason for not fulfilling the goals of foreign assistance.

Remittances, on the other hand, are directly received by poor households and people. There is no intermediary like the government here to misallocate the resources. There is much literature that reveals that remittances are used for meeting household consumption purposes. So they can not be taken into account as a good source of capital to generate more savings and investment for development. [Baldé \(2009\)](#) found that remittance has no direct impact on growth in sub-Saharan countries. "Comité Français pour la Solidarité Internationale (CFSI)" Conducted a survey and publicized by the [Faini \(2007\)](#), found that migrants from Mali, Senegal, Morocco, Comoros and Vietnam living in France classified their remittance earning to use in the following purposes: 1) Assist family; 2) Build houses; 3) Build community infrastructure (health services, schools etc); 4) Start a business; and 5) Open a saving account. Saving and investment are getting lower priority here.

According to the World Bank cited by [Salomone \(2006\)](#), the factors that influence households and migrants to use their remittances earning: 1) the intensity of household dependency on remittances, the more they are dependent on these funds, the less they save and invest; 2) the nature of remittances' recipients, women are more concerned about smoothing their consumption; 3) the existence of a potential target destination for remittances (purchase of goods or education for example), and 4) the level of households' recipient's income and the existence of credit constraints. Initial economic conditions of the migrants are also an influential factor in determining saving, investment, and consumption. A relatively good economic condition allow remittance earner to use it for a productive purpose. If migration is financed by debt, then households usually use the amount for debt repayment and consumption purpose. Therefore we can conclude that the economic condition of the migrant's country plays an important role in remittances use as saving and investment. There must be a threshold level that determines the actual use of the remittances for a country or a region.

Finally, we can conclude that foreign aid could be a complement for remittance because if aid help households to move above the threshold level, then the majority portion of remittances could be used for saving and investment purposes.

7. Conclusion

Our study's objective is to investigate the macroeconomic impact of remittances and foreign aid on saving and investment in South Asian countries. We also made a comparative analysis of the remittance and foreign aid in stimulating savings and investment in South Asia. Our result shows a mixed impact of remittance and saving on the concerned variables. Remittance has significantly favorable effects on saving but no significant effect on investment. Simultaneously, foreign aid has no significant impact on saving but has a significantly negative impact on investment for south Asian countries. So, our conclusion is also in line with the pessimist literature. Remittance is mostly going for consumption and non-productive purpose in south Asia. Our analysis questioned foreign aid for one more time. Policy researchers may think one more time about appropriately using foreign support. For international institutions, remittances and foreign aid are good complements. Because both are the foreign source of capital flows, but they do not substitute because one is public earning, but the other is private.

Appendice

Définition and source of variables

| Variables | Definition | Source |
|-----------|--|-----------------------------------|
| GDPPC | Per capita real GDP, 2010 \$ constant | World Bank (2019b), World Bank |
| REMIT | Remittances of migrants, % of GDP | |
| AID | Foreign assistances, % of GDP | |
| INV | Gross Fixed Capital Formation (% of GDP) | |
| GS | Gross saving, % of GDP | |
| DEP INT | Deposit interest rate | |
| LEND INT | Lending interest rate | |
| OPEN | Openness as a ratio of imports and exports on GDP, % | |
| INFLAT | Inflation rate mesured by the change in CPI | |

Descriptive Statistics

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|-----------------------|------|----------|-----------|----------|----------|
| Investment | 170 | 22.68138 | 5.354913 | 12.52063 | 35.81288 |
| Gross Savings | 170 | 26.40115 | 7.413546 | 10.3342 | 48.16339 |
| GDPPC | 169 | 1036.476 | 754.629 | 317.7706 | 3946.194 |
| Remittances | 162 | 6.437781 | 6.25959 | .7426467 | 31.43237 |
| Foreign aid | 170 | 1.41 | 9.38 | -2.46 | 3.94 |
| Deposit Interest rate | 67 | 8.167093 | 2.713271 | 1.634167 | 13.66345 |
| Lending Interest rate | 101 | 12.50854 | 2.515856 | 6.9575 | 18.91667 |
| Inflation | 168 | 7.832354 | 3.818864 | 1.48118 | 22.5645 |
| Openness | 170 | 1.43 | 1.82 | 1.53 | 6.90 |

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